Title

Infrared thermography as a tool to monitor workload adaptation in Brazilian Army militaries soccer players by position

Abstract

INTRODUCTION Sports training process involves exercise repetition to develop specialized motor skills structural and functional changes to maximize performance. This improvement depends on the proper distribution of training loads and recovery, and infrared thermography can be used to measure it. The aim of this study was to analyze the effect of mesocycle training preparation (MTP) on skin temperature (Tsk) of Brazilian Army militaries soccer team by position.

METHODS Transversal research with 28 male athletes (midfielder, center forward, striker, defender, goalkeeper, fullback), 20-38 years old, volunteers of the Brazilian Army Military Soccer Team. Data collection occurred in an acclimatized room at EsEFEx's biosciences lab, attending Delphi study recommendations for Tsk evaluation pre and post MTP. It was used E75FLIR® infrared camera and the images were processed by ThermoHuman software. The selected regions of interest (ROIs) were the anterior and posterior regions of lower limbs. MTP consisted in low-middle intensity physical exercise intending the development of endurance, strength, speed, and flexibility. Data was analyzed by SPSS® using descriptive statistics, paired t-Student test and ANOVA's test were used with adjusted Bonferroni post-hoc. The effect size (d) was calculated. Significant level was $p<0.05$.

RESULTS The ambient temperature was 21.5-23.2ºC and relative ambient humidity 64-68%. Table 1 presents a significant reduction in Tsk post MTP and Figure 1 present the ROIs of the Tsk by soccer position pre MTP, where there was a significant difference between the positions center forward, defender and goalkeeper.

DISCUSSION AND CONCLUSION The reduction in Tsk post MTP could be related to a progressive adaptation of the imposed training load. And the difference only in the ROIs front and inner thigh, and knee in center forward and defender is associated to shot muscles, physical practice, and competitions and the lack of training routine and soccer club by the goalkeepers before MTP.

Practical Implications

We recommend the insertion of infrared thermography on daily training for monitoring internal training load, metabolic stress, preventing injuries and optimize performance in Military Soccer Team.

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Figures and tables
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Confict of interest

None to declare.

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