

INFLUENCE OF POST-EXERCISE LIMB BLOOD FLOW STIMULATION ON PERFORMANCE RECOVERY

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Introduction: Elite sport requires athletes to complete multiple bouts of high-intensity exercise with limited rest periods that are not sufficient for full recovery. To facilitate the performance recovery, recovery therapies like active,¹ immersion² or neuroelectromyostimulation³ (NEMS) have achieved very good results. It has been hypothesized that the increase of blood flow with these strategies could accelerate the supply of oxygen rich blood, increase the flush of waste products and help reduce H⁺ levels associated with lactic acid build-up. Consequently, the assumption of a strong relationship between blood flow and high intensity performance recovery is often cited although never tested. Therefore, the aim of this study was to test this hypothesis by stimulating the blood flow at three different levels during a 30-min recovery intervention period between two sessions of multiple sprint interval (three 30-s WAnT) exercise.

Methods: Thirty-seven trained athletes participated in a randomized controlled trial. Each session consisted of performing 3 x 30 WAnT (bouts 1–3) followed by a randomly assigned 30-min recovery intervention of either: high blood flow (Veinoplus Sport®)(HBF), low blood flow (Cefar-Compex Theta 500®)(LBF); sham NEMS device (SHAM; that does not stimulate the blood flow) and passive recovery (PAS). A 30-s WAnT was then repeated (bouts 4) and compared to bout 1 for peak power and mean power. Measures of blood flow, blood lactate and heart rate were recorded every 3 min throughout the recovery intervention period to monitor physiological responses.

Results: Blood flow was significantly higher in HBF group compared to PAS, SHAM and LBF groups. Examination of heart rate and blood lactate revealed no recovery effect. The recovery of mean power was likely beneficial in the HBF group compared with the SHAM group and very likely beneficial compared with the PAS group and the LBF group. The recovery of peak power in the HBF group was likely beneficial and very likely beneficial compared with the LBF group and the PAS group, respectively.

Conclusion: Stimulate total blood flow at a high velocity is a mean of preserving performance when repeating acute exhausting exercise interspaced by short recovery period. However this positive effect is not accompanied by a greater lactate removal.

Key words: Recovery, Blood flow, NEMS.