



THE USE OF NEGATIVE PRESSURE WAVE TREATMENT IN ATHLETE RECOVERY

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INTRODUCTION & PURPOSE:

Athlete regeneration & recovery is vital in maximising performance in competitive sport. Lower Body Negative Pressure (LBNP) treatment was developed by NASA to maintain arterial blood supply in the lower body, compensating weightlessness. Clinical application has proven substantial in the treatment of patients with complex wounds. We investigated whether intermittent LBNP therapy, when applied to the lower body of athletes has a systemic effect resulting in faster recovery time.



METHOD:

Twenty two healthy male cricket players (19.5±0.09yrs) were randomly divided into treatment (ExT) and control (ExC) groups. A structured one hour heavy power gym session was completed on day-1. Thereafter, the ExT group received a 30 minute treatment on the LBNP device, over three consecutive days (i.e. at 0, 24 and 48 hours). The ExC group were not exposed to LBNP treatment. Heart rate (HR), blood pressure (BP), blood serum lactate, - creatine kinase and a perceived gradation of exertion questionnaire were recorded. Players continued their regular coaching and competition program. Following a 14 day wash out period, groups were crossed over and the trial repeated.

RESULTS:

- ◆ HR and BP decreased noticeably during treatment sessions and reverted back to baseline levels after treatment. (Fig.1)
- ◆ Lactate concentrations decreased in both groups after termination of exercise; significantly more in the ExT group than the ExC group (0.57±0.23 vs. 0.78±0.22, respectively, p<0.001). (Fig.2)
- ◆ Creatine kinase indicated no significant decrease after three treatment sessions.
- ◆ Players' personal perceived degree of regeneration rated moderately high. (Fig.3)

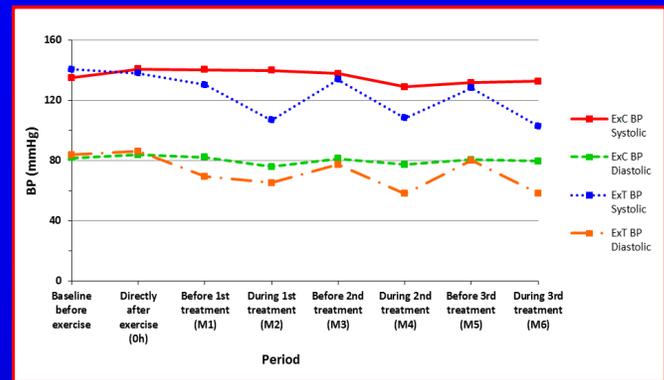


Fig. 1: Systolic and Diastolic Blood Pressure.

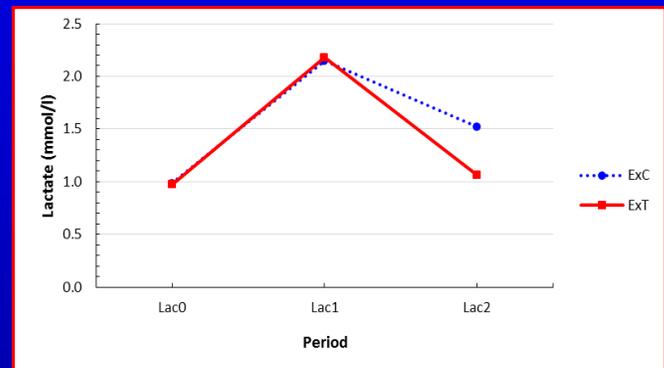


Fig. 2: Blood lactate concentration on day one at baseline (Lac0), after 1 hour of exercise (Lac1) and after 30 minutes LBNP therapy (Lac2).

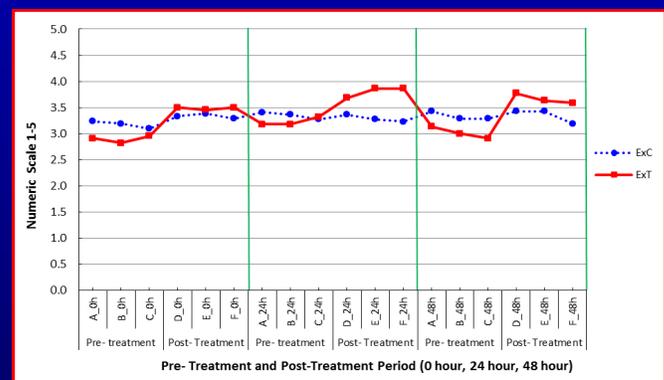


Fig. 3: Perceived recovery based on an ordinal scale of the pre- and post-treatment responses of both ExC and ExT athletes groups on the LBNP device over a three day period.

CONCLUSION:

LBNP therapy appears to have a systemic effect in lowering serum lactate levels, but not creatine kinase levels. Enhanced regeneration and recovery of athletes are still unconfirmed.

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2. Hachiya T, Blander AP, Saito M. Changes in superficial blood distribution in thigh muscle during LBNP assessed by NIRS. Aviat. Space Environ. Med. 2004;02:75(2):118-122.