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150

SHOULDER MUSCLE STRENGTH AND AVOIDANCE BEHAVIOR IN PEOPLE WITH CHRONIC SHOULDER PAIN

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Background: Individuals with chronic shoulder pain have decreased muscle strength and range of motion, in addition to movement avoidance beliefs that may compromise functionality. Literature demonstrates a slight correlation between avoidance beliefs and shoulder dysfunction assessed through specific reliable questionnaires, but to our knowledge, no analysis has been performed with biomechanical parameters such as muscle strength with a gold standard equipment.

Objectives: To analyze whether there is a correlation between muscle strength of external and internal rotators of the shoulder and avoidance behavior in individuals with chronic shoulder pain.

Methods: Forty-four individuals with chronic shoulder pain were evaluated (14 men and 30 women with a mean age of 46 ± 11 years, BMI of 29 ± 6 kg/m² and pain intensity of 5 ± 3 on the Visual Analog Scale). Those over 55 years old, with difficulties in understanding the questionnaires, previous surgery and fracture, presence of tumor and neurological disorders were excluded. The Visual Analogue Scale (0-10) was applied to assess pain intensity. The Avoidance Daily Activities Photo (ADAP) Shoulder Scale was applied to analyze movement avoidance behavior. ADAP has three domains: free movement, effort and self-care. Then, the individuals were seated on the isokinetic dynamometer (Biodex 4). Muscle strength of external and internal rotators of the shoulder was assessed using three concentric isokinetic contractions with verbal feedback for encouragement. A warm-up test was previously performed with three submaximal contractions. Stabilization was performed using belts in the pelvic and thoracic region. The arm position was 45° of elevation in the scapular plane and 90° of elbow flexion, complete range of motion of 60° (30° of internal rotation and 30° of external rotation) with a speed of 60°/s.

Results: Spearman's correlation analysis resulted in a weak negative correlation between muscle strength in external rotation and the ADAP Effort domain ($\rho = -0.3$; $p = 0.014$) and between muscle strength in internal rotation and the ADAP Effort domain ($\rho = -0.3$; $p = 0.042$).

Conclusion: There is a weak negative correlation between shoulder rotator muscle strength and the ADAP effort domain scale, thus, people with chronic shoulder pain who have less strength demonstrate greater avoidance behavior in relation to effort activities.

Implications: This study showed that individuals with chronic shoulder pain and decreased muscle strength of shoulder rotators may exhibit movement avoidance behavior. It is important for the clinician to assess these determinants to propose a treatment that

includes muscle strength and exposure strategies to movements that involve effort in individuals with chronic shoulder pain.

Keywords: Shoulder pain, Fear of movement, Muscle strength

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151

EFFICACY OF TELEREHABILITATION EXERCISE IN PATIENTS WITH CHRONIC NECK PAIN: A PROTOCOL FOR A RANDOMIZED CONTROLLED TRIAL

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Background: Neck pain is the third musculoskeletal condition that causes the most days lived with disability and is considered an important public health problem with a significant economic impact, decreased productivity and work absenteeism. In addition to pain, these individuals also present psychosocial symptoms such as kinesiophobia, catastrophizing, anxiety, and depression. Although exercise is an effective approach in the treatment of chronic neck pain, physiotherapists face barriers to the success of therapy, such as lack of patient adherence. Additionally, due to costs, distance and lack of adequate information, patients do not have access to physiotherapy treatment. Therefore, telerehabilitation is an emerging tool to overcome these barriers. However, despite the literature supporting the effectiveness of telerehabilitation in chronic musculoskeletal conditions, there are no studies on its efficacy in neck pain regarding pain, disability and psychosocial symptoms when compared to face-to-face treatment.

Objectives: To investigate the efficacy of a telerehabilitation exercise program compared to face-to-face exercise program in patients with chronic neck pain.

Methods: The study is a single-blinded randomized controlled trial. Ninety-eight individuals of both sexes, between 18-65 years old, with non-specific neck pain lasting longer than 3 months will be recruited. They will be randomly allocated to one of two groups (telerehabilitation and face-to-face). The telerehabilitation group will perform the intervention at home through videos sent beforehand and weekly call will be made to follow-up the participants. The face-to-face group will perform the intervention with the therapist. The primary outcomes will be pain intensity and disability. Secondary outcomes will be kinesiophobia, catastrophizing, fear avoidance beliefs, symptoms of anxiety and depression, pain self-efficacy and global perceived effect. All participants will be evaluated before and after treatment. Both groups will perform the same exercise protocol, twice a week for six weeks. The protocol consists of 8 exercises (two stretching exercises, two mobility exercises and four strengthening exercises) with an approximate duration of 40 minutes and these will be progressed every two weeks. The statistical analysis will follow the principles of intention-to-treat analysis and the effects of treatment will be calculated using mixed linear models, using interactions terms (group versus time interactions).