Pain Relief in Older Adults Following Static Contractions is not Task-Dependent

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Physical Activity is Related to Pain Sensitivity in Healthy Women
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There are many benefits associated with meeting current physical activity recommendations. At present, it is unknown whether a reduced sensitivity to pain is included among these benefits.

PURPOSE: To assess the relationship between pain sensitivity and physical activity and sedentary behaviors in a sample of healthy women.

METHODS: Self-reported and accelerometer measures of physical activity and sedentary behavior were collected and compared with pain intensity and unpleasantness ratings to noxious thermal stimuli in a sample of twenty-one healthy women (age 30 ± 8.3). Based on accelerometer data, participants were classified into two groups: meets recommendations (n=12) and insufficiently active (n=9).

RESULTS: Participants who met physical activity recommendations had significantly lower unpleasantness ratings than their insufficiently active peers. Correlational analyses demonstrated a significant relationship between minutes spent in vigorous physical activity and both pain intensity and pain unpleasantness ratings. Relationships were not significant for moderate activity or sedentary behavior.

CONCLUSIONS: These results provide preliminary evidence that meeting current physical activity recommendations may be beneficial for pain in women. Moreover, participation in vigorous activity appears to account for the decreased pain sensitivity. In our sample, sedentary behavior did not appear to have a deleterious effect on pain.

Pain relief in older adults following static contractions is not task-dependent
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Pain complaints increase with age. Exercise is frequently utilized for pain relief but the optimal exercise prescription to relieve pain is not clear. Following static contractions, young adults experience the greatest pain relief with low intensity, long duration contractions. The pain response to static contractions in older adults however is unknown.

PURPOSE: To compare pain reports in healthy older adults before and after static contractions of varying intensity and duration.

METHODS: Pain perception was assessed in 23 healthy older adults (11 men, 12 women; 72 ± 6.3 yrs) using a pressure pain device consisting of a 10 N force applied to the right index finger through a Lucite edge (8 x 1.5mm) for two minutes. Subjects pushed a timing device when they first felt pain (i.e., pain threshold) and rated their pain intensity every 20 seconds using a 0-10 numerical rating scale. Pain threshold and pain ratings were measured before and immediately after static contractions of the left elbow flexors using the following three doses: 1) three brief maximal voluntary contractions (MVC); 2) 25% MVC sustained for 2 minutes; and 3) 25% MVC sustained until task failure. Experimental sessions were randomized and separated by one week.

RESULTS: Time to task failure for the 25% MVC contraction was 11.8 ± 5.1 minutes. A reduction in pain was found following all three tasks with no difference between tasks (trial x task effect: p > 0.05), despite the duration of the 2 minute low-intensity contraction being ~17% of the contraction held to task failure. Pain thresholds for all doses increased 20% from 51 ± 33 to 61 ± 37 seconds and pain ratings averaged over the six trials increased 20% from 3.3 ± 2.8 to 4.2 ± 2.5 following static contractions (trial effect: p < 0.001 and p > 0.001, respectively).

CONCLUSION: Low and high intensity static contractions of both long and short duration produce similar levels of pain reduction in older adults. These preliminary data suggest that several different types of static contractions can induce significant pain relief in older adults. Age-related changes in the pain response to static contractions must be taken into account when prescribing static exercise for the management of pain.

Robustness of Pain Catastrophizing Scores Following Isokinetic Testing of Anterior Cruciate Ligament Deficient Patients
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Measurements of isokinetic knee muscle strength and pain catastrophizing behavior prior to Anterior Cruciate Ligament (ACL) reconstruction may serve as a barometer to which post-operative patient status may be compared. To attain maximal voluntary contractions during isokinetic testing, clinicians routinely employ various patient targeted psychological interventions with the purpose of enhancing motivation as well as reducing apprehension. However, these regular clinical practices may also influence immediate pain catastrophizing behavior, and hence confound baseline measurements of this psychological construct.

PURPOSE: To assess the robustness of pain catastrophizing scores obtained during knee strength testing of unilateral ACL deficient patients.

METHODS: 12 men (26±4 yrs) and 10 women (25±5 yrs) with unilateral ACL deficiency performed bilateral isokinetic knee muscle strength testing. The healthy knee was tested first, and testing of each leg encompassed 2 sets of 6 concentric extension-flexion repetitions at angular velocities of 60°sec-1 and 180°sec-1. During the warm-up phase and during testing, the examiner attempted to increase confidence and reduce possible fear of pain, or injury aggravation by providing targeted verbal and visual feedback on performance. Pain catastrophizing scores were obtained using the pain catastrophizing scale questionnaire prior to testing, between testing of the healthy and injured leg, and at completion of all efforts. Differences in pain catastrophizing scores within the testing session were assessed using one-way ANOVA with repeated measures.

RESULTS: Omnibus test results indicate nonsignificant statistical differences in pain catastrophizing scores as a function of questionnaire administration occurrence (mean pain catastrophizing scores 12.5, 11.9, and 11.2 for pre, mid, and post test occasions, respectively, p = 0.26).

CONCLUSION: The construct of pain catastrophizing was not affected by psychological interventions regularly employed during muscle strength testing. From a practical perspective, the pain catastrophizing scale questionnaire can be administered at a time of convenience during pre-operative isokinetic testing in this specific patient population.