

Resumos II Fórum Discente ABRAPG-Ft 2025

1

CARDIAC AUTONOMIC MODULATION BEHAVIOR IN RESTING ASTHMATIC WOMEN

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Background: Asthma is characterized by obstruction to expiratory airflow, reversible, and respiratory symptoms such as shortness of breath, wheezing and coughing. In addition to these, asthmatic individuals often present systemic repercussions of the disease, with changes in the cardiovascular system being particularly common, particularly changes in cardiac autonomic control.

Objectives: To compare the behavior of cardiac autonomic modulation at rest in controlled and healthy asthmatic women.

Methods: After ethical approval, 34 female participants were included, non-smokers, aged between 18 and 40 years, with and without a medical diagnosis of asthma. The participants underwent analysis of their heart rate at rest for 10 minutes, using a chest sensor that records cardiac signals. After completion of collection, the data was stored and transferred to the software for analysis in the time domain: mean heart rate interval (Mean iRR), mean heart rate (Mean HR), square root of the mean squared differences of the RR intervals (RMSSD) and pNN50 and time domain: low frequency (LF) domain indices that indicate sympathetic modulation, high frequency (HF): parasympathetic activity and the LF/HF: sympathovagal balance. The Shapiro-Wilk test was applied to verify the distribution of data, which were expressed as mean and standard deviation (SD) values. To analyze the results, the Independent Student's T Test was used.

Results: During the rest period, there was a predominance of sympathetic activity in asthmatic women observed through the LF time variable (61 ± 16 vs 40 ± 14) and lower values of parasympathetic activity, verified through the HF index (38 ± 16 vs 59 ± 14), when compared with healthy participants, respectively. Additionally, lower RMSSD values, representing parasympathetic, were found in asthmatic participants (39 ± 28 vs 65 ± 45) and higher Mean HR values (74 ± 13 vs 69 ± 10) and lower Mean iRR values (826 ± 142 vs 882 ± 121) were observed in asthmatic women, respectively.

Conclusion: Asthmatic women present changes in the behavior of cardiac autonomic modulation at rest, showing greater sympathetic activity, which differs from what was expected. For future research, we suggest investigating different classifications of asthma, as well as comparing men and women.

Implications: These results may open new possibilities for additional studies and encourage the implementation of individualized protocols for this population.

Keywords: Asthma, Heart Rate, Women

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ASSOCIATION BETWEEN SEDENTARY BEHAVIOR AND RISK OF FALLS IN INDIVIDUALS ON HEMODIALYSIS

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Background: Individuals with chronic kidney disease in hemodialysis have a high risk of falls. Additionally, these individuals present high sedentary time. The relation between sedentary behavior and the risk of falls needs to be investigated for individuals on hemodialysis.

Objectives: The primary aim of this study was to verify the association between sedentary behavior and the risk of falls in individuals on hemodialysis. The secondary aims were to identify the incidence of falls and to compare the sedentary behavior between fallers (at least one recording of falls) and nonfallers (without recording of falls).

Methods: This 12-month prospective study included individuals in regular hemodialysis. Sociodemographic, clinical, and laboratory data were recorded from an interview. Sedentary behavior was evaluated by the sedentary time recorded on dialysis and nondialysis days using a triaxial accelerometer (wGT3X-BT, ActiGraph). The accelerometer was positioned on the individuals' dominant waist, and they were instructed to wear it for eight consecutive days during waking hours. After the initial assessment, the occurrence of falls was monitored monthly for 12 months according to the fall definition as an unexpected event in which the individual came to rest on the ground, floor, or lower level. A descriptive analysis was conducted and comparisons between fallers and nonfallers were made by Student T-test. Unadjusted and adjusted logistic regression models investigated the association between sedentary time and the

risk of falls, with falls as the dependent variable. A p-value of < 0.05 was considered statistically significant.

Results: This study included 96 individuals (59.3 ± 12.3 years old, 57.3% male). The incidence of falls was 29.2%. Fallers presented lower sedentary time on nondialysis days than nonfallers did (504.9 ± 136.7 vs. 580.9 ± 120.0 minutes per day, $p = 0.012$). In the unadjusted logistic regression analysis, sedentary time on nondialysis days was directly associated with risk of falls [OR: 1.005 (1.001 to 1.009); $p = 0.016$]. After adjustment for potential confounders, including age, gender, time on hemodialysis, body mass index, cardiovascular disease, diabetes mellitus, sedentary time on nondialysis days remained associated with risk of falls [OR: 1.005 (1.000 to 1.009) $p = 0.037$].

Conclusion: Higher sedentary behavior on nondialysis days increased the risk of falls for individuals on hemodialysis.

Implications: The assessment of sedentary behavior can be used to identify individuals on hemodialysis with higher risk of falls and to contribute for the development of preventive strategies.

Keywords: Renal Dialysis, Accidental falls, Sedentary Behavior

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INFLUENCE OF SEDENTARY TIME ON FUNCTIONAL CAPACITY AND LEVEL OF PHYSICAL ACTIVITY LEVEL AFTER A PULMONARY REHABILITATION PROGRAM

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Background: Pulmonary rehabilitation (PR) improves functional capacity in individuals with Chronic Obstructive Pulmonary Disease (COPD); however, these effects diminish over time, and these individuals exhibit a vicious cycle of sedentary behavior, leading to functional losses. However, there are still gaps in the literature regarding whether this behavior influences functional capacity, physical activity levels post-PR, and the maintenance of long-term benefits.

Objectives: To verify whether pre-PR sedentary time can explain functional capacity and physical activity levels post-rehabilitation and over six months.

Methods: This is a longitudinal study conducted on individuals with COPD who completed an eight-week PR program based on functional tests. The study was approved by the institution's Ethics Committee. Participants were assessed at three time points: pre-PR, post-PR and six months after PR. The assessments included functional capacity (six-minute walk test - 6MWT and six-minute step test-6MST). To measure sedentary behavior and physical activity levels, an accelerometer was worn on the right thigh for seven consecutive days. The accelerometer data were processed using ActiPASS software, and repeated measures ANOVA, Pearson Correlation and simple linear regression analysis were conducted using SPSS. The significance level was set at $p = 0.05$.

Results: A total of 26 individuals with COPD were evaluated, with a mean age of 67 ± 7 years, 15 (58%) males, FEV1 of $51 \pm 14\%$, and a BMI of 25 ± 5 Kg/m². There was a significant improvement in functional capacity from pre- to post-PR with no differences after six months. Regarding physical activity levels, no significant differences were found across the three time points. A correlation was observed

between pre-PR sedentary time and 6MWT ($r = -0.506$, $p = 0.008$), 6MST ($r = -0.532$, $p = 0.005$), post-PR physical activity level ($r = -0.616$, $p = 0.001$) and six-month post-PR physical activity level ($r = -0.760$, $p < 0.001$). Regression analyses showed that the pre-PR sedentary time explained 22.5% of the variance in functional capacity for the 6MWT (adjusted $R^2 = 0.225$, $p = 0.008$), 25.4% for the 6MST (adjusted $R^2 = 0.254$, $p = 0.005$), 35.3% for the post-PR physical activity level (adjusted $R^2 = 0.353$, $p = 0.001$), and 55.6% for six month post-PR physical activity level (adjusted $R^2 = 0.556$, $p < 0.001$).

Conclusion: Pre-PR sedentary time explained the variance in functional capacity and physical activity levels post-PR, as well as long-term physical activity levels. This reinforces the need to encourage more sedentary individuals to break this behavior during and after PR to maintain functional gains.

Implications: The findings of this study highlight the importance of Behavior change strategies targeting more sedentary individuals to enhance PR responses and maintain its long-term benefits.

Keywords: COPD, Pulmonary Rehabilitation, Sedentary Behavior

Conflict of interest: The authors declare no conflicts of interest.

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4

FEASIBILITY AND REPRODUCIBILITY OF THE UNSUPPORTED UPPER LIMB EXERCISE TEST AND SIX-MINUTE PEG BOARD RING TEST FOR CHILDREN AND ADOLESCENTS

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Background: Activities involving the upper limbs are part of daily life in home, work, or leisure environments. However, children and adolescents with chronic lung disease, in certain situations, may experience limitations in the use of their upper limbs (UL), such as reduced strength and endurance of the UL. Much is known about the Unsupported Upper Limb Exercise Test (UULEX) and Six-Minute Peg Board Ring Test (6MBRT) in adult individuals, but there is no description in the literature regarding the use of UULEX and 6MBRT in the pediatric population.

Objectives: To evaluate the feasibility and reproducibility of two field clinical tests for upper limbs (Unsupported Upper Limb Exercise Test - UULEX and Six-Minute Pegboard Ring Test - 6PBRT) in children and adolescents.

Methods: Feasibility study. Fifteen healthy volunteers aged 6 to 17 years were included. Spirometry was performed, followed by randomization of three tests: Cardiopulmonary Exercise Test (CPET) or UULEX or 6PBRT. The CPET was performed on an upper limb ergometer with a load increment protocol every minute. For UULEX, the volunteer sits in front of a panel and raises their arms while holding bars of different weights (0.25 kg to 2.0 kg) at different heights; outcome: execution time. For 6PBRT, the volunteer sits in front of a panel with four pins (two upper and two lower) and moves rings from the lower pins to the upper ones (and vice versa) for six consecutive minutes; outcome: number of rings moved. For all tests, maximum oxygen consumption (VO_{2peak}) and peak ventilation per minute (VE_{peak}) were also evaluated as outcomes. The UULEX and 6PBRT were performed twice each (test and retest), with a 30-minute interval between each. For feasibility, less than 15% of volunteers could reach the ceiling effect and/or floor effect.

Results: Volunteers were 11 years (9-15 years), and normal pulmonary function (FVC, FEV1, FEV1/FVC > 80% predicted). The UULEX time in the test and retest was 9.5 min [8.0 - 12.0 min] vs. 9.4 min [8.2 - 12.0 min], respectively; and the number of rings in the 6PBRT was 299 [258 - 373] vs. 340 [244 - 387], respectively, $p > 0.05$. The CPET showed higher $\text{VO}_{2\text{peak}}$ 22.8 (19.4 - 26) mL/kg compared to UULEX at 11.8 (10.2 - 13.6) mL/kg and to 6PBRT 11.6 (9 - 12) mL/kg, $p = 0.001$. The VEpeak was higher at CPET 31.5 (22.9 - 33.9) L/min compared to UULEX 19.7 (15.6 - 23.1) L/min and to 6PBRT 14.4 (12.2 - 19.3) L/min, $p = 0.001$. The ICC for the test and retest of UULEX was 0.93 (0.78 - 0.97) $p < 0.001$, and for 6PBRT was 0.97 (0.91 - 0.99) $p < 0.001$. Two volunteers (13%) achieving ceiling effect at UULEX, and no floor effect for any field test.

Conclusion: The UULEX and 6PBRT are feasible and reproducible field tests for upper limbs in children and adolescents, have lower metabolic demand compared to CPET. It provides an alternative to assess upper limbs pediatric population.

Implications: New upper limb test for the pediatric population.

Keywords: Field Test, Upper Limb, Children and Adolescent

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ULTRASONOGRAPHIC EVALUATION OF PULMONARY AERATION AND ITS RELATIONSHIP WITH FUNCTIONAL CAPACITY IN PATIENTS WITH CHRONIC HEART FAILURE

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Background: Early identification of pulmonary congestion is essential for optimizing clinical management and improving outcomes in individuals with heart failure (HF) enrolled in cardiovascular rehabilitation programs. However, the clinical presentation of this condition is heterogeneous, and conventional methods such as chest radiography and pulmonary auscultation have low sensitivity for early detection. In this context, lung ultrasound (LUS) has emerged as a reliable and accurate tool for assessing pulmonary aeration, enabling the early identification of congestion and the appropriate guidance of therapeutic interventions.

Objectives: To evaluate the relationship between pulmonary aeration and functional capacity in individuals with chronic HF at the beginning of a cardiovascular rehabilitation program.

Methods: This was an observational, analytical-descriptive, and cross-sectional study conducted with individuals aged 18 to 65 years with chronic HF and a left ventricular ejection fraction (LVEF) < 50%, undergoing screening for a cardiovascular rehabilitation program. Participants underwent pulmonary aeration assessment using the LUS protocol, which analyzed 12 lung regions (6 anterior and 6 posterior), generating a total score ranging from 0 (normal aeration) to 36 (diffuse pulmonary consolidation). Pulmonary aeration was classified as mild (1-5 points), moderate (6-15 points), or severe (> 15 points). Functional capacity was determined by the six-minute walk test (6MWT) and peak oxygen consumption ($\text{VO}_{2\text{max}}$). Statistical analysis was performed using SPSS 27.0 software, employing

tests for mean comparisons and association analysis between variables.

Results: A total of 21 individuals with chronic HF were evaluated, 70.6% male and 29.4% female, with a mean age of 52.95 ± 8.27 years and a mean LVEF of $34.7 \pm 11.7\%$. Pulmonary aeration classification revealed that 19.05% had mild impairment (LUS score between 1 and 5), while 80.95% were classified as normal. Participants showed impaired functional capacity, with a mean $\text{VO}_{2\text{max}}$ of 17 ± 4.4 mL/kg/min, with 76.2% classified as "very weak" and 23.8% as "weak." In the 6MWT, the average distance covered was 433.36 ± 114.74 meters, and 55% of individuals performed below 80% of the predicted distance. A statistically significant association was identified between the LUS score and $\text{VO}_{2\text{max}}$ classification ($p < 0.05$), indicating that individuals with very weak functional capacity had a higher frequency of pulmonary alterations. Conversely, those classified as weak or moderate/good predominantly had normal pulmonary scores.

Conclusion: This study demonstrated a significant association between pulmonary aeration and functional capacity in individuals with chronic HF. Even mild pulmonary alterations were linked to functional limitations, highlighting the need for an integrated assessment of pulmonary and cardiorespiratory function in clinical practice.

Implications: LUS appears to be a valuable tool for monitoring pulmonary congestion in patients with chronic HF undergoing cardiovascular rehabilitation. Early detection of pulmonary impairment may enable adjustments in exercise prescription and clinical management, contributing to a more personalized approach. Incorporating LUS into the routine assessment of these patients could assist in risk stratification and the optimization of therapeutic strategies.

Keywords: Heart failure, Lung ultrasonography, Functional capacity

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POST-TUBERCULOSIS LUNG DISEASE: ASSOCIATIONS BETWEEN EXERCISE OXYGEN CONSUMPTION, LUNG FUNCTION AND IMAGE FINDINGS

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Background: The burden of functional impairment after tuberculosis (TB) treatment is a global health issue, now referred to as post-tuberculosis lung disease (PTLD). These patients often suffer not only from persistent respiratory symptoms but also from exercise intolerance as a result of the pulmonary sequelae.

Objectives: To evaluate the correlations of peak oxygen uptake ($\text{VO}_{2\text{peak}}$) with lung mechanics, radiographic abnormalities, and quality of life (QoL) in adults with post-tuberculosis lung disease (PTLD).

Methods: This is a cross-sectional study in which 60 adults with PTLD underwent a cardiopulmonary exercise test (CPET) using a small sample of the expired volume through a miniaturized

chamber. Additionally, the following assessments were performed: pulmonary function through spirometry and impulse oscillometry (IOS), chest X-ray (CXR), and QoL using the WHOQOL-BREF.

Results: Of the participants included in the study, 34 (56.7%) were women. The mean age was 55.1 ± 14.1 years, while the median time since the end of TB treatment was 24 months (range, 20–27 months). A history of smoking was reported by 29 (48.3%) participants, with a median smoking load of 25 (9–39) pack-years. While 46 (76.7%) participants had an mMRC score of 0–1, only 14 (23.3%) had an mMRC score of 2–4. Regarding QoL as assessed by the WHOQOL-BREF questionnaire, the worst-performing domains were physical and environment. The mean peak oxygen uptake (VO_{2peak}) was 16.1 ± 6.8 ml/kg/min. There were positive correlations between VO_{2peak} and several parameters, including height ($r_s = 0.343$, $P = 0.007$), physical–WHOQOL-BREF ($r_s = 0.275$, $P = 0.033$), and forced vital capacity (FVC, $r_s = 0.603$, $P < 0.0001$). There were negative correlations between VO_{2peak} and several parameters, including age ($r_s = -0.452$, $P = 0.0002$), heterogeneity of resistance between 5–20 Hz ($r_s = -0.466$, $P = 0.0001$), frequency response (Fres, $r_s = -0.675$, $P < 0.0001$), and reactance-area ($r_s = -0.647$, $P < 0.0001$). In IOS, patients with small airway disease had a lower VO_{2peak} . Regarding CXR, only pulmonary cavitation and nodular opacities were associated with a lower VO_{2peak} . In multivariate analysis, FVC, age, male sex, and Fres explained 65.2% of the variability in VO_{2peak} .

Conclusion: Patients with PTLTLD present low VO_{2peak} . There is a relationship between VO_{2peak} and lung mechanics. In these patients, IOS is able to detect more pulmonary mechanical alterations than spirometry, including those reflecting small airway disease (SAD). There is a relationship between VO_{2peak} and radiographic abnormalities, particularly pulmonary cavitation and nodular opacities. However, the relationship between VO_{2peak} and QoL is virtually nonexistent. Thus, the use of both CPET and IOS may aid in the monitoring of patients with PTLTLD.

Implications: There is still much to be discovered, as PTLTLD, a post-PTB disease, is a developing field, with few studies. This study highlights the impact of VO_{2peak} on individuals with PTLTLD. Tools such as CPET, IOS, spirometry, CXR, and QoL assist in guiding and managing treatment. Personalized and patient-centered care is important to improve limitations in this population, with early interventions to improve functional capacity, minimizing the impact of the disease, and improving QoL.

Keywords: Post-tuberculosis lung disease, Exercise, and Lung function

Conflict of interest: The authors declare no conflict of interest.

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7

COMPARISON BETWEEN CONVENTIONAL REHABILITATION AND CONVENTIONAL REHABILITATION ADDED TO DANCE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Background: Chronic obstructive pulmonary disease (COPD) is recognized as one of the most relevant conditions worldwide, due to its high morbidity and mortality. Patients classified by GOLD as groups B and E are strongly encouraged to participate in pulmonary rehabilitation (PR) programs. Dance has been shown to be equally or, at times, more effective as a rehabilitation strategy when compared to other types of physical activity.

Objectives: To compare the effect of conventional rehabilitation and the effect of conventional rehabilitation added to dance in patients with COPD.

Methods: This is a conventional randomized controlled clinical trial to be carried out at the Pulmonary Rehabilitation Laboratory at Veiga de Almeida University (UVA). Patients diagnosed with COPD, of both sexes, will be evaluated. Eligible participants will complete quality of life questionnaires – 36-item Short Form (SF-36), the COPD Assessment Test (CAT) and the Hospital Anxiety and Depression Scale (HADS). Additionally, patients will undergo pulmonary function tests, including spirometry, in addition to the six-minute walk test (6MWT), the handgrip test and the one maximum repetition test (1RM test). Finally, participants will be randomly divided into two groups: one group will perform conventional PR twice a week and the other group will perform conventional PR once a week and dance rehabilitation on another day of the same week for a total duration of 12 weeks. The evaluation tests will be repeated at the end of the intervention.

Results: It is expected that after the 12 weeks of intervention, G2 participants will have obtained greater and better results in relation to exercise capacity, QoL and peripheral muscle strength when compared to G1.

Conclusion: We believe that intervention using dance in conjunction with conventional PR may demonstrate improved benefits in exercise capacity and consequent improvement in QoL, by increasing the performance of resistance exercises, promoting a longer period of aerobic exercise compared to the level of anaerobic exercise, together with the use of strength exercises.

Implications: COPD is a multifactorial and systemic disease that can cause several conditions, such as dyspnea and decreased exercise capacity, culminating in a reduction in the QoL of patients. Among the indicated treatments, PR is highly valued due to its cost-effectiveness. Currently, there are few studies in literature on the use of dance as PR. The availability found indicates dance as an effective rehabilitation strategy for patients with COPD. Thus, by comparing groups of PR and PR plus dance, it is possible to find a way to enhance the effects of PR in patients with COPD, promote an improvement in QoL, and eventually maintain high adherence rates to PR. Consequently, it is assumed that there will be a decrease in the abandonment of PR programs and, consequently, an improvement in symptoms and exercise capacity of patients with COPD.

Keywords: Chronic obstructive pulmonary disease, Dance, Rehabilitation

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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8

FIRST STEPS IN THE DEVELOPMENT OF A CORE SET OF THE ICF FOR CHAGAS DISEASE PATIENTS

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Background: Chagas Disease (CD) in the Jequitinhonha Valley represents a significant public health concern, substantially impacting patients' lives, affecting their social participation and overall quality of life. However, categorizing these impacts presents considerable complexities and challenges.

Objectives: This study aims to develop the first stage of a Core Set of the International Classification of Functioning, Disability, and Health (ICF) for CD. This Core Set aims to better understand CD's functional implications and support decision-making in epidemiology and rehabilitation.

Methods: A literature review and a focus group study were conducted to identify functional aspects of disability caused by CD in adults (> 18 years) of both sexes. Published studies from the PubMed and SciELO databases were reviewed, and after excluding duplicates and studies that did not meet the inclusion criteria, 27 studies were selected for analysis. Concurrently, six focus groups were conducted with 16 adults (mean age: 67 ± 8 years) diagnosed with the cardiac form of CD, aiming to identify the most relevant functional consequences in this population. The concepts identified in the literature review and those emerging from the focus group discussions were subsequently mapped to the categories of the ICF checklist by two independent researchers.

Results: The literature review identified 310 relevant outcomes, while 180 outcomes emerged from the focus groups. These outcomes were mapped to 42 and 41 second-level categories of the ICF checklist, respectively. The most frequently identified categories in the literature review were: b130 (Energy and drive functions), b152 (Emotional functions), b410 (Heart functions), s410 (Cardiovascular system), e110 (Products and substances for personal consumption, such as food and medicine), and e580 (Health services, systems, and policies). In contrast, the most frequently mentioned categories by the patients in the focus groups were: b134 (Sleep functions), b152 (Emotional functions), b280 (Pain), d930 (Religion and spirituality), and e310 (Immediate family). The results reveal a disparity between the clinical perspectives and the experiences reported by patients with CD. While the literature review highlighted biological and cardiovascular outcomes, the focus group patients emphasized the disease's emotional, social, and spiritual dimensions, such as sleep, pain, family, and spirituality.

Conclusion: This suggests that, in addition to biological aspects, patients experience CD holistically, significantly impacting their quality of life.

Implications: These findings highlight the importance of incorporating patient perspectives in developing a Core Set of the ICF for CD.

Keywords: ICF, Validation studies, Chagas disease

Conflicts of interest: The authors declare no conflict of interest.

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AN UMBRELLA REVIEW OF SYSTEMATIC REVIEWS AND META-ANALYSIS OF RISPERIDONE ON CARDIOVASCULAR RISK: ANALYSIS OF 11,949 PATIENTS

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Background: A new Systematic Review (SR) suggested that antipsychotic drugs are involved with cardiometabolic problems. To better understand this issue, we conducted an Overview of SRs to evaluate the effects of risperidone on cardiovascular risk.

Objectives: To verify if there is any cardiovascular risk in people who are treated with Risperidone.

Methods: The searches were completed by means of EMBASE, MEDLINE/PubMed (by National Library of Medicine), Scopus, and Web of Science databases. We included SRs of risperidone and cardiovascular risk published up until 2022. PRISMA was enforced for reporting quality, AMSTAR 2 was necessary for methodological quality and GRADE was executed for quality of evidence analysis.

Results: After excluding 1883 publications, we designated six SR, that did not detect substantial effects of risperidone on tachycardia events ((relative effect: 1.35 (0.87, 2.1)), systolic blood pressure ((absolute effect: 1.07 (1.12, 3.26)) and diastolic blood pressure (absolute effect: 1.35 (1.48, 4.18)), QTC prolongation events ((relative effect: 1.02 (0.94, 1.1)) and QTC prolongation ((absolute effect: 9.39 (4.09, 14.69))). No SR entirely adhered to the PRISMA statement, AMSTAR 2 and GRADE suggested low to very low quality.

Conclusion: The SRs demonstrated no significant impact of risperidone on cardiovascular risk. Yet, we advise improvement in the evidence, methodological and reporting quality for impending SRs.

Implications: The current evidence did not report substantial cardiovascular adverse effects about risperidone treatment, backing up its cardiovascular safety. Nevertheless, the low to very-low methodological quality and low to very-low quality of evidence highlight the requirement for stronger and more robust evidence based on further scientific research.

Keywords: Risperidone, Antipsychotic drugs, Cardiovascular risks

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Ethics committee approval: CAAE: 4.106.335/2020 and 3.741.115/2019.

Registration: Not applicable.

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10

RESPIRATORY TRAINING AND RESISTANCE COMBINED WITH BLOOD FLOW RESTRICTION IN IMPROVING RESPIRATORY VARIABLES IN PEOPLE WITH COPD

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Background: Chronic Obstructive Pulmonary Disease (COPD) is an inflammatory and progressive condition that causes ventilation limitation, reducing the quality of life of individuals due to decreased exercise tolerance. Due to the characteristics of the disease, resistance exercise for this population is limited to low (LB) or moderate (MB) loads. In this context, resistance training (RT) + blood flow restriction (BFR) can provide gains similar to those of training with high loads and has been incorporated into inspiratory muscle training (IMT) as an intervention strategy for COPD management.

Objectives: Evaluate the acute effects of IMT and RT with or without BFR on: maximum inspiratory pressure (MIP), respiratory rate (RR), peripheral oxygen saturation (SpO₂), and dyspnea in individuals with COPD.

Methods: This is an experimental clinical trial with a crossover design. The sample consisted of 14 elderly individuals (67.5 ± 1.76 years) of both sexes, diagnosed with mild, moderate, or severe COPD, who were initially evaluated for body composition, ankle-brachial index (ABI), determination of arterial occlusion pressure (AOP), evaluation of inspiratory muscle strength, and 1RM test. They were then subjected to 3 experimental protocols: 1) RT with low load (30% 1RM) + IMT (30% MIP); 2) RT with low load (30% 1RM) + BFR (50% of AOP) + IMT (30% MIP); and 3) RT with moderate load (50% 1RM) + IMT (50% MIP), with a wash-out period of 48-72 hours. Respiratory rate (RR), SpO₂, and dyspnea were assessed before, immediately after, and 10 minutes post-exercise, while MIP was measured after each protocol. Data were analyzed using the Statistical Package for the Social Sciences (SPSS – 26.0), with a significance level set at P = 0.05.

Results: There was a significant reduction in respiratory rate (RR) when comparing pre- and 10-minute post-intervention in all protocols, and in the intergroup comparison, the TRCB+RFS+IMT protocol showed a lower value than TRCB+IMT (P = 0.001). No differences were found in SpO₂ between the groups; however, an increase was observed in the intragroup comparison between pre- and 10-minute post-intervention in all protocols. No difference was found between pre- and post-MIP values in the protocols (P > 0.05), but in the intergroup analysis, an increase was observed in TRCB+RFS+IMT (P = 0.010) compared to TRCB+IMT. A significant reduction in dyspnea was observed in the TRCB+IMT group (P = 0.001) compared to TRCB+IMT and TRCB+RFS+IMT.

Conclusion: IMT associated with RT, with or without BFR, was able to reduce respiratory rate (RR) and dyspnea, as well as increase SpO₂ in individuals with COPD. However, the only protocol that showed a significant increase in MIP was TRCB+RFS+IMT, demonstrating greater effectiveness. Further studies are needed to explore the potential of these protocols in specific samples according to the severity of symptoms, for better homogenization of results.

Implications: This study demonstrates that IMT combined with RT, with or without BFR, effectively improves dyspnea and respiratory

variables, highlighting its potential application in physiotherapy for COPD treatment.

Keywords: COPD, BFR, Dyspnea

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 85901318.0.0000.5504.

Registration: Not applicable.

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11

RELIABILITY AND LEARNING EFFECT OF THE TWO-MINUTE STEP TEST

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Background: The two-minute step test (2MST) is a submaximal test to assess functional capacity, but few studies analyze its reliability and learning effect.

Objectives: To verify the reliability and learning effect of the two-minute step test in healthy individuals.

Methods: Observational and methodological study, approved by local ethics committee, carried out from March to October 2024 using a non-probabilistic convenience sample. Individuals aged 18 to 80 years of both sexes were invited. The exclusion criteria were: untreated and/or unstable chronic diseases, previous diagnosis of lung and/or heart diseases, diseases and/or dysfunctions that interfered with walking, and Charlson Comorbidity Index > 4. Individuals who reached 85% of maximum heart rate (HR) and did not attend all assessments were also excluded. The test consists of marching in place for two minutes. The steps consisted of the number of times the right knee reached the predetermined height (midpoint between the iliac crest and the upper edge of the patella). Step counting was performed by two evaluators (randomized order). The test was performed twice on the same day (with 30-minute intervals) and repeated after a 7-day interval between the first and second assessment, resulting in a total of four tests. Vital signs (heart rate, blood pressure, and peripheral oxygen saturation) were monitored. Quantitative variables were described as mean (standard error), or 95% confidence interval (95% CI), and qualitative variables were expressed as absolute (relative) frequency. Intra-rater and inter-rater reliability was determined by the intraclass correlation method (ICC), considering the classification: < 0.50 (low reliability), 0.50 to 0.75 (moderate reliability), 0.76 to 0.90 (good reliability) and > 0.90 (excellent reliability). The learning effect was verified using the paired t-test (comparing the difference between the first and the last test). The significance level considered was 5% (p < 0.05).

Results: Thirty-one individuals aged 26 (24-34) years were included, of whom 16 (51.6%) were male. The ICC showed good inter-rater reliability on the first day [ICC = 0.838 (95% CI: 0.668-0.922); p = 0.000] and excellent inter-rater reliability on the second day [ICC = 0.911; (95%CI: 0.811-0.958); p = 0.000]. The intra-rater analyses for Evaluator 1 [ICC = 0.801 (95% CI: 0.587-0.904); p = 0.000] and Evaluator 2 [ICC = 0.758 (95% CI: 0.506-0.883); p = 0.000] demonstrated good reliability. The number of steps of the last 2MST [107.6(2.3)] was significantly greater (p = 0.009) than the

number of steps of the first TME2 [101.3(2,7)]. The mean difference between the two tests was 6.3 steps.

Conclusion: The two-minute step test presented good and excellent reliability and a significant learning effect.

Implications: The 2MST has proven to be a reliable tool for assessing functional capacity. Additionally, it demonstrated a significant learning effect, suggesting that repeated testing can enhance performance.

Keywords: Physical fitness, Physical Functional Performance, Exercise test

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES - Finance Code 001.

Ethics committee approval: CEP/UFMG 4.710.667.

Registration: Not applicable.

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12

HEEL-RAISE TEST FOR CALF MUSCLE ASSESSMENT IN CVI: CORRELATION WITH STRENGTH AND FUNCTIONAL PERFORMANCE TESTS

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Background: Chronic venous insufficiency (CVI) is a progressive condition affecting the venous system, involving superficial, deep, or both venous networks. The pathophysiology is primarily attributed to valvular incompetence and dysfunction of the calf muscle pump, which includes deficits in lower limb muscle strength. Given the pivotal role of the calf muscles in venous return, their functional assessment should be integrated into the routine clinical evaluation of patients with CVI. The Heel-Raise Test (HRT) has been proposed as a method to evaluate calf muscle function; however, its correlation with other validated strength and functional performance assessments remains underexplored.

Objectives: To determine the applicability of the HRT in assessing calf muscle strength and endurance in CVI patients through its association with other muscle strength and endurance tests, as well as functional performance measures.

Methods: A cross-sectional study was conducted involving 40 patients diagnosed with CVI (mean age 67.4 ± 11.3 years, 37% females). Participants underwent the HRT, where they performed maximal plantar flexion repetitions until exhaustion. The total number of repetitions and the time taken to complete the test were recorded. Additionally, participants were subjected to the Five-Times Sit-to-Stand Test (STS-5), Ten-Times Sit-to-Stand Test (STS-10), 30-Second Sit-to-Stand Test (STS-30), and 1-Minute Sit-to-Stand Test (STS-60), which evaluated lower limb strength (STS-5 and STS-10) and muscular endurance (STS-30 and STS-60). Complementary assessments included handgrip dynamometry and the Human Activity Profile (HAP) questionnaire. Pearson and Spearman correlation analyses were performed to examine associations between the HRT and other measures.

Results: The number of HRT repetitions demonstrated significant correlations with STS-5 ($r = -0.751$; $p < 0.001$), STS-10 ($r = -0.741$; $p < 0.001$), STS-30 ($r = 0.724$; $p < 0.001$), STS-60 ($r = 0.765$; $p < 0.001$), handgrip dynamometry ($r = 0.325$; $p = 0.041$), maximum HAP score ($r = 0.401$; $p = 0.014$), and adjusted HAP score ($r = 0.330$;

$p = 0.046$). Similarly, the time required to complete the HRT correlated with the STS-5 ($r = -0.386$; $p = 0.005$), STS-10 ($r = -0.399$; $p = 0.003$), STS-30 ($r = 0.347$; $p = 0.012$), STS-60 ($r = 0.406$; $p = 0.003$), maximum HAP score ($r = 0.427$; $p = 0.002$), and adjusted HAP score ($r = 0.360$; $p = 0.011$), but not with handgrip dynamometry ($r = 0.236$; $p = 0.092$).

Conclusion: The number of repetitions and time spent in the HRT are indicators of calf muscle strength, endurance, and functional capacity in individuals with CVI. Its inclusion in functional assessments can enhance the clinical evaluation of these patients.

Implications: The HRT emerges as a viable, practical tool for complementing clinical and functional assessments, particularly in the early to moderate stages of CVI, facilitating targeted interventions and patient management strategies.

Keywords: Chronic venous insufficiency, Muscle strength, Muscle weakness

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 5.639.330.

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13

ACUTE HEMODYNAMIC EFFECTS PROMOTED BY RESPIRATORY AND RESISTANCE MUSCLE TRAINING WITH BLOOD FLOW RESTRICTION IN INDIVIDUALS WITH COPD

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Background: Chronic Obstructive Pulmonary Disease (COPD) is a chronic airflow limitation that impairs the cardiovascular and respiratory systems, reducing the functional capacity of individuals. As a result, this group has low tolerance for physical exercise with high loads. In this context, intervention strategies such as low-load (LL) and moderate-load (ML) resistance training (RT), inspiratory muscle training (IMT), and blood flow restriction (BFR) have emerged as therapeutic potentials, capable of eliciting acute hemodynamic responses similar to those observed in high-load training.

Objectives: To assess the effects of IMT and RT with or without BFR on: blood pressure (BP) and heart rate (HR) in individuals with COPD.

Methods: This study is a randomized crossover experimental clinical trial. The sample consisted of 14 elderly individuals (67.5 ± 1.76 years) of both sexes, diagnosed with mild, moderate, or severe COPD. Initially, they were evaluated for body composition, ankle-brachial index (ABI), arterial occlusion pressure (AOP), inspiratory muscle strength (MIP), dynamometry, and 1RM test. Then, they performed 3 experimental protocols: 1) RT with low load (30% 1RM) + IMT (30% MIP); 2) RT with low load (30% 1RM) + BFR (50% AOP) + IMT; 3) RT with moderate load (50% 1RM) + IMT (50% MIP), with a wash-out period of 48 to 72 hours. BP and HR were measured before, immediately after, and 10 minutes after the exercises. Data

analysis was performed using the Statistical Package for the Social Sciences (SPSS – 26.0), with a significance level set at $P = 0.05$.

Results: A significant reduction in HR was observed in the TRLB+RFS+IMT protocol when comparing pre-intervention to 10 minutes post-intervention and immediately post-exercise to 10 minutes post-intervention. In the TRMB+IMT protocol, there was also a reduction at 10' post when compared to pre-intervention, with no intergroup differences observed. In the TRLB+RFS+IMT protocol, systolic blood pressure (SBP) decreased when comparing pre vs. 10' post-intervention and immediately post vs. 10' post-intervention across all three protocols. Diastolic blood pressure (DBP) did not show significant intergroup differences; however, the Friedman ANOVA test indicated a significant reduction in the TRLB+RFS+IMT protocol between pre-intervention vs. 10' post and immediately post vs. 10' post.

Conclusion: RT, associated with IMT, with or without BFR, promoted a hypotensive effect on SBP and a decrease in HR. However, the TRLB+RFS+IMT was the only protocol that showed a hypotensive effect on DBP. Therefore, further studies are needed to evaluate the chronic effects of these protocols to identify the long-term efficacy of the intervention.

Implications: The reduction in BP and HR provided by RT associated with IMT, with or without BFR, was able to optimize gains in the clinical rehabilitation of COPD, as exercise tolerance and functional capacity increased.

Keywords: COPD, BFR, Diastolic blood pressure

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 70493823.5.0000.5259.

Registration: Not applicable.

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DUKE ACTIVITY STATUS INDEX: CORRELATION WITH FUNCTIONAL MEASURES IN CHAGAS DISEASE PATIENTS FROM AN ENDEMIC REGION

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Background: Chagas disease is a neglected tropical disease that can progress to a chronic cardiac form, leading to functional impairment and reduced exercise tolerance. Assessing functional capacity in this population is essential for guiding rehabilitation strategies. The Duke Activity Status Index (DASI) is a questionnaire-based tool commonly used to estimate functional capacity, but its correlation with other objective and subjective functional measures in Chagas disease remains unclear.

Objectives: To evaluate the correlation between the DASI and functional performance measures, including the Human Activity Profile (HAP), the Sit-to-Stand Test (STS), and handgrip dynamometry, in patients with Chagas disease.

Methods: A cross-sectional study was conducted with 50 patients diagnosed with Chagas disease (66 ± 8 years) in an endemic area for Chagas disease. Participants completed the DASI and HAP questionnaires and underwent physical performance tests, including the STS (5-repetition, 10-repetition, 30-second, and 1-minute protocols) for lower limb strength and endurance, as well as handgrip dynamometry for overall muscle strength. Correlation analysis was performed using Pearson's or Spearman's correlation coefficients, depending on data distribution.

Results: The mean DASI score was 25.3 ± 9.4 . The DASI showed a significant correlation only with the maximum ($r = 0.714$; $p < 0.001$) and adjusted HAP scores ($r = 0.635$; $p < 0.001$), suggesting an association with self-reported physical activity levels. However, DASI did not correlate with the STS or handgrip strength, indicating that it may not reflect actual lower limb strength or endurance in patients with Chagas disease.

Conclusion: The DASI showed a strong correlation with self-reported physical activity levels but did not correlate with objective functional tests, suggesting it may not fully reflect the physical performance of patients with Chagas disease. These findings highlight the importance of combining subjective and objective measures for a more comprehensive assessment of functional capacity in this population.

Implications: These findings suggest that the DASI may not fully capture the functional performance of patients with Chagas disease, particularly regarding muscle strength and endurance. While the DASI correlates with subjective measures of activity levels, its lack of association with objective tests highlights the need for complementary functional assessments in clinical practice. Therefore, incorporating performance-based tests such as STS and handgrip strength alongside self-reported questionnaires may provide a more comprehensive evaluation for guiding rehabilitation programs in this population.

Keywords: Chagas disease, Cardiac Impairment, Functional Assessment

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE:13529913.7.0000.5259.

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15

ASSESSMENT OF PERIPHERAL MUSCLE STRENGTH OF PEOPLE WITH DIFFERENT LEVELS OF POST-COVID-19 DYSFUNCTION

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Background: The late impact of Covid-19 has proven to be significant, largely affecting the functionality, ability to perform daily activities and the quality of life of its survivors. In Brazil, more than 39 million people have recovered from Covid-19, however, many of them still face persistent symptoms and are referred to rehabilitation programs. Muscle weakness is one of the post-Covid changes that causes concern, given the range of problems inherent to the loss of muscle strength for global health, especially among the elderly and in people with chronic illnesses.

Objectives: To evaluate the peripheral muscle strength of people undergoing post-COVID-19 rehabilitation, with different levels of post-COVID-19 dysfunction. In the post-covid period, point to the discriminatory aspect of this scale in the assessment and assertive therapeutic prescriptions for this population.

Methods: Sectional study with a convenience sample composed of adults recovered from Covid-19. The degree of post-Covid dysfunction was assessed on admission using the post-Covid-19 Functional Status (PCFS) scale, in grades I to IV, characterized by the presence of persistent symptoms (grade I), with limitations in usual tasks (grade II), or with inability to perform some activities (grade III), and even severe dysfunctions including self-care (grade IV). Muscle strength was obtained by the handgrip strength (HGS) test in

kilograms of force (kgf), with a Saehan® hydraulic dynamometer. The values obtained were analyzed in relation to the predicted values and between subgroups with different PCFS levels using the Student's T test, adopting a significance level of 5%.

Results: 68 people were evaluated between May/2021 and July/2022, aged 50 ± 14.7 years, 41 women (60%) and 40 with PCFS grade II (59%), which indicates the presence of persistent symptoms and reduced performance in activities. The post-covid time was 66 days, ranging from 19 to 485 days since diagnosis. Furthermore, 37 individuals were hospitalized for acute Covid (54%), 43 were previously sedentary (63%) and the majority were overweight or obese (83%). The FPP obtained was lower than predicted for the total sample and when distributed by PCFS grades, not differing significantly between the groups by PCFS. Then, HGS was compared between the subgroups of grades I/II with those of grades III/IV, for which there was a similar proportion of sedentary people and those hospitalized for Covid-19. The proportion of women was higher in the subgroup with PCFS III/IV ($92\% \times 53\%$). BMI (body mass index) was higher in the PCFS I/II group ($30.9 \times 27.6 \text{ kg/m}^2$; $p:0.052$). People with PCFS I/II had higher HGS than people with grades III/IV ($29.4 \pm 11.2 \times 18.23 \pm 6.89 \text{ kgf}$, respectively; $p:0.0008$).

Conclusion: Post-covid HGS was generally compromised, but significantly among people with a higher degree of post-covid dysfunction, as measured by the PCFS scale.

Implications: These findings, in addition to showing the need for monitoring and intervention to recover muscle strength in the post-covid period, point to the discriminatory aspect of this scale in the assessment and assertive therapeutic prescriptions for this population.

Keywords: Post-Acute COVID-19 Syndrome, Functional Status, Muscle Strength

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES - Finance Code 001, PROBIC.

Ethics committee approval: CAAE: 79466924.8.0000.5108.

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ASSOCIATION BETWEEN MAXIMAL PHONATION TIME AND SLOW VITAL CAPACITY IN PEOPLE WITH HEART FAILURE HOSPITALISED FOR ELECTIVE CARDIAC SURGERY

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Background: A reduction in lung function in people with heart failure (HF) after cardiac surgery is common and associated with morbidity. In this scenario, lung function is commonly assessed pre- and postoperatively with the slow vital capacity (SVC) measured with a ventilometer. However, new outcomes have been suggested to reflect the impact of surgery on lung function, such as the maximum phonation time (MPT). So far, the association between MPT and SVC has not been studied properly in HF.

Objectives: To investigate the association between MPT and SVC in people with HF hospitalised for elective cardiac surgery.

Methods: This cross-sectional analysis included people with HF evaluated in the hospital before elective cardiac surgery. Sociodemographic data, anthropometric, and clinical characteristics were collected for sample characterisation. SVC was measured in mL with

a ventilometer, by asking participants to inhale deeply and exhale slowly and completely into the device after a demonstration. MPT was measured as the maximum time in seconds, recorded with a stopwatch, to sustain the vocalisation of the vowel /i/ (in Portuguese), in natural tone and intensity, after a demonstration. For both variables, the greatest result out of three repetitions was used for analysis. Jamovi 2.6.25 software was used to run the statistical tests: Spearman correlation coefficient and Mann-Whitney test. P-values < 0.05 was considered statistically significant.

Results: 74 individuals were included (57% women, 60 ± 11 years, New York Heart Association Functional Classification of 2 ± 1 points). The mean SVC was $2640 \pm 874 \text{ mL}$, while the mean MPT was 12.2 ± 9.4 seconds. These two variables showed a weak and non-significant correlation ($r_s = 0.19$; $p = 0.10$). After dividing the sample in two according to the mean SVC ($< \text{or} = 2640 \text{ mL}$), no statistically significant difference was observed when comparing MPT between the two groups (10.3 ± 7.8 vs. 13.9 ± 10.5 seconds, respectively; $p = 0.18$).

Conclusion: In this study, MPT was not associated with SVC in individuals with HF before elective cardiac surgery. Future studies should investigate the same analyses investigated in our study, but in larger samples and at different time points, such as after surgery.

Implications: Despite the ease of measuring MPT, our findings suggest that MPT should not be used to reflect the impact of cardiac surgery on lung function in people with HF when SVC is not available.

Keywords: Cardiac Surgical Procedure, Preoperative Period, Vital Capacity

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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ASSOCIATION BETWEEN SMOKING DURATION, PHASE ANGLE, AND CARDIORESPIRATORY CAPACITY IN ELDERLY SMOKERS: PRELIMINARY RESULTS

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Background: Smoking can contribute to the functional decline of elderly individuals, negatively impacting cellular integrity and cardiorespiratory function. Thus, prolonged exposure to harmful cigarette substances may accelerate the decline in functional capacities. Investigating the association between smoking duration and these markers can provide a better understanding of the impacts of smoking on cell healthy and cardiorespiratory capacity.

Objectives: To investigate the association between smoking duration, phase angle, oxygen consumption (VO_2 peak), and forced vital capacity (FVC) in elderly smokers.

Methods: This is a cross-sectional study conducted with elderly smokers of conventional cigarettes who had been smoking for at least one year, of both sexes, aged 60 years or older, capable of walking without assistance, and understanding the instructions for tests and questionnaires. Body composition was measured with tetrapolar bioimpedance and cardiorespiratory capacity through the cardiopulmonary exercise test (CPET) using ramp protocol. Statistical analysis was performed using Jamovi 2.6.26 software. Linear regression was conducted to analyze the associations between variables, with a significant level of $p < 0.05$.

Results: Eight individuals (62.5% males, 66.2 ± 14.3) years presents body max index of $26.5 \pm 3.6 \text{ kg/m}^2$. The average smoking duration was 47.3250 ± 6.923 years, and the average tobacco load was 34.700 ± 29.5477 packs/year. In body composition and CPET assessments, the phase angle was 5.775 ± 0.465 , which is considered borderline for this population and may indicate compromised cellular integrity due to smoking. The FVC was 2.751 ± 0.706 liters, and the relative VO_2 peak was $20.913 \pm 5.515 \text{ ml/min/kg}$. Linear regression analysis indicated that smoking duration was associated with a reduction in relative VO_2 peak ($\beta = -0.613$; $95\% \text{ CI: } -1.408 \text{ to } -0.131$; $p = 0.026$), explaining 59% of the VO_2 peak variation ($R^2 = 0.592$). There was no statistically significant association between smoking duration and phase angle ($p = 0.996$) or FVC ($p = 0.924$).

Conclusion: Smoking duration was inversely associated with VO_2 peak, suggesting a negative impact of chronic smoking on cardiorespiratory capacity. Although no significant association was found with phase angle, the observed values indicate a possible compromise of cellular integrity. Studies with larger samples and considering other outcomes, such as body composition, may provide a deeper understanding of the mechanisms by which smoking affects the functionality of elderly individuals.

Implications: Cardiorespiratory decline is associated with a higher risk of morbidity and mortality in the elderly. Therefore, cessation strategies should be initiated early and associated with cardiorespiratory rehabilitation programs. These findings highlight the importance of monitoring functional capacity in elderly smokers.

Keywords: Aged, Cardiorespiratory Fitness, Smoking

Conflict of interest: The authors declare no conflict of interest.

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TRANSCRANIAL NEUROSTIMULATION AND AEROBIC EXERCISE IN FUNCTIONAL CAPACITY, MUSCLE METABOLISM, AND QUALITY OF LIFE OF INDIVIDUALS WITH PERIPHERAL ARTERIAL DISEASE

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Background: Peripheral arterial disease (PAD), commonly caused by atherosclerosis, reduces blood flow to the extremities, resulting in muscle ischemia and intermittent claudication. Aerobic training is

an effective strategy for treating individuals with PAD, and high-definition transcranial direct current stimulation (HD-tDCS) has been studied as an adjunct therapy due to its positive effects on exercise endurance, perceived effort, and functional capacity (FC).

Objectives: To identify the effects of combining aerobic exercise and transcranial neurostimulation on quality of life (QoL), FC, peripheral muscle metabolism, and subjective perception of effort in individuals with PAD.

Methods: This case study was conducted with four volunteers diagnosed with PAD. FC was assessed using the Incremental Shuttle Walking Test (ISWT), muscle metabolism through Near-Infrared Spectroscopy (NIRS), QoL using the Short Form 36 (SF-36), and subjective perception of effort through the Modified Borg Scale. Assessments were conducted before and after 12 weeks of intervention. Participants were divided into two groups: the intervention group (IG) and the control group (CG), with two volunteers in each. The IG received active stimulation on the left dorsolateral prefrontal cortex (DLPFC-L) during exercise on a cycle ergometer, while the CG received placebo stimulation, both for 30 minutes.

Results: Regarding QoL, only the two IG participants were reassessed, as the CG participants declined to participate in the reassessment. An improvement in QoL was observed in Volunteer 1 (V1) in the following domains: general health perception (55/100), vitality (95/100), social function (100/100), and mental health (92/100); and in Volunteer 2 (V2) in the domains of physical functioning (60/100), emotional role limitation (67/100), bodily pain (68/100), general health perception (70/100), and mental health (80/100). In terms of subjective perception of effort, both volunteers reported an effort level of "too light" (Borg = 1) at the beginning, end, and recovery phases of the exercise test. FC showed a clinically significant minimal difference in three cases ($?V2 = 500\text{m}$; $?V3 = 110\text{m}$; $?V4 = 70\text{m}$). No significant differences were observed between the CG and IG regarding improvements in muscle metabolism after the intervention, except for resistance time ($?V1 = 31.6\text{s}$; $?V2 = 225.2\text{s}$; $?V3 = 26.4\text{s}$; $?V4 = 101.6\text{s}$) in both the occlusion maneuver and the ISWT and lower-limb cycle ergometer tests.

Conclusion: The combination of HD-tDCS and aerobic exercise may contribute to increased QoL and FC in individuals with PAD. Additionally, an improvement in subjective perception of effort and walking distance in the ISWT was observed in the IG. However, no significant changes were noted in tissue oxygenation behavior.

Implications: These findings highlight the need for further robust studies and emphasize the importance of additional research on HD-tDCS as an adjunct therapy for PAD treatment, aiming for its integration into clinical practice. Despite limitations, this intervention may contribute to symptom mitigation and functional capacity restoration.

Keywords: Peripheral Arterial Disease, Exercise, Transcranial Direct Current Stimulation

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 58174622.2.0000.0003.

Registration: Not applicable.

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DOES CARDIOVASCULAR REHABILITATION IN PATIENTS WITH DIABETIC NEUROPATHY INFLUENCE FUNCTIONING AND NEUROPATHIC SYMPTOMS?

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Background: Diabetes Mellitus (DM) is a chronic metabolic condition with a high global prevalence, capable of causing severe complications for individuals. Among these complications is diabetic neuropathy, which leads to a decline in functional performance and quality of life. Cardiovascular rehabilitation (CR) is a viable alternative for managing diabetes and its complications.

Objectives: To evaluate the influence of a CR program on neuro-pathic symptoms, functional performance, quality of life, knowledge, and attitude toward DM in individuals with diabetic neuropathy.

Methods: This is a case series study using tests to assess functional performance (Timed Up and Go, 6-Minute Walk Test, and Short Physical Performance Battery), specific scales for diabetic neuropathy screening (Neuropathic Symptoms and Signs Scale, Visual Analog Scale for Pain), and questionnaires designed to investigate aspects related to fatigue, quality of life, knowledge, management, and acceptance of DM. The intervention consisted of an exercise program conducted twice a week, totaling 16 sessions.

Results: Fourteen patients with type 2 DM, with a mean age of 60.3 ± 9.2 years, participated in the study. A statistically significant improvement was observed in pain scores ($p = 0.028$) and neuropathic symptoms ($p = 0.010$), performance in the 6-Minute Walk Test ($p = 0.028$), coping attitude toward DM ($p = 0.014$), and quality of life domains (functional capacity, physical and emotional aspects, pain, vitality, and summarized mental component).

Conclusions: The CR program proved beneficial for patients with diabetes and neuropathy, leading to positive changes in functional aspects, symptom reduction, improved quality of life, and better coping with DM. Further studies and viable alternatives for implementing a program that includes physical exercise and health education for the diabetic population are warranted.

Implications: This research highlights the benefits of a twice-weekly exercise program for patients with diabetes and neuropathy, reinforcing the important role of physical exercise as an ally in diabetes treatment, bringing positive changes to the individual's biopsychosocial context.

Keywords: Diabetes Mellitus, Diabetic neuropathies, Exercise therapy

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES - Finance Code 001.

Ethics committee approval: CAAE: 75664923.3.0000.0003.

Registration: Not applicable.

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COMPARISON OF RESISTANCE VERSUS AEROBIC EXERCISE DURING HEMODIALYSIS IN CHRONIC RENAL PATIENTS: A RANDOMIZED CONTROLLED TRIAL

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Background: Musculoskeletal disorders are common in hemodialysis (HD) patients. The duration and frequency of HD procedures contribute to immobility and a sedentary lifestyle, which, combined with changes in the disease itself, affect frailty and fatigue. These changes can be reversed through the adoption of intradialytic exercise programs.

Objectives: To investigate the effectiveness of resistance compared to aerobic exercise during the intradialytic period on peripheral muscle strength, walking speed, frailty, and fatigue in patients with chronic kidney disease.

Methods: In this randomized controlled trial, 32 patients were randomly allocated into two groups: Resistance exercise group (Group A), that included 8 exercises using elastic bands, dumbbells, and a Swiss ball, with 2 sets of 8 to 12 repetitions, an interval of 2 to 3 minutes between sets, and an intensity of 6 on the modified OMNI scale; and Aerobic exercise group (Group B), which consisted of 20 minutes of exercise on a cycle ergometer at an intensity between 5 and 7 on the modified Borg scale. All intervention protocols were performed during the first 90 minutes of hemodialysis, with the patient seated in a reclined chair. Peripheral muscle strength was assessed using the Saehan handgrip dynamometer and the 30-second sit-to-stand test; gait speed and frailty were assessed using the Fried Phenotype Model, and fatigue was evaluated using the Multidimensional Fatigue Inventory (MFI-20). The assessment of data normality was performed through visual inspection of histograms. The linear mixed model was used for intra and intergroup analyses. The level of statistical significance was set at 5%.

Results: Group A performed an average of $31.4 (\pm 3.4)$ effective exercise sessions and Group B performed an average of $32.5 (\pm 3.5)$ effective exercise sessions. There was no significant differences, between groups, in the results of 30-second sit-to-stand test (Group A, pre: 10.1 ± 2.0 and post: 14.9 ± 4.2 ; Group B, pre: 10 ± 2.3 and post: 16.2 ± 2.7), handgrip strength test (HST) (Group A - pre: 25.7 ± 8.7 kgf and post: 28.1 ± 9.7 kgf; Group B - pre: 29.1 ± 9.4 kgf and post: 29.6 ± 8.70 kgf), and gait speed test (Group A - pre: 1.00 ± 0.20 m/s and post: 1.3 ± 0.3 m/s; Group B - pre: 1.1 ± 0.1 m/s and post: 1.5 ± 0.2 m/s). There was a decrease in the number of frail patients in both groups (18.8%), but no significant differences were observed between groups for the total fatigue score (Group A - pre: 55.9 ± 6.2 and post: 55.6 ± 7.9 ; Group B - pre: 58.9 ± 6.6 and post: 56.6 ± 8.8).

Conclusion: No significant differences were observed between intradialytic exercise interventions in terms of peripheral muscle strength, walking speed, frailty, and fatigue. It is suggested that further studies can be conducted on the subject, in addition to the inclusion of variables such as pain, which may influence the results of the outcomes studied here.

Implications: Regardless of the type of exercise performed during hemodialysis, patients with chronic kidney disease can have positive effects on muscle strength, walking speed, frailty, and fatigue.

Keywords: Intradialytic Physical Exercise, Muscle Strength, Frailty

Conflict of interest: The authors declare no conflict of interest.

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DIAGNOSTIC ACCURACY OF PHYSICAL FUNCTION TESTS FOR RISK OF FALLS IN INDIVIDUALS ON HEMODIALYSIS

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Background: Individuals on hemodialysis have systemic complications due to chronic kidney disease and dialysis treatment. Then, impairments in physical function are frequent in this population, which contributes to a higher risk of falls.

Objectives: This study aimed to investigate the ability of physical function tests to discriminate individuals on hemodialysis with and without risk of falls.

Methods: A 12-month prospective study was conducted with individuals on regular hemodialysis. Physical function was assessed by handgrip strength, gait speed over 15 feet, the 5-repetition sit-to-stand test, and the Timed Up and Go test. Following the initial assessment, the falls were monitored monthly for 12 months. A fall was defined as an unexpected event in which the individual came to rest on the ground, floor, or lower level. The Receiver Operating Characteristic curve was used to identify a cutoff point of physical function tests able to discriminate individuals with and without risk of falls, also Area Under Curve was calculated. A p-value of < 0.05 was considered statistically significant.

Results: This study included 112 patients (58.7 ± 12.9 years, 56.3% male). The incidence of falls was 31.3%. Receiver Operating Characteristic curve showed that 5-repetition sit-to-stand test and Timed Up and Go test were significant predictors of risk of falls and the Area Under Curve and cutoff point were 0.629 (0.512 - 0.746, $p = 0.040$) and 0.644 (0.528 - 0.760, $p = 0.017$) and 12.6 seconds (sensitivity of 71.0%, specificity of 52.2%) and 8.1 seconds (sensitivity of 64.7%, specificity of 54.9), respectively.

Conclusion: Physical function tests were able to discriminate individuals on hemodialysis with and without risk of falls.

Implications: Cutoff points identified for physical function tests can be used to screen individuals on hemodialysis with and without risk of falls and to guide fall prevention programs.

Keywords: Renal Dialysis, Accidental falls, Risk

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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IMPACTS OF NICOTINE DEPENDENCE ON SLEEP AND PHYSICAL ACTIVITY IN ELDERLY SMOKERS: PRELIMINARY RESULTS

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Background: Studies indicate that smokers tend to have lower levels of physical activity, associated with higher nicotine dependence. Additionally, smoking can compromise sleep quality due to dependence symptoms, favoring the appearance of sleep disorders.

Examining the relationship between nicotine dependence, sleep quality, and physical activity levels in elderly smokers can help develop interventions to minimize the impacts of smoking on the functionality and quality of life of this population.

Objectives: To investigate the relationship between nicotine dependence, physical activity levels, sleep quality, and daytime sleepiness in elderly smokers.

Methods: This is a cross-sectional study conducted with elderly smokers of conventional cigarettes who had been smoking for at least one year, of both sexes aged 60 years or older, capable of understanding the assessment instruments. Anthropometric measurements and information on smoking habits were collected, and participants were evaluated for nicotine dependence using the Fagerström Test, physical activity levels using the short version of the IPAQ, sleep quality using the Pittsburgh Sleep Quality Index (PSQI), and daytime sleepiness using the Epworth Sleepiness Scale (ESE). Statistical analysis was performed using Jamovi 2.6.26 software, utilizing Spearman's correlation to analyze the relationships between variables, with a significance level of $p < 0.05$.

Results: Nine individuals (55.6% female 66.0 ± 4.8 years), participated in the study. Regarding nicotine dependence, 66.7% of participants were classified as mildly dependent, and 33.3% as moderately dependent. In terms of physical activity levels, 55.6% were classified as very active. Sleep quality was considered poor for 66.7% of participants according to the PSQI, and 44.4% presented mild to moderate daytime sleepiness according to the ESE. Spearman's analysis indicated a positive correlation between nicotine dependence and daytime sleepiness ($Rho = 0.759$, $p = 0.018$), suggesting that higher levels of nicotine dependence are related to greater daytime sleepiness and possibly a higher risk of sleep disorders. No significant correlation was found between nicotine dependence, physical activity levels, and sleep quality, which may be related to the small sample size, limiting the detection of associations between these variables.

Conclusion: Elderly smokers with higher nicotine dependence showed higher levels of daytime sleepiness, highlighting the impacts of smoking on sleep quality. Although no correlation was identified with physical activity levels, previous studies indicate that more dependent smokers tend to exercise less, which may potentiate the deleterious effects of smoking on health.

Implications: These findings reinforce the importance of integrated strategies for smoking cessation in the elderly population, also considering interventions that improve sleep quality and encourage physical activity. Reducing morbidity risk and promoting healthier and more functional aging.

Keywords: Tobacco Use Disorder, Exercise, Sleep quality

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 59915322.8.0000.5147.

Registration: Not applicable.

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ANALYSIS OF THE SEVERITY OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) AND ITS ASSOCIATION WITH PROGNOSIS THROUGH THE BODEXS90

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Background: Chronic Obstructive Pulmonary Disease (COPD) should be considered in individuals exposed to harmful agents to lung health, especially in people aged 40 years or older who present chronic signs and symptoms such as cough, dyspnea, fatigue with minimal exertion, and sputum production. Although a reduction in FEV1 is an important indicator, the assessment of the severity and prognosis of COPD requires additional parameters. The BODEXs90 index is a multidimensional tool that evaluates predictive variables for mortality, providing a more comprehensive assessment of the consequences of the disease.

Objectives: To explore the association between COPD severity and prognosis using the BODEXs90 index.

Methods: A cross-sectional study was conducted with patients diagnosed with COPD, confirmed by spirometry with $FEV1/FVC < 0.7$, according to the criteria of the Global Initiative for Chronic Obstructive Lung Disease (GOLD), under follow-up in an outpatient pulmonary service. Patients aged 40 to 90 years, without cognitive or oral communication deficits, and who did not depend on oxygen supplementation, were included. To compose the domains of the prognostic index, the following were evaluated: Body Mass Index (BMI), percentage of FEV1 after bronchodilation spirometry, symptom intensity by the COPD Assessment Test (CAT), degree of dyspnea by the Modified Medical Research Council (mMRC), history of exacerbations, and baseline oxygen saturation (SpO_2). The associations were determined through Pearson chi-square analysis and Fisher's exact test.

Results: The sample consisted of 65 individuals, with an average age of 67.1 ± 8.5 years, with the majority being female (55.4%). The predominant educational level was elementary school (75.4%). More than half of the patients (56.9%) reported exacerbation events. Regarding BMI, 44.6% were of normal weight, 16.9% were underweight, 16.9% were overweight, and 21.5% had some degree of obesity. The average baseline SpO_2 was 94.5 ± 2.8 . Severe FEV1 reduction (GOLD 3) was more prevalent (44.6%). No significant difference was observed between the CAT classification and predominant sex in both sexes [$\chi^2(3) = 2.394$; $p = 0.49$], nor in degree 1 of dyspnea by sex [$\chi^2(4) = 1.381$; $p = 0.85$]. A significant association was observed between COPD severity and prognosis in the BODEXs90 index [$\chi^2(6) = 22.925$; $p = 0.001$], indicating that patients with moderate obstruction were classified in the mild category of BODEXs90 compared to other categories.

Conclusion: The greater the degree of airflow obstruction, the worse the prognosis and the estimated survival at four years, regardless of sex. The use of the BODEXs90 index proved to be effective in assessing the prognosis of COPD patients.

Implications: Personalizing the treatment of COPD patients based on a multidimensional prognostic system such as the BODEXs90 index is important for adjusting therapies and also for supporting the early identification of patients at higher risk of disease progression.

Keywords: Sarcopenia, COPD, Prognosis

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Registration: Not applicable.

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PERIPHERAL OXYGENATION BEHAVIOR IN PEOPLE WITH COPD: PILOT STUDY

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Background: Chronic obstructive pulmonary disease (COPD) is a systemic condition that causes microvascular alterations, interfering with muscle metabolism and leading to reduced oxidative capacity and exercise tolerance limitations.

Objectives: To analyze the peripheral oxygenation behavior of people with COPD.

Methods: This was a cross-sectional, analytical, and quantitative study conducted with 12 individuals with COPD. The participants' peripheral oxygenation behavior was assessed using near-infrared spectroscopy (NIRS), positioned on the medial gastrocnemius muscle, while they performed a treadmill exercise test. The evaluated variables included initial saturation (StO_2 initial), lowest saturation (StO_2 lowest), final saturation (StO_2 final), desaturation time, and desaturation rate. Data analysis was performed using the Statistical Package for Social Science (SPSS), applying the Shapiro-Wilk normality test and a significance level of 5%.

Results: The mean age of female participants was 68.6 ± 23.0 years, and for males, it was 69.3 ± 20.0 years. In men, the values were: StO_2 initial = $53.7 \pm 9.58\%$, StO_2 lowest = $48.3 \pm 10.9\%$, StO_2 final = $53.4 \pm 7.92\%$, desaturation rate = -0.03 ($-0.15 - -0.01$). In women, the values were: StO_2 initial = $58.6 \pm 4.37\%$, StO_2 lowest = $52.2 \pm 4.45\%$, StO_2 final = $54.5 \pm 4.55\%$, desaturation rate = -0.18 ($0.67 - -0.01$).

Conclusion: The peripheral oxygenation behavior observed in this study differs from reference values, showing numerically lower levels. These results may be attributed to the fact that people with COPD often present chronic hypoxemia, reduced muscle perfusion due to endothelial dysfunction, and lower vasodilatory capacity. Despite the low saturation values, the volunteers were able to sustain exercise, as the desaturation rate remained below the reference values for individuals without apparent pathologies.

Implications: These findings encourage further research with a larger sample size to provide a more robust analysis of oxygenation behavior. Even with low saturation, there is resistance to continuing exercise, which may contribute to more tailored treatments for this condition through peripheral exercise.

Keywords: Chronic Obstructive Pulmonary Disease, Near-Infrared Spectroscopy, Peripheral Tolerance

Conflict of interest: The authors declare no conflict of interest.

Funding: CNPq.

Ethics committee approval: CAEE: 60443522.5.0000.5504, CAEE: 60443522.5.3001.0076.

Registration: Not applicable.

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LEVEL OF PARTICIPATION IN PEOPLE WITH INTERSTITIAL LUNG DISEASE (ILD): PRELIMINARY RESULTS

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Background: Interstitial Lung Disease (ILD) refers to the involvement of the pulmonary interstitium, characterized by inflammation and fibrosis. Psychological and functional impairments also impact patients' social participation, often resulting in social isolation. In this context, it becomes critically important to implement assessments that consider the individual's level of social participation.

Objectives: To assess the level of participation of individuals affected by ILD through the Participation Scale.

Methods: This is a preliminary multicenter cross-sectional study, part of a larger project approved by the research ethics committee, conducted with participants of both sexes diagnosed with interstitial lung disease (ILD). The participants underwent a standardized anamnesis and the Participation Scale, which consists of 18 items addressing dimensions of daily life affected by health. The scores from each item were summed to calculate a total score ranging from 0 to 72, where higher scores indicate more significant participation restrictions and an average of 12 points suggests the absence of participation restrictions. Additionally, individuals performed the 6-Minute Walk Test (6MWT) following the American Thoracic Society (ATS) guidelines and underwent muscle strength assessment through Handgrip Strength (HGS) using a Jamar hydraulic dynamometer. For statistical analysis, Spearman's correlation was performed, with a significance level set at 5%.

Results: The sample consisted of 13 participants, 7 of whom were male (53%), with a mean age of 55.82 ± 13.8 years. Only 3 (23.1%) participants had a body mass index within normal parameters. Regarding education, 7 (53.8%) had completed high school, and 7 (53.8%) self-identified as mixed-race. Post-COVID fibrosis was the most prevalent condition, affecting 4 (30.8%) participants, followed by idiopathic fibrosis, fibrosis associated with rheumatic diseases, silicosis, and sarcoidosis, each with 2 (15.4%) individuals, and finally, usual interstitial pneumonia, with 1 (7.7%) case. The total score of the Participation Scale had a mean of 31.64 ± 19.07 points. Thus, it can be inferred that the individuals presented significant participation restrictions. Specifically, 2 (15.4%) participants had no significant restriction, 1 (7.7%) had a mild restriction, 5 (38.5%) had a moderate restriction, 1 (7.7%) had a severe restriction, and 3 (23.1%) had extreme restriction. The mean distance covered in the 6MWT was 394 m, suggesting reduced functional capacity. The mean HGS was 34.38 KgF, indicating a reasonable level of peripheral muscle strength. The Participation Scale showed a strong correlation with the 6MWT distance ($r: -0.702$; $p: 0.016$) and a moderate correlation with HGS ($r: -0.589$; $p: 0.044$).

Conclusion: Participants showed significant restrictions in social participation. The negative correlation between 6MWT distance and HGS suggests an impact on both exercise capacity and muscle strength.

Implications: The preliminary findings underscore the need for targeted interventions and health policies to enhance social participation in individuals with ILD.

Keywords: Interstitial Lung Diseases, Participation

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: No. 6.227.397.

Registration: Not applicable.

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HUMAN ACTIVITY PROFILE IN PEOPLE WITH INTERSTITIAL LUNG DISEASE: PRELIMINARY ANALYSIS

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Background: Interstitial Lung Disease (ILD) is a set of pathologies that result in fibrosis, impaired gas exchange, and functional limitations. Individuals with ILD have a reduced level of physical activity due to dyspnea and fatigue. Evaluating the Human Activity Profile (HAP) is essential for understanding the impact of the disease on functionality and physical activity levels and thus guiding better physiotherapeutic interventions.

Objectives: To evaluate functional capacity and physical activity levels in individuals with ILD using HAP questionnaire.

Methods: This is a preliminary cross-sectional multicenter study, part of a larger project approved by the research ethics committee conducted with volunteers diagnosed with ILD. After collecting anthropometric data, the participants were assessed using the HAP, the 6 Minute Walk Test (6MWT) according to the standards of the American Thoracic Society (ATS), and the measurement of muscle strength using the Jamar hydraulic dynamometer. The HAP was analyzed using a questionnaire made up of 94 components which analyzed the level of physical activity and functionality, based on the variables Maximum Activity Score (MAS) and Adjusted Activity Score (AAS). The MAS corresponds to the numbering of the activity with the highest oxygen demand that the individual "still does," reflecting the highest level of metabolic effort achieved. The AAS represents the average levels of metabolic equivalents (METs) spent on a typical day, allowing an estimate of daily energy consumption based on the activities performed. Participants were classified as inactive (score < 53), moderately active (53-74), or active (> 74).

Results: The sample consisted of 13 volunteers, 7 (53.8%) of whom were male, with an average age of 55.82 ± 13.84 years, 5 (38.5%) were overweight, and 7 (53.8%) were self-declared as brown. The majority, 7 (53.8%), had finished high school. In addition, post-COVID fibrosis was the most prevalent condition found in 4 (30.8%) volunteers. In the HAP, 9 (69.2%) were classified as "inactive" and only 4 (30.8%) as "moderately active". The average distance covered in the 6MWT was 394m, suggesting a reduction in functional capacity since reference values for healthy individuals generally exceed 500m. The mean of muscle strength was 34.38 KgF, which is above the predicted value for patients with Chronic Obstructive Pulmonary Disease (COPD), which is approximately 28.0 KgF, suggesting that the participants maintain a reasonable level of peripheral muscle strength.

Conclusion: Individuals with ILD exhibit reduced physical activity levels and impaired functional capacity, despite preserved muscle strength. These findings highlight the need for interventions to mitigate functional decline.

Implications: The results underscore the importance of pulmonary rehabilitation and individualized exercise programs to enhance physical activity and quality of life in individuals with ILD.

Keywords: Lung Diseases, Interstitial, Human Activity Profile

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

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Registration: Not applicable.

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ACUTE EFFECT OF INSPIRATORY MUSCLE TRAINING ON THE PERIPHERAL MUSCLE OXYGEN DESATURATION RATE IN PATIENTS WITH COPD: A CASE SERIES

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Background: Chronic Obstructive Pulmonary Disease (COPD) is characterized by prolonged airflow obstruction due to tobacco exposure and environmental factors, making it one of the leading causes of mortality worldwide. In addition to respiratory complications, the disease promotes alterations in the cardiovascular system and peripheral muscle metabolism, contributing to exercise intolerance. In this context, Inspiratory Muscle Training (IMT) emerges as a strategy to enhance exercise tolerance and may influence the modulation of the metaboreflex during IMT application. However, the acute effects of IMT on the peripheral muscle metabolism of individuals with COPD remain poorly understood. Near-infrared spectroscopy (NIRS) is an effective method for analyzing the oxidative capacity of peripheral muscles.

Objectives: To analyze the acute effect of IMT, with different pressure loads, on the peripheral oxygen desaturation rate in patients with COPD. **METHODS:** This crossover case series followed five individuals diagnosed with COPD. They underwent two IMT protocols: one strength-focused protocol (IMT-F), using 60% of the patient's maximal inspiratory pressure, and a Sham IMT protocol. During training, tissue oxygenation behavior was measured using near-infrared spectroscopy on the gastrocnemius muscle. The study included individuals capable of performing the IMT protocol and/or functional tests, who had no associated comorbidities such as psychiatric disorders, cognitive impairments, progressive neurological disorders, chronic pain, or an inability to follow commands. Participants who wished to discontinue their participation during the protocol execution or failed to comply with the protocol were excluded. Before participation, all individuals signed an informed consent form.

Results: All participants showed greater desaturation in the IMT-F group compared to the Sham IMT group. The mean peripheral oxygen desaturation rate was higher in the IMT-F condition (-0.0184 ± 0.0210) compared to the Sham IMT (-0.0137 ± 0.0080). **CONCLUSION:** The results suggest a tendency for greater peripheral oxygen desaturation when patients are exposed to IMT-F. This condition may be explained by various physiological factors present in COPD patients that affect oxygenation and metabolic demand during intense effort. We believe that IMT-F requires more intense contractions of the inspiratory muscles, leading to increased oxygen consumption in this structure, indicating earlier activation of the metaboreflex. This mechanism redirects peripheral blood flow to the inspiratory muscles engaged in activity, potentially being a key factor in the reduction of peripheral tissue oxygenation during this type of training.

Implications: This study may contribute to a better understanding of the acute effects of IMT on peripheral tissue oxygenation behavior in COPD patients and may serve as a guide for the development of more effective respiratory rehabilitation protocols for these individuals.

Keywords: COPD, Oxygen Saturation, Strength Training

Conflict of interest: The authors declare no conflict of interest.

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PREVALENCE OF SARCOPENIA AND CLINICAL PROFILE OF INDIVIDUALS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) UNDERGOING OUTPATIENT PNEUMOLOGY CARE

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Background: Chronic Obstructive Pulmonary Disease (COPD) is a condition characterized by persistent respiratory symptoms and a partially irreversible limitation of airflow. Patients with COPD are more predisposed to sarcopenia, which is defined as the progressive loss of muscle mass, strength, and physical performance. The coexistence of these conditions results in an unfavorable clinical prognosis, with worse quality of life, increased frequency of exacerbations, and higher mortality.

Objectives: To describe the clinical profile of COPD patients under outpatient care and identify the prevalence of sarcopenia in this population.

Methods: This was a cross-sectional study conducted with patients diagnosed with COPD based on spirometry showing a FEV1/FVC ratio < 0.7 , treated in an outpatient pneumology service. Patients aged between 40 and 90 years of both sexes, with no history of using cardiac electronic devices, were included. The diagnosis of sarcopenia was established through the evaluation of appendicular muscle mass using bioimpedance. Descriptive statistical analysis was used to characterize the variables of interest.

Results: The sample consisted of 65 patients, with a predominance of females (55.4%). The mean age was 67.1 ± 8.5 years. Regarding educational level, 75.4% of patients had completed most primary education. A history of exacerbation was reported by 56.9% of participants. Approximately 26.2% required hospitalization, with 16.9% having one hospitalization, 3.1% having two, and 6.2% having three hospitalizations. The majority of patients were former smokers (67.7%), while 32.3% were still active smokers. Regarding Body Mass Index (BMI), 44.6% had normal weight, 16.9% were underweight, 16.9% were overweight, and 21.5% had some degree of obesity. Hypertension was observed in 55.4% of patients, and Diabetes Mellitus in 7.7%. According to the severity of COPD, as per the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria, 32.3% had moderate obstruction, 44.6% had severe obstruction, and 3.1% had very severe obstruction. According to the GOLD classification, which combines exacerbation history and symptoms, most patients were classified as GOLD B (44.6%) or GOLD E (43.1%), while 12.3% were classified as GOLD A. Sarcopenia was diagnosed in 28 patients (43.1%).

Conclusion: The predominant clinical profile in this sample consisted of female patients, mostly elderly, with a history of exacerbations but without the need for hospitalization. The most prevalent

comorbidity was systemic arterial hypertension, with primary school education, former smokers, normal BMI, and severe COPD obstruction (GOLD B). The prevalence of sarcopenia was high, observed in 43.1% of the sample.

Implications: The early identification of sarcopenia, along with recognition of the clinical characteristics of COPD patients, can guide evidence-based clinical decisions, favoring appropriate management of these conditions. Early diagnosis of sarcopenia may be crucial for implementing therapeutic and preventive interventions, contributing to a better prognosis for this population.

Keywords: Sarcopenia, COPD, Prevalence Ratio

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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ANALYZING DISABILITY IN PATIENTS WITH INTERSTITIAL LUNG DISEASES THROUGH THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY, AND HEALTH FRAMEWORK

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Background: Interstitial lung diseases (ILDs) lead to activity limitations and participation restrictions, often resulting in disability. Disability should be assessed using the biopsychosocial model of the International Classification of Functioning, Disability, and Health (ICF), as recommended by the WHO.

Objective: To correlate the ICF domains to explore how bodily functions are associated with activity limitations and participation restrictions in patients with ILD.

Methods: A cross-sectional observational study involving patients with ILD, diagnosed according to the guidelines of the American Thoracic Society (ATS) and the European Respiratory Society (ERS), who had a stable clinical condition for at least three months. Pulmonary function was assessed using spirometry and respiratory muscle strength; activity was measured through the Incremental Shuttle Walk Test (ISWT) and the Six-Minute Walk Test (6MWT); and participation was evaluated using the Saint George's Respiratory Questionnaire (SGRQ).

Results: Of the 25 patients, the majority were men aged over 60 years, and it was observed a positive and moderate correlation ($r = 0.45$; $p < 0.05$) was found between activity and pulmonary function. However, the 6MWT showed a negative and moderate correlation with dyspnea ($r = -0.52$; $p = 0.007$). The participation component (SGRQ) did not show a significant association with the other components.

Conclusion: A significant relationship was found between the activity component and body functions, whereas participation was not linked to these components. This suggests that restrictions in participation are multifactorial, necessitating a comprehensive approach that goes beyond the traditional biomedical model and includes contextual factors.

Implications: These findings emphasize the need for a biopsychosocial approach in rehabilitation, addressing not only physical function but also social and environmental barriers. Personalized

interventions incorporating psychological and social support are essential to effectively enhance participation and patient outcomes.

Keywords: Interstitial lung disease, Disability, International Classification of Functioning, Disability and Health (ICF), Biopsychosocial Model

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 69161623.0.0000.5152.

Registration: Not applicable.

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ADAPTATION, FEASIBILITY AND REPRODUCIBILITY OF THE MODIFIED SHUTTLE TEST FOR PEOPLE WITH DEAFNESS

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Background: Hearing loss may be associated with lower levels of physical activity, fragmentation of active time, and greater difficulties in performing activities of daily living. However, there are no records of validated exercise tests for the physical assessment of people with deafness, which are crucial for prescribing interventions and monitoring physiological and functional responses. Among these, the Cardiopulmonary Exercise Test (CPET) stands out as the gold standard for assessing physical fitness and limiting symptoms. However, CPET requires expensive equipment, highly trained personnel, and standard laboratory conditions, which limits its wide availability to the general population. On the other hand, the Modified Shuttle Test (MST) is a progressive, standardized, incremental test that is simple to perform in non-laboratory conditions. However, the MST uses auditory stimuli to guide participants, making it unfeasible for people with severe hearing loss or deafness.

Objectives: The central objective of this study was to develop an adaptation of the MST guided by visual cues. Secondly, we intend to test the validity and agreement of the visual TSM.

Methods: This is a cross-sectional study, divided into two phases. Phase I includes the development of resources for adapting the TSM, using visual guidance to replace the audible commands of the conventional test. LED (Light Emitting Diode) RGB (Red Green Blue) light signals were used, positioned above each cone, located at the ends of the path. In this phase, the test will be tested on healthy individuals and its agreement, determined by paired t-test, analysis of the intraclass correlation coefficient (ICC) and 95% confidence intervals (CI) and Spearman's correlation coefficient. In Phase II, the feasibility and reproducibility of the adapted TSM in deaf individuals will be tested.

Results: An agreement analysis of partial data from Phase I was performed using the ICC (intraclass correlation coefficient) between the auditory SST and the visual SST in hearing individuals, considering the peak HR ($n = 8$) $170,7 \pm 15,8$ vs $169,4 \pm 11,0$ bpm ($p > 0,05$) and the distance covered in the tests ($n = 10$) $999,0 \pm 44,3$ vs $987,0 \pm 53,1$ meters ($p > 0,05$), respectively. The partial results demonstrate an agreement between the tests for HR with ICC = 0,81 (95% CI = 0,39–0,93) and for distance covered ICC = 0,85 (95% CI = 0,46–0,96). The correlation between the HRpeak of the tests was $r = 0,68$, and between the distances it was $r = 0,76$ ($p < 0,05$ for both).

Conclusion: The adapted TSM has good agreement and validity when compared to the conventional TSM.

Implications: The results of this study can promote inclusion and accessibility of people with deafness for the assessment of functional capacity, contributing to a more equitable approach in the prescription of exercises. Additionally, we can provide a safe and efficient protocol for the assessment of cardiorespiratory fitness of this population.

Keywords: accessibility, deafness, exercise test

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No.6222030.

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ULTRASONOGRAPHIC EVALUATION OF DIAPHRAGMATIC FUNCTION AND ITS RELATIONSHIP WITH EXERCISE CAPACITY IN PATIENTS WITH CHRONIC HEART FAILURE

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Background: Heart failure (HF) is characterized by cardiac dysfunction and consequent exercise intolerance. In addition to peripheral muscle dysfunction, common in HF, diaphragmatic dysfunction may contribute to functional limitation and reduced exercise capacity. Maximal respiratory pressure measurement is widely used to identify respiratory muscle weakness, but diaphragmatic ultrasound has emerged as a promising tool for structural and functional diaphragm assessment, enabling early detection and therapeutic management of respiratory muscle dysfunction.

Objectives: To evaluate diaphragmatic function using ultrasound and its relationship with exercise capacity in individuals with chronic HF.

Methods: This is an observational, analytical-descriptive, cross-sectional study conducted with individuals aged 18 to 65 years diagnosed with chronic HF and left ventricular ejection fraction (LVEF) < 50%. Participants underwent diaphragmatic ultrasound assessment, including measurements of diaphragmatic excursion (DE), thickness (Tdi), and thickening fraction (DTF), as well as maximal inspiratory and expiratory pressures (PImax and PEmax). Functional capacity was evaluated using the six-minute walk test (6MWT) and maximal oxygen consumption (VO₂max). Statistical analysis was performed using SPSS 27.0 software, applying mean comparison tests and variable association analyses.

Results: A total of 18 individuals were evaluated, predominantly male (66.7%), with a mean age of 54.9 ± 8.08 years and a mean LVEF of $34.7 \pm 11.7\%$. The mean DE was 2.5 ± 1.3 cm during quiet breathing and 5.8 ± 1.9 cm during deep breathing, with 40% presenting below-normal values. The mean inspiratory Tdi was 4.6 ± 2.2 mm, reduced in 50% of cases, while DTF was decreased in 66.7% of participants. Respiratory muscle strength was relatively preserved, with 88.9% of individuals having PImax above 70% of the predicted value (mean 86.3 ± 24.16 cmH₂O) and 64.7% with PEmax above the reference value (mean 114.8 ± 37.3 cmH₂O). Functional capacity was impaired, with a mean VO₂max of 16.2 ± 3.98 mL/kg/min, where 66.7% were classified as "very weak" and 33.3% as "weak." In the 6MWT, the mean distance covered was 453.8 ± 106.7 meters, with 60% exceeding 80% of the predicted distance. Despite

these alterations, no statistically significant associations were found between diaphragmatic ultrasound parameters, respiratory muscle strength, and functional capacity.

Conclusion: The findings indicate a high prevalence of diaphragmatic dysfunction in HF patients, even in those with preserved respiratory muscle strength. The lack of significant associations between diaphragmatic function and exercise capacity may be related to the small sample size, reinforcing the need for studies with greater statistical power.

Implications: Diaphragmatic ultrasound may contribute to the clinical management of chronic HF, allowing early detection of respiratory dysfunction and personalized interventions such as respiratory rehabilitation and therapeutic adjustments. Additionally, its use in monitoring disease progression may help improve patient prognosis.

Keywords: Heart failure, Diaphragmatic ultrasound, Functional capacity

Conflict of interest: The authors declare no conflict of interest.

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INTRADIALYTIC PHYSICAL EXERCISE ON THE SLEEP QUALITY AND HEALTH-RELATED QUALITY OF LIFE IN CHRONIC KIDNEY PATIENTS: A RANDOMIZED CONTROLLED TRIAL

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Background: Changes in renal function resulting from chronic kidney disease (CKD) or hemodialysis (HD) have repercussions on sleep and quality of life. Patients with CKD often experience complications in the musculoskeletal system, such as frailty and fatigue, with impact their lifestyle and physical capacity. Exercise programs performed during HD have potential to reverse such complications and influence both sleep and quality of life. However, the evidence on this topic remains limited.

Objectives: To investigate the effectiveness of an intradialytic resistance exercise protocol compared to intradialytic aerobic exercise protocol on the sleep and quality of life in CKD patients.

Methods: This is a randomized controlled trial. Thirty-two patients with CKD in HD were randomly allocated into two groups of intradialytic exercise, during the first 90 minutes of hemodialysis for 3 months: Group A (resistance exercise protocol, performing 8 exercises using elastic bands, dumbbells, and a Swiss ball, 2 sets of 8-12 repetitions, with an interval of 2-3 minutes between sets, and an exercise of 6 on the modified OMNI scale) and GROUP B (aerobic exercise protocol performing 20 minutes of exercise on a cycle ergometer with an intensity between 5 and 7 on the modified Borg scale). Sleep quality (measured by the Pittsburgh Sleep Quality Index) and health-related quality of life (measured by the EQ-5D-3L) were measured at baseline and 3 months after randomization. Visual inspection of histograms was used to assess data normality.

Linear mixed model was used to assess the differences in intra and intergroup. The level of statistical significance was set at 5%.

