

analyzed by the western blot were BAX, CASPASE-3, CASPASE-9, ANEXIN-V, P-ASK, MTOR, BECLIN-1, P62, LC3-I, LC3-II, NRF2 and P-AKT.

Results: The apoptosis proteins BAX ($p=0.13$), CASPASE-3 ($p=0.62$), CASPASE-9 ($p=0.20$), ANEXIN-V ($p=0.85$), and P-ASK ($p=0.71$), as well as autophagy proteins - MTOR ($p=0.71$), BECLIN-1 ($p=0.58$), P62 ($p=0.70$) and LC3-II ($p=0.16$) did not show statistical significance among groups. EX+HF+D+P group expressed increased NRF2 ($p=0.04$), p-AKT ($p=0.03$), and LC3I ($p=0.005$) expression compared to the CT- group.

Conclusion: We demonstrated the positive effects of physical exercise associated with photobiomodulation, increasing the expression of proteins related to myocyte survival.

Implications: In this study, we observed an increase in Nrf2 levels in animals that performed physical exercise related to photobiomodulation, demonstrating a protective effect of the association of these two protocols on the gastrocnemius of animals with HF and DM. These results are relevant since there is a lack of therapeutic agents that may mitigate the muscle damage related to the association of DM and HF. Therefore, we suggest that the association between therapies can revert possible changes involving cell death.

Keywords: Photobiomodulation, Heart failure, Diabetes mellitus type II

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

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PRELIMINARY CONTENT VALIDITY OF THE BRAZILIAN VERSION OF THE PEDIATRIC RATING OF CHRONIC ILLNESS SELF-EFFICACY (PRCISE)

Gaby Kelly Bezerra de Macedo¹, Mayara Fabiana Pereira Costa¹, Fernanda Gabrielle Mendonça Silva¹, Alana Vallessa Bernardo Silva¹, Leylane da Silva Luz¹, Karolinne Souza Monteiro¹

¹ Federal University of Rio Grande do Norte (UFRN), Faculty of Health Sciences of Trairi (FACISA), Postgraduate Program in Rehabilitation Sciences, Santa Cruz, Rio Grande do Norte, Brazil

Background: Content validity is the degree to which the content of an instrument is an adequate reflection of the construct to be measured. It can be assessed by patients or specialists during the development or cross-cultural adaptation (CTA) of measurement instruments. In this sense, the Pediatric Rating of Chronic Illness Self-Efficacy (PRCISE) is a self-efficacy questionnaire for pediatric patients with chronic conditions, which is being adapted and validated in Brazil, but its content validity has not yet been evaluated.

Objectives: To assess the preliminary content validity of the Brazilian version of the PRCISE in children and adolescents with chronic respiratory conditions.

Methods: Exploratory methodological study in which the TCA protocol was elaborated according to internationally established recommendations, involving translation, back-translation, expert committee and pre-test procedures. The pre-test of the Brazilian version of the PRCISE was performed on a sample of 30 children and adolescents of both sexes, aged 7 to 18 years, and diagnosed with isolated asthma, cystic fibrosis, or other chronic respiratory

conditions. To determine content validity, subjects participated in virtual interviews using Google Meet and evaluated the questionnaire for item clarity, comprehensibility, relevance, and comprehensiveness. In the data analysis, the Content Validity Index (CVI) was used, adopting values ≥ 0.78 for each item as a reference.

Results: The sample consisted of 15 individuals with asthma and 15 individuals with cystic fibrosis, with a mean age of 12.3 ± 2.8 years, 53.3% male, 66.7% elementary school students, and 56.7% from the Northeast region of Brazil. In the assessment of the questionnaire, all 15 items had a CVI ≥ 0.78 , with values ranging from 0.93 to 1.00, and 60% of the items had CVI = 0.96, demonstrating good content validity. Items 2 and 15, related respectively to the domains of obtaining and humor, were more difficult for the participants to understand (CVI = 0.93). The illness management domain obtained CVI = 0.63 and, therefore, will be modified according to the participants' suggestions and assessed in a new evaluation round.

