SPORT STUDIES

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RECOVERY AFTER HIGH-INTENSITY INTERMITTENT EXERCISE IN ELITE SOCCER PLAYERS USING VEINOPLUS SPORT TECHNOLOGY FOR BLOOD-FLOW STIMULATION

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Objective: Electric muscle stimulation has been suggested to enhance recovery after exhaustive exercise by inducing an increase in blood flow to the stimulated area. Previous studies have failed to support this hypothesis. We hypothesized that the lack of effect shown in previous studies could be attributed to the technique or device used.

Design: Randomized controlled clinical trial. Setting: National Institute of Sport, Expertise, and Performance (INSEP).
Patients or Other Participants: Twenty-six healthy professional male soccer players.
Intervention(s): The athletes performed an intermittent fatiguing exercise followed by a 1-hour recovery period, either passive or using an electric blood-flow stimulator (VEINOPLUS).
Participants were randomly assigned to a group before the experiment started.
Main Outcome Measures(s): Performances during a 30- second all-out exercise test, maximal vertical countermovement jump, and maximal voluntary contraction of the knee extensor muscles were measured at rest, immediately after the exercise, and 1 hour and 24 hours later. Muscle enzymes indicating muscle damage (creatine kinase, lactate dehydrogenase) and hematologic profiles were analyzed before and 1 hour and 24 hours after the intermittent fatigue exercise.

Results: The electric-stimulation group had better 30-second all-out performances at 1 hour after exercise (P ¼ .03) in comparison with the passive-recovery group. However, no differences were observed in muscle damage markers, maximal vertical countermovement jump, or maximal voluntary contraction between groups (P . .05).

Conclusion:
Compared with passive recovery, electric stimulation using this blood-flow stimulator improved anaerobic performance at 1 hour postintervention. No changes in muscle damage markers or maximal voluntary contraction were detected. These responses may be considered beneficial for athletes engaged in sports with successive rounds interspersed with short, passive recovery periods.

Key Words: quadriceps muscle, fatigue, athletes.