Results: Participants in Group A received an average of 31.4 (± 3.4) sessions of effective exercise and Group B received an average of 32.5 (± 3.5) sessions. In the intragroup analysis, a significant improvement in sleep quality was observed for Group A (pre: 7.1 ± 4.0 ; post: 5.1 ± 3.7 ; 95% confidence interval [95%CI]: -3.2 to -0.6), but it did not occur in Group B (pre: 6.6 ± 3.0 ; post: 5.3 ± 2.4 ; 95%CI: -3.0 to 0.5). For the intergroup analysis, no significant changes were observed (mean difference [MD]: 0.7; 95%CI: -1.6 to 2.9). For health-related quality of life, no significant changes were observed in intragroup analysis (Group A, pre: 0.86 ± 0.16 , post: 0.87 ± 0.13 , 95%CI: -0.06 to 0.07; and Group B, pre: 0.86 ± 0.1 , post: 0.91 ± 0.2 , 95%CI: -0.01 to 0.11) and in intergroup analysis (MD: 0.04; 95%CI: -0.04 to 0.1).

Conclusion: Only resistance exercise seems to be effective for sleep quality after 3 months of treatment. However, there are no differences between the exercise protocols for sleep quality and health-related quality of life. These results suggest that future studies should be conducted with the inclusion of other clinical variables, such as pain, which may influence the effect of treatment.

Implications: Intradialytic exercise based on resistance exercise can benefit patients with CKD in the improvement of sleep quality. This type of exercise might be incorporated in hemodialysis centers under the guidance of physiotherapists.

Keywords: Intradialytic Physical Exercise, Sleep quality, Quality of Life

Conflict of interest: The authors declare no conflict of interest.

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CORRELATION BETWEEN INSPIRATORY MUSCLE STRENGTH WITH EXPIRATORY THICKNESS, THICKENING FRACTION AND DIAPHRAGMATIC MOBILITY IN INDIVIDUALS WITH COPD

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Background: Chronic obstructive pulmonary disease (COPD) is characterized by progressive airflow obstruction of an irreversible nature, causing persistent respiratory and peripheral symptoms. Diaphragmatic dysfunction can be observed in all stages of COPD development, presenting through structural and functional alterations. This dysfunction may be associated with hyperinflation, systemic inflammation, oxidative stress, and malnutrition. These interactions affect respiratory muscle function and diaphragmatic

biomechanics, with diaphragmatic ultrasonography being a valuable method to analyze the anatomy and function of this muscle.

Objectives: To correlate respiratory muscle function with expiratory thickness, thickening fraction, and diaphragmatic mobility in individuals diagnosed with COPD.

Methods: This was a descriptive, quantitative cross-sectional study conducted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations and approved by the research ethics committee. To assess respiratory muscle function, an electronic computerized device (KH2; PowerBreath International Ltd. UK) was used. The evaluation of expiratory thickness, thickening fraction, and diaphragmatic mobility was performed using diaphragmatic ultrasonography with a 2.5-5.0 MHz convex transducer and a 7.5-10.0 MHz linear transducer. Statistical analysis was conducted using IBM SPSS Statistics version 25. Descriptive statistics were initially applied to characterize the data, including measures of central tendency (mean) and dispersion (standard deviation). To assess data normality, the Shapiro-Wilk test was used. The correlation between variables was analyzed using Pearson's correlation coefficient, considering a significance level of 5% ($p < 0.05$). Differences between measurements were evaluated using the paired t-test, with the effect size estimated by Cohen's d. All analyses were performed with a 95% confidence interval.

Results: The study sample consisted of 11 participants, 6 male and 5 female. When analyzing the respiratory muscle strength of the patients studied, a reduction in maximal inspiratory pressure was observed compared to predicted values for individuals of the same age group without COPD ($p < 0.002$), indicating that the sample of patients studied demonstrates respiratory muscle weakness. Regarding the correlation analyses of maximal inspiratory pressure with expiratory thickness, thickening rate, and diaphragmatic mobility, only a negative correlation ($r = -0.729$, $p = 0.011$) was observed between inspiratory muscle strength, measured by maximal inspiratory pressure, and the expiratory thickness of the diaphragm muscle. This indicates that for this population of COPD patients, the lower the inspiratory muscle strength, the greater the expiratory thickness of the diaphragm.

Conclusion: Our findings demonstrated that in the studied population of COPD patients with diagnosed inspiratory muscle weakness, there was a negative correlation between inspiratory muscle strength and the expiratory thickness of the diaphragm muscle. These factors are justified by the mechanical disadvantage found in the inspiratory muscles in this population.

Implications: The results may contribute to a better understanding of the pathology and its repercussions, thus favoring a more effective rehabilitation process and positively impacting the quality of life of individuals with COPD.

Keywords: COPD, Diaphragm, Maximal Respiratory Pressures

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 53711515.0.0000.5054.

Registration: Not applicable.

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EFFECTS OF INSPIRATORY MUSCLE TRAINING ON DYSPNEA AND LUNG CAPACITY IN HEMODIALYSIS PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Respiratory muscle weakness has been shown to be frequent in patients undergoing hemodialysis. In this context, inspiratory muscle training (IMT) emerges as an alternative to improve the respiratory condition of these patients.

Objectives: To evaluate the effect of IMT on dyspnea and lung capacity in dialysis patients. The effect on respiratory muscle strength was evaluated as a secondary outcome, as well as the dialysis efficacy index (Kt/V).

Methods: A systematic review of randomized controlled trials (RCTs) which evaluated the effects of IMT in dialysis patients on the outcomes of dyspnea, lung capacity, respiratory muscle strength and dialysis effectiveness index (Kt/V) was conducted. Searches were completed in February 2025 in the Medline/PubMed, Cochrane Library, LILACS, CINAHL, PEDro, Web of Science, Embase and Google Scholar databases. The search strategy consisted of the following Keywords “Renal Institution, Chronic”, “Dialyses, Renal”, “Breathing Exercises”, “Dyspnea” and “Respiratory Function Tests” in different combinations. Studies with adult participants (> 18 years) with CKD on hemodialysis were included. The intervention was evaluating inspiratory muscle training with linear load. Study quality was assessed using the Cochrane RoB2 tool.

Results: Six studies were analyzed (n = 210). One study showed an improvement in dyspnea [4.17±0.58; 95%CI (0.0073-0.884); p = 0.022], and the meta-analyses found a mean difference of 0.34 L/min [95%CI (0.08–0.61); p = 0.010] in forced vital capacity (FVC) and 25.15 cmH₂O [95%CI (17.05–33.24); p < 0.001] in maximum inspiratory pressure (MIP) in the IMT groups. There was no difference in Kt/V. Only one study showed a low risk of bias.

Conclusion: IMT in patients with CKD on HD improved dyspnea, FVC and MIP. Considering the low quality of the studies, new RCTs with greater methodological rigor are needed.

Implications: Understanding the effects of IMT on patients receiving hemodialysis leads to more effective interventions for common respiratory symptoms in these individuals.

Keywords: Hemodialysis, Respiratory therapy, Dyspnea

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Ethics committee approval: CAAE: 65207222.1.0000.5152.

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ABSENCE OF ADVERSE EVENTS WITH EARLY PHYSIOTHERAPY APPLICATION TO CRITICALLY ILL PATIENTS DURING HEMODIALYSIS IN INTENSIVE CARE UNIT: SCOPING REVIEW

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Background: The critical scenario disease with immobility, physical deconditioning and hemodialysis (HD) has led to the implementation of physiotherapy aimed at early functional recovery and, as a result, a reduction in the length of hospital stays. However, barriers such as lack of knowledge and professional experience limit the

implementation of physical therapy intra-dialytic assistance in the Intensive Care Unit (ICU) environment.

Objective: s: To summarize and present the evidence of adverse events of early physiotherapy applied to critically ill patients during hemodialysis in the ICU stay.

Methods: This was a scoping review carried out from May to July 2024, developed in accordance with the PRISMA-ScR guidelines. The Concept, Population, and Context strategy was used to develop research questions and carry out the literature search. Descriptors standardized by DECS and MESH in English and Portuguese were used, arranged in different strategies to maximize the search for results. The search was performed in the MEDLINE via PUBMED, EMBASE, LILACS-BVS, PEDro, Scielo, WoS, Portal de Periódicos CAPES, and ClnaHL databases. The gray literature was consulted using Google Scholar. The studies were analyzed in terms of population, outcomes, and results. The main outcome was reported safety and the presence of adverse events during physiotherapy applied to critically ill patients during HD. Inclusion criteria were all experimental and observational studies and literature reviews available in full were included.

Results: The evidence was published in 2016 to 2024. The population of these studies include adults in ICU stay that is performed intermittent or continuous HD. Physiotherapy applied in ICU stay was considered safe. The adverse events were minimal and may have hemodynamic transitory changes. By the way, there is no record of any specific adverse events directly related to physiotherapy. The results were also framed into seven themes on the particularities of early physiotherapy. The context of physiotherapy in the ICU, hemodialysis and vascular access to the necessary care, physiotherapy applied in the intra-dialytic period, the importance of multi-professional action, the recording of adverse events, and the patient's perception.

Conclusion: Early physiotherapy performed on critically ill patients during the hemodialysis period was considered safe and there are no specific adverse events directly related.

Implications: Although physiotherapy during hemodialysis in ICU is not associated with significant adverse events, the assistance must be performed by criteria assessment to promote safety and better practices. It is also necessary to break down cultural factors and personal beliefs of the team member, like inappropriate manipulation as well as prevent the loss of vascular access and improve therapeutic exercise knowledge on intra-dialytic period with the multi-professional experience.

Keywords: Intensive Care Unit, Kidney Replacement Therapy, Exercise Therapy

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EVALUATION OF PREDICTIVE METHODS FOR RESPONSE TO POSITIVE END-EXPIRATORY PRESSURE (PEEP) IN INDIVIDUALS WITH ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS)

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Background: Since the first description of ARDS, PEEP has remained an essential component in its management, aiming to improve gas exchange and keep the airways and alveoli open. However, the response to PEEP varies among patients, depending on pulmonary recruitability. The assessment of this potential can be performed in different ways, but there is still no consensus on the best clinical method for its measurement.

Objectives: The aim of this study was to compare four common clinical methods of assessing response to PEEP, using mechanical ventilator data and correlating them with clinical and mechanical characteristics of patients with ARDS.

Methods: This is a secondary analysis study of a prospective cohort of patients with ARDS. Inclusion criteria were age > 18 years, diagnosis of severe ARDS ($\text{PaO}_2/\text{FiO}_2 < 100$ sustained for at least 2 hours), and mechanical ventilation (MV) time = 48 hours. Patients with contraindications for alveolar recruitment maneuver (ARM), such as intracranial hypertension (ICH), undrained pneumothorax, and severe hemodynamic instability, were excluded. Patients were assessed by four methods before ARM: Stress Index (SI), morphology of the PxV curve, hysteresis, and Recruitment to Inflation ratio (RI-ratio). They were classified as "potentially recruitable" or "poorly recruitable" and underwent ARM as a rescue strategy. After the maneuver, the recruitment response was assessed.

Results: A total of 86 individuals were evaluated, with a mean age of 60.9 ± 12.1 years. The average length of stay was 17.4 ± 12 days, and the average MV time was 13.5 ± 7.8 days, with a mortality rate of 44.2% ($n=38$). The morphology of the PxV curve (AUC = 0.827 [95% CI 0.73–0.92]; $p=0.047$), hysteresis (AUC = 0.896 [95% CI 0.83–0.96]; $p=0.035$), and RI-ratio (AUC = 0.878 [95% CI 0.80–0.95]; $p=0.037$) were equivalent predictors, with no statistically significant difference between them (SMD: 0.126, 95% CI -0.113 - 0.129; $p=0.867$). SI had an AUC of 0.64 ($p=0.061$), not being a good predictor of response to PEEP. The "cutoff points" found were lower than those established in previous studies, both in hysteresis ($\text{VCe} - \text{VCi} = 378$ ml; GINI index = 0.792) and in RI-ratio (0.335; GINI index = 0.756).

Conclusion: The clinical methods used for evaluating recruitment potential were accurate and can be clinically applied to estimate recruitment potential in patients with severe ARDS, although the cutoff points found were lower than those described in previous studies.

Implications: Patients who could benefit from ARM may be incorrectly classified as non-recruitable, which could lead to the omission of the maneuver, even when rescue of severe refractory hypoxemia is necessary. This could hypothetically contribute to a reduction in morbidity and mortality and promote better clinical outcomes in this heterogeneous syndrome.

Keywords: ARDS, PEEP, methods of assessing, alveolar recruitment

Conflict of interest: The authors declare no conflict of interest.

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DEVELOPMENT OF A CORE SET FOR CHAGAS DISEASE: EXPLORING PATIENT PERSPECTIVES ON FUNCTIONALITY

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Background: The Core Set of the International Classification of Functioning, Disability, and Health (ICF) is the methodological process that allows for the definition of categories representing a set of functional outcomes related to a specific health condition. To validate a Core Set for Chagas Disease (CD), a qualitative study was conducted to understand the functional perspectives of this population. **Objectives:** Based on focus groups, this qualitative study represented the second stage in creating the Core Set and aims to list candidate categories that will be analyzed in subsequent phases.

Methods: The focus groups were conducted to identify the most relevant categories for adults of both sexes diagnosed with the cardiac form of CD, related to the functional consequences of the disease. Significant concepts were identified from the transcriptions using the condensation method. Subsequently, the concepts that emerged from the participants' statements were linked to ICF categories by two independent researchers.

Results: Sixteen adults (mean age: 67 ± 8 years), including 10 women and 6 men, participated in six focus groups. A total of 180 relevant concepts were identified, which were mapped to 41 of the 125 second-level categories from the ICF checklist. The identified concepts represented all ICF components: Body Functions (43% of concepts), Body Structures (7% of concepts), Activities and Participation (26% of concepts), and Environmental Factors (24% of concepts). The most frequently mentioned categories were: b134 (Sleep functions), b152 (Emotional functions), b280 (Pain), d930 (Religion and spirituality), and e310 (Immediate family). Patients with CD experienced a complex condition where sleep functions, emotional functions, and the presence of pain are interrelated, creating a significant impact on their quality of life.

Conclusion: The use of religious practices and the support of the immediate family appear to be important resources in managing these conditions.

Implications: The identified categories will be added to the list of candidate categories for reaching a consensus on a Core Set of the ICF for individuals with CD.

Keywords: ICF, validation studies, Chagas disease

Conflict of interest: The authors declare no conflict of interest.

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ASSOCIATION BETWEEN FUNCTIONAL DISABILITY, PHYSICAL PERFORMANCE, AND SOCIAL PARTICIPATION IN PEOPLE WITH INTERSTITIAL LUNG DISEASE: PRELIMINARY RESULTS

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Background: Interstitial Lung Disease (ILD) encompasses a heterogeneous group of over 200 diffuse parenchymal lung disorders, primarily characterized by pulmonary interstitial involvement, frequently affected by inflammation and fibrosis. Signs and symptoms vary depending on the underlying ILD condition but generally include dyspnea, fatigue, persistent cough, bibasilar crackles, digital clubbing, and psychological symptoms. These manifestations contribute to a decline in quality of life, reduced functional capacity, and low tolerance to physical exercise.

Objectives: This study aimed to investigate the association between functional disability, health status, quality of life, physical performance, muscle strength, and physical activity level in people with ILD.

Methods: This is a preliminary cross-sectional, multicenter study, part of a larger project, conducted with people diagnosed with ILD. In addition to clinical history and spirometry for pulmonary function assessment, specific instruments were applied, including the 12-item short version of the World Health Organization Disability Assessment Schedule (WHODAS 2.0), which assesses the impact on daily activities and social participation; the King's Brief Interstitial Lung Disease Questionnaire (K-BILD), which evaluates the quality of life and health status; the Participation Scale, measuring self-perceived social participation and daily activities; the Human Activity Profile (HAP), classifying physical activity level; the Handgrip Strength Test (HST), assessing peripheral muscle strength using a Jamar dynamometer; and the 6-Minute Walk Test (6MWT), which measures functional exercise capacity and cardiorespiratory endurance.

Results: The sample comprised 13 participants, with a mean age of 55.82 years (± 13.84 years), ranging from 33 to 81 years. The majority were male (7 participants, 53.8%), and five people (38.5%) were classified as overweight. Regarding educational background, 7 participants (53.8%) had completed high school, and in terms of self-reported ethnicity, 7 (53.8%) identified as mixed-race. Additionally, 4 participants (30.8%) had a prior diagnosis of post-COVID-19 pulmonary fibrosis. The mean WHODAS 2.0 score was 32.39 (± 19.14), ranging from 15 to 67 points. Correlation analysis revealed an association only between the WHODAS 2.0 short version and K-BILD (ICC = -0.56; $p = 0.05$).

Conclusion: Preliminary results indicate that a more significant functional disability in people with ILD is associated with poorer health status, as assessed by the K-BILD. The lack of significant associations with other variables may be attributed to the small sample size of this preliminary study. However, the findings suggest relevant trends that warrant further exploration in future analyses.

Implications: These findings suggest that physiotherapeutic assessments and interventions for people with ILD should consider not only pulmonary aspects but also functional and social dimensions. An integrated approach may be essential to improving the quality of life and social participation in this population.

Keywords: Lung Diseases, Interstitial, Functional Disability, WHODAS

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INTER-RATER RELIABILITY AND VALIDITY OF THE PERME ICU MOBILITY SCORE IN PEDIATRIC INTENSIVE CARE AND WARD SETTINGS

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Background: Early mobilization in pediatric intensive care units (PICUs) is essential to minimize complications and promote functional recovery. However, there is a lack of validated tools specifically designed to assess mobility in children with critical illness. The Perme ICU Mobility Score (Perme Score), originally developed for adults, assesses mobility considering barriers such as medical devices and ventilatory support. The validation of the Perme Score for pediatric use is crucial to guide rehabilitation strategies in this population.

Objectives: To validate the Perme Score for evaluating mobility in patients admitted to PICU and pediatric wards, by analyzing its inter-rater reliability and its correlation with the Functional Status Scale (FSS), a widely used instrument in the pediatric population.

Methods: A cross-sectional observational study was conducted in two hospitals including pediatric patients aged 6 to 17 years. The Perme Score and FSS were applied independently by trained physical therapists. Inter-rater reliability was assessed using the intra-class correlation coefficient (ICC), while the correlation between the two tools was analyzed using Pearson's test. P -value < 0.05 was defined statistically significant.

Results: A total of 166 participants were included, with a median age of 11 years. The initial assessment showed a mean Perme Score of 26.13 ± 7.89 and a mean FSS of 7.25 ± 2.21 . A moderate to strong negative correlation was observed between the Perme Score and FSS ($r = -0.642$; $p < 0.01$), indicating that better mobility is associated with less functional impairment. Interrater reliability was excellent (ICC = 0.99).

Conclusion: The Perme Score proved to be a valid and reliable tool for assessing mobility in hospitalized pediatric patients. Its structured approach allows for the identification of mobility barriers and effective monitoring of functional progress throughout hospitalization.

Implications: Validating the Perme Score for the pediatric population supports its integration into clinical practice in both ICU and ward settings. The Perme Score can support early mobilization protocols and contribute to personalized rehabilitation strategies by objectively assessing mobility status of patients. Consequently, it has the potential to improve functional outcomes for critically ill children and promote evidence-based decision-making in physical therapy.

Keywords: Pediatric Intensive Care, Physical Functional Performance, Mobility Limitation Assessment

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VIVIFRIL TRAINING IMPROVES FUNCTIONAL CAPACITY OF INSTITUTIONALIZED ELDERLY PEOPLE: A RANDOMIZED CLINICAL TRIAL

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Background: Aging is associated with changes that lead to a decline in functionality, limiting the performance of activities of daily living (ADLs). Older adults living in long-term care facilities (LTCFs) have fewer opportunities to actively engage in these activities, which affects their independence and autonomy. So far, there is limited evidence on the effects of interventions aimed at improving functionality in LTCF residents, as most studies focus on community-dwelling older adults.

Objectives: To evaluate the effectiveness of the Vivifrail program in combating frailty syndrome in institutionalized older adults by analyzing the program's effects on improving balance and muscle function in this population.

Methods: The study is a randomized clinical trial conducted over a three-month period with two weekly sessions in long-term care facilities (LTCF). A total of 30 female volunteers over the age of 60 participated, forming two groups: the Vivifrail Group (VG), which underwent multicomponent training, and the Control Group (CG), which received usual care. The training followed the Vivifrail model, adjusted according to the participants' initial functional capacity, categorizing them as "frail," "pre-frail," or "independent." Participants were assessed before starting the intervention and four weeks after its completion.

Results: Thirty older women were included in the study, with a mean age of 86 years. There were no statistically significant differences between the groups at the pre-intervention stage. However, post-intervention analysis revealed statistically significant differences in frailty levels, with lower frailty scores in the intervention group. Notably, the intervention group showed an improvement of nearly two points in the SPPB assessment, an increase of approximately 5 kg/f in handgrip strength, and a reduction of nearly 5 seconds in the time required to complete the five-times sit-to-stand test.

Conclusion: In this sample, the Vivifrail program proved effective as a strategy for combating and preventing frailty syndrome, according to Fried's Frailty Phenotype.

Implications: The results suggest that the Vivifrail program can be implemented to reduce frailty and the risk of falls. Furthermore, its adoption in LTCFs may promote greater independence and quality of life for this population.

Keywords: Multicomponent Training, Elderly, Frailty

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EVALUATION OF THE OPTIMIZATION OF POSTURAL BALANCE CONTROL DURING THE USE OF VISUAL BIOFEEDBACK

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Background: Limiting postural sway within specific boundaries while standing is essential for maintaining stability and preventing falls. This has driven the development of biofeedback-based balance training protocols designed to minimize postural sway. Although visual biofeedback protocols have been shown to effectively reduce sway, this reduction is frequently associated with increased muscular effort.

Consequently, it remains uncertain whether biofeedback-induced sway reduction results in optimal postural control.

Objectives: This study aims to investigate whole-body stability during upright posture using biofeedback protocols by applying a set of variables characterizing the mathematical optimization process that minimizes the postural sway in terms of CoP coordinates.

Methods: Seventeen participants performed three 60-second postural tasks: (1) eyes open (EO) as a control; (2) center of pressure (CoP) biofeedback; and (3) wrist-controlled laser biofeedback. Posturographic variables were extracted to characterize the optimization process, focusing on downhill, stability, and convergence properties. The downhill property included: (1) percentage of signal duration with a strictly decreasing cost function (t , %), and (2) average maximum absolute convergence rate ($|\dot{p}|$, mm/s). Stability was quantified by: (1) number of local minima ($\min_N$), (2) their average values ($\min_L$, mm), and (3) variability ($\min_SD$, mm). Convergence was assessed by: (1) global minimum value ($\min_G$, mm), and (2) absolute difference between global and expected minima ($|\dot{p}_GL|$, mm). Statistical analysis used repeated measures ANOVA with Holm correction ($p < 0.05$) to assess condition effects.

Results: Significant main effects of condition were revealed on the following outcomes: Expected Local Minimum ($\min_L$) ($F(2, 32) = 3.320$, $p = 0.049$; BF COP: $M = 3.364$, $SD = 7.064$; BF Laser: $M = 10.761$, $SD = 19.650$; OA: $M = 0.691$, $SD = 1.062$), Dispersion of Local Minima ($\min_SD$) ($F(2, 32) = 3.622$, $p = 0.038$; BF COP: $M = 3.185$, $SD = 6.777$; BF Laser: $M = 11.126$, $SD = 20.083$; OA: $M = 0.553$, $SD = 0.972$), and Error (δGL) ($F(2, 32) = 3.351$, $p = 0.048$; BF COP: $M = -3.263$, $SD = 6.862$; BF Laser: $M = -10.579$, $SD = 19.308$; OA: $M = -0.651$, $SD = 1.023$). Post hoc comparisons showed significant differences between BF Laser and OA for dispersion ($p = 0.044$) and trends for Expected Local Minimum ($p = 0.055$) and Error ($p = 0.054$). No significant effects were found for other outcomes ($p > 0.05$).

Conclusion: This study shows that different biofeedback protocols affect postural control optimization differently. Wrist-controlled laser biofeedback (BF Laser) led to higher local minima, greater dispersion, and larger errors compared to center of pressure (CoP) biofeedback and the eyes-open (EO) condition, suggesting BF Laser imposes greater stability demands. In contrast, CoP biofeedback and EO demonstrated more stable and convergent control, indicating a more efficient optimization process.

Implications: These results highlight the importance of selecting biofeedback protocols that align with the goals of postural training, as not all protocols equally promote optimal postural control. Future research should explore the underlying mechanisms and long-term effects of these protocols to refine biofeedback-based balance training strategies.

Keywords: Postural Control, Biofeedback, Optimization

Conflict of interest: The authors declare no conflict of interest.

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THE SIX MINUTE WALK TEST CAN ESTIMATE THE PHYSICAL ACTIVITY LEVELS OF COMMUNITY-DWELLING OLDER ADULTS: A CROSS-SECTIONAL STUDY

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Background: Physical activity is a key determinant of health in older adults, enhancing physical and mental well-being, reducing mortality risks, and improving overall functioning. However, many older adults remain insufficiently active despite the World Health Organization's recommendations of at least 150 minutes of moderate-intensity physical activity per week.

Objectives: This study aimed to explore correlations between physical activity levels measured by subjective (IPAQ) and objective (activity monitors) assessments in older adults. Additionally, the study sought to identify functional tests that could correlate with activity levels and establish cut-off points for these tests.

Methods: Participants included 90 older adults who were assessed using the IPAQ, an activity monitor, and functional tests such as the 6-Minute Walking Test (6MWT), Timed Up and Go (TUG), and Berg Balance Scale (BBS). Data were analyzed using Spearman's correlation and Receiver Operating Characteristics (ROC) analysis.

Results: No significant correlation was found between the IPAQ (self-reported) and activity monitor data (objective). The activity monitor showed lower levels of physical activity than the IPAQ, suggesting potential overestimation in self-reports. A moderate correlation was observed between the 6MWT and moderate-to-vigorous physical activity (MVPA) levels. ROC analysis of the 6MWT revealed an Area Under the Curve (AUC) of 0.83, indicating good discriminatory capacity with a cut-off of 273.9 meters (walking speed of 0.76 m/s) to identify those achieving the recommended 150 minutes of MVPA.

Conclusion: Objective and subjective physical activity levels were not correlated in older adults, who may overestimate their physical activity levels, with self-reported activity levels higher than objective ones. Clinical testing can add value to assessing physical activity levels, with the 6MWT being correlated with objective measures. Further research is recommended to validate the 6MWT across different populations and health conditions to expand its use in clinical settings.

Implications: Clinicians may not rely solely on physical activity levels reported by older adults. The 6MWT could be a practical tool for assessing physical activity in them, offering valuable insights for rehabilitation programs and complementing subjective assessments.

Keywords: Older adults, physical activity, activity monitor, clinical evaluation

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ASSOCIATION AND AGREEMENT OF SUBJECTIVE AND OBJECTIVE MEASUREMENT OF PHYSICAL ACTIVITY LEVEL IN OLDER ADULTS - A CROSS-SECTIONAL STUDY

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Background: The World Health Organization emphasizes that maintaining functional abilities is essential for the health and well-being of older adults. Among the recommended strategies, regular physical activity is central to the role in preventing diseases and promoting active longevity. However, physical inactivity and sedentary time represent increasing challenges associated with chronic diseases and reduced quality of life. Assessment of physical activity levels is globally examined through self-reported questionnaires, although their accuracy in older adults still generates debate in the literature. In this context, the combination of objective measures, such as accelerometry and self-reporting, can improve the assessment of physical activity levels and support effective strategies for health promotion and prevention.

Objectives: To evaluate the association and agreement between subjective and objective methods of measuring physical activity in community-dwelling older adults.

Methods: In SPSS 20.0, descriptive analysis, frequency distribution of categorical variables, central tendency analysis, dispersion measures of continuous variables, Pearson's Chi-square test and Kappa coefficient were performed. The Active Australia Questionnaire (AAQ) and the International Physical Activity Questionnaire (IPAQ) were used for the subjective assessment of the level of physical activity, and the accelerometer (Actigraph®, Pensacola, Fla, USA; Model GT9X Link; ActiLife Software version 6.11.5) was used for the objective assessment for 7 consecutive days. The Pearson's Chi-square test and Kappa coefficient were performed. Statistical significance set at 5%.

Results: A total of 35 older adults participated in this cross-sectional study. The mean age was (71.06 ± 9.0 years), 23 (65.7%) females and 12 (34.3%) males, IPAQ (Sedentary 0%, Irregularly active 2.9%, Active 60%, Very active 31.1%), AAQ (Sedentary 0%, Insufficiently active 8.6%, Sufficiently active 91.4%), Actigraphy (Sedentary behavior 65.93%, Light activities 15.99%, Moderate and Vigorous physical activity 6.48%). Association - Person's Chi-square: (AAQ: $\chi^2 = 0.972$, $P = 0.324$), (IPAQ: $\chi^2 = 6.462$, $P = 0.040$). Agreement - Kappa Coefficient: (AAQ: $P = 0.324$), (IPAQ: $P = 0.451$).

Conclusion: The results of this study indicate a significant association between the assessment obtained by the IPAQ questionnaire (short version) and the accelerometry measurement by GT9X, although no agreement was observed between the data. This corroborates previous findings in the literature, which state that, although the subjective measure presents reliability and validity, especially in community studies, compared to the standard of data evaluated through accelerometry, it has a low validity criterion. Therefore, an in-depth assessment of the level of physical activity may indicate preventive measures in the health area. In addition, it is essential to continue investigating the multiple facets of physical activity, considering not only the quantity but also the quality and intensity of the practice.

Implications: Although self-reported questionnaires are widely used in community studies and present validation in several situations, they should be used with caution, especially in the older adults.

Keywords: Aging, Exercise, Healthy Aging

Conflict of interest: The authors declare no conflict of interest.

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BETWEEN FRAGILITY AND RECOVERY: THE IMPACT AND FACTORS ASSOCIATED WITH HOSPITALIZATIONS ON COMMUNITY-DWELLING ELDERLY

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Background: The increasing elderly population presents a significant challenge to health and social systems worldwide. Frailty is recognized as a condition that can substantially impact the quality of life, autonomy, and independence of older adults, elevating the risk of adverse events and hospitalization.

Objectives: To identify the impacts and factors associated with hospitalization among elderly individuals living in the community.

Methods: This is a cross-sectional, descriptive, and observational study conducted in a community assisted by a Family Health Team. The sample consisted of 202 elderly individuals, aged 60 years or older, of both sexes. Structured questionnaires developed by the researchers were used to collect data on personal information, socio-environmental factors, and risk factors for frailty. Physical assessments were conducted using tests based on frailty conceptual models, including Fried's phenotype and the Edmonton Frail Scale. Statistical analysis was performed using the Spearman correlation test.

Results: Of the 202 patients evaluated, 39 (19.3%) had been hospitalized in the previous 12 months, with an average of more than one hospitalization (1.69). It is important to highlight that the group of patients with hospitalizations had more falls (average of 2.61 versus 0.72) in the last 12 months, lower handgrip strength (24 kg/f versus 27 kg/f), and lower walking speed (1.38 m/s versus 1.51 m/s). In addition, significant correlations were found between hospitalizations in the last 12 months and the number of falls, forgetting to take their medication, unintentional weight loss, difficulty in carrying out daily activities, inability to carry out their tasks, number of medical appointments, and having a caregiver.

Conclusion: From this sample, it can be stated that having had hospitalizations in the last year can significantly affect the adaptability capacity, possibly with major impacts on the perception of quality of life, and on functional aspects and risks of falls, with worse outcomes and higher risk for a new hospitalization. Furthermore, for this sample, the number of hospitalizations was directly related to the fact of having a caregiver.

Implications: In physiotherapy practice, the need for integrated post-hospital interventions stands out, encompassing functional rehabilitation, fall prevention strategies, and emotional support, in addition to preventing re-hospitalizations, with a focus on Primary Health Care. Health management should prioritize continuous care for older adults with a history or risk of hospitalizations, implementing programs for muscle strengthening, mobility, and disability prevention. Physiotherapy professionals' training should adopt an approach that considers the physical, psychological, and social aspects of patients. Finally, public policies need to strengthen support for caregivers, recognizing their crucial role in the recovery and well-being of this population.

Keywords: Aging, Frail Elderly, Hospitalization

Conflict of interest: The authors declare no conflict of interest.

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STRENGTH, MASS AND PHYSICAL PERFORMANCE OF ELDERLY PEOPLE WITH AND WITHOUT RISK OF SARCOPENIA

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Background: Sarcopenia is a geriatric syndrome characterized by progressive and generalized loss of strength and muscle mass, most commonly associated with age. Because it is related to reduced mobility, a greater number of falls and fractures, with consequent loss of independence, it is essential to identify the relationship between the risk of sarcopenia, muscle strength, and functional variables to prevent or delay the progression of the syndrome and the associated negative outcomes.

Objectives: To identify the relationship between the risk of sarcopenia, muscle strength and functional variables in elderly people followed at a geriatric outpatient clinic.

Methods: This is a cross-sectional and quantitative study, in which elderly people of both genders, aged 60 years or older, who were waiting for consultation at a geriatrics outpatient clinic were evaluated. According to the 2019 European Working Group on Sarcopenia in Older People (EWGSOP2) algorithm, the risk of having sarcopenia was initially assessed using the SARC-CalF questionnaire (risk group, RG, N=8 and no risk group, SG, N=8), muscle strength through handgrip dynamometry, Bioelectrical Impedance (BIA) to assess muscle mass, and finally the Short Physical Performance Battery (SPPB) instrument was applied to obtain the functional variables.

Results: The groups were homogeneous regarding age (RG, 74.5 ± 3.82, SG, 71.1 ± 8.37) and there was a predominance of men in the risk group (31.3%, n=5). In the comparison of muscle strength, there was no significant difference between the groups (RG, 24.0 ± 7.46, SG, 20.13 ± 8.96; -3.88; p=0.363; Cohen = -0.470). Regarding the physical performance score, no significant differences were observed, although there was a moderate effect size (RG, 9.13 ± 0.99, SG, 8.0 ± 2.61; -1.13; p=0.275; Cohen = -0.568). The measurement of muscle mass showed a significant difference in favor of the non-risk group (RG, 6.64 ± 0.89, SG, 8.06 ± 0.73; 1.43; p=0.004; Cohen = 1.749).

Conclusion: Elderly people at risk for developing sarcopenia have lower muscle mass, however no significant differences were observed between the groups for muscle strength and physical performance, even though measures were expected to be different due to the higher risk for sarcopenia, which can be explained by the sample size.

Implications: Monitoring the variables presented in the present study can help identify changes that indicate an increased risk for sarcopenia, which allows the development of effective prevention and intervention strategies.

Keywords: Aged, Sarcopenia, Geriatric Assessment

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AGING IN FOCUS: CHARACTERIZATION OF THE ELDERLY POPULATION OF A FAMILY HEALTH TEAM

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Background: Population aging is a global trend that presents significant challenges for public health. Community-dwelling older adults represent a diverse population with different levels of autonomy and healthcare needs. Therefore, it is essential to use specific assessment tools that are sensitive to the characteristics and contexts of this population.

Objectives: To identify the characteristics of the elderly population in a neighborhood of the municipality in Rio Grande do Sul, aiming to understand frailty and factors associated with certain risks, such as falls and hospitalizations, preventing functional incapacity and promoting independence and autonomy in their daily activities with safety and dignity.

Methods: This research consists of an observational cross-sectional descriptive study. Individuals aged 60 years or older, of both sexes, and living in households within a specific community monitored by a Family Health team were evaluated. Data collection was conducted through the application of a structured questionnaire developed by researchers, which included personal data, risk factors and socio-environmental aspects. Additionally, information on fall history, use of walking aids, past hospitalizations, and whether the individual had a formal or informal caregiver, among other aspects, was gathered. Physical assessment was conducted using tests based on the conceptual models of frailty according to Fried's phenotype and the Edmonton Frail Scale.

Results: A total of 202 individuals were evaluated, the majority of whom were women (59%), with a mean age of 71.7 years. 76% of the sample were overweight or obese to some degree, and 46% perceived their health status as poor or average, and another third of the sample reported having difficulty performing daily activities (40%), which resulted in 46% of the sample reporting feeling sad or depressed. Regarding the functional tests, it is important to highlight that women had more falls, lower handgrip strength, slower speed to perform the timed-up-and-go test and slower gait speed than men, with statistically significant differences ($p < 0.05$).

Conclusion: The findings of this study highlight the predominance of women in the evaluated elderly population, with greater functional vulnerability among them, including a higher occurrence of falls, lower handgrip strength, and slower performance in functional tests. Additionally, the reported difficulty in performing daily activities by one-third of the participants reinforces the need for strategies focused on promoting functionality and preventing disabilities.

Implications: These results highlight the importance of targeted physiotherapy interventions aimed at improving mobility, nutritional status, and mental health in the elderly population. The high prevalence of overweight and functional limitations demonstrates the need for early assessments in Primary Health Care and preventive interventions. Additionally, the findings emphasize the relevance of community programs focused on exercise, fall prevention,

and mental health support, guiding management, professional training, and public policies for active aging.

Keywords: Aging, Frailty, Public Health

Conflict of interest: The authors declare no conflict of interest.

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PARTICIPANTS OF THE OPEN UNIVERSITY OF THE THIRD AGE ACQUIRE INFORMAL KNOWLEDGE?

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Background: Aging population is an irreversible phenomenon; therefore, it is essential that it is addressed actively, ensuring the possibility of continued education for the elderly.

Objectives: To assess and compare the non-formal content learning of participants from the University of the Third Age (U3A) before and after they participated in various theoretical and practical modules of the extension program offered by different health courses.

Methods: This is longitudinal research of analytical and descriptive approaches. The sample consisted of 23 elderly individuals of both sexes from a University of the Third Age, using convenience sampling. Two tests, comprising 24 questions divided into 7 domains, were used to assess participants' learning before and after the extension project, and a telephone interview was conducted to outline the sociodemographic and educational profile. Data analysis was performed using SPSS version 20.0 software.

Results: The sample consisted of 23 participants, with 20 females (87%), and an average age of 70.22 ± 7.42 years. Regarding education, 10 (43.5%) had completed elementary school, and 15 (65.2%) earned up to one minimum wage. Performance comparisons between the first and second tests showed an increase in the number of correct answers and a decrease in the number of errors; however, these results did not reach statistical significance. There was a statistically significant reduction in unanswered questions. The question about "aid devices" had the highest rate of blank responses. In the philosophical domain, only the item "social life" showed a statistically significant difference. In both evaluations, the questions with the highest accuracy rates were about "aging and tasks" and "medical specialty." The highest error rate was for "types of dementia" and "medicinal plants." In test 2, the topics "first aid" and "physical activity" were the most mentioned in the discussion question.

Conclusion: The aspect of "social life" was the only one that showed a statistically significant difference, demonstrating that the main role of U3A in socialization was fulfilled and overshadowed non-formal learning.

Implications: The results highlight the significant contribution of the University of the Third Age in promoting socialization and the need for more opportunities to be made available for this target group in our country.

Keywords: Aged, University, Learning

Conflict of interest: The authors declare no conflict of interest.

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THE VIVIFRIL PROGRAM AS A TOOL TO COMBAT FRAILTY SYNDROME: A RANDOMIZED CLINICAL TRIAL WITH INSTITUTIONALIZED ELDERLY PEOPLE

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Background: Aging is associated with a decline in functional capacity, which impacts the performance of activities of daily living (ADLs) that depend on factors such as strength, speed, endurance, coordination, flexibility, and balance. The decline in these factors increases frailty, leading to greater functional dependence in older adults. Institutionalized older adults, compared to community-dwelling older adults, are more vulnerable to frailty syndrome due to reduced participation in daily activities, sedentary behavior, and social isolation.

Objectives: To evaluate the effectiveness of the Vivifril program in combating frailty syndrome in institutionalized older adults by analyzing the program's effects on improving balance and muscle function in this population.

Methods: The study is a randomized clinical trial conducted over a three-month period with two weekly sessions in long-term care facilities (LTCF). A total of 30 female volunteers over the age of 60 participated, forming two groups: the Vivifril Group (VG), which underwent multicomponent training, and the Control Group (CG), which received usual care. The training followed the Vivifril model, adjusted according to the participants' initial functional capacity, categorizing them as "frail," "pre-frail," or "independent." Participants were assessed before starting the intervention and four weeks after its completion.

Results: Thirty older women were included in the study, with a mean age of 86 years. There were no statistically significant differences between the groups at the pre-intervention stage. However, post-intervention analysis revealed statistically significant differences in frailty levels, with lower frailty scores in the intervention group. Notably, the intervention group showed an improvement of nearly two points in the SPPB assessment, an increase of approximately 5 kg/f in handgrip strength, and a reduction of nearly 5 seconds in the time required to complete the five-times sit-to-stand test.

Conclusion: In this sample, the Vivifril program proved effective as a strategy for combating and preventing frailty syndrome, according to Fried's Frailty Phenotype.

Implications: The results suggest that the Vivifril program can be implemented to reduce frailty and the risk of falls. Furthermore, its adoption in LTCFs may promote greater independence and quality of life for this population.

Keywords: Multicomponent Training, Elderly, Fragility

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IDENTIFICATION OF MUSCULOSKELETAL COMPLAINTS AND FUNCTIONAL PERFORMANCE IN FRAIL AND PRE-FRAIL ELDERLY PATIENTS IN HOSPITALIZATION

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Background: The elderly population has been growing rapidly, especially in developing countries like Brazil, presenting significant challenges for public health systems. The increase in the number of elderly individuals, along with decreasing fertility rates and rising comorbidities, has led to higher hospitalizations and mortality, particularly among those with frailty, sarcopenia, and musculoskeletal disorders. These conditions negatively impact functionality, mobility, and quality of life, making the elderly more vulnerable to severe complications. The implications of this aging trend for public health policies and hospital management are profound, requiring specialized care. Identifying clinical predictors related to frailty and musculoskeletal disorders is crucial to improving outcomes and personalizing care. This study aims to investigate the relationship between musculoskeletal complaints and physical performance in frail and pre-frail elderly individuals, contributing to the development of more effective rehabilitation strategies for this growing population.

Objectives: To associate functional performance, gait mechanics, respiratory function, and the history of musculoskeletal dysfunctions among frail and pre-frail elderly individuals in hospital admission.

Methods: Twenty-seven elderly individuals aged 60 or older, classified as frail or pre-frail according to Fried's phenotype, were evaluated. The methodology included gait tests, grip strength, the Medical Research Council scale, the Timed Up and Go test, the Short Physical Performance Battery, the 10-meter walk test, kinematic gait assessment, and inspiratory muscle function. Additionally, pain levels and data from functional capacity and performance questionnaires, such as WOMAC, the Health Assessment Questionnaire, and the Lequesne Questionnaire, were analyzed. Statistical analysis was performed using Pearson's correlation test, with a significance level of $p < 0.05$ to determine correlations between pain levels, questionnaire scores, and functional capacity tests.

Results: The data analysis revealed no significant correlations between the variables, refuting the study's initial hypothesis. The absence of association between functional capacity, length of hospitalization, and musculoskeletal complaints may be explained by the fact that frail elderly individuals have multiple impairments, such as sarcopenia, immune system alterations, and comorbidities, making the musculoskeletal impact a secondary factor in their health and recovery.

Conclusion: According to the findings of this study, functional performance, gait mechanics, and respiratory function are not associated with the history of musculoskeletal dysfunctions among frail and pre-frail elderly individuals in hospital admission. It is suggested that the functional impairment in frail individuals is influenced by multidimensional factors, with musculoskeletal complaints being a lesser factor compared to other health issues affecting these individuals.

Implications: The results of this study highlight the importance of a multidimensional approach in physical therapy for frail and pre-frail elderly individuals, considering factors such as sarcopenia and comorbidities. The analysis reinforces the relevance of personalizing care in hospital management and the need for comprehensive assessments in the training of physical therapists. Additionally, the findings contribute to the understanding of how rehabilitation

programs can be more effective by addressing frailty in an interdisciplinary manner.

Keywords: Aging, Frailty, Functional Capacity

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EFFECTS OF PHYSICAL EXERCISE AND DUAL-TASK COGNITIVE STIMULATION ON COGNITIVE DECLINE IN TYPE 2 DIABETES: AN INTEGRATIVE REVIEW

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Background: Type 2 Diabetes Mellitus (T2DM) is associated with cognitive decline in older adults due to metabolic, neuroinflammatory, and vascular alterations. These changes contribute to functional impairment, increasing the risk of falls and dependence on daily activities. Effective interventions are necessary to mitigate these effects and promote healthy aging. Physical exercise, particularly resistance training, and dual-task cognitive stimulation have been proposed as promising strategies to enhance cognitive function and functional independence in this population.

Objectives: This study aimed to analyze the effects of physical exercise and dual-task cognitive stimulation on cognitive decline in individuals with T2DM through an integrative review of the literature.

Methods: An integrative review was conducted by searching PubMed, SciELO, LILACS, Web of Science, and Scopus databases. Original studies, systematic reviews, and meta-analyses published between 2005 and 2025 were included. The selected studies investigated interventions involving physical exercise and dual-task cognitive stimulation targeting cognitive decline in individuals with T2DM. Studies were analyzed regarding methodological characteristics, interventions, and cognitive outcomes.

Results: The findings indicate that insulin resistance, neuroinflammation, and vascular dysfunction contribute to cognitive decline in individuals with T2DM. Physical exercise, especially resistance training, and dual-task interventions have demonstrated benefits in neural plasticity, cerebral metabolism, and cognitive function. Improvements were observed in executive functions, memory, attention, balance, and motor coordination, which are crucial for functional independence and fall prevention. However, the methodological heterogeneity across studies and the limited number of longitudinal clinical trials highlight the need for further research.

Conclusion: Evidence suggests that physical exercise and dual-task cognitive stimulation are effective in mitigating cognitive decline in older adults with T2DM. These interventions contribute to glycemic control, reduce neuroinflammation, and improve cognitive and motor functions. Future studies should focus on high-quality, longitudinal clinical trials to establish standardized protocols and confirm long-term benefits.

Implications: The incorporation of resistance training and dual-task cognitive stimulation into rehabilitation programs for individuals with T2DM may enhance cognitive and functional outcomes, promoting independence and reducing the risk of falls. Further

research is needed to strengthen evidence-based practice in this field.

Keywords: Type 2 Diabetes Mellitus, Cognitive Decline, Rehabilitation

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EXERCISE INTERVENTIONS FOR GAIT IN OLDER ADULTS WITH OSTEOPOROSIS: A NARRATIVE REVIEW

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Background: Older adults with osteoporosis may exhibit impaired gait due to structural and biomechanical changes and, in addition to age-related changes, such as reduced muscle mass and strength, balance impairments and reduced motor control and cognitive function, they are more susceptible to falls and fractures. Therefore, interventions focused on gait in this population are important for maintaining functional independence and quality of life.

Objectives: To organize scientific literature from the last 10 years on exercises designed to improve gait parameters in older adults with osteoporosis.

Methods: The Health Sciences Descriptors (DeCS/MeSH) used to search for articles were “osteoporosis”, “exercise”, “gait” and “aged” in the Cochrane Library and PubMed databases as well as in the Web of Science database via the CAPES Portal. Articles published in the last 10 years in English that studied the effects of exercise on gait in older adults with osteoporosis were included. After reviewing the titles and abstracts, review articles, meta-analyses, case reports, pilot studies, cross-sectional studies, duplicate articles, restricted access articles and those not directly responding to the objectives of this review were excluded.

Results: After the articles search and application of inclusion and exclusion criteria, 4 articles were analyzed for this review. It is important to emphasize that 2 articles provided follow-up data from the other 2 original studies included in this review, presenting the long-term effects of the interventions performed. One of the interventions consisted of balance training associated with resistance training for 12 weeks, with sessions twice a week. The other intervention involved dual-task and multi-task balance training with and without the addition of walking for at least 30 minutes, also for 12 weeks, three sessions per week. It is noteworthy that most of the study sample consisted of elderly women with osteoporosis. Balance training associated with resistance training did not provide significant effects in the gait speed of older women with osteoporosis immediately after the intervention or three months after the intervention when compared with the control group. However, balance training with dual-task and multi-task exercises, with and without the addition of walking, promoted improvements in the preferred walking speed and fast walking speed of elderly individuals in the short term, with the benefits remaining for six months after the intervention.

Conclusion: Balance training is an intervention of interest for studying the improvement of the gait of older adults with osteoporosis, especially when combined with multi-task training involving cognitive and/or motor demands. Further research is suggested to

analyze gait as the primary outcome of interventions with different exercise modalities for both elderly men and women with osteoporosis, in order to define more effective short and long-term strategies for this population.

Implications: From this review, it is still difficult to determine whether balance training combined with other types of exercise brings benefits to elderly people with osteoporosis. However, balance training with multi-task exercises deserves attention, as it simulates everyday situations, making elderly people more prepared and confident while walking.

Keywords: Aged, Gait, Osteoporosis

Conflict of interest: The authors declare no conflict of interest.

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PREVALENCE AND FACTORS ASSOCIATED WITH CHRONIC BACK PAIN IN ELDERLY BRAZILIANS: DATA FROM THE 2019 NATIONAL HEALTH SURVEY

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Background: Chronic back pain (CHP) is a prevalent condition in the general population and has been associated with socioeconomic, clinical, and health factors. Despite this, studies with elderly people involving all regions of Brazil are not yet available.

Objectives: To analyze the prevalence and factors associated with chronic back pain in elderly Brazilians.

Methods: This is a cross-sectional study that used data from the 2019 National Health Survey, with 23,144 people aged 60 years or older. The factors associated with CHD were established based on the estimates of odds ratios by the binary logistic regression model, using the Statistical Package for the Social Sciences (SPSS) program, version 27.0.

Results: The prevalence of CHD among elderly Brazilians corresponded to 31.1% (95% CI: 31.0-31.1). The following variables were consolidated as associated factors: male sex (OR: 0.88; 95% CI: 0.87-0.89), age group from 70 to 79 years (OR: 1.16; 95% CI: 1.15-1.16) and 80 years and over (OR: 1.16; 95% CI: 1.15-1.17); lack of education (OR: 1.06; 95% CI: 1.06-1.07), 1 to 4 years of education (OR: 1.47; 95% CI: 1.45-1.48), 5 to 8 years of education (OR: 0.94; 95% CI: 0.93-0.96); income of up to 1 minimum wage (OR: 1.42; 95% CI: 1.40-1.43), 1 to 2 minimum wages (OR: 1.29; 95% CI: 1.28-1.31); absence of partner (OR: 1.16; 95% CI: 1.15-1.16); perception of health as regular (OR: 0.61; 95% CI: 0.60-0.62) and poor/very poor (OR: 1.26; 95% CI: 1.25-1.27); sleep problems (OR: 0.85; 95% CI: 0.84-0.86); presence of multimorbidities (OR: 0.74; 95% CI: 0.73-0.74); use of medications (OR: 3.17; 95% CI: 3.14-3.20); dependence for basic (OR: 0.40; 95% CI: 0.39-0.40) and instrumental activities of daily living (OR: 1.19; 95% CI: 1.18-1.20); body mass index (OR: 1.02; 95% CI: 1.02-1.02); depression (OR: 1.19; 95% CI: 1.18-1.20); and occurrence of falls (OR: 0.63; 95% CI: 0.62-0.63).

Conclusion: The prevalence of CHD was high and associated with socioeconomic, clinical, and health variables.

Implications: The results shown may provide support for the implementation of health actions aimed at elderly Brazilians.

Keywords: Elderly health, Risk factors, Back pain

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THE INFLUENCE OF VISUAL CONTRIBUTION ON MUSCLE ACTIVITY DURING VISUAL FEEDBACK TASKS WHILE STANDING

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Background: Visual biofeedback has been widely used in training programs aimed at improving postural balance through the reduction of postural sway. However, studies have shown variability between individuals in their ability to reduce postural sway while using visual biofeedback, suggesting that some individuals may not rely heavily on visual cues to adjust their posture. An important question arising from these findings is whether individuals who rely on visual information differ from those who do not in their postural strategies when engaging in biofeedback tasks.

Objectives: This study investigated the effect of visual contribution on muscle activity and postural sway in young adults while standing and using different visual biofeedback tasks.

Methods: Twenty participants performed four distinct postural tasks, each lasting sixty (60) seconds: (1) Eyes open (EO), as a control condition; (2) Eyes closed (EC); (3) center of pressure (CoP) biofeedback using 2 cm (3a) and 4 cm (3b) targets; and (4) wrist-controlled laser biofeedback. Electromyograms (EMG) were collected from the right tibialis anterior (TA) and medial gastrocnemius (MG), and CoP displacement was measured in the anterior-posterior (AP) and medial-lateral (ML) directions. The index, based on percentage difference of COP sway area [(EC area EO area)/(EC area +EO area) × 100] was used to determine the weight of visual information in postural control, dividing individuals into vision or non-visual. The Friedman test was used, followed by the post-hoc Wilcoxon test for pairwise comparisons between conditions, with a significance level of 5%.

Results: Eight individuals were classified as visual, with a larger COP sway area in the EC than in the EO condition, while eleven (~58%) were classified as non-visual. In the visual group and when considering CoP biofeedback, the RMS of TA activity increased when using 2 cm target ($p = 0.047$) in relation to EO, but without differences in CoP variability. In the non-visual group, there were no significant differences in muscle activity, but the SD of the AP CoP and CoP sway area decreased with the 2 cm and 4 cm targets when compared to EO ($p < 0.05$). For laser biofeedback, no differences in muscle activity were observed; however, the SD of the AP CoP increased during this biofeedback task compared to the EO condition, regardless of the visual group.

Conclusion: Postural adaptations to CoP biofeedback appear to depend on an individual's reliance on vision for postural control and

the specific biofeedback protocol used. Visual-reliant individuals exhibit increased muscle activation when required to achieve a smaller reduction in CoP sway, as observed with the 2 cm target. In contrast, non-visual individuals reduce sway without additional muscular effort, regardless of the target size. Moreover, visual reliance did not influence postural strategy during laser biofeedback, as both groups demonstrated increased CoP sway variability under this condition.

Implications: These findings suggest that an individual's reliance on vision for postural control should be considered when developing postural sway biofeedback protocols. Visual-reliant individuals may exhibit increased muscle activity in response to interventions aimed at enhancing postural stability or reducing postural sway.

Keywords: Biofeedback, Electromyography, Postural Control

Conflict of interest: The authors declare no conflict of interest.

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STANDARDIZING HEALTH-RELATED QUALITY OF LIFE ASSESSMENT FOR OLDER ADULTS: INTEGRATING SF-36 AND ICF CODES FOR IMPROVED HEALTHCARE MANAGEMENT

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Background: The global aging population is rapidly increasing, prompting the United Nations to declare the "Decade of Healthy Aging" (2021-2030) with the goal of improving the quality of life for older adults. Health-related quality of life (HRQoL) is critical in this context, and the International Classification of Functioning, Disability, and Health (ICF) provides a standardized framework for its assessment.

Objectives: To develop a more precise method of assessing HRQoL using ICF codes, facilitating targeted interventions for older adults and improving healthcare management.

Methods: A cross-sectional study was conducted with older adults aged 60 and above who accessed primary healthcare services and had no cognitive impairment. Participants underwent HRQoL assessment using the SF-36, and ICF codes previously linked to SF-36 domains were classified using ICF qualifiers. A simple calculation method was developed to convert SF-36 scores into ICF qualifiers.

Results: The study included 52 participants, with a mean age of 71.6 ± 7.0 years, 92.3% of whom were women. The ICF framework qualified 27 codes from SF-36 domains. Moderate impairments were observed in the "Bodily Pain," "General Health," and "Vitality" domains, while "Physical Functioning," "Social Functioning," and "Mental Health" showed mild impairments. No impairments were noted in the "Role Physical" and "Role Emotional" domains.

Conclusion: This approach offers a more interpretable method for assessing HRQoL impairments, making it a valuable tool for evaluating the health of older adults. The integration of ICF standardizes assessments, improves communication between healthcare providers, and streamlines data collection, thereby enhancing overall healthcare management for older adults.

Implications: This study provides a more precise and standardized approach to assessing HRQoL in older adults, which can inform the development of tailored interventions. The use of ICF qualifiers enables better communication and understanding across healthcare teams, potentially leading to more effective healthcare management. Additionally, this method can optimize healthcare provision for aging populations.

Keywords: Health-Related Quality of Life, Older Adults, Functional Assessment

Conflict of interest: The authors declare no conflict of interest.

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PSYCHOMOTOR SYNDROMES IN AGING

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Background: Aging is a complex and heterogeneous process characterized by a progressive decline in physiological functions. In aging, psychomotor syndromes are associated with neurodegeneration, cognitive decline, and psychiatric disorders. These syndromes involve motor changes such as bradykinesia, rigidity, tremors, apraxias, catatonia, dyskinesias, and psychomotor agitation. Understanding their mechanisms is essential for accurate diagnosis and proper management, aiming to reduce functional impact and improve the quality of life of older adults.

Objectives: To analyze the main psychomotor syndromes in aging, their neurobiological bases, clinical manifestations, and implications for differential diagnosis and therapeutic management.

Methods: We conducted a narrative literature review based on prospective studies on psychomotor syndromes, aging, and neurological disorders. We included original studies, reviews, and meta-analyses from 2000 to 2024 in electronic databases such as Cochrane Controlled Register of Trials, Lilacs, Medline, PubMed, SpringerLinks, and PsycINFO. The search terms used were psychomotor syndromes, aging, and psychiatric disorders. Studies that were irrelevant or had non-representative elderly samples were excluded.

Results: A total of 52 studies were selected, highlighting the following key aspects: bradykinesia and rigidity were the most prevalent motor changes, associated with Parkinson's disease and atypical parkinsonian syndromes. Apraxias were frequently observed in dementias, such as Alzheimer's disease. Essential tremors and tardive dyskinesias were linked to prolonged use of antipsychotics. Abnormal gaits, such as hemiparetic and cerebellar gaits, were associated with both neurological disorders and psychosocial factors.

Conclusion: Psychomotor syndromes in aging involve motor, cognitive, and emotional changes, requiring precise diagnosis and appropriate management. Understanding their mechanisms is essential for effective interventions and improving the quality of life of older adults. Medication use should be carefully monitored to minimize impacts and avoid associated complications.

Implications: This study is relevant as it contributes to understanding the neurobiological bases of psychomotor syndromes, enabling a more integrated approach to elderly patient care. It highlights the importance of improving physiotherapy practices, promoting personalized and effective interventions, and optimizing healthcare resource management by prioritizing early diagnoses and appropriate treatments for older adults with psychomotor disorders.

Keywords: Psychomotor Syndromes, Aging, Neurodegeneration

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IMPACTS OF A PILATES, ZUMBA AND THORACOABDOMINAL REBALANCING PROTOCOL ON THE CARDIORESPIRATORY CONDITIONS OF WOMEN WITH BREAST CANCER: PILOT STUDY

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Background: Breast cancer represents a relevant health problem both in Brazil and globally, bringing several adverse effects due to treatments, which may include surgeries and/or complementary therapies. Among these consequences, cardiorespiratory changes stand out and require special attention. Therefore, it is essential to develop rehabilitation strategies that promote adherence and effectiveness, through the implementation of a specific and detailed protocol for this population, which includes a combined global training of Mat Pilates, Zumba and Thoracoabdominal Rebalancing with the aim of improving the patients' cardiorespiratory condition.

Objectives: To evaluate the impacts of an exercise protocol consisting of Mat Pilates, Zumba and Thoracoabdominal Rebalancing on the cardiorespiratory conditions of women undergoing breast cancer treatment.

Methods: Controlled and randomized clinical trial, carried out with women after surgery and undergoing breast cancer treatment, randomized to the intervention group (IG = 8) that received the Zumba, Mat Pilates and Thoracoabdominal Rebalancing protocol and the control group (CG = 8) that did not receive the protocol. The protocol was carried out in 10 sessions, 2 per week on alternate days. Protocol consisting of monitoring initial and final signs (heart rate, diastolic and systolic blood pressure), reeducation of respiratory biomechanics using the Thoracoabdominal Rebalancing Method, 10 minutes of Zumba and 10 minutes of Mat Pilates. Before and after the protocol period, general and clinical characteristics, the physical activity questionnaire (IPAQ) and cardiorespiratory conditions were evaluated considering respiratory muscle strength (maximum inspiratory and expiratory pressures), peripheral muscle strength (handgrip test) and functional capacity using the sit-to-stand test. The variables were analyzed using specific intra (Wilcoxon) and intergroup (Mann-Whitney) statistical tests.

Results: The IG was 43.2 ± 7.2 years old and the CG was 59.3 ± 5.5 years old. 75% of the IG and 25% of the CG practiced physical activity. In the intragroup analysis, the IG showed a significant improvement in sit-to-stand test ($p = 0.048$), while the CG showed a significant worsening in maximum inspiratory pressure ($p = 0.039$) and in handgrip of the dominant hand ($p = 0.030$). In the intergroup analysis, there was a significant difference in systolic blood pressure ($p = 0.019$), with the CG having higher values and in the handgrip of the dominant hand ($p = 0.048$), with the IG having higher values. This indicates that the protocol has the potential to improve or maintain the variables analyzed in the study, since in participants who did not follow the protocol, a reduction in these variables was observed over time.

Conclusion: The treatment protocol had a positive impact on the cardiorespiratory conditions of the IG, considering sit-to-stand test and blood pressure, in addition to maintaining respiratory and peripheral muscle strength variables. While the patients in the CG, who did not undergo the intervention, had a negative impact on the inspiratory and peripheral muscle strength of the dominant hand.

Implications: The results found demonstrate the potential that this protocol has in providing improvements in the cardiorespiratory conditions of this population, through the combination of specific and well-structured exercises, improving recovery and functionality.

Keywords: Breast Neoplasms, Breathing Exercises, Exercise Movement Techniques

Conflict of interest: The authors declare no conflict of interest.

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CELLULAR INTEGRITY OF PEOPLE WITH LUNG OR HEAD AND NECK CANCER UNDERGOING A HOME-BASED PHYSICAL TRAINING PROGRAM DURING ONCOLOGICAL TREATMENT

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Background: Lung and head cancer have high incidence and mortality rates. Chemotherapy and radiotherapy are widely used therapeutic modalities in cancer treatment, acting by destroying tumor cells. However, these treatments can also affect healthy cells, leading to adverse effects and damage to cellular integrity and function. Considering the difficulty of going to a training center, the immunosuppression of this population and the benefits of physical exercise in healthy people, home physical training can be a complement to cancer treatment.

Objectives: To evaluate the cell integrity of people with lung or head and neck cancer undergoing a home-based physical training program during cancer treatment.

Methods: People with primary lung or head and neck cancer were randomized into a training group (TG) and a control group (CG). The TG performed home-based physical training during cancer treatment. Aerobic training was performed through daily walks of at least 20 minutes, seven times a week, and resistance training of elbow flexion, knee flexion and extension with a green elastic band (2.3 kg of resistance), twice a week. The training time followed the duration of cancer treatment established individually by the oncologist. The CG performed only cancer treatment without any type of physical exercise. The groups were evaluated before and after cancer treatment, regarding the cell integrity (phase angle of the bioelectrical impedance analysis). The paired t-test was used to verify the intragroup difference and the independent t-test for intergroup analysis. In addition, a linear regression with the cell integrity and training adherence was performed.

Results: Fifty-four people were evaluated, most were diagnosed with head and neck cancer (60%), men (78%), with overweight and in an advanced stage of the disease (74%). The TG performed the home physical training program for a mean of 14 weeks, with 52%

mean adherence. Both groups showed a decrease in the phase angle, but this decrease was significant only in the CG (TG = Baseline: 4.96 ± 0.68 ; Final: 4.72 ± 0.69 ; $p = 0.060$) (CG = Baseline: 5.05 ± 0.96 ; Final: 4.59 ± 0.82 ; $p = 0.001$), but there was no difference between the groups ($p = 0.210$). When stratifying the sample, a significant decrease in the CG was also observed in men ($p = 0.005$), people with lung cancer ($p = 0.045$), head and neck cancer ($p = 0.016$) and advanced stage cancer ($p = 0.003$). However, there was no statistical difference between groups. In addition, the linear regression demonstrated that greater adherence to home training ($> 60\%$) was associated with a smaller reduction or better maintenance of the cell integrity.

Conclusion: People with lung or head and neck cancer who underwent home physical training during cancer treatment appear to have maintenance of cellular integrity, especially in individuals with greater adherence to physical training.

Implications: These findings highlight the potential of home exercise programs as a strategy to complement oncological care. Additionally, these results reinforce the need for healthcare policies that promote physical activity as an adjunct therapy in cancer care. **Keywords:** Bioelectrical Impedance, Physical Training, Lung Neoplasms

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SLEEP QUALITY AND MUSCLE STRENGTH IN CANCER PATIENTS: A NARRATIVE REVIEW

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Background: Sleep disorders are prevalent among cancer patients. Reduced nighttime sleep, as a type of sleep disorder, diminishes quality of life and is associated with depression, anxiety disorders, fatigue and irritability. This directly impacts the musculoskeletal quality, leading to muscle weakness. Both shorter or longer sleep durations are significant factors influencing changes in body composition. These changes increase the risk of obesity and sarcopenia—a musculoskeletal disorder characterized by a generalized loss of muscle strength and mass. Cascades of anabolic and catabolic hormones, mediated by growth hormone, insulin-like growth factor I, cortisol, testosterone, and insulin—critical to the improvement and restoring muscle fibers, functionality, and strength—are influenced by sleep quality. Chronic insomnia can also disrupt the hypothalamic-pituitary-adrenal axis, leading to endocrine changes.

Objectives: This narrative review aimed to analyze the influence of sleep quality on muscle strength in cancer patients.

Methods: This descriptive review focused on studies conducted between 2021 and 2025. A total of 25 studies were selected from databases including LILACS, MEDLINE via PubMed, SciELO, and PEDro. The search utilized a combination of terms and keywords with Boolean operators OR and AND. The selected descriptors were derived from the MeSH platform: Sleep Quality, Sleep Wake Disorders, Muscle Strength, and Cancer Survivors.

Results: The results showed that sleep quality issues, such as insomnia, obstructive sleep apnea syndrome (OSAS), and excessive daytime sleepiness, are common and significant complaints among cancer patients. These issues may be related to pre-existing sleep disorders, psychological conditions associated with cancer, or side effects of cancer treatment. Reduced sleep duration and quality

disrupt cellular functions by inhibiting protein synthesis pathways and activating muscle degradation pathways. Physiotherapists also face challenges in effectively screening and identifying these contributing factors.

Conclusion: Poor sleep quality is a significant public health concern, as it is both widespread and associated with numerous adverse effects on the quality of life of cancer patients. The use of validated assessment tools is essential to guide physiotherapeutic interventions and promote health.

Implications: This review has the potential to significantly advance oncology physiotherapy research by addressing an underexplored yet highly relevant area. Nonetheless, additional research is needed to better understand the relationship between sleep quality and muscle strength in cancer patients, and to enhance clinical practices. This review underscores the importance of evaluating these connections to identify the underlying causes of patient conditions, ultimately aiming to deliver holistic and comprehensive care.

Keywords: Sleep Quality, Muscle Strength, Cancer Survivors

Conflict of interest: The authors declare no conflict of interest.

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EFFECT OF SLEEPER STRETCH AND CROSSBODY STRETCH ON PAIN AND GLENOHUMERAL MOBILITY IN SYMPTOMATIC OVERHEAD ATHLETES: A RANDOMIZED CLINICAL TRIAL

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Background: Various techniques for stretching the posterior shoulder capsule have been incorporated into rehabilitation and injury prevention programs for overhead athletes. The Cross-body Stretch and Sleeper Stretch techniques are discussed in literature with the aim of relieving pain and increasing internal rotation (IR) range of motion. However, there are still no studies comparing the effects of these stretches on overhead athletes with pain and glenohumeral movement limitations.

Objectives: To compare two techniques for stretching the posterior capsule in terms of pain relief and glenohumeral range of motion in overhead athletes.

Methods: This is a randomized, controlled clinical trial with two parallel arms. The sample consisted of competitive-level overhead athletes who exhibited a minimum difference of 20° in IR limitation compared to the non-dominant side and reported pain during daily or sports activities of at least 2/10 on the Numeric Visual Scale (NVS). Participants underwent the following steps: (a) eligibility screening; (b) outcome assessment (pain, IR range of motion) by blind evaluators; and (c) intervention. All participants were evaluated twice during the study (baseline and after four weeks). After evaluation and randomization (1:1), participants were allocated to either the Cross-body Stretch group (GCB) or the Sleeper Stretch group (GSS). The exercises were performed three times a week, in 5 sets of 30 seconds each, with a 30-second rest between sets, for 4 weeks. The first session was conducted in person, with a

demonstration of the technique and provision of an illustrated guide. Subsequent sessions were self-administered and remotely supervised.

Results: Thirty-five participants were included in the study (GSS = 18; GCB = 17). After 4 weeks of intervention, both stretches promoted pain reduction (GSS: MD = -2.17 points; 95% CI = -3.13 to -1.21; GCB: MD = -1.54 points; 95% CI = -2.53 to -0.55), but there was no difference between the groups (MD = 0.14; 95% CI = -1.21 to 1.48). The IR deficit was reduced in both groups. The GSS showed a reduction of -14.69° (95% CI = -19.48 to -9.89), and the GCB showed a reduction of -14.77° (95% CI = -19.70 to -9.84). There was no significant difference between the groups (MD = 3.08°; 95% CI = -1.74 to 7.89).

Conclusion: For competitive-level overhead athletes with IR deficit and shoulder pain, both the sleeper stretch and the cross-body stretch are effective in improving pain and mobility after four weeks of intervention, with no superiority between the techniques.

Implications: In addition to improving the established outcomes, no athlete experienced adverse effects from the techniques throughout the protocols. Therefore, both can be appropriate strategies for reducing pain and improving glenohumeral mobility in overhead athletes.

Keywords: Overhead athletes, shoulder pain, glenohumeral internal rotation deficit

Conflict of interest: The authors declare no conflict of interest.

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IMMEDIATE AND SHORT-TERM EFFECTS OF LOW-LEVEL LASER ON ATHLETE'S FUNCTIONAL PERFORMANCE: A DOUBLE BLINDED RANDOMIZED CLINICAL TRIAL

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Background: Recovery from exercise-induced muscle fatigue is crucial for optimizing athletic performance, as maintaining appropriate functional capacity helps prevent injuries. Low-level laser therapy (LLLT) has shown potential benefits in muscle tissue recovery. However, its immediate and short-term effects on functional performance remain largely unexplored.

Objectives: This study aimed to evaluate the immediate and short-term effects of LLLT on the functional performance of athletes experiencing exercise-induced muscle fatigue.

Methods: This study is a double-blind, randomized, placebo-controlled clinical trial. A total of 24 athletes were included based on the following criteria: they were handball or volleyball players, aged 18 to 35 years, with a consistent training routine of at least two sessions per week. Participants were randomly assigned to either the Intervention Group (IG, n = 12) or the Control Group (CG, n = 12). The study involved a daily fatigue protocol targeting the quadriceps muscles, consisting of 30 repetitions of jump squats, followed by either laser therapy or a placebo treatment for five consecutive days. The physiotherapist administering the laser therapy and the evaluator assessing the outcomes were both blinded to the participants' group assignments. Functional performance was assessed using the horizontal jump test, immediately after the laser or placebo therapy, using a modified hop test. Immediate effects and short-term effects were evaluated by comparing functional

performance between groups after laser therapy or a placebo treatment on the first and fifth day, respectively.

Results: No significant differences were observed between groups regarding the immediate or short-term effects of LLLT on functional performance [$p = 0.099$, 95% CI (130 ± 34.2 to 146 ± 32.0)]; [$p = 0.996$, 95% CI (145 ± 31.9 to 165 ± 37.3)], respectively.

Conclusion: This study found that LLLT, when applied immediately after exercise-induced muscle fatigue and over five consecutive days, did not significantly improve functional performance compared to placebo.

Implications: In this study, LLLT was applied post-fatigue based on the hypothesis that it could enhance functional performance. However, the findings do not support this premise, as current evidence remains insufficient to confirm that immediate post-fatigue LLLT application enhances functional outcomes. Further research is needed to establish its efficacy in this context.

Keywords: Laser Therapy, muscle fatigue, functional performance

Conflict of interest: The authors declare no conflict of interest.

Funding: PIBIC.

Ethics committee approval: Not applicable.

Registration: PROSPERO-CRD42024523252.

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PREVALENCE AND ASSOCIATED FACTORS OF URINARY INCONTINENCE IN BRAZILIAN FEMALE RUNNERS: PRELIMINARY RESULTS FROM THE STATE OF AMAPÁ, AMAZON

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Background: Urinary Incontinence (UI) is the most prevalent pelvic floor dysfunction. High-impact sports, such as running, increase in intra-abdominal pressure, which can lead to UI. The prevalence of UI among female runners ranges from 19.6% to 44%. Despite its health benefits, UI may negatively impact on running performance. In northern Brazil, particularly in Amapá, there is a lack of epidemiological data on UI in female runners. This underscores the need for further research to assess risk factors, population characteristics, and the impact on runners' Quality of Life (QoL), ultimately guiding prevention and treatment strategies.

Objectives: This study aims to identify UI prevalence in female runners, analyzing sociodemographic, anthropometric and urogynecological profiles, and UI subtypes: Stress Urinary Incontinence (SUI), Urgency Urinary Incontinence (UUI), and Mixed Urinary Incontinence (MUI). Additionally, we sought to identify risk factors for UI (age, number of pregnancies, obesity, among others). This analysis aims to establish correlations between running, UI and QoL.

Methods: This observational, cross-sectional study followed CHERIES guidelines. Conducted online in Brazil (2024–2025), it included female runners aged 18–59 who had been running for ≥ 6 months, ≥ 2 times/week. Exclusion criteria included pregnancy, postpartum < 12 months, recent pelvic surgery, and neurological diseases. Data collection was conducted via Google Forms, with participants recruited through social media and running groups. Validated questionnaires (ICIQ-SF, QUID-Br, and 3IQ-Br) were used. Statistical analysis was performed using SPSS and Poisson regression ($p < 0.05$, CI 95%).

Results: From January 2024 to March 2025, 72 women from the metropolitan region of Amapá were contacted. Of these, 7 (13.20%) reported UI. The mean age was 34.38 years (± 13.21), mean weight

was 67.71 kg (± 9.39), and mean BMI was 25.65 kg/m² (± 2.83). A total of 57.12% were white. UI episodes in the last three months were reported by 85.71%, with a weekly frequency of once or less (42.86%) and only a small amount of urine loss (85.71%). The most prevalent type was MUI (71.42%), followed by SUI (28.57%). No cases of UUI were reported. UI was not a limiting factor for running. Regarding QoL, 42.86% reported a mild impact, 28.57% moderate, and 14.29% severe. **Conclusion:** This study found a low prevalence of UI among female runners, with a predominance of MUI, contrary to the literature which suggests that SUI is the most common in high-impact athletes. UI did not cause limitations in sports practice and had a mild to moderate impact on QoL. Future research should explore associated factors and expand the sample to other regions of Brazil to develop preventive and therapeutic strategies.

Implication: This study contributes to the literature by addressing a gap in knowledge on the prevalence and impact of urinary incontinence in female runners from northern Brazil. The findings may enhance preventive and therapeutic strategies, supporting physiotherapists in pelvic floor rehabilitation. Additionally, they highlight the importance of pelvic health in women's sports, encouraging early interventions to minimize impacts on athletic performance and QoL.

Keywords: Urinary Incontinence, Running, Female

Conflict of interest: The authors declare no conflict of interest.

Funding: PIBIC-AF/CNPq (IC).

Ethics committee approval: CAAE: 68316123.7.0000.5188.

Registration: Not applicable.

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ASSOCIATION BETWEEN THE LUMBOPELVIC STABILITY TEST AND MUSCLE STRENGTH IN SWIMMING ATHLETES

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Background: The trunk plays an important role in transferring energy to the distal body segments during sports gestures. This region can be assessed through the lumbar-pelvic stability test, where the degree of pelvic tilt is observed, and muscle weaknesses can be identified by the presence of pelvic drop. In swimmers, the factors associated with lumbopelvic stability are poorly understood, including the isometric muscle strength of the muscles of the trunk, shoulder, hip, and knee.

Objectives: To evaluate the association between the lumbopelvic stability test and isometric muscle strength of regions of trunk, shoulder, hip, and knee in swimming athletes.

Methods: This is a cross-sectional study approved by the research ethics committee. The inclusion criteria were swimmers athletes of both sex, age between 18 and 60 years old, with competitive practice in the past one year, and regular training for at least twice a week. Lumbopelvic stability was assessed using the one-legged bridge test with spherical markers on the anterior superior iliac spines, where the pelvic tilt (in degrees) was observed and recorded. Two-dimensional analyses were conducted using Kinovea 0.9.5 software (Kinovea Open Source Project) for Windows®. Additionally, the peak of isometric muscle strength of the shoulder elevators, shoulder internal and external rotators, lower trapezius, serratus anterior, trunk extensors and flexors, hip extensors,

abductors, and rotators (HIPSIT), hip flexors, and knee extensors were assessed using a hand-held dynamometer (Lafayette, Model 01165A). The association between the lumbopelvic stability test and strength was verified using multiple linear regression. Data analysis was performed using SPSS Inc., Chicago, IL version 23.0.

Results: A total of 27 athletes participated in the study, with mean age of 32.78 $\pm$ 14.64, 6.96 $\pm$ 6.05 years of sports practice, and 15 (56 %) were men. The results of the lumbopelvic stability test showed a significant association ($p = 0.026$) with the muscle strength of the hip flexors, explaining 15% of the test. Additionally, the standardized beta ($\beta = -0.42$) showed a negative result, indicating that the greater the strength of this muscle group, the smaller the pelvic tilt. All other muscles were not significantly associated with lumbopelvic stability tests.

Conclusion: The lumbopelvic stability test is associated with the muscle strength of the hip flexors in swimming athletes.

Implications: The study suggests the importance of thoroughly evaluating the strength of the hip flexor muscle group in swimming athletes, as it is the main influencing group in the lumbopelvic stability test, which can affect the pelvic tilt, leading to biomechanical imbalance and potentially becoming a risk factor for pain or injuries.

Keywords: Kinetic chain, risk factors, athletes

Conflict of interest: The authors declare no conflict of interest.

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SLEEP QUALITY IN SWIMMERS WITH AND WITHOUT SHOULDER PAIN: A CROSS-SECTIONAL ANALYSIS

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Background: Musculoskeletal injuries are common in high-performance overhead athletes. Current studies indicated that injuries can be influenced by various factors, including psychological, biological, and social aspects. Sleep quality is an essential factor for the physical and mental health of athletes and can be influenced by several variables, such as anxiety, stress, and nutrition. Poor sleep quality may increase the risk of injury. Therefore, clinicians should assess sleep quality using validated instruments, such as the Pittsburgh Sleep Quality Index (PSQI). Nevertheless, it is still unclear the role of sleep quality in the shoulder pain of swimmers, due to the lack of studies directly evaluating the relationship between these factors. Our study hypothesizes that athletes with shoulder pain will present poorer sleep quality, compared to those without shoulder pain.

Objectives: To compare sleep quality between swimmers with and without shoulder pain.

Methods: This is a cross-sectional observational study, which was approved by the Ethics Research Committee. We included competitive swimmers with or without musculoskeletal shoulder pain, of both sexes, aged between 12 and 60 years, with at least one year of competitive experience and a training regimen of at least twice a week. Sleep quality was assessed using the PSQI, which consists of

19 items across seven domains, as well as five additional questions for the bed partner. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 23.0. Data normality was assessed using the Shapiro-Wilk test. Between groups-comparisons for normally distributed data were conducted using Student's t-test, while the Mann-Whitney U test was used for non-normally distributed data. Effect size (Cohen's d) was calculated for between-group differences.

Results: A total of 49 competitive swimmers were included in the study, with a mean age of $30,82 \pm 14,34$, $7,18 \pm 6,41$ years of sports practice, and 22 (44,9%) were women. The mean and standard deviation of the PSQI score for each group were as follows: Shoulder pain group: 6.30 ± 0.43 and no shoulder pain group: 5.90 ± 0.45 . Results from comparison analysis indicated no statistically significant difference between the groups ($p = 0.53$; Mean difference (95% CI): $0.40 (-0.90 \pm 1.71)$; Effect size (Cohen's d) = 0.90).

Conclusion: The results indicate no statistically significant difference in sleep quality between athletes with and without shoulder pain.

Implications: The results of this study suggest that sleep quality is not different between swimmers with and without shoulder pain. However, different findings may be found using other measurement instruments for assessing sleep quality.

Keywords: Athletes, Shoulder Pain, Sleep Quality

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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PROFILE OF PARA ATHLETES AND CHARACTERIZATION OF SPORTS INJURIES DURING THE 2023 PARALYMPIC SCHOOL GAMES

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Background: Injuries during the physiological growth phase can not only compromise the development of sports skills, but also impair the physical development expected for their age group. Adaptive mechanisms to training are the main determinants of the prevalence and location of injuries, traumas and musculoskeletal complaints. Despite advances in research on the performance and health of para-athletes, there is still a significant gap in knowledge about the epidemiology of sports injuries in young para-athletes, leaving aside the particularities of the young population, which has distinct physical and psychological characteristics, which makes it difficult to create preventive protocols and appropriate treatment strategies.

Objectives: Identify and characterize the profile of para-athletes participating in the competition and analyze the occurrence of sports injuries in para-athletes during the 2023 School Paralympics.

Methods: This is an observational, descriptive and analytical study designed according to the recommendations of the STROBE protocol (Strengthening the Reporting of Observational Studies in Epidemiology). The study was developed during the national stage of the 2023 edition of the Brazilian School Paralympics. The inclusion criteria were students of both sexes with physical, visual and intellectual

disabilities, aged between 11 and 18 years, regularly enrolled in the school they were representing and attending elementary, high school or special education in public or private schools. The participating para-athletes were recruited at the Brazilian Paralympic Training Center at two different times: on competition days during the moments preceding their events (first stage) and at the end of the para-athletes' participation in the championship (second stage). Two questionnaires were used as data collection instruments: the general data questionnaire for participants, applied in the first stage, and the Oslo Sports Trauma Research Center - Questionnaire on Health Problems (OSTRC-BR), applied in the second stage. All questionnaires were applied in person, in an individual interview and during the sporting event.

Results: The sample consisted of 640 para-athletes, 253 (60.5%) female and 387 (60.5%) male, with a mean age of 14.06 years. 41 (14.9%) of the participants reported injuries/illnesses, and the team with the highest percentage of injured members was from the state of Tocantins (14.8%). Most of the injured athletes had intellectual disabilities (41.46%), practiced athletics (56.9%) and were in the final years of elementary school (21.95%), with a mean age of 14.56 years, and the majority were male (56.86%).

Conclusion: A significant difference was observed in the occurrence of injuries between young people who had been practicing sports for more than 2 years and those who were just beginning their sports career. It is suggested that future studies explore each sport modality, the types of disabilities and the amateur or professional profiles of the participants in more specific ways, reducing biases and obstacles in parasports research.

Implications: This pioneering study fills a gap in knowledge about the profile of young para-athletes and raises a reflection for teams that monitor para-athletes, highlighting the essential role of physiotherapy in preventing and treating injuries and in improving sports performance in a safe manner.

Keywords: Sports Injuries, Musculoskeletal Injuries, Parasports

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KEY FACILITATORS IN PHYSICAL THERAPY ASSESSMENT IN BRAZILIAN DEAF SPORTS

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Background: Deaf Sports play a fundamental role in fostering self-esteem, quality of life, and social inclusion within the Deaf Community. Physical therapy is essential for maintaining the functional capacity of athletes who are Deaf and Hard of Hearing (D/HoH), yet specific challenges arise due to sociocultural and communication barriers. Effective communication strategies are crucial to ensuring accurate assessments and optimal treatment. Despite the growing recognition of these challenges, there is limited research exploring facilitators that enhance the assessment process for athletes who are D/HoH in Brazil.

Objectives: This study aimed to identify and analyze key facilitators that support physical therapists in conducting assessments of athletes who are D/HoH in Brazil, considering linguistic and

technological resources that contribute to effective interaction and clinical evaluation.

Methods: A qualitative cross-sectional study was conducted using focus group discussions. Brazilian physical therapists, both male and female, with at least three months of experience in Deaf Sports participated. Two online focus group sessions were held via Google Meet®. The discussion guide was developed by the research team based on existing literature on physical therapy and Deaf Sports. Data analysis was performed using Braun and Clarke's (2006) Thematic Analysis approach and Bardin's (2016) Content Analysis principles.

Results: Four physical therapists participated in the research and identified several key facilitators for the physical therapy assessment of athletes who are D/HoH. The presence of sign language interpreters was highlighted as essential for conducting comprehensive evaluations and ensuring clear communication. The use of technology, such as messaging apps and smartphones, was also considered a significant tool in bridging communication gaps. Additionally, lip reading and the use of gestures were reported as complementary methods to enhance interaction. The utilization of Brazilian Sign Language (Libras) and assistance from oralized athletes who are D/HoH further facilitated the assessment process.

Conclusion: The findings indicate that multiple strategies contribute to improving communication and assessment efficiency in the physical therapy care of athletes who are D/HoH. The integration of interpreters, technological resources, and alternative communication methods strengthens the therapist-athlete interaction and enhances evaluation accuracy.

Implications: These results emphasize the need for an inclusive approach that incorporates sign language interpreters, continuous training in sign language, and the adoption of digital communication tools in clinical practice. Supporting the use of these facilitators can significantly enhance accessibility, inclusion, and the overall effectiveness of physical therapy services for athletes who are D/HoH in Brazil.

Keywords: Physical Therapy Services, Persons With Hearing Impairments, Sports for Persons with Disabilities

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 61176022.4.0000.5108.

Registration: Not applicable.

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ANXIETY AND DEPRESSION IN SWIMMERS WITH AND WITHOUT SHOULDER PAIN: A CROSS-SECTIONAL ANALYSIS

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Background: Musculoskeletal injuries are common in overhead sports. Repetitive use of the upper limb in specific movements can lead to the development of pain and significant functional impairments, affecting athletic performance and quality of life. Psychological factors, such as anxiety and depression, can influence athletes' performance and overall well-being, particularly in those experiencing musculoskeletal pain. Shoulder pain is a common issue among swimmers due to the high demands of repetitive overhead movements, potentially impacting their mental health. Identifying

whether athletes with shoulder pain present higher levels of anxiety and depression can provide valuable insights for developing comprehensive rehabilitation strategies that address both physical and psychological aspects. The Hospital Anxiety and Depression Scale (HADS) is a widely used tool for assessing anxiety and depression symptoms in clinical and research settings. However, the relationship between shoulder pain and psychological distress in competitive swimmers remains unclear.

Objectives: To assess whether athletes with shoulder pain present higher scores for anxiety and depression based on the HADS.