Conclusion: The Brazilian version of the PRCISE presented good preliminary content validity by assessing children and adolescents with chronic respiratory conditions. The illness management domain did not reach the recommended value and will be modified and reassessed by participants.

Implications: Based on these results, we have the basis for further establishing the content validity of the Brazilian version of the PRCISE for children and adolescents with chronic respiratory conditions. Furthermore, this is the first step to analyzing the psychometric properties of this instrument and to determine if it provides valid and reliable measures before being used in clinical practice.

Keywords: Respiratory diseases, Self-efficacy, Validation study

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PHYSICAL THERAPY EXERCISE IN EARLY AND LATE POST-OPERATIVE PERIOD OF TOTAL KNEE ARTHROPLASTY: SYSTEMATIC REVIEW WITH META-ANALYSIS

Alany Gabrielli Leite¹, Beatriz Batista Vicente¹, Allysiê Priscilla de Souza Cavina¹, Alessandra Madia Mantovani², Cristina Elena Prado Teles Fregonesi¹

¹ Faculty of Science and Technology, São Paulo State University State (FCT/UNESP), Presidente Prudente, São Paulo, Brazil

² Center University Toledo, Presidente Prudente, São Paulo, Brazil

Background: Objective: To analyze the effects of exercise-based rehabilitation on the functionality of individuals with Total Knee Arthroplasty (TKA) in the early and late postoperative period.

Methods: Systematic review of which studies were selected through six databases (Pubmed, PEDro, LILACS, EMBASE, CINAHL, and Cochrane Library) from January 2010 to August 2020. Only randomized clinical trials of primary unilateral TKA in the early or late postoperative period were included. All meta-analyses were conducted using Review Manager – RevMan software described as standardized mean differences with 95% confidence intervals (CI). Outcome data, including the final mean, standard deviation, and sample size values, were extracted by two reviewers. The data extraction process was performed using a standardized form and disagreements were resolved by a more experienced third author. PROSPERO Register: CRD42020200375.

Results: Five studies were chosen for full-text review. The main findings of this study demonstrated that physical therapy exercise,

when compared to the other conditions, was effective only for the timed up and go test (three studies, $n=225$; MD=-1.38, 95% CI [-2.35, -0.41]; $p=0.005$; $I^2=56\%$). No significant differences were observed for the other analyses.

Conclusion: The findings of the present study demonstrate that physical therapy based on exercises, when started mainly in the early postoperative period of TKA is better than the comparison conditions in knee functionality.

Implications: The present review shows the clinical applicability of physiotherapeutic exercises started early after TKA, which can improve the functional conditions of patients.

Keywords: Arthroplasty, Knee, Replacement, Exercise Therapy, Postoperative Care

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Ethics committee approval: Not applicable.

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BODY BALANCE IN INDIVIDUALS WITH OSTEOARTHRITIS OF THE HIP AND KNEE, BEFORE AND AFTER GROUP PHYSIOTHERAPY INTERVENTION PROTOCOL

Alany Gabrielli Leite¹, Gustavo Yuji Watanabe¹, Ariel Aparecido da Cruz Souza¹, Alessandra Madia Mantovani², Cristina Elena Prado Teles Fregonesi¹

¹ Faculty of Science and Technology, São Paulo State University State (FCT/UNESP), Presidente Prudente, São Paulo, Brazil

² Center University Toledo, Presidente Prudente, São Paulo, Brazil

Background: Osteoarthritis (OA) is a slow and progressive musculoskeletal disorder that primarily affects the hip and knee joints. As a result, it leads to loss of flexibility, pain, reduced range of motion, and affects gait and body balance, resulting in functional dependence and reduced quality of life for individuals. Physical therapy based on exercises is considered the best treatment option due to its favorable cost-benefit ratio, helping to reduce pain and improve physical function, gait, and body balance. Additionally, studies suggest that group physical therapy has proven beneficial as it utilizes fewer resources, thereby reducing costs, offering greater interaction among patients, and achieving similar results to individual treatment.

