

Effects of whole body cryotherapy and cold water immersion on immune and inflammatory markers following exercise induced muscle damage

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ABSTRACT

Introduction: Cold therapies are used regularly in medicine for their analgesic and anti-inflammatory effects. Whole-body cryotherapy (WBC) involves exposure to air maintained between -110 and -160°C, and is hypothesised to reduce pain, local and systemic inflammation. WBC has recently become popular in an exercise and sporting context as a recovery method after skeletal muscle damage. However, research examining the efficacy of WBC in an athletic context is minimal, in particular, studies comparing WBC to currently accepted recovery methods are lacking. Cold water immersion (CWI) is a widely researched and applied method of skeletal muscle recovery in sport science. As yet, no study has compared the proposed new method of WBC and the currently practiced method of CWI. We have designed a randomised control trial to examine the efficacy of WBC, as compared with CWI on recovery from a bout of eccentric muscle damage.

Methods: Sixty healthy male subjects will perform skeletal muscle function tests and an eccentric muscle damage protocol of their left quadriceps femoris, using an isokinetic dynamometer. They will then be randomly assigned to one of 3 groups, WBC, CWI or a passive recovery control (PAS). The WBC will expose subjects to -160°C for 3min, using cold air. The CWI condition involves whole body exposure for 3min, in water maintained at 12°C. The PAS will have subjects seated comfortably at room temperature following the exercise protocol. Blood samples, muscle functional measurements and pain reports will be taken before muscle damage, immediately following damage, prior to therapy administration and post therapy. Further follow up measures to be taken 6 h post, 24 h and 7 days post. Blood samples will be analysed for changes in interleukins 6, 8 and 10, creatine kinase and leukocyte population kinetics.

Results: Testing is being conducted. Results to be presented at the international society of exercise immunology (ISEI) symposium in September 2013.