Methods: This is a cross-sectional observational study, which was approved by the Ethics Research Committee. We included competitive swimmers, both with and without musculoskeletal pain, of both sexes, aged between 12 and 60 years, with at least one year of competitive experience and a training regimen of at least twice a week. Anxiety and depression were assessed using the HADS, which consists of 14 questions divided into two subscales. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 23.0. Data normality was assessed using the Shapiro-Wilk test. Between groups comparisons for normally distributed data were conducted using Student's t-test, while the Mann-Whitney U test was used for non-normally distributed data. Effect size (Cohen's d) was calculated for between-group differences.

Results: A total of 49 competitive swimmers were included in the study, with a mean age of $30,82 \pm 14,34$, $7,18 \pm 6,41$ years of sports practice, and 22 (44,9%) were women. No statistically significant differences were found between the groups for anxiety and depression. For the total HADS score the mean difference was 0.41 ((95% confidence interval [CI]: -3.094, 3.92, $p = 0.81$); Effect size (Cohen's d) = 1.74). For the anxiety subscale the mean difference was 0.85 ((95% CI: -1.34, 2.98, $p = 0.44$); Effect size (Cohen's d) = 1.83). For the depression subscale the mean difference was -0.43 ((95% CI: -2.22 to 1.35; $p = 0.62$); Effect size (Cohen's d) = 0.014).

Conclusion: The results indicate no statistically significant difference in anxiety and depression scores between athletes with and without shoulder pain.

Implications: The results of this study suggest that the anxiety and depression scores are not different between swimmers with and without shoulder pain. However, different results may be found using other measurement instruments to assess the anxiety and depression scores.

Keywords: Athletes, Anxiety, Depression

Conflict of interest: The authors declare no conflict of interest.

Funding: Empresa Brasileira de Serviços Hospitalares (Ebserh).

Ethics committee approval: No. 4.924.333.

Registration: Not applicable.

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PREVALENCE AND IMPACT OF CERVICAL AND SHOULDER PAIN ON RUNNING PERFORMANCE: PARTIAL SURVEY RESULTS FROM BRAZILIAN RUNNERS

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Background: Lower limb musculoskeletal injuries in runners are well-established in the literature; however, musculoskeletal injuries of the upper limbs related to running have been less frequently studied, and its impact on running performance remains unknown.

Objectives: The aim of study is to investigate the prevalence of neck and shoulder pain and the impact on running performance.

Methods: This prospective open survey study was conducted in accordance with the CHERRIES guideline recommendation. The study was conducted across the entire Brazilian territory using the Google Forms platform. Demographic data were collected, along with questions regarding the presence of cervical and shoulder pain. Among those who reported experiencing cervical and shoulder pain, they were also asked whether these pains limited their running performance. Finally, they completed two questionnaires to assess the levels of disability in the shoulder and cervical regions (SPADI and NBQ, respectively).

Results: 392 runners in all Brazilian territory answered this open survey which two-hundred ninety-one (58,16%) was women and one-hundred eighty-four (41,83%) was men. A total of 174 participants reported experiencing cervical and/or shoulder pain. Among them, 82 had cervical pain, corresponding to a prevalence of 20.92% (NBQ score = 20.65). Of these, 4 participants (4.88%) reported that cervical pain limited their running practice (NBQ score = 32.5). Additionally, 92 participants (23.47%) reported shoulder pain (SPADI score = 19.03), and among them, 5 (5.43%) stated that shoulder pain limited their running practice (SPADI score = 36.6). These preliminary findings suggest a moderate prevalence of cervical and shoulder pain among runners, with approximately 9% of affected individuals experiencing running limitations due to pain. Further studies are needed to better understand the relationship between cervical and shoulder pain and its impact on running performance.

Conclusion: These partial results suggest that the prevalence of neck and shoulder pain is 20.92% and 23.47%, respectively. However, only a small percentage of runners with cervical and/or shoulder pain experience limitations in running performance. Further studies are needed to identify the factors associated with the development of cervical and shoulder pain that may restrict running practice.

Implications: Understanding the impact of neck and shoulder pain on running performance can contribute to the development of preventive and rehabilitative strategies tailored to runners. Coaches, physiotherapists, and healthcare professionals should consider incorporating upper limb assessments and interventions into training programs to minimize potential biomechanical compensations and prevent further injuries. Future research should explore the underlying biomechanical and physiological mechanisms linking upper limb dysfunctions to running performance and injury risk. Additionally, longitudinal studies are needed to assess causality and the long-term effects of cervical and shoulder pain on runners' health and performance.

Keywords: Pain, running, prevalence

Conflict of interest: The authors declare no conflict of interest.

Funding: PIBIC/AF – CNPq.

Ethics committee approval: No. 4.359.315.

Registration: Not applicable.

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ASSOCIATION BETWEEN UPPER LIMB ROTATION TEST AND ISOMETRIC MUSCLE STRENGTH IN SWIMMERS

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Background: Functional tests are widely used in the assessment of sports injuries to analyze aspects such as muscle strength, power, and athlete agility, being routinely applied in clinical practice for the prevention and rehabilitation of these injuries. The Upper Limb Rotation Test (ULRT) are frequently used for the evaluation of the upper limb functional status of athletes. However, the association between ULRT scores and isometric muscle strength of the kinetic chain muscles in swimmers is not completely understood.

Objectives: To evaluate the correlation between the isometric muscle strength of the kinetic chain muscles and the ULRT in swimmers.

Methods: This is a cross-sectional study that includes swimmers of both sexes, aged between 12 and 60 years, with at least 1 year of competitive practice, and a minimum of two training sessions per week. This study was approved by Ethics Research Committee. The ULRT was performed with the swimmers in a modified flexion position (on their elbows), close to a wall. They performed trunk rotation and external shoulder rotation at 90° of abduction and external rotation, touching a tape on the wall as quickly as possible for 15 seconds. The athletes performed three trials, and the mean was considered for the analysis. The peak isometric muscle strength of the shoulder elevators (scaption), shoulder internal and external rotators, lower trapezius (LT), serratus anterior (SA), trunk extensors and flexors, hip abductors and rotators (HIPSIT), hip flexors (HF), and knee extensors (KE) were measured using a handheld isometric dynamometer. The association between ULRT and muscle strength was assessed with Pearson Correlation Coefficient, which was classified as weak (0–0.39), moderate (0.40–0.69), and strong (0.70–1.00). A significance level of $p < 0.05$ was adopted. The data were analyzed with SPSS software version 23.0.

Results: A total of 50 athletes participated in the study, with mean age of 30.46 ± 14.27 and 27 (54%) were male. The ULRT showed a weak positive correlation with internal shoulder rotators ($r = 0.36$; $p = 0.008$) and moderate positive correlation with shoulder elevators ($r = 0.40$; $p = 0.004$), external shoulder rotators ($r = 0.41$; $p = 0.002$), LT ($r = 0.43$; $p = 0.001$), SA ($r = 0.42$; $p = 0.002$), trunk flexors ($r = 0.57$; $p < 0.000$), trunk extensors ($r = 0.43$; $p = 0.001$), HIPSIT ($r = 0.44$; $p = 0.001$), HF ($r = 0.43$; $p < 0.000$) and KE ($r = 0.44$; $p = 0.001$).

Conclusion: The study showed that performance in the ULRT is associated with muscle strength of shoulder elevators (scaption), external shoulder rotators, LT, SA, trunk extensors and flexors, HIPSIT, HF and KE. The results demonstrate that higher muscle strength in these muscles is associated with better performance in the test, highlighting the importance of the kinetic chain.

Implications: These findings can help clinicians to identify which components of the kinetic chain might affect ULRT performance.

Keywords: Physical Performance Test, Functional Test, Kinetic Chain

Conflict of interest: The authors declare no conflict of interest.

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DOES ANKLE AND HIP JOINT MOBILITY AND STRENGTH ASYMMETRY CORRELATES WITH THE PERFORMANCE OF HOP TEST IN PHYSICALLY ACTIVE INDIVIDUALS?

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Background: Understanding the interaction between musculoskeletal variables is essential for identifying dysfunction, preventing injuries, and improving athletic performance. Ankle dorsiflexion and hip function are crucial for dynamic activities such as jumping. Although the Hop Test is widely used to assess functional capacity, the interaction between these variables and their impact on performance remains underexplored. In this context, asymmetry between the lower limbs can compromise performance and increase the risk of injuries, making it essential to identify and correct these discrepancies to enhance performance and prevent musculoskeletal deficiencies.

Objectives: To investigate the correlation of ankle and hip joints mobility and strength asymmetry with the performance of Hop Test in physically active individuals. The study aims to understand how these variables are related with functional capacity and physical performance in activities that require jumping and stability in physically active individuals.

Methods: This is a cross-sectional study using data from the Physiotherapy Assessment Tool (PHAST) database. The sample consisted of 200 physically active individuals (124 men, 76 women, 97% with right lower limb dominance), aged 18-56 years (mean = 35.01; SD = 8.71), with an average height of 172.8cm and weight of 72.84kg. Participants underwent the following clinical measurements: passive hip internal rotation (IR) ROM, ankle dorsiflexion ROM, hip extensor and abductors repetition test, and the single Hop Test. Pearson's correlation coefficient and linear regression analysis were performed to examine the associations between asymmetry scores, musculoskeletal variables, and hop test performance, with a significance level set at $p < 0.05$.

Results: Greater asymmetry was observed in ankle dorsiflexion ROM ($> 10\%$) in 42.5% of individuals, in hip extensors repetition test ($> 10\%$) in 51.5% of volunteers, and in hip abduction repetition test ($> 10\%$) in 60% of the sample. Regarding single Hop Test performance, an asymmetry greater than 10% was observed in 27.5% of participants. Although correlations were weak, they were statistically significant between hip extensors function ($r = 0.18$ and $p = 0.009$ on the dominant side [DS]; and $r = 0.19$ and $p = 0.005$ on the non-dominant side [NDS]) and dorsiflexion ROM ($r = 0.19$ and $p = 0.006$ on the DS; and $r = 0.19$ and $p = 0.004$ on the NDS) when compared to Hop Test performance.

Conclusion: The observed correlations and asymmetries suggest that hip extensors function and dorsiflexion ROM have a significant, albeit weak, relationship with single Hop Test performance. Additionally, asymmetries in variables related to the hip abduction repetition test, hip extensors repetition test and ankle dorsiflexion ROM indicate potential areas for future studies focusing on interventions that could be explored to improve symmetry and physical performance, particularly in activities involving jumping and joint stability.

Implications: The results of this study highlight the importance of understanding the contribution of hip variables and the ankle/foot complex to Hop Test performance, as well as to injury prevention and functional capacity improvement. These findings emphasize the need to address dysfunctions and asymmetries by implementing strategies to prevent injuries and optimize physical performance, especially in activities that require jumping and joint stability.

Keywords: Stability, Functional Performance, Injury risk

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 5.795.738.

Registration: Not applicable.

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PHYSICAL ACTIVITY LEVEL AMONG HEALTHY ADULT WOMEN AND MEN: AGREEMENT BETWEEN SELF-PERCEPTION AND IPAQ-SF

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Background: Sedentary behavior is highly prevalent worldwide and is associated with a wide range of chronic diseases and premature mortality. It can be identified through self-reporting by individuals or specific physical activity questionnaires, such as the International Physical Activity Questionnaire - Short Form (IPAQ-SF). Although it is a validated instrument, your results depend on the accurate reporting of activities performed in the past week, which may be a confounding factor at the time of application.

Objectives: To analyze the agreement between self-reported sedentary behavior and the IPAQ-SF in healthy adult men and women.

Methods: This is a cross-sectional observational study comprising 204 healthy individuals aged between 18 and 59 years. Initially, all participants were asked about their self-perception of physical activity level, classifying themselves as sedentary or physically active. Subsequently, they completed the International Physical Activity Questionnaire - Short Form (IPAQ-SF), in which they reported the intensity, duration, and frequency of physical activities performed in the last week. Based on the IPAQ-SF responses, individuals were categorized into five groups: (1) very active, (2) active, (3) irregularly active A, (4) irregularly active B, and (5) sedentary. Cohen's Kappa coefficient was used to quantify the level of agreement between self-reporting and IPAQ-SF classifications. The analysis was stratified by sex, and the significance level was set at $p < 0.05$.

Results: A total of 204 volunteers participated in the study, of whom 56% were women (35.4 ± 12.5 years, 67.5 ± 13.0 kg, and 1.63 ± 0.06 m) and 44% were men (33.1 ± 12.0 years, 82.3 ± 14.8 kg, and 1.77 ± 0.07 m). Based on self-perception, 31% of men and 43% of women considered themselves sedentary. However, only 7.14% of men and 10.2% of women were classified as sedentary by the IPAQ-SF, indicating low agreement between the methods. Among men who self-identified as sedentary, 21.42% were classified as irregularly active B, 14.28% as irregularly active A, 35.71% as active, and 7.14% as very active according to the IPAQ-SF. Among women, 28.57% were classified as irregularly active B, 16.32% as irregularly active A, 28.57% as active, and 16.32% as very active.

Conclusion: There is low agreement between self-reported sedentary behavior and the classification obtained through the International Physical Activity Questionnaire - Short Form (IPAQ-SF) in healthy adults.

Implications: Many individuals who considered themselves sedentary were classified by the questionnaire as physically active at different levels, indicating a discrepancy between subjective perception and objective criteria for assessing physical activity. These differences may be related to individual interpretations of the concept of sedentary behavior or inaccurate recall of physical activity practices when completing the questionnaire.

Keywords: Behavior sedentary, Exercise, Activities, Physical

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: No. 1.817.533.

Registration: Not applicable.

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CORRELATION BETWEEN ISOMETRIC MUSCLE STRENGTH AND THE UPPER QUARTER Y BALANCE TEST PERFORMANCE IN SWIMMING ATHLETES

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Background: Functional tests are commonly used in sports injury rehabilitation and prevention to measure abilities associated with athletic demands, including muscle strength, power, and agility. The Upper Quarter Y Balance Test (UQYBT) is commonly used for assessment of upper limb physical performance of the athletes. However, the association of the UQYBT and isometric muscle strength of kinetic chain muscles is not yet fully understood in swimming athletes. Therefore, further studies are needed to investigate the relationship between muscle strength and the UQYBT in this population. **Objectives:** To evaluate the correlation between isometric muscle strength of the kinetic chain muscles and the scores of UQYBT in swimming athletes.

Methods: This is a cross-sectional study. This study was approved by Ethics Research Committee. Swimmers of both sexes, aged between 12 and 60 years, with at least one year of competitive swimming experience and a training regimen of at least twice a week, were included. The UQYBT was analyzed in its medial, superolateral, and inferolateral directions. The athletes placed one hand at the center of the lines, and the other hand moved the free limb as far as possible three times in each direction. The mean, normalized by upper limb length, and the composite score were considered for analysis. Peak (Kg) of isometric muscle strength was assessed for shoulder elevators (scapion), shoulder rotators, lower trapezius, serratus anterior, trunk extensors and flexors, hip extensors, abductors, and internal and external rotators, as well as knee extensors. Pearson's correlation coefficient was considered as = 0.25 no relationship; 0.25 to .050 weak; 0.50 to 0.75 moderate, = 0.75 strong. Data analysis was performed using the Statistical Package for the Social Sciences, version 23.0 (SPSS Inc, Chicago, IL).

Results: A total of 51 athletes participated in the study. The medial direction of the UQYBT was significantly weakly correlated with muscle strength of all assessed muscles groups (r ranging from 0.30 to 0.46), except with trunk flexors ($r = 0.26$) and internal rotators ($r = 0.27$), which showed non-significant weak correlation. The inferolateral directions of UQYBT showed positive moderate correlation with trunk flexors ($r = 0.59$), knee extensor ($r = 0.55$), and lower trapezius ($r = 0.50$), and significant weak correlation with all other muscles groups (r ranging from 0.36 to 0.43). The composite score was weakly correlated with all isometric muscles strength ($r < 0.03$, $p > 0.05$). The superolateral direction showed no relationship with the strength of all the muscle groups analyzed (r ranging from 0.05 to 0.24).

Conclusion: The findings indicated that performance in the medial direction of the UQYBT was weakly correlated with all the muscles analyzed, the inferolateral direction was moderately correlated with knee extensor, trunk flexors, and lower trapezius strength, and the superolateral direction was weakly correlated with all the muscles analyzed.

Implications: These results can support clinicians in making informed decisions regarding the application of the UQYBT and in identifying which components of the kinetic chain may influence test performance. Consequently, strengthening key muscle groups may help improve UQYBT scores.

Keywords: Physical Performance Test, Functional Test, Kinetic Chain

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 5.888.374; No. 5.807.986.

Registration: Not applicable.

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ANALYSIS OF KNOWN-GROUP VALIDITY OF THE UPPER QUARTER Y BALANCE TEST FOR ASSESSING SWIMMING ATHLETES WITH SHOULDER PAIN

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Background: Upper extremity physical performance tests are widely used to assess the functional status of athletes, analyzing skills related to demands, including muscle strength, power, and agility. The Upper Quarter Y Balance Test (UQYBT) is commonly used for assessment of upper limb physical performance of the athletes. However, the information on the validity of the UQYBT in known groups of swimming athletes with and without shoulder pain is scarce. Therefore, further studies are needed to investigate the known group validity of the UQYBT in this population.

Objectives: To evaluate the known group validity of the UQYBT in swimmers with and without pain.

Methods: This is a cross-sectional study. This study was approved by Ethics Research Committee. Swimmers of both sexes, aged between 12 and 60 years, with at least one year of competitive swimming experience and a training regimen of at least twice a week, were included. The UQYBT was analyzed in its medial, superolateral, and inferolateral directions. The supporting hand was positioned at the center of the marking of the three lines, and the individual was asked to move the free limb as far as possible. The swimmers reached three times each direction and the mean and normalized by upper limb length were considered for analysis. To assess known-group validity, the scores of UQYBT were compared between athletes with shoulder pain and asymptomatic. The groups were chosen based on the assumption that shoulder pain would significantly affect physical performance measured by UQYBT, resulting in lower scores for athletes with shoulder pain. The Kolmogorov-Smirnov test was used to assess the distribution of the data. To compare the groups with and without pain, an independent samples t-test was conducted. Data analysis was performed using the Statistical Package for the Social Sciences, version 23.0 (SPSS Inc, Chicago, IL).

Results: A total of 51 athletes participated in the study. The asymptomatic group presented significant greater score than the shoulder pain group in the medial direction of the UQYBT (mean difference [MD]: 8,1, 95% CI: -14,22, -2,01 $p = 0.013$). For the superolateral and inferolateral directions, the asymptomatic group did not show a statistically significant difference compared to the shoulder pain group (MD = 5,43, 95% CI: -11,03, 0,15 $p = 0.056$) for superolateral directions and (MD = 0,70, 95% CI: -8,30, 6,89, $p = 0.85$) for inferolateral direction.

Conclusion: The findings indicated that performance in the medial direction of the UQYBT can identify differences between individuals with and without pain, however, for the superolateral and inferolateral directions did not show significant results to differentiate the groups.

Implications: The findings of this study suggest that performance in the medial direction of the UQYBT may be a valid indicator for distinguishing swimmers with and without shoulder pain, reinforcing its potential as a functional assessment tool for athletes in this sport. However, the superolateral and inferolateral directions may not be sensitive enough to detect performance deficits associated with shoulder pain.

Keywords: Physical Performance Test, Functional Test, Measurement Properties

Conflict of interest: The authors declare no conflict of interest.

Funding: Empresa Brasileira de Serviços Hospitalares (Ebserh).

Ethics committee approval: CAAE: 4.106.335/2020 e 3.741.115/2019.

Registration: Not applicable.

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DETERMINING KNOWN-GROUP VALIDITY OF THE UPPER LIMB ROTATION TEST IN SWIMMERS ASYMPTOMATIC AND WITH SHOULDER PAIN

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Background: Swimmers frequently experience upper limb injuries, with shoulder pain being one of the most common, negatively affecting their athletic performance. Functional tests, such as the Upper Limb Rotation Test (ULRT), are widely used in clinical practice to assess these athletes. However, there is still no evidence to support the ULRT's ability to differentiate between asymptomatic swimmers and those with shoulder pain. Therefore, it is essential to investigate the known-group validity of the ULRT in this population.

Objectives: To evaluate the known-group validity of the Upper Limb Rotation Test in swimmers asymptomatic and with shoulder pain.

Methods: This is a cross-sectional study that includes swimmers of both sexes, aged between 12 and 60 years, with at least 1 year of competitive practice, and a minimum of two training sessions per week. This study was approved by Ethics Research Committee. The ULRT was performed with the swimmers in a modified flexion position (on their elbows), close to a wall. They performed trunk rotation and external shoulder rotation at 90° of abduction and external rotation, touching a tape on the wall as quickly as possible for 15 seconds. The athletes performed three trials, and the mean was considered for the analysis. The Shapiro-Wilk test was used to assess the normality of distributions for continuous data, which presented normal distribution. For the known group validity, the ULRT score of the asymptomatic group and those with shoulder pain was compared using an independent samples t-test. The data were analyzed with SPSS software version 23.0.

Results: A total of 50 athletes participated in the study, with 29 (58%) from the asymptomatic group and 21 (42%) from the group with shoulder pain, with a mean age of 30.46 ± 14.27 years, and 27 (54%) were male. For the validity of known groups, there was no statistically significant difference between the asymptomatic group and the group with pain (mean difference: 2.72, 95% CI: -5.87, 0.42, $p = 0.08$).

Conclusion: The results of this study indicate that the ULRT is unable to differentiate swimmers with shoulder pain from asymptomatic swimmers.

Implications: These findings can assist clinicians in the assessment and management of shoulder pain in swimmers, guiding the selection of more effective assessment tools to identify functional restrictions associated with shoulder pain in this population.

Keywords: Physical Performance Test, Functional Test, Measurement Properties

Conflict of interest: The authors declare no conflict of interest.

Funding: Empresa Brasileira de Serviços Hospitalares (Ebserh).

Ethics committee approval: CAAE: 82278824.8.0000.0017.

Registration: Not applicable.

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CORRELATION BETWEEN LUMBOPELVIC STABILITY TEST AND ENDURANCE TESTS OF THE TRUNK IN SWIMMERS

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Background: The pelvic drop can indicate a sign of muscle weakness during the lumbopelvic stability test. The integrity of this region ensures the proper transfer of energy to the distal segments for the body's kinematics and biomechanics, such as muscle strength, which is an important component of the kinetic chain. In swimming athletes, it is not yet clear which factors may be related to the injuries and pain they experience, making it necessary to understand if there is any correlation between the lumbopelvic stability test and trunk muscle endurance due to the scarcity of studies.

Objectives: To assess the correlation between the lumbopelvic stability test and endurance tests of the trunk in swimmers.

Methods: This was a cross-sectional observational study approved by the research ethics committee. The inclusion criteria were swimmers athletes of both sex, age between 18 and 60 years old, with competitive practice in the past one year, and regular training for at least twice a week. Lumbopelvic stability was assessed using the one-legged bridge test with spherical markers on the anterior superior iliac spines, where the pelvic tilt (in degrees) was observed and recorded. Two-dimensional analyses were conducted using the Kinovea 0.9.5 software (Kinovea Open Source Project) for Windows®. Additionally, muscle endurance of the trunk flexors (front plank), extensors (Biering-Sorenson test), and lateral flexors (side plank) was assessed by having the individual maintain a pre-established ideal posture for each muscle group for as long as possible. Pearson coefficient correlation was used to assess the association between the lumbopelvic stability test and endurance tests, which was classified as weak (0–0.39), moderate (0.40–0.69), and strong (0.70–1.00). Data analysis was performed using SPSS Inc, Chicago, IL version 23.0.

Results: A total of 27 athletes participated in the study, with mean age of 32.78 ± 14.64 , 6.96 ± 6.05 years of sports practice, and 15 (56 %) were men. The results of the lumbopelvic stability test showed a weak negative correlation for the endurance of the flexor muscles (front plank) ($r = -0.233$), right lateral flexors (side plank) ($r = -0.217$), left lateral flexors (side plank) ($r = -0.003$), and a weak positive correlation for the trunk extensor muscles (Biering-Sorenson test) ($r = 0.109$).

Conclusion: The lumbopelvic stability test has a weak negative correlation for the endurance of the flexor muscles, lateral flexors, and

a weak positive correlation for the trunk extensor muscles in swimming athletes.

Implications: The study suggests that endurance does not influence pelvic tilt during the lumbopelvic stability test in swimming athletes, and therefore, it is important to investigate and evaluate other factors that may actually influence instability in this region.

Keywords: Kinetic chain, risk factors, athletes

Conflict of interest: The authors declare no conflict of interest.

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RELIABILITY, STANDARD ERROR OF MEASUREMENT, AND MINIMAL DETECTABLE CHANGE OF THE UPPER QUARTER Y TEST IN SWIMMING ATHLETES

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Background: Physical performance tests are commonly applied in sports injury prevention and rehabilitation to measure abilities linked to athletic demands, including muscle strength, explosive power, and agility. These assessments offer insight into an athlete's functional capacity. The Upper Quarter Y Test (UQYBT) has been widely used for assessment of athletes. However, there is limited information on its reliability in swimmers.

Objectives: To assess the reliability, standard error of measurement (SEM), and minimal detectable change (MDC) of the UQYBT in swimmers.

Methods: This is a cross-sectional study. This study was approved by Ethics Research Committee. Swimmers of both sexes, aged 12 to 60 years, with at least one year of competitive experience and a minimum of two training sessions per week were eligible. Two assessments were conducted with an average interval of 10.37 ± 3.15 days between them. Three ground lines were marked: medial, superolateral, and inferolateral. With one hand on the center mark, the individual reached with the free limb three times per direction. The mean, normalized by limb length, and the composite score were analyzed. The reliability of the UQYBT was assessed using the Intraclass Correlation Coefficient (ICC 3.3), Standard Error of Measurement, and 95% Minimal Detectable Change. The ICC was classified as excellent ($ICC > 0.90$), good (0.75-0.90), moderate (0.50-0.75) and poor ($ICC < 0.50$). Data analysis was performed using the Statistical Package for the Social Sciences, version 23.0 (SPSS Inc, Chicago, IL).

Results: A total of 51 athletes participated in the study. The non-normalized UQYBT for the dominant side demonstrated good reliability across all three directions, with ICC values ranging from 0.80 to 0.84. The SEM ranged from 4.11 to 6.28, while the MDC ranged from 11.41 to 17.42. For the normalized scores, reliability ranged from moderate to good, with ICC values of 0.68 for medial ($SEM = 6.12$, $MDC = 16.97$), 0.82 for superolateral ($SEM = 4.80$, $MDC = 13.31$), and 0.72 for inferolateral ($SEM = 7.43$, $MDC = 20.61$). The composite score for the dominant side also showed good reliability ($ICC = 0.82$, $SEM = 3.73$, $MDC = 10.34$). On the non-dominant side, the non-normalized score of all three directions demonstrated good reliability, with ICC values ranging from 0.86 to 0.89, SEM from

3.66 to 5.65, and MDC from 10.17 to 12.76. For the normalized scores, reliability ranged from moderate to good, with ICC values of 0.70 for medial ($SEM = 5.65$, $MDC = 15.66$), 0.87 for superolateral ($SEM = 4.43$, $MDC = 12.30$), and 0.80 for inferolateral ($SEM = 6.06$, $MDC = 16.80$). The composite score for the non-dominant side demonstrated good reliability ($ICC = 0.86$, $SEM = 3.61$, $MDC = 10.02$).

Conclusion: The UQYBT demonstrated moderate to good reliability for assessing swimmers. The SEM and MDC values were provided to help clinicians interpret the test results.

Implications: Clinicians can use the UQYBT for assessing swimmers, considering the moderate to good reliability. In addition, clinicians should consider the SEM and MDC for interpreting the results of UQYBT.

Keywords: Physical Performance Test, Functional Test, Measurement Properties

Conflict of interest: The authors declare no conflict of interest.

Funding: Empresa Brasileira de Serviços Hospitalares (Ebserh).

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Registration: Not applicable.

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INCIDENCE OF INJURIES IN RECREATIONAL BEACH TENNIS PLAYERS AND ITS ASSOCIATION WITH TRAINING VOLUME

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Background: Beach tennis (BT) is a sport that has become popular in Brazil, and its unrestricted and unsupervised practice has often been associated with the occurrence of injuries. However, this belief is based on empirical knowledge, without any scientific basis.

Therefore, the lack of evidence regarding the incidence of injuries in BT, as well as its relationship with training volume, can hinder decision-making regarding injury prevention strategies in this sport.

Objectives: To analyze the incidence of injuries in BT practitioners and its association with training volume.

Methods: This is a cross-sectional study that included 120 individuals who practiced BT regularly and recreationally in the last six months, with a minimum frequency of once a week. Recreational practitioners were considered those who were non-competitors or who competed only in local competitions. The dependent variable of this study was the incidence of injuries, defined as the rate of injuries per 1,000 hours of BT practice. The independent variables included the weekly frequency and number of hours per day of training, in addition to pre-training warm-ups and practice of other sports. Participants were recruited through invitations via social media and direct contact with potential participants at sports clubs. Data collection was based on an online survey that contained data on personal information, occurrence of injuries, and characteristics of BT practice. Injury incidence was calculated using the following formula: (Number of injuries/Number of hours of exposure) x 1000. The association between injury occurrence and variables related to training volume was analyzed using the Chi-square test. All analyses considered a 95% confidence interval and a significance level of 5%.

Results: A total of 166 injuries were documented in 96 practitioners (80% of the sample), after 53,232 hours of play, which generated an injury incidence rate of 3.11 injuries per 1,000 hours of BT play. Bivariate analysis indicated that variables related to the volume of BT practice, such as weekly frequency ($p = 0.83$; effect size = 0.10) and daily hours of practice ($p = 0.99$; effect size = 0.10), warm-up

before practice ($p = 0.85$; effect size = 0.10) and participation in other sports ($p = 0.10$; effect size = 0.15) are not associated with the occurrence of injuries in recreational BT practitioners.

Conclusion: The incidence of injuries in BT practitioners is relatively low and is not associated with training volume.

Implications: The results may contribute to the understanding of injuries in BT practitioners and indicate variables that do not need to be the focus of attention in injury prevention protocols in this population.

Keywords: Athletic injuries, epidemiology, injury prevention

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

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MOBILITY, DYNAMIC POSTURAL BALANCE AND NEUROMUSCULAR CONTROL OF SOCCER PLAYERS WITH AND WITHOUT A HISTORY OF LATERAL ANKLE SPRAIN

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Background: Lateral ankle sprain (LAS) is one of the most common injuries in soccer and is associated with persistent functional deficits, affecting mobility, dynamic balance, and neuromuscular control. Despite its high prevalence, there is still a gap in understanding the long-term implications of LAS on the physical performance of young athletes. Assessing these parameters is crucial to optimizing rehabilitation strategies and injury prevention.

Objectives: To compare mobility, neuromuscular control, and dynamic balance in under-20 soccer players with and without a history of LAS.

Methods: This is an observational, descriptive, analytical, and cross-sectional study conducted with 75 under-20 athletes (46 with a history of LAS and 29 without). Data collection included anthropometric and functional assessments using the Cumberland Ankle Instability Tool (CAIT) and the Foot and Ankle Ability Measure (FAAM) questionnaires, as well as functional tests such as the Weight-Bearing Lunge Test (WBLT), Hop Test, and Y Balance Test (YBT).

Results: Athletes with a history of LAS showed significantly lower neuromuscular control and dynamic balance. The LAS group performed worse in the Triple Hop Test for the right lower limb (mean difference = -25.42 cm; 95% CI: -45.63 to -5.21; $p = 0.018$; Cohen's $d = 0.67$). In the Y Balance Test, the anterior reach of the right lower limb was lower in the LAS group (mean difference = -2.91 cm; 95% CI: -5.78 to -0.04; $p = 0.046$; Cohen's $d = 0.54$). Additionally, ankle mobility, assessed by the WBLT, was lower in the LAS group (mean difference = -2.37°; 95% CI: -4.53 to -0.21; $p = 0.031$; Cohen's $d = 0.49$). The Cumberland Ankle Instability Tool questionnaire indicated lower stability in the LAS group for the right lower limb (mean difference = -2.38 points; 95% CI: -3.95 to -0.81; $p = 0.003$; Cohen's $d = 0.74$) and for the left lower limb (mean difference = -1.78 points; 95% CI: -3.01 to -0.55; $p = 0.005$; Cohen's $d = 0.61$). The Foot and Ankle Ability Measure questionnaire indicated poorer functionality in daily and sports activities ($p < 0.05$).

Conclusion: The findings highlight persistent functional deficits in mobility, dynamic balance, and neuromuscular control among athletes with a history of LAS. These deficits may contribute to a higher risk of re-injury and impaired sports performance. Identifying these deficiencies allows for targeted interventions in rehabilitation, injury prevention, and performance optimization.

Implications: This study reinforces the importance of implementing preventive and rehabilitative strategies for young soccer players with a history of LAS. Addressing deficits in mobility, balance, and neuromuscular control may improve performance and reduce recurrence rates. Integrating these assessments into sports routines can enhance clinical decision-making in physiotherapy, supporting long-term athletic development and injury prevention programs.

Keywords: Ankle Injuries, Postural Balance, Motor Activity

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WOMEN WITH PATELLOFEMORAL PAIN SHOW FUNCTIONAL DEFICITS WHEN COMPARED TO ASYMPTOMATIC WOMEN

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Background: Patellofemoral pain (PFP) is characterized by pain in the anterior region or around the patella during weight-bearing activities, being more prevalent in women. Its high recurrence rate can compromise the performance of daily activities. Functional tests are simple and low-cost tools widely used to assess functional performance in patients with musculoskeletal disorders. However, the functional deficit identified through these tests is still underexplored in the PFP population. Therefore, investigating whether functional tests can detect performance differences compared to asymptomatic individuals may be relevant to improve assessments in clinical practice.

Objectives: Compare the performance in functional tests between women with and without PFP.

Methods: Sixty women, aged between 18 and 35 years, physically active, participated in this study, divided into two groups: PFP ($n = 30$) and control ($n = 30$). Initially, anamnesis was performed to obtain personal data and eligibility criteria. Functional assessment was conducted through three tests. The forward jump test, in which the participant had to stand on one leg, jump as far as possible, and land without losing balance. The test was performed three times, and the best performance was considered for data analysis. The one-legged chair rise test, in which the participant had to rise from a chair and then sit back down using only the assessed leg, performing as many repetitions as possible in 30 seconds. The step-down test, in which the participant was asked to touch the ground with the heel of the non-tested leg while keeping the tested leg on the step, then return to the initial position, performing as many repetitions as possible in 30 seconds. For data analysis, an independent samples t-test was applied, with a significance level of $p < 0.05$.

Results: Women with PFP showed a deficit in functional performance in the forward jump test ($p = 0.005$), step-down test ($p < 0.001$), and one-legged chair rise test ($p = 0.042$) compared to asymptomatic women.

Conclusion: Women with PFP show a decline in performance in functional tests when compared to asymptomatic women, which can be detected through clinical tests.

Implications: Functional tests should be incorporated into the assessment and monitoring of rehabilitation programs for women with patellofemoral pain, allowing for the identification of the level of impairment and the progression of functional capacity throughout the treatment. Furthermore, it is recommended that rehabilitation include exercises that simulate activities of daily living, aiming to improve functionality and the quality of life of these patients.

Keywords: Women, Functionality, Muscle Strength

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MANUAL THERAPY IN THE BODYBUILDING: INTEGRATIVE REVIEW

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Background: Physiotherapy has several approaches and instruments that act in rehabilitation and pain relief. Among the resources to be used is manual therapy. Its use in sports is well known, including in bodybuilding, where it demonstrates benefits both in injury prevention and muscle recovery.

Objectives: To analyze the use of manual therapy in bodybuilding.

Methods: This is an integrative review, in which the search strategy was carried out according to the PICO strategy, being (P) Bodybuilders, (I) Manual therapy, (C) Control or other intervention, (O) Health and functional performance, and with the use of descriptors present in the Health Sciences Descriptors (DeCS/MeSH) and Medical Subject Headings (MeSH), in addition to complementary terms due to the absence of specific descriptors for this audience. Then, the search was carried out on the Pubmed, Cochrane, Web of Science, Scopus and Virtual Health Library (VHL) platforms, with no restrictions regarding time and language. The inclusion criteria were articles with a specific sample of bodybuilders and using at least one manual therapy technique. In parallel, the exclusion criteria were review studies, books, course completion papers, theses and monographs. After the bibliographic survey, the data were directed to the Rayyan software, in which duplicates were excluded, title and abstract screening and full-text screening were performed. The data from the selected articles were displayed in an Excel spreadsheet for analysis of the results.

Results: A total of 239 studies were identified, of which 6 duplicates were removed. Then, 3 articles were selected in the screening by title and abstract and in the end only 2 articles were included. Among the included studies, one quasi-experimental study and one randomized clinical trial were obtained, which analyzed different outcomes. Regarding the sample, there were different approaches, with one study focused on bodybuilders with chronic low back pain (n = 48) and another on male bodybuilders (n = 30). Among the manual therapy techniques used were massage (n = 2) and dry needling (n = 1), performed for 30 minutes. Among the tests, scales and assessment instruments, the following were observed: visual pain scale, visual analogue scale, modified Schober test, portable

goniometer, mechanical scale, blood sample by venipuncture, agility test, vertical jump displacement and maximum isometric torque test. It was possible to observe that dry needling demonstrated benefits mainly in relation to pain, while massage obtained advantages in relation to range of motion and in optimizing the athletes' performance.

Conclusion: Manual therapy can be an effective resource in the health and performance of bodybuilders. However, it should be emphasized that there are few studies available with this audience, and it is essential to carry out new research that investigates more techniques in different situations and outcomes.

Implications: Identifying the effectiveness of manual therapy in bodybuilding is essential for the practice of sports physiotherapists, who can use low-cost techniques capable of benefiting athletes in their daily lives and performance.

Keywords: Resistance Training, Physical Functional Performance, Musculoskeletal Manipulations

Conflict of interest: The authors declare no conflict of interest.

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ACUTE EFFECTS OF MANUAL MYOFASCIAL RELEASE ALONE OR IN COMBINATION WITH INSTRUMENT OR PERCUSSION DEVICE ON DELAYED ONSET MUSCLE SORENESS

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Background: Amateur athletes frequently experience delayed-onset muscle soreness (DOMS), impacting training and daily activities. Myofascial release, a massage technique for DOMS management, can be performed manually or with instruments. Recently, percussion devices, such as massage guns, have gained popularity. While several studies have examined foam rollers for self-myofascial release, no research has compared physiotherapist-administered manual myofascial release with instrument-assisted or percussion-based techniques for DOMS treatment.

Objective: To evaluate the effects of a single session of manual myofascial release alone or combined with instrument-assisted soft tissue mobilization or a percussion device massager on DOMS in amateur athletes.

Methods: Randomized controlled trial. Amateur athletes were classified as "very active" according to the International Physical Activity Questionnaire (IPAQ), and pain reporting associated with exercise practice was included. Exclusion criteria included athletes with pain due to a previously diagnosed musculoskeletal injury and those unable to read and understand the questionnaire. Athletes were randomized into one of three groups: Manual Myofascial Release (MMR), Manual + Instrument-Assisted Soft Tissue Mobilization (MMR + IASTM), or Manual + Percussion Device Massager (MMR + PDM). An assistant researcher conducted the randomization process. Assessments were carried out by a trained evaluator blinded to group allocation. Initially, participants identified the muscle group experiencing pain. The evaluator then palpated the affected muscle group and asked the athlete to quantify their pain using the Visual Analog Scale (VAS) from 0 to 10. Following this assessment, a trained physiotherapist administered the assigned intervention. Each

session lasted 40 minutes. The session was evenly divided for interventions combining manual therapy with another approach, with 20 minutes allocated to manual therapy and 20 minutes to the instrument/device intervention. Immediately after the session, the same evaluator reassessed pain levels using the VAS. Twenty-four hours later, the research team contacted participants, instructing them to palpate the painful area and self-report their pain score on the VAS. To assess normality, the Shapiro-Wilk test was applied. For group comparisons, repeated measures ANOVA and one-way ANOVA were used.

Results: A total of 159 athletes completed the protocol: 73 in the MMR group, 47 in the MMR+IASTM group, and 39 in the MMR+PDM group. There was a loss of 24-hour follow-up data in the last two groups due to non-responsiveness to the 24-hour evaluation. No significant differences were found between the three groups in baseline VAS scores: 4.63 for MMR, 4.79 for MMR+IASTM, and 5.59 for MMR+PDM ($p=0.099$). Immediately after the intervention, VAS scores were 2.30 for MMR, 2.34 for MMR+IASTM, and 5.28 for MMR+PDM. At the 24-hour follow-up, VAS scores were 2.38 for MMR, 2.82 for MMR+IASTM, and 4.44 for MMR+PDM. When comparing groups, no significant difference was found between MMR and MMR+IASTM ($p=0.714$), while both showed superior results compared to MMR+PDM ($p < 0.001$ for both comparisons).

Conclusion: MMR alone or in combination with IASTM yielded better outcomes than MMR combined with PDM in treating DOMS.

Implications: A percussion device should not be combined with MMR for DOMS management.

Keywords: myofascial release, myofascial pain, athlete

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CONCURRENT VALIDITY OF MY JUMP LAB APP IN VERTICAL JUMP PERFORMANCE IN INDIVIDUALS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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Background: Performance in vertical jump tests, such as jump height and the reactive strength index (RSI), are important metrics for clinicians to monitor during the rehabilitation of individuals following anterior cruciate ligament reconstruction (ACLR). Although force platforms are considered the gold standard for this type of measurement, their limited accessibility and high cost make them unsuitable for clinical settings. In this context, mobile applications, such as the My Jump Lab app, have emerged as potential alternative tools for jump assessment in clinical environments.

Objectives: To verify the concurrent validity of the My Jump Lab app compared to a force platform (gold standard) in assessing vertical jump performance in individuals who have undergone anterior cruciate ligament reconstruction.

Methods: A concurrent validity study following the Guidelines for Reporting Reliability and Agreement Studies (GRRAS). Individuals of both sexes who had undergone ACLR and were eligible to perform jump tests between the sixth and twenty-fourth postoperative

month were recruited. Participants were instructed to complete an assessment form with clinical and anthropometric characteristics and then underwent a five-minute warm-up on a stationary bicycle. They performed two vertical jumps: single-leg vertical jump (SLVJ) and single-leg drop jump (SLDJ). A researcher not involved in the assessment randomized the limbs (operated and non-operated) to determine which limb the participant would start the tests with. The evaluation of jumps using the My Jump Lab app was conducted simultaneously with the force platform assessment (Bertec® Model FP4060-08-1000) by two blinded assessors, each responsible for analyzing the data from one instrument. The smartphone (iPhone 11) was positioned 1.5 meters from the platform with its lenses close to the ground. The jump height in SLVJ and SLDJ and the RSI in SLDJ were collected. Pearson correlation was used to analyze concurrent validity, and Bland-Altman plots were used to assess the agreement between the force platform and the My Jump Lab app.

Results: Eighty participants with ACLR were included in the evaluation. A total of 320 jumps were analyzed using the app. The jump height in SLVJ and SLDJ and the RSI in SLDJ assessed by the My Jump Lab app showed a very strong correlation with the jump height in SLVJ ($r=0.982$, $p < 0.001$) and SLDJ ($r=0.977$, $p < 0.001$) and the RSI in SLDJ ($r=0.972$, $p < 0.001$) assessed by the force platform. The agreement analysis using Bland-Altman plots did not reveal any systematic bias in the results obtained by either method.

Conclusion: The My Jump Lab app is a valid tool for assessing vertical jump performance in individuals who have undergone anterior cruciate ligament reconstruction.

Implications: Due to the high cost of gold-standard instruments, such as the force platform, mobile applications like My Jump Lab offer a more economical and accessible alternative for use in clinical practice.

Keywords: Anterior Cruciate Ligament Reconstruction, Functional Performance, Smartphone

Conflict of interest: The authors declare no conflict of interest.

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CORRELATION BETWEEN DORSIFLEXION AND JUMP PERFORMANCE IN BASKETBALL ATHLETES

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Background: Basketball requires high physical demand, including running, directional changes, and frequent jumping. Jump performance is a key determinant of athletic success, given the sport's specific demands. The jump phases include takeoff, flight, and landing, with the ankle joint playing a crucial role in energy transfer and impact absorption.

Objectives: To evaluate the correlation between ankle dorsiflexion and jump height in basketball athletes.

Methods: This cross-sectional observational study included male basketball players, excluding those with self-reported lower limb pain or injury. Ankle dorsiflexion was assessed using the Lunge Test, in which athletes performed maximal knee flexion while

maintaining heel contact with the ground. An inclinometer was positioned 15 cm below the tibial tuberosity to record measurements. The test was performed three times with 30-second intervals, and the average dorsiflexion of both limbs was used for analysis. Jump performance was assessed using a bilateral countermovement jump, measured with a Baiobit® inertial sensor placed at the S1-S2 vertebral level. Three jumps were performed with 30-second intervals, and the highest recorded value was used for analysis. Data normality was verified using the Kolmogorov-Smirnov test, and the correlation between variables was analyzed using Pearson's correlation coefficient. Statistical analysis was performed using SPSS 20.7.

Results: The study included 51 athletes (age: 20.7 ± 0.4 years; body mass: 78.1 ± 1.94 kg; height: 1.8 ± 0.1 m; BMI: 23.5 ± 0.4 kg/m²; basketball experience: 5.9 ± 0.3 years). A strong, significant positive correlation was observed between dorsiflexion and jump height ($r = 0.81$; $P < 0.001$).

Conclusion: Ankle mobility positively influences jump height in basketball athletes.

Implications: These findings suggest that physiotherapists working with basketball players should assess ankle mobility and incorporate strategies to enhance dorsiflexion in training and injury prevention programs.

Keywords: Physical Functional Performance, Ankle Joint, Correlation Measures

Conflict of interest: The authors declare no conflict of interest.

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EFFECT OF ISCHEMIC PRECONDITIONING ON THE SUBJECTIVE PERCEPTION OF EFFORT DURING VELOCITY-BASED TRAINING IN BASKETBALL ATHLETES

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Background: Velocity-based training (VBT) is a precise approach that, by measuring movement velocity, allows for the precise prescription and monitoring of training volume and intensity. In this context, ischemic preconditioning (IPC) stands out as a non-invasive ergogenic method associated with improved sports performance. Studies indicate that IPC can influence neuromuscular and physiological variables, affecting the rating of perceived exertion (RPE). Given the role of RPE in regulating training load and physiological response, investigating its relationship with IPC in the context of VBT may provide valuable insights for optimizing sports performance.

Objectives: To analyze the acute effect of IPC on the RPE of basketball athletes during a training session using VBT.

Methods: This is an experimental, cross-over-designed study. The sample consisted of 24 junior basketball athletes (18.2 ± 0.4 years) randomly subjected to four experimental conditions with a wash-out period of 48–72 hours. IPC was applied bilaterally to the lower

limbs (four cycles of 5 minutes of total occlusion alternated with four cycles of 5 minutes of reperfusion) with varying rest periods, all followed by Smith machine squats (3 sets to failure at 50% 1RM): 1) CR15: 15-minute rest; 2) CR30: 30-minute rest; 3) CR45: 45-minute rest; 4) CC: IPC session (20 mmHg) without rest time. The Borg CR-10 rating of perceived exertion (RPE) scale was used to assess athletes' perceived effort. Data were analyzed using the Statistical Package for the Social Sciences (SPSS – 26.0), with a significance level of $P = 0.05$.

Results: The Friedman test identified significant differences in RPE between conditions and overtime ($P < 0.001$). Post hoc analysis with Bonferroni correction revealed significant differences between the first set of CR15 vs. the third set of CR45 ($P = 0.035$) and the third set of CR45 vs. the first set of CR30 ($P = 0.013$). Compared to the control condition, differences were also found between the first and third sets ($P = 0.044$) and between the first set of CC vs. the third set of CR45 ($P = 0.001$).

Conclusion: The CR45 condition elicited significantly higher perceived exertion compared to CC, CR15, and CR30. Additionally, in the CC condition, a progressive increase in RPE was observed throughout the experimental session, highlighting the significant impact of IPC on effort perception regulation during resistance training.

Implications: The rest period after IPC may directly influence RPE, affecting training load regulation and effort tolerance. These findings suggest that adjusting post-IPC recovery time can be a valuable strategy to optimize sports performance, prevent excessive fatigue, and enhance physiological adaptations, benefiting athletes and coaches in velocity-based training prescription.

Keywords: Velocity-based training, Ischemic preconditioning, Basketball athletes

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES - Finance Code 001.

Ethics committee approval: CAAE: 5.888.374; 5.807.986.

Registration: Not applicable.

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DIAGNOSIS AND RISK FACTORS OF INJURIES IN WHEELCHAIR FENCING PARATHLETES DURING A NATIONAL CHAMPIONSHIP

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Background: Wheelchair fencing is a sport for para-athletes with physical disabilities. To minimize the impacts of disability, para-athletes are divided into three functional categories: A (highest functionality), B and C (lowest functionality). The sport emerged as a rehabilitation process but has evolved into a high-performance sport. With this evolution, para-athletes have begun to face a greater training load, which can increase the incidence of injuries. In this context, accurate identification of diagnoses and analysis of risk factors are essential for the implementation of preventive strategies.

Objectives: To identify the diagnosis and risk factors of sports injuries in wheelchair fencing para-athletes during a national championship.

Methods: This is a prospective, descriptive, cross-sectional study conducted with male and female wheelchair fencing para-athletes during the Brazilian Para-fencing Championship. The Sports Injury

Protocol in Paralympic Sports (PLEEP) questionnaire was used to collect information on injury diagnoses, which were obtained from the medical department during the championship. A quantitative analysis of the data was performed using descriptive statistics.

Results: Fifty wheelchair fencing athletes participated in this study, 56% male and 44% female, with a mean age of 30.92 (± 11.14) years. Regarding the functional categories of the athletes, 62% were in category A and 36% in category B. During the championship, 16 injuries were recorded, 62.5% of which were in the upper limbs. The diagnoses of injuries included effort-induced muscle disorder (43.75%), contusion (25%), blister (18.75%), and abrasion (12.5%). Regarding the risk factors related to the diagnoses, it was observed that 25% of the effort-induced disorders were associated with repetitive movements with the armed arm, and 18.75% with movements specific to the modality. For bruises, 12.5% were related to blows with the tip or blade of the combat weapon and 12.5% to the transfer of the wheelchair. Regarding blisters, 12.5% were associated with the use of protective equipment (gloves) and 6.25% to the use of the combat wheelchair (holding the support bar during combat). Abrasions were related to blows with the tip or blade of the combat weapon (12.5%).

Conclusion: The results of this study indicate that the upper limbs are the most affected region by injuries among wheelchair fencing para-athletes, with exercise-induced disorder being the most frequent diagnosis. Risk factors such as repetitive and modality-specific movements were frequently associated with these injuries.

Implications: The identification of the types of injuries and their risk factors contributes to the identification of modality-specific prevention demands, providing greater safety in the practice of sports by para-athletes.

Keywords: Athlete Injuries, Epidemiology, Wheelchair Fencing

Conflict of interest: The authors declare no conflict of interest.

Funding: FAPESP, PPBR/Ministério do Esporte.

Ethics committee approval: No. 6.669.065.

Registration: Not applicable.

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ASSOCIATION BETWEEN SLEEP QUALITY AND THE UPPER LIMB ROTATION TEST PERFORMANCE IN SWIMMERS

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Background: Sleep plays an important role in physiological and psychological well-being. Poor sleep quality can impair competitive performance through, increase injury rates and reduced training efficiency. On the other hand, high-quality sleep before a competition can enhance performance and optimize results. Despite these findings, the literature has yet to explore whether sleep quality is related to performance in tests such as the Upper Limb Rotation Test (ULRT).

Objectives: To analyze the association between sleep quality and physical performance in the ULRT among swimmers.

Methods: This was a cross-sectional study. This study was approved by Ethics Research Committee. The sample included swimmers of both sexes, aged between 12 and 60 years, with more than one year

of experience in the sport, training at least three times per week, and actively participating in competitions. Sleep quality was assessed using the Brazilian version of the Pittsburgh Sleep Quality Index (PSQI), a valid and reliable 10-item instrument. Upper limb physical performance was evaluated using the ULRT. The test was performed with athletes in an elbow plank position, with the shoulder, epicondyle, greater trochanter, and lateral malleolus touching a wall. They executed trunk rotations combined with external shoulder rotation at 90° of abduction, aiming to touch a mat on the wall as quickly as possible within 15 seconds. Three attempts were performed, with a 45-second rest between trials, the number of repetitions was recorded as the score, and the mean of three trials was considered for analysis. Data analysis was conducted using Jamovi software. Univariate linear regression was performed to assess the association between sleep quality and the Upper Limb Rotation Test (ULRT).

Results: A total of 53 swimmers were included, with an average of 7.0 $\pm$ 6.36 years of sports practice and a mean age of 30.2 $\pm$ 14.4 years, of whom 23 (45.1%) were female. Performance in the ULRT showed no significant association with sleep quality ($p > 0.05$). Additionally, sleep quality explained less than 21% of the performance variation for both the dominant and non-dominant limbs.

Conclusion: The findings suggested that sleep quality, assessed with the PSQI, was not associated with ULRT performance in swimmers. Future studies should consider different approaches to analyzing sleep quality, as well as incorporating physiological and psychological factors, to better understand the relationship between sleep and functional performance.

Implications: The sleep quality, assessed with PSQI, did not have a significant impact on ULRT performance.

Keywords: Physical performance tests, functional tests, sleep disorders

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: Not applicable.

Registration: PROSPERO - CRD42023484509.

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INFLUENCE OF CATEGORY AND BIOLOGICAL SEX ON THE LEVEL OF PAIN CATASTROPHIZING IN SWIMMING ATHLETES

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Background: Pain catastrophizing, an exaggerated tendency to anticipate and amplify painful sensations, is a critical factor in the evaluation and treatment of athletes. The Pain Catastrophizing Scale (PCS) is a self-assessment questionnaire, consisting of 13 statements that assess thoughts and feelings related to pain. In the context of swimming, a high-performance sport, understanding the differences in pain catastrophizing between age and sex categories can provide information about each individual's perception of pain. This study aims to explore how these factors influence the level of sleep catastrophizing in athletes.

Objectives: To characterize the level of catastrophizing in swimming athletes and analyze the association of category and sex with the level of pain catastrophizing in swimming athletes.

Methods: This is an observational cross-sectional study. Forty-four swimmers of both sexes classified in the children's, youth and junior categories participated in the study. The athletes responded to the Pain Catastrophizing Scale, which ranges from 0 to 52 points, with values above 30 points representing a significant level of pain catastrophizing. The Total Pain Catastrophizing score was calculated. Analysis of Variance and independent t-test were used for analysis.

Results: Of the 44 athletes evaluated, 33 completed the Pain Catastrophizing Scale, 13 of whom were in the Children's category, 10 in the Youth category and 10 in the Junior category. Of these, 21 were men and 12 were women. Only 6 athletes had a score higher than the cutoff point. There was no significant difference between the categories ($p = 0.946$) and, when comparing genders, there was no significant difference in pain catastrophizing ($p = 0.145$).

Conclusion: The study revealed that most of the athletes evaluated presented low levels of pain catastrophizing, with only 6 athletes demonstrating scores above 30 points, indicating a significant level of catastrophizing. Furthermore, there was no significant difference between categories and genders. Future studies with larger sample sizes and with athletes at different levels of competition need to be carried out to better investigate the factors that influence catastrophizing.

Implications: Pain catastrophizing is an exaggerated negative orientation towards harmful stimuli and should be considered important for the performance and well-being of athletes, especially those with a history of previous injuries. The presence of catastrophic thoughts can impair adaptation to physical discomfort and negatively influence sports performance. Therefore, it is essential that sports training and rehabilitation programs include psychological approaches that help to reduce pain catastrophizing, covering different factors that may be associated with the amplification of pain sensation. Continued studies on the impact of pain catastrophizing may contribute to the development of more specific and effective interventions for different age groups and sports modalities.

Keywords: athletes, catastrophization, pain perception

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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KINEMATIC AND KINETIC ADJUSTMENTS AT THE TRUNK DURING SUBMAXIMAL AND MAXIMAL INSTEP SOCCER KICKS

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Background: During soccer matches, players frequently adjust kicking effort to modulate ball velocity and meet specific tactical demands. Submaximal kicks are typically used for short passes, while maximal kicks are employed for long passes or goal attempts. In maximal kicks, the trunk plays a crucial role in generating a downward energy flow toward the pelvis and the kicking limb, which may avoid excessive effort and overload at the lower limb. However, how these contributions vary across different kicking effort levels remains unclear.

Objectives: This study investigated the kinematic and kinetic adjustments at the trunk, hip, and knee joints of the kicking limb during instep kicks performed at three effort levels.

Methods: Forty-four amateur soccer players (age: 23.9 ± 4.8 years) performed kicks at maximal effort, 70-80% of maximal, and 50-60% of maximal. Three-dimensional motion capture was performed at 300 Hz, and ground reaction forces were recorded at 1200 Hz. Kinematic and kinetic data were processed using Visual 3D software. Statistical parametric mapping with repeated measures ANOVA was used to compare time series between effort levels.

Results: The trunk exhibited distinct adjustments in the sagittal plane depending on the kicking effort. During maximal kicks, in the backswing and leg cocking phases, trunk flexion moments generated a downward energy flow toward the pelvis, accelerating its retroversion and contributing to the forward motion of the kicking limb toward the ball. Subsequently, part of this energy was redistributed to the thigh and shank during the acceleration phase, favoring increased final velocity. In contrast, during submaximal kicks, trunk extensor moments were predominant and generated an upward energy flow from the pelvis to the trunk, decelerating pelvic retroversion. In the transverse plane, in both maximal and submaximal kicks, trunk rotation moments generated a downward energy flow toward the pelvis, inducing pelvic rotation toward the support limb and assisting the forward displacement of the kicking limb. Additionally, hip and knee moments in the kicking limb increased with effort, optimizing energy transfer to the shank.

Conclusion: Trunk-generated moments and energy flows act as additional resources for advancing the kicking limb, with axial trunk moments being recruited at all effort levels and sagittal trunk moments being used exclusively during maximal kicks. These findings highlight the importance of trunk muscles in coordinating kicking performance.

Implications: Training programs should include exercises to strengthen trunk flexor and rotator muscles, especially for maximal kicks. Incorporating strength and power training for the trunk and lower limbs at different intensities may improve intermuscular coordination and kicking efficiency. Educating players about proximal-to-distal control of movement may enhance performance across different kicking efforts and avoid joint and muscle overloads.

Keywords: Soccer kicking, Biomechanics, Kinetic chain, Energy flow

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE 53152221.3.0000.5235.

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INFLUENCE OF BIOPSYCHOSOCIAL FACTORS ON UPPER LIMB PERFORMANCE IN UNIVERSITY HANDBALL ATHLETES

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Background: Handball is an Olympic team sport played on a court, involving running, shooting, jumping, repeated accelerations, and directional changes. However, research on handball athletes is limited, especially among university-level players. High-performance throwing requires a combination of biomechanical factors, such as upper limb power and precise coordination of joint movements. Although these factors are crucial for performance, psychological and social variables may also influence sports outcomes. University

students have a higher prevalence of mental health disorders like anxiety and depression, and university athletes may be even more susceptible.

Objectives: This study aimed to analyze the relationship between biopsychosocial factors and functional performance in university handball athletes.

Methods: Participants included male and female university handball players aged 18 to 40 years, with at least one year of training. A cross-sectional analytical design was used, consisting of two assessment phases. Initially, a semi-structured questionnaire incorporating validated instruments evaluated biopsychosocial aspects (Disabilities of the Arm, Shoulder, and Hand; Athlete's Quality of Life Questionnaire; Athlete Burnout Questionnaire - ABQ; Perceived Motivational Climate in Sport Questionnaire-2; and Competitive Trait Anxiety Scale). Functional performance was assessed using the Seated Medicine Ball Throw (MBT) and Unilateral Seated Shot-Put Test (USSPT), followed by isokinetic strength assessment of shoulder rotators, elbow flexors and extensors, and wrist muscles using the BIODEX Multi-Joint System 4. Grip strength was measured with the Lafayette hydraulic dynamometer. In the second phase, 7-meter throw performance was evaluated. Correlation tests were applied according to data distribution ($p = 0.05$).

Results: A total of 36 university handball athletes were assessed. Strong positive correlations were found between biomechanical variables and performance in the MBT ($r = 0.7$, $p = 0.01$) and USSPT ($r = 0.7$, $p = 0.01$). Mean throwing velocity showed a strong correlation ($r = 0.7$, $p = 0.01$) with concentric strength of external shoulder rotators and a moderate correlation ($r = 0.4$, $p = 0.01$) with other biomechanical variables. The Physical/Emotional Exhaustion domain of the ABQ showed a moderate correlation ($r = 0.4$, $p = 0.01$) with MBT, a moderate correlation ($r = 0.7$, $p = 0.05$) with USSPT, and a weak correlation ($r = 0.2$, $p = 0.05$) with mean 7-meter throw velocity. The Reduced Personal Accomplishment domain showed a moderate negative correlation ($r = -0.4$, $p = 0.01$) with both performance tests. No significant correlation was found between target accuracy and any biomechanical or psychosocial variable.

Conclusion: Biomechanical variables were correlated with performance. Psychosocial factors had a low association with sports performance, with burnout symptoms showing only a low to moderate impact. Further studies with larger samples are needed to better understand the biopsychosocial dynamics of Brazilian university handball athletes.

Implications: This study demonstrated that biomechanical variables have a strong correlation with throwing performance, reinforcing the importance of strength and power training for university handball athletes. Psychosocial factors, particularly burnout symptoms, showed moderate correlations with performance, suggesting that emotional exhaustion may impact sports performance.

Keywords: Handball, university, performance, function, muscle strength

Conflict of interest: The authors declare no conflict of interest.

Funding: CNPq, CAPES - Finance Code 001.

Ethics committee approval: CAAE: 79466924.8.0000.5108.

Registration: Not applicable.

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ASSOCIATIONS BETWEEN PERFORMANCE IN THE FREQUENCY SPEED KICK TEST, HEART RATE VARIABILITY, AND BODY COMPOSITION IN AMATEUR MUAY THAI FIGHTERS

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Background: In martial arts, heart rate variability (HRV) measurements can be used to assess injury risk and susceptibility to fatigue. In Muay Thai, the frequency speed of kick test (FSKT) is used to measure kick speed, which may be influenced by autonomic modulation.

Objectives: We aimed to evaluate the correlations between FSKT, HRV, and body composition measures in amateur Muay Thai fighters.

Methods: This is a cross-sectional study with 37 Muay Thai fighters. They underwent FSKT-10 and multiple FSKT to measure the kick fatigue index (KFI). In addition, body composition was assessed using bioimpedance analysis and HRV using a heart rate monitor before and during the FSKT-10s. Inferential analysis consisted of the following methods: (1) the variation between the two moments (before and during the FSKT) was evaluated using the Wilcoxon signed rank test, and (2) correlations between the FSKT-10s or KFI derived from the FSKT-mult and all other variables were evaluated using Spearman's coefficient.

Results: The mean age was 27.9 ± 7.7 years, and all participants were male. Based on body mass index (BMI), 15 (44%) were eutrophic, 12 (35%) were overweight and 7 (21%) were obese. The median number of kicks in the FSKT-10 and the KFI were 20 (17–26) and 20 (14–29) %, respectively. When comparing the values before and during the FSKT-10s, there was a decrease in the percentage of interval differences of consecutive successive NN intervals greater than 50 ms (pNN50), approximate entropy, and parasympathetic nervous system (PNS) index, with an increase in the sympathetic nervous system (SNS) index. The number of kicks assessed in the FSKT-10s correlated positively with fat-free mass (FFM) and low frequency range (LF). The KFI correlated negatively with the FFM and PNS index, and positively with the LF and SNS index.

Conclusion: When amateur Muay Thai fighters perform the FSKT-10s, there is an acute effect on autonomic modulation with increased sympathetic activation, vagal withdrawal, and decreased system complexity. There are relationships between FFM and sympathetic activation with performance and susceptibility to fatigue.

Implications: The ability to generate force in the lower limbs with the least amount of fatigue is critical to the success of many sporting events, including amateur Muay Thai fights. In this sense, we used the FSKT-10s technique and its multiple version, as they are among the most used techniques during an official competition. Thus, the results of this study can be used by coaches as guidelines for developing strength and conditioning programs for their Muay Thai athletes in preparation for martial arts competitions.

Keywords: Exercise, Autonomic nervous system, Body composition

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 7.212.202.

Registration: Not applicable.

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CORRELATIONAL ANALYSIS BETWEEN BAROPODIOMETRY AND THE MAXIMUM REPETITION TEST OF THE KNEE AND HIP OF JUNIOR FIELD SOCCER ATHLETES

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Background: Soccer imposes a series of physical and technical demands on its practitioners, especially of the lower limbs (MMII), such as jumping, kicking, attacking, turning, running, changing the rhythm and sustaining. An overloaded musculature can result in imbalances between the agonist and antagonist muscles, resulting in possible postural changes and impairment of the athlete's performance.

Objectives: Thinking about the challenges that the practice of soccer entails on the lower limbs, the present study aimed to analyze the correlation between baropodometry and the maximum repetition test of the knee and hip of junior field soccer athletes.

Methods: A cross-sectional observational clinical study was carried out with 33 amateur soccer athletes between 13 and 15 years old, in which the values of maximum repetitions (RM) and baropodometry were collected.

Results: In the maximal repetition analysis, the statistics revealed, during the driving with eyes closed, a moderate negative correlation between the maximum repetition of internal rotation of the right hip and the center of medial-lateral pressure, as well as between the maximal repetition of internal rotation of the left hip and the center of medial-lateral pressure. A weak negative correlation was also observed between the maximal repetition of left knee flexion and the anteroposterior center of pressure, as well as a moderate negative correlation between the maximal repetition of left external rotation of the hip and the maximal pressure exerted on the left foot during closed eyes. These correlations indicate that postural control and plantar pressure distribution in athletes are influenced by different factors such as muscle group, sports gestures, dominant and supportive limb, as well as the player's position on the field.

Conclusion: This study demonstrated moderate correlations between the muscle strength of knee flexors and internal and external hip rotators with the balance and distribution of plantar pressure oscillation in junior soccer players.

Implications: These results can help in the development of appropriate training protocols that can favor muscle strengthening and muscle rebalancing in soccer athletes, since this balance between agonist and antagonist is important, and can also favor physical and functional performance, reducing the risk of injuries.

Keywords: athletes, postural balance, lower extremity

Conflict of interest: The authors declare no conflict of interest.

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PHYSICAL FITNESS OF CHILDREN AND ADOLESCENTS WITH CHRONIC KIDNEY DISEASE ON HEMODIALYSIS: PARTIAL RESULTS OF A CROSS-SECTIONAL STUDY

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Background: Chronic kidney disease (CKD) is characterized by abnormalities in the structure or function of the kidneys that persist for more than three months, with specific implications for health. Hemodialysis is a widely used and well-established treatment to prolong the survival of patients with CKD. However, these patients often experience a reduction in physical capacity, limitations in activities of daily living (ADL), and a deterioration in quality of life. **Objectives:** The aim of this study was to assess the physical fitness of children and adolescents with chronic kidney disease undergoing hemodialysis.

Methods: This cross-sectional study included patients aged between 6 and 16 years, of both sexes, who had been undergoing hemodialysis for at least three months. Medical records were reviewed, and physical fitness tests were conducted, including hand grip strength (HGS), the sit-to-stand test in 1 minute (STS1M), and the walking speed test (WST), along with upper and lower limb perimetry. The data were analyzed using Jamovi 2.3.28 software and presented using descriptive statistics (absolute and relative values, mean, standard deviation) and associations between results, with significance defined as $p = 0.05$.

Results: A total of 20 patients with chronic kidney disease undergoing hemodialysis were evaluated, with 55% being female. The mean age was 9.35 ± 2.89 years, and the average treatment duration was 14.3 ± 12.1 months. Upper limb perimetry (ULP) measurements showed a mean of 15.6 ± 2.66 cm for the right limb and 15.3 ± 2.31 cm for the left limb. Lower limb perimetry (LLP) measurements showed a mean of 27.3 ± 3.95 cm for the right limb and 26.9 ± 4.07 cm for the left limb. Dominant hand strength (DHS) had a mean of 11.9 ± 7.14 kgf, while non-dominant hand strength (NDHS) had a mean of 9.85 ± 6.69 kgf. The STS1M test showed a mean of 22.4 ± 5.45 repetitions, and the WST showed a mean of 0.958 ± 0.306 m/s. Correlations were observed between right upper limb perimetry and dominant hand strength ($r = 0.668$; $p = 0.001$), and between left upper limb perimetry and non-dominant hand strength ($r = 0.722$; $p < 0.001$). Correlations between lower limb perimetry and STS1M ($r = 0.397$; $p = 0.083$) and between left lower limb perimetry and STS1M ($r = 0.411$; $p = 0.072$) were not statistically significant. However, a significant correlation was observed between the walking speed test and the sit-to-stand test ($r = 0.711$; $p < 0.001$).

Conclusion: The results suggest that perimetry and hand grip strength values are below the expected range for children and adolescents in the age group studied, as described in the literature. Significant findings were observed in the correlations between left upper limb perimetry and non-dominant hand strength ($p < 0.001$) and between the walking speed test and the sit-to-stand test ($p < 0.001$).

Implications: The decline in physical fitness in children with CKD has significant physical, emotional, and social implications. Growth difficulties, influenced by factors such as malnutrition, hormonal imbalances, and bone disorders, result in reduced capacity to perform ADLs, participate in play, and engage in sports, thereby negatively impacting quality of life. This decline contributes to worsening cardiovascular conditions and, consequently, a poorer prognosis for disease progression.

Keywords: Renal dialysis, Physical fitness, Child health

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 2.415.333.

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ANKLE PROPULSIVE TORQUE DURING WALKING IN CHILDREN WITHOUT AND WITH BACKPACK LOADING CARRIAGE

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Background: School-aged children often carry significant weight due to the school supplies required for daily activities. This overload can lead to biomechanical, structural, and strength changes, impacting musculoskeletal development and posture.

Objectives: Compare the propulsive ankle torque during walking without load and with 10% of the body mass in children aged 8 to 10 years.

Methods: A cross-sectional study approved by the local ethics committee was conducted with healthy children. Fifteen children (53.3% boys) (9.6 ± 0.5 years; 33.1 ± 4.5 kg; 1.36 ± 0.5 m) participated in the study. Gait analysis was performed at a 5km/h control speed in a biomechanics laboratory equipped with a motion capture system (Vicon, EUA) using reflective markers, specifically the Plug-in-Gait model from Vicon Motion Systems. The system's cameras recognized these markers, and the children were evaluated under two conditions: walking without a backpack and walking with a backpack carrying a load equivalent to 10% of their body weight. Familiarization with the testing area was conducted, and data from seven valid trials were collected for each proposed condition. A trial was considered valid when the child walked a distance of 10 meters and stepped on a force platform. The ankle plantarflexion torque without and with a backpack with 10% were compared using a paired Student's t-test and the effect size was calculated by Hedges' g, with a significance level set at $p < 0.05$, using the Statistical Package for the Social Sciences.

Results: The ankle plantarflexion torque with a backpack with 10% of the body weight was significantly higher (1.2 ± 0.1 N.m/kg) compared to the ankle plantarflexion torque without a backpack (1.1 ± 0.1 N.m/kg) ($p < 0.001$; Hedge's $g = 0.94$, 95% CI = 0.36 to 1.43).

Conclusion: A slight increase in plantarflexion torque was observed when children walked while carrying an additional 10% body weight in a backpack. During prolonged walking, this may lead to increased energy consumption, potentially causing overload and fatigue, even with a relatively small load. This suggests that carrying a backpack with an additional 10% of their body weight may cause muscular overload.

Implications: Children's weight in their daily activities should be kept below 10% of their body weight to prevent high biomechanical loads and muscular overload during gait.

Keywords: Gait, Torque, Child Health

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE 64132122.0.0000.5108.

Registration: Not applicable.

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EMPOWERING MOBILITY: CO-DESIGNING ASSISTIVE SOLUTIONS FOR CHILDREN WITH SEVERE DISABILITIES - A CASE REPORT

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Background: Independent mobility plays a crucial role in child development, contributing to motor, cognitive, and social skills. Children with severe disabilities often face limited mobility opportunities, impacting their ability to explore their environment. The ADAPT project, a university-based community and research initiative, aims to promote independent mobility for children and adolescents with disabilities through low-cost assistive mobility solutions. The project follows the principles of Patient and Public Involvement (PPI), ensuring that families are actively engaged throughout the process. This case report highlights the impact of co-designing a motorized mobility device for twins with severe disabilities, emphasizing the role of PPI in assistive technology development.

Objectives: The primary objective was to analyze the impact of family involvement in the development and implementation of a customized motorized mobility solution for twin brothers with cerebral palsy, visual impairments, and cognitive disabilities (Gross Motor Function Classification System – GMFCS level IV). A secondary objective was to assess the mother's perception of the intervention's effectiveness and feasibility through qualitative feedback.

Methods: This study employed a case report methodology, using a co-design approach that actively involved the children's mother throughout the development process. Initial assessments were conducted to understand the children's functional abilities and specific needs. A commercially available ride-on toy was modified to include accessible controls, postural support, and visual enhancements based on continuous feedback from the mother. Data collection was based on qualitative reports from the mother, obtained through semi-structured interviews conducted at different stages of the intervention. Follow-ups were performed to monitor the device's usability and its integration into the family's daily routine.

Results: The co-design process resulted in a single adapted ride-on vehicle that could be used by both children at different times, addressing logistical challenges for the family. Key modifications included a centrally positioned activation button with LED lighting for enhanced visibility, an ergonomic seating system to provide adequate postural support, and lightweight motorization to facilitate handling. The mother reported increased participation of the children in daily activities, greater motivation to interact with their surroundings, and improved cognitive engagement. Additionally, she highlighted the ease of integrating the device into their routine and its potential role in preparing the children for future use of powered wheelchairs.

Conclusion: This case report reinforces the importance of PPI in assistive technology development. Family involvement throughout the co-design process ensured that the adapted mobility device was functional, accessible, and aligned with the children's needs. Future research should explore long-term benefits, including the impact on motor development and the transition to more advanced assistive mobility devices.

Implications: This study highlights the significance of integrating PPI principles into rehabilitation and assistive technology development. The findings suggest that co-designed, low-cost assistive mobility solutions can enhance the quality of life and autonomy of children with severe disabilities. Additionally, the approach provides valuable insights for healthcare professionals and

polymakers on the role of family engagement in pediatric rehabilitation and accessibility programs.

Keywords: Power mobility, Disability, cerebral palsy, Family engagement in research

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 6.952.272.

Registration: Not applicable.

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MANUAL PERFORMANCE AND FUNCTIONALITY OF CHILDREN AND ADOLESCENTS WITH AUTISM SPECTRUM DISORDER

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Background: Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects communication, social interaction, and can impact motor skills. Children with ASD may exhibit clinically relevant motor deficits, compromising daily activities such as grasping objects and writing. These limitations can affect functionality, thereby reducing autonomy and social participation. Functionality, understood as the ability to perform daily tasks independently, is often associated with fine motor skills. However, the relationship between manual performance and functionality in children and adolescents with ASD has not been sufficiently explored in the literature.

Objectives: To associate the functionality of daily activities with the manual performance of children and adolescents with Autism Spectrum Disorder.

Methods: A cross-sectional, quantitative study that was submitted to and approved by the Research Ethics Committee. The study included children and adolescents aged 6 to 15 years, of both sexes, diagnosed with Autism Spectrum Disorder, classified as support level I or II, who have normal or corrected vision and do not present movement restrictions in the upper limbs. To assess functionality, the Pediatric Evaluation of Disability Inventory - Computer Adaptive Test (PEDI-CAT) was used and applied with the parents, and to evaluate manual performance, the Block Design Test was conducted with the children.

Results: The data were presented as mean and standard deviation. Normality was initially observed through the Shapiro-Wilk test. To associate manual performance with the functionality of daily activities, Pearson correlation tests were conducted. The data were organized using the Statistical Package for the Social Sciences (SPSS) version 20.0, with a significance level set at $p < 0.05$. The correlation between manual performance and the functionality of daily activities did not show a significant difference for the association between performance with the right hand and daily activities [$r = 0.17$, $p = 0.57$], while the association between performance with the left hand and daily activities was [$r = -0.02$, $p = 0.96$].

Conclusion: This study did not find a significant association between manual performance and the functionality of daily activities in children and adolescents with ASD. These results suggest that other factors, such as sensory and cognitive aspects, may influence the

functionality of this population. Future research should investigate these variables, as well as include larger samples and longitudinal analyses, in order to better understand the determinants of functionality and manual performance in children and adolescents with ASD.

Implications: Despite the findings, it is important to consider that the sample size was relatively small ($n = 14$), which may have influenced the results and limited the generalization of the data. Nevertheless, these results may guide more effective interventions in physical therapy, education, and social inclusion for children and adolescents with ASD.

Keywords: Autism Spectrum Disorder, Motor Skills, Daily Activities

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: Research Ethics Committee of the João de Barros Barreto University Hospital -Approval document N° 5.600.662.

Registration: Not applicable.

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TRAJECTORY OF FUNCTIONAL SKILLS IN CHILDREN BORN WITH BIOLOGICAL RISK IN THE FIRST 2 YEARS OF LIFE: PROSPECTIVE STUDY

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Background: Children with biological risk for motor delay are those born with certain adversities (e.g., prematurity, low birth weight, perinatal complications, etc.) and may experience limitations in daily activities. Despite existing evidence, knowledge about the developmental trajectory of functional skills in real-life contexts during the first two years of life is still limited.

Objectives: To verify the development trajectory of functional skills (mobility, daily activities and social-cognitive) of children with biological risk at 12 and 24 months of age.

Methods: This was a prospective, observational multicenter study. Eighteen infants with biological risk and their families participated in the study (mean gestational age: 37.55 weeks- SD 3.12 weeks; birth weight: 3.01 kg- SD 0.905g; stay in NICU: 8.55 days; 61.11% received oxygen therapy, and 27.77% required cardiopulmonary resuscitation). Functional abilities were assessed using the Pediatric Evaluation of Disability Inventory - Computer Adaptive Test (PEDI-CAT) - speed version. The normative score (scores between 30 and 70 are within the expected range for age) and the continuous score (individual functional progress) for each domain were used. The paired t-test was applied to compare the children at 12 and 24 months, considering a significance level of 5%.

Results: The children exhibited an average normative score above 50 for all skills. At 24 months, children had higher continuous and normative scores for daily activities than at 12 months ($p = 0.024$ and $p < 0.001$, respectively), and higher continuous scores at 24 months in mobility ($p < 0.001$) and social-cognitive domain ($p < 0.001$).

Conclusion: The children evaluated showed functional progress in mobility, daily activities and social-cognitive. Furthermore, these children did not show motor delay in these activities.

Implications: Understanding the trajectory of functional skills in a real-life context enables the monitoring of adaptive behaviors and the identification of potential delays in important domains of

functioning. Additionally, this knowledge can be useful for providing support to families.

Keywords: child development, life skills, risk factors

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CHILDREN WITH LOWER URINARY TRACT SYMPTOMS SHOW DEFICITS IN BALL MOTOR SKILLS

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Background: Lower urinary tract symptoms (LUTS) can lead to behavioral, neuromotor, and psychological changes, as school-aged children, fearing an episode of urinary incontinence, often avoid common activities for their age group, such as ball games. The lack of such activities may be related to delays in the acquisition of motor skills, as the child is not exposed to stimuli that promotes this development.

Objectives: To compare ball-handling skills in children with and without LUTS.

Methods: This is a cross-sectional and observational study conducted with schoolchildren aged 5 to 11 years old, of both sexes, who either presented or did not present LUTS. Neurodivergent children and those who had undergone amputations were excluded. Two questionnaires were administered: the Dysfunctional Voiding Symptom Score (DVSS), used to screen for urinary symptoms and divide participants into groups with and without symptoms, and a sample characterization questionnaire, which included questions such as age, sex, skin color, weight and height. Gross motor skills were assessed using the Test of Gross Motor Development-3 (TGMD-3), with a specific focus on ball skills, which are scored on a scale of 0 to 54 points. The assessed skills included: striking a ball with two hands, striking a ball with one hand, bouncing a ball, catching a ball with two hands, kicking a ball, overhand throwing, and underhand throwing. Data were analyzed descriptively and using an independent t-test. The groups were compared in terms of sex, skin color, and categorical BMI using chi-square or Fisher's exact tests. All analyses were performed using SPSS version 26.

Results: A total of 77 children were evaluated, of whom 54.55% did not have LUTS and 38.96% had LUTS. Both groups were homogeneous in terms of age, sex, and skin color ($p < 0.05$). BMI also showed no significant difference between the groups ($p = 0.922$). Regarding ball skills, children without LUTS had a mean score of 41.09 ± 4.89 points, while those with LUTS had a mean score of 32.00 ± 5.61 points ($p < 0.001$). For all seven skills assessed, children with LUTS scored lower compared to children without LUTS.

Conclusion: The findings indicate that children with LUTS perform significantly worse in ball-handling skills compared to children without LUTS. These results suggest that motor deficits may be associated with the presence of LUTS, highlighting the importance of assessing and monitoring the motor development of these children.

Implications: The results reinforce the need for interventions that go beyond the treatment of urinary symptoms and promote the

improvement of motor skills in children with LUTS. Physical therapists should include specific approaches for the development of ball-handling skills in the context of pediatric rehabilitation. Collaboration among physical therapists, physical educators, and other healthcare professionals is essential to prevent and detect motor deficits early in these children, aiming to minimize long-term functional impacts.

Keywords: Child, Motor skills, Physical therapy specialty

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 5996125.

Registration: Not applicable.

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PARENTS AND CHILDREN IN FRONT OF SCREENS: IS THERE A RELATIONSHIP BETWEEN THEIR USAGE TIMES?

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Background: The use of digital media devices has become increasingly common among preschool children, establishing itself as a new habit during a critical phase of child development. Studies suggest that parents' behaviors regarding the use of these devices can influence their children's practices. Therefore, understanding this emerging behavioral reality is crucial for the effective implementation of interventions and public policies.

Objectives: This research aimed to investigate whether there is a relationship between parents' daily screen time and the daily screen time of preschool children attending public daycare centers.

Methods: This is a cross-sectional, observational, quantitative study, which is part of a randomized clinical trial approved by the Research Ethics Committee, focusing on the influence of media on child development. Data were collected using a questionnaire developed by the authors regarding media use at home, with questions answered by the mother, father, or guardian. The questionnaire covered topics such as time and mode of use, devices used, the age at which the child first encountered each device, and biological and socioeconomic aspects. Children aged 24 to 42 months from two Municipal Early Childhood Education Centers, whose parents signed the Free and Informed Consent Form, were included. For statistical analysis purposes, the Spearman correlation test was applied to investigate the relationship between the variables and, subsequently, a simple linear regression analysis was performed to assess the influence of parents' screen time on children's screen time.

Results: The sample consisted of 70 children and their respective parents/guardians, with a mean age of 33 months and no gender predominance. All children had exposure to media devices, spending an average of 160 minutes per day in front of screens. Regarding the guardians, more than 90% of the questionnaires were completed by mothers, who spent an average of 350 minutes per day using screens. A moderate correlation was found between children's screen time and parents' screen time ($p < 0.00$; $r_s = 0.37$). Maternal screen time accounted for 12.4% of the variation in children's screen time ($R^2 = 0.124$), indicating that parents' screen time influences children's screen use behaviors at home.

Conclusion: Parents' media use habits, particularly those of mothers, can directly influence the daily screen time of preschool children. Further research is suggested to explore other contextual factors that may influence children's screen time and their developmental consequences.

Implications: This study underscores the importance of educational programs that train families on how parental screen use habits can affect children's screen time. It also emphasizes the effects of excessive screen time and encourages healthy behaviors.

Keywords: Child Preschool, Screen Time, Child Behavior

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 6.498.702.

Registration: Not applicable.

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CONTENT VALIDITY OF TEA-CIFUNCIONALIDADE: A MEASURE FOR ASSESSING THE FUNCTIONING OF BRAZILIAN AUTISTIC CHILDREN AND YOUTH

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Background: Autism is a complex health condition with a global prevalence of 1%, according to the World Health Organization (WHO). The deficits caused by autism in social communication, along with restricted and repetitive patterns of behavior, interests, or activities, can significantly impact an individual's functioning. Although numerous outcome measures exist, Brazil currently lacks a functioning assessment tool for this population that is grounded in the International Classification of Functioning, Disability, and Health (ICF), as recommended by the WHO.

Objectives: This study aimed to assess the content validity of TEA-CIFuncionalidade, an innovative Brazilian tool designed to evaluate the functioning of children and youth with autism based on the ICF from the perspective of parents.

Methods: All the methodological processes were conducted based on the Consensus-based Standards for the selection of health Measurements Instruments (COSMIN). The content validity analysis of TEA-CIFuncionalidade was conducted in two stages. In the first stage, an Expert Committee consisting of five professionals with expertise in therapies for children and youth with atypical neurodevelopment, and/or professionals experienced in psychometrics, assessed the tool's relevance, comprehensiveness, and comprehensibility using a standardized questionnaire distributed via Google Forms. In the second stage, 30 parents of children and youth with autism participated in personal interviews to evaluate these same aspects of the tool. For the statistical analyses the Content Validity Coefficient was calculated for each evaluated item, resulting in a total of Content Validity Coefficient (CtVC) for relevance, comprehensiveness, and comprehensibility.

Results: 100% of the judges in the Expertise Committee had experience with the ICF, and 50% had five or more years of experience with autism. The Content Validity Coefficient values from the Expertise Committee were satisfactory for relevance (CtVC = 0,98), comprehensiveness (CtVC = 0,95) and comprehensibility (CtVC = 0,93). The target population consisted of 30 parents of autistic children and youth diagnosed according to the ICD-10, aged between 2 and 18 years. All participants were female and received care from the

private healthcare sector in São Paulo. The Content Validity Coefficient values from the target population were satisfactory for relevance (CtVC = 0,98), comprehensiveness (CtVC = 0,99) and comprehensibility (CtVC = 0,96).

Conclusion: TEA-CIFuncionalidade demonstrated acceptable Content Validity values according to the Expertise Committee and target population. Further analyses of the remaining measurement properties proposed by COSMIN are still required.

Implications: This study confirms that TEA-CIFuncionalidade is a viable tool for the standardized assessment of functioning in Brazilian children and youth with autism, grounded in the International Classification of Functioning, Disability, and Health.

Keywords: International Classification of Functioning Disability and Health, Measurement Properties, Autism

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PARTICIPATION OF CHILDREN AND ADOLESCENTS WITH CEREBRAL PALSY IN THE COMMUNITY: RESULTS OF PARTICIPA BRASIL

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Background: Children with cerebral palsy (CP) often have low participation and involvement in the community due to environmental barriers. Understanding how these barriers impact their participation is crucial to developing physical therapy interventions and creating more effective public policies.

