EFFECTS OF CRYOTHERAPY ON PAIN, SWELLING, AND FUNCTION FOLLOWING DELAYED ONSET MUSCLE SORENESS

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**Context:** Cryotherapy is purported to reduce pain, swelling and hasten recovery following athletic injuries. Unfortunately little evidence exists to substantiate this widely held clinical belief. **Objective:** To evaluate the effects of cryotherapy on pain, swelling and function following delayed onset muscle soreness (DOMS). **Design:** Randomized clinical trial, repeated measures design. **Settings:** Research Laboratory. **Patients or Other Participants:** Twenty college students (age= 20.1±1.3 yrs., height= 66.8±3.9 in., weight= 158.5±37.9 lbs.) volunteered for this study. **Interventions:** DOMS was induced in both lower legs by a series of concentric and eccentric calf raises. Self-reported pain and function was assessed by a series of 4 visual analog scales which consisted of 100 millimeter lines (mm). Linear measurement of the calf and limb volume utilizing a customized tank system was used to assess changes in swelling. Function was determined by a unilateral hop for distance for each limb. Pre and Post treatment measurements were taken daily over a period of 5 days. Cryotherapy was delivered to the posterior calf of one randomly assigned limb at the location of greatest pain via a plastic bag filled with 1 kg of crushed ice for either 20 or 40 minutes based on random assignment. The other limb served as a control. The independent variable was cryotherapy with two levels (20 or 40 minutes of application). We analyzed the pain, swelling and function data with multiple repeated measures ANOVAs. Significance level was set at .05 a priori. **Main Outcome Measures:** Self reported pain and athletic function, limb volume and function as measured by unilateral hopping. **Results:** Induction of DOMS caused an increase in pain (P<.001), decreases in self reported athletic function (P<.001) and unilateral hopping distance (P=.015). Analysis indicated that cryotherapy has no significant effect on self reported pain (Cryotherapy 15.4±21.2mm, Control 12.3±17.8mm P=.490), self reported athletic function (Cryotherapy 17.6±24.1mm, Control 12.8±22mm P=.696), limb volume (Cryotherapy 1145.6±216.3mL, Control 1154.1±222.2mL P=.875) or unilateral hop (Cryotherapy 119.2±28.2cm, Control 122.9±29cm, P=.891) at the end of the 5 day experiment. **Conclusion:** Our results indicate that daily 20 or 40 minute application of ice bags following DOMS did not affect self reported pain or athletic function, limb volume or functional performance following delay onset muscle soreness. Additional randomized clinical trials examining the effects of cryotherapy on acute and chronic orthopedic injuries are needed. **Word Count:** 379.