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Introduction

Every physical activity is tiresome for the body; muscles produce metabolites and lactic acid which limit its working ability. It is then necessary to efficiently and quickly recover after the effort. In fact, a bad recovery could bring prejudice to the following performance and the athlete's physical state. Active recovery and balneotherapy together with new techniques such as cryotherapy and electro stimulation are upcoming tools to recover better. The goal of this study was to compare the impact of 2 types of electro stimulator : « VeinoPlus Sport » (VPS - Fig. 1) and « TENS » on amateur soccer players after Yo-Yo-type effort.

Material and methods

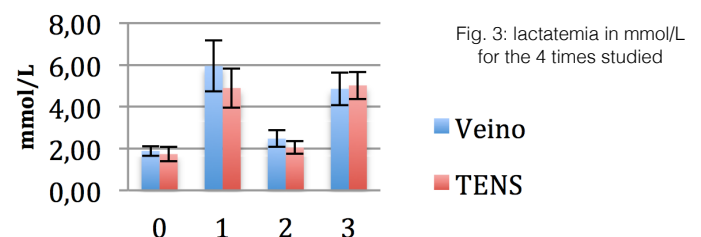
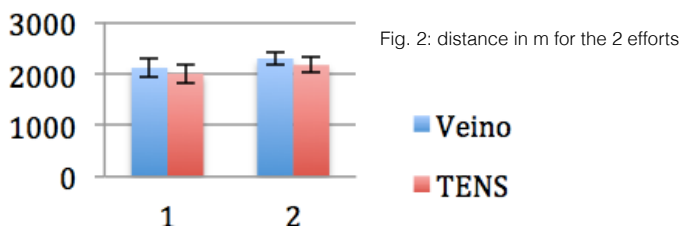
In an identical context, each athlete (20 soccer players; average age $17,1 \pm 0,79$) benefited from VPS and TENS during 2 different treatment sessions after 2 Yo-Yo-type efforts. Four blood samples were taken (lactate, blood gases, ions, cardiac markers,...) and an explosiveness Myotest evaluation was conducted respectively before effort, just after effort, after recovery, and after the second effort. A questionnaire on the fatigue state was filled out by each athlete. For the statistical analysis, we used the Anova algorithm of the StatPlus system and a Scheffé test.



Fig. 1: VeinoPlus Sport

Results

All athletes have ran a greater distance in their second effort especially in the VPS group but differences were insignificant (Fig. 2). The test lead to a significant variation of lactate (Fig. 3), HCO₃⁻ ions and myoglobin. The study of other blood parameters and of the explosiveness parameters didn't show any significant variations. Nevertheless according to the subjective athlete's opinion the VPS group has noted less legs pain, less overall fatigue, less diminishment of strength and fitter than the TENS group between 12 and 24 hours after effort. Finally all athletes have said to like the use of a electro-stimulation recovery device better than their normal daily recovery techniques without expressing any preferences between VPS and TENS.



Discussion - Conclusion

This comparative study only shows minor differences, non significant, between the two devices. The two groups have ran the greatest distance during the second effort which suggests that the test wasn't tiresome despite biological signs of "fatigue". However on subjective criteria of recovery and well-being a slight preference was shown for the VPS device. The results should be taken into consideration in a other comparative study of the recovery devices with more tiresome effort.