Effects of Home Exercises on Shoulder Pain and Pathology in Chronic Spinal Cord Injury: A Randomized Controlled Trial

PUBLICATIONS

Model System:

SCI

Reference Type:

Journal

Accession No.:

Journal:

American Journal of Physical Medicine & Rehabilitation

Year, Volume, Issue, Page(s):

2020 , 99, 6, 504-513

Publication Website:

https://pubmed.ncbi.nlm.nih.gov/31851011/

Abstract:

Objective: The aims of this study were to replicate findings that a home exercise program intervention improved shoulder pain and function and to assess changes in supraspinatus tendon pathology associated with the home exercise program in persons with chronic spinal cord injury.

Design: The study is a single-blind randomized controlled trial. Individuals with spinal cord injury of at least 1 yr and chronic shoulder pain of moderate or greater average intensity were enrolled. Participants were randomized to a 12-wk home exercise program consisting of strengthening and stretching exercises or to an education-only control group, with immediate postintervention and 4-wk postintervention (16 wks) follow-ups. The main outcome measures were self-report measures of shoulder pain and impairment, the Physical Examination of the Shoulder Scale, quantitative ultrasound metrics of the supraspinatus tendon, and the Ultrasound Shoulder Pathology Rating Scale.

Results: Thirty-two participants were randomized to home exercise program or education-only control condition. The mean ± SD age was 44.8 ± 12.5; 81.3% were male; 65.6% had motor complete paraplegia. Using a per-protocol, within-group analysis method, significant differences were observed between baseline and postintervention for the home exercise program group for the least pain intensity ($P = 0.02$), number of days with shoulder pain ($P = 0.042$), Physical Examination of the Shoulder Scale scores (dominant side, $P = 0.036$; nondominant side, $P = 0.008$), the Disabilities of the Arm, Shoulder, and Hand ($P = 0.028$), and the Patient Global Impression of Change ($P = 0.015$). The education-only control

condition group demonstrated significant changes in average unpleasantness of shoulder pain after the intervention period (P = 0.049). Comparisons in changes from baseline between groups showed that the home exercise program group had greater improvements in nondominant-side Physical Examination of the Shoulder Scale scores and global impression of change, whereas the education-only control condition group had greater improvements in depressive symptoms.For quantitative ultrasound measures, no significant changes were found with within-group analyses for the home exercise program group, although the education-only control condition group demonstrated a decrease in tendon width in the nondominant-side supraspinatus tendon (P = 0.036). Comparison of changes between groups suggests that the education-only control condition group had a greater increase in dominant shoulder supraspinatus tendon ultrasound contrast at the end of the study.

Conclusions: Changes in several measures of shoulder pain and function occurred after the home exercise program intervention, although the magnitude of changes was only significantly greater than those of the education-only control condition group for two measures. Significant changes in supraspinatus pathology were not detected with quantitative ultrasound metrics.

Author(s):

Diana D Cardenas, Elizabeth R Felix, Rachel Cowan, Melanie F Orell, Robert Irwin

Participating Centers:

South Florida SCIMS

UAB Spinal Cord Injury Model System (UAB-SCIMS)