

Research Highlight

Effect of Transcutaneous Electrical Acupoint Stimulation on Fatigue Recovery of the Quadriceps

Past research suggests that Transcutaneous Electrical Acupoint Stimulation (TEAS) appears to have comparable effects to conventional acupuncture treatment and it has been used to treat various clinical conditions, with reports indicating that TEAS appears to be effective in reducing postoperative nausea and vomiting. One of the potential applications of TEAS is for the recovery of muscle force capacity after exercise-induced muscle fatigue. If TEAS is found to facilitate muscle recovery after fatigue, it will have significant clinical implications for sports medicine and athletic training.

Objective

The aim of this study was to evaluate the effect of TEAS at selected acupoints on enhancing the rate of muscle force capacity recovery after strenuous knee extension/flexion exercise.

Methodology

Ten male and seven female healthy adults participated in this study in which they performed isokinetic knee fatigue exercise on three separate days. After the familiarisation trial on day one, subjects underwent 15 minutes of either TEAS or pseudo-TEAS recovery treatment after the isokinetic exercise in the following two trials on day two and day three, respectively. The TEAS treatment was applied on 4 selected acupoints (Zusanli (ST36), Chenshan (BL57), Yanglingquan (GB34) and Sanyinjiao (SP6)) while the pseudo-TEAS treatment was applied on the points away from the selected acupoints. Isometric knee extension peak torque, blood lactate removal rate and median power frequency restitution of the vastus medialis, vastus lateralis and rectus femoris were measured before and immediately after the test exercise.

Results

The results of the two-way repeated measures ANOVA on peak torque recovery revealed that the TEAS treatment group recovered faster than the

pseudo-TEAS group. It was concluded that 15 minutes of TEAS on the four acupoints was significantly more effective than a pseudo-TEAS treatment in enhancing the rate of recovery of muscle force capacity after fatigue and this effect was enhanced by treatment time. No effects on lactate removal rate and median power frequency restitution were found. Pain control might be a possible mechanism to explain the benefit of TEAS treatment.

Implications

TEAS is a non-invasive treatment with minimal risk as it does not involve the actual insertion of needles into the body. It is feasible to apply TEAS during and immediately after training. However, more studies need to be done to consolidate a standardised method and identify the most effective acupoints to maximise the effect of TEAS.

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The equipment for providing the electrical stimulation 提供電刺激的儀器