Comparison of Treatments for Delayed Onset Muscle Soreness (DOMS)

Authors: Kathleen Palladino, Sabrina Garcia, Sandeep Moses, and Luis Anaya

KINE 3325 – Undergraduate Research Methods (Dr. Caçola)
Department of Kinesiology - The University of Texas at Arlington

**Abstract**

**INTRODUCTION:** Delayed onset muscle soreness (DOMS) is related to pain that follows an unfamiliar eccentric exercise that causes damage to the skeletal muscle (Hilbert, et al. 2003). The pain typically appears within the first 24 hours and starts to peak between 48-72 hours post exercise. Symptoms include the feeling of stiffness, pain, and inflammation. Some common forms of treatment for DOMS are ice packs, hot packs, and topical analgesics. PURPOSE: The purpose of this study was to investigate the effects that ice packs, hot packs, and peppermint oil have for treating delayed onset muscle soreness (DOMS) in order to see which one would elicit the best results for reducing pain. METHODS: A sample of 20 subjects (15 females and 5 males) between the ages of 18-24 years old was chosen for this experiment. Subjects’ criterion was narrowed to those who did not use resistance training in the upper body. Participants were randomly assigned to either one of the three treatment groups or to the control group. For the exercise protocol subjects completed 4 sets of 10 repetitions of seated concentric-circular movements (maximal concentric/eccentric elbow flexion/extension movements) taking 8 seconds to lower the weight. They were given a three-minute rest period after completion of each set. Participants used a specific free weight (dumbbell) in accordance with their one-repetition max (1-RM). Treatment was then administered to those receiving an ice pack, hot pack, or peppermint oil for a time period of 20 minutes. After a total time of 30 minutes had elapsed, participants filled out a Neuropathy Pain Scale (NCP). The control group followed the NCP immediately following the exercise. All participants returned again approximately 24, 48, and 72 hours after to receive treatment (besides control group) as well as to fill out an NCP. RESULTS: The One-way ANOVA demonstrated no significant difference (p > 0.05) between groups over time (pre-test, day 1, day 2, day 3, and day 4). A repeated measurements test was conducted to analyze the pain level measures over time within each group. There was no significant differences seen in group 1 (cold) or group 2 (hot) (p > 0.05). However, within group 3 (oil) a significant difference (p < 0.05) was found. A dependent t-test found that the significant differences (p < 0.05) to be between days 1 and 4, and between days 3 and 4. CONCLUSION: This present study found that there are no differences between using ice packs, hot packs, or application of peppermint oil for treatment of DOMS in the non-dominant arm over time (i.e., day 1, 24, 48, and 72 hours).

**REFERENCES**

- Personal statement by Dr. Mark Ricard, March, 2015.