

POSITIVE EFFECTS OF LOW-FREQUENCY ELECTRICAL STIMULATION DURING SHORT-TERM RECOVERY ON SUBSEQUENT HIGH INTENSITY EXERCISE

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Purpose: The aim of this study was to compare the effectiveness of blood flow stimulation (BFSTIM) with VEINOPLUS® device to active and passive recovery methods during a short-term recovery period between two exhausting exercises of short duration.

Methods: Fourteen highly trained female handball players completed two successive 'Yo-Yo intermittent recovery' tests (level 2; YYIR2) elapsed by a 15 min recovery period during which they used one of the three recovery modalities presented in a random order (Active, BFSTIM or Passive). Performances (i.e. distance achieved) were measured at the end of each YYIR2 test. Blood lactate, pH and bicarbonates ions concentrations were measured or calculated before and immediately after the first YYIR2 test and every three minutes during the recovery. Heart rate, respiratory gas exchange and tissue saturation index (%TSI) of the lateral gastrocnemius were continuously recorded during the recovery phase.

Results: In comparison to passive recovery, we observed a beneficial effect with BFSTIM (+13.0% ± 7.8%; ± 90% confidence limits) and a "possible" beneficial effect with active recovery (+4.0% ± 9.0%) on performance during the second YYIR2. BFSTIM and active recoveries versus passive recovery clearly showed a significantly faster return to baseline value of blood lactate, pH and bicarbonates ions concentrations during the recovery period ($P < .05$). Whereas %TSI was continuously lower, heart rate and oxygen uptake were higher with active recovery in comparison to the two others modalities.

Conclusion: The results suggested that blood flow stimulation with VEINOPLUS® and, to a lesser extent, active recovery are effective interventions to improve recovery during short time periods and could be useful during half-time