

A New Prescription for Pain Management in Humans: Does Exercise Dose Matter?

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Affecting over 116 million American adults, chronic pain presents itself both as idiopathic pain and as a comorbidity for other health-related conditions, such as cancer and obesity. Although numerous pharmacological interventions exist, few have proven effective. Exercise has proven effective in reducing sensitivity to chronic pain, but research has yet to verify an appropriate dose. **PURPOSE:** To determine the minimal beneficial dose of exercise for reducing acute pain in healthy human participants.

METHODS: In a lab-based study, moderately active human participants were screened to determine eligibility. Eligible participants were randomized to 1 of 3 groups: control (no exercise), low dose exercise (3x/wk), and moderate dose exercise (5x/wk). Over 7 days, participants performed 30 minutes of moderate intensity walking on a treadmill during assigned exercise days. Sensitivity thresholds for painful thermal stimulation and painful pressure stimulation were examined. Participants also rated the intensity and unpleasantness of both thermal and pressure pain. **RESULTS:** Currently, 14 subjects have completed the study and descriptive data (averages, percent change) have been calculated for 3 subjects per group. Subjects in the moderate dose group demonstrated less sensitivity to constant heat pain (-58% change from baseline). Subjects in both the low and moderate dose groups, at follow-up, tolerated greater pressure thresholds, 24.4% and 27.3% respectively. However, the low dose group demonstrated greater sensitivity (63.3%) while the moderate dose group demonstrated less sensitivity (-66.3%) to constant pressure pain. **CONCLUSION:** The moderate dose group displayed the greatest reduction in overall pain sensitivity, with decreases in sensitivity to heat and pressure intensity. The low dose group displayed both increases and decreases in pain sensitivity, suggesting that a low dose of exercises is insufficient. The study is ongoing, but the preliminary analysis suggests that the analgesic effects of exercise are dose-dependent. This will have important implications when prescribing exercise for individuals with a chronic pain syndrome.

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