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**** SESSION **** Muscle 3
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Title: **Effects of Mild Electro-Stimulation Treatment on Healthy Humans Following Exercise Induced Muscle Damage.**
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Exercise-induced muscle damage has been widely reported in healthy humans, and is characterised by morphological changes in muscle, protein leakage to the circulation, acute inflammatory responses, muscle dysfunction and subsequent soreness. **Purpose:** This study investigated plasma protein, inflammatory markers and exercise performance responses to multi-day mild electro-stimulation treatment following a single bout of eccentrically biased exercise. It was hypothesised that mild electro-stimulation would decrease inflammation and muscle damage, and subsequently accelerate recovery. **Methods:** Sixteen healthy volunteers (11 M, 5 F) performed exercise trials and provided blood samples pre and for 7 days post muscle damage (45min bench stepping). Exercise trials comprised isotonic knee extension at 180°s, vertical jump, and cycling at 90% VO_2 WR_{peak} to fatigue. Blood analyses included creatine kinase (CK), myoglobin (Mb), lactate dehydrogenase (LDH) and c-reactive protein (CRP). Experimental (EXP) or control (CON) treatment (single blind, randomised) was administered for 20min immediately following the muscle damage step test, and for 7 days thereafter. **Results:** There was a rapid increase in c-RP above baseline (5-fold at +2 days), following bench stepping in CON ($P < 0.05$), which was systematically higher than EXP each day, with peak 4.4-fold difference at +2 days ($P < 0.05$). CK increased above baseline in both trials ($P < 0.05$), and tended to be greater at +1 day post damage in CON ($P = 0.08$). There was no condition effect for Mb and no time or condition effect for LDH. Leg extension force at 180°s decreased by 3% and 5% respectively for CON & EXP following muscle damage, decreased by 9% in CON on +2 days. Muscle force was re-established by +1 days in EXP ($p < 0.05$). There were no significant differences between trials for vertical jump or 90% VO_2 WR_{peak} to fatigue. **Conclusions:** Mild electro-stimulation attenuated the rise in c-RP and CK following exercise-induced muscle damage compared to CON. This suggests decreased inflammation and damage, and accelerated recovery, which may in part be due to increased lymphatic and blood flow. The underlying mechanisms are unclear, and require further investigation. Supported by Bodyflow International
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