Objectives: Identify the frequency, involvement, support and barriers to the participation of children with CP and explore the relationship between these variables.

Methods: This is a cross-sectional study involving children and adolescents with CP, aged 5 to 17 years, followed in the ParticiPa Brasil study. The Brazilian version of the Participation and Environment Measure for Children and Youth (PEM-CY) was used. Clinical and sociodemographic information from children and family members was collected using an online questionnaire. An exploratory analysis, correlation tests, and association tests were performed.

Results: A total of 185 parents and/or guardians participated in this study. Most children and adolescents presented GMFCS V (31.5%) and GMFCS II (27.7%), with a mean age of 8.82 years (SD = 2.75) and male gender (60%). An average attendance of 3.99 and involvement of 3.92 were observed; on average, children participated in 5 activities in the community. The activities in which children participated most frequently were neighborhood outings, unorganized physical activities and religious activities, and those with least frequency were paid work, organization of groups and classes and courses. Environmental factors showed that 47.90% of children receive average support in the community, while 46.37% face barriers. The study revealed significant correlations between the frequency and presence of environmental barriers ($r = -0.196$; $p = 0.008$), as well as between the frequency and the amount of support ($r = 0.294$; $p < 0.001$). In addition, a positive correlation was observed between

support and involvement ($r = 0.327$; $p < 0.001$), as well as between involvement and barriers ($r = 0.282$; $p < 0.001$). Several environmental variables, such as Physical Layout, Physical Demands, Cognitive Demands, Social Attitudes and Actions, Atmospheric Conditions, Climate, Programs and Services, Information, Sufficient Money and Sufficient Time, showed an association with the frequency of participation. Regarding involvement, it was associated with Physical Demands, Cognitive Demands, Social Attitudes and Actions, Personal Transportation, Public Transportation, Information and Financial Resources.

Conclusion: Most parents or guardians do not consider related aspects such as access to personal transportation; public transportation; available time; available money; safety in the community and the child's relationship with peers as barriers. On the other hand, related aspects such as the way furniture, objects and physical structures are organized; physical aspects of usual activities in the community; access to programs and services in the community; information about participation in the community and equipment and materials were the greatest environmental barriers found that restrict the participation of children and adolescents in the community.

Implications: The results allow us to identify where greater interventions are needed to support the community participation of children and adolescents with CP.

Keywords: Cerebral Palsy, Participation, Barriers

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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IMPACT OF A 2024 GUIDELINE-BASED PROGRAM ON CERVICAL RANGE OF MOTION IN INFANTS WITH CONGENITAL MUSCULAR TORTICOLLIS: A PILOT STUDY

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Background: Congenital muscular torticollis (CMT) is a condition characterized by the shortening of the sternocleidomastoid muscle, leading to restricted cervical motion, postural asymmetry, and potential motor development delays. The 2024 Clinical Practice Guideline for CMT highlights the importance of early intervention, including passive stretching, active motor stimulation, postural training, and caregiver education. However, there is a need for structured studies assessing the impact of a combined home and supervised intervention program on active and passive cervical range of motion (ROM).

Objectives: To evaluate the feasibility and preliminary effectiveness of a structured physical therapy intervention aimed at improving active and passive cervical lateral flexion ROM in infants with CMT, following the recommendations from the 2024 CMT Clinical Practice Guideline.

Methods: A single-group prospective experimental pilot study with repeated measures. Participants: Eight infants aged 3 to 4 months diagnosed with CMT, presenting with restricted passive and/or active cervical lateral flexion. Parental consent was obtained for participation in a home-based program combined with weekly

supervised physical therapy sessions. The intervention consisted of five components: (1) Passive stretching: Low-intensity, sustained stretches of the sternocleidomastoid (SCM) muscle. (2) Active range of motion training: Stimuli for head-righting responses during exercises in various postures. (3) Symmetry-based activities: Encouragement of midline head alignment and equal use of both sides of the body during play. (4) Environmental modifications: Positioning strategies for sleep, feeding, and other activities in the home setting. (5) Caregiver education and adherence monitoring: Weekly supervised sessions (60 minutes) to assess progress, reinforce techniques, and implement an individualized home program for each child based on the criteria of the 2024 Clinical Practice Guideline. Outcome Measures: Passive cervical ROM (lateral flexion) was measured using an arthrodial protractor, while active cervical ROM was assessed through visual/photographic tracking and the Muscle Function Scale (MFS).

Results: The intervention period ranged from 3 to 4 months, with a follow-up evaluation conducted 3 months after its completion. All four children who initially presented with more than 5° of asymmetry in passive ROM showed improvement in the final assessment, reducing asymmetry to less than 5°. Similarly, among the five children with more than 5° of asymmetry in active ROM, three (60%) demonstrated improvement, achieving a final asymmetry of less than 5°.

Conclusion: A structured physical therapy intervention effectively improved active and passive cervical lateral flexion ROM in infants with CMT. All infants with passive ROM asymmetry showed improvement. Regarding active ROM, 60% (3) of the infants exhibited improvement in the MFS. However, active ROM assessments are more influenced by the infant's cooperation, and evaluating the MFS on different days may provide a more accurate assessment.

Implications: This study demonstrates the feasibility and preliminary effectiveness of a structured physical therapy intervention for improving active and passive cervical lateral flexion ROM in infants with CMT in clinical practice.

Keywords: Congenital Muscular Torticollis, Range of Motion, Pediatric Physical Therapy

Conflict of interest: The authors declare no conflict of interest.

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HIP SURVEILLANCE OF BRAZILIAN CHILDREN AND ADOLESCENTS WITH CEREBRAL PALSY: A QUALITATIVE STUDY ON CAREGIVERS' KNOWLEDGE

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Background: Children with Cerebral Palsy (CP) are at an increased risk of developing hip displacement. The lateral migration of the femoral head out of the acetabulum is a severe and potentially progressive musculoskeletal complication that may require surgical intervention. Hip surveillance is recommended, a systematic monitoring process to detect early critical signs of displacement. In this context, understanding the experiences of caregivers involved in hip

surveillance can promote a more effective and family-centered approach.

Objectives: The objective was to understand the knowledge of caregivers of children and adolescents with CP about hip surveillance in Brazil.

Methods: This was a cross-sectional, qualitative study. Participants were selected from across Brazil through convenience sampling, with recruitment via social media, and from the *PartiCipa Brasil* Project. The study consisted of an invitation for caregivers to participate in focus groups. Caregivers of individuals with CP, aged 0 to 18 years, of any sex, of all clinical types and Gross Motor Function Classification System (GMFCS) levels. A semi-structured questionnaire was applied, composed of six main questions and 15 secondary questions addressing topics such as knowledge about hip displacement, monitoring procedures, frequency of X-rays, responsibility for remembering periodic X-rays, whether families receive explanations about X-ray results, among other issues. Interviews were conducted through Google Meet with caregivers who agreed to participate in the focus groups, where the semi-structured questionnaire was administered following a script. Finally, the interviews were transcribed and subjected to qualitative content analysis to identify relevant categories related to knowledge and necessary guidance for hip surveillance.

Results: A total of nine caregivers of Brazilian children and adolescents with CP participated in the qualitative study. They represented different GMFCS levels and came from various regions of Brazil: four from the Southeast, two from the North, two from the Northeast, and one from the Central-West. Notably, there were no participants from the South region of Brazil. The main themes that emerged from the participants' statements were: "Lack of knowledge about hip displacement," "Access to exams and public healthcare services," "Lack of assistive devices," "Professional misinformation," and "Family coping." Within these themes, sub-themes were also highlighted, including Lack of information, Waiting time, Technical language, Cost, Search for information, and Rights.

Conclusion: The qualitative study with caregivers of Brazilian children and adolescents with CP revealed that their knowledge about hip displacement and surveillance is limited. Healthcare professionals should improve their communication with caregivers of children and adolescents with CP to enhance family engagement and adherence to their child's treatment.

Implications: The findings from the focus groups have implications for efforts to improve hip care for children and adolescents with CP. Pragmatically, they can contribute to enhancing family-centered practice, making hip surveillance more accessible, better accepted, and better understood by parents. Building partnerships, adopting a proactive approach to coordination, and developing clear, easy-to-interpret reports or feedback for families are crucial considerations for the future of this practice in Brazil. Strengthening communication between professionals and families will ultimately lead to better adherence and improved outcomes in hip surveillance.

Keywords: Hip, Cerebral Palsy, Family-centered, Information, Surveillance

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EXPLORATORY ANALYSIS OF ASPECTS THAT IMPACT CHILD DEVELOPMENT IN AN AQUATIC STIMULATION PROGRAM

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Background: In the first instance, child development is marked by various transformations. During this period, psychosocial, motor and cognitive skills undergo various gains, and this process is therefore affected by interacting factors. At a second stage, when development is below expectations, damaging effects related to social and economic aspects can arise. Such a situation contributes to a scenario of scarce resources, which can increase disparities during the life cycle.

Objectives: The aim of this study is to verify the relationship between child development and its determinants considering children being admitted to an aquatic stimulation project.

Methods: A bivariate logistic linear regression analysis was carried out and the data was analyzed using the PSPP program, version 2.0. As the participants were children from an aquatic stimulation project, the study can be classified as exploratory, quantitative and cross-sectional. Various aspects were analyzed, and in order to characterize socioeconomic status, the Brazilian Economic Classification Criterion (CCEB) was used. In order to assess the opportunities at home to stimulate the baby, the version adapted for Portuguese Affordances in the home Environment Motor Development- infant scale (AHEMD-IS) was used. In addition, a questionnaire was created with the child's identification data, information about the pregnancy and sociodemographic characteristics of the family. Another instrument used was the Well-being of Young Children (SWYC) as a dependent variable. In addition, the infant's head circumference was collected and then these data were entered into the World Health Organization curves.

Results: The variables gender and gross motor AHEMD were significantly associated with child development (SWYC developmental milestones). Analysis of data from 49 boys and 52 girls showed that being female and having a greater number of gross motor toys were respectively 0.34 and 5.4 times more likely to have an adequate SWYC developmental milestones category.

Conclusion: Based on the aforementioned data, it should be noted that the behavior of infants is directly affected by the environment in which they live, so it is clear that factors such as gender and the number of toys offered to these children have a direct impact on their development.

Implications: In short, it can be seen that beyond the individual, child development is a social and economic issue, so studies such as this can act as a guide for states, as guided by scientific estimates they can implement public policies which take into account children's needs. It is therefore essential that more and more studies delve into the various aspects of child development, so the dissemination of research like this can boost new studies on this subject, as well as helping new researchers on this scientific journey.

Keywords: Stimulation, Child Development, Opportunities

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EFFECTS OF TACTILE-KINESTHETIC STIMULATION ON PREMATURE NEWBORN IN NEONATAL ICU: SYSTEMATIC REVIEW

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Background: Premature newborns admitted to a neonatal intensive care unit are exposed to factors that compromise neurobehavioral organization. In addition to the disorganization of all organic subsystems due to immaturity and pathophysiological conditions, environmental risks are also present, ranging from noise and excessive light to painful invasive procedures and a lack of physical and emotional contact, directly impacting neuropsychomotor development.

Objectives: To investigate the effects of tactile-kinesthetic stimulation on the neuropsychomotor development of premature newborns admitted to the Neonatal Intensive Care Unit.

Methods: A systematic review based on the PRISMA method, using the PICO strategy, was carried out in the bibliographic databases: MEDLINE/PubMed, The Cochrane Library, Scopus, VHL, and Web of Science. This was based on the descriptors contained in Medical Subject Headings (MeSH) and Health Sciences Descriptors (DeCS), together with their subtitles organized with the Boolean operators OR and AND. The extracted data were decoded by RAYYAN, where the studies were screened. The risk of bias analysis was carried out using ROB2, evaluating the methodological quality of the included studies.

Results: In this study, six randomized clinical trials were included after blind analysis by two reviewers, with a review by a third reviewer excluding texts that were unavailable in full. The period of publication of the research was from 2009 to 2023, without continental restrictions, which applied tactile and/or kinesthetic intervention to premature infants in the neonatal ICU. The main effects were: weight gain and growth; improvement of motor performance; organized modulation of motor activity; facial relaxation; increased bone mineralization; tibial sound growth; and anthropometric measurements; improvement of deep sleep and control of neonatal pain.

Conclusion: Tactile-kinesthetic stimulation brings positive results for pain control and modulation of motor skills; however, it requires studies with aligned therapeutic proposals to delimit the real beneficial effects, with the application of pain assessment scales, behavioral state, and sleep-wake quality.

Implications: Sensorimotor stimulation optimizes the integral neuropsychomotor development of newborns, especially premature ones. It is a low-cost, non-pharmacological intervention that integrates a multidisciplinary team and parental care, with defined protocols and practical application from the intensive care unit being essential.

Keywords: sensorimotor stimulation, premature newborn, neonatal intensive care unit

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THE EFFECTS OF MULTISENSORY AND TACTILE-KINESTHETIC STIMULATION ON NEWBORNS ADMITTED TO THE NEONATAL INTENSIVE CARE UNIT

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Background: The Neonatal Intensive Care Unit (NICU) environment is filled with stimuli that can be harmful to the neurodevelopment of newborns. The immaturity of the central nervous system (CNS), combined with vulnerability and exposure to potential hypoxic and ischemic events, increases neonatal morbidity and mortality. Early stimulation consists of sensory and motor techniques tailored to the specific age range of newborns, promoting greater interaction with their environment.

Objectives: This study aims to analyze the physiological effects of multisensory (olfactory, auditory, and gustatory) and tactile-kinesthetic stimulation in newborns admitted to the NICU.

Methods: An experimental, interventional, randomized controlled study was conducted involving 20 newborns with a corrected gestational age (CGA) between 33 weeks and 6 days and 41 weeks and 6 days, admitted to a NICU from December 2024 to January 2025. The intervention group received multisensory stimuli followed by tactile-kinesthetic stimulation, while the control group was monitored for 10 minutes without interventions. Data on heart rate (HR), respiratory rate (RR), oxygen saturation (SpO₂), and behavior were collected and assessed using the Brazelton Scale.

Results: The results showed an 8.3% increase in HR in the control group, without statistical significance, while the intervention group showed a significant 9.3% reduction in HR. No significant differences were observed in RR, SpO₂, and Brazelton scores between the groups ($p > 0.05$). Percentage variations were also reported.

Conclusion: Multisensory and tactile-kinesthetic stimulation reduced HR, leading to decreased pain perception and inhibition of the endocrine-metabolic stress response in newborns. In the long term, varied sensory stimulation fosters new neuronal connections in the developing brain, aiding in the acquisition of future skills and the process of speech and language learning. Therefore, implementing stimulation protocols in NICUs is recommended to support neurodevelopment.

Implications: Implementing multisensory and tactile-kinesthetic stimulation in NICUs supports neurodevelopment, reduces stress responses, enhances neural plasticity, and may improve cognitive, motor, and language development in newborns.

Keywords: Newborn, Neonatal Intensive Care, Physiotherapy Modalities, Neonatal Diseases, Sensory Modalities

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CORRELATION BETWEEN FAMILY FACTORS, TECHNOLOGY USE, AND CHILD COGNITIVE DEVELOPMENT: A CROSS-SECTIONAL STUDY

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Background: Child cognitive development is influenced by family and environmental factors, including technology use and screen time. With the increasing presence of digital devices in households, it is essential to understand how these factors interact with children's cognitive development to support more effective interventions and educational practices.

Objective: s: The study aimed to investigate family factors that impact child cognitive development, measured by the balanced Bayley Cognitive score, with an emphasis on technology use and screen time.

Methods: The research adopted a quantitative and correlational approach, with a cross-sectional and observational design. Participants included children aged 24 to 42 months, enrolled in municipal early childhood education centers, and their respective parents. Data were collected through a structured questionnaire, which addressed technology use, screen time for both parents and children, and device ownership. The quality of the home environment for stimulation was assessed using the Affordances in the Home Environment for Motor Development (AHEMD) instrument, and vocabulary acquisition was measured using the TvAud Vocabulary Test. After confirming data normality, correlations between variables were analyzed using Pearson's test.

Results: The analysis revealed positive correlations between mothers' ownership of computers and televisions and children's cognitive scores (computer: $r = 0.288$; $p = 0.026$; television: $r = 0.360$; $p = 0.005$). Mothers' screen time on computers and televisions during the week also positively correlated with children's cognitive performance (computer: $r = 0.336$; $p = 0.016$; television: $r = 0.328$; $p = 0.020$). Total screen time for both mothers and children also showed a positive association with cognitive scores (mother: $r = 0.322$; $p = 0.024$; child: $r = 0.300$; $p = 0.026$). Additionally, the consumption of digital content, such as YouTube and TikTok, showed a significant correlation ($r = 0.314$; $p = 0.019$). Regarding vocabulary, a negative correlation was observed between the number of errors on the tests and cognitive scores ($r = -0.634$; $p < 0.0001$). Fine motor toys also demonstrated significant positive correlations ($r = 0.369$; $p = 0.003$).

Conclusion: The results highlight that family factors, such as technology ownership, screen time, and home stimulation factors, significantly impact cognitive development. A family environment that balances technology use with playful activities can promote healthier development.

Implications: The findings underscore the importance of considering parents' technological habits and the quality of home stimulation when designing interventions for child cognitive development. It is recommended to create educational programs to raise awareness about the impact of screen time and encourage practices that enhance cognitive and motor skills. Future studies should investigate the long-term effects of these factors.

Keywords: Cognitive Development, Screen Time, Home Stimulation

Conflict of interest: The authors declare no conflict of interest.

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RELATIONSHIP BETWEEN MOBILITY CAPACITY AND PERFORMANCE IN BRAZILIAN CHILDREN WITH CEREBRAL PALSY

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BACKGROUND: Cerebral Palsy (CP) causes posture and movement disorders, limiting mobility. The International Classification of Functioning, Disability, and Health (ICF) considers two important aspects of mobility: capacity and performance. Capacity is assessed in controlled clinical settings, while performance reflects the real-life context in which the child is inserted (e.g., the community).

OBJECTIVES: To investigate the relationship between mobility capacity and mobility performance.

METHODS: This is a multicenter cross-sectional study. Brazilian children with CP, aged 2 to 11 years, were included. Capacity was assessed using the Gross Motor Function Measure (GMFM-66), and performance was evaluated with the Gross Motor Function Family Report (GM-FR). The classification level was determined by the Gross Motor Function Classification System (GMFCS), with participants grouped as ambulant (I-III) or non-ambulant (IV-V). To analyze the relationship between capacity and performance, a simple linear regression was performed for each group, considering capacity as the independent variable and performance as the dependent variable.

RESULTS: Forty children participated, with a mean age of 6.73 years (± 2.74). Mobility capacity explained 73% of the variation in performance ($R^2 = 0.73$; $p < 0.001$) among ambulant children ($n = 24$) and 63% among non-ambulant children ($n = 16$) ($R^2 = 0.63$; $p < 0.001$). For each additional point in the GMFM, the GM-FR increased by an average of 0.858 points ($\beta = 0.858$; $p < 0.001$) for ambulant children and by an average of 0.798 points ($\beta = 0.798$; $p < 0.001$) for non-ambulant children.

CONCLUSION: Mobility capacity is an important predictor of mobility performance, especially in ambulant children. Environmental and personal factors should be considered when discussing the mobility of Brazilian children with CP, as they may have a greater influence on non-ambulant children.

IMPLICATIONS: The implications of this study highlight the importance of considering not only motor capacity assessed in a clinical setting but also functional performance in the daily lives of children with cerebral palsy. The findings suggest that therapeutic interventions should extend beyond improving motor capacity to incorporate environmental and personal factors that influence mobility, particularly in children at GMFCS levels IV and V. Furthermore, the results reinforce the need for individualized rehabilitation strategies and public policies that promote accessibility and the participation of these children in various social contexts.

Keywords: Cerebral palsy, Mobility, Capacity, Performance

Conflict of interest: The authors declare no conflict of interest.

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MANUAL PERFORMANCE OF CHILDREN AND ADOLESCENTS WITH AUTISM SPECTRUM DISORDER

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Background: The performance between the dominant hand (DH) and non-dominant hand (NDH) is distinct, with the DH typically showing better dexterity, strength, and coordination in manual tasks as it is more frequently used for daily activities. The manual performance of children with Autism Spectrum Disorder (ASD) may vary, as this population may exhibit motor deficits.

Objectives: To compare the manual performance of the dominant and non-dominant hands in children and adolescents with ASD.

Methods: A cross-sectional and quantitative study, which was submitted to and approved by the Research Ethics Committee. The study included 14 children and adolescents aged between 6 and 15 years, of both sexes, diagnosed with Autism Spectrum Disorder, classified as support level I or II, who have normal or corrected vision and do not have movement restrictions in the upper limbs. The Global Lateral Dominance Inventory (IPLAG) was used to assess laterality, and the Block Design Test was conducted with the children and adolescents to evaluate manual performance.

Results: The data were presented as mean and standard deviation. Normality was initially observed through the Shapiro-Wilk test. To compare the practice conditions with the dominant and non-dominant hands, paired t-tests were conducted for both the number of correct responses and the number of errors. The data were organized using the Statistical Package for the Social Sciences (SPSS) version 20.0, with a significance level set at $p < 0.05$. Fourteen children were evaluated with a mean age of 7.35, consisting of 13 males and 1 female. Of these, only 1 was left-handed. The comparison between the number of correct responses with the right hand ($M = 34.21 \pm 6.22$) and the left hand ($M = 33.86 \pm 8.37$) showed no significant difference [$t(13) = 0.24$, $p = 0.81$, $r = 0.01$]. Regarding the number of errors, there was no significant difference between the performance of the right hand ($M = 1.21 \pm 1.61$) and the left hand ($M = 2.89 \pm 3.77$) [$t(13) = -1.84$, $p = 0.09$, $r = 0.14$].

Conclusion: In light of the above, it was noted that there was no difference in manual performance between the right and left hands of children and adolescents with Autism Spectrum Disorder; however, further studies with this population are necessary due to the small sample size of the present study.

Implications: This study addresses the manual performance of children and adolescents with Autism Spectrum Disorder. Given that this population may exhibit motor performance deficits, which can compromise fine motor coordination, it is essential to study and

delve deeper into this topic to better understand and establish goals for effective treatment.

Keywords: Autism Spectrum Disorder, Motor Skills, Laterality

Conflict of interest: The authors declare no conflict of interest.

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LOWER LIMB STRENGTH IS RELATED TO GROSS MOTOR SKILLS IN SCHOOLCHILDREN

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Background: The development of motor skills in children is essential for activities of daily living (ADLs) and can be assessed using the Test of Gross Motor Development-3 (TGMD-3), an instrument that identifies delays in the acquisition of gross motor skills through thirteen skills, such as running, hopping, galloping, jumping with both feet, jumping on one foot, side running, kicking a ball, throwing a ball, and bouncing a ball. The distance of the jump is directly related to lower limb strength (LLS), a crucial component for the efficient execution of these movements.

Objectives: To analyze the relationship between LLS and gross motor skills, assessed using the TGMD-3.

Methods: This is a cross-sectional and observational study conducted with school children aged 5 to 11 years old, of both sexes, who studied public schools. Neurodivergent children and those who had undergone amputation were excluded. The identification and characterization of the sample were carried out using a questionnaire developed by the authors, which included information such as age, sex, weight, and height. LLS was assessed by the distance of the jump in centimeters, and gross motor skills were analyzed using the TGMD-3. The analysis was based on the total score of the test, which ranges from 0 to 100 points. All assessments were conducted by a single trained evaluator to minimize biases in data collection. Data were analyzed descriptively and using Spearman's correlation test. The strength of the correlation followed Cohen's criteria (1988): $r < 0.29$ as a small correlation; $0.30 \leq r \leq 0.49$ as a moderate correlation; and $r > 0.50$ as a strong correlation. All analyses were performed using SPSS 26.

Results: The sample consisted of 77 children, with a mean age of 8.58 ± 1.24 years. The majority of the sample was female (63.60%), white (57.10%), and eutrophic (55.80%). The mean jump distance was 132.17 ± 20.43 cm, while gross motor skills had a mean score of 71.57 ± 9.92 points. The correlation test revealed a p -value < 0.001 , indicating a significant relationship between the variables. A positive association was observed between jump distance and performance in gross motor skills, suggesting that children with greater lower limb muscle strength tend to have better motor performance, reinforcing the influence of muscle strength on motor development.

Conclusion: The results indicate a significant relationship between LLS and gross motor skills in children, suggesting that lower limb muscle strength may be a determining factor in the development of these skills. The analysis of these variables may contribute to the early identification of motor deficits and to the planning of interventions aimed at improving functionality in ADLs.

Implications: These findings highlight the importance of interventions that assess and promote adequate motor development from

childhood. Physical therapists and other health professionals, such as physical education teachers, can integrate this knowledge into educational programs aimed at improving children's motor performance, with positive impacts on their functional abilities.

Keywords: Child, Motor skills, Physical therapy specialty

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PARENTAL EXPERIENCES IN THE PARTICIPATION OF THEIR CHILDREN WITH ATYPICAL DEVELOPMENT IN A COMMUNITY AQUATIC STIMULATION PROJECT: AN INCLUSIVE PERSPECTIVE

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Background: Some children may have significant motor delays or difficulties, impacting on their ability to participate in activities and interact in the community. The International Classification of Functioning, Disability and Health (ICF) defines participation as “involvement in life situations”, highlighting its relevance to healthy development and its relationship with activities that favor social interactions. Various physical and environmental factors can limit this participation, and these restrictions can vary according to individual needs and the characteristics of the environment in which the person is inserted.

Objectives: This study aimed to understand the experience and point of view of parents of children with atypical development about the experience and participation of their children in an aquatic stimulation project for children.

Methods: This is a qualitative, descriptive case study carried out with participants in an aquatic stimulation project for children. Six participants were selected using the “sampling by type variety” technique to answer a semi-structured individual interview in January and February 2024. The data collected was analyzed using the “content analysis” technique, which allowed categories to be identified. The research was approved by the Research Ethics Committee.

Results: Data analysis resulted in eight categories: (1) the adaptation process and challenges faced; (2) interaction with other children; (3) facilitators in participation; (4) how other parents and children react; (5) involvement of the child in an integrated and equal way; (6) impact on cognitive, language and motor development; (7) impact on affective-social behavior; (8) affective bond. Parents reported benefits in their children's overall development, including motor gains and stronger emotional bonds.

Conclusion: The results indicate that participation in the aquatic stimulation project provides significant benefits for the children involved. The study identified both barriers and facilitators that

impact participation, reinforcing the importance of adapted and inclusive practices that encourage greater social interaction.

Implications: This study suggests the need for continuous training for professionals who work with children, as well as the importance of public policies that promote inclusion in various contexts. Understanding the barriers and facilitators can help to create more effective strategies, guaranteeing access and participation for these children in social and recreational activities, which are fundamental for their development and integration into the community.

Keywords: atypical development, aquatic stimulation, facilitators and barriers

Conflict of interest: The authors declare no conflict of interest.

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EFFECTS OF NEUROFUNCTIONAL REHABILITATION ON FUNCTIONALITY, PERFORMANCE AND ACTIVITIES IN CHILDREN DIAGNOSED WITH CEREBRAL PALSY: A LONGITUDINAL STUDY

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Background: Long-term physiotherapeutic follow-up is essential for optimizing motor and functional development in children diagnosed with cerebral palsy. As a highly heterogeneous condition, cerebral palsy significantly impacts mobility, social participation, and independence in diverse ways. Understanding the long-term effects of neurofunctional rehabilitation is crucial for improving therapeutic interventions and patient outcomes.

Objectives: This study aims to evaluate the effects of neurofunctional rehabilitation on gross motor function, self-care, mobility, and social function in children with cerebral palsy. A secondary objective was to analyze how different severity levels classified by the Gross Motor Function Classification System (GMFCS) influence rehabilitation outcomes.

Methods: A prospective longitudinal cohort study was conducted with 29 children aged 0 to 12 years diagnosed with cerebral palsy. Assessments were performed at four time points over nine months. Gross motor function was measured using the Gross Motor Function Measure (GMFM), while self-care, mobility, and social function were evaluated using the Pediatric Evaluation of Disability Inventory (PEDI). Participants were classified according to the GMFCS and analyzed in two groups: levels I-II-III and levels IV-V.

Results: Significant improvements in gross motor function were observed across all GMFCS levels. Children classified as levels I-II-III showed significant progress in standing and walking-related scales, whereas those at levels IV-V demonstrated improvements mainly in seated posture stability. Regarding mobility and social function, only children in levels I-II-III exhibited significant advancements. No substantial changes were found in the need for assistance among children or caregivers in levels IV-V.

Conclusion: Neurofunctional rehabilitation proved effective in improving gross motor function across all GMFCS levels, particularly enhancing mobility and social function in children with milder impairments. For those with more severe motor limitations, the

primary gains were related to postural stability in the seated position. These findings highlight the necessity of personalized rehabilitation programs and long-term follow-up to maximize functional independence.

Implications: This study underscores the fundamental role of combining multiple evidence-based rehabilitation methods and techniques to optimize functional outcomes in neurofunctional rehabilitation. The findings emphasize that a multimodal approach—integrating different therapeutic strategies—enhances functional independence and social participation more effectively than isolated interventions. Future research should further explore the synergy between various rehabilitation techniques and advocate for their broader integration into healthcare and educational policies, ensuring expanded access to specialized and comprehensive care.

Keywords: Cerebral Palsy, Neurological Physiotherapy, Rehabilitation, Motor Activity, Patient Participation, Longitudinal Studies

Conflict of interest: The authors declare no conflict of interest.

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DEVELOPMENT OF MOBILITY PERFORMANCE IN BRAZILIAN CHILDREN AND ADOLESCENTS WITH CEREBRAL PALSY

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Background: Parents of children with cerebral palsy (CP) have desires for changes in their children's mobility. Knowing the level of mobility of these children is crucial for guiding the prognosis and aligning family expectations.

Objectives: To identify the development of mobility performance in Brazilian children and adolescents stratified by each level of the Gross Motor Function Classification System (GMFCS).

Methods: This is a multicenter study, which included 313 Brazilian children and adolescents with CP (aged 2 to 18 years). Mobility performance was assessed by the Gross Motor Function Family Report (GM-FR), and the classification level was determined by the GMFCS. To identify mobility performance, the nonlinear regression model developed by Palisano (2000) was used.

Results: A total of 368 evaluations were performed, with a mean age of 7.21 years (± 3.746). The GMFCS level proved to be a strong predictor and explained 78% ($R^2 = 0.78$; $p < 0.001$) of the variation in mobility, while age was not a predictor ($R^2 = 0.23$; $p < 0.061$). The predicted GM-FR scores differed across the five mobility curves: [level I (N = 63) = 89.1; level II (N = 70) = 80.6; level III (N = 40) = 56.7; level IV (N = 60) = 32.8; level V (N = 128) = 13.9]. The difference in the predicted GM-FR score between the GMFCS levels was, on average, 19.88 points, with the smallest difference between levels I and II (8.9 points). The age at which the children reached 90% of the predicted GM-FR score was: GMFCS I: 4 years; GMFCS II: 6 years and 1 month; GMFCS III: 3 years and 6 months; GMFCS IV: 3 years and 9 months; GMFCS V: 3 years and 11 months.

Conclusion: The classification of children with CP based on abilities and functional limitations is predictive of mobility. Children with GMFCS levels I and II exhibit less variation in mobility between

them, while the other levels show greater variation. Additionally, children with higher GMFCS levels take longer to reach the expected limit.

Implications: The implications of this study highlight that the functional classification of children with cerebral palsy, based on the GMFCS, is a strong predictor of motor performance and mobility. Children in GMFCS levels IV and V reach the expected mobility limit more quickly, in contrast to children with GMFCS levels I and II, who show less variation in performance. This suggests that, for children with higher GMFCS levels, therapeutic interventions should focus on maximizing functional capacity within their level of mobility, given that they face greater limitations. Furthermore, everyday performance skills, as reflected in the GM-FR, emerge as stronger predictors of mobility than chronological age. This finding underscores the need for rehabilitation strategies that consider functionality in real-life contexts, not just motor skills in clinical settings, and highlights the importance of public policies that promote inclusion and accessibility for all children with CP, especially those with GMFCS levels IV and V.

Keywords: Cerebral palsy, Mobility, Capacity, Performance

Conflict of interest: The authors declare no conflict of interest.

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CEREBRAL PALSY AND EQUINE-ASSISTED SERVICES: EXPLORING THE BENEFITS OF EQUINE STIMULATION

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Background: Cerebral palsy (CP) is a movement and posture disorder caused by a non-progressive brain injury. Various interventions can support children with CP, including equine-assisted services, which have demonstrated positive effects on motor function.

Objectives: This study aimed to evaluate changes in the functional abilities of a child with CP following participation in an equine-assisted services program.

Methods: A case study was conducted with a 4-year-10-month-old male child, using a quantitative research approach. The intervention comprised weekly 45-minute sessions over 12 weeks, totaling eight sessions. Functional assessment was conducted through pre- and post-testing using the Pediatric Evaluation of Disability Inventory (PEDI), which measures performance across three domains: self-care, mobility, and social function. The PEDI also assesses the level of independence, the need for assistance, and the use of environmental modifications to facilitate performance.

Results: Post-intervention, the child exhibited notable improvements. The self-care score increased from 21 to 84, mobility improved from 12 to 17, and social function rose from 10 to 13. These findings suggest a positive impact on functional abilities, as evidenced by the score advancements.

Conclusion: Participation in the equine-assisted services program contributed to enhanced functional performance in a child with CP, as reflected in the post-test results. These findings underscore the potential of equine-assisted interventions as a valuable therapeutic modality for children with CP. Future studies should explore the effects of increased session frequency and duration.

Implications: Complementary therapies play a crucial role in rehabilitation, and equine-assisted services should be recognized as a valuable intervention for children with CP.

Keywords: Cerebral Palsy, Equine-Assisted Therapy, Complementary Therapies

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 67426223.4.0000.5188.

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PREGNANCY COSTS IN BRAZIL: A RETROSPECTIVE DESCRIPTIVE STUDY FROM THE PERSPECTIVE OF THE PUBLIC HEALTH SYSTEM

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Background: Pregnancy can be stratified as low-, medium-, or high-risk, depending on the impact of a possible comorbidity. In the low-risk pregnancy, maternal and perinatal morbidity and mortality are equal to or lower than those of the general population, without the need for high-density health technology. To date, there is insufficient data in Brazil or other countries on the costs of low-risk pregnancy. Therefore, it is important to understand these costs for future strategies that optimize the use of resources in the Brazilian public health system.

Objectives: To analyze the outpatient and hospital costs of low-risk pregnancy from the Brazilian public health system perspective.

Methods: This retrospective descriptive cost-of-illness study was conducted using a top-down approach. Data from adolescents and pregnant women from all states of Brazil aged between 15 and 40 years were included, using the international classification of diseases (ICDs) that characterize low-risk pregnancy (Z34 Supervision of normal pregnancy, Z34.0 Supervision of normal first pregnancy, Z34.8 Supervision of other normal pregnancy, and Z34.9 Supervision of normal pregnancy, unspecified). Healthcare cost data were collected considering the year 2023 and extracted from the Outpatient and Hospital Information System, obtained through DATASUS, by the TABNET application and processed through TABWIN, from the Brazilian Ministry of Health. Healthcare costs were presented as the total spent in 2023 with all ICDs evaluated and by ICD, in Brazilian Real.

Results: The total spent by the Brazilian public health system on low-risk pregnancy was R\$6,802,453. In the outpatient care, the total cost of a low-risk pregnancy was R\$4,812,488, representing 71% of the total healthcare costs. Separately by ICD in the outpatient care, the following costs were observed for ICD Z34 R\$1,459,427, Z34.0 R\$338,527, Z34.8 R\$341,471, and Z34.9 R\$2,673,063. In the hospital care, the total cost of a low-risk pregnancy was R\$1,989,967, representing 29% of the total healthcare costs. Separately by ICD in the hospital care, the costs were Z34 R\$1,265,809, Z34.0 R\$83,501, Z34.8 R\$115,390, and Z34.9 R\$525,267. The ICD with the highest cost in the outpatient care was Z34.9 related to the supervision normal pregnancy, unspecified, and in the hospital care was Z34 related to the supervision of normal pregnancy. The age group of 20 to 29 years presented the highest total cost: in the outpatient care, consultation/emergency care (in general) presented the highest expenditure for ICD Z34.9

R\$287,898, and in the hospital care, childbirth presented the highest expenditure for ICD Z34 R\$303,041.

Conclusion: The outpatient care contributed with greater expenses to the Brazilian public health system. The ICD Z34.9 represented the greater expenses to the outpatient care and the ICD Z34 to the hospital care. These costs may be even higher if we consider the loss of productivity and the patients' out-of-pocket costs, which should be explored in future studies.

Implications: These data are important to highlight how public investments are being applied, being of utmost importance for health managers and professionals. In addition, this information is essential to facilitate the implementation of health policies and encourage decision-making in the area.

Keywords: Pregnancy, Costs and cost analysis, Healthcare costs

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 42214920.4.3001.5149.

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PELVIC FLOOR MUSCLE TRAINING OR HYPOPRESSIVE EXERCISES FOR RUNNING-INDUCED URINARY INCONTINENCE IN WOMEN: PRELIMINARY RESULTS OF RANDOMIZED CONTROLLED TRIAL

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Background: Female participation in running competitions has increased over the years at both amateur and professional levels. There is a high prevalence of urinary incontinence (UI) among female runners, but no studies have proposed a specific treatment for this condition in this population.

Objectives: This study aimed to compare two different pelvic floor muscle training (PFMT) regimens with an abdominal hypopressive technique (AHT) exercise program in female runners with UI.

Methods: Women who had been running at least 15 km per week for at least six months without interruptions exceeding three weeks and who reported urine leakage during running were included. Participants were required to have a pelvic floor muscle (PFM) strength of = 2 on the Oxford Scale. Exclusion criteria included neuromuscular diseases affecting the PFM, pregnancy, prior pelvic floor physiotherapy, and intolerance to vaginal palpation. Participants were randomized into three groups: isolated PFMT (iPFMT), involving maximal voluntary PFM contractions as the sole task; coordinated PFMT (cPFMT), incorporating maximal PFM contractions coordinated with abdominal activation; and AHT. The primary outcome was the impact of UI on quality of life, assessed using the International Consultation on Incontinence Questionnaire UI- Short Form (ICIQ-UI-SF). The secondary outcomes included PFM strength, evaluated via vaginal palpation and measured by Oxofrd and manometry (using Peritron). An experienced examiner, blinded to group allocation, conducted the assessments. The intervention lasted 12 weeks, twice a week, with progressive levels introduced monthly for the three groups. Reassessment was performed after 24 exercise

sessions. Data normality was tested using the Shapiro-Wilk test, and a two-way ANOVA was used for group comparisons.

Results: A total of 102 female runners participated (mean age: 34.2 years, SD: 8.7). Each intervention group had 34 participants who completed their respective programs. At 12 weeks, the mean change in ICIQ-UI-SF scores was -6.5 (95% CI: -7.24 to -5.75) for iPFMT, -6.7 (95% CI: -7.22 to -6.17) for cPFMT, and -1.7 (95% CI: -2.08 to -1.31) for AHT. There was no significant difference between iPFMT and cPFMT, but both were superior to AHT, with the two PFMT regimens achieving the minimum clinically important difference of 4 points. Regarding PFM strength assessed by vaginal palpation (Oxford Scale), the mean change at 12 weeks was 1.1 (95% CI: 0.8 to 1.3) for iPFMT, 1.2 (95% CI: 1.02 to 1.3) for cPFMT, and 0.4 (95% CI: 0.22 to 0.57) for AHT. For mean PFM pressure measured by manometry, the mean change was 22.5 cmH₂O (95% CI: 15.84 to 32.71) for iPFMT, 24.4 cmH₂O (95% CI: 18.65 to 35.71) for cPFMT, and 10.3 cmH₂O (95% CI: 7.17 to 13.34) for AHT. For all PFM evaluations, there was no significant difference between iPFMT and cPFMT, but both were superior to AHT.

Conclusion: There was no difference in effect between coordinated and isolated PFMT, but both PFMT training regimens were superior to AHT.

Implications: As demonstrated in the general population of women with UI, PFMT is also an effective treatment for UI in female runners. AHT should not be recommended for this purpose.

Keywords: hypopressive, pelvic floor, running, urinary incontinence

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: No. 5.566.069.

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ASSOCIATION BETWEEN MUSCULAR QUALITY INDEX AND QUALITY OF LIFE IN WOMEN WITH FIBROMYALGIA

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Background: Fibromyalgia (FM) is a rheumatic condition characterized by chronic, diffuse musculoskeletal pain, often associated with other manifestations. Patients with FM commonly experience reduced functional capacity, impairment in performing daily living activities, and worse quality of life (QoL). Compared to healthy control individuals, they show lower muscle strength and functional capacity, which may increase the risk of impairment in the muscular quality index (MQI). The MQI has been proposed as a clinically relevant marker to identify individuals at risk of functional disability, as well as an important prognostic factor for mortality. The MQI can be measured using two approaches: laboratory measurement and field measurement. The field MQI, being easy to implement and low-cost, is a valid alternative for assessing muscular quality, especially in contexts with limited laboratory resources.

Objectives: To investigate the associations between field and laboratory MQI measurements and QoL in women with FM.

Methods: This is a quantitative, cross-sectional, and exploratory study. Women over 18 years old with a confirmed diagnosis of FM according to the criteria established by the American College of Rheumatology (2016) were included. QoL was assessed using the

Short Form-36 (SF-36) questionnaire, Brazilian version, which covers eight domains: functional capacity, physical aspects, pain, general health status, vitality, social aspects, emotional aspects, and mental health. The MQI was obtained from the following calculations: the ratio between lower limb (LL) strength and lean mass of LL (laboratory measure); and the ratio between LL strength and body mass index (BMI) (field measure). LL strength was measured using the chair stand test (five repetitions). Lean mass of LL was measured by dual-energy X-ray absorptiometry (DEXA). BMI was calculated by the ratio of weight (kg) to height (m²). The association between the variables was analyzed using Spearman's correlation test.

Results: The study included 47 women with an average age of 53.45 ± 7.32 years. Significant correlations were found between both laboratory and field MQI and the domains of pain ($r = 0.528$, $p = 0.000$; $r = 0.452$, $p = 0.001$, respectively); functional capacity ($r = 0.359$, $p = 0.013$; $r = 0.433$, $p = 0.002$); and physical aspects ($r = 0.433$, $p = 0.002$; $r = 0.479$, $p = 0.001$). Additionally, a strong correlation was found between field MQI and laboratory MQI ($r = 0.94$, $p = 0.000$).

Conclusion: A higher MQI is associated with greater functional capacity, better physical condition, and reduced pain in women with FM. Furthermore, both laboratory and field MQI proved to be relevant indicators of muscular quality, with field MQI representing a valid alternative for clinical contexts due to its accessibility and practicality.

Implications: The results of this study may contribute to the development of more specific interventions to improve the QoL of women with FM. Additionally, they reinforce the applicability of field MQI as a viable clinical tool for assessing muscular quality, enabling the monitoring and implementation of management strategies, even in contexts with limited laboratory resources.

Keywords: Fibromyalgia, muscle quality, quality of life

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ASSOCIATION OF PAIN SEVERITY WITH KINESIOPHOBIA IN WOMEN WITH CHRONIC PELVIC PAIN: A CROSS-SECTIONAL STUDY

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Background: Chronic Pelvic Pain (CPP) is characterized by persistent pain for at least 6 months in the pelvic region. This condition generates negative impacts on both the physical and psychological aspects of life, and can also cause fear of movement, known as kinesiophobia. Previous research has observed that people with chronic

pain can present kinesiophobia. However, it is important to know whether pain severity is associated with higher levels of kinesiophobia in women with CPP.

Objectives: To analyze the association of pain severity with kinesiophobia in women with Chronic Pelvic Pain.

Methods: This is a cross-sectional study, conducted between December 2020 to October 2022, with women aged 18 to 45 years with CPP. In addition to sociodemographic data, information on pain intensity in the last 30 days were collected using the Numerical Pain Scale (NPS), and kinesiophobia was assessed using the TAMPA Scale for Kinesiophobia (TSK). Pain (NPS) was classified as mild to moderate (up to 6 points); severe pain (7 points or more). Furthermore, a cutoff point of 51 points or more on the TAMPA scale was considered for the classification of severe kinesiophobia. Descriptive analysis was expressed using mean and standard deviation for quantitative variables, and absolute and relative frequencies for categorical variables. The Chi-square test was used to analyze the association between pain severity and kinesiophobia (significance level of 5%).

Results: The total sample consisted of 168 women with a mean age of 34.2 years (SD $\pm$ 6.9), 73.2% (n = 123) of mixed race, 42.3% (n = 71) married and 55.7% (n = 93) with a level of education ranging from complete high school to incomplete higher education. Regarding pain intensity in the last 30 days, the mean pain was 7.6 (SD $\pm$ 2.0) points and 69.6% (n = 117) of the women reported severe pain. Regarding kinesiophobia, the mean on the TAMPA scale was 45.5 (SD $\pm$ 8.6), in which 28% (n = 47) of the women presented severe kinesiophobia and 72.0% (n = 121) mild to moderate kinesiophobia. We observed that women who reported severe pain were associated with the presence of severe kinesiophobia (p = 0.002).

Conclusion: We evidenced that there was an association between greater pain severity and the presence of severe kinesiophobia.

Implications: The results of the study reinforce the need for comprehensive care for women with CPP so that there is a reduction in pain and fear of movement in their rehabilitation process. In clinical practice, the multidisciplinary team involved in assisting this population should look at both physical and psychological aspects.

Keywords: Kinesiophobia, Pelvic Pain, Women's health

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EFFECT OF THE MENSTRUAL CYCLE ON THE ISOMETRIC MUSCLE STRENGTH OF ELBOW FLEXORS IN HEALTHY ADULT WOMEN

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Background: The menstrual cycle is characterized by variations in the concentrations of female sex hormonal steroids, which may influence skeletal muscle performance. However, the literature presents discrepancies regarding the impact of different phases of the menstrual cycle in muscle strength in women of reproductive age.

Objectives: To analyze the isometric muscle strength of elbow flexors in healthy adult women during different phases of the menstrual cycle.

Methods: This prospective cross-sectional observational study included 30 women aged 18 to 37 years, all with regular menstrual cycles and no use of contraceptives for at least four months. Participants were assessed during three phases of the menstrual cycle: follicular, ovulatory, and luteal. Assessments in the follicular phase were conducted on the first or second day of menstruation; in the ovulatory phase, on day 14; and in the luteal phase, one to two days before menstruation. Isometric muscle strength was measured using a hand-held dynamometer, with three repetitions of five seconds each, interspersed with 30 seconds of rest. Assessments were conducted with participants in an upright position and their elbows flexed at 90°. Numerical variables were analyzed using mean and standard deviation. Normality was verified using the Shapiro-Wilk test, and inferential analysis was performed using repeated measures Analysis of Variance (ANOVA) to compare muscle strength across the different phases, considering a significance level of p > 0.05.

Results: The study included 30 participants (22.3 $\pm$ 3.61 years; 64.1 $\pm$ 12.2 kg; 1.63 $\pm$ 0.05 m). For right elbow flexion, the mean strength values were: 12.9 $\pm$ 3.16 kgf in the follicular phase, 13.8 $\pm$ 3.25 kgf in the ovulatory phase, and 13.2 $\pm$ 2.31 kgf in the luteal phase. For the left arm, the mean values were: 12.9 $\pm$ 3.14 kgf in the follicular phase, 13.4 $\pm$ 3.51 kgf in the ovulatory phase, and 12.8 $\pm$ 2.69 kgf in the luteal phase. No statistically significant differences were observed between menstrual cycle phases (p = 0.309).

Conclusion: Hormonal fluctuations throughout the menstrual cycle did not show a significant influence on the isometric muscle strength of elbow flexors in healthy adult women.

Implications: The findings of this study contribute to the understanding of the relationship between the menstrual cycle and muscle performance, providing evidence that upper limb isometric strength may remain stable across menstrual phases in healthy women. Future studies with larger sample sizes and assessments of different muscle groups may complement these findings and further deepen the understanding of this topic.

Keywords: Woman, Muscle Strength, Menstrual Cycle

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CORRELATION BETWEEN PELVIC FLOOR MUSCLE FUNCTION AND TONE AND SEXUAL FUNCTION IN WOMEN WITH GENITO-PELVIC PAIN/PENETRATION DISORDER

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Background: Genito-pelvic pain/penetration disorder (GPPPD) negatively impacts women's quality of life and sexual function. Studies suggest that pelvic floor muscle (PFM) strength and tone may be associated with sexual dysfunction in this population, but this relationship is not well established.

Objectives: To assess the correlation between pelvic floor muscle function and tone and the sexual function of women with genito-pelvic pain/penetration disorder.

Methods: This is a cross-sectional study. Women over 18 years old who had engaged in sexual intercourse and experienced genito-pelvic pain/penetration before, during, or after intercourse were

included. Exclusion criteria were women who could not tolerate the insertion of a finger into the vaginal canal, pregnant women, those with pelvic inflammatory disease, and women undergoing post-radiation therapy in the pelvic region. A questionnaire was developed to collect socioeconomic data, urogenital and obstetric history, and lifestyle habits. Assessments included the Female Sexual Function Index (FSFI) for sexual function, the Reissing scale for muscle tone, and the modified Oxford scale for PFM strength. Data were analyzed using JASP software. The Shapiro-Wilk test was used to assess data normality, followed by Spearman's correlation test ($p < 0,05$).

Results: A total of 62 women were analyzed (age: $28,2 \pm 9,4$ years; BMI: $23,6 \pm 4,9$ kg/m²). The FSFI score was $17,3 \pm 7,0$, indicating sexual dysfunction. Muscle tone was $0,5 \pm 0,7$, and muscle strength was $3,2 \pm 1,0$. No significant correlation was found between PFM tone and FSFI ($r = 0,052$; $p = 0,692$) or between muscle strength and FSFI ($r = 0,088$; $p = 0,503$).

Conclusion: Findings indicate that in women with GPPPD, there is no correlation between PFM function and tone and sexual function. This suggests that biopsychosocial factors may have a greater influence on sexual function than pelvic floor muscle characteristics.

Implications: The results highlight the need for multidisciplinary approaches in managing sexual dysfunction in women with GPPPD. Future studies should explore other factors that may influence sexual function in this population.

Keywords: Sexual dysfunction, Pain, Sexuality

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 79684524.7.0000.5188.

Registration: Not applicable.

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EFFECT OF THE PILATES METHOD ON ABDOMINAL MUSCLE FUNCTION IN WOMEN WITH DIASTASIS RECTI

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Background: Diastasis recti (DRA) is characterized by the separation of the abdominal muscles due to the widening of the linea alba, leading to abdominal bulging and functional impairments. This condition is associated with abdominal muscle weakness, lower back pain, and pelvic floor dysfunctions, which can negatively impact women's quality of life. Conservative treatment is the first-choice approach, and physical therapy plays a fundamental role in this process. In this context, the Pilates Method has been suggested as an effective strategy for strengthening the abdominal muscles; however, there are still few studies investigating its effects on women with DRA.

Objectives: To evaluate the effects of the Pilates Method on abdominal muscle function in women with DRA.

Method: This is a randomized, longitudinal, and quantitative clinical trial. The study included 44 women over 18 years old, primiparous or multiparous, diagnosed with DRA (inter-rectus distance greater than 20mm). Participants were randomly divided into two groups: the Pilates Group ($n = 22$), which followed a Pilates exercise protocol twice a week for 12 weeks, with 30-minute supervised sessions; and the Control Group ($n = 22$), which did not receive any intervention during this period. Muscle function was assessed using the front plank and side plank tests (right and left), measuring the maximum holding time. Statistical analysis was performed using

SPSS software, employing the repeated measures ANOVA test for group comparisons and Tukey's post-hoc test. The significance level adopted was 5%.

Results: Both groups had similar characteristics before the intervention. After 12 weeks, a group-time interaction was observed in the right side plank [$F(1,38) = 9.29$; $p = 0.004$] and left side plank [$F(1,38) = 9.52$; $p = 0.004$] measurements. The post-hoc test showed an increase in plank holding time only in the Pilates Group, with a significant difference between groups after the intervention ($p < 0.001$). No statistically significant differences were observed in the front plank test.

Conclusion: The findings demonstrate that the Pilates Method significantly improves abdominal muscle function in women with DRA. The increased plank holding time indicates core muscle strengthening, which may contribute to improved lumbopelvic stability and reduced symptoms associated with DRA.

Implications: The results suggest that the Pilates Method can be incorporated as a therapeutic strategy for the rehabilitation of women with DRA, promoting functional improvement. However, the study did not assess the reduction of the inter-rectus distance, which limits the understanding of the structural effect of the intervention. Future research should include this evaluation for a more comprehensive approach to the effectiveness of Pilates in DRA.

Keywords: Diastasis: Exercise and Movement Techniques for Abdominal Muscles

Conflict of interest: The authors declare no conflict of interest.

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PAIN DURING SEXUAL INTERCOURSE IN WOMEN WITH AND WITHOUT SEXUAL DYSFUNCTION: A CROSS-SECTIONAL STUDY

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Background: Pain during sexual activity can alter the sexual response cycle, potentially leading to sexual dysfunction. Often underestimated in healthcare consultations, pain during sexual activity can negatively impact women's quality of life.

Objectives: To assess the frequency of pain during sexual activity in women with and without sexual dysfunction.

Methods: This is a cross-sectional study that included women aged = 18 years who reported having had sexual activity in the last four weeks. The study was approved by the Human Research Ethics Committee. Data were collected through an electronic form containing sociodemographic questions and the Female Sexual Function Index (FSFI) questionnaire to assess the presence of sexual dysfunction in six domains (desire, arousal, lubrication, orgasm, satisfaction, and pain). The risk of sexual dysfunction was considered for women with a total FSFI score = 26.55, and domain-specific cut-off points were < 2.4 for desire and < 3.6 for the other domains. A descriptive analysis was conducted to determine the frequency of pain during sexual activity in women with and without sexual dysfunction.

Results: Regarding sexual dysfunction, they were presented by domain and total FSFI score. Results: A total of 621 women participated, of whom 197 (31.72%) were at risk of developing sexual dysfunction and 424 (68.28%) were not. The mean age in the dysfunction group was 30.5 ± 9.3 years, while in the non-dysfunction group, it was 29.5 ± 8.6 years. A total of 94 (42.2%) women reported experiencing pain during sexual intercourse, including 75 (38%) in the dysfunction group and 19 (4.4%) in the non-dysfunction group. This was based on their response to the question: "Over the past 4 weeks, how often did you experience discomfort or pain during vaginal penetration?". Regarding FSFI domains, the results for women with and without sexual dysfunction, respectively, were: 4.2 (± 1.0) and 2.8 (± 1.0) for desire, 5.3 (± 0.5) and 3.5 (± 1.0) for arousal, 5.4 (± 0.7) and 3.9 (± 1.1) for lubrication, 5.1 (± 0.9) and 3.4 (± 1.3) for orgasm, and 5.5 (± 0.6) and 4.0 (± 1.2) for pain.

Conclusion: The results indicate that women with and without sexual dysfunction experience pain during sexual intercourse. Thus, it is necessary to develop screening strategies and provide guidance to the population for the prevention and treatment of pain during sexual activity.

Implications: The study highlights the presence of pain during sexual activity in women with and without sexual dysfunction, reinforcing the need for greater attention to this issue in clinical practice. Given that pain during intercourse can negatively impact social life and overall well-being, healthcare professionals—particularly physiotherapists—should integrate sexual health assessment into their routine care. In physiotherapy practice, these findings emphasize the importance of pelvic floor rehabilitation strategies, pain management techniques, and patient education on sexual health. From a policy perspective, incorporating sexual function assessments into broader women's health programs could facilitate early intervention.

Keywords: Pain, Sexual Dysfunctions, Psychological, Women's Health

Conflict of interest: The authors declare no conflict of interest.

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IMPACT OF THE SEVERITY OF PRIMARY DYSMENORRHEA ON FUNCTIONING IN ADULT BRAZILIAN WOMEN: AN ANALYSIS USING A NEW INSTRUMENT

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Background: Primary dysmenorrhea (PD) is menstrual pain without associated pelvic disease, while secondary dysmenorrhea (SD) is associated with conditions such as endometriosis. PD has a prevalence of 71% worldwide and can have a significant impact on women's functioning (i.e., "an umbrella term for body function, body structures, activities and participation, and it denotes the positive or neutral aspects of the interaction between a person's health condition(s) and that individual's contextual factors"). However, its impact remains neglected. Assessing how pain severity affects functioning using instruments developed for people with dysmenorrhea is essential to understanding its broader impact.

Objectives: To analyze the impact of the severity of PD on functioning in adult Brazilian women with PD using a new instrument.

Methods: This is a cross-sectional and online study conducted between January 2022 and March 2023. We included Brazilian adult women between 18 and 50 years old with a report of PD for at least the previous three months. We excluded pregnant women, those with up to six months postpartum, transgender men, and women with a clinical diagnosis of SD. Severity of PD was rated by the single-item Numerical Rating Scale (NRS) for the last period, with response options ranging from zero "no pain" to 10 "the worst imaginable pain". PD-related functioning was assessed using the Dysmenorrhea-Related Impact on Functioning Scale (DIFS), which has two subscales, "Bodily functions" and "Daily activities and social participation". Higher scores on the Bodily functions scale, Daily activities and social participation scale, and the total DIFS score indicate a greater impact of dysmenorrhea on bodily functions, daily activities and social participation, and functioning, respectively. Data were analyzed using linear regression in SPSS® 26.

Results: A total of 2382 women (27.1 ± 7 years) participated in the study. Age at menarche, menstrual cycle length, and severity of PD in the last period were 12.2 ± 1.6 years, 28.2 ± 4.6 years, and 6.5 ± 2.3 points, respectively. The "Bodily functions", "Daily activities and social participation", and DIFS total score were 14 ± 4.7 points, 31.7 ± 17.2 points, and 45.7 ± 20.6 points, respectively. Severity of PD has a significant impact on bodily functions ($p < 0.001$, $R^2_{adj} = 0.197$), daily activities and social participation ($p < 0.001$, $R^2_{adj} = 0.208$), and functioning ($p < 0.001$, $R^2_{adj} = 0.233$) of participants. On average, a one-point increase in PD severity negatively impacts bodily functions by 0.910 points (95%CI 0.836 - 0.984), daily activities and social participation by 3.407 (95%CI 3.140 - 3.674), and functioning by 4.317 (95%CI 4.002 - 4.432).

Conclusion: Our findings show that the severity of PD has a significant impact on women's functioning, affecting both bodily functions and daily activities and social participation. Future studies should explore the long-term impact of dysmenorrhea and evaluate the effectiveness of interventions to minimize its effects.

Implications: The findings highlight the importance of incorporating PD management into physical therapy practice and public health policy. Educational programs and therapeutic interventions should address pain management and promote strategies to improve women's functioning.

Keywords: Dysmenorrhea, Women's Health, Activities of Daily Living

Conflict of interest: The authors declare no conflict of interest.

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PELVIC FLOOR FUNCTION, URINARY SYMPTOMS AND IMPACT ON QUALITY OF LIFE IN WOMEN WITH PELVIC ORGAN PROLAPSE: CROSS-SECTIONAL STUDY

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Background: Pelvic Organ Prolapse (POP) is defined as the descent of one or more vaginal walls and/or the vaginal apex. Symptoms range from a sensation of a “ball/bulge” in the vaginal region to a sensation of heaviness, burning, and pain. Due to its etiology, POP is almost always accompanied by urinary and sexual symptoms, generating negative repercussions on Quality of Life (QoL).

Objectives: To verify vaginal and urinary symptoms, the function of the Pelvic Floor Muscles (PFM), and the impact on the QoL of women with POP, in addition to comparing the impact between the stages of POP.

Methods: This is a cross-sectional study, in which data were collected between 2021 to 2024, and the sample consisted of women aged 18 or over diagnosed with POP. Urological data were collected; a physical examination was performed through the assessment of PFM and the Pelvic Floor Impact Questionnaire (PFIQ-7) instrument was applied. This instrument has 3 subscales that seek to assess urinary, bowel and vaginal symptoms. In the present study, we used only the vaginal symptoms subscale, with a score from 0 to 100. The descriptive analysis was presented through mean and standard deviation for quantitative variables, and absolute and relative frequencies for qualitative variables. The Kruskal-Wallis test was used to compare the PFIQ-7 means between the stages of POP (significance level of 5%).

Results: Of the 88 women collected, 21 had POP as the main complaint, with a mean age of 55.9 years. The most frequently identified urinary symptoms in bladder storage were nocturia 76.2% (n = 16), urgency 76.2% (n = 16) and loss on exertion 71.4% (n = 15). Regarding voiding symptoms, we identified a sensation of incomplete voiding 50% (n = 10), hesitation 35% (n = 7) and post-void dripping 45% (n = 9). In the physical examination, 85% used accessory muscles at the time of contraction (n = 17), with the glutes being the most used 94.1% (n = 16), 81% had a strength deficit and 70% had hyperactive MAP. In the evaluation of POP, anterior vaginal wall prolapse was the most recurrent with 89.5% (n = 17), with stage 2 being the most common, with 52.6% (n = 10), and apical prolapse being the least common, with 6.7% (n = 1). In the PFIQ-7, the activities that were most affected were physical activities, with 20% (n = 4), and entertainment activities, with 28.6% (n = 6). The mean for stage 2 was 29.6 (SD ± 30.3) points, for stage 3 it was 30.5 (SD ± 31.7) points, and for stage 4 it was 52.4 (SD ± 13.5) points, with no significant difference between the POP stages (p = 0.57).

Conclusion: It is possible to observe that women with prolapse have a high frequency of urinary symptoms, deficiencies in PFM functions, and impact on their activities of daily living.

Implications: The data reinforces the importance of a detailed physiotherapeutic assessment focusing not only on the physical aspect, but also on an analysis of what this complaint generates in QoL.

Keywords: Pelvic Floor, Pelvic Organ Prolapse, Physiotherapy

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TRANSCUTANEOUS TIBIAL, PARASACRAL, AND MEDIAL PLANTAR NERVE STIMULATION ON QUALITY OF LIFE IN WOMEN WITH OVERACTIVE BLADDER: A CLINICAL TRIAL

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Background: Overactive Bladder Syndrome (OBS) is a common condition that impacts lifestyle, affects individuals of all ages, and results in a decline in quality of life. The diagnosis of OBS is clinical, characterized by symptoms such as urgency, increased daytime frequency, and/or nocturia, with or without urinary incontinence, in the absence of urinary tract infections or other diagnosed conditions. In clinical practice, only the parasacral and tibial nerves have been used to inhibit detrusor muscle hyperactivity, proving to be an effective and conservative approach for treating the symptoms of an overactive bladder. Conservative treatments for OBS include behavioral therapy (BT), bladder training (BT) combined with transcutaneous tibial nerve stimulation (TTNS), parasacral nerve stimulation (PNS), or medial plantar nerve stimulation (T-MPNS). These treatments are both cost-effective and less invasive.

Objectives: The goal of this study was to evaluate the effects of BT with BT combined with TTNS, BT with BT combined with PNS, and BT with BT combined with T-MPNS on the quality of life in women with OBS.

Methods: This was a controlled and randomized clinical trial with three experimental groups: GE1: BT with BT combined with PNS; GE2: BT with BT combined with T-MPNS; and the control group (CG): BT with BT combined with TTNS. Inclusion criteria required women who had symptoms of OBS according to the OAB-V8 (Overactive Bladder Validated 8) questionnaire and who were over 18 years old. Evaluations were conducted before treatment, after treatment, and at a 30-day follow-up using the OAB-V8 (for overactive bladder symptoms) and KHQ (King's Health Questionnaire) for quality of life. Both transcutaneous electrostimulation methods used an asymmetric biphasic pulsed current with constant voltage, 12 sessions, twice a week, lasting 20 minutes at the participant's maximum intensity, with a frequency of 10Hz and a pulse duration of 200µs. To verify the normality of the data, the Shapiro-Wilk test was applied, and repeated measures ANOVA was used for analysis.

Results: The sample ages were as follows: GE1 (40.57 ± 15.00); GE2 (42.12 ± 11.54); and CG (46.09 ± 17.03). Significant intra-group differences were observed after the interventions in the following KHQ domains: impact of urinary incontinence (p = 0.004); limitations in daily life activities (p < 0.001); physical limitations (p = 0.003); social limitations (p = 0.012); emotions (p = 0.018); sleep and well-being (p < 0.001); severity measures (p = 0.002); symptom scale (p < 0.001); and OBS symptoms (p < 0.001). No significant inter-group differences were observed, nor at follow-up.

Conclusion: Both groups showed significant improvement in the quality of life and in OBS symptoms after the interventions. This

suggests that physical therapists should be particularly attentive to OBS symptoms, given their significant negative impact on quality of life.

Implications: Our study demonstrates that three effective transcutaneous electrostimulation options exist for inhibiting detrusor muscle hyperactivity, which can subsequently improve the quality of life for women with OBS.

Keywords: Urinary Bladder Overactive, Transcutaneous Electric Nerve Stimulation, Behavior Therapy

Conflict of interest: The authors declare no conflict of interest.

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IMPACT OF DYSMENORRHEA ON FUNCTIONING IN BRAZILIAN WOMEN: A QUALITATIVE ANALYSIS

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Background: Dysmenorrhea is the menstrual pain and significantly impacts on women's functioning (i.e., "an umbrella term for body function, body structures, activities and participation, and it denotes the positive or neutral aspects of the interaction between a person's health condition(s) and that individual's contextual factors"). Understanding how dysmenorrhea impacts on functioning can reveal barriers to proper management and highlight the need for culturally relevant interventions.

Objectives: To qualitatively analyze the reports of Brazilian women on the impact of dysmenorrhea on their functioning.

Methods: This qualitative and online study was conducted from January 2022 to March 2023. Participants were recruited through social media and universities and schools across Brazil. We included cisgender Brazilian women aged 18–29 years with dysmenorrhea in the past three months. We also included only women who responded to the open-ended item "Feel free to comment on your experience with menstrual pain". Data analysis followed a four-step process by two independent researchers: reading of the responses, thematic categorization, coding, and final interpretation. Responses were analyzed using thematic analysis to explore women's perceptions of the impact of dysmenorrhea on functioning.

Results: Of the 234 women who responded to the open-ended item, the responses from 130 (55.6%) women (23.9 ± 3 years) met the eligibility criteria and were included in this study. Most of the participants were from the Southeast region of Brazil ($n = 69$, 53.1%) and had higher education ($n = 129$, 99.2%). The thematic category "impact on daily activities and functioning" was divided into "impact on movement and physical activity", "impact on concentration and mood", "impact on work, study, and/or relationships with colleagues", and "impact on sleep and/or eating". The following reports highlighted the impact of dysmenorrhea on functioning

related to bodily functions, daily activities, and activities and participation. The ensuing reports underscored how dysmenorrhea impacts bodily functions, daily routines, and various activities and participation: "My cramps are so strong that I cannot sit or walk for long periods of time. It is difficult to get up, to take a shower, much less to go to the toilet. I cannot see anyone, I cannot communicate, and I cannot go out" and "My cramps affected my life to the point where I cannot sleep at night because of the pain and no position is comfortable. The discouragement and pain also took away my social life. I stopped leaving the house. I had to sit and stay in antalgic positions all the time".

Conclusion: This study highlights the significant impact of dysmenorrhea on women's functioning, affecting mobility, concentration, social participation, and daily activities. The findings reinforce the need for greater awareness of dysmenorrhea as a condition that extends beyond physical pain, influencing multiple aspects of life. Future studies should further explore the long-term consequences of dysmenorrhea and the effectiveness of interventions to mitigate its impact.

Implications: The findings emphasize the importance of integrating dysmenorrhea management into healthcare policies and educational programs, particularly in physiotherapy. Strategies such as exercise-based interventions should be further investigated and promoted to improve women's functioning.

Keywords: Dysmenorrhea, Activities of Daily Living, Qualitative Research

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Registration: RBR-5s28jmt.

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QUALITY OF LIFE AND ADHERENCE OF WOMEN TO PELVIC FLOOR TRAINING VIA MOBILE APPLICATION

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Background: Urinary incontinence (UI) is a prevalent issue among women, affecting their quality of life and daily functionality. Pelvic floor muscle training (PFMT) is an effective strategy for managing UI, and mobile technologies have emerged as an alternative to improve treatment adherence.

Objectives: This study analyzed the effects of using a mobile application for pelvic floor muscle training in women with stress and mixed urinary incontinence, focusing on adherence, perceived health improvement, and impact on activities of daily living.

Methods: This randomized controlled trial followed CONSORT guidelines and included 52 women diagnosed with stress or mixed urinary incontinence, who used a mobile application for pelvic floor training. The intervention lasted 12 weeks, with pre- and post-intervention assessments using the International Consultation on Incontinence Questionnaire - Short Form (ICIQ-SF) and King's Health Questionnaire (KHQ). Adherence was monitored, and the impact on ADLs and quality of life was analyzed. The data were analyzed by intention to treat. The collected data were tabulated in a database of the EXCEL[®] program and analyzed using the SPSS statistical software (Statistical Package for the Social Sciences). A descriptive analysis of the data was performed, using simple frequency, mean, standard deviation, p-value, and effect size (D of Cohen) of the

quantitative data. The normality of the data was verified using the Shapiro Wilk test. For the analysis of the data, the Two-way ANOVA test with Tukey post-hoc was used. A level significance of 5% was considered.

Results: Participants using the mobile application reported a significant improvement in general health perception ($p=0.009$) and a reduction in the interference of UI in daily activities ($p=0.045$). However, adherence to the training protocol was low, with an average of 39.59% of the proposed training days completed. Despite this, 84.61% of participants rated the intervention as “excellent.” Improvements in emotional well-being and self-reported quality of life were observed, but limitations in social engagement remained largely unchanged.

Conclusion: Findings suggest that the mobile application was effective in improving perceived health and reducing UI interference in daily life, despite lower adherence rates.

Implications: Mobile applications can be a promising tool for PFMT, especially in promoting self-management. However, strategies to enhance adherence, such as reminders, gamification, or remote professional support, should be considered in future research to maximize treatment benefits.

Keywords: Urinary incontinence, Mobile Applications, Pelvic floor

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Registration: Not applicable.

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EFFECTS OF LOW AND MEDIUM FREQUENCY CURRENTS IN THE TREATMENT OF URINARY INCONTINENCE: A RANDOMIZED CLINICAL TRIAL

Registration: Not applicable.

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Background: Urinary incontinence (UI) is defined as any involuntary loss of urine, classified as stress UI, urge UI (UUI) or mixed UI. UUI is caused by overactivity of the detrusor muscle and affects quality of life. Part of the first line of treatment for UUI is electrostimulation of the tibial nerve, but the literature is not clear on the effects of medium-frequency currents. One of the ways to measure some effectiveness is through the application of validated questionnaires, such as the Overactive Bladder Awareness Tool (OAB-V8), made up of 8 questions, which aims to assess the severity of overactive bladder symptoms and the discomfort caused by them. The scale ranges from 0 (no discomfort) to 5 (a lot of discomfort), with a maximum score of 40. A score of 8 or more suggests the presence of significant symptoms.

Objectives: To analyze and compare the Overactive Bladder Awareness Tool (OAB-V8) questionnaire score before and after treatment with low and medium frequency currents.

Methods: This is a randomized clinical trial, with women aged 18 years and over with complaints of UUI, randomly assigned to an intervention with low-frequency current (GTENS-LF) in a symmetrical biphasic pulsed form of 10 Hz and pulse width of 200 ms and another with medium-frequency current (GA-MF) with 4 kHz with bursts of 4 ms and modulation of 100 Hz in continuous mode. Both consisted of 20 sessions of bilateral electrostimulation of the tibial nerve, twice a week. The participants took an anamnesis and

completed the Overactive Bladder Awareness Tool (OAB-V8) questionnaire. After 10 sessions the questionnaires were reapplied and at the end of the 20 sessions they were re-evaluated.

Results: A total of 50 participants were included and randomly assigned to two groups. At the evaluation, the participants obtained a score of 24.24 ± 8.72 in the GTENS-MF group and 28.52 ± 8.3 in the GA-MF group. At the 10th session, the results were 16.0 ± 6.4 and 19.6 ± 11.42 , respectively. Finally, at the reassessment, GTENS-LF had scores of 13.72 ± 6.59 and GA-MF 19.06 ± 9.36 .

Conclusion: In the context of this randomized clinical trial, it was observed that both low-frequency and medium-frequency currents were able to reduce the symptoms of overactive bladder and UUI when applied bilaterally to the tibial nerve, with no difference between the currents.

Implications: Based on the results of this study, the use of medium- and low-frequency currents becomes a viable alternative for the conservative treatment of patients with urge urinary incontinence.

Keywords: Urinary incontinence, Electrostimulation, Urge urinary incontinence

Conflict of interest: The authors declare no conflict of interest.

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PERCEPTION OF PREGNANT WOMEN AND PHYSICAL THERAPISTS ON TELEHEALTH CARE

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Background: Physical therapy care through telehealth has been established over the years as a viable alternative for certain health conditions. However, it is necessary to know about the perception of both professionals and patients regarding this mode of care.

Objectives: To assess the perception of pregnant women and physical therapists regarding the safety of a physical therapy assessment conducted via telehealth.

Methods: This is an observational cross-sectional study conducted through an electronic survey. The study included women aged = 18 years, in their second or third trimester of a singleton pregnancy, undergoing prenatal care, with internet access, and experiencing pelvic girdle pain (PGP) confirmed by the question: “In the past four weeks, have you had back pain that affected your daily activities?”. Additionally, physical therapists who conducted the assessments were included. The evaluation process involved the following steps: Participants received a booklet with seven PGP tests and were instructed to perform them independently before repeating them synchronously via a video call on Google Meet under the supervision of a physical therapist. After the teleconsultation, pregnant women answered the following questions: “Did you feel safe during the video call?” (rated from 1 = very unsafe to 5 = very safe); “Would you use telehealth to communicate with a physical therapist or another healthcare professional if needed in the future?” (rated from 1 = disagree to 5 = strongly agree); “What were the positive aspects of the session?” (open-ended response). Physical therapists answered: “Did you feel that participants were safe during the video call?” (rated from 1 = strongly disagree to 5 = strongly agree).

Results: Twenty-four pregnant women participated in the study, with a mean age of $31.0 (\pm 4.82)$ years; and four physical therapists participated, with a mean age of $25.5 (\pm 3.5)$ years. Regarding the

perception of safety during the assessment, all pregnant women rated it as "very safe." Concerning the use of telehealth as a means of communication with healthcare professionals, 20 participants (83.33%) fully agreed, 3 (12.50%) agreed, and 1 (4.17%) did not respond. Regarding the positive aspects of the session, participants highlighted the teleconsultation itself, the professionals, and accessibility, as well as their perceptions. Five responses (20.83%) emphasized safety, 9 (37.50%) highlighted the care, attention, and guidance provided by the professionals, 6 (25.00%) mentioned the clarity and quality of the information, and 3 (12.50%) pointed to the convenience and accessibility of telehealth as positive aspects. Regarding the perception of physical therapists about participants' safety, 91.67% (22) fully agreed that the participants were safe, while 4.17% (1) remained neutral and 4.17% (1) disagreed.

Conclusion: There was a positive perception of the teleconsultation assessment for the pregnant women and physical therapists in this study.

Implications: The results of this study contribute to clinical practice by reducing transportation costs and improving access to physical therapy. They also support integrating telehealth into public health systems, increasing national access to specialized care. Clinical trial design studies are necessary to further explore the results.

Keywords: Physiotherapy, Telerehabilitation, Women's health

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IMPACT OF URINARY INCONTINENCE ON THE QUALITY OF LIFE OF WOMEN WITH SYSTEMIC LUPUS ERYTHEMATOSUS

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Background: Urinary incontinence (UI) is a condition that can affect the quality of life of affected women. The impact of UI can be even greater in women with chronic conditions, such as systemic lupus erythematosus (SLE), which can compromise various systems. Thus, it is necessary to understand the impact of UI on different aspects of life, such as social, emotional, and daily activities of women with SLE.

Objectives: To analyze the impact of urinary incontinence on the quality of life of women with systemic lupus erythematosus.

Methods: Cross-sectional study with 21 women diagnosed with SLE and complaints of urinary incontinence aged 18 years or older. The study was conducted at the Rheumatology outpatient clinic of a University Hospital. Participants answered the "urinary impact questionnaire" (UIQ-7) subscale of the Pelvic Floor Impact Questionnaire-7 (PFIQ-7), which contains seven questions about the impact of urinary incontinence on different aspects of life. Means and standard deviations (SD), absolute and relative frequencies were calculated.

Results: 21 women with a mean age of 46.76 years (SD = 11.92) participated in the study. Regarding the type of UI, 42.8% of women had stress urinary incontinence (SUI), 28.6% urge urinary incontinence (UUI), and 28.6% mixed urinary incontinence (MUI). Regarding the UIQ-7 responses, 19 women (90.5%) did not report an impact on

their ability to perform domestic activities. 14.3% of women indicated a significant impact on their ability to perform physical activities. Regarding entertainment activities, 4.8% indicated a slight impact and 14.3% reported a significant impact. Regarding the ability to travel long distances, 61.9% of women reported no impact. In social activities, 14.3% reported a moderate impact. 14.3% reported a significant impact on emotional health. Regarding the feeling of frustration, 28.6% consider themselves very frustrated with the situation.

Conclusion: The UIQ-7 results reveal that urinary incontinence has a considerable impact on the quality of life of women with SLE. It is recommended that further studies be carried out with larger samples.

Implications: This study highlights the importance of assessing the impact of urinary incontinence on the quality of life of women with SLE. The results can be used to stimulate the development of interventions aimed at improving the quality of life of these women.

Keywords: Pelvic Floor Disorders, Quality of Life, Urinary Incontinence

Conflict of interest: The authors declare no conflict of interest.

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EFFECT OF AEROBIC EXERCISE ON URINARY COMPLAINTS IN POSTMENOPAUSAL WOMEN: PRELIMINARY RESULTS OF A CLINICAL TRIAL

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Background: Aerobic exercise, widely practiced by postmenopausal women, is described as effective in reducing some typical symptoms of this period. Urinary complaints, particularly those related to continence, are among the most common complaints in this population. **Objectives:** Therefore, the aim of the study was to evaluate the effect of aerobic exercise on urinary complaints in postmenopausal women.

Methods: This is a clinical trial that included women in the postmenopausal period. All participants followed a 12-week aerobic exercise protocol, which included warm-up, walking, and cooling down three times a week for 50 minutes, with an increase in intensity every 4 weeks. Before and after the 12 weeks, participants were assessed regarding the impact of urinary complaints on quality of life using the International Consultation on Incontinence Questionnaire - Short Form (ICIQ-SF). The Wilcoxon test was applied to compare the differences between the ICIQ-SF questionnaire scores (questions 3, 4, 5, and total score) before and after the intervention.

Results: Thirty-five women were included in the study (mean age: 57.5 years, SD: 7.05). The results showed a significant difference only for question 3 of the ICIQ-SF, which refers to the frequency of urinary leakage ($p = 0.046$), suggesting a reduction in the frequency of urinary complaints after the aerobic intervention. No significant differences were found for other variables after the intervention ($p > 0.05$).

Conclusion: It is concluded that aerobic exercise led to a slight improvement in urinary complaints in postmenopausal women.

Further studies are needed to better understand the impacts of aerobic exercise.

Implications: Aerobic exercise (such as walking) is a low-cost intervention widely practiced by this population. The results of this study may influence how postmenopausal women are guided and treated regarding their urinary complaints.

Keywords: Aerobic Exercise, Urinary Incontinence, Postmenopause

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES - Finance Code 001.

Ethics committee approval: CAAE 67426223.4.0000.5188.

Registration: Not applicable.

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EVALUATION OF CHILDBIRTH EXPERIENCE ACCORDING TO MATERNAL AGE AND MEDICAL CARE PLAN: CROSS-SECTIONAL STUDY

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Background: Pregnancy and childbirth are important moments in the lives of many women, and the experience of childbirth can profoundly affect the health of postpartum women. Their age and the health insurance plan used can be factors that can affect the reporting of this experience.

Objectives: To evaluate the childbirth experience according to maternal age and health insurance plan.

Methods: This is a cross-sectional study that was conducted with women up to four weeks after vaginal delivery, to apply a Childbirth Experience Questionnaire. The participants were divided into two groups for evaluation: health insurance plan and maternal age. The first group was subdivided according to the health insurance plan, with group G1 using the Unified Health System ($n = 27$) and group G2 using the Private Network system ($n = 21$); group G3 composed of women aged between 18 and 30 years ($n = 23$); and group G4 aged between 31 and 40 years ($n = 25$). All participants signed the Free and Informed Consent Form. The Student's t-test was used for independent samples and the significance level was set at $p < 0.05$.

Results: The score obtained in the group that delivered in the Private Health System was 2.72, while the group that delivered in the Public Health System (SUS) was 2.44 ($p = 0.026$). Regarding the maternal age scores, the group aged between 18 and 30 years had an average of 2.65, while the groups aged between 31 and 40 years had a score of 2.52 ($p = 0.36$).

Conclusion: A better childbirth experience was evidenced in the group with medical care in the Private Health System compared to the Unified Health System, and there was no difference between the groups regarding maternal age.

Implications: Based on the results obtained, which demonstrate that women who gave birth with medical assistance in a private network had a better birth experience and associated with all the socio-emotional burden that affects both the woman, the child and the family, it is extremely important to apply the recently validated and updated questionnaire that shows where the limitations are and what needs to be improved at the time of birth between the networks. This study becomes necessary to help health professionals, including physiotherapists (who are increasingly gaining space in maternity centers) to apply the questionnaire and correct what is generating a negative experience during childbirth.

Keywords: Pregnancy, Maternal Age, Medical Assistance

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SEXUAL FUNCTION AND ITS RELATIONSHIP WITH GENITAL SELF-IMAGE IN YOUNG MEN AND WOMEN

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Background: Sexuality is a fundamental aspect of human well-being. Evidence suggests that a negative perception of body image is linked to an increased risk of sexual dysfunctions. However, there is a lack of studies investigating the relationship between genital self-image and sexual function in young adults.

Objectives: To investigate the associations between genital self-image and sexual function in men and women aged 18 to 40 years.

Methods: Cross-sectional, prospective cohort study. Recruited participants through social media. A web-based survey was conducted, including assessments of sexual function (Female or Male Sexual Function Index) and genital self-image (Female or Male Genital Self-Image Scale).

Results: 124 women and 101 men participated in the study. Participants of both sexes with a more positive genital self-image exhibited better sexual function, considering total score, as well as improved performance in the domains of satisfaction, arousal, and lubrication/erection, along with higher self-esteem. In males, there was also a positive correlation between genital self-image and the sexual desire subdomain, whereas no such correlation was observed in women.

Conclusion: Both men and women with a more positive genital self-image demonstrated better outcomes in the domains of satisfaction, arousal, and lubrication/erection. Additionally, in men, a positive genital self-image was associated with sexual desire, a relationship not observed in women.

Implications: In men, insecurity regarding genital appearance may increase anxiety in sexual situations, potentially impairing erectile function and ejaculatory control. Similarly, in women, genital self-image directly influences sexual satisfaction and function. Negative perceptions of genital appearance are associated with orgasm difficulties and reduced sexual desire, which may be exacerbated by sociocultural factors, such as beauty standards, myths and taboos about female sexuality, ultimately impacting women's sexual health.

Keywords: Sexual function, body image, genital self-image

Conflict of interest: The authors declare no conflict of interest.

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EFFECTS OF DIFFERENT EXERCISE INTERVENTIONS ON WOMEN WITH PREMENSTRUAL SYMPTOMS: AN OVERVIEW

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Background: Premenstrual symptoms are highly prevalent in women of reproductive age. Growing evidence suggests that physical exercise can alleviate these symptoms; however, it remains unknown what is the best exercise intervention for this alleviation.

Objectives: In this context, the present systematic review of systematic reviews intends to reply to two questions: (a) What do systematic review findings conclude about the effects of different exercise interventions on premenstrual symptoms? (b) Which intervention is most effective in improving premenstrual symptoms?

Methods: To be included in this study, a systematic review should have analyzed the effect of an exercise intervention in comparison to a non-exercise intervention, no intervention, or usual care on women's (in reproductive age) Premenstrual Syndrome. Searches for systematic reviews were conducted in the following databases: Cochrane Database of Systematic Reviews (CENTRAL), EBSCOhost (EBSCO), Excerpta Medica Database (EMBASE), Medical Literature Analysis and Retrieval System Online (MEDLINE), PsycINFO, and Web of Science, with no restrictions on language or publication date. Two independent reviewers carried out the study selection process and evaluated the systematic review quality with the AMSTAR-2 tool.

Results: After screening 286 records, 31 studies were evaluated in full text for inclusion in the systematic review. Twelve studies published between 2017 and 2024 that included between five and 436 randomized controlled trials (RCT) were eligible. The total number of women of reproductive age included in each systematic review (i.e., summing the participants included by the RCTs summarized by the systematic review) ranged from 492 to 11,590 participants. The interventions provided by the RCTs included in the systematic reviews varied considerably, encompassing yoga, aerobic exercise, diverse physical exercises, and physiotherapy. Many outcomes were evaluated by these RCTs including, pain, work absenteeism, functional status, well-being, depression, and premenstrual symptoms. Collectively, the findings of the systematic reviews support that physical exercise interventions can reduce significantly premenstrual symptoms, anxiety, depressive symptoms, and improve pain and work productivity. Most systematic reviews focused on Yoga, so, the larger part of the evidence supports this kind of exercise. Moreover, results from subgroup analyses of a systematic review suggested that aerobic exercises promote greater health benefits than other types of physical exercise. Nonetheless, some systematic reviews also identified a high risk of bias and heterogeneity in RCTs.

Conclusion: Overall, systematic reviews support the benefit of physical exercise interventions (e.g., Yoga, aerobic exercise, and physiotherapy), especially Yoga and aerobic exercise, to improve women's health by reducing the impact of premenstrual symptoms and enhancing work productivity. Nevertheless, there is a need for a lower risk of bias RCTs to increase confidence in these findings.

Implications: Physical exercise interventions such as Yoga and aerobic exercise can be considered as a strategy to improve the well-being of women who suffer from premenstrual symptoms. Though more high-quality research is important, policy makers' and practitioners' efforts to increase women's engagement in physical exercise may improve their health and work productivity.

