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Blood Flow Restricted Electrical Stimulations to Prevent Symptoms of Muscle Damage

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Both electrical stimulations (E-STIM) and blood flow restriction (BFR) have been shown to attenuate symptoms of muscle damage when applied after damaging exercise. We are aware of no studies that have tested whether performing E-STIM and BFR simultaneously can produce even greater effects than one individual mode. **PURPOSE:** To determine if performing E-STIM under BFR would result in a greater protective effect by attenuating or preventing the onset of muscle damage. **METHODS:** Individuals completed one set of eccentric elbow flexion exercises to induce muscle damage. Immediately after the bout of exercise, and 24h post-exercise, individuals completed a low frequency E-STIM protocol on both arms. The amplitude was set to the minimal amplitude required to observe a muscle contraction. One arm completed this protocol without BFR while the other had 2-minute bouts of complete occlusion separated by 1-minute deflation periods throughout the 20-minute protocol. Measurements of discomfort (Borg CR10+) and isometric strength of the elbow flexors were taken 24h and 48h after the damaging exercise, while muscle thickness was measured 48h post. Bayesian repeated measures ANOVAs with uninformed priors were used to compute Bayes Factors (BF_{10}) for ($BF_{10} < 0.33$) or against ($BF_{10} > 3$) the null hypothesis. **RESULTS:** A total of 18 individuals (9 females) completed the study. There were main effects of time for muscle thickness (pre: 3.5 cm; 48h post: 3.8 cm; $BF_{10} = 88.476$), discomfort (pre: 0.0 au; 48h post: 4.2 au; $BF_{10} = 241.996$), and isometric strength (pre: 278 N; 48h post: 232 N; $BF_{10} = 10,289.894$) which were all changed as a result of the damaging exercise protocol, but there were no differences between conditions (all $BF_{10} < 0.28$). **CONCLUSION:** While BFR itself may have utility for preventing the onset of muscle damage, it does not appear to have any additive effect when combined with low frequency E-STIM. Future studies may wish to examine alternative E-STIM and/or BFR protocols aimed at preventing the onset of muscle damage.