Effect of a new treatment technique on Delayed Onset Muscle Soreness recovery

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BACKGROUND & PURPOSE
Delayed onset muscle soreness (DOMS) is a common occurrence following unaccustomed physical activity which can have a drastic effect on performance (Nosaka & Clarkson 1996; Fridén & Lieber 2001). However, no universally accepted treatment exists (Tiidus 1999).

The aim was to determine the effects of a new technique (LPG Systems) on DOMS induced by eccentric exercise (EE)

METHODS
- 10 healthy men, moderately active experienced DOMS induced by maximal isokinetic EE of knee extensor muscles
  - 8 sets x 15 rep. at -120°.s⁻¹ - 90° ROM (90° to full extension) - 3 min rest - DC = 1/8 (1 rep/6 sec.)
- Bilateral measures from day₀ pre-exercise to day₄ post-exercise
  - Surface EMG (RMS) on Maximal Isometric Force (MIF)
  - Magnetic Resonance Imaging (T₂ relaxation time) and thigh girth
  - Perceived soreness and muscle Tenderness
- Random treated side (LPG) and untreated as control (C) with the same workload (85% Wₘₚₐₓ)
- Treatment: 15 minutes /day from d₀ post-exercise to d₄
- ANOVA with repeated measurements (Side x Day)

RESULTS
- Effects of maximal EE on muscle function
  - Decrease in MIF and Neuromuscular efficiency (NME)
  - Peripheral fatigue (Ca²⁺)
  - Increase in soreness indices (Perceived soreness and tenderness), in muscle swelling (T₂ and thigh girth)
- Effects of LPG treatment on recovery of symptoms of muscle damage
  - Faster recovery of MIF and NME
  - Maintenance of myoelectric activity of the bi-articular RF
  - Prevention of muscle swelling (thigh girth and MRI-T₂)
  - No complete recovery of soreness indices at d₄
- Positive relationship between MIF vs NME during recovery
  - LPG (r² = 0.81, P < 0.001)
  - C (r² = 0.19, NS)

CONCLUSION
- EE induces a decline in NME suggesting a perturbation in Excitation-contraction coupling (Morgan & Allen 1999)
- LPG mechanical treatment alleviates DOMS symptoms:
  - Adaptation of neural drive (RF mainly): early recovery (day 1 to 3)
  - Reduction of muscle swelling: day 3 to 4
- Soreness indices were not indicators of MIF recovery

References