Keywords: Exercise, Premenstrual symptoms, Systematic review

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CORRELATION BETWEEN PELVIC FLOOR MUSCLE FUNCTION AND TONE AND PAIN COMPLAINTS DURING SEXUAL INTERCOURSE IN WOMEN WITH GENITO-PELVIC PAIN/PENETRATION DISORDER

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Background: Genito-pelvic pain/penetration disorder (GPPPD) is the term used to define female sexual disorders that encompass conditions such as dyspareunia, vaginismus and vulvodynia, significantly affecting women's quality of life. GPPPD is associated with changes in the pelvic floor muscles (PFM), including increased tone and muscle spasms, which may contribute to pain during sexual intercourse. However, there are still few studies that directly evaluate the relationship between PFM muscle tone and strength and the intensity of muscle pain in women with GPPPD.

Objectives: Evaluate the correlation between pelvic floor muscle tone and strength and pain intensity in women with GPPPD.

Methods: This is a cross-sectional study that included women over 18 years of age who had already had sexual intercourse and who had genito-pelvic pain/penetration before, during or after sexual intercourse. The assessment of the participants included a physical examination of the PFM with measurement of tone using the Reissig Scale, muscle strength using the modified Oxford Scale and tender points using the Pain Map, using the Visual Analogue Scale (VAS). To assess tender points, points in the region of the right and left obturator internus muscles and the right and left levator ani muscles were palpated. Statistical analysis was performed using the JASP software, with the Shapiro-Wilk test to verify data normality and the Spearman correlation test ($p < 0.05$).

Results: Sixty-two women participated in the study (age: 28.26 ± 9.36 years; BMI: 23.67 ± 4.90 kg/m²). The PFM muscle strength was 3.26 ± 1.03 and tone, 0.50 ± 0.74 . Correlation analysis showed no relationship between tone and muscle strength and pain intensity in the right and left obturator internus and right and left levator ani muscles ($p > 0.05$). However, there was a moderate positive correlation between pain in the right obturator internus and levator ani ($p < 0.001$, $r = 0.61$), as well as between the first one and the left obturator internus ($p < 0.001$, $r = 0.49$). Positive correlations were also observed between pain in the right and left levator ani ($p < 0.001$, $r = 0.63$) and between the left obturator internus and the left levator ani ($p < 0.001$, $r = 0.64$).

Conclusion: The results indicate that there is no correlation between the tone and strength of the PFM being directly associated with the complaint of pain in women with GPPPD. However, the pain appears to be distributed in different muscles of the pelvic floor, suggesting that its origin may be multifactorial, involving not only muscular aspects, but also other intrinsic factors and biopsychosocial factors.

Implications: A comprehensive clinical approach is needed in the assessment and treatment of pain in women with PGD, going beyond the isolated analysis of muscle tone. Future studies should explore other intrinsic and extrinsic factors involved in this condition.

Keywords: Sexual dysfunction, Pain, Sexuality

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IMPACT OF MENOPAUSAL SYMPTOMS ON THE QUALITY OF LIFE OF MIDDLE-AGED WOMEN

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Background: Menopause is characterized by the absence of menstruation for 12 consecutive months due to the reduction of estrogen and progesterone hormones, typically occurring between the ages of 45 and 55. This process can trigger physiological and psychological symptoms that significantly impact quality of life. It is essential to understand the impact that the intensity of these symptoms has on the daily lives of these women.

Objectives: To assess the quality of life of menopausal women and the symptoms related to this period.

Results: Menopause impacted the participants' quality of life, especially in the urogenital aspects and the total MRS score. Psychological symptoms were classified as moderate (5.93 ± 3.97), with 40% of participants presenting severe symptoms and 33.3% moderate symptoms. Somato-vegetative symptoms were also classified as moderate (7.40 ± 2.61), with 46.7% of participants reporting moderate symptoms and 33.3% severe symptoms. Urogenital symptoms were considered severe (3.40 ± 2.26), with 53.3% of participants falling into this classification. The total score had a general average of 16.73 ± 7.07 , also classified as severe. Most participants (66.7%) had severe symptoms, while 20% reported moderate symptoms and 13.3% mild symptoms. No participant was classified as asymptomatic or with minimal symptoms. However, according to the UQOL assessment, participants' quality of life was considered high, considering the total score average (79.13 ± 12.18) and the average of each assessed domain: occupational (26.13 ± 4.16), health (21.07 ± 5.23), emotional (22.40 ± 3.31), and sexual (9.53 ± 3.18). Although most participants presented a good quality of life, the study revealed great variability in the sample, with large standard deviations. Percentile analysis showed that in the 25th percentile, scores were low in most domains, while in the 50th and 75th percentiles, they were above the validated average. Although there was an overall tendency toward good quality of life, some participants still experienced challenges in specific aspects.

Conclusion: Menopause can affect women's quality of life, especially regarding urogenital symptoms and the total MRS score. On the other hand, the UQOL assessment indicates that many women still perceive their quality of life positively, with high scores in various domains. However, the wide variation in results shows that this experience is not the same for all women – while some cope well with the changes, others face challenges that impact their well-being.

Implications: Analyzing the intensity and impact of menopausal symptoms on women's quality of life allows for the development of interventions tailored to their specific needs. Furthermore, it guides the creation of support programs and health policies aimed at

minimizing the negative effects of menopause and promoting the well-being of this population.

Keywords: Menopause, Quality of life, Symptoms

Conflict of interest: The authors declare no conflict of interest.

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OCCURRENCE OF MENSTRUAL SYMPTOMS IN PERIMENOPAUSAL WOMEN: CROSS-SECTIONAL STUDY

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Background: Dysmenorrhea, characterized by abdominal pain or discomfort associated with the menstrual cycle, and other menstrual symptoms such as lower back pain, headaches, nausea, vomiting, fatigue, and diarrhea are frequently reported by women of reproductive age. Although widely studied in younger women, the occurrence of menstrual symptoms during perimenopause is still under-investigated, and there is limited knowledge about the continuation or worsening of these symptoms, highlighting the need for more research in this population.

Objectives: Investigate the occurrence of menstrual symptoms in perimenopausal women.

Methods: This is a cross-sectional study approved by the Research Ethics Committee. Data collection was performed using a structured questionnaire available on the Google Forms platform, focusing on aspects related to dysmenorrhea and menstrual symptoms. Menstrual pain was assessed using an 11-point Numeric Pain Scale (NPS), where 0 indicates no pain and 10 signifies the worst imaginable pain. The research dissemination occurred online through social media channels. The study included women in the perimenopausal period, aged 35 years or older. Exclusions applied to pregnant women, those who had not menstruated in the past year, or those reporting health conditions related to secondary dysmenorrhea (associated pelvic disease). Data were presented as mean, standard deviation, and percentage. An analysis was conducted to examine the association between reports of dysmenorrhea during adolescence and the perception of menstrual symptoms during perimenopause, with relative risk calculated. A significance level of 5% was considered.

Results: A total of 1,040 women participated in the study, with a mean age of 39.8 ± 4.1 years. The majority of participants (58.2%) were in a marital union. Among the study participants, 49.1% reported experiencing menstrual symptoms since adolescence; 34.5% were nulligravida, and among those who had given birth, 65% had undergone a cesarean section, 25% had a vaginal delivery, and 10% had experienced both types of childbirth. Over the past three months, the average dysmenorrhea intensity assessed by the Numerical Pain Scale (NPS) was 4.9 ± 3.0 , with 9.1% of participants reporting no pain, 26.7% reporting mild pain, 27.3% reporting moderate pain, and 35.9% reporting severe menstrual pain. A significant association was observed between a history of dysmenorrhea during adolescence and the occurrence of menstrual symptoms in perimenopause ($p = 0.03$). Women who experienced dysmenorrhea during adolescence had a 35% higher risk of developing menstrual

symptoms in perimenopause compared to those without a history of adolescent dysmenorrhea (RR = 1.35; 95% CI 1.21 to 1.42).

Conclusion: The occurrence of menstrual symptoms in perimenopause, especially dysmenorrhea, reported by most participants as severe pain, is associated with a history of dysmenorrhea during adolescence.

Implications: The findings highlight the importance of monitoring women with menstrual symptoms during perimenopause.

Keywords: Perimenopause, Dysmenorrhea, Menstrual Symptoms

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FEMALE SEXUALITY: TABOOS AND SOCIAL ASPECTS

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Background: Sexuality, even today, is marked by sexist manifestations and by taboos and myths that mainly influence female sexuality. Women's lack of knowledge about their own bodies and their sexual identity can lead them to accept certain situations as natural to sex, such as pain and lack of pleasure during sexual intercourse, which makes guidance and discussion on the subject relevant.

Objectives: To relate sociodemographic characteristics to female sexuality.

Methods: This is an exploratory-descriptive study with a quantitative-qualitative design. Data collection took place from September 2020 to January 2021, online, through a questionnaire made available through a Google Forms link. Women between 18 and 55 years old who were sexually active were included. The questionnaire covered questions regarding female sexuality and sociodemographic items, including identification, age, education, contraceptive methods, experiences in sexual relations, family and social influences, among others. After data collection, Excel® 2010 software was used to create tables, charts and graphs, in addition to the analysis generated by Google forms.

Results: The total sample consisted of 104 participants, with a minimum age of 18 and a maximum of 55 years, of whom the majority reported having an incomplete higher education level (56.73%). When questioned, the majority (66.40%) believed they had good knowledge about their own anatomy of the reproductive and sexual system, and 58.65% reported that their family members did not talk openly and respectfully about sexuality. In addition, it was possible to identify that the majority used some contraceptive method (84.62%), of which 37 people mentioned the use of more than one contraceptive method, with condoms being the most cited (n = 60).

It is worth mentioning that 80.77% reported not feeling safe in not using contraceptive methods and 31 people stated that their partner had already refused to use contraceptive methods, in addition to 51 reporting having some traumatic experience during sexual intercourse and 19 having suffered some type of aggression during sexual intercourse.

Conclusion: It can be concluded that female sexuality is still a subject that needs to be discussed so that women have greater knowledge about their own bodies and can talk openly with their families about the subject. It is worth mentioning that most people reported using contraceptive methods and not feeling safe in not using them. However, there are alarming issues such as the fact that partners refuse to use contraceptive methods, the number of traumatic experiences and aggressions during sexual intercourse.

Implications: Understanding the sociodemographic profile and female sexuality allows the physiotherapist to establish the best approaches when serving this audience, especially with regard to health education.

Keywords: Sexual Health, Sexual Trauma, Contraception Behavior

Conflict of interest: The authors declare no conflict of interest.

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MOBILE APPLICATION FOR PELVIC FLOOR MUSCLE TRAINING IN URINARY INCONTINENCE: ADHERENCE, IMPACT, AND QUALITY OF LIFE

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Background: Urinary incontinence (UI) significantly affects women's quality of life, impacting physical, psychological, and social aspects. Pelvic floor muscle training (PFMT) is considered the first-line treatment for UI; however, long-term adherence remains a challenge.

The use of mobile technologies has been proposed as an alternative to support treatment adherence.

Objectives: This study aimed to evaluate the effects of using a mobile application for pelvic floor muscle training in women with stress and mixed urinary incontinence, considering the reduction of urinary complaints, impact on quality of life, and participant satisfaction.

Methods: This was a randomized controlled trial following CONSORT guidelines. The sample consisted of 104 women diagnosed with stress or mixed urinary incontinence, randomly allocated into two groups: one receiving guidance through a mobile application (n = 52) and another through an educational booklet (n = 52). The training protocol lasted 12 weeks. Participants completed the International Consultation on Incontinence Questionnaire - Short Form (ICIQ-SF) and King's Health Questionnaire (KHQ) before and after the intervention. Treatment adherence was monitored, and satisfaction was assessed using a visual analog scale. The data were analyzed by intention to treat. The collected data were tabulated in a database of the EXCEL® program and analyzed using the SPSS statistical software (Statistical Package for the Social Sciences). A descriptive analysis of the data was performed, using simple frequency, mean, standard deviation, p-value, and effect size (D of Cohen) of the quantitative data. The normality of the data was verified using the Shapiro Wilk test. For the analysis of the data, the Two-way ANOVA test with Tukey post-hoc was used. A level significance of 5% was considered.

Results: The results showed that both interventions significantly reduced the interference of urinary incontinence in quality of life. The Booklet group showed higher adherence to the protocol (90.73% of the proposed days) compared to the App group (39.59%), as well as better performance on ICIQ-SF and KHQ scores, especially in reducing the frequency and amount of urinary leakage ($p = 0.001$). In the between-group analysis, the Booklet group had better results regarding UI impact and social limitations. Regarding satisfaction, both groups had high approval rates, with a higher percentage of "excellent" ratings in the App group (84.61% vs. 76.92% in the Booklet group).

Conclusion: The findings suggest that despite high satisfaction with the app, adherence to PFMT was lower than in the Booklet group, resulting in less expressive symptom improvement.

Implications: Future studies should explore ways to optimize adherence to app-based training, including remote professional support. The incorporation of mobile technologies into UI treatment appears promising, but additional strategies are necessary to maximize its effectiveness and long-term adherence.

Keywords: Urinary incontinence, Mobile Applications, Pelvic floor

Conflict of interest: The authors declare no conflict of interest.

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CHARACTERIZATION OF THE MAIN POSTPARTUM COMPLICATIONS IN WOMEN UNDERGOING FOLLOW-UP IN PRIMARY HEALTH CARE: A CROSS-SECTIONAL STUDY

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Background: Postpartum is a period marked by intense physical and emotional adaptations, signaling the end of pregnancy and the beginning of a phase of great vulnerability in women's health. During this time, complications may arise that compromise quality of life and well-being, requiring appropriate attention and care. Among the most common complications are postpartum hemorrhage, pelvic floor dysfunctions such as urinary and anal incontinence, as well as prolapse and pelvic pain, and psychological disorders like depression and anxiety. These conditions can have a negative impact on quality of life, potentially leading to hospitalization, the use of medications and procedures, as well as affecting daily activities, maternal-infant bonding, and generating a substantial economic impact on individuals and healthcare services.

Objectives: To characterize the main postpartum complications and highlight their prevalence.

Methods: This is a cross-sectional, descriptive study conducted from August 2023 to April 2024. The sample consisted of postpartum women up to one year postpartum, aged 18 years or older, who voluntarily consented to participate in the study by signing the Free and Informed Consent Form (TCLE). Participants who did not express interest in joining the study were excluded. Postpartum complications were self-reported, allowing for a subjective analysis of the complications experienced during this period.

Results: A total of 61 women were included, with an average age of 29 years and an average of 132 days postpartum. The majority of

the women (80.33%) did not experience postpartum complications. Among the participants who reported complications (19.67%), perineal laceration was the most frequent, accounting for 58.33% of cases, followed by postpartum depression and hemorrhage (25%), and infection (8.33%).

Conclusion: The majority of postpartum women did not experience complications. Among the most frequent, perineal laceration stands out. Additionally, complications such as postpartum depression, hemorrhage, and infection were observed. These findings highlight the need for continuous monitoring and early interventions to ensure maternal health and well-being in the postpartum period. A limitation of this study is the use of self-reporting, which may be subject to participants' perception and memory bias.

Implications: The analysis of postpartum complications highlights the prevalence of conditions such as perineal laceration and emphasizes the importance of physical therapy in managing these conditions. The findings indicate that, despite the majority of postpartum women not experiencing complications, a proportion of women report complications that require early intervention.

Keywords: Postpartum complications, Primary Health Care, Intercurrences

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PELVIC FLOOR MUSCLE TRAINING OR MAT PILATES FOR STRESS URINARY INCONTINENCE IN MENOPAUSAL WOMEN: A RANDOMIZED CONTROLLED CLINICAL TRIAL

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Background: Stress urinary incontinence (SUI) affects many women, particularly those who are postmenopausal. Pelvic floor muscle training (PFMT) is the first-line treatment, but it has low adherence rates. Mat Pilates (MP) has been proposed as an alternative treatment for SUI. Pilates instructors believe the method can strengthen the pelvic floor muscles, making it an appealing alternative for treating SUI. However, current evidence is not robust enough to conclude that MP has a clinically relevant effect on SUI treatment.

Objectives: To compare the effects of MP combined with maximum voluntary contraction of the pelvic floor muscles (PFM) and compare it to the gold standard PFMT in postmenopausal women with SUI.

Methods: This is a randomized controlled clinical trial with two groups: the experimental group (EG): MP combined with maximum voluntary contraction of the PFM, and the control group (CG): PFMT. Inclusion criteria included postmenopausal women aged 45 to 65 years with SUI. Both training programs consisted of 36 sessions, three times a week on alternate days over a 3-month period. Both groups performed the same number of PFM contractions, with training progression occurring every 12 sessions by increasing the load and number of maximum contractions. Assessments were performed using the ICIQ-SF (International Consultation on Incontinence

Questionnaire), physical assessment of the PFM with a one-finger palpation measured using the Oxford Scale, and the Peritron equipment. To test the normality of the data, the Shapiro-Wilk test was applied, and repeated measures Two-Way ANOVA with a Tukey post hoc test was used.

Results: Preliminary results showed the following average age: EG 57.87 (± 4.48) years and CG 57.36 (± 4.70) years. The average number of childbirths in the EG was 2.60 (± 0.93) and in the CG 2.31 (± 0.95). The average BMI in the EG was 30.27 (± 4.84) Kg/m² and in the CG 30.47 (± 4.49) Kg/m². The ICIQ-SF in the EG changed from 11.07 (± 5.61) to 7.13 (± 3.58), and in the CG from 11.79 (± 4.42) to 3.86 (± 2.71), inter-group ($p = 0.047$) and intra-group ($p < 0.001$). All muscle variables improved: In the EG, strength increased from 3.00 (± 0.85) to 3.73 (± 0.80), and in the CG from 3.00 (± 1.11) to 3.71 (± 0.91), inter-group ($p = 0.973$) and intra-group ($p < 0.001$); in the EG, endurance increased from 4.80 (± 1.42) to 6.67 (± 2.16), and in the CG from 3.71 (± 0.91) to 5.14 (± 1.92), inter-group ($p = 0.215$) and intra-group ($p < 0.001$); peak pressure in the EG was 34.48 (± 18.48) to 38.98 (± 17.18), and in the CG was 37.57 (± 17.53) to 38.98 (± 21.98), inter-group ($p = 0.801$) and intra-group ($p = 0.408$).

Conclusion: Preliminary results suggest that PFMT is more effective in treating SUI in postmenopausal women when compared to Mat Pilates.

Implications: PFMT remains the level A evidence treatment and should be the first choice for physical therapists in the management of SUI.

Keywords: Pelvic Floor, Urinary Incontinence, Stress, Resistance Training

Conflict of interest: The authors declare no conflict of interest.

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WHAT IS THE PROFILE OF BRAZILIAN WOMEN WHO RECEIVE PHYSIOTHERAPEUTIC ASSISTANCE DURING CHILDBIRTH? A CROSS-SECTIONAL STUDY

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Background: In Brazil, the team assisting childbirth traditionally consists of doctors and nurses, however, physiotherapists can be part of the interprofessional team aiming for more humanized care. Physiotherapy assistance during labor can promote a better experience and satisfaction with delivery.

Objectives: To describe the profile of women who received physiotherapy assistance during childbirth.

Methods: This is a cross-sectional observational study that included postpartum women aged ≥ 18 years, up to 12 months postpartum, who experienced vaginal delivery in a hospital setting. The study was approved by the Human Research Ethics Committee. Data were collected nationwide using an electronic form via Google Forms, containing questions about sociodemographic and health data. In this form, women were asked about access to physiotherapy care during labor by the question: "Which health professionals accompanied you during labor?" with the option to mark physiotherapist,

doula, obstetric nurse and doctor. Data analysis was performed descriptively, representing continuous variables as mean and median, and categorical variables as absolute numbers and percentages.

Results: 320 postpartum women participated in the study, of which 111 (34.69%) received physiotherapy assistance during labor. The average age of women who had a physiotherapist during the birthing process was 32.9 (± 4.25) years. Regarding the region of residence, 69 (62.2%) resided in the South and Southeast regions, while 40 (36.0%) in the North, Northeast, and Midwest regions. Regarding education level, 73 (65.8%) postpartum women reported having postgraduate education. Concerning self-declaration of race/color, 78 (70.3%) declared themselves white. Regarding marital status, 106 (95.5%) participants reported having a stable union. Finally, in relation to monthly family income, 48 (43.2%) indicated belonging to Class B, 29 (26.1%).

Conclusion: The women in this study, who had the presence of an intrapartum physiotherapist, were mostly from the South and Southeast regions, with a high level of education, white, in stable unions, and with high income. This shows an extremely restricted profile that does not reflect the reality of most women in Brazil, possibly indicating that a large portion of women do not have access to physiotherapy care in maternity hospitals. **Implication:** The characterization of women who had access to the services of a physiotherapist during intrapartum reinforces that access to this professional is still limited; women with higher education levels and high income have the opportunity to have more qualified assistance. It is known that the physiotherapeutic resources employed during the birthing process are related to the reduction of pain and anxiety, relaxation, reduction of labor time, in addition to the professional collaborating with continuous support providing a more positive birth experience. These findings highlight the need for the advancement of public policies that favor the presence of physiotherapists in maternity hospitals and in different socioeconomic contexts, in order to promote better birth experiences.

Keywords: Physiotherapist, Childbirth Experience, Women's Health

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES - Finance Code 001.

Ethics committee approval: No. 6.189.198.

Registration: Not applicable.

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ENDOMETRIOSIS BEYOND PAIN: AN OVERVIEW OF EMOTIONAL STRESS

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Background: Endometriosis is a chronic and inflammatory gynecological disease characterized by the presence of tissue outside the uterine cavity. The most common symptoms are chronic pelvic pain, dyspareunia, dysuria, dyschezia, fatigue, and infertility. The disease can affect up to 10% of women in reproductive age, leading to negative physical and psychological impacts on their lives. Epidemiological studies point to possible risk factors for the disease, including stress, triggered by physical or psychological stimuli. In recent years, studies have suggested the presence of an association between high levels of stress and endometriosis and have revealed that women with the disease report higher levels of depression and emotional stress, and psychological factors appear to contribute to the intensification of the symptoms of the disease.

Objectives: To describe the profile of women with endometriosis and the prevalence of emotional stress as a factor in worsening the disease.

Methods: Cross-sectional study involving 135 women with a medical diagnosis of endometriosis, treated by the Physiotherapy service of a Comprehensive Women's Health Care Center, between 2011-2019. Sociodemographic and clinical data of these women were collected from medical and physiotherapy records. The data were presented descriptively.

Results: Most women (74.81%) were in reproductive age, with average age of 37.50 ± 8.77 years, 80 (59.26%) were married, 101 (74.82%) had already undergone at least one surgery due to symptoms and only 6 (4.44%) were undergoing hormonal treatment to control endometriosis symptoms. In this sample, we identified that 53 (39.26%) reported physical or emotional stress as a factor in worsening symptoms, 37 (27.41%) reported physical stress, 41 (30.37%) reported emotional stress, 7 (5.18%) had a history of depression and 17 (12.59%) undergoing drug treatment with antidepressants. Of the women included in the study, 116 of them had pain at the time of evaluation and the average pelvic pain according to the visual analog scale was 7.44 ± 1.94 .

Conclusion: This study presented relevant information about the profile of women with endometriosis, highlighting the prevalence of emotional stress as a factor associated with worsening symptoms. The findings underscore the need for integrated approaches that consider the impact of emotional well-being on disease management, highlighting the fundamental role of multidisciplinary teams in providing comprehensive and personalized care. With these insights, it is expected to foster more effective therapeutic strategies, promoting a better quality of life for women affected by endometriosis.

Implications: Knowing the epidemiological profile of women with endometriosis helps in better understanding and therapeutic approach, thus allowing a more effective treatment, considering the influence of the emotional factors of this condition.

Keywords: Endometriosis, Psychological Distress, Pelvic Pain

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SELF-REPORT OF PREVIOUS LABOR EXPERIENCE AT A UNIVERSITY HOSPITAL IN BRASÍLIA: A CROSS-SECTIONAL STUDY

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Background: Maternal satisfaction with childbirth is associated with a positive perception of the care received during labor, and is influenced by professional practices, the environment, women's expectations, and the support offered during this period. Studies indicate that the information provided to patients during labor is one of the most important predictors of high satisfaction and a positive experience. However, high satisfaction with childbirth is observed even in unfavorable scenarios, which may be related to low schooling and limited pre-partum education in emerging countries. Thus, we aim

to understand maternal satisfaction with the previous childbirth experience through self-reporting in a public hospital in Brasília.

Objectives: Describe previous experience of women's childbirth in a public hospital in Brasília.

Methods: This was an observational study conducted at the Obstetric Center of a public hospital in Brasília, from August to December 2024. Women who were admitted to this hospital and agreed to participate by signing the Informed Consent Forms (ICF) participated in the research. Abortions and stillbirths were exclusion criteria. Trained researchers observed the hospital service routine twenty-four hours a day and collected demographic and obstetric data from patients, including reports of previous labor experiences.

Results: 56 parturients were included in the study, 39 (69.64%) with positive experience and 17 (30.36%) with negative experience. Among the parturients with positive experience, the most prevalent age group was 20 to 29 years (58.97%), with a mean age of 28.89 (SD: 5.44). The women were mostly brown (56.41%), had completed high school (53.85%) and were single (48.72%). Regarding the previous gestational history of these women, there was an average of 2.10 pregnancies (SD: 1.04), 1.74 vaginal deliveries (SD: (1.01), 0.20 abortions (SD: 0.40) and 0.15 cesarean sections (SD: 0.26). Among the patients with negative experiences, the age group that prevailed was 30 to 39 years (70.59%), with an average age of 30.76 (SD: 4.10). The parturients were black (70.59%), had completed elementary school (47.06%) and were single (67.71%). Regarding the previous gestational history of these women, there was an average of 1.88 pregnancies (SD: 1.23), 1.44 vaginal deliveries (SD: 1.19), 0.16 abortions (SD: 0.51) and 0.27 cesarean sections (SD: 0.46).

Conclusion: Most parturients reported a positive previous experience. This high level of satisfaction can be explained by the growing wave of humanization, evidence-based practices in obstetric centers and the recommendations of good practices suggested by the WHO and the Ministry of Health. However, it is worth noting that the low level of education and knowledge about childbirth tends to increase the level of satisfaction with labor.

Implications: The experience of women in labor is important data for health managers, since it is a data composed of several variables and can impact the subsequent pregnancy and childbirth experience, since a negative experience can lead to a worsening of sleep, self-rated health and fear of childbirth in subsequent pregnancies.

Keywords: Self-report, labor, experience

Conflict of interest: The authors declare no conflict of interest.

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KINESIOPHOBIA IN PREGNANT WOMEN WITH AND WITHOUT LUMBOPELVIC PAIN IN THE THIRD TRIMESTER OF PREGNANCY: A DESCRIPTIVE ANALYSIS

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Background: Lumbopelvic pain is a common musculoskeletal complaint during pregnancy, affecting 24% to 90% of pregnant women. Although often considered a normal part of pregnancy, it can negatively impact quality of life, daily activities, sleep, and mental health. Regular physical activity helps reduce pain intensity and improves maternal and fetal outcomes. However, many pregnant women face barriers to exercise, including fear of movement, known as kinesiophobia, which can lead to avoidance behaviors, functional decline, and reduced adherence to rehabilitation.

Objectives: To descriptively compare kinesiophobia levels between pregnant women with and without lumbopelvic pain in the third trimester of pregnancy.

Methods: Twenty pregnant women were assigned to two groups of ten: those with and without lumbopelvic pain. The inclusion criteria required participants to be in the third trimester of a singleton pregnancy and at least 18 years old. Exclusion criteria included reliance on assistive devices for walking, neurological disorders affecting mobility, previous spinal or lower limb surgeries, inflammatory conditions in the lower back or lower limbs, and contraindications to physical activity. Data collection included sociodemographic, anthropometric, and clinical variables. Kinesiophobia was assessed using the Tampa Scale for Kinesiophobia. Pain intensity was measured with the Numeric Pain Rating Scale, and disability due to low back pain and pelvic pain was evaluated using the Roland-Morris Disability Questionnaire and the Pregnancy Pelvic Girdle Questionnaire, respectively. Due to the small sample size, differences between groups were analyzed descriptively, without statistical tests.

Results: The average age was 32.6 ± 6.5 years in the pain-free group and 30.7 ± 4.9 years in the pain group. Gestational age was 34 weeks and $0.2 \text{ days} \pm 3 \text{ weeks}$ and 2 days in the pain-free group and 35 weeks and $6.2 \text{ days} \pm 2 \text{ weeks}$ and 2.7 days in the pain group. Participants in the pain group reported a mean score of 5.75 ± 1.5 on the Numeric Pain Rating Scale. The Roland-Morris Disability Questionnaire and Pregnancy Pelvic Girdle Questionnaire showed mean scores of 10.7 ± 7.2 (indicating low disability levels) and 47.7 ± 22.5 (indicating moderate disability levels) in the pain group, respectively. Regarding kinesiophobia levels, a descriptive analysis revealed similar scores in both groups: 28.7 ± 5.9 in the pain-free group and 30.7 ± 7.5 in the pain group, indicating high kinesiophobia levels in both.

Conclusion: In this descriptive and preliminary analysis, pregnant women with lumbopelvic pain exhibited kinesiophobia levels similar to those without pain, with both groups presenting high levels. These findings suggest that pregnancy may be a critical period for the development or manifestation of kinesiophobia. However, caution is needed due to the small sample size, and further studies are necessary to confirm these findings.

Implications: This study enhances the understanding of kinesiophobia levels in pregnant women with and without lumbopelvic pain, highlighting its relevance in pain management strategies. Recognizing kinesiophobia as a potential barrier to physical activity is essential for developing targeted interventions that promote movement, reduce disability, and improve overall maternal well-being during pregnancy.

Keywords: Kinesiophobia, Lumbopelvic pain, Pregnancy

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ASSOCIATION BETWEEN TRAINING VOLUME AND SEXUAL AND URINARY DYSFUNCTIONS IN FEMALE CYCLISTS: A CROSS-SECTIONAL STUDY

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Background: Women's cycling has gained popularity in recent years, and while the literature highlights numerous health benefits, including improved cardiovascular fitness and muscle endurance, certain training practices raise concerns about potential negative effects on pelvic health, particularly regarding sexual and urinary dysfunctions. Sexual dysfunction (SD) in female cyclists has been associated with various factors, including prolonged perineal compression, hormonal imbalances, and high training loads. Similarly, urinary incontinence (UI) may be influenced by repeated impact and sustained intra-abdominal pressure. Despite these concerns, Brazilian studies exploring the relationship between training volume and pelvic floor dysfunctions in female cyclists remain scarce.

Objectives: To analyze the association between training volume and sexual and urinary dysfunctions in female cyclists.

Methods: This is a cross-sectional study approved by the Research Ethics Committee. All athletes provided informed consent before responding to the questionnaire, which was distributed online. Female cyclists aged 18 to 50 years, cycling for at least one year, training at least once a week, and sexually active (at least one sexual intercourse or sexual relations in the past four weeks) in the last four weeks were included – pregnant women, those with any previous pelvic surgery for prolapse and orthopedics. The questionnaires included training behavior variables (i.e. distance daily, Distance weekly, Frequency weekly, training hours per day, training intensity by borg scale), the presence of sexual dysfunction assessed by the Female Sexual Function Index (FSFI), and urinary incontinence evaluated using the International Consultation on Incontinence Questionnaire (ICIQ). Descriptive data were used to identify prevalence, and Pearson's test was applied to assess the correlation between training behavior and FSFI and ICIQ scores. Parametric descriptive data were presented as mean $\pm$ standard deviation. Correlation values, represented by R values within the range of 0.0–0.30, were considered weak; 0.31–0.50, mild; 0.51–0.70, moderate; 0.71–0.90, strong; and 0.91–1.0, excellent correlations. Statistical analyses were performed using SPSS software, version 26.0.

Results: The study included 95 female cyclists. The average age of the athletes were 36.0 ± 8.6 years, with a cyclist time experience of 3.24 ± 1.81 years. The training intensity, assessed using the Borg Scale, was 14 points (almost exhausting). The prevalence of SD was 33.7% and UI among the women included in the study were 4.12%, with 12 women reporting "no awareness of urine loss," accounting for 13.7%. A positive and weak correlation was found between the weekly training volume and the FSFI questionnaire score ($r = 0.210$; $p = 0.043$). **Conclusion:** Higher weekly training volumes are associated with better sexual function in female cyclists.

Implications: Further studies are needed to truly confirm that training long distances is not associated with dysfunctional pelvic floors.

Keywords: Athletes, Urinary incontinence, Sexual dysfunction

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HEALTHCARE COSTS DURING PREGNANCY CONSIDERING WOMEN'S HEALTH: A SYSTEMATIC REVIEW

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Background: Pregnancy is an essential physiological condition for the maintenance of life. Most pregnant women can be classified as low-risk pregnant women. However, due to the need for pregnancy monitoring to prevent undesirable outcomes, even low-risk pregnancies increase the use of health resources and associated costs.

Objectives: To conduct a systematic review to summarize healthcare costs in the management of low-risk pregnancies, considering women's health during the gestational period.

Methods: A search was performed on January 6, 2025, in the PUBMED, Embase, CINAHL, SPORTDiscus, EconLit, National Health Service Economic Evaluation Database (NHSEED), and Health Technology Assessment (HTA) databases. Cross-sectional and cohort studies that described the healthcare costs, considering women's health during the gestational period, were included. All costs were inflated to the year 2023 and converted to International Dollar (\$) using purchasing power parity. A descriptive summary of the data was performed.

Results: Seven studies were included in this systematic review: five studies considered the healthcare costs of low-risk pregnancies, and two studies considered the healthcare costs of low-risk pregnancies with physiological symptoms associated with pregnancy. One study conducted in a low-income country (Rwanda) reported a mean cost of \$68 per pregnant woman. Three studies were conducted in upper-middle-income countries (two in Brazil and one in India), and the mean costs ranged from \$8 to \$856 per pregnant woman, with the lowest cost observed in the study with a time horizon of the last prenatal check-up, while the other two studies reported costs related to the gestational period. Three studies were conducted in high-income countries (Australia, Canada and United States) and the mean costs ranged from \$5 to \$1,487 per pregnant woman, with the lowest cost observed in the study that considered a time horizon of one week and the other two studies considered the gestational period. Therefore, costs varied depending on the physiological symptoms of pregnancy, the perspective of the study, the time horizon and the cost components included. Costs of medications, diagnostic tests, consultations with obstetricians, nurses and/or alternative medicine, emergency and hospitalization services, materials and equipment, infrastructure, and support and administrative services were found among the components included in the healthcare cost. The highest costs were identified in studies conducted in high-income countries that reported only costs for medical consultations, both with conventional and alternative medicine.

Conclusion: Healthcare costs in prenatal care for low-risk pregnancies ranged from US\$5 to US\$1,487 per pregnant woman. Future studies should be conducted to assess and describe costs more clearly, including unit costs, information on the components included in the cost category, description of mean costs per patient, and measures of variability. Future studies should also be conducted from a societal perspective.

Implications: Summarizing healthcare costs and identifying whether spending is being directed toward interventions recommended by the guidelines can provide important information for

policymakers, decision-makers, and professionals who care for pregnant women, including physical therapists. Thus, well-targeted resources can be essential to prevent tragic or undesirable outcomes during pregnancy, which can be responsible for even more significant costs during pregnancy.

Keywords: economic evaluation, pregnancy, prenatal care

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WHAT IS THE LEVEL OF PHYSICAL ACTIVITY OF WOMEN IN DIFFERENT GESTATIONAL TRIMESTERS? A CROSS-SECTIONAL STUDY

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Background: Physical activity is an essential element of a healthy lifestyle and a component of optimal health. Women who exercise during pregnancy may experience a reduced risk of adverse pregnancy outcomes, such as gestational diabetes and even a shorter duration of active labor. Furthermore, physical activity is beneficial throughout all pregnancy trimesters and may help reduce potential risks to fetal growth.

Objectives: To analyze the level of physical activity among women in different pregnancy trimesters.

Methods: This is a cross-sectional study Brazilian pregnant women aged ≥18 years who were undergoing prenatal care were included. Data collection was conducted using an electronic form containing questions about sociodemographic and clinical data, along with the Global Physical Activity Questionnaire (GPAQ), which gathers information on physical activity related to work, transportation, and recreation. The instrument presents results in Metabolic Equivalents (METs) and categorizes physical activity levels as follows: weekly expenditure = 1500 METs as vigorous, 600 METs = METs < 1500 METs as moderate, and METs < 600 as low. Descriptive statistics were used to characterize participants, and the chi-square test was performed to verify the association between the gestational trimester and activity level, with a p-value < 0.05 considered significant.

Results: A total of 107 women participated in the study, with 28.0% (30) in the first trimester (mean age 32.7 ± 4.2 years), 35.5% (38) in the second (mean age 32.0 ± 5.3 years), and 36.5% (39) in the third trimester (mean age 30.3 ± 5.3 years). Monthly family income was classified as follows: Class A (above US\$3,826.82): 13.3% (4) in the first trimester, 10.5% (4) in the second, and 7.7% (3) in the third; Class B (US\$1,235.02–3,826.82): 56.7% (17), 44.7% (17), and 33.3% (13), respectively; Class C (US\$504.44–1,235.02): 26.7% (8), 21% (8), and 46.1% (18); Class D/E (below US\$504.44): 3.3% (1), 2.6% (1), and 12.8% (5). Regarding physical activity levels, 34.6% (37) of the pregnant women had a vigorous level of physical activity, 28% (30) moderate, and 37.4% (40) low. No significant association was found between gestational trimester and physical activity level (p = 0.24).

Conclusion: The level of physical activity among pregnant women was not related to the gestational trimester. However, it is

noteworthy that most women had a low level of physical activity, which may impact their pregnancy health.

Implications: Studies with a larger number of participants are necessary to evaluate the relationship between physical activity levels and gestational trimesters. Since physical activity directly impacts maternal and fetal health, it is highly recommended by the World Health Organization.

Keywords: Pregnancy, Physical Activity, Sedentary Behavior

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IMPACT OF ANXIETY AND SEXUAL FUNCTION ON CHRONIC PELVIC PAIN

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Background: Chronic pelvic pain (CPP) is a multifactorial condition that affects a significant number of women. It is characterized by persistent pelvic pain lasting more than six months. This condition can compromise quality of life and is frequently associated with psychological factors such as anxiety. Additionally, CPP may negatively impact sexual function. CPP has been linked to sexual dysfunction and anxiety, both of which can significantly affect patients' sexual and relational health.

Objectives: To investigate the association between anxiety levels, pelvic pain intensity, and female sexual function.

Methods: A cross-sectional study was conducted with 800 women aged 18 to 65 years. Pelvic pain intensity was assessed using the visual analog scale, while anxiety symptoms were measured using the Beck Anxiety Inventory. Sexual function was evaluated using the Female Sexual Function Index (FSFI), which assesses six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. Statistical analyses included correlation tests and regression models to determine the strength and significance of associations between variables.

Results: Higher anxiety levels were significantly associated with greater pelvic pain intensity ($p < 0.05$). Women with moderate to severe pain had significantly higher anxiety scores compared to those with mild or no pain. A correlation was observed between pelvic pain and sexual function: pelvic pain was negatively correlated with the total FSFI score ($r = -0.141$), with a more pronounced impact on the domains of desire ($r = -0.183$) and orgasm ($r = -0.095$).
Conclusion: The findings reinforce the complexity of chronic pelvic pain and its relationship with psychological and physiological factors. The correlation between greater pain intensity, higher anxiety levels, and lower sexual function scores suggests the need for multidisciplinary therapeutic approaches that include pain management, psychological support, and sexual function rehabilitation to improve patients' quality of life.

Implications: The results highlight the importance of an integrated approach that combines medical, psychological, and sexual health interventions to optimize patient care. Addressing anxiety and sexual function as part of chronic pelvic pain management may contribute to better therapeutic outcomes.

Keywords: Chronic Pelvic Pain, Anxiety, Sexual Function, Quality of Life, Women's Health

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PHYSICAL ACTIVITY LEVELS BY COMPONENT IN PREGNANT WOMEN WITH AND WITHOUT LUMBOPELVIC PAIN IN THE THIRD TRIMESTER: A DESCRIPTIVE ANALYSIS

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Background: Lumbopelvic pain is a common condition during pregnancy, impacting quality of life of pregnant women and influencing their physical activity levels. Regular physical exercise is recommended to improve maternal health and reduce pain symptoms; however, adherence to physical activity during pregnancy remains low. Understanding how different components of physical activity are distributed among pregnant women with and without lumbopelvic pain is essential to guide effective interventions and recommendations.

Objectives: To descriptively analyze the level of habitual physical activity in pregnant women in the third trimester of pregnancy with and without lumbopelvic pain, divided into components: occupational physical activities, leisure-time physical exercises, and physical activities during leisure and locomotion.

Methods: A cross-sectional study design was performed. Ten pregnant women were divided into two groups of five each: with and without lumbopelvic pain. Inclusion criteria were being in the third trimester of a singleton pregnancy and being at least 18 years old. Exclusion criteria were using assistive devices for walking, having neurological conditions affecting locomotion, history of spinal or lower limb surgeries, inflammatory or rheumatic diseases, and contraindications to exercise. Data collection included sociodemographic, anthropometric, and clinical information. Physical activity levels were assessed using the Baecke Habitual Physical Activity Questionnaire. Pain intensity was measured using the Numeric Pain Rating Scale. Differences between groups were analyzed descriptively due to the small sample size.

Results: The mean age in the pain-free and pain groups was 35.2 ± 7.3 years versus 29.4 ± 6.2 years, respectively. Gestational age was 34 weeks and 5.2 days ± 2 weeks and 4 days in the pain-free group versus 36 weeks and 3.6 days ± 2 weeks and 1 day in the pain group. Additionally, the pain group had a Numeric Pain Rating Scale score of 5.8 ± 1.9 . Regarding the results from the Baecke Habitual Physical Activity Questionnaire, descriptively findings suggested that pregnant women with pain engaged more in occupational activities and less in leisure-time physical exercises and physical activities during leisure and locomotion compared to the pain-free group. However, total physical activity levels were similar between the two groups: mean 10,825 and 8,975, respectively. The mean values for the components of occupational physical activities, leisure-time

physical exercises, and physical activities during leisure and locomotion were 2.975, 2.45, and 5.4 in the pain-free group, compared to 2.875, 1.8, and 4.4 in the pain group.

Conclusion: Lumbopelvic pain impacts physical activity patterns in pregnant women. As this is a preliminary result of a descriptive analysis, findings should be interpreted with caution, and further studies with a larger sample size and more robust statistical analyses are needed.

Implications: These findings reinforce the need for policies that encourage adapted physical activity programs for pregnant women, promoting awareness of the benefits of exercise in reducing pain. In clinical practice, physiotherapists can use this information to develop personalized strategies, balancing occupational load and encouraging mobility. In education, the importance of training professionals to guide pregnant women is highlighted, while in management and public policies, expanding access to maternal health programs is recommended.

Keywords: Lumbopelvic Pain, Physical activity, Pregnancy

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PROFILE OF HEALTH PERSONNEL MANAGING PAIN IN THE BRAZILIAN FEMALE POPULATION: A PATIENT'S PERSPECTIVE

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Background: Understanding the profile of health personnel is key to improving quality of life and ensuring patients' needs are met. Data reveals how often patients seek care, sometimes due to misdiagnoses or unresolved issues. It's crucial to assess if health professionals understand pain, emotions, and external factors affecting patients. Many struggle to express symptoms clearly, so recognizing their perspective can enhance communication and care quality.

Objectives: To analyze the profile of healthcare and understand how the professionals interpret symptoms, in addition to evaluating patients' ability to express them.

Methods: This is a cross-sectional study that included women and individuals who identified as female, aged 18 or older, and residing in Brazilian territory. This research followed the ethical precepts established by National Health Council (CNS) resolution n° 510/2016 and its complementary and followed General Law on the Protection of Personal Data (LGPD) 13.709/2018. A structured questionnaire was created on Google Forms to assess healthcare experiences. It includes questions about which professionals treated the patient, how often they sought care, and whether they felt understood. It also examines patients' ability to express their pain and how many professionals truly understood their condition. Data is presented in percentages.

Results: Of the 1,152 responses received, 1000 were included in this study according to the inclusion criteria. Most patients sought health care and consulted with various medical specialties, with the following prevalence rates: doctors (59.0%), physiotherapists (38.4%), psychologists (26.5%), physical education professionals (15.0%), nutritionists (12%), and dentists (12%). Additionally, 22.5% did not receive any medical care. It is important to note that these percentages do not sum to 100% since many women consulted with

more than one specialty. About how many times patients sought health care per year, 18.6% had one appointment in the year, 32.3% had two to three times, 26.7% had four or more appointments and 22.2% did not have any type of health care. If patients consider that professionals understand their pain, 37.7% reported that professionals completely understand their pain symptoms, 46.9% partially understand, and 6% do not understand. Regarding how patients report their pain to doctors, 3.6% do not know how to express their pain, 32.5% express it partially, and 56.2% express it completely. Of the professionals who attended the patients, 44.7% more than half understood the patients' pain symptoms, 23.6% half of the professionals, and 21.0% less than half. A total of 9% of patients did not seek healthcare.

Conclusion: The results show that patients with partial pain seek more healthcare, showing a diagnostic profile focused on treatment rather than prevention of symptoms, as observed in the frequency of times these patients sought healthcare. One factor that needs to be considered is that patients consider that most health professionals do not understand their pain complaints.

Implications: This study emphasizes the need for active listening in healthcare professional to improve pain reporting. Better symptom-tracking tools and communication can enhance care. Training programs and changes in care should focus on patient-centered assessments and therapeutic relationships.

Keywords: Health Personnel, Pain, Women's Health

Conflict of interest: The authors declare no conflict of interest.

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LEVEL OF EDUCATION AND ADHERENCE TO TREATMENT WITH PHOTOBIOMODULATION IN WOMEN WITH MYOFASCIAL PAIN OF THE PELVIC FLOOR

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Background: Myofascial pelvic floor pain (MPFP) significantly impacts women's quality of life, affecting physical, emotional, and social aspects. Photobiomodulation (PBM) has emerged as a promising therapy for managing this condition. However, treatment adherence may be a critical factor for therapeutic success.

Objectives: To investigate adherence to PBM treatment in women with MPFP.

Methods: A cross-sectional observational study, derived from a feasibility study for a randomized clinical trial, was conducted with 21 women aged 18 years or older diagnosed with myofascial pelvic floor pain (MPFP). Participants were divided into three groups receiving different PBM dosages: G1 (1J), G2 (4J), and G3 (6J), over eight intervention days, twice a week. Treatment adherence was assessed based on attendance frequency, with adequate adherence defined as attending at least 80% of the sessions. Education level was categorized into incomplete high school and high school or higher. Socio-demographic data, including education level, were collected using a standardized form.

Results: Treatment adherence rates were 100% in the 1J group, 88% in the 4J group, and 100% in the 6J group, with no statistically

significant differences between groups ($p=0.098$). Regarding education level distribution in G2, 72.4% of participants had only incomplete high school education, while the other groups had a higher proportion of women with high school or higher education (85.7% in G1 and 71.4% in G3).

Conclusion: The results suggest that education level may have a tendency to influence treatment adherence. Strategies to improve adherence, especially among women with lower education levels, should be considered in future studies.

Implications: The findings suggest that education level may tend to influence adherence to PBM treatment in women with MPFP. Although not statistically significant, this trend highlights the need for personalized strategies, such as clear guidance and continuous support, particularly for women with lower education levels. The study reinforces the importance of considering sociodemographic factors in managing treatment adherence.

Keywords: Pelvic diaphragm, myofascial pain syndromes, laser therapy

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EFFECTS OF LOW AND MEDIUM FREQUENCY CURRENTS FOR THE TREATMENT OF NOCTURIA IN WOMEN: A RANDOMIZED CLINICAL TRIAL

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Background: Nocturia is defined by the International Continence Society (ICS) as the number of mictions during the main sleep period. In a population study carried out in the USA with urology patients with a mean age of 57.3 years, the prevalence of nocturia in women was 41.5%. In recent years, it has been recognized that the causes of nocturia are multifactorial, one of which is bladder overactivity, which in turn can also corroborate the development of Urge Urinary Incontinence (UUI). UUI is present in the lives of thousands of individuals around the world and is a public health problem that affects self-esteem, psychological well-being and often causes these people to isolate themselves from social interaction. Among the treatments recommended for this dysfunction is transcutaneous nerve stimulation (TENS) of the tibial nerve, which has been widely used for the treatment of UUI due to its low cost and minimally invasive nature, in addition to demonstrating significant improvement in clinical conditions.

Objectives: The aim of the study was to analyze and compare the effects of low- and medium-frequency currents on nocturia reported by participants submitted to treatment.

Methods: This is a randomized clinical trial was carried out with women aged 18 and over with UUI symptoms, randomly assigned to an intervention with low-frequency current (GTENS-LF) in a symmetrical biphasic pulsed form of 10 Hz and pulse width of 200 ms and another with medium-frequency current (GA-MF) at 4 kHz with bursts of 4 ms and modulation of 100 Hz in continuous mode. Both consisted of 20 sessions of bilateral electrostimulation of the tibial nerve, twice a week. The participants underwent an anamnesis and answered the ICIQ-OAB (International Consultation on Incontinence

Questionnaire Overactive Bladder) questionnaire, which has a specific question about nocturia and is reliable in Portuguese. After 20 sessions, the questionnaires were reapplied and the participants were re-evaluated.

Results: In the first evaluation, the participants allocated to the GTENS-LF group had a score of 2.0 ± 1.8 , while the GA-MF group had 2.36 ± 1.89 . At the end of the 20 electrostimulation sessions, the GTENS-LF and GA-MF groups' scores were 0.77 ± 0.73 and 1.06 ± 0.75 , respectively. Both groups showed a significant difference compared to the first assessment.

Conclusion: Analyzing the results, it was possible to conclude that both low-frequency and medium-frequency were able to significantly reduce self-reported nocturia in the study participants, with no difference between the currents.

Implications: Based on the results of this study, the use of medium- and low-frequency currents becomes a viable alternative for the conservative treatment of patients with urge urinary incontinence.

Keywords: Nocturia, Urinary Incontinence, Electrostimulation

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BODY PAIN LOCATION AND PAIN SEVERITY IN BRAZILIAN WOMEN: A CROSS-SECTIONAL STUDY USING THE BRIEF PAIN INVENTORY

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Background: Women are more likely to experience from pain symptoms than men due to biological and social factors. Changes in the body throughout the female life cycle, as well as external social and cultural pressures, place increased demands on women, resulting in pain symptoms for some.

Objectives: To verify the most common pain locations and the severity of pain experienced by women.

Methods: This is a cross-sectional study that included women and individuals who identified as female, aged 18 or older, and residing in Brazilian territory. This research followed the ethical precepts established by National Health Council (CNS) resolution n° 510/2016 and its complementary and followed General Law on the Protection of Personal Data (LGPD) 13.709/2018. The body map of the Brief Pain Inventory (BPI) includes three key domains: pain location, pain intensity, and pain interference in daily life. It was used to identify both the location and intensity of body pain. We assessed pain severity using a BPI domain, where the score ranges from 0 (no pain) to 10 (severe pain). Pain severity was verified by the average of the worst pain felt, the weakest pain felt, the average pain felt, and the pain felt at the moment. To answer the BPI, we considered pain symptoms in the past 24 hours. Nine hundred and sixty-four adult women participated in this study. Data is presented in percentages and means $\pm$ standard deviation.

Results: According to the body map, 64.2% of the women experienced headache, 34.3% experienced neck pain, 22.4% experienced right knee pain, 20.4% experienced sacral pain, 10% experienced thigh, gluteal and right shoulder pain. The average pain of the participants was 2.8 ± 2.4 on a scale of 0 to 10.

Conclusion: Most women reported headaches, followed by neck pain and right knee pain. Other affected areas included the sacral

region, thigh, gluteal, and right shoulder, but with lower frequency. The average pain intensity was moderate, varying among participants. Those symptoms might be related to high levels of stress, physical overload, physiological changes, and sedentary behaviors that cause pain symptoms and those external factors need to be investigated to identify the causes of these symptoms. Although the pain severity by domain was considered as mild pain, other factors such as the impact of pain on women's daily lives must be considered in order to reduce pain symptoms and the impact on these women's lives.

Implications: Understanding the location of body pain and identifying the severity of symptoms are essential for a more accurate diagnosis and effective treatment. Some women may struggle to express their symptoms and emotions, making it difficult to communicate the true impact of pain on their daily lives to healthcare professionals.

Keywords: Pain, Physical therapy, Women's Health

Conflict of interest: The authors declare no conflict of interest.

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PELVIC FLOOR MUSCLE TRAINING VERSUS CONTROL GROUP ON IMPROVEMENT THE URINARY SEVERITY OF WOMEN WITH STRESS URINARY INCONTINENCE: UMBRELLA REVIEW

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Background: Stress urinary incontinence (SUI) is the common type of UI among women that occurs during efforts that make intra-abdominal pressure. Pelvic floor muscle training (PFMT) is considered as the first-line treatment proven to guarantee results for UI. There are several systematic reviews about PFMT effect. However, are still needed to deepen the knowledge of PFMT regarding different outcomes and clinical relevance for the patient. This study had questioned if the PFMT was effective in improving the urinary severity of women with SUI when compared to the control group.

Objective: To review systematic reviews that reported the comparison of PFMT and control group to improve urinary severity in women with SUI.

Methods: This umbrella review was carried out in the Women's Health Research Laboratory (LAMU) at the Universidade Federal de São Carlos. This study follows the PRISMA recommendation and Cochrane Collaboration for systematic reviews. The following databases CINAHL, Cochrane, EMBASE, MEDLINE, PEDro and PubMed databases, were conducted by using Boolean operators with no language limits and articles published date. Inclusion criterion: systematic review that included randomized controlled trial, with an arm with PFMT alone in comparison with any intervention or no treatment in the adult women with SUI and whose outcome was urinary severity (collected by ICIQ-SF and ICIQ-7 instruments). The study selection was undertaken by two reviewers independently. The studies were displayed and screened to identify relevant reviews, using Rayyan website.

Results: From 2,119 were excluded 2,116 studies after screening the title, abstract and full article. Three systematic reviews were included, the meta-analysis was performed using data from primary studies, with 1,691 participants. The overall effect estimate between

PFMT and no treatment favored the PFMT group with moderate to large effect size (SMD = -0.54, 95% CI [-0.90 to -0.17], $p = .005$). When compared effect estimate between PFMT; when compared offering educational instructions favored the PFMT group with large effect size. (SMD = -0.90, 95% CI [-1.40 to -0.41], $p \leq .001$) and the effect estimate between PFMT and other interventions, there was no difference. (SDM = 0.05, 95% CI [-0,10 to 0,19], $P = 0.79$).

Conclusion: The present study showed that PFMT interventions are better than no treatment in terms or only offering educational instructions to reducing IU severity. When comparing PFMT with other study subjects, it was observed in 3 of the 5 studies that the control group performed PFMT associated with another invention.

Implications: This umbrella review supports the widespread use of PFMT as the first-line treatment for SUI. However, we recommend further studies like this to look at other important outcomes that impact the lives of women with SUI.

Keywords: Conservative treatment, Physical Therapy Modalities, Women's Health

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FEMALE SEXUAL FUNCTION AND QUALITY OF LIFE

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Background: Sexual function refers to the different reactions of the body during the phases of the sexual response cycle, and any reason that interrupts this cycle is characterized as sexual dysfunction. In this sense, sexual dysfunction can significantly impact on quality of life and generate a mistaken perception about sexuality, especially among women who have historically been immersed in taboos surrounding the subject.

Objectives: To verify female sexual function and its influence on quality of life.

Methods: This is an exploratory-descriptive study with a quantitative-qualitative design. Data collection took place online, through a link made available on Google Forms, from September 2020 to January 2021. A questionnaire composed of sociodemographic questions, female sexuality and pregnancy history was used, in addition to the Female Sexual Function Index (FSFI), which consists of 19 items with questions related to sexual function up to 4 weeks ago and covers domains related to sexual desire, sexual arousal, vaginal lubrication, orgasm, sexual satisfaction and pain. Women between 18 and 55 years old, who had an active sexual life in the 4 weeks prior to

the questionnaire were included. Data organization and analysis were performed using Excel® 2010 software, including the preparation of tables, charts, and graphs, in addition to the use of analyses generated by Google Forms.

Results: 104 individuals participated in the study, of which the majority were between 18 and 25 years of age ($n = 73$), identified themselves as single in relation to marital status (79.81%), had no diagnosis of sexual dysfunction (97.12%) and were students (49.04%). In addition, the majority had no abortions (92.31%) and no pregnancies (71.15%), while the minority had 3 and 4 or more pregnancies, representing 0.96% each. Regarding sexual function, 61.54% had a score above the cutoff line on the FSFI, not suggesting sexual dysfunction, while 38.46% obtained a score below the cutoff line, suggesting sexual dysfunction. Regarding perceptions, 20.19% believe that educational or professional life negatively affects sexual life and 63.46% that sexual life positively interferes with their mood. When analyzing the sexual life domain in quality of life, on a score from 0 (minimum) to 4 (maximum), it was possible to observe a good classification, in which 34.44% attributed the maximum score and 47.68% a score of 3.

Conclusion: It can be concluded that most participants presented good sexual function and that sexual life positively influences mood, in addition to having a good classification within the quality of life assessment. However, it should be noted that the sample was composed mostly of young, single adults with no history of pregnancy, which may have influenced the results. Therefore, it is essential to conduct new research with a more diverse sample.

Implications: Understanding female sexual function and its influence on quality of life is essential for the physiotherapist to identify the prevalence of dysfunctions and their impacts on the daily lives of patients, as well as the importance of effective professional monitoring.

Keywords: Sexuality, Genitalia, Women's Health

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Registration: Not applicable.

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IMPACT OF WORK-RELATED PSYCHOSOCIAL FACTORS ON THE DEVELOPMENT OF NECK PAIN IN PROFESSORS FROM BRAZILIAN PUBLIC HIGHER EDUCATION INSTITUTIONS

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Background: Psychosocial risk factors may influence mental and musculoskeletal health. Neck pain is one of the most frequently reported diagnoses by professors, which can be associated with physical and mental work demands. A broader understanding of the development of neck pain can determine whether there is a psychosocial influence and to suggest possible management strategies.

Objectives: To verify whether psychosocial factors are associated with the development of neck pain in professors at Brazilian public higher education institutions (HEIs).

Methods: This longitudinal study used baseline data collected from May to December 2022 and from May to December 2023 (12-month follow-up). Participants were invited to participate mainly by email, responding to an electronic form. For this study, we selected professors who worked 40 hours per week exclusively and without a medical diagnosis of neck pain at baseline. Psychosocial aspects were

assessed using the short Brazilian-Portuguese version of the Copenhagen Psychosocial Questionnaire (COPSOQ II-Br). Logistics and descriptive analyses of the data were performed, using the SPSS statistical software. The work-related psychosocial risk factors assessed were symptoms of stress and burnout; work-family conflict; quantitative work demands, and emotional work demands. The variables sex, age, preschool-aged children (0 to 5 years), and family income were added to the adjusted model. For family income, the monthly minimum wage (MMW) was used based on the year 2022 (MMW = R\$ 1,212.00 ? USD 230).

Results: The study included 661 professors, mean age of 48.9 (SD=9.8) years, 54% were male, 71% were white, 70.1% had a spouse, 36% had no children and only 12.3% had preschool-age children, 89% had a doctorate, 52% had a family income less than or equal to 12 MMW and 95.5% were non-smokers. Professors from all Brazilian states participated, but the majority (24.4%) lived in the state of São Paulo. The majority were in the risk category for three of the five psychosocial factors evaluated, namely: burnout (61.1%); stress (62.4%); emotional work demands (50.7%). Most professors were in the safe category for the work-family conflict factors (54.4%) and quantitative work demands (81.4%). At the 12-month follow-up, 3.5% of professors reported a medical diagnosis of neck pain. Only emotional demands showed a significant association ($p < 0,05$) with the medical diagnosis of neck pain in the 12-month follow-up in crude model ($p = 0,027$; OR: 2,91; 95% CI: 1,13–7,47) and the adjusted model ($p = 0,043$; OR: 2,69; IC: 1,03–7,05).

Conclusion: Emotional demands increase the chance of developing neck pain in professors at Brazilian public HEIs by almost three times, which suggests the need for a multifaceted approach to manage this health condition.

Implications: This result highlights the importance of a comprehensive approach that considers not only the physical assessment but also the psychosocial aspects of these workers, with multidisciplinary treatment protocols. HEIs should support the emotional demands of professors, controlling emotionally stressful situations and promoting awareness programs on mental health, emotional intelligence and resilience to prevent neck pain.

Keywords: Occupational Health, Musculoskeletal Pain, Emotional Intelligence

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 81922924.9.0000.5152.

Registration: Not applicable.

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FACTORS ASSOCIATED WITH WORK ABILITY IN OLDER WORKERS AS PREDICTORS OF WORK PARTICIPATION: A SYSTEMATIC REVIEW

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Background: The sustainability of the labor market for older workers has become a central issue. The prolonged participation of these workers raises concerns for organizations, which face an increase in age-related chronic conditions and disabilities, leading to higher absenteeism rates and reduced work ability. Understanding the work ability of older workers is essential for society's sustainable development.

Objectives: To identify the factors associated with work ability in older workers and whether they predict whether they will continue to participate in the workforce.

Methods: This is a systematic review of prospective cohort studies. The search was conducted between May and July 2024 in the following databases: PubMed, CINAHL, EMBASE, and Scopus. Only prospective cohort studies were included, with workers over 45 years of age and that had as an outcome an indicator of work ability and associated factors that should be able to predict whether to be involved in work (this includes retirement, total or partial disability pension). Studies with unemployed workers, which did not discriminate between age groups in the results and did not predict the ability to work and participate in work and continue working, were excluded. The methodological quality of the studies was assessed using the Newcastle-Ottawa Scale tool, a version for cohort studies.

Results: 1,063 studies published between 1969 and 2024 remained for the review of titles and abstracts. After reading the remaining 39 articles in full, 33 were excluded based on eligibility criteria, leaving six studies that passed the quality assessment process, of which five were classified as good quality and only one as poor quality. Work ability is a key predictor of prolonged absences and early retirement, influenced by older age, obesity, smoking, strenuous physical conditions, and compromised mental health. Depression and intense physical and emotional demands were associated with low mental and physical work ability over time. Factors such as temporary employment, low job satisfaction, and lack of investment in training increased the risk of dismissal. In addition, support and control in the workplace decreased the risks of early retirement and dissatisfaction.

Conclusion: Low work ability, other indicators of illness, heavy workload, dissatisfaction with life and work, employability, and inadequate training may influence whether workers continue to participate in the workforce.

Implications: This systematic review expands understanding of the interaction between individual health and the work environment across the career path, suggesting that modifiable factors such as control and support at work, in addition to reducing risk behaviors, can prevent absences and prolong healthy employment. The results indicate the importance of tailored workplace health promotion programs, including interventions focused on reducing smoking and weight control and measures that increase psychological support. The results obtained in this systematic review support managers, companies, and governments in improving working conditions, indicating the need for work planning, adequate training, and strategies to remain in work.

Keywords: Aging work, work capacity, predicting factors

Conflict of interest: The authors declare no conflict of interest.

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PREDICTORS OF PHYSICAL ACTIVITY MAINTENANCE OVER ONE YEAR IN PROFESSORS FROM BRAZILIAN PUBLIC HIGHER EDUCATION INSTITUTIONS

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Background: Physical inactivity contributed to a significant mortality rate between 1990 and 2017 in Brazil. Professors who do not practice physical activity (PA) have greater stress, worse quality of life and health. On the other hand, the practice of physical activity has a protective effect on physical and mental health.

Objectives: To identify which factors, predict the maintenance of PA over one year among professors.

Methods: This longitudinal study used an electronic form. Baseline data were collected from May to December 2022 and a 12-month follow-up from May to December 2023. Professors with exclusive dedication of 40 hours per week in Brazilian public higher education institutions (HEIs) were invited to participate mainly by email. PA was assessed using the short version of the International Physical Activity Questionnaire (IPAQ) and classified as active or sedentary. For this study, only cases of active professors in the baseline study data were selected. Logistic regression analyses were performed with each of the following variables: personal (sex; age; preschool age of children; family income; body mass index; satisfaction with: sleep, activities of daily living, work capacity, self-esteem, personal relationships, sexual activity; social support; home environment; accessibility to health and social care; and transport), health conditions (hypothyroidism; arterial hypertension; low back pain; sleep apnea; obesity; menopause; depression; anxiety disorder) and psychosocial risk factors (symptoms of stress and burnout (physical exhaustion or emotional exhaustion), work-family conflict, emotional work demands, and quantitative work demands).

Results: A total of 451 professors participated in the study, with a mean age of 49.5 years (± 9.7). Most professors lived in the state of São Paulo (25.2%), were male (52.4%), white (72%), lived with a partner (69%), and 64% had children, of which 10.6% were of preschool age. The majority had a doctorate (90%), had a family income less than or equal to 12 minimum wages (50.7%), worked in federal HEIs (67.6%), in graduate programs (61.8%), and were at the current HEI more than 10 years (64.6%). Most professors were overweight (56.1%), non-smokers (95.8%), and had at least one of the eight medical diagnoses assessed (60.4%) at baseline. According to the 12-month follow-up, 13.3% of professors became sedentary. Among personal factors, satisfaction with activities of daily living ($p = 0.010$; OR = 2.05; 95% CI: 1.19-3.56) and work capacity ($p = 0.006$; OR = 2.15; 95% CI: 1.24-3.73) showed a significant association with PA in the 12-month follow-up. Among health conditions, only hypothyroidism showed a significant association ($p < 0.001$; OR = 0.25; 95% CI: 0.12-0.54). Among psychosocial risk factors, physical exhaustion ($p = 0.003$; OR = 0.33; 95% CI: 0.16-0.69) and quantitative work demands ($p = 0.044$; OR = 0.50; 95% CI: 0.26-0.98) showed significant associations.

Conclusion: Professors at psychosocial risk for quantitative demands, those with physical exhaustion or diagnosed with hypothyroidism are less likely to remain active in one-year follow-up. Professors who are satisfied with their ability to perform daily activities and those who are satisfied with their ability to work are more likely to remain active.

Implications: This study offers valuable insights into how to maintain professors' PA through improved working conditions, psychosocial support, health promotion, and increased job satisfaction.

Keywords: Occupational Health, Sedentary Behavior, Exercise

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THE IMPACT OF COMPUTERIZED WORK ON WORKERS' QUALITY OF LIFE

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Background: The intense technological evolution and, more recently, the practices of Artificial Intelligence (AI), have significantly changed labor relations and production processes. Given this scenario, there is a need to analyze the impact of this reality on the lives and health of workers.

Objectives: To assess the quality of life of workers who use computer terminals and to observe the implications of computerized work on the health of these professionals.

Methods: 209 workers over the age of 18 who worked in an institution using a computer for between 4 and 8 hours a day took part in this study. The SF-36 Questionnaire (Short Form Health Survey) was applied, an instrument that contains 36 items encompassed in eight scales: functional capacity, physical aspects, pain, general state of health, vitality, social aspects, emotional aspects, mental health and a question comparing current health conditions with those of a year ago (quantitatively - ranging from 1 to 5; and qualitatively, between excellent, much better, a little better, almost the same, a little worse, much worse). To evaluate the results, a score was given on a scale of 0 to 100, where zero corresponds to a worse state of health and 100 to a better one, and each dimension was analyzed separately.

Results: The weighted average of the domains was as follows: functional capacity (87.27), limitations due to physical aspects (85.76), pain (69.37), general state of health (59.28), vitality (55), social aspects (71.90), limitations due to emotional aspects (74.84), mental health (67.15) and comparative assessment between current health conditions and those of a year ago - quantitative (2.75) and qualitative, in which the majority reported "almost the same" (99; 47.36%).

Conclusion: In the general assessment of quality of life, the scores that obtained the best scores were functional capacity and limitations due to physical aspects. However, the domains pain, general state of health, vitality, social aspects, limitations due to emotional aspects, and mental health were lower than expected.

Implications: The results presented in this research indicate that the concept of quality of life has very important connotations that need to be explored and deepened. Thus, this study provides input for future research into issues related to quality of life and computerized work. Work, when carried out in healthy conditions, promotes a sense of well-being and vitality, results that were contrary to those presented in this study. This data shows that there is a need to improve working conditions and the physical and mental capacity of these workers. In addition, favorable physical and mental health is reflected in improved productivity and efficiency in the services provided by these professionals. Workers in computerized workstations therefore need special attention from health professionals.

Keywords: quality of life, technology, workers' health

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES - Finance Code 001.

Ethics committee approval: Not applicable.

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EVALUATION OF MOBILE APPLICATIONS AVAILABLE IN BRAZILIAN ONLINE STORES FOR WORKERS' HEALTH AND WELL-BEING BY POTENTIAL END USERS

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Background: Unfavorable conditions in the workplaces affect the health and well-being of Brazilian workers, whose self-management can be achieved by mobile health (mHealth) technologies. The widespread availability of mHealth makes relevant its quality evaluation.

Objectives: To evaluate the quality of mHealth applications aimed to promote workers' health and well-being available in Brazilian online stores by potential end users.

Methods: Three apps were evaluated in this study, which obtained the highest scores in a previous systematic search recently published. The Laboral Life (LL) by Life PQV - version 1.0 obtained the best score (4.03 ± 1.0). Pausas Ativas (PA) 3.1.0 by Eighteen Code and Exercícios de exercício de escritório - perder peso (EE) 1.0.04 by Home Fit had the same score (3.5 ± 0.9) by trained researchers according to the Mobile App Rating Scale (MARS). The opinion of potential end users was obtained through the Portuguese-Brazil version of the User Mobile App Rating Scale (uMARS). An electronic form with 36 questions, containing a sociodemographic questionnaire and the uMARS that assesses engagement, functionality, aesthetics, information and subjective quality on 5-point scales were used. The sample was composed by Brazilian professors with a workload of more than 20 hours per week and access to a smartphone with Android or iOS operating system. Exclusion criteria were being retired, away from work or on vacation. The app was randomly selected for each participant and tested for at least 10 minutes. Data collection occurred in August-October 2023. Descriptive analysis was performed.

Results: The sample consisted of 30 professors, 50% men, with 51.5 ± 10.4 years, 83% white, 60% married and 87% had PhD. On a scale of 1 to 5, the mean and standard deviation of the quality of the three applications according to the uMARS scale was 3.4 ± 0.6 , with an overall quality score of 3.51 ± 0.78 for PA; 3.43 ± 0.70 for EE; 3.31 ± 0.23 for LL. The overall score of the engagement subscale was 2.7 ± 1.4 ; with a mean of 2.8 for PA; 2.9 for EE and 2.3 for LL. The overall score of the functionality subscale was 4.1 ± 0.6 , with a mean of 4.3 for PA, 4.3 for EE and 3.8 for LL; the overall score of the aesthetics subscale was 3.8 ± 0.5 , with a mean of 3.9 for PA, 3.7 for EE, and 3.8 for LL; and the overall score of the information subscale was 3.0 ± 0.8 , with a mean of 3.0 for PA, 2.8 for EE, and 3.4 for LL.

Conclusion: For users, the apps were of moderate quality. PA was the highest rated app in user reviews but is currently not available in the online store. We recommend the EE app, now renamed to Exercícios Treino Escritório, which is available on the Google Play Store.

Implications: In addition to monitoring by a health professional, mHealth applications can be used as a strategy by workers to promote their health and well-being. Developers need to improve information and incentives for user engagement.

Keywords: Occupational Health, mHealth, Mobile Apps

Conflict of interest: The authors declare no conflict of interest.

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CROSS-CULTURAL ADAPTATION OF THE JOB SATISFACTION SCALE - VERSION FOR TEACHERS (ESL-VP): INTERNAL CONSISTENCY ANALYSIS

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Background: Job satisfaction is crucial to teachers' well-being and performance. The Job Satisfaction Scale - Version for Teachers (ESL-VP) is a validated instrument used to assess job satisfaction among educators. However, its applicability to the Brazilian educational context requires cultural adaptation to ensure semantic, conceptual, and psychometric equivalence.

Objectives: This study aimed to conduct the cross-cultural adaptation of the ESL-VP for Brazilian teachers and to assess its internal consistency.

Methods: A cross-sectional study was conducted in two phases: (1) cross-cultural adaptation, including translation, back-translation, expert panel review, and pretesting; and (2) psychometric evaluation of internal consistency. The study included teachers from basic education in the southern region of Espírito Santo, Brazil. Data collection involved administering the adapted ESL-VP and assessing internal consistency using Cronbach's alpha and McDonald's omega coefficients with 95% confidence intervals [95%CI].

Results: One hundred teachers (65% female, 35% male; median [interquartile range] age of 41 [20] years participated in this study. The questionnaire items showed adequate distribution, with mean scores ranging from 3.1 to 3.8 (SD = 1.1–1.3). Internal consistency analysis demonstrated strong reliability (Cronbach's $\alpha = 0.828$ [0.730–0.904]; McDonald's $\omega = 0.814$ [0.707–0.895]). The "if item drop" analysis revealed that the lowest Cronbach's alpha coefficient was observed for item 18 ("Having sufficient technical and material resources for work", $\alpha = 0.819$), while the highest was for item 5 ("Having enough time for family", $\alpha = 0.833$), indicating that removing these items would have minimal impact on the overall internal consistency of the scale.

Conclusion: The ESL-VP was successfully adapted to the Brazilian context, maintaining semantic and conceptual equivalence. The scale exhibited high internal consistency, supporting its use as a valid tool for assessing job satisfaction among Brazilian teachers.

Implications: This adaptation provides an essential instrument for evaluating and improving teacher satisfaction in Brazil. Future research should explore its predictive validity and potential applications in educational policy and ergonomic interventions to enhance teachers' work conditions.

Keywords: Job Satisfaction, Surveys and Questionnaires, Validation Study

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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WORKING CONDITIONS IN OUTSOURCED PRODUCTION UNITS IN THE FOOTWEAR INDUSTRY: A CROSS-SECTIONAL STUDY

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Background: Outsourcing and informal labor have become increasingly common practices aimed at optimizing efficiency and reducing costs. In the footwear industry, it results in precarious working conditions, including exhausting work hours, inadequate environments, lack of labor rights, exposure to various occupational hazards, and the development of metabolic, musculoskeletal, and psychological disorders.

Objectives: To evaluate the working conditions in outsourced informal production units in the footwear industry.

Methods: The sample was composed by four workers. The Need for Recovery Scale (NFR) was applied to assess fatigue; the COPSOQ II-Br to identify psychosocial work risks and the Work Ability Index (WAI) to evaluate workers' perception of their work capacity. Data were analyzed using descriptive statistics.

Results: NFR indicated that three of four (75%) of workers scored below the cutoff point of 45, suggesting a lower need for recovery. In the WAI assessment, two of four (50%) of workers scored 43, indicating good work ability, while the remaining two workers scored 44, indicating excellent work ability. Finally, COPSOQ II-Br revealed unfavorable scores in work pace, influence on work, new skill development, commitment to the workplace, burnout, and stress.

Conclusion: The results indicate that, although the perception of work ability is predominantly good or excellent and the need for recovery is lower, unfavorable psychosocial conditions, such as a fast work pace, low autonomy, and high stress levels, may compromise occupational health in the long term.

Implications: Identifying these working conditions may contribute to the development of strategies aimed at mitigating the impacts of informal and outsourced labor on the health of workers in the footwear industry, preventing occupational health deterioration.

Keywords: Ergonomia, Saúde ocupacional, Prevenção

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 29747120.0.0000.5504.

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WORK PHYSIOTHERAPY: PROTOCOL OF A RANDOMIZED CLINICAL TRIAL DEVELOPED FOR COMPUTER TERMINAL USERS

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Background: The use of computers as a work tool has had severe and uncomfortable consequences for workers' health. As a result of this demand, occupational physiotherapy has been increasingly required by organizations. However, there is a limited amount of scientific research into physiotherapeutic interventions that allow physiotherapists to guide their work based on scientific evidence.

Objectives: To describe a study protocol to evaluate the effectiveness of physiotherapeutic intervention on the functionality of workers using computer terminals.

Methods: A randomized controlled clinical trial will be carried out with 209 workers over the age of 18 who work in an institution using computers for between 4 and 8 hours a day. The physiotherapy intervention will consist of occupational physiotherapy, which will be carried out daily (Monday to Friday), lasting 15 minutes, at pre-scheduled times, in the workplace itself. Posture school will also be carried out by means of a powerpoint presentation for each participant at their workstation, in which, initially, an explanation will be given about the structures of the body, functionality and posture so that the worker can single-handedly protect their health, reduce discomfort and the risk of injury and increase productivity. Next, possible ergonomic corrections will be made to the workstation, such as adjusting the height of the video monitor and chair, organizing the work table and equipment. Each school will last 30 minutes. There will also be two lectures: the first on ergonomics and the second on self-care. These lectures will be held in an auditorium on a pre-scheduled day and time, and each will last one hour.

Results: It is hoped that after this study, following the biopsychosocial model and the ICF, which interrelate aspects linked to functionality (body structure and function, activity and participation) with contextual factors (personal and environmental), the effects of physiotherapeutic intervention will be observed. Data will be collected according to 5 domains, in which the following instruments have been chosen for each category: Domain 1: body functions and structures (Nordic Musculoskeletal Questionnaire (MNQ)); Domain 2: activities (Work Limitations Questionnaire (WLQ)); Domain 3: participation (Short Form Health Survey (SF-36)); Domain 4: context factors (personal and environmental) (Sociodemographic Questionnaire; International Physical Activity Questionnaire - SHORT VERSION - IPAQ and Couto Checklist for assessing ergonomic conditions in workstations and computerized environments (2014 version)) and Domain 5: World Health Organization Disability Assessment Schedule (WHODAS 2.0). **Implications:** The existence of a physiotherapeutic intervention protocol allows for the development of scientific knowledge that will provide physiotherapists with efficient choices of conduct, generating opportunities for better action for this population. In addition to promoting the value of physiotherapists in the job market.

Keywords: Computers, Physical Therapy Specialty, Occupational Health

Conflict of interest: The authors declare no conflict of interest.

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CONSTRUCT VALIDITY ANALYSIS OF NEED FOR RECOVERY WITH 7 ITEMS (NFR-7)

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Background: The Need for Recovery scale (NFR) assesses early symptoms of work-related fatigue. It is based on the daily recovery process from short-term fatigue, considering rest opportunities during and after the workday. If recovery is insufficient, symptoms may persist and accumulate over time. Structural analysis have shown that the scale consists of seven items. However, the construct

validity of the seven-item NFR (NFR-7) has not yet been tested in Brazilian workers, only its 11-item version has been evaluated.

Objectives: To assess the construct validity of the NFR-7 in hospital workers.

Methods: This cross-sectional study involved the simultaneous application of the NFR-7 (scored from 0 to 100%) and the Borg CR-10 Scale via an online form to a convenience sample of healthcare workers. The sample consisted of 48 healthcare workers in both clinical and administrative roles at a university hospital. Participants were invited via institutional email, social media announcements, and internal hospital communication channels. The Spearman correlation test was used to assess the correlation between the two scales. A correlation of $=0.10$ was considered small, $=0.10$ and <0.50 moderate, and $=0.50$ high. The significance level of 0.05 was adopted. Statistical analysis was conducted using R software v4.2.0 (R Core Team, 2022) with the 'stats' package.

Results: The mean age of the sample was 40 ± 6.8 years, with a majority of participants being female (66%), white (73%), and married (60%). The mean NFR-7 score was $44 \pm 21\%$, and the mean Borg Scale score was 4.0 ± 2.4 . A high and significant correlation was found between NFR-7 and Borg Scale ($r = 0.62$; 95% CI: 0.41, 0.77; $p < 0.001$).

Conclusion: The NFR-7 demonstrated construct validity for use among healthcare workers.

Implications: The NFR-7 version is a valid tool for occupational health services and research in worker health. However, further studies with larger samples and additional evaluations of its measurement properties are needed.

Keywords: Need for recovery, Construct validity, Worker

Conflict of interest: The authors declare no conflict of interest.

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WORK ABILITY AMONG BRAZILIAN WORKERS DURING THE COVID-19 PANDEMIC: A 3-YEAR LONGITUDINAL STUDY

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Background: The Work Ability Index (WAI) is a worldwide instrument to assess the workers physical and mental capacity to perform work activities, considering the social, psychological and economic context. Work ability may have been affected by the COVID-19 pandemic, reducing workers' capacity and increasing work demands.

Monitoring the WAI allows the identification of possible changes in the workability and, consequently, the management of occupational health services to prevent absenteeism and early retirement.

Objectives: To describe the workability of Brazilian workers during the COVID-19 pandemic in a longitudinal study with 3 years of follow-up.

Methods: Longitudinal study of the IMPPAC cohort (Implications of the COVID-19 pandemic on psychosocial aspects and work ability among Brazilian workers). Data from the baseline (2020) and three annual assessments (2021, 2022 and 2023) were included. The sample was composed by 1211 workers in 2020, 633 workers in 2021, 494 workers in 2022 and 467 workers in 2023. Data collection took place from June 29th to September 29th of each year. A

sociodemographic and occupational questionnaire was used to obtain sex, age, marital status, education, among others. The WAI consists of seven items, with scores ranging from 7 to 49 points and classified as low (7-27 points), moderate (28-36 points), good (37-43 points) and excellent (44-49 points). Data was descriptively analyzed.

Results: The majority of the sample was composed by women (51,9%), between 31 and 40 years old (37,3%), married (54,7%) and having completed higher education (83,2%). In 2020, 49% of workers had good, 25% had excellent, 23% moderate and 3% low workability. In 2021, 47% had good, 28% excellent, 22% moderate and 3% low workability. In 2022, 50% had good, 27% excellent, 22% moderate and 1% low workability. In 2023, 43% had good, 32% excellent, 22% moderate and 3% low workability.

Conclusion: Brazilian workers from different economic sectors had immediate and late impacts on occupational health during and after the COVID-19 pandemic. In the first year there was a reduction from good to moderate, in the second year the WAI increased from good to excellent and there was a reduction in moderate frequency. In the third year of follow up there was a reduction in moderate and good frequencies and an increase in excellent.

Implications: It is necessary to implement individual and collective actions to maintain the working capacity of Brazilian workers, with a focus on those with moderate and low workability.

Keywords: Work ability, work, pandemics

Conflict of interest: The authors declare no conflict of interest.

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TRANSCRANIAL DIRECT CURRENT STIMULATION FOR REDUCING IRRITABILITY IN CHILDREN WITH AUTISM SPECTRUM DISORDER

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Background: Autism Spectrum Disorder (ASD) is a neuropsychological condition that affects behavior and communication. Irritability is a common symptom, manifesting as outbursts of anger and difficulties with changes. Transcranial Direct Current Stimulation (tDCS) is a promising technique for modulating these symptoms.

Objectives: Investigating the effect of tDCS combined with virtual reality on reducing irritability in children with ASD.

Methods: A quasi-experimental study was conducted with 18 children diagnosed with ASD. The Childhood Autism Rating Scale (CARS) and the Affective Reactivity Index (IRA) were administered before and after the intervention. For statistical analysis, the Shapiro-Wilk test and paired t-test were used.

Results: There was a statistically significant difference in irritability levels after the intervention ($p = 0.00$), suggesting that tDCS had a positive impact on reducing the symptom.

Conclusion: tDCS combined with virtual reality demonstrated efficacy in reducing irritability in children with ASD, making it a promising alternative for managing these symptoms.

Implications: The results reinforce the need for randomized clinical trials to confirm the effects of tDCS and its clinical applicability.

Keywords: Transcranial Direct Current Stimulation, Irritability, Autism Spectrum Disorder

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: CAAE: 78784324.0.0000.5152.

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SINGLE-PULSE TMS IN ALS DIAGNOSIS: EMERGING INSIGHTS FROM A SCOPING REVIEW

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Background: Amyotrophic Lateral Sclerosis (ALS) is a progressive neurodegenerative disease with no precise biomarkers that makes early diagnosis challenging. The current diagnostic criteria, such as the El-Escorial and Gold Coast criteria, have limited sensitivity, often delaying neuroprotective treatments and clinical trial recruitment. Transcranial Magnetic Stimulation (TMS) has emerged as a valuable tool to assess corticospinal pathway integrity, offering a potential alternative in detecting early cortical hyperexcitability. Despite promising findings, inconsistencies in methodology and protocol standardization remain inconclusive.

Objectives: This study aims to evaluate the effectiveness of Single-Pulse TMS in ALS diagnosis, addressing key gaps and challenges in existing research.

Methods: In this scoping review, we searched for articles on Single-Pulse TMS using parameters like Resting Motor Threshold (RMT), Central Motor Conduction Time (CMCT), Motor Evoked Potential (MEP), and Silent Period (SP). The PICO strategy guided the research question, ensuring relevant evidence retrieval. Only cross-sectional studies were included, selected from Scopus, PubMed, Embase, and Web of Science (May 2021–Feb 2025). Inclusion criteria required ALS diagnosis using Single-Pulse TMS, while exclusions involved non-relevant techniques, ALS treatment, or language restrictions. Data extraction included patient demographics and disease characteristics. Methodological quality was assessed using JBI checklists for cross-sectional studies, addressing potential biases.

Results: A total of 1,222 articles were identified across four databases, with 19 totally meeting inclusion criteria. The JBI appraisal identified 11 studies as high quality and eight as moderate quality, based on criteria assessing bias, methodological rigor, and validity in cross-sectional research. The studies included 730 ALS patients and 526 controls. Findings in the majority showed reduced SP, lower MEP amplitude, prolonged CMCT, and shorter RMT. Five studies had ambiguous cortical hyperexcitability results.

Conclusion: The lack of standardized protocols and inconsistent methodology limit conclusions on ALS diagnosis using TMS. Furthermore, it becomes difficult to relate the impact of factors such as the onset of symptoms, affected hemisphere, and time of diagnosis with the presence/absence of hyperexcitability. Future research should focus on refining diagnostic criteria based on the standardization of corticospinal activity measurement.

Implications: The study highlights the potential of Single-Pulse TMS for early ALS diagnosis but faces limitations such as methodological heterogeneity, lack of standardized protocols, and inconsistent parameter definitions. These challenges impact result reproducibility and clinical applicability. In clinical approach, improved TMS standardization could enhance early ALS detection, optimizing patient referral for neuroprotective therapies and clinical trials. In physiotherapy, better diagnostic accuracy may guide personalized interventions, delaying functional decline.

Keywords: Motor Neuron Disease, Cortical Hyperexcitability, Neurophysiology

Conflict of interest: The authors declare no conflict of interest.

