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EFFECT OF ISOMETRIC AND ISOTONIC EXERCISE ON SHOULDER PAIN, FUNCTION AND STRENGTH IN INDIVIDUALS WITH ROTATOR CUFF TENDINOPATHY

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Background: Rotator cuff tendinopathy (RC) is a common disorder of the shoulder complex, affecting approximately 24% of the Brazilian population over 20 years of age. One of the treatment strategies is conservative, including the use of therapeutic exercise. Most studies that evaluated the effect of exercise on this public have used isotonic exercises (which involve concentric and eccentric phases of muscle contraction), and few studies have demonstrated the effect of isometric exercise on individuals with RC tendinopathy. It is known that exercise, in general, has an analgesic effect described as exercise-induced analgesia. It has also been demonstrated that isometric exercise has the effect of decreasing pain summation. In addition, individuals with patellar tendinopathy showed a decrease in pain level immediately after using isometric exercise compared to isotonic exercise.
Objectives: To compare the immediate and 6-week effects of isometric and isotonic exercise training on shoulder pain, function, and strength in individuals with RC tendinopathy.
Methods: This is a randomized clinical trial. 30 individuals with RC tendinopathy were included, randomly distributed in the isometric (IM = 14) and isotonic (IT = 16) groups and evaluated for pain during arm elevation using the numeric pain rating scale, function using the Penn Shoulder Score questionnaire and isometric strength through manual dynamometry. After the initial evaluation (EV1) individuals performed the first exercise session, then they were reassessed immediately after the intervention (EV2) and after 6 weeks of treatment (EV3). Individuals performed stretching and strengthening of the scapular musculature, in addition to specific exercise for the RC, being isometric or isotonic depending on the randomization, twice a week for 6 weeks. RC strengthening included shoulder flexion, external and internal rotation exercises with load reassessment and progression. Comparison between groups and the 3 assessments was performed using a linear mixed model using SPSS 22.0 software.
Results: There was interaction between group and assessment for shoulder flexion strength ($F = 5.31$, $p<0.05$) and external rotation ($F = 5.82$, $p<0.05$). The IM showed a higher mean for flexion strength in EV3 compared to EV2 and greater rotation strength in EV3 compared to EV2 and EV1, in addition to being greater than the IT in EV3. Pain decreased and there was an improvement in function in EV3 in both groups ($p>0.05$).
Conclusion: Isometric exercise was not superior to isotonic for pain and function variables, but it was superior in terms of increasing shoulder elevation and external rotation strength.
Implications: In individuals with RC tendinopathy, the choice of exercise modality will not influence the improvement of pain or function, thus choosing the most tolerable one for the patient. However, in cases where there is a decrease in isometric strength, one can choose to use isometric exercise to increase strength gain.
Keywords: Pain management, Exercise therapy, Subacromial impingement syndrome

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FUNCTIONAL INDEPENDENCE, EXERCISE CAPACITY AND EXERTIONAL DESATURATION AFTER NON-CRITICAL COVID-19 IN NON VACCINED PATIENTS: SHORT AND MEDIUM-TERM IMPACTS

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Background: Studies point to the persistence of symptoms in patients with non-critical COVID-19 after hospitalization, pointing to impairments in functionality, exercise capacity and effort desaturation, which characterize the need for continuity of management and treatment after acute illness.
Objectives: To evaluate functional independence, exercise capacity, and effort desaturation after non-critical COVID-19 after hospital discharge.
Methods: A cross-sectional study included adult individuals with a noncritical COVID-19 diagnosis who were hospitalized for at least 24 hours between 30 and 180 days after hospital discharge. Participants were classified into 3 groups: G1M - one month after hospital discharge, G3M - three months after hospital discharge, and G6M - six months after charge. A digital form with clinical and sociodemographic questionnaire, modified MRC scale, Barthel Index, and London Chest Activity of Daily Living Scale was applied, in addition to the 6-minute Walk Test in G3M and G6M. The significance value was $p<0.05$.
Results: We included 64 individuals (G1M=18, G3M=25, G6M=21). There was a significant difference in Barthel Index between G1M and G6M (p=0.007). G3M walked 420m vs 442m of G6M (p=0.25). 48% of participants in G3M and 52% in G6M walked a distance less than 80% of predicted; 28% of G3M participants had >=4% drop in SpO2, vs 19.05% in G6M (p=0.478). There was a high prevalence of persistent symptoms, with a significant association between dyspnea (p=0.001), cough (p=0.038) and angina (p=0.001) and decreased functional independence.
Conclusion: After non-critical COVID-19, decreased functional independence was observed, with significant improvement 6 months after hospital discharge, in addition to decreased exercise capacity, the occurrence of desaturation on exertion, and high prevalence of persistent symptoms with no improvement 6 months after hospitalization.
Implications: Patients with persistent symptoms after COVID-19 should be evaluated and treated in pulmonary rehabilitation clinics. The changes caused by non-critical COVID-19 remain in the short and medium term, as in critical COVID-19.
Keywords: Acute post-covid-19 syndrome, 6-Minute Walk Test, Functional Independence

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