Objectives: This study aimed to evaluate the effects of a group exercise protocol on static and dynamic body balance in individuals with knee and hip osteoarthritis.

Methods: A clinical trial was conducted with patients diagnosed with knee and/or hip OA, who were able to walk independently and scored above 25 on the Lower Extremity Functional Scale (LEFS). The assessment instruments included the LEFS functionality questionnaire, Visual Analogue Scale (VAS) for pain assessment, Agility and Dynamic Balance Test (ÁGIL), and Stabilometry using an electronic baropodometer (FootWalk Pro®, AM CUBE, France), where participants maintained a bipedal position without support for 30 seconds. The intervention protocol consisted of 10 group kinesiotherapy sessions, conducted twice a week, with progressive exercises. The first week focused on mobility exercises involving active movements of the lower limbs, ballistic stretching, oscillations, and adopting different positions. The second week they emphasized mobility and resistance, incorporating shin pads and active lower limb exercises. In the third week, the focus was on resistance with higher intensity compared to the previous week. The fourth week they included resistance and functional exercises simulating

musculoskeletal strain during daily activities. The fifth week involved functional exercises with increased intensity and additional balance training. Data were presented as means and standard deviations, and comparisons were made using dependent sample tests determined by the Kolmogorov-Smirnov test with the assistance of SPSS software (version 19.0) at a significance level of 5%.

Results: The sample comprised 27 participants, 20 women (74%) and seven men (26%), and a mean age of 64.19 ± 8.33 years. After accounting for sample loss between the first and second evaluation moments (after intervention), there were 18 participants available for comparison tests. The results showed a significant 17% improvement in functional capacity and a 44% reduction in pain during movement.

Conclusion: The five-week group exercise protocol improved pain and functionality in this sample; however, it did not lead to significant changes in static and dynamic body balance parameters.

Implications: This study demonstrates the clinical applicability of group exercises, which can improve pain and function in patients with knee and/or hip osteoarthritis, thereby reducing costs and enhancing the efficiency of care in clinics.

Keywords: Osteoarthritis, Balance, Physiotherapy

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

Acknowledgment: Not applicable.

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THE INTRODUCTION OF NEW TECHNOLOGIES APPLIED TO THE CITIZEN SCIENCE METHOD IN SCIENTIFIC PROJECTS IN HEALTH: AN INTEGRATIVE REVIEW

Alexandre Gomes Sancho^{1,2}, Arthur de Sá Ferreira²

¹ Universidade do Grande Rio (UNIGRANRIO), Rio de Janeiro, Rio de Janeiro, Brasil

² Postgraduate Program in Rehabilitation Sciences, Augusto Motta University Center (UNISUAM), Rio de Janeiro, Rio de Janeiro, Brazil

Background: Citizen Science (CC) refers to the collaboration of volunteers, amateur scientists, non-professional scientists (citizens), and those without academic training in a project or research of a scientific nature, actively contributing to science. In public health, research with the CC method is recent, in small numbers and samples, proving particularly useful, especially with the recent introduction of new technologies (NT). These NT help collect and analyze population health data, encourage the involvement of community members, and promote greater interaction, contribution, and discussions in solving the scientific problem that directly impacts a community's health and/or well-being.

Objectives: To describe the main studies in the literature and their findings on the incorporation of new technologies in health research applied to the citizen science method.

Methods: We carried out an integrative review of articles published up to 2021, extracting the location, the most used technology, and its results on the health of the individual or the environment in which he lives.

Results: Fourteen studies were found in 5 countries, mostly American (42.8%) and European (35.7%), with 92.8% using information and communication technology (applications) on mobile devices (smartphones) for data collection and recording of the studied population. All studies presented important findings regarding the training of individuals in the collection, analysis, monitoring, and health promotion of the studied population.