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VOLUNTARY EXERCISE WITH ENRICHED ENVIRONMENT REDUCES ANXIETY- AND DEPRESSION-LIKE BEHAVIOR AFTER NERVE CONSTRICTION IN FEMALE MICE

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Background: Neuropathic pain results from injuries or diseases affecting the somatosensory system, impacting 7–10% of the global population. Additionally, psychological factors such as depression and anxiety are linked to heightened pain perception. Studies using animal models with chronic sciatic nerve constriction injury (CCI) are essential for investigating its pathophysiology. Although pharmacological treatment is widely used, environmental enrichment (EE) and voluntary exercise (VE) have shown efficacy as adjuvant interventions in managing neuropathic pain, including reducing anxiety- and depression-like behaviors associated with pain exacerbation. EE provides motor, sensory, social, and cognitive stimuli, which can be enhanced by VE, consisting of voluntary physical activity performed by the animal on a freely accessible running wheel. However, few studies have compared the effects of EE alone versus EE combined with VE.

Objectives: To compare the effects of EE with or without VE on anxiety- and depression-like behavior in a neuropathic pain model induced by CCI.

Methods: Twenty female BALB-C mice aged 7–8 weeks, weighing 30–35 g, were obtained from the Instituto Evandro Chagas (IEC) animal facility after approval by the animal research ethics committee. The animals were divided into four groups: CCI, CCI + VE, CONTROL, and CONTROL + VE. All groups received EE; the CCI groups underwent nerve constriction surgery, while control groups were not

exposed to surgical intervention. Anxiety- and depression-like behaviors were assessed using the Open Field (OF) test, where animals were placed in a 30 × 30 × 40 cm apparatus for 5 minutes and filmed for later analysis. Statistical analyses included the Shapiro-Wilk normality test and one-way ANOVA with Tukey's post-hoc test, using Prism 9 software. p-values < 0.05 were considered significant.

Results: In the OF test, the CCI + VE group maintained total distance traveled like pre-injury measurements, with no significant changes over the 28-day experiment. In contrast, the CCI group showed increased immobility and progressive distance reduction on days 14, 21, and 28 (one-way ANOVA, $F(4,16) = 6.47$; $p = 0.003$). Furthermore, time spent in the corners of the apparatus increased significantly in the CCI group compared to pre-injury (one-way ANOVA, $F(4,16) = 3.34$; $p = 0.03$).

Conclusion: The combination of VE with EE enhanced the reduction of anxiety- and depression-like behaviors in mice subjected to CCI.

Implications: These findings suggest that combined non-pharmacological interventions could be promising strategies for managing neuropathic pain through reducing anxiety- and depression-like behaviors, warranting further studies to explore their mechanisms and clinical applications.

Keywords: Physical Exercise, Hyperalgesia, Nervous System

Conflict of interest: The authors declare no conflict of interest.

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ENRICHED ENVIRONMENT WITH VOLUNTARY EXERCISE PROMOTES SENSORY RECOVERY AFTER SCIATIC NERVE CONSTRICTION IN FEMALE MICE

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Background: Neuropathic pain results from injuries or diseases affecting the somatosensory system, impacting 7–10% of the global population. Animal models with chronic constriction injury (CCI) of the sciatic nerve are essential for investigating its pathophysiology. Although pharmacological treatment is widely used for neuropathic pain, non-pharmacological interventions such as environmental enrichment (EE) and voluntary exercise (VE) have shown promising efficacy. EE, which provides motor, sensory, social, and cognitive stimuli, can be enhanced by VE, performed in a freely accessible activity wheel. However, there is a scarcity of studies comparing isolated EE and its combination with VE.

Objectives: To evaluate the effects of EE, alone or combined with VE, on sensitivity modulation in a model of neuropathic pain induced by sciatic nerve constriction in female mice.

Methods: Twenty female BALB-C mice, aged 7–8 weeks and weighing 30–35 g, were used, acquired after approval by the animal research ethics committee. The 29-day experiment divided the animals into four groups: CCI, CCI + VE, SHAM, and SHAM + VE. All groups underwent EE, and the SHAM group consisted of animals without sciatic nerve injury. Sensitivity was assessed using the Von

Frey test, which applies stimuli with nylon monofilaments (0.05 to 300 g) to the animal's paw, with an expected response of shaking, cleaning, or lifting the paw if the stimulus is felt. Each filament was applied 10 times, and a positive result occurred when the animal responded 40% of the time to the same filament. Tests were conducted before injury and on days 7, 14, 21, and 28 post-CCI. Statistical analyses included the Shapiro-Wilk normality test and one-way ANOVA with Tukey's post hoc test, using Prism 9 software. p -values < 0.05 were considered significant.

Results: In the Von Frey sensory test, all groups showed worsened sensitivity on day 7, with no significant differences ($p = 0.89$). On day 14, the CCI + VE group improved, matching the SHAM group, while the CCI group maintained significantly worse sensitivity compared to the other groups (one-way ANOVA, $F(3,11) = 5.6$; $p = 0.001$). On days 21 and 28, the CCI group aligned with the SHAM and CCI + VE groups ($p = 0.35$).

Conclusion: VE combined with EE accelerated the recovery of the CCI + VE group, which showed a faster improvement in mechanical sensitivity starting on day 14, compared to the CCI group, which only improved from day 21 onwards.

Implications: The findings suggest that the combined intervention may be a more effective strategy for neuropathic pain modulation. Translating to clinical practice, outdoor or group exercises are recommended as a form of enrichment.

Keywords: Physical Exercise, Hyperalgesia, Nervous System

Conflict of interest: The authors declare no conflict of interest.

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EDUCATIONAL LEVEL AND INCOME ARE ASSOCIATED WITH KNOWLEDGE OF STROKE IN USERS OF SUS IN SOUTH OF BRAZIL

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Background: Stroke is the primary cause of disability among adults in Brazil and imposes a substantial financial burden on the Unified Health System (SUS). This burden can be alleviated through primary care preventive measures focused on identifying risk factors and early disease diagnosis. However, few studies evaluate SUS users' knowledge about stroke.

Objectives: This study aimed to assess the knowledge of stroke among the population using the SUS in the South of Santa Catarina and explore the association of educational level and income with knowledge of stroke in this population.

Methods: This cross-sectional study was conducted between January and April 2023, using a questionnaire developed by researchers which evaluated knowledge about stroke regarding signs and symptoms, pathophysiology, risk factors and sequelae. A total of 350 individuals participated. The collected data were organized and analyzed using the Statistical Package for Social Sciences (SPSS) version 22 for Windows. The chi-square test was used to assess the association between sociodemographic variables and questionnaire responses.

Results: The sample was mostly female, with a mean age of 36 ± 14.33 years, mostly white, married/stable union, with an income of 1.5 minimum wages. It was observed that most participants believed to know in about pathophysiology, signs and symptoms,

risk factors and sequelae of stroke, but few responded correctly. Among the responses that were considered adequate, it was possible to observe a significant association between education level and giving an adequate response, demonstrating that the variable education level influences the adequacy of the participant's response. It was also possible to see that individuals with lower incomes (up to 1.5 minimum wages) make more mistakes regarding the pathophysiology of stroke. When comparing income and knowledge of the signs and symptoms of stroke, it was observed that there is a tendency to be statistically significant, with individuals with lower incomes (up to 1.5 minimum wages) presenting more inadequate responses. During the analyses, it was possible to observe a statistically significant association between those who say they know the risk factors and family history of stroke ($p = 0.001$; $X^2 = 11.343$). Individuals who had a history said they knew more about the risk factors (71.3%) when compared to those who did not have a family history (53.7%). However, when evaluating only the yes answers, classified as adequate or inadequate, it was seen that this difference was not significant ($p = 0.758$; $X^2 = 0.095$), demonstrating that having a family member with stroke does not increase knowledge of the risk factors of the disease. There was also no statistically significant relationship between family history and responding adequately to the pathophysiology of stroke ($p = 0.543$; $X^2 = 0.371$), sequelae ($p = 0.678$; $X^2 = 0.172$) and signs and symptoms ($p = 0.697$; $X^2 = 0.152$).

Conclusion: This study showed that most of the interviewees do not know in general about stroke, and that lower incomes and level of education are associated with answers that are inadequate, while having a family member with stroke does not increase knowledge of stroke.

Implications: It became evident that educational interventions are essential for the general population to enhance stroke prevention and minimize its impact.

Keywords: Knowledge, Unified Health System (SUS), Stroke

Conflict of interest: The authors declare no conflict of interest.

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BRAIN-COMPUTER INTERFACE IN COGNITIVE REHABILITATION FOR INDIVIDUALS WITH PARKINSON'S DISEASE AND IMPROVEMENT IN OCCUPATIONAL PERFORMANCE: A PILOT STUDY

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Background: Parkinson's disease (PD) causes non-motor symptoms such as cognitive impairments, which can progress to dementia, leading to occupational performance issues. The use of a non-invasive brain-computer interface (BCI) is a promising approach in neurofunctional rehabilitation, such as the application of an upper-limb exoskeleton. Although BCI has been validated for other neurological conditions, further research is needed to investigate its impact as a

rehabilitation strategy for individuals with PD, including its effects beyond motor symptoms.

Objectives: To assess the effects of BCI-controlled exoskeleton use on cognition and occupational performance in individuals with PD.

Methods: This pilot study involved 10 daily intervention sessions, each lasting 60 minutes, using BCI with motor imagery combined with an exoskeleton applied to the most affected hand, followed by the execution of the imagined action. Each participant imagined and executed five problem-based activities in the domains of self-care, productivity, and leisure, focusing on tasks they found most challenging. The assessment instruments used before and after the interventions included the Parkinson's Disease Cognitive Rating Scale (PD-CRS) and the Canadian Occupational Performance Measure (COPM).

Results: A total of 12 individuals with PD participated (6 men and 6 women), with a mean age of 60.41 years. The majority were right-hand dominant (91.6%), with eight participants exhibiting contralateral motor symptoms. The average time since diagnosis was 3.9 years, with most participants classified at stage 3 (58.3%) according to the Hoehn and Yahr Scale. Participants demonstrated significant improvement in subcortical frontal cognitive functions ($p = 0.016$), including sustained attention, working memory, alternating and verbal action fluency, clock drawing, and immediate and delayed free recall verbal memory; posterior cortical functions ($p = 0.001$), including confrontation naming and clock copying; as well as in the total PD-CRS score ($p = 0.007$). Both occupational performance and satisfaction significantly improved ($p < 0.001$) according to the COPM, with sustained benefits observed in a follow-up assessment after four weeks.

Conclusion: BCI-controlled motor imagery intervention using a robotic glove is a viable approach for individuals with PD, as it significantly improved cognitive functions and participants' perceived performance and satisfaction in daily activities. Further studies, particularly randomized clinical trials with larger sample sizes and long-term interventions, are necessary to determine whether BCI application plays an effective role in PD rehabilitation.

Implications: The use of an exoskeleton appears to have positive implications for the functional rehabilitation of individuals with PD. BCI has the potential to enhance neuronal activation, promoting brain reorganization and plasticity, thereby stimulating cognitive functions. A notable aspect of this study is its individualized approach, tailoring imagined and executed activities to each participant's specific needs while incorporating key neurofunctional rehabilitation principles, including neurofeedback, repetitive training, and treatment intensity.

Keywords: Brain-Computer Interfaces, Neurological Rehabilitation, Parkinson's disease

Conflict of interest: The authors declare no conflict of interest.

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FUNCTIONALITY, WORK ABILITY, AND REHABILITATION BARRIERS IN YOUNG ADULTS POST-STROKE: A CROSS-SECTIONAL ANALYSIS

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Background: Stroke is a leading cause of disability worldwide, with significant consequences for young adults, including functional limitations, reduced work capacity, and challenges in rehabilitation adherence. Although the impact of stroke on older populations is well-documented, studies on young stroke survivors remain limited, particularly regarding barriers to rehabilitation and return to work. Identifying the factors influencing functionality, work ability, and rehabilitation participation is important for improving post-stroke outcomes in this population.

Objectives: This study aimed to (1) assess functionality and work ability among young adults post-stroke, (2) evaluate perceived barriers to rehabilitation, and (3) examine the relationship between functional status, work capacity, and rehabilitation barriers.

Methods: A cross-sectional study was conducted with 50 young adult stroke survivors (ages 18–65). Functional assessments included the National Institutes of Health Stroke Scale (NIHSS), Modified Rankin Scale (mRS), Barthel Index (BI), and Stroke Impact Scale (SIS). Work ability was measured using the Work Ability Index (WAI), and barriers to rehabilitation were assessed using the Cardiac Rehabilitation Barriers Scale (CRBS). Correlation analyses explored associations between functionality, work ability, and rehabilitation barriers.

Results: Participants exhibited moderate functional impairment (median NIHSS: 6, IQR: 4; BI: 88, IQR: 32; mRS: 2, IQR: 1), with SIS subdomains indicating significant mobility and hand function deficits. Work ability was generally low (median WAI: 10, IQR: 9), with a strong positive correlation between higher functional status and work ability (e.g., BI and WAI, $r = 0.56$, $p < 0.001$). Rehabilitation barriers were prevalent, particularly in perceived needs and accessibility. Higher CRBS scores were associated with lower functional status and work ability, suggesting that socioeconomic and logistical factors significantly impact rehabilitation adherence.

Conclusion: Young stroke survivors face substantial functional limitations and work restrictions, compounded by socioeconomic and accessibility barriers to rehabilitation. Addressing these challenges through targeted rehabilitation programs and improved access to services may enhance functional outcomes and work reintegration.

Implications: These findings highlight the need for integrated post-stroke rehabilitation strategies that consider functionality, work capacity, and rehabilitation barriers. Policymakers and healthcare providers should focus on reducing structural and socioeconomic obstacles to optimize recovery and reintegration into professional life.

Keywords: Barriers to Access of Health Services, Stroke Rehabilitation, Rehabilitation

Conflict of interest: The authors declare no conflict of interest.

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KNOWLEDGE ABOUT RISK FACTORS FOR STROKE PREDICTS THE ADOPTION OF HEALTHY LIFESTYLE BEHAVIORS POST-STROKE: A CROSS-SECTIONAL STUDY

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Background: Recurrent stroke significantly contributes to the global burden of stroke. Stroke secondary prevention, which promotes healthy lifestyle behaviors, is seen as a priority solution to reduce this burden. However, many post-stroke individuals maintain unhealthy lifestyles, often citing a lack of stroke education as a barrier to adopting healthier habits. Understanding whether knowledge about stroke influences the adoption of healthy behaviors can help guide secondary prevention strategies, where health education plays a crucial role in empowering individuals to make informed lifestyle choices.

Objectives: This study aimed to assess whether knowledge about stroke—its definition, signs, symptoms, risk factors, and the individual's belief in the possibility of another stroke—predicts the adoption of healthy lifestyle behaviors during the chronic phase post-stroke.

Methods: A cross-sectional study was conducted through telephone interviews with individuals in the chronic post-stroke phase, collecting data on sociodemographic, lifestyle behaviors, and stroke-related knowledge. Descriptive statistics and binary logistic regression ($\alpha = 5\%$) were used for analysis. The dependent variables were smoking cessation, safe alcohol consumption, healthy diet, physical activity, and the simultaneous adoption of all four healthy behaviors. Predictor variables related to stroke knowledge included knowing what a stroke is, its signs, symptoms, risk factors, and belief in the risk of a new stroke.

Results: Seventy-five individuals participated (mean age: 63 ± 13 years; 50% male). Of them, 65 (87%) did not smoke, 74 (89%) consumed alcohol safely, 48 (64%) ate at least two servings of fruits/vegetables daily, 25 (33%) engaged in ≥ 1 hour of physical activity weekly, and 14 (19%) adopted all four healthy behaviors. Regarding stroke knowledge, 43 (57%) knew what a stroke is, 41 (55%) knew its signs and symptoms, 29 (39%) knew its risk factors, and 33 (44%) believed they were at risk of a new stroke. Knowledge of stroke risk factors was found to significantly predict physical activity participation ($B: 1.08$, $OR: 2.95$, 95% $CI: 1.03-8.41$, $p = 0.043$) and the simultaneous adoption of all healthy behaviors ($B: 1.45$, $OR: 4.27$, 95% $CI: 1.15-15.82$, $p = 0.030$).

Conclusion: Knowledge of stroke risk factors significantly predicted physical activity participation and the combined adoption of smoking cessation, safe alcohol consumption, a healthy diet, and post-stroke physical activity. Screening for knowledge of stroke risk factors could help identify individuals who need targeted secondary prevention education. Health education on this topic is essential in promoting the adoption of healthy lifestyle behaviors for stroke secondary prevention.

Implications: This study highlights the importance of health education in secondary stroke prevention, particularly in addressing knowledge about stroke risk factors to encourage healthy lifestyle behaviors. It also underscores the need for screening knowledge on stroke risk factors to identify individuals who require targeted education. These findings are relevant for healthcare professionals involved in secondary stroke prevention and suggest that future studies should explore whether providing knowledge about stroke risk factors can promote healthier behaviors and reduce recurrence rates.

Keywords: Stroke, Secondary Prevention, Healthy Lifestyle Behaviors, Knowledge

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QUALITY OF LIFE IN INDIVIDUALS AT DIFFERENT STAGES OF PARKINSON'S DISEASE: A COMPARATIVE ANALYSIS

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Background: Parkinson's disease (PD) is a progressive neurodegenerative condition characterized by motor and non-motor symptoms that significantly impact individuals' functionality and independence, reducing their quality of life (QoL). The QoL of people with PD can be influenced by several factors, including disease progression, the presence of comorbidities, and treatment response. Thus, understanding the relationship between PD severity and QoL is essential for optimizing rehabilitation strategies, enabling the implementation of more effective and personalized approaches to minimize the negative impacts of the disease.

Objectives: To assess the relationship between PD severity and the quality of life of individuals affected by Parkinson's disease.

Methods: A cross-sectional study was conducted with individuals diagnosed with PD, recruited from Parkinson's disease associations in Rio Grande do Sul, Brazil. The study was approved by the Research Ethics Committee. Disease severity was measured using the Hoehn & Yahr Scale (H&Y), which classifies Parkinson's disease into stages based on a combination of clinical characteristics and disability. Quality of life was assessed using the Parkinson's Disease Questionnaire-39 (PDQ-39), which evaluates individuals' perceptions of QoL, participation, and disease-related restrictions. The comparison between variables was analyzed using a four-way ANOVA test, with post hoc analyses corrected by Bonferroni adjustments.

Results: A total of 27 individuals were included (mean age: 70.14 years, 66% male). The four-way ANOVA indicated a significant effect on QoL among individuals with different levels of PD severity ($p = 0.011$). Post hoc tests revealed large and moderate effect sizes, with Cohen's d ranging from -0.460 to -1.084 . Statistical significance was reached only in the comparison between the H&Y 1.5 and H&Y 3 groups ($d = -1.084$, $p = 0.042$). Descriptive analysis showed a progressive increase in PDQ-39 scores, from 23.6 ± 5.4 , 28.0 ± 12.8 , 36.0 ± 9.2 , and 48.0 ± 17.6 for stages 1.5, 2, 2.5, and 3, respectively, indicating that higher disease severity levels are associated with poorer quality of life.

Conclusion: PD severity is directly related to poorer QoL, highlighting the critical need for early and targeted interventions to minimize the negative impacts of disease progression. As the disease advances, individuals experience increasing disability and limitations, significantly affecting their daily lives. The findings of this study emphasize that individuals in more advanced disease stages, particularly those classified as H&Y stage 3, are particularly vulnerable to substantial reductions in their quality of life.

Implications: This study reinforces the importance of early and individualized rehabilitation strategies to address PD progression in its initial stages. Early recognition of disease severity through tools such as the Hoehn & Yahr scale allows for interventions that may help slow the decline in functional abilities and reduce the impact of PD on patients' lives. Furthermore, understanding the relationship between disease severity and QoL enables healthcare teams to tailor treatment plans more effectively, meeting the unique needs of each patient as they progress through the disease stages.

Keywords: Parkinson's disease, PDQ39, Hoehn & Yahr Scale

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PREVALENCE OF PARKINSONISM IN PATIENTS WITH BIPOLAR DISORDER

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Background: The human movement represents a fundamental connection between neurology and psychiatry. Movement disorders are common in psychiatry and share networks between the basal ganglia and the cerebral cortex. Bipolar Disorder (BD) is characterized by episodes of depression and mania without an apparent cause. Idiopathic Parkinsonism in bipolar patients includes motor symptoms of Parkinson's Disease (PD). Many bipolar patients exhibit facial inexpressiveness, action tremors, rigidity, and reduced arm swing while walking, which characterizes bilateral and symmetrical Parkinsonism.

Objectives: To assess the occurrence of parkinsonism in individuals with BD.

Methods: A retrospective, descriptive, and cross-sectional study (N = 85) involving patients aged 51 to 86 years (mean age: 64.8 years), conducted over 10 months. The study included both male and female patients diagnosed with BD and presenting signs of parkinsonism, followed at a neurodementia outpatient clinic in a university hospital (GO) and a private neuropsychiatry service. Patients underwent medical and neuropsychological assessments, including evaluations of mania, cognitive dysfunction, quality of life in PD, and apraxias. Data were analyzed using SPSS Statistics.

Results: The highest prevalence of BD with parkinsonism was among women (73.4%); 53.8% of the sample exhibited some degree of dementia, either mild or moderate. Executive dysfunction was observed in 90% of patients, while 80% presented tremor, bradykinesia, rigidity, and apraxias. The prevalence of parkinsonism in women with BD suggests a genetic influence on motor and cognitive impairment, reinforcing the hypothesis of a neurodegenerative phenotype involving frontostriatal circuits. The high frequency of motor symptoms indicates an overlap with movement disorders, highlighting the importance of differential diagnosis.

Conclusion: This study provides a critical foundation for implementing rehabilitation strategies for patients with BD and signs of parkinsonism. The observed interrelation between psychiatric disorders and neurofunctional alterations underscores the need for integrated therapeutic approaches that address both psychiatric and motor aspects. The findings are crucial for guiding future research and clinical practices aimed at improving the quality of life and functionality of these patients.

Implications: Identifying the overlap between mood disorders and motor alterations reinforces the need for integrated therapeutic approaches, promoting a physiotherapeutic approach that considers both psychiatric and motor aspects.

Keywords: Bipolar Disorder, Parkinsonism, Motor Alterations

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MOST: A TEST TO EVALUATE MOBILITY OVER STABILITY IN INDIVIDUALS WITH SPINOCEREBELLAR ATAXIA

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Background: An efficient postural control needs functional motor skills, such as mobility over stability, i.e., the ability to move parts of the body while maintaining a stable base of support. Spinocerebellar ataxia (SCA) is a condition in which postural instability is usually the first and most frequent symptom with a huge impact of independence. The instruments currently available to assess postural control are focused on tasks with static or dynamic postures. There are rare tests for mobility over stability such as the Functional Reach Test and some items of the Berg Balance Scale (BBS).

Objectives: This study proposes the Mobility Over Stability Test (MOST) to fill the gap in literature with a specific test for this functional motor skill.

Methods: MOST was composed by four tasks performed in standing position, with feet together, in this sequence: (1) looking up and down, (2) right and left, (3) upper limbs flexion, and (4) turning the trunk to look back at an object 1.5m behind the participant, both sides. In tasks 1, 2 and 4, the arms remain crossed over the trunk. Each block of tasks was repeated 3 times. Stability during the task's execution was assessed considering the level of postural displacement, recorded by an accelerometer attached to a smartphone fixed at L4-L5. The extent of instability was measured by counting how often the person lost balance, which was reflected in the number of times they required assistance from the evaluator to regain stability. This test was carried out with 31 individuals with SCA and 14 healthy individuals matched for gender, age, and body mass. Individuals with SCA were assessed using the Scale for the Assessment and Rating of Ataxia (SARA), Inventory of Non-Ataxia Signs (INAS) and BBS. The association between the data generated by MOST and the other instruments was evaluated.

Results: 31 participants with SCA were assessed. Of these, 21 did not need any additional support to complete the test, while 10 needed one or more touches. The maximum duration of the test was 35 seconds. There was no significant association between performance on the MOST and scores on the SARA, INAS and BBS instruments. Despite this, the correlations between the scores of the instruments and those of the MOST were strong. In the accelerometry analysis, individuals with SCA had a shorter test duration compared to controls, suggesting greater postural instability.

Conclusion: The MOST proved to be a quick-to-apply, easy-to-access and easy-to-use test. The data indicate that, although there is a difference in MOST performance between healthy people and people with SCA, the clinical and postural displacement variables did not significantly explain these differences. Studies with a larger sample size and greater variability in clinical presentations will be necessary to confirm the usefulness of the MOST.

Implications: These results indicate that MOST can be an important tool in assessing and monitoring the evolution of stability and the degree of imbalance in individuals with SCA, even in mild levels of ataxia severity, and can also be used to prescribe exercises.

Keywords: Spinocerebellar ataxia, Mobility over stability, Postural control, Balance

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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EFFECTS OF CONVENTIONAL ASSISTIVE DEVICES ON SPATIOTEMPORAL GAIT PARAMETERS OF ADULTS WITH NEUROLOGICAL DISORDERS: PRELIMINARY RESULTS OF A SYSTEMATIC REVIEW

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Background: Assistive devices are commonly prescribed to compensate for gait impairments in individuals with neurological disorders. However, there are limited recommendations for prescribing these devices, and the effects of their use are poorly understood.

Objectives: To investigate the immediate, short, and long-term effects of using conventional assistive devices on gait parameters in adults with neurological disorders.

Methods: This is an ongoing systematic review including experimental studies that investigated the effects of using conventional assistive devices (e.g., canes, crutches, and walkers) on the gait parameters (speed, cadence, step length and distance) of individuals with neurological disorders. Electronic searches were conducted in MEDLINE, Embase Ovid, PEDro, Scielo, CINAHL Database, LILACS, and gray literature. Two trained independent reviewers selected the studies, extracted the data, and assessed the methodological quality of the included studies using the Cochrane Risk of Bias (RoB2) tools. A third independent reviewer resolved disagreements. Meta-analyses were conducted when at least two homogeneous studies were available. The quality of the evidence was assessed (GRADE).

Results: Twenty-three studies involving 450 participants were included. The neurological conditions included Alzheimer's Disease (AD), Huntington's Disease, Neuromuscular Disorders, Multiple Sclerosis (MS), Parkinson's Disease (PD), Spinal Cord Injury, and Stroke. About half of the studies had a high risk of bias. Most studies ($n = 21$; 92%) evaluated immediate effects, one study evaluated short-term effects (4%), and one study evaluated long-term effects (4%) of assistive device use. Most studies compared the gait with and without assistive devices ($n = 19$; 83%). The mean difference (MD) between test conditions was calculated for all studies and meta-analyses were conducted including individuals with AD, PD and stroke. According to the meta-analysis, the immediate use of assistive devices worsened or made no difference in the gait parameters of individuals with AD, PD and stroke ($0.001 = p = 0.410$) compared with gait without assistive devices. In individuals with stroke the immediate use of a single-point cane improved both gait speed (MD: 0.017 m/s, 95% CI: 0.025 to 0.090; $p = 0.001$) and distance (MD: 20.33 meters, 95% CI: 4.49 to 38.19, $p = 0.012$) compared to the four-point cane. Data from a single study about the long-term effects showed that the gait speed with a cane was 0.14 m/s (95% CI 0.05–0.23) higher in individuals with stroke who used the device daily for 30 days, compared to control individuals who performed stretching sessions.

Conclusion: Current evidence on the effects of assistive devices is mainly based on studies investigating immediate effects, showing no benefit or a worsening of gait parameters compared to gait without the device. In the long-term, daily use of a single-point cane increased gait speed with the cane in individuals with stroke after four weeks of intervention. Additionally, the use of the single-point cane was superior to the use of the four-point cane.

Implications: The time of training and the type of device should be considered when prescribing assistive devices. Future research should investigate the effects of training and device use in both the

short and long-term. Results should be interpreted with caution until the study is completed.

Keywords: Neurological disorders, conventional assistive device, gait

Conflict of interest: The authors declare no conflict of interest.

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EMOTIONAL STRESS/DEPRESSION AND AGE ARE PREDICTORS OF ADOPTING HEALTHY LIFESTYLE BEHAVIORS POST-STROKE IN A MIDDLE-INCOME COUNTRY

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Background: Stroke has a high global burden, which is highest in low and middle-income countries (LMICs). Recurrent strokes contribute heavily to this burden, making secondary prevention crucial. Adopting healthy lifestyles is essential for stroke secondary prevention but remains low among individuals post-stroke. While studies in high-income countries provide valuable insights, their findings may not be directly applicable to LMICs due to cultural and contextual differences. Identifying key predictors of the adoption of healthy lifestyle behaviors in a middle-income country can target individuals who may benefit most from non-pharmacological, non-surgical stroke secondary prevention interventions and guide the development of interventions focused on these mediators.

Objectives: To investigate whether sociodemographic and routinely assessed clinical risk factors for recurrent stroke variables predict the adoption of healthy lifestyle behaviors post-stroke in a middle-income country.

Methods: A cross-sectional study was conducted with approval from the Institutional Ethical Review Board. All individuals admitted to a public hospital Stroke Unit between September-2019 and February-2021 were invited to participate in a previous cohort study. Two years later, they were contacted via telephone call for this study. Those who consented were screened for cognitive and language impairments that could hinder telephone interviews by a trained researcher. Using the Stroke Riskometer™ App, four healthy lifestyle behaviors were considered dependent variables: physical activity participation, healthy eating, smoking abstinence, and safe alcohol consumption. A fifth dependent variable assessed adherence to all four behaviors. Independent predictors included sociodemographic factors (age and sex) and clinical risk factors (cardiac condition, hypertension, diabetes, body mass index, and emotional stress/depression). Binary logistic regression ($\alpha = 5\%$) was employed. **Results:** Among 81 participants (63 ± 14 years, 51% male), 22% engaged in physical activity = 2.5 hours/week, 68% consumed = 2 servings of fruits/vegetables daily, 88% were non-smokers, and 95% reported safe alcohol consumption. Only 16% adopted all four behaviors. Regression models for physical activity, healthy eating, and safe alcohol consumption did not identify significant predictors. The model for smoking abstinence (correct classification = 87.7%) revealed that emotional stress/depression predicted smoking

($p = 0.036$, $B = 1.896$, $OR = 6.659$, $95\%CI = 1.137-39.013$). Individuals without emotional stress/depression were more likely to be non-smokers. The model for adopting all four behaviors (correct classification = 82.7%) identified age as a significant predictor ($p = 0.023$, $B = -0.072$, $OR = 0.931$, $95\%CI = 0.875-0.990$), with older individuals less likely to adopt all healthy behaviors.

Conclusion: Emotional stress/depression and age were predictors of adopting healthy lifestyle behaviors post-stroke in a middle-income country, highlighting their importance in targeting secondary prevention interventions.

Implications: Smoking cessation interventions should consider additional support for individuals experiencing emotional stress/depression. Secondary prevention strategies should also target older individuals to enhance their adherence to multiple healthy behaviors. While age cannot be modified, older individuals may require intensive behavioral strategies to reduce stroke recurrence risk. The low physical activity rate (22%) aligns with findings from another study conducted in a middle-income country, emphasizing the need for targeted interventions. Despite the high smoking cessation rate, relapse remains a concern, reinforcing the need for sustained prevention efforts. Additionally, studies should incorporate feasible clinical measurements to refine these findings further.

Keywords: stroke, healthy behaviors, risk factors

Conflict of interest: The authors declare no conflict of interest.

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EVALUATING BALANCE, GAIT VELOCITY, AND FUNCTIONAL STRENGTH IN INDIVIDUALS WITH SPINOCEREBELLAR ATAXIA VERSUS HEALTHY ONES: EXAMINING DISEASE SEVERITY

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Background: Spinocerebellar ataxia (SCA) is a family of dominant hereditary cerebellar ataxias that progressively degenerate the cerebellum and its pathways, causing postural instability and incoordination. Despite the importance of assessing functionality in individuals with SCA, data on performance in these tests is scarce.

Objectives: To assess the impact of SCA over functionality based on disease progression and symptom severity by comparing the performance of individuals with SCA to healthy ones.

Methods: Thirty-nine individuals with SCA were invited to participate. Four decline the invitation. Thirty healthy participants, matched in gender and age, were also recruited. Individuals with SCA was assessed through the Scale of the Assessment and Rating of Ataxia (SARA) and the Inventory of Non-Ataxia Signs (INAS) to characterize disease gravity and presence of non-ataxic symptoms, respectively. All participants were evaluated with the Five times sit to stand (5TSTS), 10m walk test (10MWT) and Functional reach test (FRT) with accelerometry. During FRT, a linear artifact was acquired using signals from 3D accelerometers integrated into an Apple smartphone (Iphone 13, designed by Apple in California USA,

assembled in Brazil) positioned in the lumbar region. The individuals with SCA were subdivided into three groups, according to the scores obtained on the SARA scale associated to the level of dependence when performing ADL (minimum-moderate, maximum, and severe-total dependence). To compare the control group and individuals with SCA subgroups, a one-way ANOVA was performed, followed by posttests in case of a significant main effect. Analysis of accelerometer recording during FRT was performed by comparing the groups using a t test for independent samples.

Results: For the analyzes of the 5TSTS, FRT and 10MWT, data from the 35 individuals with SCA as well as 30 height controls were used. For the analysis of the movement pattern during FRT with accelerometry, data from only 28 individuals with SCA and 22 controls were included due to the enough quality of signals found needed to analysis. There was a main effect when comparing groups for all variables: 5TSTS ($P < 0.001$); TAF ($P < 0.001$); Time in the 10MWT ($P < 0.001$); and number of steps in the 10MWT ($P < 0.001$). The distances achieved in the FRT by the control group were significantly higher than those of the maximum and severe-total dependence groups, while for the minimal-moderate dependence group, there were no significant differences compared to the control group. Regarding the TAF movement phases, there were no significant differences for any variable ($P < 0.132$).

Conclusion: The results indicate that SCA impacts gait and postural control. In general, individuals with SCA with greater dependence for ADL and worse disease severity had the worst performance in the tests. Although the distances reached in the FRT were smaller for patients with SCA, the movement phases did not show significant differences between them, indicating that the movement pattern is not significantly altered.

Implications: These results help to improve the treatment of individuals with SCA, highlighting the changes that can cause disease progression, identifying the areas in which patients have more difficulties, and helping in designing their plans of assistance.

Keywords: Spinocerebellar ataxia, Mobility, Functional strength, Postural control

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 74297023.4.0000.5504.

Registration: Not applicable.

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COMPARISON AND CORRELATION BETWEEN THE NUMERICAL PAIN SCALE AND THE VISUAL ANALOG SCALE IN PAIN PERCEPTION AMONG INDIVIDUALS WITH MIGRAINE

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Background: Chronic migraine (CM) is a highly prevalent neurological condition and a leading cause of disability, particularly among women. Pain assessment is crucial for managing this condition, and scales such as the Numerical Pain Scale (NPS), which evaluates pain on a scale from 0 to 10, and the Visual Analog Scale (VAS), consisting of a 100-mm line ranging from "no pain" to "worst possible pain," are widely used for this purpose.

Objectives: To compare the VAS and NPS and correlate them with a functional disability scale in patients with chronic migraine.

Methods: This was a cross-sectional observational study with a non-probabilistic convenience sample. Subjects included were those diagnosed with CM by a neurologist, on stable CM medication for at least three months, and without other associated headaches. Pain levels were assessed using the VAS, NPS, and the Migraine Disability Assessment Scale (MIDAS). Upon inclusion, participants were asked, "What is the intensity of your headache during a migraine attack?", which was quantified using the NPS. Next, the second part of the assessment was conducted, where the MIDAS and VAS were applied. Data were analyzed descriptively and inferentially using SPSS software, version 20. The Kolmogorov-Smirnov test was used to assess data normality; the Wilcoxon test was applied to compare NPS and VAS scores; and Spearman's correlation was used to evaluate the relationship between the variables and the MIDAS scale. A 95% confidence interval and a p-value < 0.05 were considered statistically significant.

Results: The sample comprised 80 women, with a mean age of 35.99 ± 2.17 years. The median NPS pain score was 10 (2.00), while the median VAS score was 8.35 (2.78). The MIDAS median score was 81.5 (88.75), indicating a significant functional impact of migraine. A statistically significant difference ($p < 0.05$) was observed in the comparison between the scales, with a positive correlation ($r_s = 0.27$; $p < 0.05$). The NPS showed a stronger correlation with the MIDAS scale ($r_s = 0.33$; $p < 0.01$) compared to the VAS ($r_s = 0.27$; $p < 0.05$), though both correlations were significant.

Conclusion: The NPS demonstrated a stronger correlation with pain-related functional impairment, suggesting it may be a more sensitive tool for this purpose.

Implications: The stronger correlation between the NPS and MIDAS suggests that the NPS may be more effective in monitoring the impact of pain on patients' functionality, aiding in therapeutic decision-making. Further studies are needed to confirm these findings and expand the understanding of the clinical applicability of pain assessment scales.

Keywords: Pain scales, Chronic migraine, Functional disability

Conflict of interest: The authors declare no conflict of interest.

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PASSIVE MOBILIZATION PERFORMED BY AN AUTOMATED KINESIOTHERAPY DEVICE: IMMEDIATE EFFECTS OF ON GAIT BIOMECHANICS IN HEMIPARETIC PATIENTS

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Background: Brain injuries refer to damage in cerebral structures, either vascular or traumatic in origin, leading to impairments in postural, balance, and muscle tone. These manifestations result in significant movement limitations, thus affecting daily activities and increasing the risk of falls, pain, and discomfort. Passive mobilization is a therapeutic approach that can influence joint range of motion and the properties of muscle and connective tissues. Automated devices enable passive movement repetition with greater intensity, reproducibility, and specificity while also reducing the physical strain on physical therapists. However, studies assessing the effects of this intervention on the lower limbs of spastic and hemiparetic patients remain scarce.

Objectives: This study evaluated the immediate effects of passive mobilization performed with a kinesiotherapy device on spatiotemporal gait parameters in hemiparetic patients.

Methods: This clinical trial included 18 hemiparetic patients diagnosed with brain injury. We performed gait assessment using an Inertial Measurement Unit (IMU) with an accelerometer and gyroscope and evaluated discomfort using the Visual Analog Scale (VAS). The intervention protocol involved passive kinesiotherapy using an automated device for 30 minutes, with all tests applied pre- and post-intervention.

Results: The intervention improved cadence, symmetry, step length, and propulsion for both the affected and unaffected hemibody, with a significant increase in walking speed ($p = 0.02$). Step length of both the affected and unaffected limbs, as well as propulsion of the affected limb, showed a moderate effect size.

Conclusion: The results of this study demonstrate that passive mobilization using an automated kinesiotherapy device has immediate effects on gait biomechanics in hemiparetic patients. It is well established that muscle joint complex function depends on the integrity of the mechanical components of the tissue, and the passive kinesiotherapy device protocol suggests that passive mobilization positively impacts components related to muscle-joint integrity.

Implications: These findings represent a new perspective on applying automated passive mobilization to complement conventional physiotherapy in neurological rehabilitation. An important point to highlight is that the device is intended for home use and does not replace physiotherapy but should be considered a complementary treatment. This approach can maximize gains and minimize losses, optimizing rehabilitation goals based on the ICF framework, as patients can continue guided rehabilitation at home.

Keywords: brain injury, muscle spasticity, gait, hemiparesis, continuous passive motion therapy

Conflict of interest: The authors declare no conflict of interest.

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ASSOCIATION BETWEEN ABDOMINAL PERFORMANCE AND BICEPS BRACHII ACTIVATION RANGE DURING FOUR IRRADIATION MANEUVERS: A CROSS-SECTIONAL STUDY

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Background: Proprioceptive Neuromuscular Facilitation (PNF) is a therapeutic approach with principles and procedures used to promote motor rehabilitation. One of the principles of PNF is motor irradiation, in which the application of resistance to a stronger body segment promotes muscle contraction in another weaker limb. This is useful in motor recovery when voluntary contraction is not possible, such as in cases of paralysis of a segment. Abdominal strength is fundamental to the effectiveness of various training and rehabilitation techniques. But, in clinical practice, it is commonly observed that people with greater abdominal strength produce weaker contractions in target muscle during the application of irradiation maneuvers.

Objectives: To investigate the relationship between abdominal strength and the amplitude of activation of the biceps brachii

muscle provoked by the execution of four FNP motor irradiation maneuvers.

Methods: A cross-sectional observational study was conducted with 33 healthy participants (19 women and 14 men, with 27 ± 5 years of age, 1.70 ± 0.09 m in height, 68.6 ± 14.47 kg in body mass, and BMI of 23.64 ± 3.90 kg/m²). Inclusion criteria were age between 18 and 45 years and agreement to sign the Free and Informed Consent Form. Individuals with uncontrolled cardiovascular conditions, musculoskeletal alterations, post-COVID sequelae, and other contraindications to the use of EMG were excluded. After signing the consent form, a screening session was held to identify the demographic characteristics of the sample and identify the non-dominant side. Next, the maximum voluntary contraction of each participant was measured. Then, surface electromyography (EMG) (Delsys trigno) of the biceps brachii on the non-dominant side was obtained, while the patterns of (i) flexion, adduction and external rotation with knee flexion in lateral decubitus; (ii) extension, adduction and internal rotation of the upper limb in dorsal decubitus; (iii) rotation of the lower trunk in prone; and (iv) pre-bridge position on the elbows (upper limb along the body without supporting it on the stretcher) in an adapted position (standing with the knees semi-flexed) were applied on the dominant side against manual resistance. Each pattern was repeated 3x and the contraction maintained for 5s on each attempt, with a 10s rest interval. Abdominal strength tests were performed according to the American College of Sports Medicine protocol.

Results: The amplitude of the EMG of the biceps brachii was significantly different between the irradiation maneuvers applied, but there was no group effect (divided according to performance in the abdominal test), nor any significant interaction between group and maneuver.

Conclusion: The data indicate that the level of performance in the abdominal test may not significantly influence the specific recruitment of the biceps brachii during the application of irradiation maneuvers. Future studies should consider a larger sample size, with different age groups and body composition, and with different kind of diseases.

Implications: This study challenges the assumption that stronger abdominal muscles decrease recruitment of distal muscles through irradiation techniques. If future studies confirm these findings, abdominal strength will not need to be considered when healing weakness of a segment with motor irradiation.

Keywords: Rehabilitation, Muscle Contraction, Electromyography

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BICEPS BRACHII ACTIVATION DURING MOTOR IRRADIATION: A CROSS-SECTIONAL STUDY IN HEALTHY INDIVIDUALS

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Background: Motor irradiation is a basic procedure of proprioceptive neuromuscular facilitation (PNF) in which a manual resistance is applied to one body part to generate muscle activation in another segment, aiming at improving strength. Few studies have investigated whether the targeted muscle exhibits a relevant electromyographic (EMG) pattern of muscle activation during the application of motor irradiation. Moreover, no study analyzed motor irradiation targeted to the biceps brachii muscle, an essential muscle in various daily activities evolving upper limbs.

Objectives: To analyze the muscle activation patterns of the biceps brachii in healthy individuals during different PNF irradiation maneuvers.

Methods: This was a cross-sectional study in which 33 healthy individuals were assessed, 19 women, 26 years old (min 20, max 43), 67kg (min 42, max 97), 1.70m (min 1.51, max 1.88). After signing the consent form, a screening session was carried out immediately before the intervention, consisting of identifying the sample, the non-preferred side and maximum voluntary contraction measurements. EMG (Delsys trigno) of the biceps brachii were performed during 4 randomized FNP irradiation techniques (flexion, adduction, and external rotation of the lower limb [FAR]; extension, adduction and internal rotation of the upper limb [EAR]; inferior rotation of the trunk [ROT] and prone on the adapted elbow [PRO]). The techniques were applied 3 times for 5 seconds with a 10-second interval.

Results: There was electromyographic activation of the biceps brachii for the 4 FNP motor irradiation maneuvers. In the post hoc analysis, the upper limb extensor pattern showed less activation when compared to the other three patterns ($P < 0.006$). EMG amplitude was consistently higher in maneuvers than EAR when compared with other maneuvers. Group analysis revealed significant differences in EMG amplitude (in % of MVC) among motor irradiation maneuvers ($P < 0.001$). Posttest analysis reveals significant differences between EAR maneuver and FAR ($P < 0.001$), PRO ($P = 0.006$) and ROT ($P < 0.001$), with no differences among FAR, PRO and ROT (P always > 0.875). EMG amplitude in EAR was smaller than in other PNF maneuvers. There were also significant differences in active EMG duration (in % of total duration) among PNF maneuvers ($P < 0.001$). Posttest analysis reveals significant differences between EAR and FAR ($P = 0.006$), PRO ($P = 0.002$) and ROT ($P < 0.001$), with no differences among FAR, PRO and ROT (P always > 0.506). EAR exhibited the shorter active EMG duration compared with other PNF maneuvers.

Conclusion: There was activation of the biceps brachii for all four FNP irradiation techniques, with the upper limb extensor pattern showing the least activation. Future studies should explore clinical applications, long-term effects, and functional benefits of different muscles and PNF irradiation maneuvers.

Implication: These findings can help guide rehabilitation strategies, emphasizing the importance of selecting appropriate PNF techniques for targeted muscle activation. Clinicians can use this information to optimize treatment for patients with upper limb weakness or neuromuscular impairments.

Keywords: manual therapy, proprioceptive neuromuscular facilitation, electromyography

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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KNOWLEDGE ABOUT STROKE AMONG USERS OF SUS: STUDY IN POPULATION FROM SOUTH OF SANTA CATARINA

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Background: Stroke is the leading cause of disability in adults in Brazil and has a significant financial impact on the Unified Health System (SUS). This impact can be reduced with preventive measures in primary care aimed at identifying risk factors and early diagnosis of the disease. Few studies assess the knowledge of SUS users about stroke.

Objectives: This study aimed to investigate the knowledge about stroke among the population that uses the SUS in the South of Santa Catarina.

Methods: This cross-sectional study was carried out based on the analysis of a questionnaire which evaluated knowledge about stroke regarding signs and symptoms, pathophysiology, risk factors and sequelae, developed by the researchers, with 350 individuals who were SUS users. The data collected were tabulated and analyzed in the Statistical Package for Social Science for Windows (SPSS) version 22. Descriptive statistics were performed in order to characterize the sample regarding sociodemographic and socioeconomic characteristics, as well as to describe the results of the questionnaire application.

Results: The sample was mostly female, with a mean age of 36 ± 14.33 years, mostly white, married/stable union, with an income of 1.5 minimum wages. It was observed that 64.5% ($n = 226$) of the participants believed they knew the pathophysiology of stroke, but of these only 28.8% ($n = 65$) answered correctly. The same occurs with signs and symptoms, risk factors and sequelae of stroke. The most common error found in the pathophysiology questions was the confusion of stroke with acute myocardial infarction. Regarding the immediate conduct when witnessing an individual having a stroke, 96.8% ($n = 239$) of the interviewees answered correctly, calling the emergency services. Even so, there were errors when correctly answering the SAMU number, 81.7% ($n = 286$) of the participants said they knew, however 51.4% ($n = 147$) reported the wrong number. Of the generic signs and symptoms of stroke, the most frequently cited during the study was headache, mentioned 80 times, followed by numbness in the arms 53 times, crooked mouth 42 times, dizziness 39 times, speech difficulties 30 times, high blood pressure 20 times, facial paralysis and fainting 12 times, and mental confusion 11 times. Regarding the consequences of stroke, the most frequently cited was paralysis of the limbs and mouth, mentioned 104 times, followed by impaired movement/motor function 102 times and speech 91 times. Among the least frequently cited were being confined to bed, mentioned 11 times, and death, 9 times. When asked about the pathophysiology of Transient Ischemic Attack, only 1.4% ($n = 5$) of the total number of interviewees were able to answer correctly.

Conclusion: This study showed that most of the interviewees do not know in general about stroke, however, they believe they know which can lead to inadequate prevention and intervention practices in stroke.

Implications: The need for educational interventions among this population became evident, as a way of preventing stroke, in order to reduce the individual and collective impact of the disease.

Keywords: Knowledge, Unified Health System (SUS), Stroke

Conflict of interest: The authors declare no conflict of interest.

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ASSOCIATION BETWEEN STAGE OF PARKINSON'S DISEASE AND KINEMATIC GAIT VARIABLES

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Background: With increasing life expectancy, the prevalence of chronic neurodegenerative diseases increases. Among these diseases, the second most prevalent is Parkinson's disease. Parkinson's disease is a chronic and progressive disorder of the nervous system that leads to the death of dopamine-producing neurons. Symptoms of Parkinson's disease include rigidity, postural instability, akinesia, bradykinesia, and tremor, as well as gait changes.

Objectives: To analyze the correlation between Parkinson's disease staging and kinematic parameters of gait in people with Parkinson's disease.

Methods: Fifteen patients diagnosed with Parkinson's disease participated in the study. Data collection was performed in a single visit to the collection environment. The Hoehn and Yahr scale and the Unified Parkinson's Disease Rating Scale (UPDRS) were used and applied during the intervention. Kinematics were assessed by the following parameters: gait speed, stride length, support time, swing, single support, double support, and stride. The variability of these parameters was calculated using the mean of the standard deviation. Pearson's correlation test was used to correlate disease staging and gait kinematic parameters. The significance level was set at $p < 0.05$.

Results: Associations were found between gait speed and disease stage ($p < 0.001$ and $r = -0.943$), stance time and disease stage ($p < 0.001$ and $r = 0.933$), disease stage and stride time ($p < 0.001$ and $r = 0.966$), disease stage and stance time variability ($p = 0.01$ and $r = 0.785$) and disease stage and swing time variability ($p < 0.016$ and $r = 0.766$) and disease stage and stride time variability ($p < 0.016$ and $r = 0.0761$).

Conclusion: As the stages of Parkinson's disease progress, the occurrence of gait abnormalities increases in individuals with the disease, such as reduced speed, increased support and stride time, and increased variability in the temporal kinematic parameters of gait, which may increase the risk of early fatigue and falls in these individuals.

Implications: The main limitation of the present study is the low n-sample. Rehabilitation through strengthening of key gait muscles has been shown to be the main precursor to reducing falls and early fatigue.

Keywords: Parkinson's disease, Gait, Kinematics

Conflict of interest: The authors declare no conflict of interest.

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TELEHEALTH INTERVENTION WITH HEARTS TECHNICAL PACKAGE AND ACTIVITY MONITOR TO INCREASE PHYSICAL ACTIVITY POST-STROKE: PRELIMINARY RESULTS OF A FEASIBILITY STUDY

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Background: Low physical activity level is a common risk factor for recurrent stroke. Behavior-changing interventions can increase physical activity participation, but face barriers (e.g., home visits or internet access). Low-cost telehealth approaches, like telephone calls and activity monitors, may offer a feasible solution. However, evidence supporting the efficacy of activity monitors to increase physical activity levels post-stroke remains limited. A previous systematic review suggests that integrating these devices into multifaceted behavior change interventions, such as the 5As (Ask, Advise, Assess, Assist, and Arrange) brief intervention from the HEARTS Technical Package, may enhance their effectiveness.

Objectives: To present preliminary results on the feasibility of implementing the telehealth intervention that combines the 5As brief intervention, as outlined in the HEARTS Technical Package, with the additional use of an activity monitor, compared to a control group receiving only the 5As brief intervention, for increasing physical activity level post-stroke.

Methods: A feasibility randomized controlled trial (RCT) with blinded assessment enrolled 24 individuals' post-stroke (= 6 months), aged = 18 years, inactive, able to walk 10 meters independently, and medically approved for physical activity. Participants were randomized into an experimental group (EG) (n = 12) or a control group (CG) (n = 12). Both groups received the 5As brief intervention outlined in the HEARTS Technical Package (12-weeks), via telephone call, with the EG also using an activity monitor. Outcomes included recruitment feasibility, intervention feasibility (1. retention, 2. attendance, 3. safety, and 4. perceived effectiveness), and physical activity level (assessed with the Human Activity Profile). Descriptive statistics were used for analysis.

Results: The recruitment rate was 38%. For intervention feasibility: 1. retention was 75% in the CG (9/12) and 83% in the EG (10/12); 2. attendance was 97% in the CG and 99% in the EG; 3. no adverse events were reported; 4. perceived effectiveness: in the CG, 55.6% reported feeling "much better" performing routine physical activity, 11.1% "moderately better," and 33.3% "a little better"; in the EG, 30% felt "much better," 20% "moderately better," 40% "a little better," and 10% reported "the same". Physical activity levels (mean $\pm$ SD) increased from 37 ± 12 to 49 ± 16 in the CG and from 42 ± 10 to 57 ± 18 in the EG.

Conclusion: Preliminary findings suggest that the intervention is feasible (high retention and attendance rates and no adverse events). Additionally, the proposed telehealth intervention may positively impact physical activity levels post-stroke.

Implications: To our knowledge, this is the first study investigating the feasibility of implementing a telephone call-based 5As brief intervention, as outlined in the HEARTS Technical Package, combined with an activity monitor compared to the 5As brief intervention alone. These findings will inform a fully powered RCT. The study addresses key gaps in the literature, including: 1. identifying a theoretically-informed intervention to increase physical activity post-stroke while overcoming barriers such as home visits and internet access; 2. addressing the lack of evidence supporting physical activity monitors for stroke survivors; and 3. exploring the additional effects of integrating activity monitors into multifaceted behavior change interventions to enhance physical activity post-stroke.

Keywords: stroke, physical activity, telehealth

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EXPLORING PERCEPTIONS AND EXPERIENCES OF INTERVENTION FOR BALANCE AND GAIT CONCOMITANT TO TDCS IN SPINOCEREBELLAR ATAXIA: A QUALITATIVE STUDY

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Background: Spinocerebellar ataxias (SCA) are a group of autosomal dominant inherited cerebellar disease characterized mainly by imbalance, motor incoordination, and dysarthria because of progressive degeneration of the cerebellum and/or its pathways. SCA type 3 (SCA3), also known as Machado-Joseph disease, is the most common form of SCA and has a high prevalence in Brazil. Patients with SCA face a progressive functional decline that compromises their quality of life. Understanding the factors that influence the adherence of individuals with SCA3 to programs of rehabilitation to improve balance is essential to adapt it to their expectations and needs. However, there is still little investigation on perceptions about both the impact of these interventions and the disease in their lives.

Objectives: To explore the perceptions and experiences of patients who participated in a balance and gait intervention program.

Methods: This is a qualitative study approved by the local Ethics Committee. Initially, a pilot group of 12 participants diagnosed with SCA3 were interviewed using a semi-structured script. These participants completed 20 consecutive sessions of an exercise program for balance and gait exercises concomitant to Transcranial Direct Current Stimulation (tDCS). Based on the initial interviews, the script was improved, resulting in a final version composed of 15 questions organized into four main axes: motivation, difficulties, benefits of treatment, and expectations. Subsequently, an independent researcher conducted semi-structured interviews with 25 additional participants with SCA3 who had completed the same intervention. All interviews were transcribed and analyzed using ATLAS.ti® software.

Results: The analysis revealed five main themes: participation experience, expectations for improvement, motivational factors, challenges faced, and perceptions during the study. Participants reported health benefits, strengthening of interpersonal bonds, and gratitude for the opportunity, despite challenges such as difficulty in performing the exercises and environmental barriers. Expectations ranged from perceived significant improvements to uncertainty about maintaining the improvements achieved. Motivation was reinforced by hope, persistence, and confidence in the treatment. In addition, participants shared perceptions about electrostimulation and suggestions for improving the intervention protocol.

Conclusion: The results provide a broader understanding of the positive, neutral, and negative perceptions and experiences of the participants that undergoing the intervention. Predominantly positive responses were observed regarding the experience in general, indicating that the proposed intervention was favorable in the perception of the participating individuals.

Implications: This study has the potential to help refine future programs and identify ways to reduce barriers that may lead to dropout from similar programs. It also has important application in providing valuable information about the perceptions of individuals with SCA3.

Keywords: SCA 3, Machado-Joseph disease, Perceptions and experiences, Semi-structured interview

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USE OF LIMOS-BR IN FUNCTIONALITY ASSESSMENT: STANDARDIZED MEASUREMENT FOR THE PRODUCTION OF HEALTH INDICATORS

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Background: LIMOS-Br was developed for clinical use, guiding decision-making in rehabilitation and encompassing a significant portion of the core set of rehabilitation information. It is a 45-item instrument that measures the activity component, covering broad aspects of communication, mobility, self-care, cognition, and domestic tasks. The instrument is already utilized in Switzerland and has been validated in Brazil in the form of a questionnaire, facilitating the coding of the International Classification of Functioning, Disability and Health (ICF) and the production of essential health indicators for member countries of the World Health Organization (WHO).

Objectives: To explore the potential of LIMOS-Br to simultaneously provide relevant information for rehabilitation and for the production of health indicators.

Methods: The cross-sectional study was approved by the Ethics Committee and included 100 adult individuals post-stroke with varying levels of impairment and disability. Functionality was measured through patient self-reports using LIMOS-Br, based on interviews conducted by a rehabilitation professional and guided questions specific to the instrument. In cases of moderate to severe aphasia, assistance from proxies was provided. The data were analyzed descriptively.

Results: The information generated by the instrument follows the exact description of the ICF categories and does not require linkage processes. Despite communication and cognitive impairments, the greatest difficulties were related to mobility, particularly dependency and limitations in climbing (d451), changing basic body position (d410), moving around (d455), and walking (d450). For self-care, the activities with the highest difficulty were eating (d550), caring for body parts (d520), dressing (d540), and washing oneself (d510).

Conclusion: The information obtained from LIMOS-Br was easily coded using the categories and the five proposed levels of functionality by the ICF, and was consistent with findings from previous studies on functionality in post-stroke individuals, reinforcing that mobility is a significant restriction in these cases. These findings suggest the need for support and adaptation of the environment to facilitate the participation of these individuals, often involving the necessity of a caregiver. The use of LIMOS-Br should be expanded to other populations to enhance understanding of functionality in different contexts.

Implications: LIMOS-Br demonstrates potential to provide essential data for both rehabilitation planning and the generation of health indicators. Identifying difficulties in performing functional activities can support the development of public policies and strategies focused on rehabilitation and accessibility.

Keywords: International Classification of Functioning, Disability and Health, Health Status Indicators, Rehabilitation

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FEASIBILITY OF A TASK-SPECIFIC TRAINING PROTOCOL IN AN AUGMENTED REALITY CONTEXT (INTERACT PROTOCOL) FOR CHILDREN WITH CEREBRAL PALSY

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Background: Task-specific training is recommended for motor improvements in children with cerebral palsy (CP), as well as its association with other approaches, such as augmented reality (AR). To ensure the effectiveness of these interventions, assessing their feasibility is essential.

Objectives: To evaluate the feasibility of implementing the INTERACT protocol (IN - individualized; T - task-specific; E - environment; R - real and augmented realities; ACT - active training) in children with CP.

Methods: A randomized clinical trial (RCT) was conducted with five children with spastic CP: INTERACT group (IG) (3) and control group (CG) (2), with a mean age of 10.6 years (SD = 1.82), GMFCS levels I and II, and MACS levels I, II, and III. Feasibility was assessed using a Google Form, considering the perspectives of caregivers and children during recruitment (adherence), evaluation, and intervention (adherence, adverse events, duration, comprehension, and execution). Satisfaction was measured using a visual scale. Recruitment feasibility was determined by the percentage of families who agreed to participate relative to the total number of families contacted. Adherence was assessed by the percentage of scheduled sessions attended. Adverse events were recorded based on the percentage of sessions in which undesirable reactions occurred. In the questionnaires, items related to children's and caregivers' perceptions, such as duration, were rated from 1 ("Very inadequate") to 5 ("Very adequate"). Comprehension and execution were scored from 1 ("Very difficult") to 5 ("Very easy"). The INTERACT protocol included: a) Initial assessment: manual reach kinematics, sit-to-stand kinetic movement, functional reach, upper limb activities, goal setting and quantification, and the Challenge test, with an average duration of 6 hours. b) Intervention: 16 hours of training over four weeks, conducted three times a week in 1h20min sessions, using motor learning principles, active and individualized exercises based on child-selected tasks, enriched environments, and AR context. The CG underwent physiotherapy without AR, with the same training volume as the IG.

Results: Among 12 contacted families, 7 agreed to participate (recruitment rate: 58%). Five children were included and attended all assessments (adherence rate: 100%). Evaluation: a) Duration: 60% of children considered it adequate, and 40% as very adequate. Among caregivers, 20% rated it as adequate and 80% as very adequate. b) Comprehension: 20% rated it as moderate, 40% as easy, and 40% as very easy. c) Execution: 20% of children rated it as very easy, 40% as easy, and 40% as neutral. One adverse event was recorded, achieving a feasibility rate of 92%. Intervention: a) Adherence: 88%. Four adverse events were recorded, resulting in 90% feasibility. b) Duration: 66.7% of children and caregivers rated it as adequate, while 33.3% of both rated it as very adequate. c) Execution: 33.3% rated it as easy, 33.3% as moderate, and 33.34% as

difficult. d) Satisfaction: Among 43 sessions, 53% reported “loved it,” 42% “liked it,” and 5% “neutral”.

Conclusion: The INTERACT protocol appears feasible for caregivers and children, considering evaluation, intervention, and satisfaction. **Implications:** Feasibility studies support RCT development, preventing unfeasible or unsafe interventions and optimizing financial and human resources.

Keywords: Cerebral palsy, children, augmented reality

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PERSPECTIVES OF INDIVIDUALS POST-STROKE IN PATIENT AND PUBLIC INVOLVEMENT PANELS ON COMPONENTS RELATED TO HEALTHY LIFESTYLE ADOPTION: A CROSS-COUNTRY ANALYSIS

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Background: Stroke secondary prevention, centered on medication adherence and adoption of healthy lifestyle behaviors, is essential for reducing the global stroke burden. However, clinical guidelines, especially in low- and middle-income countries (LMICs), often lack recommendations on adopting healthy lifestyle behaviors. Ireland, a high-income country, has evidence and financial support to conduct research on stroke secondary prevention, whereas Brazil, a middle-income country with a higher stroke burden, has limited research and financial support in this field. Therefore, Brazil often relies on evidence from high-income countries like Ireland. However, behavior is influenced by social and environmental factors that differ between countries. Understanding the similarities and differences in perspectives of individuals post-stroke, as members of Patient and Public Involvement (PPI) panels, on components related to adopting healthy lifestyle behaviors is crucial, particularly in LMICs, to develop culturally relevant interventions.

Objectives: To identify the similarities and differences in perspectives of individuals post-stroke, as members of PPI panels, on components related to the adoption of healthy lifestyle behaviors considering two distinct cultural and social contexts - a high-income country (Ireland) and a middle-income country (Brazil).

Methods: A cross-sectional, descriptive study was conducted with PPI panels consisting of five individuals post-stroke in each country (Ireland and Brazil). PPI panel members rated core components for six lifestyle behaviors - healthy diet (5 components), medication adherence (17 components), mood management (27 components), physical activity participation (10 components), safe alcohol consumption (4 components), and smoking cessation (4 components) - as “definitely important,” “maybe important,” or “not important” according to their perspectives. Descriptive statistics were used.

Results: Regarding the similarities, at least 50% of the components of all lifestyle behaviors, except diet (40%), were rated as “definitely important” by the majority of both PPI panels members. In addition, no component was simultaneously rated as “not

important” by the majority of both PPI panels members. Regarding the differences, the Brazilian PPI panel members rated all components of three lifestyle behaviors (healthy diet, physical activity participation, and smoking cessation) as “definitely important,” while no lifestyle behavior had all components rated as “definitely important” by the Irish PPI panel members. Additionally, the Irish PPI panel members rated some components of all lifestyle behaviors as “maybe important” (healthy diet: 20% of the components, medication adherence: 18%, mood management: 33%, physical activity participation: 50%, safe alcohol consumption: 25%, and smoking cessation: 25%).

Conclusion: The similarities highlight key components that should be emphasized in both countries to promote the adoption of healthy lifestyle behaviors post-stroke. The differences underscore the importance of culturally tailored approaches, particularly in middle-income countries like Brazil, where local factors must be considered when adapting and developing interventions.

Implications: This study highlights the need for caution when applying evidence from high-income countries, such as Ireland, to LMICs like Brazil, especially when promoting healthy lifestyle adoption post-stroke. It emphasizes the necessity of context-specific strategies to enhance the effectiveness of interventions in diverse settings.

Keywords: stroke, patient and public involvement, healthy lifestyle

Conflict of interest: The authors declare no conflict of interest.

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FUNCTIONAL INDEPENDENCE AND QUALITY OF LIFE IN PEOPLE WITH SPINAL CORD INJURY

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Background: Spinal Cord Injury (SCI) is a highly debilitating neurological and pathological condition that causes significant motor, sensory and autonomic dysfunctions in the affected individual, affecting their quality of life. In addition, SCI impacts the functionality of the affected person, since depending on the location and severity of the damage, motor and sensory deficits may be manifested.

Objectives: The objective of the study was to identify the level of functional independence and quality of life in people with SCI.

Methods: In this observational, cross-sectional, descriptive and exploratory study, 17 participants of both sexes, with spinal cord injury of any level, participated in an evaluation consisting of an interview to identify sociodemographic data and application of instruments such as the Quality of Life Questionnaire - SF 36 and the Functional Independence Measure (FIM).

Results: Regarding gender, 14 participants were male (83.33%) and 3 were female (16.67%), of which the predominant age range was 40 to 49 years, with 7 individuals (38.88%). Most participants had completed elementary education (38.88%), were single (50%), retired (50%), unemployed (50%) and self-employed (50%). Furthermore, the predominant injury time was between 2 and 10 years (50%), so

that 15 individuals used a wheelchair (88.89%) and 11 performed physical activity (61.11%). Regarding SF-36, it is noteworthy that the domains with the highest average were Limitation due to Emotional Aspects (100 ± 49.6) and Mental Health (86 ± 16.5), in addition, the total average of SF-36 was 59.88 ± 27.79 . Regarding FIM, the total mean obtained was 110.41, with the self-care item obtaining the highest mean (51.23 ± 2.82), on the other hand, the item with the lowest mean was locomotion (5 ± 4.24).

Conclusion: The levels with the highest mean of functionality and quality of life may be related to participation in physical activity, since the majority practice some type of activity, in addition to having a considerable level of education. In addition, the value of self-care suggests more autonomy and rehabilitation practices after the injury. **Implications:** The SF-36 and the MIF are measures that help in the evaluation of people with SCI as an additional tool to Physiotherapy treatment, enhancing therapeutic strategies for functionality and quality of life. However, studies with a greater number of people with SCI should be carried out to further strengthen evidence-based practice aimed at Physiotherapy.

Keywords: Spinal Cord Injury, Quality of life, functional independence

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: Número de aprovação do CEP: 5.638.729 CAAE: 61710822.0.0000.5345.

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IS READINESS-TO-CHANGE DIFFERENTLY AMONG PATIENTS WITH CHRONIC LOW BACK PAIN DISTINCT PAIN PHENOTYPES?

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Background: Phenotypes can help classify Chronic low back pain (CLBP) into nociceptive, neuropathic, and nociplastic types based on the underlying pain mechanisms. This categorization aids in identifying the main type of pain and tailoring treatments, including behavior change, pain education, medications, and psychosocial support. The Pain Stages of Change Questionnaire (PSOCQ) can assess a patient's readiness for self-management. Different pain phenotypes may show varying levels of readiness for change; however, it was not previously reported in the literature.

Objectives: To identify differences in readiness for change between pain phenotypes in participants with CLBP.

Methods: This is a cross-sectional study that utilizes secondary data. The sample comprised participants with CLBP, both sexes, aged between 18 and 60 years, divided into subgroups by pain phenotype: nociceptive (G1), neuropathic (G2), nociplastic (G3) and mixed (G4). Participants answered the PSOCQ questionnaires to assess readiness for change covering four subscales (Precontemplation, Contemplation, Action and Maintenance), the score obtained is through a 5-point Likert scale, which ranges from "completely disagree" to "completely agree", and is calculated by averaging the responses, ranging from 1 to 5, Central Sensitization Inventory (CSI) 25 items and Pain Detect Questionnaire. For statistical analysis, one-way analysis of variance (ANOVA) was performed, followed by LSD post-hoc test ($p < 0.05$).

Results: A total of 150 participants, G1= 48, G2= 59, G3= 8, G4= 35 (97 women and 53 men with mean, standard deviation [SD] age of

41.07, SD = 11.55 years; mean weight of 76.70, SD = 16.75 kg and height of 1.67, SD = 0.09 m) were recruited for this study. The ANOVA revealed a significant difference in the scores of the PSOCQ between pain phenotypes only for the Pre-contemplation domain ($F(3, 146) = 2.89, p = 0.037$). The neuropathic (mean[M] = 3.07) showed significant higher scores for the pre-contemplation domain of the PSOCQ when compared to nociceptive ($M = 2.45, p = 0.02$) and nociplastic subgroups ($M = 2.55, p = 0.04$). In addition, the mixed group ($M = 2.77$) also showed higher score for pre-contemplation domain than the nociceptive group ($M = 2.45, p = 0.03$).

Conclusion: The results suggest readiness for change is influenced for pain phenotypes particularly for the Precontemplation stage. Patients with neuropathic pain and mixed pain phenotypes showed less readiness to change beliefs than patients which pain is classified as nociceptive.

Implications: Understanding differences in readiness for change between pain phenotypes can assist physical therapists in adjusting their therapeutic methods. Patients with nociceptive pain profiles appear more willing to participate in active treatments such as exercise, where modifying lifestyle is part of the therapy. We encourage physical therapists to categorize patients based on their pain phenotype profiles.

Keywords: Low back pain, Transtheoretical Model, Pain Management

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EFFECT OF PHOTOBIOMODULATION ON MYOFASCIAL PAIN IN THE TRAPEZIUS: A RANDOMIZED, DOUBLE-BLIND CONTROLLED TRIAL

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Background: Myofascial pain syndrome is characterized by trigger points (TPs), which cause pain in muscles and fasciae. Low-Level Laser Therapy (LLLT) has shown potential in treating TPs, contributing to pain reduction and the inflammatory process. However, inhibitory doses remain underexplored for this condition. TP formation is associated with a knot in the muscle fiber, leading to local vasoconstriction, but it may also contain inflammatory mediators. This creates a challenge in thermographic characterization, as a TP may present as either a colder region, due to vasoconstriction, or a warmer one, due to inflammation.

Objectives: To assess whether a dosage of 16J of 808nm LLLT induces changes in pain and skin temperature in individuals with TPs in the trapezius.

Methods: This is a double-blind, sham-controlled, randomized clinical trial with 52 volunteers of both sexes (= 18 years old) experiencing spontaneous trapezius pain for over three months and diagnosed with TPs. Sixty participants will be randomly assigned to two equal

groups: LLLT group (LLLTG), treated with an 808nm laser (16J) applied to TPs in the upper trapezius; and Sham group (SHAMG), which will receive the same protocol with a placebo LLLT. The treatment will consist of eight sessions, twice a week, over four weeks, with participants lying in a supine position, with their cervical spine in a neutral position. Pain perception (Numeric Pain Rating Scale), skin temperature (Tsk) (E54 thermographic camera, FLIR, USA), presence of TPs (palpation), and cervical disability index (Neck Disability Index) will be assessed at three time points: before, immediately after, and 48 hours post-protocol. The global perceived effect (GPE) will be evaluated after the final session and 48 hours later. The primary outcomes will be pain and Tsk. Statistical analysis will use linear mixed models in SPSS, and a Q-Q plot will be generated to check for normal distribution of the data.

Results: It is expected that the LLLT treatment protocol with an inhibitory dose of 16J on the trapezius will significantly reduce pain compared to the Sham group. Regarding skin temperature, it may increase if vasodilation is the predominant response to LLLT or decrease if there is a reduction in metabolic activity and inflammatory mediators. Improvements in the Neck Disability Index and global perception of improvement are also expected.

Conclusion: The findings of this study may provide evidence on the effects of the inhibitory dose of LLLT on pain and skin temperature in individuals with TPs. If the therapy proves effective, these results could contribute to the refinement of clinical follow-up and rehabilitation protocols.

Implications: The results may directly impact clinical practice by supporting a more effective treatment for TPs. If LLLT with an inhibitory dose demonstrates positive effects in reducing pain and modulating temperature, its application could serve as an alternative for the management of trigger points, expanding therapeutic options for physical therapists and other healthcare professionals. Meanwhile, thermography may serve as a useful tool for monitoring treatment responses.

Keywords: Pain, Low-Level Laser Therapy, Thermography

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EXPLORING THE RELATIONSHIP OF PAIN, DISABILITY, PSYCHOLOGICAL FACTORS, AND SLEEP QUALITY WITH SHOULDER MOBILITY DEFICITS IN FROZEN SHOULDER

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Background: Shoulder mobility restriction is a central feature in individuals with frozen shoulders, a musculoskeletal condition that significantly impacts the functionality of those affected. Psychological factors such as anxiety, depression, kinesiophobia, and pain catastrophizing, along with sleep quality, have been associated with pain and disability in various chronic pain conditions. However, it remains unclear which of these factors are most strongly associated with shoulder mobility deficits in individuals with frozen shoulder.

Objectives: To analyze the association of pain, disability, psychological factors (anxiety, depression, kinesiophobia, pain catastrophizing) and sleep quality with shoulder mobility deficits in individuals with frozen shoulder.

Methods: A cross-sectional study conducted via video call using Google Meet[®]. Shoulder mobility was assessed using Kinovea[®] software, considering flexion, abduction (in degrees), and external rotation (in centimeters) for the painful and non-painful sides. Pain and disability were measured using the Shoulder Pain and Disability Index (SPADI), while self-efficacy was evaluated using the Pain Self-Efficacy Scale (PSEQ-10). Anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS), kinesiophobia with the Tampa Scale for Kinesiophobia-11 (TSK-11), pain catastrophizing with the Pain Catastrophizing Scale (PCS), and sleep quality using the Pittsburgh Sleep Quality Index (PSQI). Data analysis was performed using multiple linear regression with two distinct models. In the first model, the external rotation mobility deficit (difference between painful and non-painful sides) was the dependent variable. In the second, the arm elevation deficit was calculated as the average of the differences in flexion and abduction, and was also a dependent variable. The other variables were considered independent.

Results: Ninety-six individuals participated, with 57 diagnosed with primary frozen shoulder and 39 with secondary frozen shoulder [72 women, mean age = 53.1 ± 10.8 years, BMI = 26.3 ± 4.8 kg/m²]. For external rotation, none of the variables were associated with mobility deficits. However, for arm elevation, pain was significantly associated, contributing 5.5% to the variation in mobility ($f(1,94) = 6.52$, $p < 0.012$, adjusted $R^2 = 0.055$, RMSE = 19.35). Other psychological factors and sleep quality were not significantly associated with shoulder mobility deficits.

Conclusion: Pain was significantly associated with shoulder mobility restriction, particularly in arm elevation, although with a modest contribution. Psychological factors and sleep quality did not demonstrate a relevant association with mobility deficits.

Implications: These findings suggest that while pain has some impact on shoulder mobility, other factors not investigated in this study may have a more significant influence on mobility restriction. Psychological factors and sleep quality should likely not be the primary focus in addressing mobility deficits but could be incorporated as complementary strategies aimed at the patient's overall well-being.

Keywords: Frozen shoulder, shoulder pain, range of motion

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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RELATIONSHIP BETWEEN HAND FUNCTIONAL CAPACITY AND DIGITAL DEXTERITY IN WOMEN WITH SYSTEMIC SCLEROSIS

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Background: One of the most relevant aspects of systemic sclerosis (SS) is the involvement of the hands, where the skin of the fingers becomes stiff, restricting movement. Additionally, calcifications in the phalanges, telangiectasias, and digital ulcers may appear. These abnormalities create limitations that can affect quality of life and the ability to perform daily activities.

Objectives: The aim of this study was to assess hand functional capacity in women with SSc (wwSSc) using the TGlittre-Shelf (TGlittre-S) and to correlate it with digital dexterity, muscle strength, lung function, and physical function.

Results: Mean age and body mass index were 51.9 ± 13.7 years and 24.4 ± 4.9 years, respectively. TGlittre-S time was higher in wwSc than in healthy controls [60 (55-74) vs. 44 (41-49) sec, $p < 0.0001$]. In addition, 9-HPT was higher in wwSc than in healthy controls [24 (22-26) vs. 20 (18-22) sec, $p < 0.0001$]. Similarly, CHFS was higher in wwSc than in healthy controls [6 (0.5-25) vs. 0 (0-0) points, $p < 0.0001$]. In wwSc, TGlittre-S time was significantly correlated with the following variables: HGS ($rs = -0.511$, $p = 0.0006$), HAQ-DI ($rs = 0.510$, $p = 0.0006$), 9-HPT ($rs = 0.398$, $p = 0.009$), and CHFS ($rs = 0.351$, $p = 0.024$). No significant correlation was found between TGlittre-S time and lung function. No significant differences in TGlittre-S time were found between limited cutaneous and diffuse cutaneous forms.

Conclusion: In wwSSc, there is a deterioration in impaired hand functional capacity as measured by TGlittre-S. In these patients, the longer the TGlittre-S time, the worse the HGS, digital dexterity, and physical function.

Implications: We observed that the TGlittre-S was able to capture the functional disability of the hands in wwSSc. As TGlittre-S is easy to perform and does not require much space, its incorporation into clinical practice is promising and may be considered as an outcome measure for future studies in SSc.

Keywords: Scleroderma, Hand, Exercise

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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ASSESSMENT OF TEMPORAL SUMMATION IN PEOPLE WITH SYMPTOMS OF TEMPOROMANDIBULAR DISORDER

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Background: Temporomandibular disorder (TMD) is characterized by signs and symptoms such as clicking and/or popping sounds in the temporomandibular joint (TMJ), along with restricted range of motion and pain in the orofacial region. TMD may be associated with alterations in the pain modulation system due to chronicity and central sensitization. Therefore, quantitative sensory tests, such as the temporal summation test (TST) and pressure pain threshold (PPT), may be useful for assessing individuals with TMD symptoms.

Objectives: To evaluate temporal summation in individuals with TMD symptoms.

Methods: This was an observational, non-probabilistic, cross-sectional study with convenience sampling. Individuals presenting signs and symptoms suggestive of TMD participated in the study. All participants underwent an evaluation process in which the TMD pain screening questionnaire from the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) was administered. Those who scored above two points were included in the study. Additionally, all participants completed the Jaw Functional Limitation Scale (JFLS-20). The assessment protocol involved measuring the PPT of the masseter muscle on the less symptomatic or pain-free side, followed by the TST, using a pressure algometer (MEDDOR). For the TST, 10 stimuli were applied at 30-second intervals, using the PPT value determined for the masseter muscle. Participants were instructed to rate pain intensity using the Numerical Pain Scale (NPS) after the first and tenth stimuli. For statistical analysis, the Shapiro-Wilk test was used to assess the normality of the sample, and the paired t-test was applied to compare NPS values between the first and tenth stimuli. Measures of central tendency and dispersion were expressed as mean and standard deviation (SD). Inferential analyses were performed with a 95% confidence interval, and a p-value < 0.05 was considered statistically significant.

Results: Twenty-two individuals participated in the study, including 17 women and 5 men, with a mean age of 37.09 years (SD = 15.44). The mean JFLS-20 score for mandibular function was 3.29 (SD = 2.31). The mean PPT of the masseter muscle, which was used as the stimulus intensity for the TST, was 1.02 kg/cm^2 (SD = 0.46). The mean NPS score for pain perception was 4.77 (SD = 2.54) after the first stimulus and 5.82 (SD = 2.68) after the tenth stimulus. Pain perception increased between the first and tenth stimuli, and this difference was statistically significant ($p < 0.01$).

Conclusion: An increase in pain perception was observed during the Temporal Summation Test in individuals with TMD symptoms.

Implications: The findings indicate an increase in pain perception with repeated stimuli of equal intensity. However, given the relatively small variation in pain perception, it is unclear whether this response reflects a dysfunctional process. Further studies with larger samples are needed to explore the relationship between quantitative sensory test measures, such as pressure pain threshold and TST, in individuals with TMD.

Keywords: Pain perception, Temporomandibular disorder

Conflict of interest: The authors declare no conflict of interest.

Funding: PIBIC.

Ethics committee approval: CAAE: 70797823.1.0000.5235.

Registration: Not applicable.

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RELIABILITY OF THE NEUROPHYSIOLOGY OF PAIN QUESTIONNAIRE IN CHRONIC LOW BACK PAIN: PRELIMINARY RESULTS

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Background: Chronic low back pain (CLBP) is a prevalent condition affecting individuals of all ages. CLBP is characterized by persistent pain symptoms lasting more than three months and is associated with significant impacts on functioning. Pain Science Education (PSE) is recommended for managing CLBP by helping patients reconceptualize non-adaptive beliefs about pain. Nevertheless, assessing the effectiveness of pain education interventions requires instruments that address the construct of pain neurophysiology understanding, such as the Neurophysiology of Pain Questionnaire (NPQ). The NPQ is useful, but data on its reliability in the Brazilian population with CLBP are limited.

Objectives: To provide preliminary data on the reliability of the revised Neurophysiology of Pain Questionnaire (rNPQ-Br) in CLBP patients.

Methods: This study presents initial data regarding the measurement properties of the rNPQ-Br in patients with chronic low back pain (CLBP). Participants were assessed for sociodemographic characteristics, pain intensity using the Numerical Pain Rating Scale (NPRS), which ranges from 0 (no pain) to 10 (worst pain imaginable), and disability using the Oswestry Disability Index (ODI), which ranges from 0 (no disability) to 100 (maximum disability). The questionnaires were administered in two sessions with a one-week time interval. The clinical stability of the patients was monitored by evaluating the intensity of pain in both sessions; patients not stable were excluded from the study (variation in the NPRS score > 2). Test-retest reliability of the rNPQ-Br was analyzed using Intraclass Correlation Coefficient (ICC). The ICC (2,1) was calculated using a two-way random effects model with absolute agreement. ICC values = 0.70 were interpreted as acceptable reliability, according to Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) criterion for good quality of reliability.

Results: Fifty participants with non-specific CLBP participated in this study, including 28 women and 22 men. The mean age was 22 years (standard deviation [SD] = 37.31) for men and 28 years (SD = 45) for women. Mean weight was 83 kg (SD = 10.88) for men and 76.75 kg (SD = 15.66) for women, while mean height was 173 cm (SD = 7.24) for men and 164 cm (SD = 7) for women. Mean pain duration was 7.45 years (SD = 7.56) for men and 9.18 years (SD = 10.44) for women. Mean NPRS scores were 5.31 (SD = 1.35) for men and 6.35 (SD = 1.55) for women, and mean ODI (0-100) scores were 29.00 (SD = 7.42) for men and 28.89 (SD = 8.79) for women. The data showed an ICC(2,1) = 0.5 (95% CI: 0.12–0.72), indicating no acceptable reliability for the rNPQ-Br total score in CLBP.

Conclusion: The rNPQ-Br total score can assess patients' understanding of the neurophysiology of pain in chronic musculoskeletal conditions. However, in CLBP, the reliability was below acceptable levels (< 0.50). This preliminary study's findings should be interpreted with caution.

Implications: At this time, rNPQ-Br total score shows insufficient levels of reliability, and its use in clinical practice cannot yet be recommended.

Keywords: Low Back Pain, Pain Measurement, Psychometrics

Conflict of interest: The authors declare no conflict of interest.

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DOES KINESIOPHOBIA INFLUENCE LOWER LIMB KINEMATICS DURING UPHILL WALKING IN WOMEN WITH PATELLOFEMORAL PAIN?

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Background: Patellofemoral pain (PFP) consists of pain around or behind the patella that is accentuated during overload activities, such as jumping. The cause of PFP is multifactorial and recent studies have reported kinesiophobia as a possible factor associated with high rates of functional disability in this population. Understanding how fear of movement can contribute to biomechanical alterations observed during functional tasks can help guide treatment strategies for people with PFD.

Objectives: To investigate the influence of kinesiophobia on lower limb movement patterns during uphill walking in women with patellofemoral pain.

Methods: Twenty-two women with PFP, aged between 18-35, were selected. Initially, the Tampa Kinesiophobia Scale and the Pain Catastrophizing Scale were applied. Next, a kinematic assessment of the lower limb was carried out during uphill walking on a treadmill. The volunteers walked on the treadmill at a 10% incline for three minutes. Photo-reflective markers were placed on the affected lower limb at specific anatomical points (anterior superior iliac spine bilaterally, greater trochanter of the femur, lateral condyle of the femur, midpoint of the patella, lateral malleolus, midpoint between the malleoli, dorsal region between the first and second metatarsals). The angles of hip flexion, knee flexion and ankle dorsiflexion were calculated. Pearson's correlation test was used for statistical analysis, with a significance level of $p < 0.05$.

Results: The knee flexion angle during uphill walking was negatively associated with the level of kinesiophobia ($r = -0.341$, $p = 0.040$) and pain catastrophizing ($r = -0.482$, $p = 0.023$). There was no correlation for the other angles evaluated.

Conclusion: Kinesiophobia reduces knee flexion during uphill walking in women with PFP.

Implications: The findings show that kinesiophobia can alter the movement pattern, especially of the knee joint, during uphill walking. Less knee flexion can be a strategy to reduce pain when performing the task, but it increases the ground reaction forces applied to the joint and, in the long term, can lead to joint damage. It is important to consider kinesiophobia in the treatment of PFP, recommending interventions aimed at reducing it, together with physical exercise, which can reduce pain and improve functionality.

Keywords: Knee Pain, Kinesiophobia, Walking Uphill

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

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HEALTHCARE COSTS OF NECK PAIN: A SYSTEMATIC REVIEW

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Background: Neck pain is a common health condition that generates high levels of disability, consumption of healthcare services, and lost productivity. Cost-of-illness studies can provide insights into the economic impact of a specific illness, which informs policy makers and justifies intervention programs. However, there is a lack of literature summarizing the economic burden of neck pain.

Objectives: To conduct a systematic review to summarize the healthcare costs related to neck pain.

Methods: The search was conducted in seven databases (PubMed, EMBASE, CINAHL, SPORTDISCUS, EconLit, National Health Service Economic Evaluation Database, and Health Technology Assessment Database) on 18 December 2024. Cross-sectional and cohort studies that measured the healthcare costs related to neck pain, regardless of the duration of symptoms, in adults over 18 years old of both sexes were included. Healthcare costs included prescribed medication and healthcare services consumed by patients. All costs were inflated for the same reference year (2023) using the Consumer Price Index of each country and converted to International Dollar (\$). The results were presented descriptively.

Results: Four studies were included for data extraction. None of the studies reported onset or duration of neck pain symptoms. Two studies provided relevant information on the description of the components of healthcare costs of neck pain, being the costs of hospitalization and procedures the most cited. In The Netherlands (high-income country), the total healthcare costs were \$291,901,827 in a 12-month period. Separately, hospital care costs were \$31,702,814 (10.9%), medical procedures were \$3,969,432 (1.3%), medical specialist fees were \$2,901,739 (1%), ambulatory hospital care were \$1,328,099 (0.5%), general practice were \$7,973,887 (2.7%), and paramedical care costs were \$244,025,856 (83.6%). In Brazil (upper-middle-high income country), the total healthcare costs were \$6,090,870 in a 12-month period. Separately, hospital costs were \$3,730,247 (61.2%), professional costs were \$625,037 (10.3%), intensive care unit costs were \$397,926 (6.5%), companion stay costs were \$17,550 (0.3%), and outpatient costs were \$1,320,110 (21.7%). Two studies were conducted in the United States (high-income country). One study found that early physiotherapy initiation resulted in lower one-year costs per patient (\$2,438) compared to late initiation (\$5,299, $p < 0.001$), while the other study showed that total healthcare costs were \$439,681,567 in a 12-month period per patient.

