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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

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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

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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, SPORTSDISCUS, 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

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 (Acu-mar, 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 (ß = -0.19; p = 0.02) contribution was significant for the model, while kinesiophobia (ß= -0.09; p = 0.25), and catastrophizing (ß= 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