Conclusion: The total healthcare costs of neck pain ranged from \$6,090,870 to \$439,681,567. Since three studies included in this systematic review were from high-income countries, further studies are needed to better estimate the healthcare costs of neck pain worldwide. Additionally, prospective cohort studies are needed to provide a more accurate assessment of the healthcare costs of neck pain and to inform and support clinical decision-making, considering a standardization of the cost estimation and reporting methods, as well as a clear definition of neck pain.

Implications: This review highlights a large variation in the healthcare costs of neck pain, which emphasizes the need to standardize cost estimation and reporting for better comparability and decision-making. Despite this, early physiotherapy initiation, compared to late, reduces costs. Policymakers can use these data to promote early physiotherapy referral and prioritize conservative treatments.

Keywords: neck pain, cost of illness, economic evaluation

Conflict of interest: The authors declare no conflicts of interest.

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THE INFLUENCE OF PSYCHOLOGICAL FACTORS ON SHOULDER RANGE OF MOTION IN INDIVIDUALS WITH SHOULDER PAIN

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Background: Shoulder dysfunctions are among the leading causes of musculoskeletal pain, often associated with a reduced range of motion and subsequent functional impairments. Emerging evidence suggests that psychological issues, such as kinesiophobia, pain catastrophizing, and increased central sensitivity, might play a role in pain perception and shoulder functional performance. Additionally, the reduced range of motion has been significantly associated with pain severity and physical disability in these patients. However, the relationship between psychological issues and shoulder range of motion remains unclear.

Objectives: This secondary analysis aimed to investigate whether the reduced shoulder range of motion is associated with negative psychological factors in individuals with musculoskeletal shoulder pain.

Methods: A total of 159 individuals (68 females, 39 ? 12.5 years old) with musculoskeletal shoulder pain (44.5 ? 55.9 months of pain) were assessed. Sociodemographic data and pain intensity (Numerical Pain Rating Scale, NPRS, 0–10) were recorded based on self-report. Shoulder range of motion for external rotation and abduction (degrees) were measured using inclinometry (Acumar, Model ACU 360, Lafayette Instrument Company). Kinesiophobia (Tampa Scale for Kinesiophobia, TSK), pain catastrophizing (Pain Catastrophizing Scale, PCS), and central sensitivity (Central Sensitization Inventory, CSI) were the psychological factors assessed using specific Patient Reported Outcome Measures. Two multiple linear regression analyses were performed to investigate the association between each shoulder range of motion (dependent variables) and psychological factors (independent variables). The models were adjusted using the ordinary least squares regression method, with statistical significance threshold set at $p < 0.05$. The assumptions of linear regression were verified, including normality of residuals, homoscedasticity, and absence of multicollinearity.

Results: For external rotation range of motion, the model indicated that psychological factors explained 5.1% of the variation in range of motion ($R = 0.226$; $R^2 = 0.051$, $p = 0.043$). Central sensitivity's ($\beta = -0.19$; $p = 0.02$) contribution was significant for the model, while kinesiophobia ($\beta = -0.09$; $p = 0.25$), and catastrophizing ($\beta = 0.02$; $p = 0.77$) were not able to explain external range of motion. Conversely, for abduction range of motion, psychological predictors accounted for only 0.9% of the variation ($R = 0.096$, $R^2 = 0.009$, $p = 0.699$), with no contribution of any of the psychological predictors.

Conclusion: Kinesiophobia, pain catastrophizing, and central sensitivity might explain the decrease in range of motion of shoulder external rotation; however, they did not affect shoulder abduction. However, individuals with higher signs of central sensitivity are more likely to present lower external rotation range of motion. Therefore, other factors may be involved in shoulder range of motion limitations and might be better investigated.

Implications: These findings underscore the role of psychological factors in restricting shoulder external rotation, highlighting the need for therapeutic approaches that integrate both psychological and biomechanical aspects in the management of musculoskeletal shoulder pain.

Keywords: Shoulder pain, Range of motion, Psychological factors

Conflict of interest: The authors declare no conflict of interest.
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MANIPULATION VS. MOBILIZATION IN THE LUMBAR SPINE: WHICH IS MORE PLEASURABLE? A PROTOCOL FOR A RANDOMIZED CROSSOVER TRIAL

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Background: Joint mobilizations and manipulations are manual techniques widely used in the management of spinal dysfunctions. Mobilizations are low-velocity, low-force oscillatory techniques that typically do not produce audible joint sounds, while manipulations are characterized by a high-velocity, low-amplitude thrust at or near the end of the physiological movement, often resulting in audible joint sounds. Despite being distinct techniques, current evidence suggests that there is no difference between them in terms of pain reduction and range of motion improvement. Therefore, in most cases, the choice of technique is left to the discretion of the physical therapist. However, recent studies suggest that modern manual therapy should adopt a person-centered care model. Consequently, investigating patient-related outcomes after the application of joint techniques is of paramount importance, and to the best of our knowledge, this has not yet been explored.

Objectives: To investigate whether there is a difference in pleasure perception immediately after manipulation compared to joint mobilization in the lumbar spine of healthy individuals and to evaluate whether there is a relationship between pain, fear, comfort, and the participant's pleasure perception immediately after the application of the techniques.

Methods: This is a protocol for a randomized, crossover clinical trial with two arms and a single-blind design, involving participants of both sexes and ages ranging from 18 to 60 years who have not experienced significant lumbar pain in the past 3 months and consider themselves healthy. The volunteers recruited for the study will be randomly assigned to one of two groups: the manipulation group (Gm) or the mobilization group (Gmob). As a crossover design, all participants will undergo both techniques with a 7-day washout period between them, aimed at eliminating any residual effects from the previous technique. After the washout period, participants will undergo the second technique. The Gm group will consist of 15 volunteers who will receive a "thrust" manipulation in the lumbar spine during the first phase and mobilization in the second phase, after the washout period. The Gmob group will follow the same protocol. Randomization will be performed by P1, who will not be involved in data collection, and the allocation will be placed in opaque envelopes. After opening and identifying the participant's group, P3 will apply the designated technique, and finally, P2 will administer the assessment instruments. This evaluator will be blinded. All participants will be assessed for eligibility and sign the Informed Consent Form (ICF). Participants will be evaluated for pleasure sensation, pain intensity, relaxation perception, fear,

comfort, and self-perception immediately after the application of the technique. Adverse effects, if any, will also be collected.

Results: We believe that the comparison of the two techniques in terms of the participants' pleasure perception will be more evident in the Gm group, as the presence of audible clicks may generate psychological effects and influence the pleasure sensation.

Conclusion: We hope to clarify which technique is more pleasurable after completing the study.

Implications: The results found will assist physical therapists in decision-making regarding which technique to use.

Keywords: Manipulação articular, mobilização articular, percepção de prazer

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: CAAE 83118724.0.0000.5341.

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RATE OF TORQUE DEVELOPMENT IN HIP MUSCLES OF WOMEN WITH AND WITHOUT PATELLOFEMORAL PAIN

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Background: Patellofemoral pain (PFP) is a common musculoskeletal disorder, primarily affecting women. It is characterized by pain in the anterior region of the knee, which can lead to functional limitations in the knee and hip. The rate of torque development (RTD) is considered a more representative indicator of daily task performance compared to maximal strength. Even though previous studies have examined strength deficits in individuals with PFP, limited research has explored RTD alterations in the hip musculature of this population. Understanding its influence on the hip musculature in this population can contribute to a better understanding of the factors involving PFP.

Objectives: To compare the rate of torque development (RTD) of the hip extensor and abductor muscles in women with and without PFP.

Methods: This is a cross-sectional study involving 60 women, divided into two groups: PFP (n = 30) and control (n = 30). Hip extensor and abductor torque were measured using a System 4 PRO isokinetic dynamometer (Biodex®). The protocol consisted on three maximal concentric contractions and the movement range was 0° to 30° of abduction and 90° to 60° of hip flexion at an angular velocity of 30°/second. RTD was calculated by dividing the difference in normalized torque by the difference in time from contraction onset to 30% (RTD 30%) and 60% (RTD 60%) of maximum torque ([Nm.Kg⁻¹] × 100/ms). Data was statistically analyzed using PASW Statistics 18.0® (SPSS), applying the t-test.

Results: Women with PFP showed a reduction in the RTD of hip extensors and abductors at 30% (p < 0.001, p = 0.015, respectively) and 60% of peak torque (p < 0.001, p = 0.015, respectively) compared to asymptomatic women.

Conclusion: Women with PFP exhibit deficits in rate of torque development of the hip extensor and abductor muscles when compared to women without PFP, underscoring the importance of targeting various aspects of muscle function in exercise therapy.

Implications: RDT may better represent the ability to perform daily living activities compared to maximal strength. Everyday tasks

require rapid force production, yet this deficit in muscle power is rarely addressed in exercise therapy. Therefore, it is essential to emphasize both hip strength and power in the rehabilitation of women with patellofemoral pain to achieve more favorable medium- and long-term outcomes.

Keywords: Rate of torque development, anterior knee pain, women

Conflict of interest: The authors declare no conflict of interest.

Funding: FAPESP.

Ethics committee approval: CAAE: 64458522.2.0000.5261.

Registration: Not applicable.

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ANALYSIS OF SPATIOTEMPORAL GAIT VARIABLES IN PATIENTS UNDERGOING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: A LONGITUDINAL STUDY

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Background: Anterior cruciate ligament reconstruction (ACLR) aims to restore knee stability. However, there is limited knowledge regarding the evolution of spatiotemporal gait variables in the first postoperative months, which is crucial for optimizing exercises protocols.

Objectives: To identify spatiotemporal gait differences between the preoperative period and 15, 30, and 60 days after ACLR.

Method: A longitudinal study was conducted with participants undergoing ACLR, followed by up to 60 days of physical therapy. Gait was assessed using GAITRite® in the preoperative period and at 15, 30, and 60 days postoperative (PO). Single support, double support, swing phase, and stance phase were analyzed using the generalized estimating equation model with specific syntax and the Bonferroni post hoc test in SPSS®, with a 5 % significance.

Results: Sixteen participants were evaluated (13 men and 3 women), with a mean age of 26 year (SD = 7.57), weight of 82 kg (SD = 17), and height of 1.72 m (SD = 0.89). Comparison between the ACLR and control limbs revealed significant differences at PO15: single support ($P < 0.005$), swing phase ($P < 0.009$), and stance phase ($P < 0.009$). In the ACLR limb, differences were found in single support between preoperative and PO15 ($P < 0.0001$) and PO30 ($P = 0.021$), as well as between PO15 and PO30 ($P = 0.001$). For double support, significant differences were observed between preoperative and PO15 ($P < 0.0001$), PO30 ($P < 0.0001$), between PO15 and PO30 ($P < 0.0001$), PO15 and PO60 ($P < 0.0001$), and PO30 and PO60 ($P < 0.0001$). The swing phase showed differences between preoperative and PO30 ($P = 0.010$) and between PO30 and PO60 ($P < 0.0001$). In the stance phase, differences were observed between preoperative and PO30 ($P = 0.012$) and between PO30 and PO60 ($P < 0.0001$). In the uninjured limb, differences were found in single support between preoperative and PO30 ($P = 0.007$) and PO30 and PO60 ($P < 0.0001$). For double support, differences were observed between preoperative and PO15 ($P < 0.0001$), PO30 ($P < 0.0001$), between PO15 and PO30 ($P < 0.0001$), and PO15 and PO60 ($P < 0.0001$). PO30 was different from PO60 ($P < 0.0001$). The swing phase indicated differences between preoperative and PO15 ($P = 0.001$) and PO30 ($P = 0.016$). PO15 was different from PO30 ($P = 0.003$) and PO60 ($P = 0.001$), and PO30 was different from PO60

($P = 0.006$). In the stance phase, significant differences were found between preoperative and PO15 ($P = 0.001$), PO30 ($P = 0.015$), between PO15 and PO30 ($P = 0.003$), PO15 and PO60 ($P = 0.001$), and between PO30 and PO60 ($P = 0.008$).

Conclusion: On PO15, the ACLR limb exhibited lower single support, a longer swing phase, and a shorter stance phase. Additionally, at PO15, single support was lower, and double support was greater. In the uninjured limb, at PO15, double support and stance phase were greater, while the swing phase was shorter. At PO30, the ACLR limb showed a decrease in single support.

Implications: There are significant differences in gait between the two lower limbs up to 60 days after ACLR, emphasizing the importance of targeting exercises strategies for each phase of the gait cycle and physical function.

Keywords: Anterior Cruciate Ligament Reconstruction, Gait Analysis, Postoperative Period

Conflict of interest: The authors declare no conflict of interest.

Funding: CNPq.

Ethics committee approval: CAAE: 64458522.2.0000.5261.

Registration: Not applicable.

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SIMULATION MODELING ANALYSIS FOR PREDICTION OF QUALITY OF LIFE AFTER NEUROMUSCULAR TRAINING FOR HIP OSTEOARTHRITIS

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Background: Neuromuscular training in hip osteoarthritis is a promising approach to improve quality of life, pain, and functional performance, but few studies use statistical methods to predict clinical evolution of these patients. Simulation Modeling Analysis (SMA) allows the application of time series analysis in small samples, identifying individual patterns of response to treatment. This approach can optimize physical therapy interventions and become a relevant tool in hip osteoarthritis treatment.

Objectives: To predict values and verify differences in quality of life for a patient with hip osteoarthritis undergoing neuromuscular training, using SMA. Additionally, to evaluate pain intensity, functional performance, and muscle strength before and after neuromuscular training. **Method:** Case study with a male patient (59 years, BMI: 32.2 kg/m²) diagnosed with advanced hip osteoarthritis. Quality of life was assessed by WOMAC, pain by Numerical Pain Scale (NPS), functional performance by Timed Up & Go (TUG), and 30-Second Chair Stand (30STS) tests, and muscle strength by maximum isometric dynamometry. Treatment followed an adapted neuromuscular training protocol (NEMEX-TJR), with 26 sessions of 50 minutes over three months. Statistical analysis included descriptive analysis of variables (pain, functional performance, and muscle strength) and time series analysis for WOMAC data. Bootstrapping was used to estimate autocorrelation coefficients based on lags. Correlation values and slopes were also calculated. Statistical significance was set at 5 %. **Results:** SMA analysis demonstrated a significant prediction of continuous improvement in quality of life with neuromuscular training, with an estimated reduction of 1.28 points on WOMAC per week. After neuromuscular training, there was a global improvement of 61.9 % in quality of life and 100 % reduction

in pain. In functional tests, TUG improved by 18.7 % and 30STS showed a 64.6 % increase in repetitions. Increased strength was observed in hip abductor muscles (12.7 % in the unaffected lower limb) and adductors (11.9 % in the affected lower limb and 6.3 % in the unaffected). Conclusion: SMA allowed observation of significant difference and prediction of quality of life evolution over time, demonstrating the effectiveness of the NEMEX-TJR protocol for this outcome in this patient pattern. Additionally, there was a clinically relevant reduction in pain, improved functional performance, and increased strength of hip adductors and abductors. These findings reinforce the positive impact of neuromuscular training on hip osteoarthritis treatment. Studies with larger samples are needed to consolidate these findings and validate SMA use as a complementary tool in rehabilitation. Implications: SMA application in physical therapy can contribute to a more individualized approach, week by week, allowing adjustments based on treatment response prediction. This can positively impact clinical management of hip osteoarthritis, optimize decision-making, and improve quality of life, pain, and functional performance outcomes for patients.

Results: SMA analysis demonstrated a significant prediction of continuous improvement in quality of life with neuromuscular training, with an estimated reduction of 1.28 points on WOMAC per week. After neuromuscular training, there was a global improvement of 61.9 % in quality of life and 100 % reduction in pain. In functional tests, TUG improved by 18.7 % and 30STS showed a 64.6 % increase in repetitions. Increased strength was observed in hip abductor muscles (12.7 % in the unaffected lower limb) and adductors (11.9 % in the affected lower limb and 6.3 % in the unaffected).

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Implications: SMA application in physical therapy can contribute to a more individualized approach, week by week, allowing adjustments based on treatment response prediction. This can positively impact clinical management of hip osteoarthritis, optimize decision-making, and improve quality of life, pain, and functional performance outcomes for patients.

Keywords: Hip osteoarthritis, case reports, quality of life

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: CAAE: 63282122.5.0000.0121.

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DOES METABOLIC EXERCISES AFTER ACUTE ANKLE SPRAIN REDUCE PAIN? A RANDOMIZED CONTROLLED TRIAL

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Background: Ankle sprains are common injuries that can significantly impact daily activities. One of the most frequent complications is pain, which interferes with functional recovery. Edema is known to contribute to pain, potentially hindering treatment progress. Metabolic exercises are commonly used to manage edema, yet their effectiveness remains unclear, highlighting the need for a better understanding of their role in rehabilitation.

Objectives: To evaluate the effect of combining metabolic exercises with the usual care protocol on pain intensity in individuals with acute ankle sprains, compared to the usual care protocol alone.

Methods: The study was a randomized controlled trial. Participants were allocated into two groups. One group followed a metabolic exercise protocol (experimental group, EG) in addition to the usual care protocol, while the other group received only the usual care protocol (control group, CG). The usual care protocol consisted of cryotherapy applied three times daily for 20 minutes over five days, with the ankle elevated at an angle of 30 to 45 degrees of hip flexion, combined with elevation and compression using a bandage. The metabolic exercise protocol involved active mobilization exercises performed three times daily over five days. Participants were instructed to lie on their backs with their hips flexed at 30 to 45 degrees and perform the following exercises: (i) Continuous active plantar and dorsiflexion movements for five minutes; and (ii) Continuous active ankle circumduction movements in clockwise and counterclockwise directions for five minutes. Participants were advised to perform the exercises in a pain-free range of motion and to gradually increase movement speed over the course of the intervention. To assess the effect of metabolic exercises, pain intensity changes from baseline were compared between groups using an independent t-test.

Results: Four-nine participants were included (EG = 25, CG = 24), with 10 dropouts during the protocols (EG = 4, CG = 6). The mean age was 26 years, and randomization occurred, on average, 58 hours after the sprain. Regarding pain intensity, the EG reported a mean pain score of 3.3 points (± 1.6) before the intervention and 2.1 points (± 1.5) after. In the CG, pain intensity was 3.5 points (± 1.8) before the intervention and 1.6 (± 1.4) after. The between-group comparison showed a mean difference of -0.8 (95% confidence interval: -0.4 to 1.9), indicating that this difference was not statistically significant ($p = 0.18$). The effect size was 0.40, suggesting a small difference between groups.

Conclusion: The addition of metabolic exercises to usual care did not result in a statistically significant reduction in pain intensity in individuals with acute ankle sprains compared to usual care alone.

Implications: Metabolic exercises targeting pain reduction after acute ankle sprain does not appear to provide additional clinical benefits. However, as the intervention was not harmful and may be beneficial for other rehabilitation outcomes, clinicians may consider incorporating it based on patient preference.

Keywords: Ankle Injuries, Pain Perception, Treatment Outcome

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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THE BRAZILIAN VERSION OF PATTERNS OF ACTIVITY MEASURE-PAIN SCALE: TRANSLATION AND CROSS-CULTURAL ADAPTATION

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Background: Chronic pain affects between 11% and 40% of the North American population, while in Brazil, this number can range from 23% to 76%, a significant prevalence that primarily affects females. Furthermore, this condition is considered the leading cause of disability in the general population. Individuals with chronic pain activity may have changed patterns of activities, including behaviors related to rest and alternating and planned activities. The assessment of patterns of activities is important for planning the treatments using adequate instruments, such as the Patterns of Activity Measure-Pain (POAM-P). However, POAM-P has not yet been translated and culturally adapted to be used in Brazil.

Objectives: To translate into Brazilian Portuguese and culturally adapt the POAM-P.

Methods: This is a cross-sectional observational study, conducted according to the recommendations for the translation and cultural adaptation process, and approved by the research ethics committee. The POAM-P was translated by two Brazilians fluent in English. Afterward, the translations were synthesized and then back translated into English by two native English speakers. Finally, a committee of experts reviewed all the translations and the original version to formulate the pretest version. The comprehensibility of the items in the pretest version was evaluated in 30 individuals. The pretesting phase included individuals of both sexes, aged over 18 years old, with chronic musculoskeletal pain for at least 3 months and an intensity greater than 3 on the 11-point numerical pain scale. Each participant responded to the questionnaire, reported their understanding, and suggested modifications to the instrument. The instrument was considered acceptable if 90% of participants understood all the questions.

Results: The translation and back-translation processes did not reveal significant discrepancies between versions, ensuring semantic and conceptual equivalence with the original instrument. The expert committee reviewed the pre-testing version, making minor adjustments to enhance clarity while maintaining the original meaning. The pretest version was then sent to the authors of the original POAM-P, who suggested changes to the terms “pacing” and “overdoing” to better align with the meaning in the original version. In the pre-test phase, 30 individuals with chronic pain and a mean age of 43.97 ± 16.4 years participated, with a predominance of females ($n = 23$, 76.67%) and body mass index of 28.62 ± 5.49 kg/m². Regarding the main complaints, the trunk region stands out ($n = 15$, 50%), followed by lower limbs (11, 36.67%) and upper limbs (4, 13.33%). The score on the 11-point numerical pain scale obtained an average of 6.10 ± 2.21 and pain duration (in years) of 7.88 ± 9.02 . All items reached an understanding above 90%, indicating adequate comprehensibility. In addition, the individuals did not suggest changes in the items of the POAM-P.

Conclusion: The final version in Brazilian Portuguese and cross-cultural adaptation of the POAM-P was completed and considered appropriate and clear.

Implications: This instrument will be relevant for clinical practice regarding the evaluation of individuals with chronic pain, in addition to serving as an outcome measure to monitor therapeutic strategies for reducing disability in these individuals.

Keywords: Questionnaire translation, chronic pain, activity patterns

Conflict of interest: The authors declare no conflict of interest.

Funding: CNPq.

Ethics committee approval: CAAE: 66980723.2.0000.5149.

Registration: Not applicable.

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EFFECTS OF COGNITIVE-FUNCTIONAL THERAPY IN THE TREATMENT OF CHRONIC SHOULDER PAIN: A CASE REPORT

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Background: Chronic shoulder pain is the third most common musculoskeletal dysfunction in medical and physical therapy clinics. It can be influenced by factors beyond the biological, involving beliefs, attitudes, and expectations of the individual. Based on this perspective, introducing Cognitive-Functional Therapy (CFT), a biopsychosocial approach, into physical therapy protocols appears to be beneficial in reducing pain and functional disability.

Objectives: To report the case of a patient with chronic shoulder pain undergoing CFT as an intervention strategy.

Methods: A 48-year-old female patient, a confectioner, reported the onset of pain in her right shoulder approximately 7 months ago while performing underwater swimming upon returning to recreational swimming. The patient underwent a functional assessment and completed pre- and post-intervention questionnaires using the following tools: Shoulder Pain and Disability Index (SPADI), Chronic Pain Self-Efficacy Scale (CPSS), Pain Catastrophizing Scale (PCS), and Numeric Pain Rating Scale (NPRS). Additionally, information about the patient's history before and after the onset of pain was collected. The initial evaluation lasted one and a half hours, and subsequent sessions lasted approximately fifty minutes. The patient expressed a belief in structural damage as the reason for her symptoms but also acknowledged that a lack of physical conditioning contributed to the injury. She reported emotional impact due to the temporary suspension of her work activities because of the pain, as well as difficulty performing household and self-care tasks. The treatment protocol was applied over eight consecutive weeks, with weekly in-person sessions. The approach included reflective questioning to challenge negative beliefs about tissue damage and hypervigilance, gradual exposure to feared movements, and guidance on lifestyle changes. The rehabilitation program was progressive, with a well-established therapeutic alliance. Functional exercises with increasing load and intensity were tailored to the limitations identified during the assessment, including deficits in shoulder flexion, abduction, and internal rotation, as well as activities deemed important to the patient. Home exercise guidance and prescription were also provided.

Results: Initially, the disability assessment showed a SPADI score of 86.92 points. After eight weeks of intervention, this score was reduced to 0.76 points. Additionally, pain decreased from 8 to 1 on the NPRS, indicating improvement in pain and functional capacity. In the self-efficacy assessment, the initial CPSS score was 55.90 points, which decreased to 32.72 after treatment. Finally, catastrophizing, as measured by the PCS, decreased from 20 points at the start to 0 at the end of the protocol (Pre = 20; Post = 0).

Conclusion: The application of CFT over 8 weeks resulted in pain reduction and functional recovery, as well as changes in negative beliefs and pain catastrophizing.

Implications: In addition to improving pain, functional capacity, and eliminating negative beliefs and fear of movement, the patient experienced no adverse effects from the therapy throughout the treatment. Therefore, this approach appears to be an appropriate strategy for the treatment of chronic shoulder pain.

Keywords: Multidimensional approach, psychosocial factors, chronic shoulder pain

Conflict of interest: The authors declare no conflict of interest.

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TRANSLATION AND CROSS-CULTURAL ADAPTATION OF THE PAIN CONCEPTS QUESTIONNAIRE (PCQ) INTO BRAZILIAN PORTUGUESE IN CHRONIC LOW BACK PAIN

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Background: Low back pain (LBP) is a condition widely experienced by the global population and is one of the leading causes of disability in individuals. The persistence of this condition for three months or more characterizes its chronicity, referred to as chronic low back pain (CLBP). Current evidence suggests that managing CLBP should combine active movement interventions with psychosocial strategies, such as educational approaches, aimed at transforming dysfunctional beliefs into those more aligned with the biopsychosocial model. One way to assess the effectiveness of educational interventions is through instruments that evaluate beliefs and knowledge about pain, such as the Pain Concepts Questionnaire (PCQ). However, this instrument has not yet been validated or cross-culturally adapted for Brazilian Portuguese.

Objectives: To translate and cross-culturally adapt the Pain Concepts Questionnaire into Brazilian Portuguese.

Methods: The PCQ consists of 25 items assessing core pain concepts, which included items related to beliefs about the causes of pain and pain flare-up, pain processing in the brain, and treatment options that reflect a biomedical approach and biopsychosocial approach to pain management. Responses are rated on a 5-point Likert scale: 1) strongly disagree, 2) somewhat disagree, 3) not sure, 4) somewhat agree, and 5) strongly agree. The cross-cultural adaptation process was carried out in five stages: forward translation, translation synthesis, back-translation, expert committee meeting, and pre-final version testing. Thirty participants answered the pre-final version of the PCQ and completed the cognitive interview in which comprehension, comprehensiveness and relevance were assessed. Suggestions to improve the instruments were considered when at least 20% of the participants reported issues with the item.

Results: Two translators fluent in English and native Portuguese speakers translated the PCQ into Brazilian Portuguese. Another two translators, fluent in Portuguese and native English speakers, back-translated it into English. All translators worked independently and were unaware of the original version. A specialist committee, including translators, physiotherapists, and experts in rehabilitation and pain, resolved disagreements to create the pre-final version of PCQ-Brazil. The sample had a mean age of 41.80 years (DP = 11.65),

with 60% (n = 18) female and 40% (n = 12) male. Most participants (53.33%, n = 16) had completed high school. Participants answered the pre-final version and reported no issues with comprehension, relevance, or comprehensiveness. Therefore, no modifications were needed for the final version.

Conclusion: The PCQ questionnaire demonstrated good comprehensibility, comprehensiveness, and relevance to the topic. However, it is still necessary to test its measurement properties to ensure that the instrument is suitable for implementation in clinical practice.

Implications: The PCQ-Brazil was translated and cross-cultural adapted, making available a new instrument to assess beliefs and knowledge about pain in Portuguese. The PCQ-Brazil should be tested regarding its measurement properties before being used in clinical practice and research to assess changes in beliefs and knowledge about pain in CLBP following educational interventions.

Keywords: Low Back Pain, Pain Measurement, Surveys and Questionnaires

Conflict of interest: The authors declare no conflict of interest.

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TEMPORAL AND INTENSITY CHARACTERIZATION OF PAIN IN CONJUNCTION WITH SLEEP DISORDERS AND SEDENTARY LIFESTYLE IN MUSCULOSKELETAL PATIENTS IN NORTHERN BRAZIL

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Background: The experience of pain is reported by a large part of the population and is one of the main complaints of patients who undergo physical therapy. Literature has shown that pain often appears in conjunction with other clinical findings, such as sleep disorders and sedentary behavior. Parallel to this, descriptive epidemiology has the aim of helping to characterize a population and the factors related to their health-disease process.

Objectives: To characterize pain according to time and intensity in trauma-orthopedic and rheumatological patients from an Academic league in North region of Brazil.

Methods: This cross-sectional observational study carried out with secondary collection of medical records of trauma-orthopedic and rheumatological patients treated by interns from an Academic league of the Physiotherapy course in the North region of Brazil, from April 2019 to July 2024. The REDCap platform (version 13.3.0) was used for data collection and management and Jamovi (version 2.6) for statistical analysis, evaluating the frequency of types of pain by time (acute, subacute and chronic) and by intensity according to Numerical Pain Scale, which considers 1-2 a mild, 3-7 a moderate and 8-10 an intense pain, in addition to sedentary lifestyle and reports of sleep disorders in patients with pain complaints.

Results: The sample consisted of 394 medical records. The mean age was 45.6 years old, of which 170 (42.7%) had a traumatological disorder, 157 (39.4%) had an orthopedic and 71 (17.8%) a rheumatological. Pain complaints lasting more than 3 months were considered chronic pain, from 8 days to less than 3 months as subacute pain and

up to 7 days as acute pain. Thus, 179 (45.5%) people with chronic pain were identified, 51 (12.9%) with subacute pain, 9 (2.3%) with acute pain, 40 (10.1%) without pain and 115 (29.2%) with no record of pain assessment or injury time. Furthermore, 215 (54.6%) complained a moderate pain, 72 (18.3%) had an intense pain, 19 (4.8%) a mild pain, 40 (10.2%) did not complained about pain and 48 (12.2%) with no register of pain intensity assessment. In relating to all patient that presented pain (306), 192 (62.7%) were sedentary and 158 (51.6%) reported sleep disorders.

Conclusion: Chronic pain, moderate level of pain, sedentary behavior and sleep disorders are present in a population of adults. Besides, it is possible to confirm that traumatological and orthopedic disorder, despite do not be necessary a chronic condition, could reinforce chronic pain. The biopsychosocial factors found in Brazilian patients with complaints of pain are already debated, mainly due to the multifactorial nature of chronic pain, but there was still a lack of data in Brazil, especially in the North region. Future studies need to evaluate more characteristics of musculoskeletal pain.

Implications: The results obtained in this research help to better understand the most prevalent characteristics of the patients treated, which implies better resources for planning and improvements in the services provided, both in management and in care.

Keywords: Physical Therapy Modalities, Orthopedic, Clinical Clerkship

Conflict of interest: The authors declare no conflict of interest.

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THE COMPARISON OF THE IMMEDIATE EFFECT OF NEURODYNAMIC TENSION VERSUS MUSCLE STRETCHING ON STRAIGHT LEG RAISE IN ASYMPTOMATIC INDIVIDUALS

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Background: Hamstring injuries are common among athletes and physically active individuals, often resulting from a lack of muscle flexibility. Muscle stretching and neural mobilization techniques offer distinct approaches to improving joint range of motion. Although previous literature provides evidence of similar effects of both interventions on the range of motion in the straight leg raise test, no study has investigated their influence on sciatic neurodynamic tension.

Objectives: To compare the immediate effect of a muscle stretching exercise program versus neural mobilization on the sciatic neurodynamic tension of asymptomatic individuals.

Methods: A randomized clinical trial was conducted with 40 asymptomatic adults. Sociodemographic and clinical characteristics were collected using a self-administered questionnaire. The straight leg raise test and ultrasound imaging measurements (cross-sectional area and nerve-to-skin distance) were used to assess sciatic neurodynamic tension. During the ultrasound evaluation, participants were instructed to remain in lateral decubitus, with the spine

straight, head and neck supported on a pillow. The transducer was kept in a transverse position to the sciatic nerve at the posterior mid-thigh. Images were taken in two different positions of the lower limb of lesser and greater neural tension, all with the hip positioned at 60° of flexion: position A) with the knee flexed at 90° and the ankle in a neutral position, position B) with the knee extended and ankle dorsiflexion. Participants were randomly assigned to two groups: the control group performed hamstring stretching exercises, while the experimental group received sciatic nerve mobilization. The effects of the interventions were compared using a mixed linear model for repeated measures.

Results: Participants had a mean age of 30 years, with an equal sex distribution. After screening 140 individuals, the final sample was determined based on an estimated 20 participants per group. Both interventions similarly increased the hip flexion range of motion (mean difference = 3.86, 95% confidence interval from -0.46 to 8.17, p-value = 0.079). Neither technique significantly altered the cross-sectional area (p-value = 0.664) or nerve-to-skin distance (p-value = 0.868).

Conclusion: Sciatic nerve mobilization and hamstring stretching exercises produced similar outcomes regarding sciatic neurodynamic tension in asymptomatic individuals.

Implications: Muscle stretching and neural mobilization are similarly effective in improving range of motion in individuals assessed in the short-term. The improvement in the range of movement may be related to muscles or connective tissue adaptations since there was no effect on the neurodynamic tension.

Keywords: Muscle stretching exercises, Musculoskeletal manipulations, Range of motion

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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THE BRAZILIAN VERSION OF NON-AVOIDANCE PACING SCALE: TRANSLATION AND CROSS-CULTURAL ADAPTATION

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Background: Chronic pain can be defined as pain that persists for more than three months, being one of the main causes of suffering and physical and emotional disability. Negative or maladaptive psychological factors, such as fear, negatively influence the pain. Individuals with chronic pain tend to develop fear and catastrophic thoughts in response to pain, leading to a sedentary lifestyle due to avoidance behavior. In addition to avoidance, there are other patterns of behavior and activity, such as pacing, which is characterized by moderating activity levels and alternating between periods of activity and rest. Currently, some instruments assess pacing in individuals with chronic pain, such as Non-avoidance Pacing Scale (NAPS). However, the NAPS has not yet been translated and culturally adapted into Brazilian Portuguese.

Objectives: To translate and culturally adapt the NAPS into Brazilian Portuguese.

Methods: This is a cross-sectional observational study that was approved by the Ethics Research Committee and conducted based on previously established recommendations for translation and cultural adaptation processes. The NAPS was translated by two Brazilian translators fluent in English. Afterward, the translations were synthesized and then back-translated into English by two native English speakers fluent in Brazilian Portuguese. Finally, a committee of experts reviewed all the translations and the original version to create the pretest version. The comprehensibility of the items in the pretest version was evaluated in 30 individuals. The pretesting phase included individuals with chronic pain for at least three months of both sexes, aged over 18 years, and reporting pain intensity greater than 3 on an 11-point numeric rating scale. Each participant completed the questionnaire, provided feedback on their comprehension, and proposed adjustments to the instrument. The instrument was deemed acceptable if at least 90% of the participants fully understood all the questions. The data were analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 23.0.

Results: The translation and back-translation process showed no significant discrepancies, ensuring semantic and cultural equivalence. An expert committee made minor adjustments to enhance comprehension while preserving the original meaning. The pretest version was sent to the authors of the original NAPS and was approved without additional suggestions. A total of 30 individuals with chronic pain participated in the study (female: 23, 76.67%; male: 7, 23.33%), with a mean age of 43.97 ± 16.4 years and a body mass index of 28.62 ± 5.49 . The most frequently reported pain region was the trunk (15, 50%), followed by the lower limb (11, 36.67%) and upper limb (4, 13.33%). Pain intensity on the numeric rating scale (6.10 ± 2.2), while pain duration in years was 7.88 ± 9.02 . All items achieved a comprehensibility rate above 90%.

Conclusion: The translation and cultural adaptation of the NAPS into Brazilian Portuguese were considered appropriate.

Implications: This instrument will enable the analysis of behavioral patterns in patients with chronic pain, specifically pacing, and assessing the presence of maladaptive and negative processes related to the condition.

Keywords: Questionnaire translation, Chronic pain, Pacing

Conflict of interest: The authors declare no conflict of interest.

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PAIN SELF-EFFICACY IN INDIVIDUALS WITH FROZEN SHOULDER: ASSOCIATIONS WITH PAIN, DISABILITY, PSYCHOLOGICAL FACTORS, AND SLEEP QUALITY

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Background: Pain self-efficacy may influence an individual's ability to manage pain and maintain functionality. Lower self-efficacy levels are linked to greater pain, disability, and poorer outcomes. In a frozen shoulder, persistent pain and restricted movement may be associated with low self-efficacy. Psychological factors (depression, anxiety, kinesiophobia, pain catastrophizing) and sleep disturbances are associated with pain and function in musculoskeletal conditions. Still, their contribution to self-efficacy pain in frozen shoulder remains unclear. Understanding these relationships may improve rehabilitation strategies by addressing psychosocial aspects alongside physical treatment.

Objectives: To analyze the association between pain, disability, psychological factors (anxiety, depression, kinesiophobia, pain catastrophizing), and sleep quality with pain self-efficacy in individuals with frozen shoulder.

Methods: This cross-sectional study was conducted via video calls using Google Meet[®]. Pain self-efficacy was assessed with the Pain Self-Efficacy Questionnaire (PSEQ-10); pain and disability with the Shoulder Pain and Disability Index (SPADI). Anxiety and depression were evaluated with the Hospital Anxiety and Depression Scale (HADS), kinesiophobia with the Tampa Scale for Kinesiophobia-11 (TSK-11), and pain catastrophizing with the Pain Catastrophizing Scale (PCS). Sleep quality was assessed with the Pittsburgh Sleep Quality Index (PSQI). Multiple linear regression examined pain self-efficacy as the dependent variable and pain, disability, anxiety, depression, kinesiophobia, pain catastrophizing, and sleep quality as independent variables.

Results: A total of 96 individuals participated (72 women; mean age = 53.1 ± 10.8 years; BMI = 26.3 ± 4.8 kg/m²), including 57 with primary and 39 with secondary frozen shoulder. Depression, pain, and sleep quality were significantly associated with pain self-efficacy, explaining 34.4% of the variance ($F(3,92) = 17.63$, $p < 0.000$, adjusted $R^2 = 0.344$, RMSE = 10.40). The remaining variables were not significantly associated.

Conclusion: Depression, sleep quality, and pain intensity were associated with pain self-efficacy, accounting for 34.4% of its variance. Higher depression levels, poorer sleep quality, and greater pain intensity were linked to lower self-efficacy. These findings highlight the importance of integrating psychological support and sleep hygiene strategies into frozen shoulder rehabilitation.

Implications: A comprehensive, interdisciplinary approach addressing psychosocial factors and sleep disturbances may enhance pain self-efficacy and treatment outcomes in frozen shoulder. Incorporating psychological interventions and sleep hygiene into rehabilitation programs could improve adherence and effectiveness.

Keywords: Frozen shoulder, biopsychosocial model, depression

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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THE BRAZILIAN VERSION OF THE ACTIVITY MANAGEMENT INVENTORY FOR PAIN: TRANSLATION AND CULTURAL ADAPTATION

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Background: Musculoskeletal chronic pain is a common condition that can limit daily and professional activities. Individuals with chronic pain may exhibit distinct activity-related behavior patterns. The Activity Management Inventory for Pain (AMI-P) is a 20-item instrument that evaluates behaviors related to rest, alternating and planned activities, as well as goals such as pain reduction, increased activity, and energy conservation. Although used in clinical and research contexts, the questionnaire has not yet been translated, adapted, or validated for the Brazilian population. A culturally adapted version of this instrument could provide a more accurate assessment of chronic pain.

Objectives: To translate and adapt the AMI-P questionnaire into Brazilian Portuguese.

Methods: This is a cross-sectional study that followed the recommendations of Beaton et al., 2000. This study was approved by the Ethics Research Committee. The original version of the AMI-P was translated into Portuguese by two Brazilian translators fluent in English. Subsequently, the translations were synthesized and then back translated into English by two native English speakers. Finally, a panel of experts reviewed all the translations and compared them with the original version to formulate the pretest version. The comprehensibility of the items in the pretest version was evaluated in 30 individuals. The pretesting phase included individuals of both sexes, aged over 18 years, with musculoskeletal low back chronic pain for at least 3 months and an intensity greater than 3 on the 11-point numerical pain scale. Each participant responded to the questionnaire, reported their understanding, and suggested modifications to the instrument. The instrument was considered acceptable if 90% of participants understood all the questions. All statistical analyses were conducted using Excel™ software (Microsoft, version 2019).

Results: The translation and back-translation processes showed no major discrepancies between versions, confirming semantic and conceptual alignment with the original instrument. The expert committee carefully reviewed the pretest version and made minor refinements to improve clarity while preserving the original intent. This version was then submitted to the authors of the original AMI-P, who recommended adjustments to the terms "social activities," "be better able to complete the task," "get more done," "too," "the most," and "predefined time" to ensure greater conceptual consistency with the original scale. Thirty patients participated in the pre-testing phase, with a mean age of 36.3 ± 17.35 years, body mass index of 25.78 ± 4.58 kg/m² and 19 (63, 33%) were women. The majority of participants (73.33%, n = 22) had a higher education level. The participants demonstrated a 90% level of understanding of all items of AMI-P, meeting the established criterion for adequate comprehensibility.

Conclusion: The Brazilian Portuguese version of the AMI-P was considered adequate and clear.

Implications: The Portuguese version of the AMI-P will be an important tool for the assessment of musculoskeletal chronic pain in Brazil. The assessment of the measurement properties is still necessary.

Keywords: Assessment instrument, Chronic pain, Physical activity

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: CAAE: 77330824.2.0000.5235.

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DOES KINESIOPHOBIA INFLUENCE JUMP LANDING KINEMATICS IN WOMEN WITH PATELLOFEMORAL PAIN?

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Methods: Women aged 18 to 30 years with complaints of PFP participated in this study. Initially, anamnesis was performed, followed by the application of the Tampa Scale of Kinesiophobia. Subsequently, kinematic evaluation of the lower limb was conducted. Reflective markers were positioned on the dominant lower limb at the following anatomical points: anterior superior iliac spine, acromion, greater trochanter of the femur, center of the patella, lateral malleolus, and head of the fifth metatarsal. Volunteers were instructed to step onto a 30 cm box and perform a jump, landing on the ground using only the affected lower limb. The test was performed three times, and the following angles were calculated: hip flexion, pelvic tilt, knee flexion, knee valgus, and ankle dorsiflexion. For statistical analysis, Pearson's correlation test was used, with a significance level of $p < 0.05$.

Results: Knee flexion angles ($p = 0.008$, $r = 0.806$), ankle dorsiflexion ($p = 0.015$, $r = 0.517$), and pelvic tilt ($p = 0.043$, $r = 0.436$) during single-leg jump landing were associated with kinesiophobia levels in women with PFP.

Conclusion: Kinesiophobia alters movement patterns during single-leg jump landing, such that higher levels of kinesiophobia lead to the adoption of biomechanical adjustments in landing kinematics, which may result in greater joint overload.

Implications: This study demonstrated that kinesiophobia levels are related to altered movement patterns during activities that impose high patellofemoral loads. The reduction in knee flexion angle observed in women with PFP and kinesiophobia may represent an attempt to maintain joint stability and reduce pain during movement execution, considering that pain intensifies at greater flexion angles. However, landing from a jump with a stiffer knee, greater pelvic tilt, and reduced ankle mobility may decrease impact absorption and have deleterious effects on the joint in the medium and long term. Therefore, rehabilitation programs for PFP should include patient education strategies aimed at reducing kinesiophobia alongside resistance exercises to achieve more effective outcomes.

Keywords: Biomechanical Phenomena, Quality of Life, Patellofemoral Pain Syndrome

Conflict of interest: The authors declare no conflict of interest.

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CONDITIONED PAIN MODULATION AND DISABILITY IN PATIENTS AFTER TRAUMATIC MUSCULOSKELETAL INJURIES IN THE UPPER LIMB

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Background: Conditioned pain modulation (CPM) evaluates the endogenous pain inhibitory mechanisms, and its identification may be crucial for understanding pathophysiology and pain mechanisms. Although CPM has been extensively studied in chronic pain conditions, there is still limited evidence in post-traumatic chronic pain conditions, mainly in upper limb injuries.

Objectives: The aim of this study was to investigate the correlation between conditioned pain modulation (CPM) and the upper limb disability in patients after traumatic musculoskeletal injuries.

Methods: Adult patients of both sexes with musculoskeletal trauma in the upper limb were evaluated after 3 months of the traumatic event. The pressure pain threshold assessment (PPT) was conducted using a digital algometer (Wagner Instrument) on the upper trapezius and the Disabilities of the arm, shoulder, and hand (DASH, 0-100) questionnaire was used. The evaluation of CPM was conducted using the painful conditioning stimulus, the Cold Pressor Test. Pain intensity was assessed using the Visual Numeric Scale (VNS), and the pressure pain threshold was measured with an algometer every 30 seconds and immediately after the hand was removed from the water. Pearson correlation was used to measure the strength and direction of the relationship between two continuous variables. Its value ranges from +1, indicating a perfect positive correlation, to -1, indicating a perfect negative correlation. A value of 0 suggests no linear correlation between the variables.

Results: This cross-sectional study evaluated 18 patients, predominantly men (66,7%), with upper limb fractures (88.9%) and complex injury (11.1%) with a mean age of 40,78 (15.3) years, involving the shoulder/arm (n = 55.50%), elbow/forearm (n = 16.70%), and wrist/hand (n = 27.8%). The mean score of DASH was 38.39 (20.6). The pain intensity was slight (32.7) in patients after three months of the traumatic musculoskeletal injury. The average hand immersion time in cold water was 83.8 (43.5) seconds. The PPT on the upper trapezius of the affected side was 6.1 (4.4) kg/cm² before the hand immersion in cold water and 5.8 (3.9) kg/cm² after the painful stimulus, i.e., the hand immersion in cold water. The post-pre difference averaged was - 0.3 (2.6) indicating a poor response of the endogenous pain inhibitory mechanisms. There was no correlation between the CPM and DASH score ($r = 0.11$, $p = 0.65$).

Conclusion: The endogenous pain inhibitory mechanisms was poor in patients after three months of the injury. However, there is no correlation between the endogenous pain inhibitory mechanisms measured by CPM and upper limb disability measured by DASH in patients after three months of the traumatic musculoskeletal injury. **Implications:** This is a cross-sectional study which does not allow for longitudinal analyses with a small sample size. However, the findings might have clinical relevance suggesting better understanding on pain mechanisms that contributes to pain chronification after traumatic injuries.

Keywords: arm injuries, disability, fractures, trauma

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EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION ON ANXIETY AND DEPRESSION IN INDIVIDUALS WITH NEUROPATHIC PAIN: SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Neuropathic pain is a common disorder that may cause physical impairment and has been associated with anxiety and depression. The Transcranial Direct Current Stimulation (tDCS) may assist in managing populations with chronic symptoms. However, findings in the literature remain conflicting, with prior studies reporting small effect sizes and factors that may influence tDCS efficacy.

Objectives: To evaluate the effects of tDCS on anxiety and depression in patients with chronic neuropathic pain.

Methods: A literature search was conducted in the MEDLINE, CINAHL, EMBASE, and CENTRAL databases in February 2024. Included studies were controlled clinical trials involving patients with chronic neuropathic pain undergoing tDCS. The meta-analysis was calculated using the Standardized Mean Difference (SMD) with a 95% confidence interval (CI) and the level of evidence was assessed with GRADE approach.

Results: The search retrieved 1,729 articles. After screening, 9 studies were included and compared the effects of active tDCS versus sham tDCS on depression, with a combined sample of 256 participants, and 8 studies that investigated effects on anxiety, with a total of 216 participants. All studies applied anodal current to the stimulation target. The predominant stimulation site was the Primary Motor Cortex (M1), with current intensity ranging from 1 mA to 2 mA, 5–14 sessions, and session duration of 20–30 minutes each. Low-quality evidence indicated that active tDCS was not superior to sham tDCS in improving depression (SMD = -0.24; 95% CI [-0.55, 0.07]; $P = 0.13$), with low heterogeneity ($I^2 = 32\%$, $P = 0.16$). Low-quality evidence showed no superiority of active tDCS over sham tDCS in reducing anxiety (SMD = -0.23; 95% CI [-0.63, 0.17]; $P = 0.26$), with moderate heterogeneity ($I^2 = 50\%$, $P = 0.05$).

Conclusion: The meta-analysis indicated that tDCS was not superior to sham interventions for improving anxiety or depression in individuals with neuropathic pain.

Implications: tDCS should not be used for treating anxiety and depression in patients with chronic pain.

Keywords: Systematic Review, Neuropathic Pain, Transcranial Direct Current Stimulation

Conflict of interest: The authors declare no conflict of interest.

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ASPECTS ASSOCIATED WITH THE ADHERENCE TO PHYSICAL THERAPY TREATMENTS IN PATIENTS WITH CHRONIC LOW BACK PAIN: A QUALITATIVE APPROACH

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Background: The effectiveness of physical therapy treatments in patients with chronic low back pain is significantly influenced by patient adherence. This adherence is shaped by various factors, including the need for comprehensive care, effective patient-physical therapist communication, and the patient's socioeconomic circumstances.

Objectives: To identify variables perceived by patients that influence adherence to treatment.

Methods: This study employed a qualitative approach, using semi-structured interviews to collect data from patients undergoing physical therapy treatment at a teaching clinic. A convenience sampling method was used, including adult males and females with non-specific chronic low back pain. The interviews were transcribed and analyzed through qualitative content analysis to identify themes related to patients' self-perception of treatment adherence. Data collection involved individual interviews with a pre-established guiding script that included both open and closed questions, categorized into the following thematic axes: I – Psychosocial Factors; II – Communication and Professional-Patient Relationship; III – Behavioral and Motivational Factors.

Results: Content analysis identified three main themes regarding patients' perceptions of adherence to physical therapy treatment: (I) Family support, (II) Expectation of improvement, and (III) Perception of pain relief. Many patients highlighted the crucial role of family support in ensuring treatment continuity. Additionally, the belief that physical therapy could prevent more invasive interventions, such as surgery, and improve quality of life was recognized as a motivating factor. Furthermore, the recognition of progressive pain relief emerged as a key reason for continued treatment.

Conclusion: Adherence to physical therapy treatment in patients with non-specific chronic low back pain is influenced by multiple factors, with significant contributions from family support, the expectation of improvement, and the perception of pain relief. Therefore, strategies aimed at strengthening the patient-physical therapist relationship, enhancing family involvement, and emphasizing the benefits of treatment should be incorporated into physical therapy approaches.

Implications: Future research should explore these variables in different populations and regional contexts and employ longitudinal designs to assess how perceptions and adherence evolve over time. It is also crucial to test personalized, multifaceted interventions that integrate technological, educational, and behavioral components to sustain patient motivation in a more long-lasting manner.

Keywords: Chronic low back pain, Treatment adherence, Biopsychosocial factors

Conflict of interest: The authors declare no conflict of interest.

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CORRELATION BETWEEN CATASTROPHIZING, PAIN, AND MANDIBULAR FUNCTION IN PEOPLE WITH TEMPOROMANDIBULAR DISORDER SYMPTOMS

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Background: Temporomandibular disorder (TMD) is defined as a set of signs and symptoms affecting the temporomandibular joint (TMJ) and/or the masticatory muscles, with pain being the most common symptom, impacting approximately 50 to 60% of the population.

TMD's can be influenced by psychological factors, such as exaggerated and negative thoughts about pain, known as catastrophizing, that can significantly intensify the perception of pain, leading to a worsening of the clinical condition and affecting TMJ functionality.

Objectives: To evaluate the relationship between pain and catastrophizing in individuals with TMD symptoms.

Methods: This is a cross-sectional observational study that assessed pain, catastrophizing, and TMJ functionality in individuals with TMD using scales such as the Numeric Rating Scale for Pain (NRS Pain) (NRSP), Pain Catastrophizing Scale (PCS), and Jaw Functional Limitation Scale (JFLS-20). The study included individuals who reported orofacial pain for more than three months and scored above 2 points on pain screening for TMD in the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD). The data were analyzed using descriptive and inferential statistics with SPSS software version 20.0. The Shapiro-Wilk test was conducted to assess normality, and Pearson's correlation was used to evaluate the relationship between JFLS, pain, mobility, and PCS, considering a 95% confidence interval and a p-value < 0.05 to indicate significant associations.

Results: The study included 20 participants, consisting of 14 women and 6 men, with a mean age of 33.85 years (SD = 11.05). Pain, assessed using the NRSP, had a mean score of 6.25 (SD = ±1.61). Pain-free mouth opening had a mean of 26.94 mm (SD = 8.58), while maximum mouth opening was 41.92 mm (SD = 5.70). The global JFLS score had a mean of 3.20 (SD = 1.72), and the mean mobility domain score was 2.57 (SD = 1.51). Pain catastrophizing, measured by the PCS, had a mean score of 25.25 (SD = 13.78). Significant correlations were found between PCS and JFLS-20 ($r = 0.45$; $p < 0.05$), as well as between the mobility domain of the JFLS-20 scale and PCS ($r = 0.54$; $p < 0.05$), both being positive.

Conclusion: The findings suggest that pain catastrophizing is strongly associated with functional limitations of the TMJ, emphasizing the need for further research to better understand this relationship and the impact of pain on mandibular function.

Implications: These results underscore the importance of multidisciplinary approaches in physiotherapy, incorporating interventions such as manual therapy, kinesiotherapy, and, most notably, pain education to mitigate catastrophizing and enhance TMJ functionality, ultimately improving clinical outcomes.

Keywords: Disorder, Catastrophization, Pain

Conflict of interest: The authors declare no conflict of interest.

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EXERCISE-INDUCED HYPOALGESIA FROM UPPER LIMB LATERAL RAISES: A PILOT STUDY ON INTRA-RATER RELIABILITY

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Background: Evidence suggests that physical exercise influences pain sensitivity through the modulation of the peripheral and central nervous systems in healthy individuals. The exercise-induced hypoalgesia (EIH) test was proposed to assess this effect and is widely used in literature. However, studies have shown low reliability of this test after aerobic and isometric exercise sessions. To date, there have been no investigations into the reliability of the EIH test in dynamic resistance exercises involving the upper limbs (UL) in this population.

Objectives: The aim is to investigate the intra-rater reliability, standard error of measurement (SEM), and minimal detectable change (MDC) of the EIH test for lateral elevation of the upper limbs (UL) in healthy individuals.

Methods: This is a pilot, observational, and cross-sectional study. Healthy individuals (18–45 years old, both sexes) participated. Individuals are advised not to exercise or consume nicotine, caffeine or analgesic medication 24 hours before the assessment. Assessments were conducted over two days. EIH was measured by the pressure pain threshold (PPT) and pain tolerance threshold (PTT), measured using a digital algometer at the following points: upper trapezius and quadriceps (remote), before and after exercise. The evaluator was blinded to the PPT and PTT results. Intra-rater reliability was analyzed using the Intraclass Correlation Coefficient (ICC) with a two-way random effects model for absolute agreement, using the Statistical Package for Social Sciences (SPSS), version 23.0. The SEM was calculated from the mean standard deviation of both days for each measure and location using the formula $SEM = SD \sqrt{1 - ICC}$. The MDC was calculated using the formula $MDC = 1.96 \times \sqrt{2} \times SEM$.

Results: A total of 20 participants (60% female), with a mean age of 26 years and BMI of 25 kg/m², were included. The reliability for absolute changes was considered good for the PPT, both at the local and remote regions of the exercise (ICC = 0.77 and 0.79). The SEM was 91.15 kPa and 59.10 kPa, and the MDC was 26.46 kPa and 21.30 kPa, respectively. However, the reliability for relative change was weak at the local region (ICC = 0.47) and moderate at the remote region (ICC = 0.73), with SEM of 33.26% and 13.30%, and MDC of 15.98% and 10.10%, respectively. When evaluated by the PTT, the absolute reliability was low at the local region (ICC = 0.44) and moderate at the remote region (ICC = 0.56), with SEM of 131.09 kPa and 126.42 kPa, and MDC of 31.73 kPa and 31.16 kPa. In contrast, the relative reliability was weak (ICC = 0.25 and 0.46) with SEM of 20.99% and 16.50%, and MDC of 12.69% and 11.25%, respectively.

Conclusion: The EIH test for lateral elevation of the upper limbs showed good reliability between sessions for absolute changes in both regions, and moderate reliability for relative change in the quadriceps when using the PPT. The PTT showed weak reliability for both absolute and relative changes.

Implications: Results can be used to enhance the understanding of the effects of therapeutic exercise on pain processing.

Keywords: Reproducibility of Results, Pressure pain threshold, Hypoalgesia

Conflict of interest: The authors declare no conflict of interest.

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EVIDENCE-BASED EDUCATION AND COUNSELING IN LOW BACK PAIN MANAGEMENT IN PRIMARY HEALTH CARE: A CROSS-SECTIONAL STUDY

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Background: Low back pain (LBP) is a prevalent condition with substantial global and national burden, particularly within the scope of Primary Health Care (PHC). Evidence-based education and counseling are recommended strategies for LBP management; however, their implementation remains suboptimal. Identifying the frequency of these practices and the themes explored may contribute to understanding whether key messages recommended for LBP education and counseling are being addressed in primary care.

Objectives: This study aimed to investigate the frequency of education and/or counseling in the management of LBP in PHC and to identify the content provided to patients, assessing adherence to the recommended key messages.

Methods: A cross-sectional observational study was conducted with physicians and nurses working in PHC in Fortaleza, Brazil. Data were collected through in-person and online surveys using a RedCap-based form. Participants responded to two simulated clinical cases—one acute and one chronic—based on validated cases. The participant was asked about LBP management. If the response included education and counseling, the participant would respond about the themes covered from the options. Sociodemographic and professional data were collected. The survey also described adherence to recommended key messages and barriers to implementing education and/or counseling.

Results: A total of 140 professionals participated, with 74.29% being female and 59.29% being physicians. The mean age was 39.90 (± 11.27) years, and the mean time since graduation was 13.45 (± 10.88) years. Regarding qualifications, 51.43% held a specialization. Most professionals (51.43%) worked within the Family Health Strategy, and 42.86% had over 10 years of experience in PHC. Counseling was provided in 81.44% of cases, with a frequency of 84.62% in chronic LBP and 78.36% in acute LBP. Recommended key messages, such as guidance on exercise (65.26%) and home-based measures (72.77%), were frequently addressed. However, non-recommended messages, such as education about joint wear (56.81%) and limitation of household activities (40.38%), were also prevalent. The most frequently reported barriers included insufficient training (23.81%) and a limited perception of the educational role (23.81%).

Conclusion: Although educational and counseling were frequently employed in PHC, the content covered still includes many themes not recommended in evidence-based key messages. Implementing training programs for healthcare professionals could enhance alignment with scientific recommendations, ultimately improving LBP management within PHC settings.

Implications: These findings highlight the need for targeted interventions to enhance education and/or counseling in LBP management within PHC. Strengthening professional training in educational strategies and addressing identified barriers could improve a more effective and evidence-based approach to LBP management in PHC.

Keywords: Low back pain, Primary Health Care, Health Education

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 83164524.5.0000.5235.

Registration: Not applicable.

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RELATIONSHIP BETWEEN SOCIAL SUPPORT AND PHYSICAL ACTIVITY LEVEL IN INDIVIDUALS WITH CHRONIC LOW BACK PAIN: A CROSS-SECTIONAL STUDY

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Background: Chronic low back pain (CLBP) is disabling and often associated with modifiable socioeconomic and lifestyle factors, such as physical activity level, the latter being a key treatment component. Evidence suggests that social support (SS) may be a crucial health determinant in encouraging exercise and improving pain management, highlighting the importance of investigating this relationship in those with CLBP.

Objectives: To analyze the association between social support and physical activity level in adults with primary CLBP.

Methods: This cross-sectional study was conducted between August and December 2024 with volunteers recruited from a Primary Care Unit through active search or referred by health agents. Adults aged 18 to 60 years with primary CLBP lasting more than three months answered the following questionnaires: Sociodemographic form, Numerical Pain Scale (NPS), Medical Outcomes Study-Social Support Survey (MOS-SSS), and International Physical Activity Questionnaire (IPAQ-SF), with the aid of illustrated response cards. Data were analyzed using JAMOVI software for descriptive analysis and to assess the correlation between social support and physical activity.

Results: We included 54 participants (77.7% female), with a mean age of $48.9 \text{ years} \pm 9.26$. The mean pain intensity was 6.81 ± 2.25 , and the mean weekly physical activity was $4,153 \pm 3,476$ METs, with most participants reporting moderate to high physical activity levels. The mean perceived SS score was $72.2 \pm$ (standard deviation = 23), indicating a moderate level of social support perception. SS and physical activity levels were weakly and positively correlated ($\rho = 0.3$; $p < 0.03$).

Conclusion: There was a positive, albeit modest, relationship between SS and physical activity levels, suggesting that SS may contribute to physical activity status. However, the magnitude of the correlation highlights the need to consider other contextual factors, such as gender, financial barriers, workload, and health perception in individuals with primary CLBP. Although relevant, SS does not appear to be the main determinant of physical activity. This study reinforces the importance of future research, specifically on the role of general social support and its interactions with contextual factors affecting physical activity levels in this population.

Implications: The study points to the relationship between SS and physical activity level in adults with CLBP, highlighting the importance of investigating social support as a facilitator in promoting a more active lifestyle in individuals with CLBP.

Keywords: Chronic low back pain, social support, physical activity

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: CAAE: 84817224.6.0000.5188.

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IMPACT OF DIFFERENT MANUAL THERAPY TECHNIQUES ON ANKLE DORSIFLEXION RANGE OF MOTION: PRELIMINARY DATA FOR SYSTEMATIC REVIEW WITH META-ANALYSIS

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Background: Reduced ankle dorsiflexion range of motion is associated with biomechanical and functional changes, impacting daily activities such as walking. Assessing and addressing this limitation is clinically relevant, highlighting the need to investigate the outcomes used in populations with this condition.

Objectives: This study aims to conduct systematic review and meta-analysis to evaluate and synthesize published randomized controlled trials (RCTs), providing conclusions on the short- and long-term efficacy of different manual therapy techniques on ankle dorsiflexion range of motion.

Methods: This systematic review and meta-analysis follow the PRISMA guidelines. Data were extracted from RCTs without language restrictions, identified through systematic searches in the following databases: MEDLINE/PubMed (via National Library of Medicine), Scopus (Elsevier), CINAHL (EBSCO), LILACS, EMBASE (Elsevier), and Web of Science (Clarivate Analytics). Statistical analysis will be conducted using R software. Random effects models with a 95% confidence interval (CI) will be estimated to analyze the study's outcome. Heterogeneity will be assessed using the I^2 index, and sensitivity analyses will be performed, whenever possible, in the presence of high heterogeneity ($I^2 > 40\%$). All statistical comparisons assume a significance level of $\alpha = 0.05$. Preliminary

Results: A total of 194 studies were identified through database searches, with no additional studies found from other sources. After removing duplicates, 114 articles remained. Following title and abstract screening, 102 studies were excluded. The 12 remaining studies were assessed for full-text review, and eight studies were excluded. Thus, four studies were included and are currently undergoing qualitative synthesis and meta-analysis, totaling 191 participants (M: 104 / H: 87), of whom 107 underwent the intervention and 84 were in the control group. The participants' mean age ranged from 22.3 to 72.6 years, and their mean body mass index varied between 22.46 and 28.47 kg/m^2 . Inclusion criteria included adults over 60 years old with dorsiflexion limitation below 35° measured by the weight-bearing lunge test, adults over 18 years old, with or without ankle injury, and those with asymmetric dorsiflexion stiffness during the weight-bearing lunge test; as well as students aged 18 to 35 years in good health. Exclusion criteria included neurological diseases, musculoskeletal conditions in the lower limb, musculoskeletal injury in the last three months, vestibular pathology, vascular disease, or a history of previous surgery in any lower extremity. Two clinical trials applied manual therapy to the ankle joint, while two used Mulligan mobilization with movement, with one of them associating a tibiofibular tape. The primary outcome assessed was the increase in dorsiflexion during the weight-bearing lunge test.

Conclusion: Although manual therapy is widely used to improve ankle mobility, further research is needed to determine the most effective approach. This systematic review and meta-analysis will provide evidence on the effectiveness of manual interventions to improve dorsiflexion.

Implications: Improving our understanding of different interventions that can improve ankle movement facilitates prevention strategies, rehabilitation protocols, and clinical decision-making.

Keywords: Range of Motion, Musculoskeletal Manipulations, Systematic review

Conflict of interest: The authors declare no conflict of interest.

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QUALITY OF DESCRIPTION OF USUAL CARE INTERVENTIONS IN CLINICAL TRIALS INVOLVING EXERCISE FOR KNEE OSTEOARTHRITIS: A SYSTEMATIC REVIEW

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Background: Conducting randomized clinical trials (RCTs) with a comparator group is methodologically appropriate and essential to minimize confounding factors in systematic reviews, provided that the interventions, including Usual Care (UC) in the comparator group, are described in detail to ensure the reproducibility of the methods.

Objectives: To evaluate the quality of the description of interventions termed UC as a comparator group in RCTs that utilized exercise for the treatment of knee osteoarthritis (OA).

Methods: A meta-research study with a systematic review of RCTs involving exercise for knee OA in individuals aged 40 years or older. Searches were conducted in the following databases: MEDLINE, EMBASE, Cochrane Central, PEDro, CINAHL, and SportDiscus. Studies that compared any therapeutic exercise to Usual Care were included. The description of interventions in both the exercise intervention group and the UC control group was assessed using the Template for Intervention Description and Replication (TIDieR) tool. A quantitative and qualitative comparison was made regarding the quality of reporting between the groups, as well as the description before and after the publication of the TIDieR checklist.

Results: A total of 67 RCTs were analyzed, and in 100% of these RCTs, the description of the UC group was of low quality. The TIDieR score (0-12) was higher in the exercise group, with a median of 4.0 (interquartile range [IQR] 3 to 5), compared to the UC group, which had a median of 1.0 (IQR 1 to 2), $p < 0.001$. For the intervention groups, only 22.3% of the descriptions were considered "high quality." There was no difference in the quality of intervention descriptions before and after the publication year of the TIDieR checklist.

Conclusion: The description of interventions referred to as UC in RCTs involving exercise for knee OA is insufficient. Consequently, it is not possible to replicate these RCTs or properly implement their findings in clinical practice.

Implications: These findings underscore the need for clearer and more consistent descriptions of groups in RCTs on knee OA, particularly regarding the UC group. Furthermore, it is essential to encourage the adoption of the TIDieR checklist to ensure transparency and reproducibility in these studies.

Keywords: Knee osteoarthritis, patient care, exercise

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PSYCHOSOCIAL PROFILE OF INDIVIDUALS WITH FROZEN SHOULDER: PAIN, DISABILITY, PSYCHOLOGICAL FACTORS, AND SLEEP QUALITY

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Background: Frozen shoulder is a musculoskeletal condition characterized by pain and progressive restriction of mobility, significantly impacting the functionality of affected individuals. In addition to physical limitations, psychological factors, and sleep patterns may play a relevant role in this condition. Identifying the psychosocial characteristics of these patients can provide essential information to enhance therapeutic approaches and personalize treatment, considering the particularities of individuals with this condition.

Objectives: To describe the psychosocial profile of individuals with frozen shoulder.

Methods: This is a cross-sectional study conducted via video call using Google Meet[®] with individuals diagnosed with primary and secondary frozen shoulder. Sociodemographic data were collected, and instruments were applied to assess pain (Numerical Pain Scale), disability (Shoulder Pain and Disability Index), anxiety and depression (Hospital Anxiety and Depression Scale), kinesiophobia (Tampa Scale for Kinesiophobia-11), pain catastrophizing (Pain Catastrophizing Scale), and sleep quality (Pittsburgh Sleep Quality Index). Descriptive analysis was performed using IBM[®] SPSS 22 software, according to the specific cut-off points of each instrument, presenting the results in percentages, means, and standard deviations. **RESULTS:** The sample consisted of 96 individuals, 57 diagnosed with primary frozen shoulder and 39 with secondary frozen shoulder (72 women, mean age = 53.1 ± 10.8 years, symptom duration = 6.1 ±

4.2 months). Most participants (60.4%) reported pain equal to or greater than 7 points, while 75% presented significant functional disability, with scores above 40. Regarding psychological aspects, 98.9% demonstrated high levels of kinesiophobia, with scores above 17, and 56.2% exhibited signs of anxiety, with scores equal to or greater than 9. Sleep quality was considered poor in 36.4% of individuals (scores equal to or greater than 5), and 57.2% presented sleep disorders (scores equal to or greater than 10). In contrast, most participants showed no signs of depression (83.3% with scores below 9) or pain catastrophizing (54.1% with scores equal to or below 30). Conclusion: The results indicate that individuals with frozen shoulder experience intense pain and functional disability associated with high levels of kinesiophobia and anxiety. Additionally, a significant portion of the sample reported inadequate sleep patterns. Implications: These findings reinforce the need for integrated therapeutic strategies that address not only physical aspects but also the emotional and behavioral components involved in this condition. Therefore, an interdisciplinary approach incorporating strategies for pain management, psychological support, and health education to reduce fear of movement and improve sleep habits may promote a more effective rehabilitation process and contribute to better clinical outcomes in this condition.

Conclusion: The results indicate that individuals with frozen shoulder experience intense pain and functional disability associated with high levels of kinesiophobia and anxiety. Additionally, a significant portion of the sample reported inadequate sleep patterns.

Implications: These findings reinforce the need for integrated therapeutic strategies that address not only physical aspects but also the emotional and behavioral components involved in this condition. Therefore, an interdisciplinary approach incorporating strategies for pain management, psychological support, and health education to reduce fear of movement and improve sleep habits may promote a more effective rehabilitation process and contribute to better clinical outcomes in this condition.

Keywords: Frozen shoulder, shoulder pain, biopsychosocial model

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TRANSLATION AND CROSS-CULTURAL ADAPTATION OF THE WHEELCHAIR USER'S SHOULDER PAIN INDEX TO BRAZILIAN PORTUGUESE

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Background: Shoulder pain is frequent among wheelchair users, resulting from the overload generated by locomotion and transfer activities. In this context, evaluation and monitoring through tools such as questionnaires are essential to guide the actions of health professionals and researchers. The Wheelchair User's Shoulder Pain Index (WUSPI) is a validated questionnaire, originally developed in English, that assesses shoulder pain in wheelchair users. Considering the scarcity of specific tools for this population available in Brazil, it

is essential to translate and culturally adapt the WUSPI to Brazilian Portuguese.

Objectives: Translate and cross-culturally adapt the Wheelchair User's Shoulder Pain Index into Brazilian Portuguese.

Methods: This study included wheelchair users of both sexes, with shoulder pain for at least 3 months, aged 18 years or older, both athletes and non-athletes, with athletes participating in regular training at least twice a week. This study was approved by Ethics Research Committee. The methodology followed five steps recommended by international guidelines: translation, translation synthesis, back-translation, analysis by an expert committee, and pre-testing. After obtaining the author's consent, the translation process began. The WUSPI has 15 items that assess shoulder pain in wheelchair users during activities involving transfers, mobility, self-care, and general activities. Each item is scored from 0 to 10 on the Visual Analog Scale, with the total score ranging from 0 to 150. For individuals with specific limitations, such as quadriplegia or partial wheelchair use, the Performance Corrected WUSPI was created, adjusting the score by dividing the total raw score by the number of activities performed and multiplying by 15. After the steps, the materials were sent to the author for review, and the pre-test was administered. Items with less than 90% comprehension should be modified.

Results: Thirty individuals participated in the study, with mean age 45.2 ± 13.98 , 16 (53%) were female and 19 (63%) were athletes. All WUSPI items and demographic data achieved over 90% comprehension in the pre-test version. However, the committee accepted some suggestions from participants and the author to ensure equivalence between versions. In the WUSPI, in question 3, the word "bathtub" was replaced with "shower chair," and in question 6, "using" was changed to "pushing." In the demographic data, under participant information, the option "civil union" was added to question 1, "that you currently use" was added to question 4.B, and the option "ambidextrous" was included in question 7. In the medical history section, the alternative "I don't remember" was added to question 1.

Conclusion: The WUSPI was translated and culturally adapted to Brazilian Portuguese following all recommended procedures, making it a useful questionnaire for clinical and research purposes. Future studies are needed to analyze the psychometric properties of the questionnaire.

Implications: The translation of the WUSPI into Brazilian Portuguese expands the tools available in Brazil for assessing wheelchair users, contributing to clinical practice and scientific research on shoulder dysfunctions in this population.

Keywords: Persons with Disabilities, Pain Measurement, Upper Extremity

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: Not applicable.

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DOES KNEE EXTENSOR TORQUE DETERMINE PERFORMANCE IN THE STEP-DOWN TEST IN WOMEN WITH PFP?

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Background: Patellofemoral pain (PFP) is characterized by pain around the patella or in the anterior region, occurring mainly during

activities that increase overload on this joint. Its incidence is higher in women, with high rates of recurrent pain and decreased functionality.

Objectives: To investigate the association between knee extensor torque and performance in the step descent test in women with PFP.

Methods: The project was approved by the Ethics Committee (5.690.291). Initially, anamnesis was performed to obtain personal data. To assess function, the step-down test was performed, in which participants stood on a 20 cm high step with their feet supported and their hands on their pelvic girdle. The participant was asked to touch the ground with the heel of the unaffected leg and return to the starting position. The participant was asked to perform as many repetitions as possible in 30 seconds. To assess knee extensor joint torque, the Biodex[®] isokinetic dynamometer was used. Initially, there was a 5-minute warm-up on the treadmill and the volunteers were positioned with their hips and knees flexed at 90°. Torque was assessed at an angle of 90 to 30 degrees of flexion, at a speed of 60°/second. The protocol consisted of 3 maximum concentric contractions. For statistical analysis, Pearson's correlation test was used, with a significance level of $p < 0.05$.

Results: Performance in the step descent test is positively associated with maximum concentric knee extension torque ($r = 0.351$, $p = 0.006$) in women with PFP.

Conclusion: The decreased ability to produce knee extensor force negatively affects the functional performance of women with PFP.

Implications: Women with PFP have impaired ability to produce maximum knee extension force and this interferes with their functional performance. Understanding the factors that involve limitations in the functional performance of women with PFP can help in clinical practice, guiding treatment programs and making prognosis more accurate. Functional tests are low-cost and simple to perform, which can be used to monitor the progress of people with PFP and their response to resistance training, especially of the knee extensors.

Keywords: patellofemoral pain, maximum torque, capacity

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 68544023.0.0000.0003.

Registration: 10.17605/OSF.IO/R7MFC: DOI.

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PAIN INTENSITY IS RELATED TO PAIN SELF-EFFICACY AND VERTICAL JUMP PERFORMANCE IN WOMEN WITH PATELLOFEMORAL PAIN SYNDROME

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Background: Patellofemoral Pain Syndrome (PFP) is characterized by intermittent pain in the anterior region or around the patella, commonly observed in young women. Although biomechanical factors are widely recognized, the importance of understanding the impact of non-physical aspects, such as kinesiophobia, pain catastrophizing, and self-efficacy, on the functionality and performance of individuals with PFP has become increasingly evident. These psychosocial factors, associated with physical aspects, can affect functional performance, such as during the Vertical Jump.

Objectives: To verify the level of relationship between psychosocial aspects and performance in the Vertical Jump functional test in female individuals with patellofemoral pain syndrome.

Methods: The study included 50 women with PFP, aged between 18 and 30 years. All participants completed standardized questionnaires, including the Visual Analog Scale (VAS), Positive and Negative Affect Schedule (PANAS), Pain Self-Efficacy Questionnaire (PSEQ-10). Functional Performance was assessed using the Vertical Jump Test. After analyzing the normality of the data (Shapiro-Wilk test), the level of correlation was assessed using the Spearman Correlation test (rs value), with rs values below 0.1 considered weak correlation, values between 0.1 and 0.3 as moderate correlation and rs values above 0.5 as strong correlation. A significance level of 5% was considered.

Results: Only pain intensity showed a moderate negative correlation in relation to pain self-efficacy (PSEQ-10) ($rs = -0.33$; $p < 0.05$) and in relation to performance in the Vertical Jump ($rs = -0.31$; $p < 0.05$), indicating that higher levels of pain are associated with lower pain self-efficacy and worse functional performance. The other emotional variables did not demonstrate a significant relationship with pain intensity or functional performance.

Conclusion: Pain intensity has an inverse relationship with pain self-efficacy and performance in the Vertical Jump test. On the other hand, vertical jump performance did not show a relationship with emotional aspects.

Implications: This study demonstrates that pain level appears to influence the patient's way of managing pain, as well as functional performance. On the other hand, emotional aspects do not have an important relationship with these factors in patients with PFP.

Keywords: Proms, patellofemoral pain syndrome, functionality

Conflict of interest: The authors declare no conflict of interest.

Funding: Not applicable.

Ethics committee approval: FACISA/UFRRN 6.204.652.

Registration: Not applicable.

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ASSOCIATION BETWEEN KINESIOPHOBIA AND KINEMATIC ALTERATIONS DURING FUNCTIONAL SIT-TO-STAND MOVEMENT IN WOMEN WITH KNEE OSTEOARTHRITIS

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Background: Knee osteoarthritis (KOA) is a chronic and degenerative disease, reported as one of the leading causes of disability worldwide. Its incidence is higher in women, especially after menopause. Persistent pain is one of the main symptoms contributing to greater difficulty in performing daily tasks, such as sitting and standing from a chair. Kinesiophobia, defined as an intense fear of experiencing pain during movement, is a factor that may predict functional capacity and influence the movement pattern adopted by this population. Understanding the relationship between kinesiophobia and the kinematics of the sit-to-stand movement may contribute to a better understanding of the factors that contribute to functional limitations in women with KOA.

Objectives: The aim of this study is to investigate the relationship between kinesiophobia and lower limb kinematics during the sit-to-stand test in women with KOA.

Methods: The research project was approved by the Ethics Committee of Unesp/Marília, and all participants signed the informed consent form. A total of thirty-five women ($67,00 \pm 8,43$), with a medical diagnosis of KOA participated in the study. Initially, an anamnesis was conducted to collect personal and anthropometric

data. To assess kinesiophobia, the Brief Fear of Movement Scale, a reduced version of the Tampa Kinesiophobia Scale, was administered. This scale consists of 6 statements which relate symptom intensity to fear of movement. Subsequently, a kinematic assessment of the lower limb was performed during the sit-to-stand test. The images were processed using Kinovea® software. For statistical analysis, Pearson correlation test was applied, considering a significance level of $p < 0.05$.

Results: Knee flexion ($p=0.005$, $r=0.776$) and knee valgus ($p=0.006$, $r=-0.303$) angles during the sit-to-stand movement are associated with the level of kinesiophobia in women with KOA.

Conclusion: Women with KOA may alter their movement patterns when performing daily tasks as an attempt to avoid pain, due to fear of movement.

Implications: Kinesiophobia is a cognitive-behavioral factor that significantly affects the functionality of women with KOA, leading to kinematic alterations as an attempt to avoid pain. Given the high prevalence of kinesiophobia among older adults with musculoskeletal conditions, understanding the relationship between kinesiophobia and lower limb kinematics during functional movements highlights the importance of biopsychosocial approach in the physiotherapeutic treatment of individuals with KOA. To make treatment more personalized for this population, it is essential to provide education on the factors related to KOA and to progressively introduce individualized functional goals for each individual.

Keywords: Arthritis, Biomechanical Phenomena, Fear of Movement

Conflict of interest: The authors declare no conflict of interest.

Funding: CNPq.

Ethics committee approval: CAAE: 80269224.2.0000.5188.

Registration: Not applicable.

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AGE AND ANXIETY WERE ASSOCIATED WITH INEFFICIENT PAIN MODULATION IN PATIENTS WITH MUSCULOSKELETAL PAIN

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Background: Conditioned pain modulation is a crucial physiological mechanism for regulating pain perception. Age, body mass index, and psychosocial status (i.e., symptoms of anxiety, social isolation, perceived stress, catastrophizing, kinesiophobia, and symptoms of depression) may influence the efficiency of this mechanism. However, these elements are commonly investigated separately.

Objectives: The current study evaluated the relationship between demographic features and psychosocial status and the efficiency of conditioned pain modulation in participants with and without musculoskeletal pain. We also investigated the same relationship stratifying by health condition (participants with musculoskeletal pain and asymptomatic individuals).

Methods: A cross-sectional study was conducted with 100 patients with musculoskeletal pain and 100 asymptomatic individuals. Participants answered questionnaires about sociodemographic characteristics and psychosocial status (Brief Screening Questions and Brief Psychological Screening Questions). The cold pressor test was the

psychophysical method used to assess conditioned pain modulation. The difference between pre-and post-test pressure pain threshold values calculated conditioned pain modulation efficiency. Negative values indicated conditioned pain modulation inefficiency, while null or positive values were considered a typical conditioned pain modulation response. A logistic regression model was fitted to examine the relationship between independent variables (demographic features and psychosocial status) and the conditioned pain modulation efficiency.

Results: The mean age of the sample was 33.17 (± 16.78) years, and the mean body mass index was 25.75 (± 5.46) kg/m². The symptomatic group had significantly higher age [symptomatic = 40.53 $\pm$ 19.51, asymptomatic = 25.74 $\pm$ 8.58; $p < 0.001$] and body mass index [symptomatic = 26.56 $\pm$ 5.81, asymptomatic = 24.93 $\pm$ 4.98; $p = 0.035$] than the asymptomatic group. Conditioned pain modulation was inefficient in 43 (21.50%) of the sample. Age (OR = 1.03; 95% CI: 1.01–1.05) was the only variable associated with inefficient pain modulation, considering the total group. Symptoms of anxiety (OR = 3.99; 95% CI: 1.05–15.1) and age (OR = 1.03; 95% CI: 1.00–1.06) were associated with inefficient pain modulation among the symptomatic group.

Conclusion: Increasing age and greater levels of anxiety higher the likelihood of presenting inefficient pain modulation in participants with musculoskeletal pain. The findings suggest that symptoms of anxiety are the strongest psychosocial predictor of pain response.

Implications: Psychosocial status should be incorporated into pain management in clinical practice, allowing for more individualised approaches. In addition, addressing symptoms of anxiety may be crucial for contributing to regulating pain perception.

Keywords: Diffuse Noxious Inhibitory Control, Musculoskeletal Pain, Observational Study

Conflict of interest: The authors declare no conflict of interest.

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Registration: Not applicable.

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IMPACT OF AURICULOTHERAPY WITH LASER BIOPHOTOMODULATION ON THE GENERAL HEALTH OF PATIENTS WITH TEMPOROMANDIBULAR DYSFUNCTION

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Background: The auriculotherapy with laser biophotomodulation is a technique used to promote the body's balance and treat several conditions. Individuals with Temporomandibular Disorder (TMD) often have compromised general health. The impact of this therapy on the health of these patients is not yet fully understood.

Objectives: Evaluating the effects of auriculotherapy with LASER biophotomodulation on the general health of individuals with TMD.

Methods: A randomized crossover clinical trial was conducted with 25 participants, divided into a Placebo Group (PG, $n = 14$) and an Experimental Group (EG, $n = 11$). The groups were assessed using the Patient Health Questionnaire (PHQ) before and after the intervention. The EG received treatment with LASER (100 mW, 602 nm, 5

J/cm²), twice a week for four weeks, while the PG received treatment with the device turned off. After 15 days, the groups were crossed over. Independent t-tests and paired t-tests were performed for statistical analysis.

Results: The PHQ of the EG significantly decreased after the intervention [$t(21) = 2.79$, $p = 0.01$], while in the PG it remained unchanged [$t(24) = 1.24$, $p = 0.20$]. The comparison between groups after the intervention showed no significant difference [$t(47) = 2.00$, $p = 0.05$].

Conclusion: Auriculotherapy with laser biophotomodulation showed positive effects on the general health of participants in the EG, but it was not significantly superior to the placebo treatment. Implications: These results suggest that the technique may have benefits for individuals with TMD, but further studies are needed to validate its clinical efficacy.

Keywords: Auriculotherapy, Temporomandibular Disorder, Patient Health, Rehabilitation

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 78798524.4.0000.5152.

Registration: Not applicable.

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CAN IMPROVEMENT IN POSTURAL CONTROL BE OBSERVED AFTER FOUR MONTHS OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION? PILOT STUDY

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Background: Anterior cruciate ligament (ACL) rupture accounts for 50% of all knee ligament injuries and is related to sports practice in young and active patients. ACL reconstruction (ACLR) contributes to improving knee function, reducing joint instability, and assisting the patient in returning to their activities. However, even after reconstruction surgery and well-structured rehabilitation programs, residual rotational instability may remain in up to 30% of patients, which highlights the importance of assessing stability, balance, and postural control. However, although there are studies showing the impact on joint stability, there is still no knowledge about postural control in different periods of the postoperative period.

Objectives: To establish the differences in bipedal and unipedal postural control before and after 15, 30, 60 and 120 days after ACL reconstruction surgery.

Methods: This is a pilot study evaluating 13 participants with ACL injury and surgical reconstruction who underwent analysis of bipedal and unipedal postural control before and after 15, 30, 60 and 120 days using a force platform. The variables analyzed were the center of pressure area (COP), anteroposterior amplitude (AAP), mediolateral amplitude (AML), anteroposterior velocity (VAP) and mediolateral velocity (VML). Three repetitions in bipedal support and three in unipedal support on the lower limb subjected to ACLR were evaluated. The mean of the attempts was considered as the result. The results were established by Repeated Measures Analysis of Variance. The assumptions were verified using Mauchly's sphericity test and when they were not assumed, an analysis was performed using the Greenhouse-Geisser correction. The F test, if a significant difference was identified, the Bonferroni multiple

correction test was used. Significance was set at 5%. Analyses were performed using IBM-SPSS 29.

Results: The participants were 10 men and 03 women, aged 25.09 (6.44) years, weighed 79.27 (16.67) kilos and measured 170.45 (8.64) centimeters in height. Postural control in the bipedal position showed no differences between the moments evaluated for COP ($P = 0.107$), AAP ($P = 0.217$), AML ($P = 0.269$), VAP ($P = 0.432$) and VML ($P = 0.477$). When the participants were in unipedal support, COP showed significant improvement ($P = 0.025$) with a difference between the preoperative moments (7.76 (2.17)) and after 120 days of surgery (5.93 (1.30)). The variables AAP ($P = 0.085$), AML ($P = 0.089$), VAP ($P = 0.669$) and VML ($P = 0.248$) did not show any changes.

Conclusion: ACLR improves postural control in single-leg stance by reducing the area of the center of pressure 120 days after surgery. These results establish the improvement in lower limb stability after ACLR.

Implications: Residual rotational instability may remain in up to 30% of patients. However, it is noted that ACLR has a beneficial impact on joint stability in different periods of the postoperative period, especially after 120 days of surgery.

Keywords: Anterior Cruciate Ligament Injury, Postural Control, Postural Balance, Physiotherapy

Conflict of interest: The authors declare no conflict of interest.

Funding: CNPq.

Ethics committee approval: No. 1.503.496.

Registration: Not applicable.

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COMPARISON OF THE SCIATIC AND MEDIAN NERVES NEURODYNAMIC IN ASYMPTOMATIC OLDER ADULTS AND YOUNGER ADULTS: OBSERVATIONAL CASE-CONTROL STUDY

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Background: Healthy peripheral nerves have the ability to adapt to increased neurodynamic tension generated by body movements. However, this adaptive capacity is reduced in pathological conditions. Although peripheral neuropathies are common in older adults, there is an absence of knowledge about the behavior of peripheral nerves in asymptomatic older adults.

Objectives: To compare the behavior of the sciatic and median nerves to neurodynamic tension in older adults and asymptomatic adults.

Methods: Sixty-eight asymptomatic participants (34 older adults and 34 sex-matched adults) were evaluated by ultrasound imaging of the sciatic and median nerves, in two positions with different degrees of neurodynamic tension for each nerve. For the median nerve, the first position kept the participant's right upper limb at 90 degrees of shoulder abduction and external rotation, elbow flexion at 90 degrees, forearm supination with the palm facing the participant, and the wrist and metacarpophalangeal joint in a neutral position. In position 2, the second examiner passively extended the elbow, wrist, and metacarpophalangeal joint until the perception of resistance limits the range of motion. For the sciatic nerve, the hip flexion was maintained at 60° in both positions. In Position 1, the knee was flexed at 90 degrees, and the tibiofibular joint remained neutral. In position 2, the knee was passively extended, and the

tibiofibular joint dorsiflexed. The cross-sectional area and the nerve-skin distance of each nerve were measured in each position in both groups. The measurements were compared by analysis of variance for repeated measures.

Results: The sample was predominantly composed of females [$n = 25$, (73.52%)], with a mean age of 30.47 years (6.84) for adults and 70.47 years (5.22) for older adults. The nerve-to-skin distance increased significantly between positions 1 and 2 for the median nerve ($F = 54.04$; $p < 0.001$) and between positions 1 and 2 for the sciatic nerve ($F = 107.54$; $p < 0.001$), regardless of age group. Similarly, the cross-sectional area of the sciatic nerve was greater in position 1 compared to position 2 for the sciatic nerve ($F = 17.27$; $p < 0.001$). No significant interactions were observed between age group and position for any of the variables, indicating that both adults and older adults responded similarly to the increase in neural tension. Moreover, the sciatic nerve was significantly more superficial in older adults than younger adults ($t = -3.09$; $p = 0.018$) in position 2.

Conclusion: The sciatic and median nerves responded similarly to increased tension in older adults and adults for the variables: cross-sectional area of the sciatic and median nerves and the nerve-skin distance of the median nerve. However, for the nerve-to-skin distance of the sciatic nerve, it was observed that the nerve was more superficial in older adults.

Implications: The neurodynamic response to tension was similar between asymptomatic older and younger adults. Although the sciatic nerve was more superficial in older adults, it is reasonably explained by the body mass index difference and the age-related trend of muscle mass decline.

Keywords: Peripheral Nerves, Ultrasonography, Age Groups

Conflict of interest: Os autores declaram não ter conflito de interesse.

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Ethics committee approval: CAAE: 30624320.3.0000.5268.

Registration: Not applicable.

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RESPONSE ANALYSES IN CHRONIC LOW BACK PAIN DO THEY MODIFY CLINICAL TRIAL OUTCOMES?

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Background: Most clinical trials in the field of low back pain use mean differences and 95% confidence intervals to estimate treatment effects. However, clinicians often criticize this statistical approach, arguing that it may not provide a "real estimate" at an individual level. An alternative strategy is to categorize patients as "recovered" or "non-recovered" to better identify those who may benefit more from specific treatments. This type of analysis is known as responder analysis.

Objectives: This study aims to perform a secondary analysis (responder analysis) of clinical trials involving patients with low back pain, examining each study's results individually and investigating whether a responder analysis would alter the conclusions of these trials.

Methods: We conducted a secondary analysis of fourteen randomized controlled trials performed by our research group on patients with chronic low back pain. Pain, disability, and global perceived effect outcomes were analyzed. We generated cutoff points to

classify patients as "recovered" or "not recovered" for the responder analysis. We then compared the results of the responder analysis to the original findings of these trials.

Results: We analyzed data from 2,187 patients with chronic low back pain. In total, only 23 out of 384 (6%) analyses altered the primary findings, suggesting that although the secondary analysis modified some individual outcomes, most results remained consistent with the primary analysis.

Conclusion: Reanalyzing the original clinical trial results using responder analysis did not lead to significant changes in the previous conclusions of any of these trials. The hypothesis that a response-based analysis could identify a higher proportion of recovered patients in the intervention groups was not confirmed.

Implications: Despite being widely used, responder analysis appears to yield similar conclusions to traditional statistical approaches in low back pain trials.

Keywords: Responder analysis, Low back pain, Clinical trial

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES - Finance Code 001.

Ethics committee approval: CAAE: 68578023.3.0000.5142.

Registration: Not applicable.

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RELATIONSHIP BETWEEN ISOKINETIC MEASURES, PSYCHOLOGICAL READINESS AND SUBJECTIVE FUNCTION AFTER 6 MONTHS OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: PILOT STUDY

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Background: Isokinetic measurements are considered important variables for return to sport, however, isokinetic testing is not easily accessible to most athletes. In this context, physical therapists use self-reported scales and questionnaires to better understand knee function and readiness to return to sports activities. However, little evidence addresses how self-reported measures of subjective function and psychological readiness may be associated with recovery of function after Anterior Cruciate Ligament Reconstruction (ACLR).

Objectives: To analyze the correlation between isokinetic variables, psychological readiness measured by the Return to Sport Scale (ACL-RSI) and subjective function by the International Knee Documentation Committee (IKDC) after 6 months of ACLR.

Methods: This is a pilot study (I), with 7 participants undergoing ACLR (27.5 ± 6.9), 6 men and 1 woman, who participated in the standardized evaluation and treatment protocol over 6 months. At the end of 6 months of ACLR, they underwent isokinetic evaluation and responded to ACL-RSI and IKDC. The outcomes evaluated were isokinetic strength, Limb Symmetry Index (LSI) and Muscle Impairment Index (MDI), ACL-RSI and IKDC. The analyses performed were Pearson's Correlation Coefficient in SPSS29 ($p < 0,05$). The correlations in relation to ACL-RSI and IKDC, respectively, were: For extensor strength $r = -0.200$ ($p = 0.667$) and $r = -0.860$ ($p = 0.855$) and flexor $r = -0.254$ ($p = 0.582$) and $r = -0.226$ ($p = 0.627$), extensor LSI $r = 0.422$ ($p = 0.346$) and $r = 0.294$ ($p = 0.523$) and flexor $r = 0.297$ ($p = 0.518$) and $r = 0.173$ ($p = 0.711$) and extensor IDM $r = 0.412$ ($p = 0.358$) and $r = 0.145$ ($p = 0.757$) and flexor $r = -0.740$ ($p = 0.057$)

$r=-0.580$ ($p=0.902$). There were no significant results. Conclusion: Isokinetic measures 6 months after ACLR were not associated with psychological readiness as measured by the ACL-RSI Return to Sport Scale (ACL-RSI) and subjective function as measured by the International Knee Documentation Committee (IKDC). This may be related to the sample size, subjectivity of the ACL-RSI and IKDC scores. Implications: The results provide information that self-reported outcome scores can be used as an additional screening tool in conjunction with isokinetic variables to help promote better recovery and resumption of activities.

Conclusion: Isokinetic measures 6 months after ACLR were not associated with psychological readiness as measured by the ACL-RSI Return to Sport Scale (ACL-RSI) and subjective function as measured by the International Knee Documentation Committee (IKDC). This may be related to the sample size, subjectivity of the ACL-RSI and IKDC scores.

Implications: The results provide information that self-reported outcome scores can be used as an additional screening tool in conjunction with isokinetic variables to help promote better recovery and resumption of activities.

Keywords: Anterior Cruciate Ligament Reconstruction, Knee, Questionnaire

Conflict of interest: The authors declare no conflict of interest.

Funding: CNPq.

Ethics committee approval: No. 6.955.081.

Registration: Not applicable.

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EFFECTS OF DIFFERENT SERIES PROGRESSIONS ON FUNCTIONAL DISABILITY IN PEOPLE WITH NON-SPECIFIC CHRONIC LOW BACK PAIN

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Background: Non-specific chronic low back pain (NSCLBP) is a significant public health problem, with increasing prevalence and incidence over the years. Physical exercise is recommended as the first-line treatment, with traditional resistance training widely used for strength and muscle hypertrophy development. The total training volume can be classified as low, medium, or high, directly influencing neuromuscular adaptations. Although evidence suggests that a higher number of sets results in greater adaptations, there are still gaps regarding the minimum necessary dose to optimize strength and hypertrophy gains, especially in individuals with musculoskeletal disorders such as NSCLBP. Furthermore, the ideal prescription of load, intensity, and recovery for this population remains a challenge.

Objectives: This study aims to analyze the influence of series volume progression (2, 4, and 6 sets) every two weeks on functional capacity, muscle power, and body composition in people with NSCLBP.

Methods: This is a randomized clinical trial lasting 12 weeks. The first two weeks will be dedicated to initial assessments and familiarization with the exercises, followed by eight weeks of intervention and, finally, two weeks for final evaluations. Functional capacity will be measured using the Roland-Morris Questionnaire, while muscle power will be assessed through the countermovement jump

(CMJ). Lower and upper limb strength will be measured using isokinetic dynamometry, trunk strength through functional tests, and body composition through densitometry (DEXA). The training protocol will include exercises such as stiff-leg deadlift, conventional deadlift, and half-squat, with a progressive increase in the number of sets throughout the intervention. The sample will include individuals of both sexes, aged between 18 and 40 years, with an NSCLBP diagnosis for at least 12 weeks. A total of 33 individuals (11 per group) are expected to participate in the study. The study will be conducted following ethical guidelines and submitted to the Research Ethics Committee.

Results: It is anticipated that all participants will show a reduction in disability associated with NSCLBP, with greater benefits in the groups performing a lower volume of sets.

Conclusion: It is hypothesized that the low- and medium-volume groups will perform better in functional capacity and physical tests compared to the high-volume group, considering guidelines that suggest excessive volumes may not be ideal for this population.

Implications: The study's findings are expected to contribute to the development of safe and effective training progression strategies for individuals with NSCLBP, providing scientific support for designing specific programs for this population.

Keywords: Low Back Pain, Disability, Strength Volume, Training Volume, Exercise

Conflict of interest: The authors declare no conflict of interest.

Funding: CAPES PROEXT PG UFVJM: 88881.926996/2023-01.

Ethics committee approval: CAAE: 77326924.0.0000.5235.

Registration: Not applicable.

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ACUTE EFFECTS OF 2MM INFRACAPITAL INSOLES ON BODY CENTER OF PRESSURE, VERTICAL JUMP AND GLUTEUS MEDIUS STRENGTH – RANDOMIZED CLINICAL TRIAL

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Background: Dynamic knee valgus is a common biomechanical alteration, particularly in women, and is often associated with hip muscle weakness, especially in the gluteus medius (GM), which plays a key role in controlling knee alignment. In this context, insoles have been proposed as an intervention to modify lower limb biomechanics. However, there is limited evidence on their effect on dynamic valgus correction, gluteus medius strength, and center of pressure (CoP) distribution. This study investigates whether a 2 mm infracapital insole can improve knee alignment, muscle strength, and CoP in adult women with dynamic knee valgus.

Objectives: The primary objective of this study was to evaluate whether a 2 mm infracapital insole corrects dynamic knee valgus in adult women. Secondary objectives were to evaluate whether the use of this insole influences GM strength and alters CoP distribution, contributing to improved neuromuscular control and postural stability.

Methods: This randomized, triple-blind clinical trial included adult female participants with dynamic knee valgus. Subjects were randomly assigned to an intervention group (using a 2 mm infracapital insole) or a control group (using a flat insole). Motion analysis was conducted to assess changes in knee valgus angles, and GM force analysis was performed using an isometric dynamometer. Additionally, a force platform was used to assess CoP displacement, postural

stability, and vertical jump time. The study adhered to strict methodological protocols, ensuring blinding of participants, researchers, and statistical analysts.

Results: Participants in the intervention group exhibited a significant reduction in knee valgus angles compared to the control group. Furthermore, analysis of force and vertical jump time indicated a possible increase in GM activation in the intervention group, suggesting an improvement in neuromuscular control. CoP analysis revealed more stable weight distribution and reduced postural sway, indicating greater postural control with the use of the insole. These results support the potential biomechanical benefits of using infracapital insoles in individuals with dynamic knee valgus.

Conclusion: This study provides evidence that a 2 mm infracapital insole can contribute to the correction of dynamic knee valgus, increase GM strength, and improve postural stability by modifying the CoP distribution. These findings suggest that insoles may be a valuable tool for addressing lower limb biomechanics in individuals at risk for knee malalignment. Future studies should explore long-term effects and clinical applications in rehabilitation settings.

Implications: The results of this study have significant implications for physical therapy practice, rehabilitation, and injury prevention. The use of a simple, noninvasive intervention such as an infracapital insole may help optimize lower limb biomechanics, reducing injury risk, improving functional performance, and enhancing postural control. These findings may inform clinical guidelines for the treatment of dynamic knee valgus and provide a basis for future research in sports science and orthotic interventions.

Keywords: Dynamic knee valgus, Gluteus medius, strength, insoles

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: Not applicable.

Registration: Not applicable.

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RELIABILITY, STANDARD ERROR OF MEASUREMENT, AND MINIMAL DETECTABLE CHANGE OF PAIN PROCESSING ASSESSMENTS IN THE SHOULDER REGION

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Background: Assessment of pain processing is essential to understand underlying mechanisms, personalize treatments, and improve rehabilitation. Pain processing mechanisms, including pressure pain thresholds (PPT), temporal summation, and conditioned pain modulation (CPM), play a crucial role in understanding pain sensitivity and modulation in both clinical and research settings. Reliable assessment of these measures is essential for accurately evaluating pain responses and guiding treatment strategies. However, the consistency of these measurements in asymptomatic individuals remains a critical factor in ensuring their validity for broader applications.

Objectives: To assess the reliability, reliability, standard error of measurement (SEM), and minimal detectable change (MDC) of Pressure pain thresholds (PPT), temporal summation, and Conditioned pain modulation (CPM) in asymptomatic individuals.

Methods: This is a cross-sectional study. This study was approved by Ethics Research Committee. Two assessment sessions were conducted for assessment of test-retest reliability with an average interval of 3.80 ± 1.69 days. PPTs were assessed with a digital algometer (AlgoMed®, Hörby, Sweden) at four anatomical points: deltoid, acromion, trapezius, and anterior tibialis. The order of evaluation was randomized. Each point was measured three times, and the average was calculated. Temporal summation testing was also conducted on the deltoid and anterior tibialis, where the previously determined PPT pressure was applied 10 consecutive times. Pain intensity was recorded using the 11-point Numeric Pain Rating Scale before and after the last stimuli. CPM was evaluated using the cold pressor test, with PPT serving as the test stimulus. The participant's hand immersed in cold water (8°C) for two minutes and the PPT was measured on the deltoid during and after immersion. The reliability was assessed with Intraclass Correlation Coefficient (ICC 3.3) and measurement error with SEM and MDC95. ICC(3,3) with values interpreted as follows: greater than 0.90 as excellent, 0.75 to 0.90 as good, 0.50 to 0.75 as moderate, less than 0.50 as poor reliability.

Results: Ten asymptomatic individuals (7 women, mean age of 25 ± 4.12 years) participated in the study. The PPT of trapezius (ICC = 0.88; SEM = 0.13; MDC95 = 0.86), and anterior tibialis (0.78; SEM = 0.44; MDC95 = 1.23) were good and of acromion (ICC = 0.92; SEM = 0.15; MDC95 = 0.41) and deltoid (ICC = 0.93; SEM = 0.13; MDC95 = 0.37) were excellent. The temporal summation showed good reliability, with ICC values of 0.78 for deltoid (SEM = 0.74, MDC = 2.05) and 0.73 for tibialis anterior (SEM = 1.33, MDC = 3.69). The CPM showed good to excellent reliability, with ICC ranging from 0.84 to 0.95 (SEM: 0.41, 0.56; MDC95: 1.15, 1.57).

Conclusion: The procedures for the assessment of central pain processing showed good to excellent reliability. These results indicate those procedures are suitable tools for clinical pain assessment.

Implications: Clinicians should use the PPTs, temporal summation, and CPM for assessment of central pain processing in the shoulder region. In addition, clinicians should interpret the results of those procedures considering the SEM and MDC.

Keywords: measurement properties, clinimetric properties, Rotator cuff, subacromial

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 6.955.081.

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PAIN AND ANXIETY CORRELATION IN PATIENTS WITH TEMPOROMANDIBULAR DISORDER AFTER PHOTOBIO-MODULATION LASER AURICULOTHERAPY

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Background: TMD is often associated with both physical pain and psychological symptoms, particularly anxiety. Pain and anxiety can influence each other, creating a cycle that exacerbates symptoms. Bio-photobiomodulation (PBM) laser auriculotherapy has been proposed as a treatment to address both pain and anxiety in TMD

patients. However, the correlation between pain and anxiety after PBM treatment remains poorly understood. This study aimed to investigate whether PBM laser auriculotherapy can alter the relationship between pain and anxiety in TMD patients.

Objectives: The study aimed to evaluate the correlation between pain and anxiety symptoms in TMD patients after PBM laser auriculotherapy.

Methods: This randomized, controlled crossover trial involved 22 TMD patients assigned to either the Experimental Group (EG) or Placebo Group (PG). PBM treatment was administered twice a week for 4 weeks. The EG received active PBM treatment, while the PG received sham treatment. Pain was assessed using the Chronic Pain Disability Scale (CPDS), and anxiety was evaluated using the Generalized Anxiety Disorder Scale (GAD-7). Data were analyzed using Spearman's correlation test.

Results: In the PG, there was a significant positive correlation between pain and anxiety symptoms ($r = 0.67$, $p = 0.01$). In contrast, no significant correlation was observed in the EG ($r = 0.34$, $p = 0.12$).

Conclusion: The results suggest that PBM laser auriculotherapy may reduce the correlation between pain and anxiety in TMD patients. The significant correlation in the placebo group supports this possibility, but further research is needed to confirm these findings.

Implications: These findings indicate that PBM laser auriculotherapy might help break the cycle of pain and anxiety in TMD patients. Additional studies are necessary to confirm the efficacy of PBM in managing both pain and anxiety.

Keywords: Anxiety, Rehabilitation, Laser Therapy

Conflict of interest: The authors declare no conflict of interest.

Funding: FAPEMIG.

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Registration: Not applicable.

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EFFECTS OF BLOOD FLOW RESTRICTION ON PAIN IN PATIENTS WITH KNEE OSTEOARTHRITIS DURING ONE-MONTH INTERVENTION: A RANDOMIZED CLINICAL TRIAL

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Background: Physical exercises are strongly recommended for the treatment of knee osteoarthritis (KOA). However, when subjected to loads that overload the joint, these individuals may experience worsened symptoms and low adherence to treatment. Evidence shows that exercises combined with Blood Flow Restriction (BFR) allow for strength and muscle endurance gains using lighter loads. Therefore, it is necessary to investigate whether this method can

help patients reduce pain and joint discomfort as effectively as exercises with heavier loads.

Objectives: To assess the efficacy of 40% occlusion with blood flow restriction in improving pain in patients with knee osteoarthritis.

Methods: Clinical study with 16 patients (12 women, 4 men; average age $51.31 \pm (9.1)$ years), divided into three groups: 40% BFR + Rest ($n = 4$), 40% BFR + Low Load ($n = 6$), and HIRE (High Intensity Resistance Exercise) + Placebo ($n = 6$). Pain was assessed before and after one month using the Visual Analog Scale (VAS).

Results: Regarding the initial pain scale, the averages were: 3.5 ± 3.3 for the 40% BFR + Rest group, 6 ± 3.16 for the 40% BFR + Low Load group, and 3.83 ± 3.25 for the HIRE + Placebo group. Regarding the final pain scale, the averages were: 3 ± 3.4 for the 40% BFR + Rest group, 4 ± 3.87 for the 40% BFR + Low Load group, and 0.6 ± 1.21 for the HIRE + Placebo group. Thus, when evaluating pain levels before and after one month of treatment, the 40% BFR + Rest group showed a pain reduction of approximately 14% on average, while the 40% BFR + Low Load group demonstrated a reduction of around 33%, and the HIRE + Placebo group reduced the average by about 84%, indicating a greater improvement in pain compared to the 40% BFR + Rest and 40% BFR + Low Load groups.

Conclusion: Thus, it is concluded that all groups showed improvement in the investigated outcome, but the group using high loads (HIRE + Placebo) still appears to be more effective in reducing knee pain in patients with osteoarthritis.

Implications: It is expected that the results of this clinical study will clarify the applicability and implementation of 40% BFR in the rehabilitation of OA.

Keywords: Pain, Knee Osteoarthritis, Blood Flow Restriction Therapy

Conflict of interest: The authors declare no conflict of interest.

Funding: Scientific Initiation Program of the Brazilian Hospital Services Company Network (Ebserh) with the support of the National Council for Scientific and Technological Development (CNPq).

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Registration: Not applicable.

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ASSESSMENT OF EMOTIONAL ASPECTS, PAIN SELF-EFFICACY AND FUNCTIONAL PERFORMANCE IN VERTICAL JUMP IN WOMEN WITH PATELLOFEMORAL PAIN SYNDROME

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Background: Patellofemoral pain syndrome (PFPS) primarily affects females, characterized by intermittent episodes exacerbated during functional activities, particularly eccentric actions like jumping. Its etiology remains incompletely understood, but biomechanical alterations in the lower limbs, neuromuscular control deficits, and psychosocial influences such as kinesiophobia and hyperalgesia may contribute to symptom onset or intensification. Understanding factors beyond biomechanical aspects, including psychosocial characteristics of individuals with PFPS, could optimize physiotherapy assessment and intervention strategies.

Objectives: To compare aspects related to pain perception, self-efficacy, emotional states, and functional performance in subjects with and without patellofemoral pain syndrome.

Methods: This study is a cross-sectional study in which one hundred women aged 18 to 30 years, with and without anterior knee pain, were evaluated. Participants were divided into two groups: the

patellofemoral pain syndrome group (n = 50) and the asymptomatic control group (n = 50). All participants completed standardized questionnaires, including the Visual Analog Scale (VAS), Positive and Negative Affect Schedule (PANAS), and Pain Self-Efficacy Questionnaire (PSEQ-10). Functional clinical testing was performed using the Vertical Jump test. Mann-Whitney test was used for intergroup comparisons of patient perception and functional test variables due to non-normality (Shapiro-Wilk test), with a significance level of 5%.

Results: The PFPS group exhibited higher pain intensity (VAS: 4.0 [4.17; 5.1]) compared to the Control group (p = 0.001). Positive affect was 15% lower in the PFPS group (29.0 [26.2; 29.8]) compared to the Control group (34.0 [32.3; 35.9]), while negative affect was 35% higher (23.0 [20.8; 25.2]) vs. Control group (15.0 [14.5; 17.1]; p = 0.001). Pain self-efficacy was 23% lower in the PFPS group (46.0 [42.0; 47.9]) compared to the Control group (60.0 [59.5; 60.1]; p = 0.001). Functional performance (Vertical Jump test) was 28% lower in the PFPS group (17.4 cm [16.7; 19.0]) compared to the Control group (24.24 cm [23.9; 26.8]; p = 0.001).

Conclusion: Women with PFPS demonstrate higher negative emotions and lower positive emotions, as well as reduced pain self-efficacy, compared to women without PFPS. Additionally, women with PFPS exhibited poorer performance on the vertical jump test.

Implications: This study suggests that patients with patellofemoral pain syndrome exhibit more pessimistic cognitions, lower pain self-efficacy, and impaired functional performance compared to women without PFPS. These findings underscore the importance of considering emotional and psychosocial factors in the assessment and understanding of PFPS.

Keywords: Patellofemoral pain syndrome, Proms, Functionality

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Ethics committee approval: CAAE: 84462524.8.0000.5188.

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IMPACT OF PHOTOBIMODULATION LASER AURICULOTHERAPY ON ANXIETY SYMPTOMS IN PATIENTS WITH TEMPOROMANDIBULAR DISORDER

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Background: Anxiety is common among TMD patients and often exacerbates pain and muscle tension. PBM laser auriculotherapy has been used to treat pain and may also help manage anxiety. This study aimed to investigate the impact of PBM laser auriculotherapy on anxiety symptoms in TMD patients.

Objectives: The primary objective was to assess the effect of PBM laser auriculotherapy on anxiety symptoms in TMD patients.

Methods: This randomized, controlled crossover trial included 22 TMD patients. Participants received PBM laser auriculotherapy twice a week for 4 weeks. The Generalized Anxiety Disorder Scale (GAD-7) was used to evaluate anxiety levels before and after the intervention. The experimental and placebo groups crossed over after a washout period.

Results: No significant difference in anxiety reduction was found between the EG and PG (p = 0.44).

Conclusion: The findings suggest that PBM laser auriculotherapy did not significantly reduce anxiety symptoms in TMD patients.

Implications: PBM laser auriculotherapy may not be effective for managing anxiety in TMD patients in the short term. Further research is required to assess the long-term effects and explore different treatment protocols.

Keywords: Anxiety, Rehabilitation, Laser Therapy

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: CAAE: 68578023.3.0000.5142.

Registration: Not applicable.

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PRESSURE PAIN THRESHOLD IN PATIENTS WITH CHRONIC POST-TRAUMATIC PAIN

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Background: Musculoskeletal traumas have increased over time, raising healthcare costs. Chronic and neuropathic pain impact sleep and quality of life. Assessing the pressure pain threshold (PPT) is crucial for improving treatments and recovery outcomes.

Objectives: To investigate the correlation between PPT in patients three months after upper limb musculoskeletal trauma and sleep quality and neuropathic pain characteristics while still hospitalized.

Methods: This study included 18 adult patients of both sexes with acute musculoskeletal trauma in the upper limb three months prior. Sleep quality was assessed using The Pittsburgh Sleep Quality Index (PSQI), with a global score ranging from 0 to 21, where scores above 5 indicate moderately impaired sleep quality. Neuropathic pain was evaluated using The Leeds Assessment of Neuropathic Symptoms and Signs (LANSS), with scores ranging from 0 to 24, where scores above 12 indicate neuropathic pain. Both questionnaires were administered while patients were still hospitalized. The pressure pain threshold was measured using a digital algometer on the upper trapezius and tibialis anterior muscles bilaterally three months post-injury. Spearman's correlation test was used significance level 5%, with correlations classified as weak ($\rho = 0.10-0.30$).

Results: In this cross-sectional study, 18 patients were evaluated, with a mean age of 40.78 (15.32) years, predominantly male (66.7%) and female (33.3%). The causes of injuries were work-related accidents (44.44%), traffic accidents (44.44%), and domestic incidents (11.11%), including falls from height. Fractures were present in 88.90% of cases, with 11.10% involving injuries in multiple locations, distributed as follows: shoulder/scapular girdle (33.30%), arm (22.20%), elbow (11.10%), forearm (5.60%), wrist (11.10%), and hand (16.70%). The mean PSQI score was 9.7 (5.0), indicating moderately impaired sleep quality. The mean LANSS score was 7.7 (5.3), below the cutoff of 12, suggesting no significant neuropathic pain component on average. The mean pressure pain thresholds (PPT) and standard deviations varied across sites: affected-side upper trapezius 6.1 (4.4) kg/cm², contralateral upper trapezius 6.0 (4.6) kg/cm², affected-side tibialis anterior 7.9 (5.3) kg/cm², and contralateral tibialis anterior 8.0 (4.8) kg/cm². A moderate negative correlation was found between the PPT of the affected-side upper trapezius and sleep quality ($r = -0.5$, $p = 0.04$), indicating that worse

sleep quality at hospitalization was associated with a lower PPT in the affected-side upper trapezius three months post-injury. A moderate negative correlation was also observed between the PPT of the affected-side ($r = -0.5$, $p = 0.04$) and contralateral upper trapezius ($r = -0.5$, $p = 0.02$) and LANSS scores, suggesting that higher LANSS scores at hospitalization were associated with lower PPT in both the affected and unaffected upper trapezius three months post-injury. No correlation was found with PPT measured in the tibialis anterior.

Conclusion: Higher LANSS scores and worse PSQI scores were associated with lower PPT three months post-injury. Lower PPT also correlated with higher LANSS and PSQI scores during hospitalization.

Implications: Although the study presents interesting results and is longitudinal, the sample size (n) is insufficient for more robust analyses, considering other variables and possible confounding factors.

Keywords: arm injuries, fractures, neuropathic pain

Conflict of interest: The authors declare no conflict of interest.

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BRAZILIAN VERSION OF THE ACTIVITY PATTERNS SCALE: TRANSLATION INTO BRAZILIAN PORTUGUESE AND CULTURAL ADAPTATION

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Background: Chronic pain significantly affects the physical and psychological functionality of individuals. The lack of accurate tools to measure different activity patterns highlights the need for more effective instruments to assess activity management in patients with chronic pain. The Activity Patterns Scale (APS) is a 24-item instrument that evaluates eight constructs related to physical activity. However, it has not yet been translated, adapted, or validated for Brazil. A culturally adapted version of this instrument is important for a more accurate assessment of chronic pain.

Objectives: Translate and adapt the language of the APS questionnaire into Brazilian Portuguese.

Methods: This is a cross-sectional study. For the translation and adaptation of the APS, the recommendations of Beaton et al. (2000) were followed. This study was approved by the Ethics Research Committee. The original version of the APS was translated by two Brazilian translators fluent in Spanish. The translations were then synthesized and subsequently back-translated into Spanish by two native Spanish speakers. A panel of experts reviewed the versions and compared them with the original to formulate the pretest version. The comprehensibility of the items in the pretest version was evaluated in 30 participants, both sexes, aged over 18 years, with chronic musculoskeletal pain in the lower back for at least 3 months and an intensity greater than 3 on the 11-point numerical pain scale. Each participant answered the questionnaire, reported their understanding, and suggested modifications. The instrument was considered adequate when 90% of participants understood all the questions. Statistical analyses were performed using Excel™ software (Microsoft, version 2019).

Results: In the translation and back-translation processes, no significant differences were identified between the versions, ensuring semantic and conceptual equivalence. The original, translated, and synthesized version were reviewed by the expert committee, and the pre-testing version was created. The pre-testing version was sent to the authors of the original APS who approved and did not suggest changes. Thirty patients participated in the study, with a mean age of 36.3 ± 17.35 years. The sample consisted of 19 women and 11 men, with a mean body mass index of 25.78 ± 4.58 kg/m². The majority of participants (73.33%, $n = 22$) had a higher education level. The participants demonstrated a 90% level of understanding, meeting the established criterion for adequate comprehensibility.

Conclusion: The Portuguese version of the APS was translated and adapted, being clear, with satisfactory comprehensibility, and suitable for assessing individuals with chronic pain.

Implications: The Brazilian version of the APS will be an important tool for the assessment of musculoskeletal chronic pain in Brazil. Additional studies on its measurement properties should be conducted, which will provide important information to support the use of APS in clinical practice and research.

Keywords: Assessment instrument, Chronic pain, Physical activity

Conflict of interest: The authors declare no conflict of interest.

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PARTIAL VASCULAR OCCLUSION OR RESISTED EXERCISES ON PAIN, FUNCTIONAL CAPACITY, POSTURAL CONTROL, MUSCLE ACTIVATION, AND QUADRICEPS STRENGTH IN PATELLOFEMORAL PAIN

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Background: The treatment of patellofemoral pain (PFP) is predominantly conservative, with an emphasis on exercises for quadriceps strengthening. However, one of the challenges in rehabilitation is the pain experienced during the execution of these exercises, as well as the difficulty in progressing with load. In this context, Partial Vascular Occlusion (PVO) emerges as a promising strategy, as it enables improvements in strength and hypertrophy with less overload.

Objectives: To evaluate the effect of PVO or resisted exercises for quadriceps strengthening on pain, functional capacity, postural control, activation, and quadriceps strength in women with patellofemoral pain.

Methods: A randomized clinical trial, with a blinded evaluator, approved by the ethics committee (Opinion 4.062.833) and registered at Clinical Trials. The sample consisted of 24 women, aged 18 to 45 years, diagnosed with patellofemoral pain. Participants were randomized into two groups: Group 1 (G1; $N = 12$), who performed resisted exercises with an external load of 20% of their body weight, and Group 2 (G2; $N = 12$), who performed exercises without additional load, with PVO applied to the proximal region of the thigh, at a pressure of 200 mmHg. All participants were evaluated before the intervention, immediately post-intervention, and at a four-week follow-up. The outcomes analyzed were pain (visual analogue pain scale), functional capacity (Anterior Knee Pain Scale and Lysholm

Knee Scoring Scale), postural control during stair ascent and descent (force platform), quadriceps muscle activation (electromyography), and quadriceps strength (isometric dynamometer). Both groups performed the same exercises: bilateral squats, lunges, single-leg squats, and at the fourth week, single-leg squats on an inclined platform (25°), executed at the participant's most comfortable angle. Three sets of each exercise were performed, with up to 15 repetitions per set, over 12 sessions, twice a week, for a total treatment duration of six weeks. Statistical analysis was conducted using intention-to-treat analysis, effect size calculation, and generalized estimating equations (GEE) model. A generalized estimating equation (GEE) model, using specific syntax, was employed to compare the variables of anxiety and sleep. Multiple comparisons were conducted using the Bonferroni post hoc test. All analyses were performed using IBM-SPSS software, with a significance level set at 5%.

Results: Initially, the groups did not show differences in age, body mass index, physical activity level, or pain level ($P > 0.05$). Pain, functional capacity, postural control, and muscle strength were similar between the groups at all three assessment points ($P > 0.05$), with improvements in pain and functional capacity after treatment ($P < 0.05$; $d > 1$). Muscle activation results were inconclusive, G1 showed less activation of the rectus femoris and greater activation of the vastus medialis at follow-up. No differences in pain during exercise execution were found ($P = 0.79$).

Conclusion: The results indicate that treatment protocols for PFP using PVO or resisted exercises with an external load of 20% of body weight similarly improved pain and functional capacity.

Implications: The use of PVO and resisted exercises proved to be effective therapeutic options for improving pain and functional capacity in women with patellofemoral pain.

Keywords: Patellofemoral pain, Vascular Occlusion, Exercise

Conflict of interest: The authors declare no conflict of interest.

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EFFECT OF THE MAT PILATES METHOD ASSOCIATED WITH FRENCH AURICULOTHERAPY IN POST-COVID-19 PATIENTS – A RANDOMIZED CLINICAL TRIAL

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Background: Post-COVID-19 syndrome is characterized by the persistence of symptoms for more than three months after infection, affecting multiple body systems.

Objectives: To evaluate the effects of Pilates and auriculotherapy on body image, cardiac autonomic function, energy profile, anxiety, brain electrical activity, sleep quality, and quality of life in post-COVID-19 patients.

Methods: The sample included 25 volunteers with post-COVID-19 syndrome. Functionality was assessed using the post-COVID-19 Functional Status (PCFS) Scale, body image with the Body Dysmorphic Disorder Examination (BDDE), sleep quality with the Pittsburgh Sleep Quality Index (PSQI), quality of life with the WHOQOL-BREF, and anxiety with the State-Trait Anxiety Inventory (STAI) and salivary amylase levels. Cardiac autonomic function, energy profile, and brain waves were also evaluated. The Pilates Group (PG)

performed Mat Pilates twice a week for 50 minutes over five weeks. The Pilates and Auriculotherapy Group (PAG) followed the same protocol, with the addition of weekly auriculotherapy sessions.

Results: A reduction in body dissatisfaction was observed in the Pilates group, as well as a decrease in anxiety levels and a positive impact on heart rate variability, suggesting improved autonomic balance. Quality of life improved in the group that combined both interventions. Although sleep quality and salivary amylase levels did not show statistical significance, changes in brain electrical activity and energy profile reinforce the positive effects of the applied therapies.

Conclusion: This study demonstrated that, although the Pilates Group showed more evident and significant results in several variables, the combination of Pilates with Auriculotherapy also provided benefits, albeit in a more subtle manner. These two approaches can indeed be complementary, as both aim to promote the physical and emotional balance of post-COVID-19 patients. However, the results suggest that the combined intervention did not have as strong an impact as Pilates alone, highlighting the need for further research with larger samples.

Implications: This study contributes to the understanding of the effects of Pilates and Auriculotherapy in the post-COVID-19 context but also highlights the need for future research with larger samples to further explore the potential of these combined therapies and their implications for patient rehabilitation.

Keywords: Body Image, Pilates Method, Auriculotherapy

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Ethics committee approval: CAAE: 45528821.6.0000.5154.

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CONSTRUCT VALIDITY AND RESPONSIVENESS OF THE DA PAIN CATASTROPHIZING SCALE IN INDIVIDUALS WITH ROTATOR CUFF-RELATED SHOULDER PAIN

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Background: Rotator cuff-related shoulder pain (RCRSP) is a common complaint in the general population. Pain catastrophizing plays a crucial role in the experience and management of chronic musculoskeletal pain, including rotator cuff-related shoulder pain (RCRSP). The Pain Catastrophizing Scale (PCS) is widely used to assess catastrophic thinking related to pain, but its construct validity and responsiveness in individuals with RCRSP require further investigation.

Objectives: To evaluate the construct validity and responsiveness of the PCS in individuals with RCRSP.

Methods: This was a cross-sectional study approved by a research ethics committee. This study included individuals aged 18 years or older, with shoulder pain for at least 3 months, and pain intensity of 3 or higher on an 11-point numerical rating pain scale (NPRS) during arm elevation. The construct validity was analyzed through hypothesis testing. This study hypothesizes that the rumination, magnification, and helplessness subscales and total score of PCS are moderately ($r > 0.40$) and positively associated with pain intensity,

upper limbs disability (quick version of Disabilities of the Arm, Shoulder, and Hand (QuickDASH) questionnaire), and fear of movement (Tampa Scale for Kinesiophobia (TSK)). . Validity was deemed acceptable if = 75% of the hypotheses were confirmed. Responsiveness was analyzed in individuals treated for eight weeks using effect size (ES), standardized response mean (SRM), and area under the curve (AUC-ROC). ES and SRM values were interpreted as small (< 0.50), moderate (0.50–0.80), or large (> 0.80). The Global Rating of Change (GROC), used as an external anchor, classified individuals as having "significant improvement" or "mild/no improvement" (cut-off = 4). AUC > 0.70 indicated adequate responsiveness. Statistical analyses were conducted using SPSS 23.0, with a significance level of 0.05.

Results: The validity analysis included 64 participants, while the responsiveness analysis involved 59. The mean age was 37.5 ± 12.3 years for validity and 37.7 ± 12.6 years for responsiveness. The mean symptom duration was 12.0 ± 6.27 months in both analyses, and the mean pain intensity was 6.9 ± 2.0 for validity and 6.9 ± 1.9 for responsiveness. Construct validity analysis showed that the PCS met 83% of the proposed hypotheses. The PCS exhibited a significant moderate correlation with TSK, NPRS, and QuickDASH, except for the rumination and magnification subscales, which showed a weak correlation. The rumination, helplessness subscales, and total PCS score demonstrated a large effect size and responsiveness, while the magnification subscale showed a moderate effect. All subscales and the total PCS score had an AUC above 0.7, indicating good responsiveness.

Conclusion: The PCS demonstrated adequate construct validity and responsiveness in assessing individuals with chronic RCRSP.

Implications: The PCS demonstrated adequate validity and responsiveness for assessing pain catastrophizing in individuals with chronic RCRSP. Its use can aid clinicians in identifying maladaptive pain-related thoughts and monitoring treatment progress.

Keywords: Construct validity, Responsiveness, Pain catastrophizing

Conflict of interest: The authors declare no conflict of interest.

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CAN ACTION OBSERVATION TECHNIQUE RELIEVE PAIN IN FIBROMYALGIA? DEVELOPMENT OF A RANDOMIZED CONTROLLED CLINICAL TRIAL PROTOCOL TO EVALUATE ITS EFFECTIVENESS

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Background: Fibromyalgia (FM) is a syndrome characterised by chronic diffuse primary pain associated with fatigue, sleep disturbance, cognitive and somatic complaints. Its presence has a significant impact on activities of daily living, affecting the functionality, emotional well-being and quality of life of this population. The wide variety of symptoms reflects dysfunction in multiple body systems, with central nervous system involvement being a central factor. Central sensitisation of pain is considered the most relevant pathophysiological hypothesis in literature, reinforcing the importance of rehabilitation strategies aimed at its modulation. In addition, FM also impairs motor control and the study of muscular activation patterns and the effect of rehabilitation strategies in muscular activation can also contribute to FM management. Movement representation strategies are

interventions that neurophysiologically evoke the perceptual and cognitive representation of movement through observation combined, or not, with the actual execution of the movement, which can cause an increase in cortical excitability. Therefore, they have the potential to reverse the inhibition produced by physiological processes associated with chronic pain, such as those presented by patients with FM.

Objectives: Development of a treatment protocol based on action observation, a movement representation strategy, to evaluate its effectiveness in reducing pain and the impact of fibromyalgia through tools that can measure whether there are changes in cortical excitability and muscle recruitment patterns.

Methods: This two-arm parallel randomized controlled clinical trial with a blinded evaluator will include eighty-two patients aged between 20 and 75 years who meet the ACR2016 classification criteria for FM. The subjects will be randomized into two groups: an intervention group (IG-I), that will receive a rehabilitation protocol based on exercises associated with action observation technique, and a control group (CG-I) that will receive a booklet with general guidelines on FM. The primary outcome will be pain intensity, and the secondary variables will be the impact of fibromyalgia, pain sensitivity, fatigue level, level of functionality, level of disability, sleep disturbances, and the patient's global perception of change, kinesiophobia, health-related quality of life, encephalographic (EEG) activity and electromyographic (EMG) activity of the trapezius, vastus lateralis and tibialis anterior muscles. A mediation analysis will also be performed to investigate if increased cortical excitability mediates improvement in pain.

Results: The results of this study will provide important information on the effects of movement representation strategies on cortical activation, motor recruitment, intensity and pain perception in FM patients.

Conclusion: It is expected that this study will contribute to the development of more effective therapeutic approaches for the management of fibromyalgia, improving the quality of life of this population.

Implications: This study may clarify whether movement representation techniques can be incorporated into the clinical practice of physical therapists treating patients with fibromyalgia.

Keywords: Action observation, Fibromyalgia, Motor control, Cortical excitability, Chronic pain

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USE OF HEALTH SERVICES BY PERSONS RESIDENT IN QUILOMBOLA TERRITORY

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Background: The Remnant Quilombo Communities are formed by descendants of enslaved black people and maintain a system of social organization related to their ancestry. This population group has presented situations of vulnerability since the historical process of enslavement, resulting in social and health inequalities. This reality highlights the need for studies that verify the use of health

services by people living in the quilombola territory and thus make it possible to meet the health care priorities of this population.

Objectives: To verify the sociodemographic characteristics and the profile of use of health services by people living in the quilombola territory.

Methods: Cross-sectional and quantitative field study. For data collection, a semi-structured questionnaire was developed and applied to 85 randomly selected households, where one resident responded for all residents of the household. The eligibility criteria were households registered with the ESF and age over 18 years.

Results: The sample consisted of 154 quilombola people. The majority were female, married, aged between 18 and 59 years, and had < 8 years of education. It was observed that 68.8% of the participants did not use the health service. Among those who used the health services, the main reason was to continue treatment, for medical consultation and to seek care at the Basic Health Unit.

Conclusion: The low use of health services may be associated with factors such as turnover and shortage of health professionals in rural areas, in addition to individual behavior, which can be evaluated in other studies in the quilombola territory.

Implications: The unique needs of this population must be understood in order to expand the supply and use of health services. The need for physiotherapists to work in the promotion, prevention and treatment of the health-disease process in the quilombola territory is highlighted.

Keywords: Health, Ethnicity

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TEACHING OF ENTREPRENEURSHIP IN UNDERGRADUATE PHYSIOTHERAPY COURSES AT PUBLIC INSTITUTIONS IN BRAZIL

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Background: Management, entrepreneurship, and innovation in healthcare are part of the dimensions and domains related to the areas of practice and knowledge of physiotherapists, as expressed in the National Curriculum Guidelines. From this perspective, considering a scenario with various public institutions offering physiotherapy courses in different regions of Brazil, the following question arises: what are the characteristics of the disciplines and content related to entrepreneurship offered in undergraduate physiotherapy programs at public higher education institutions in Brazil?

Objectives: To describe and analyze the teaching of content related to entrepreneurship in undergraduate physiotherapy programs at public higher education institutions in Brazil.

Methods: A documentary-based study with a descriptive and qualitative approach, utilizing information from the National Registry of

Courses and Higher Education Institutions (Registration e-MEC). The websites of higher education institutions and their respective courses were examined to review Curriculum and identify subjects and syllabi containing content related to entrepreneurship. Descriptive statistical analysis was conducted, and textual data analysis employed basic lexicography (word cloud), the Descending Hierarchical Classification (DHC) method, and similarity analysis, using the IRAMUTEQ software (Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires).

Results: Of the 59 public higher education institutions offering undergraduate physiotherapy programs in Brazil, ten (10) were excluded due to the absence of courses related to entrepreneurship and administration or the unavailability of information on their institutional websites. The highest percentage of courses is offered in the eighth semester (30.9%), followed by the fifth semester (14.3%); 85.71% (n = 42) are mandatory, with an average workload of 37.63±11.08 hours. The most frequently cited terms in the word cloud construction were physiotherapy (67), health (58), administration (55), service (54), management (37), entrepreneurship (31), and planning (25). Five classes emerged, three of which directly relate to topics such as administration and organizational structure, while the other two classes address ethical and legal aspects of service provision in physiotherapy, the public and private sectors, and entrepreneurship. The maximum tree visualization revealed three main nodes: physiotherapy, administration, and health.

Conclusion: The teaching of entrepreneurship-related content in undergraduate physiotherapy programs is not mandatory in all analyzed public higher education institutions, with greater emphasis on topics such as administration, service provision, and entrepreneurship.

Implications: The results of this study allow for the identification of how physiotherapy programs in public institutions offer content related to entrepreneurship and can guide discussions on proposing a minimum curriculum structure aligned with national curricular guidelines, as well as market needs and trends.

Keywords: Physical Therapy, Entrepreneurship, Organization and Administration

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SEXUAL RISK BEHAVIORS MEDIATE THE RELATIONSHIP BETWEEN PORNOGRAPHY CRAVING AND OVERALL SEXUAL SATISFACTION AMONG UNIVERSITY MEN

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Background: Pornography use has been associated with negative effects on male sexual function, resulting in decreased sexual function. In addition, there is evidence that frequent pornography use may influence sexual risk behaviors, including having multiple partners and not using condoms. Given that the college phase is characterized by intense discovery and experimentation, understanding the relationship between pornography craving, sexual risk

behaviors, and overall sexual satisfaction is essential for developing effective interventions to promote sexual health in this population.

Objectives: To investigate the mediating role of sexual risk behaviors in the relationship between pornography craving and overall sexual satisfaction among university men.

Methods: This is a cross-sectional and online study conducted from September to November 2023 with university men in Brazil. We included cisgender and university men from Brazil and excluded women and men who reported no sexual activity in the past four weeks. Total scores on the International Index of Erectile Function (IIEF), Pornography Craving Questionnaire (PCQ), and Sexual Risk Behaviors Scale (SRBS) were used to assess overall sexual satisfaction, pornography craving, and sexual risk behaviors, respectively. The IIEF was validated in Brazilian men to assess sexual function. PCQ and SRBS are undergoing validation by our group. Mediation (model 4) analysis was conducted in IBM SPSS® v26.0 using the PROCESS macro v4.2 with pornography craving as the independent variable, overall sexual satisfaction as the dependent variable, and sexual risk behaviors as the mediator.

Results: Seven hundred and one university men participated in the study. However, 174 (24.8%) men who had no sexual activity in the past four weeks were excluded. Thus, data from 527 university men (33.2 ± 11 years) were analyzed. Most participants lived in southern Brazil ($n = 185$, 35.1%), identified as heterosexual ($n = 312$, 59.2%), had a partner ($n = 392$, 74.4%), did not have a medical diagnosis of anxiety ($n = 411$, 78%) and depression ($n = 476$, 90.3%), were non-smokers ($n = 422$, 80.1%), and drank alcoholic beverages less than once a week ($n = 230$, 43.6%). There was a significant mediating effect ($\beta = 0.008$, 95% BCa CI 0.001; 0.028) of the sexual risk behaviors in the relationship between pornography craving and overall sexual satisfaction among university men. A direct effect of pornography craving on overall sexual satisfaction was also observed ($\beta = -0.152$). The mediated proportion (%) of the model was 62%.

Conclusion: Sexual risk behaviors partially mediate the relationship between pornography craving and overall sexual satisfaction among university men. Higher pornography craving may lead to increased sexual risk behaviors, negatively affecting satisfaction. Future studies should use longitudinal designs to establish causality and explore additional mediators, such as emotional well-being and relationship quality.

Implications: These findings highlight the need for interventions promoting sexual health in university settings. Physiotherapists and other health professionals can integrate these insights into educational programs addressing pornography use and its impact on sexual behaviors. Public health policies should consider strategies to reduce risk behaviors and enhance sexual well-being through awareness campaigns and targeted interventions.

Keywords: Sexual Dysfunction, Physiological, Pornography

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EPIDEMIOLOGICAL PROFILE AND PAINFUL SYMPTOMS OF CHIKUNGUNYA CASES IN A STATE OF THE NORTHERN REGION OF BRAZIL, 2016–2021

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Background: Chikungunya has a high incidence in various areas of Brazil, representing a significant public health challenge. The disease overwhelms healthcare services and affects the ability to work and maintain professional activities among infected individuals.

Objectives: To analyze the epidemiological profile and the prevalence of painful symptoms among suspected and confirmed cases of Chikungunya fever in a state of the Northern region of Brazil, from 2016 to 2021.

Methods: This is an observational, retrospective, and ecological study. Data on reported cases were collected from notification forms in the Notifiable Diseases Information System (SINAN). The sample included confirmed and suspected cases of Chikungunya fever, involving individuals of both sexes and all age groups from a state in the Northern region of Brazil, between 2016 and 2021. Variables such as sex, age, race, education level, and symptoms were analyzed. Data analysis was performed using Jamovi software (2.3.28), with results presented in frequencies, mean, standard deviation, and percentages.

Results: A total of 854 individuals were included, comprising 482 suspected and 372 confirmed cases, with a predominance of females (55.7%), a mean age of 31.8 years (± 18.5), and the highest prevalence in the 30–59 age group (45.7%). The ethnic distribution showed a predominance of mixed-race individuals (pardos), accounting for 77.4% ($n = 661$), while 15% ($n = 128$) of participants had an education level up to high school. Among pain-related symptoms, myalgia was observed in 73.3% ($n = 640$) of cases (297 confirmed and 343 suspected), and back pain in 57.1% ($n = 485$) (221 confirmed and 264 suspected).

Conclusion: The predominance of cases among working-age women with low educational attainment suggests greater exposure to the vector and potential gaps in vector control. Furthermore, the high prevalence of painful symptoms may compromise the quality of life and functionality of affected individuals.

Implications: The study highlights the need for effective strategies for vector prevention and clinical management of Chikungunya, considering the observed clinical and demographic characteristics, to minimize the impact of the disease on the daily lives of affected individuals.

Keywords: Chikungunya Fever, Pain, Epidemiology

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THE INFLUENCE OF LIFESTYLE ON CARDIORESPIRATORY FITNESS IN UNIVERSITY STUDENTS: A STUDY OF THE UNILIFE-M COHORT

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Background: The relationship between lifestyle and cardiorespiratory fitness (CRF) has been extensively studied in adults, with evidence indicating that CRF is associated with a lower risk of physical and mental health problems. However, this relationship is still not

clearly established for university students and most studies in this area have not explored how the lifestyle can affect cardiorespiratory fitness in the young population. In view of this, understanding how different aspects of lifestyle are associated with ACR can be useful for the development of interventions aimed at promoting the health and well-being of this population.

Objectives: The objective of this study was to evaluate the influence of lifestyle in the cardiorespiratory fitness in university students.

Methods: The research used a quantitative cross-sectional observational method with a sample of 423 university students (64,7% women), with a mean age of 21 ± 4.8 years. To assess lifestyle, the instrument The Short Multidimensional Inventory Lifestyle Evaluation (SMILE-C) was used. Cardiorespiratory fitness was assessed using the 20m Shuttle Run test, which is a valid measure to estimate the ACR in the young population. Statistical analysis was performed using a univariate general linear model to assess the contribution of lifestyle to cardiorespiratory fitness. The significance adopted was $p < 0.05$. All analysis was performed using JASP Version 0.15 software.

Results: The results showed that lifestyle was not a significant predictor ($F(1,421) = 0.02$; $p = 0.870$; $R^2 = 0$). Since the assumptions of normality of the residuals and homoscedasticity of the model were not met, the bootstrapping technique was performed with 5000 resamplings. However, the model remained non-significant ($B = 0.00$, $p = 0.86$).

Conclusion: This study provides evidence indicating that lifestyle are not associated with cardiorespiratory fitness in university students. However further studies are needed.

Implications: The findings of this study can be applied in creating specific intervention programs aimed at improving the cardiorespiratory fitness of university students. In addition, knowledge of these factors can also be used by health professionals to guide and encourage students to adopt a healthier lifestyle, thus improving the health and well-being of this population.

Keywords: Medicine lifestyle, University Students, Cardiorespiratory fitness

Conflict of interest: The authors declare no conflict of interest.

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HEALTHCARE COSTS WITH OSTEOARTHRITIS IN BRAZIL OVER 2023: A COST-OF-ILLNESS STUDY

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Background: Osteoarthritis is a chronic joint disease that predominantly affects the knee and hip, causing high levels of pain and disability. In recent decades, its global prevalence has increased considerably, impacting health systems, the economy and patients' quality of life. Financial resources for health systems are scarce worldwide. Thus, understanding the economic impacts related to these conditions is essential to assist health decision-makers on how to allocate financial resources efficiently.

Objectives: To estimate the healthcare costs of hip and knee osteoarthritis in Brazil over 2023.

Methods: This is a cost-of-illness study conducted from the Brazilian public healthcare system perspective using a gross-costing and top-down approach with a time horizon of 12 months. Healthcare costs over 2023 were extracted from the Brazilian health database. Healthcare costs consisted of inpatient care costs (data derived from the Hospital Information System) and outpatient care costs (derived from the Outpatient Information System). The quantities and costs of the inpatient healthcare services were categorized as personnel services, in-hospital service, intensive care unit service, and companion stay. The quantities and costs of the outpatient healthcare services were categorized as diagnostic procedures, therapeutic interventions, minor surgical procedures, assistive devices, and supplementary services. Data were extracted considering adults with 18 years-old or over, both sexes, and the following International Classification of Diseases 10th Revision (ICD-10) codes for hip osteoarthritis: M16-Coxarthrosis, M16.0-Primary coxarthrosis, bilateral, M16.1-Other primary coxarthrosis, M16.2-Coxarthrosis resulting from dysplasia, bilateral, M16.3-Other dysplastic coxarthrosis, M16.4-Post-traumatic coxarthrosis, bilateral, M16.5-Other post-traumatic coxarthrosis, M16.6-Other secondary coxarthrosis, bilateral, M16.7-Other secondary coxarthrosis, M16.9-Coxarthrosis, unspecified; and for knee osteoarthritis: M17-Gonarthrosis, M17.0-Primary gonarthrosis, bilateral, M17.1-Other primary gonarthrosis, M17.2-Post-traumatic gonarthrosis, bilateral, M17.3-Other post-traumatic gonarthrosis, M17.4-Other secondary gonarthrosis, bilateral, M17.5-Other secondary gonarthrosis, M17.9-Gonarthrosis, unspecified. The total healthcare costs (the sum of inpatient and outpatient care costs), outpatient costs, and inpatient care costs were presented descriptively and reported separately. We also reported the outpatient costs related to physiotherapy procedures, separately. All costs were extracted in Brazilian Real (R\$) and converted to International Dollar (\$) using the 2023 purchasing power parity approach.

Results: The total healthcare costs due to osteoarthritis were US\$58 million in 2023. Inpatient care accounted for the biggest share of these costs, representing 86.7% of the total healthcare costs (US\$50.3 million). Overall, the total healthcare costs were higher for knee (53.42%) compared to hip osteoarthritis (46.6%). The physiotherapy costs represented 74% of all procedures performed in outpatient care services, representing US\$5.7 million.

Conclusion: The Brazilian public healthcare system expended US\$58 million with osteoarthritis in 2023. Knee osteoarthritis accounted for the biggest share of these costs. Inpatient care costs were higher compared to outpatient care costs. The most common procedure consumed for outpatient care was physiotherapy.

Implications: Cost-of-illness studies with representative and current data are needed to better understand the socioeconomic impact of osteoarthritis in Brazil. This information can help identify which procedures are most used in the management of osteoarthritis to improve the allocation of financial resources. This information can also help in the development of clinical practice guidelines to improve the quality of services.

Keywords: Cost-of-illness, Osteoarthritis, Healthcare costs

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INTER- AND INTRA-EXAMINER RELIABILITY OF THE PHYSIOCODE POSTURE APPLICATION FOR QUANTITATIVE ASSESSMENT OF POSTURAL ALTERATIONS: PRELIMINARY DATA

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Background: Posture is defined as the alignment of body segments or the relative positioning of body parts for a specific activity. Traditional postural assessment is based on visual analysis, through qualitative observation of spinal curvatures and asymmetries from lateral, anterior, and posterior views. In most cases, it is subjective, as it relies heavily on the evaluator's experience and skill to interpret the results. With current technological advancements, the use of digital photography is being considered and applied for quantitative postural assessment. Physiocode Posture is an Android application designed to identify postural and movement alterations quantitatively.

Objectives: This study aimed to investigate the inter- and intra-examiner reliability of the Physiocode Posture application for the quantitative assessment of postural alterations.

Methods: This is a cross-sectional observational study conducted with 32 volunteers aged 18 to 30 years. Data collection took place on two separate days, with a seven-day interval between assessments. The Physiocode Posture app was used for quantitative postural analysis in the right and left lateral views. Images were captured using a smartphone mounted on a tripod, positioned at a standardized distance of 2.4 meters from the volunteers, with height adjusted according to each participant's stature. Anatomical points were identified and marked with retro-reflective markers to facilitate analysis. The volunteers were instructed to maintain an orthostatic posture, with their gaze fixed on a reference point. The evaluators performed the measurements independently and underwent a familiarization phase with the application before the study began. Inter- and intra-examiner reliability was assessed using the Intraclass Correlation Coefficient (ICC), analyzed with SPSS software.

Results: The study results suggest varying ICC values, with inter-examiner reliability generally higher than intra-examiner reliability. The reliability of the same evaluator in the right and left lateral views ranged from poor to moderate, while the reliability between different evaluators in the same views was good to excellent.

Conclusion: The Physiocode Posture application demonstrated good to excellent inter-examiner reliability, highlighting its potential as a quantitative postural assessment tool. However, intra-examiner reliability was lower, emphasizing the need for improvements in the use of the application and its methodology.

Implications: This study fills an important gap in the literature by investigating the reliability of Physiocode Posture in the quantitative assessment of postural alterations, a topic that has been minimally explored. By analyzing and reporting the application's reliability in different contexts, the study contributes to the consolidation of more objective and precise postural assessment methods, providing reliable data that can support clinical decision-making.

Keywords: Data Accuracy, Posture, Mobile Applications

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: 76840123.2.0000.5108.

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KNOWLEDGE, ATTITUDES, PRACTICES, AND BARRIERS OF PHYSICAL THERAPISTS REGARDING HEALTH PROMOTION IN FORTALEZA, BRAZIL: PRELIMINARY RESULTS

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Background: Noncommunicable chronic diseases (NCDs) are a leading cause of death and disability worldwide, including in Brazil. Fortaleza, the largest capital in the northeast, mirrors this trend. The main types of NCDs are cardiovascular diseases (heart attacks and stroke), cancers, chronic respiratory diseases (obstructive pulmonary disease and asthma), and diabetes. The World Health Organization recommends that health professionals focus on health promotion to manage well-being and prevent NCD risk factors like physical inactivity, and smoking, using behavior change theoretical frameworks. While physiotherapists are well-positioned to promote health and mitigate NCDs risks, there is little information on their competencies and barriers in health promotion in Brazil.

Objectives: To investigate the knowledge, attitudes, practices, and barriers to health promotion among physical therapists in Fortaleza.

Methods: A cross-sectional study was conducted using the Brazilian version of the "Knowledge, Attitudes, and Practice" questionnaire, which 30 physical therapists completed. Physical therapists were considered eligible for the study if they were currently practicing and providing services to adults. The questionnaire underwent cross-cultural adaptation following recommended procedures, ensuring appropriate semantic, idiomatic, cultural, and conceptual Equivalence in the final translated version. The ethical review board of the university approved this study and consent was considered implied for the physical therapists who participated. The questionnaire included 26 items designed to identify knowledge, attitudes, and practices related to health promotion. One item was added to the end of the questionnaire, to identify the most frequent barriers to updating clinical practice regarding health promotion. For most items, participants indicated their level of agreement using a 5-point Likert scale. Descriptive statistics and percentages were calculated for the data.

Results: Participants, aged 25 to 47 years (mean: 32.6, SD: 5.8), were predominantly women (63.3%). The most common highest education level was a bachelor's degree with an additional certificate (52%), and 67% had less than 9 years of clinical experience. Most respondents recognized health promotion as important disease prevention (83.3%) and behavior change (77%). However, over half lacked knowledge of behavior change theories (53%) and felt physical therapists were not well-positioned to meet clients' health promotion needs (57%). All participants agreed that physiotherapists should use appropriate methods and collaborate with stakeholders to enhance health promotion effectiveness (100%). Most reported consistently incorporating health promotion into client care (70%), with a lack of understanding about health promotion and time cited as the primary (62%) and second barriers (50%), respectively.

Conclusion: Physical Therapists from an underprivileged region of Brazil expressed positive attitudes towards health promotion;

however, there is a need to develop an educational and supportive organizational infrastructure. This would enhance knowledge and skills of behavioral change theories, ultimately increasing research integration in physical therapy.

Implications: Potential strategies may include incorporating behavioral change theories into undergraduate programs in this city.

Keywords: Health Promotion, Noncommunicable Diseases, Health promotion strategies

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PREVALENCE OF CHRONIC PAIN IN A STATE IN NORTHERN BRAZIL

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Background: Chronic pain represents a significant public health issue, characterized by its high prevalence and the associated physical, emotional, and social impacts. Investigating and understanding the distribution of this condition in different populations is essential to support policies and intervention strategies. In the Brazilian Amazon, there is a gap in studies focused on this topic, making it crucial to conduct research that allows for a deeper understanding of the regional scenario of this population.

Objectives: To identify the prevalence of chronic pain in the population of the state of Amapá.

Methods: A cross-sectional study investigating the prevalence of chronic pain in the state of Amapá, Brazil. Data were collected from 204 participants, aged 18 and older, through an online structured questionnaire.

Results: Of the 204 individuals, 131 (64.2%) reported experiencing pain; of these, 112 (85.5%) stated they had been experiencing pain for more than three months, while 19 (14.5%) reported pain for less than three months. The mean age was 32.6 ± 11.3 years; 145 (71.1%) were female. Regarding self-reported race, 112 (54.9%) identified as mixed-race, 59 (28.9%) as white, 32 (15.7%) as Black, and 1 (0.5%) as Asian. A total of 159 (77.9%) reported no associated disease or comorbidity, while 45 (22.1%) had at least one. Concerning physical activity, 68 (33.3%) engaged in regular exercise, while 136 (66.7%) did not.

Conclusion: The findings of this pioneering study indicate a high prevalence of chronic pain in the population of the state of Amapá, with higher occurrence among women and individuals who do not engage in physical activity.

Implications: Public and private health policies aimed at managing chronic pain in these individuals, as well as improving healthcare professionals' qualifications, could help reduce the physical, economic, and social impacts in this region of the country.

Keywords: Chronic pain, Prevalence, Amazon

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EXPLORING HEALTHCARE PROFESSIONALS' KNOWLEDGE OF STROKE: A STUDY IN HEALTH FACILITIES IN SOUTHERN BRAZIL

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Background: Stroke is the second leading cause of death and the third leading cause of permanent disability among adults worldwide. Given that the duration of cerebral ischemia is directly correlated with the risk of permanent disability, rapid and efficient screening by a well-trained healthcare team is crucial. Previous worldwide studies observed low recognition of the major stroke symptoms, risk factors, sequelae and acute stroke management among HCPs, and few studies were found regarding the knowledge of health professionals about stroke management in the Brazilian population.

Objectives: This study aimed to assess HCPs' knowledge of stroke in health facilities in Southern Brazil to identify knowledge gaps that could inform future training initiatives. The primary objective was to evaluate HCPs' knowledge of stroke pathophysiology, signs and symptoms, emergency management, risk factors, and prevention. A secondary objective was to analyze the impact of previous stroke training and professional experience on knowledge levels.

Methods: This cross-sectional study was conducted in public health facilities in Southern Brazil. A total of 296 HCPs participated, including physicians, nurses, physiotherapists, and nursing assistants. Participants completed a validated questionnaire assessing stroke knowledge. Responses were categorized as adequate or inadequate based on established criteria. Statistical analyses included Kruskal-Wallis and Mann-Whitney tests for group comparisons and Spearman correlation for experience-related knowledge trends.

Results: The overall correct response rate was 46.6%. Physicians and medical interns had significantly higher scores than other professional groups ($p < 0.03$). Nursing assistants demonstrated the lowest accuracy (36.1%). Participants who had attended stroke training scored higher (52.2% vs. 45.1%, $p = 0.039$). A negative correlation was observed between years of professional experience and knowledge levels ($r = -0.275$, $p = 0.00$), suggesting a decline in knowledge retention over time. Only 33.4% of participants accurately described thrombolysis, and just 6.7% knew the correct therapeutic window for its administration. However, 75% correctly identified stroke prevention strategies.

Conclusion: Significant knowledge gaps about stroke exist among HCPs, particularly non-physicians, emphasizing the need for targeted education and continuous training programs. Future studies should assess the effectiveness of different educational approaches and expand research to other Brazilian regions.

Implications: The study highlights the urgent need for ongoing professional development in stroke management. Findings support integrating stroke education into undergraduate curricula and continuing education programs for practicing HCPs. Public policies should promote systematic training efforts to enhance early stroke recognition and management, ultimately improving patient outcomes and reducing stroke-related disability and mortality in Brazil.

Keywords: knowledge, health care team, CVA (Cerebrovascular Accident)

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IS PAIN AN EDUCATIONAL NEED IN THE BRAZILIAN POPULATION WITH RHEUMATOID ARTHRITIS? A MIXED CROSS-SECTIONAL STUDY

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Background: Rheumatoid arthritis (RA) is one of the most prevalent chronic systemic diseases worldwide. Pain is the primary concern of individuals with RA and may have various etiologies, ranging from nociceptive mechanisms to central processing dysregulation. Recommendations for RA treatment can be divided into pharmacological and non-pharmacological approaches, such as exercise, patient education and self-management strategies. Pain neuroscience education has been shown to provide benefits in pain reduction, disability, catastrophizing, and physical performance in individuals with chronic musculoskeletal pain. However, there is no consensus about the essential knowledge for this population. Therefore, investigating the educational needs of this population is essential for developing patient-centered treatment strategies.

Objectives: To evaluate whether pain is among the health education needs of individuals diagnosed with RA in Brazil.

Methods: A mixed cross-sectional study was conducted by means of an online form, with a convenience sample. Participants were individuals over 18 years of age, with an RA diagnosis, recruited via social media. The form was divided into sections of sociodemographic data and educational needs, including pain, through both open-ended and closed-ended questions. The data were analyzed descriptively and tabulated in Microsoft Excel.

Results: The study included 192 participants diagnosed with RA, 185 females and 7 males, with an average age of 47.7 years. Among the educational needs, the question 'Why do I feel pain?' was the third most relevant, with 72.9% of participants rating it as extremely important, 15.6% as very important, and 11.5% as important. Additionally, it is important to note that the topic of 'pain' also appeared in the qualitative data collected from the open-ended question, where participants were asked about information they considered important to know (e.g., 'How to identify if the pain I feel is from arthritis or another cause' and 'The struggle to prove the chronic pain of rheumatoid arthritis'), highlighting the significance of this information for this population.

Conclusion: Brazilian individuals with RA require information about pain, and this study may contribute to future research focused on developing educational materials tailored to these needs.

Implications: This study highlights the need to incorporate pain-related information into treatment protocols, utilizing educational strategies that aim to support self-management and enhance disease education.

Keywords: Rheumatoid arthritis, Pain, Health education

Conflict of interest: The authors declare no conflict of interest.

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PROTOTYPE OF A MEDIAPIPE-BASED PROGRAM TO ENHANCE THE TEACHING OF BIOMECHANICS

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Background: The best way to assess human kinematics is by capturing movements in three dimensions, which is commonly done using an optoelectronic measurement system. However, due to equipment or logistical limitations, only two-dimensional kinematic assessment is performed in practical biomechanics classes in undergraduate and graduate courses. For this reason, practical demonstrations in the classroom by biomechanics professors are limited, especially in universities that do not have access to an optoelectronic measurement system. A program that allows three-dimensional kinematics assessment demonstrations using only a simple camera can be a great improvement in the teaching process.

Objectives: To develop a program to facilitate the practical teaching of kinematics in classrooms.

Methods: A script was prepared in Python using MediaPipe (pose estimation), Matplotlib (three-dimensional graphs), OpenCV (computer vision), NumPy (angle calculations), and Streamlit (data visualization). Using only a cellphone or a webcam with a notebook, the program captures video frames and uses them for kinematic analysis. The main functionality is provided by MediaPipe, a library capable of recognizing a human body in an image or video and detecting 33 three-dimensional landmarks. The script has two modes: live and recorded video. Live mode uses a live camera to capture video frames, recognize the human body, and apply the landmarks, allowing real-time visualization of the body in a three-dimensional perspective. Recorded mode performs the same process but uses pre-recorded videos. The program outputs a video feed (either from a camera or a recorded video) with landmarks overlaid on the body and an X-Y-Z graph representing the body's three-dimensional structure, displayed side by side. Additionally, the program shows joint angles in degrees and angular velocity. A feature to track the linear displacement of a specific joint was included in the X-Y-Z graph.

Results: The program can capture video frames in real time to provide students with a three-dimensional representation of the human body using 33 landmarks. Professors can also use pre-recorded videos to demonstrate three-dimensional kinematic analysis. In both modes, the program allows the visualization of linear and angular segment displacement.

Conclusion: A prototype of a MediaPipe-based program to assist biomechanics professors in practical kinematics classes. The program used only a camera and a laptop, which are commonly used in classes. Future research could explore the use of this type of program in teaching kinematic concepts.

Implications: This study presents a program prototype to improve the tools available for teaching biomechanics to undergraduate and graduate students, which can be used in classrooms.

Keywords: Kinematics, Graduate, Computer vision

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THE EFFECT OF DIFFERENT BIOFEEDBACK TECHNIQUES ON THE LEVEL OF MUSCLE ACTIVATION AND POSTURAL BALANCE IN YOUNG ADULTS

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Background: Visual biofeedback of postural sway has been shown to optimize postural balance by reducing postural sway during quiet standing. However, it is not yet fully known whether the reduction of postural sway from biofeedback is associated with the increase of postural muscle effort during standing balance.

Objectives: To investigate the effect of different types of visual biofeedback of postural sway on muscle activity and postural balance during standing balance in young adults.

Methods: Twenty-two participants (14 women and 8 men; mean $\pm$ standard deviation: 30.44 ± 6.76 years; body mass: 77.56 ± 19.47 kg; height: 1.70 ± 0.11 m; BMI: 26.42 ± 4.94 kg/m²) participated in this cross-sectional study and performed four postural tasks on the force platform for 60 seconds: 1) No biofeedback (control); 2) Centre of pressure (CoP) Biofeedback; 3) Biofeedback by portable laser, controlled by both wrist movement and body movement. The root mean square (RMS) amplitude of the surface electromyogram (EMG) collected from the right medial gastrocnemius and anterior tibialis muscles, and the standard deviation of the CoP displacement in the anteroposterior (AP) and mediolateral (ML) directions were analyzed. The Friedman test (Shapiro-Wilk, $P < 0.05$) was applied to assess the main effect of the biofeedback on RMS amplitude and CoP standard deviation, followed by the Wilcoxon test for pairwise comparisons (significance level of 5%).

Results: The RMS amplitude (median; interquartile range) of the tibialis anterior was greater in the wrist laser (46.0 ; 30.0 μ V) and posturography biofeedback (44.0 ; 25.0 μ V) tasks, when compared with the condition without biofeedback (39.0 ; 13.0 μ V) ($P < 0.05$). For the medial gastrocnemius, no main effect of task was found for the RMS amplitude ($P = 0.837$). When compared to without biofeedback (7.071 ; 2.693 mm), the standard deviation of CoP displacement in the AP direction was greater in the body laser (9.585 ; 6.097 mm) and wrist laser (8.272 ; 3.307 mm) and, lower in CoP biofeedback (5.858 ; 2.248 mm). In the ML direction, no differences in the standard deviation of CoP displacement were found between the tasks ($P = 0.169$).

Conclusion: Different types of biofeedback appear to lead to increased muscular effort at the ankle in the orthostatic position.

Implications: Balance rehabilitation and training strategies should consider the specific training objectives and the neuromuscular responsiveness of individuals when choosing the biofeedback to be used.

Keywords: Biofeedback, Electromyography, Postural Control

Conflict of interest: The authors declare no conflict of interest.

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ANXIETY AND LIFESTYLE: A CROSS-SECTIONAL STUDY OF BRAZILIAN UNIVERSITY STUDENTS

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Background: Anxiety is a common mental disorder, with a prevalence of 301.4 million cases worldwide and 18.6 million cases in Brazil. Lifestyle factors are associated with mental disorders and are considered both risk factors and potential interventions. Understanding the lifestyle of those with anxiety symptoms, particularly young people, can guide the development of proper screening and approaches in this area.

Objectives: Describe lifestyle characteristics of university students with anxiety symptoms and compare whether these characteristics differ between those with and without symptoms.

Methods: This cross-sectional study is part of the UNILIFE-M cohort investigating the associations between university students' lifestyle behaviors and mental health symptoms. We used baseline data from participants from 13 federal universities in Brazil (2023 to 2024). Screening for anxiety symptoms was conducted with the Generalized Anxiety Disorder Questionnaire (GAD-7) (7-item, 0-21), where scores ≥ 10 indicate the presence of symptoms. Lifestyle was measured using the Short Multidimensional Inventory Lifestyle Evaluation for University Students (U-SMILE) (24-item, 7-96), where higher scores indicate a healthier lifestyle across the seven domains (diet, substance use, physical activity, stress management, sleep, social support, and environmental exposures). Means and standard deviations were reported. We used different tests to compare the overall lifestyle and its domains between individuals with and without anxiety symptoms according to Levene's test. The Mann-Whitney U test was used for substance use, social support, and environmental exposure domains and the Student's t-test was used for the remaining domains.

Results: We included 6371 undergraduate students (60.5% were female, mean age of $19.9 (\pm 3.19)$ years). From total valid responses, 2834 individuals (49.9%) were screened positive for anxiety symptoms, with a total lifestyle score of $62.3 (\pm 7.39)$. The highest-scoring domains were substance use, with a mean score of $15.2 (\pm 1.38)$ out of 16 (95%), social support with $16.1 (\pm 3.02)$ out of 20 (80.5%), and diet with $7.7 (\pm 1.61)$ out of 12 (64.7%). In contrast, the lowest-scoring domains were stress management with $4.0 (\pm 1.57)$ out of 8 (50%), environmental exposures with $8.7 (\pm 2.17)$ out of 16 (54.3%), physical activity with $7.6 (\pm 2.51)$ out of 12 (63.8%) and sleep with $7.6 (\pm 1.99)$ out of 12 (63.8%). Students with anxiety symptoms presented a less healthy lifestyle compared to those without it (67.0 ; ± 7.47). The mean difference in total lifestyle score was statistically significant (4.74 ; $p < .001$; 95%CI 4.34 to 5.13) with a moderate effect size (Cohen's $d = 0.638$; 95%CI 0.58 to 0.69). Separately, significant differences were found in all domains except for stress management.

Conclusion: Students with anxiety symptoms had low lifestyle scores in the stress management, environmental exposures, physical activity, and sleep domains. Overall, their lifestyle was less healthy compared to individuals without anxiety symptoms.

Implications: Understanding the lifestyle characteristics of university students with anxiety symptoms in this sample may support the implementation of more targeted intervention strategies in the future.

Keywords: Anxiety, Students, Life Style

Conflict of interest: The authors declare no conflict of interest.

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PREVALENCE OF PAIN CATASTROPHIZING IN BRAZILIANS WITH SYSTEMIC LUPUS ERYTHEMATOSUS: A DESCRIPTIVE CROSS-SECTIONAL STUDY

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Background: Systemic Lupus Erythematosus (SLE) is a chronic multi-system disease. Its etiology is not yet fully defined, but it is known to be associated with genetic and environmental factors. This context results in a variety of symptoms that can manifest. However, pain has been one of the most frequent reasons for seeking health services, mainly due to tissue damage due to the presence of auto-antibodies and release of neuropeptides. The combination of neuro-physiological changes provided by the chronicity of SLE can lead to a state of catastrophizing, recognized as a maladaptive change in the perception of threats and the severity of the pain sensation. The pain generated by SLE and its catastrophizing represent a significant impact on social interactions, task execution and quality of life of those affected. Previous studies on the association between SLE and pain catastrophizing are limited in sample size, age and ethnic diversity, in addition to being geographically restricted to the USA, therefore, they may not be generalizable to adults from other countries, such as Brazil.

Objectives: To identify the prevalence of pain catastrophizing in Brazilians with SLE, in addition to characterizing their sociodemographic and clinical profile.

Methods: This is a cross-sectional, descriptive, observational study, approved by the Research Ethics Committee of the Federal University of Amapá (n° 6.606.644). Individuals aged 18 years or older, of both sexes, diagnosed with SLE and pain for at least 3 months were included, while those with other types of lupus were excluded. All participants signed the Free and Informed Consent Form. An online questionnaire was used to collect sociodemographic and clinical data, as well as the Pain Catastrophizing Scale.

Results: A total of 64 individuals were included, of which only one participant was male, with a mean age of 36.3 ± 12.5 years and a mean disease duration of 8.53 ± 7.34 years. Most participants were single, brown-skinned, and employed in paid work. Furthermore, their highest concentration was in the Northeast region (31.25%) of Brazil. Regarding the Pain Catastrophizing Scale, the mean score was 31.4 ± 12.2 , suggesting that most patients presented scores close to the upper limit of the instrument, which is associated with a mean pain level of 4.9 points on the Numerical Pain Scale.

Conclusion: The results of this study suggest that pain catastrophizing is a characteristic present in adult patients with SLE in Brazil; furthermore, this finding was presented at a medium to high level. Due to its descriptive approach, future studies should be conducted

aiming at the association between the level of catastrophizing and other clinical variables of interest to better understand this relationship.

Implications: These findings suggest that tissue damage is not the only determinant in the poor progression of the disease, since catastrophizing impacts the execution of the individual's functions and their self-perception. Including this finding in treatment plans, with a focus on self-efficacy strategies and pain neuroscience education, may be crucial to empowering patients to deal with this phenomenon more effectively.

Keywords: Lupus Erythematosus Systemic, Catastrophization, Pain

Conflict of interest: The authors declare no conflict of interest.

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Ethics committee approval: No. 6.606.644.

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DEPRESSION IS ASSOCIATED WITH POSTURAL BALANCE IN INDIVIDUALS WITH LONG COVID: A CROSS-SECTIONAL STUDY

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Background: COVID-19 is a multisystemic condition that can cause persistent symptoms, including emotional alterations such as anxiety, depression, and stress. These symptoms may influence functional outcomes, including postural balance, but their relationship remains unclear.

Objectives: To compare body balance between controls and post-COVID-19 patients and analyze the correlation between body balance and the symptoms of anxiety, depression and stress in post-COVID-19 patients.

Methods: A cross-sectional study was conducted with 30 controls and 30 post-COVID-19 patients. Postural balance in both groups was assessed by the Berg Balance Scale (BBS), Timed Up and Go (TUG) and Mini-BESTest (MBT). Anxiety, depression and stress symptoms were assessed with the Depression, Anxiety and Stress Scale (DASS-21). The Mann-Whitney non-parametric test for independent samples was used to compare the scores obtained in the balance tests and emotional aspects of the DASS-21 between the groups (control and post COVID-19). Spearman's correlation test was used to correlate the results of the balance tests with the DASS 21.

Results: No significant differences in balance tests were observed between the control and post COVID-19 groups ($p > 0.05$). In the post COVID-19 group, all the balance tests were positively correlated with the emotional aspect of depression on the DASS-21 scale. A moderate positive correlation was observed between stress and the MBT balance test.

Conclusion: The main findings of this research indicated a low risk of falls in the post-COVID-19 group. The assessment of depression and stress may provide valuable insights into balance instability in post-COVID-19 individuals.

Implications: These findings suggest that emotional symptoms should be considered when evaluating postural balance, potentially contributing to a more comprehensive approach to motor rehabilitation.

Keywords: COVID-19, equilíbrio postural, sintomas emocionais

Conflict of interest: The authors declare no conflict of interest.

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CHRONIC DISEASES IN PEOPLE LIVING IN QUILOMBOLA TERRITORY

Registration: Not applicable.

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Background: Over the years, chronic degenerative diseases have gained greater emphasis in relation to infectious and parasitic diseases, associated with technological advances in the health area and also, consequent improvement in basic sanitation conditions. Studies indicate that there is an association between chronic diseases and higher health care costs. This increase in costs impacts both the patient and the health systems. In the most vulnerable populations, among them the quilombola population, it has been observed that chronic diseases cause impacts on health conditions.

Objectives: To verify the existence of chronic diseases diagnosed in people living in the quilombola territory.

Methods: A cross-sectional and quantitative field study was carried out in a quilombola territory. For data collection, a semi-structured questionnaire was applied to 85 randomly selected households, where one resident responded for all residents of the household. The eligibility criteria were: households registered with the ESF and age over 18 years.

Results: The sample consisted of 154 people, 42.2% in the age group between 39-59 years. 42.9% of the quilombola people were identified with a diagnosis given by the doctor of a chronic, physical or mental illness, or of long duration and that did not limit their usual activities.

Conclusion: The epidemiological transition, through access to and use of health services, may produce changes in the health profile of this population with a likely increase in diagnoses of chronic diseases and limitations on usual activities. However, we emphasize the hygienic and sanitary conditions, evidenced by the lack of basic services, such as sanitation, drinking water and the accumulation of household waste. Therefore, we suggest studies to also verify the prevalence of infectious and parasitic diseases in the quilombola territory.

Implications: In order to promote greater attention to health, given the conditions of vulnerability in which they are inserted, with the difficulty of accessing health services and the lifestyle, physiotherapy should be included in the quilombola territory.

Keywords: chronic disease, ethnicity

Conflict of interest: The authors declare no conflict of interest.

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POSTURAL CONTROL IN BRAZILIAN UNDERGRADUATE STUDENTS: AN OBSERVATIONAL STUDY

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Background: Postural control has two main functional goals: postural orientation and balance. It relies on the integration of motor, sensory, and cognitive systems to regulate body positioning under different conditions. It is influenced by age, physical activity level, and psychosocial aspects. University populations are considered healthy due to age and period of life. However, there have been growing concerns related to them, since mental health has suffered the impact from the academic and social demands.

Objectives: To describe the postural control of undergraduate university students.

Methods: This is a descriptive, cross-sectional study conducted with 96 undergraduate university students (73.26% female; mean age = 21.85 ± 2.24 years). Participants underwent static postural control assessments using a force platform (stabilometry) in two conditions: eyes open (EO) and eyes closed (EC), with a duration of 60 seconds for each condition. The parameters analyzed included elliptical sway area, standard deviation, mean frequency, and mean velocity in both the anteroposterior (AP) and mediolateral (ML) axis. Data were described by presenting mean and standard deviation. A paired t-test was also conducted to compare EO and EC conditions. EC/EO ratio for elliptical sway area was calculated using the following formula: $(EC - EO / EC + EO) * 100$.

Results: The mean elliptical sway area was $284.73 \pm 125.42 \text{ mm}^2$ under the EO, and $367.28 \pm 230.48 \text{ mm}^2$ in EC condition. The standard deviation of sway was $5.00 \pm 1.48 \text{ mm}$ in the AP axis and $4.77 \pm 1.24 \text{ mm}$ in the ML axis for the EO condition, and $5.59 \pm 2.08 \text{ mm}$ in the AP axis and $5.26 \pm 1.61 \text{ mm}$ in the ML axis for the EC one. The mean frequency of sway was $0.17 \pm 0.07 \text{ Hz}$ in the AP axis and $0.23 \pm 0.08 \text{ Hz}$ in the ML axis with EO, and $0.24 \pm 0.10 \text{ Hz}$ in the AP axis and $0.31 \pm 0.11 \text{ Hz}$ in the ML axis with EC. Mean velocity was $13.34 \pm 4.38 \text{ mm/s}$ in the AP axis and $10.37 \pm 1.97 \text{ mm/s}$ in the ML axis for the EO condition, and $15.09 \pm 4.29 \text{ mm/s}$ in the AP axis and $13.07 \pm 3.53 \text{ mm/s}$ in the ML axis for the EC condition. A significant difference was found when comparing EO and EC elliptical sway area, with $t(95) = -4.56$, $p < .001$. Finally, 67.71% of the participants were more reliant on vision (positive EC/EO ratio).

Conclusion: The findings provide a descriptive profile of postural control on undergraduate students. As expected, there was an effect from the visual condition, with EC showing higher values across all parameters. In addition, the values described herein differed when compared to previous studies that assessed healthy individuals of the same age, strengthening the relevance of investigating the mechanisms surrounding that process.

Implications: This study contributes to physiotherapy by providing insights into postural control in undergraduate students. Alterations in stabilometric variables, compared to a healthy group of the same

age, could suggest other factors, such as psychological ones modulating postural control.

Keywords: Postural Control, Students

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