

APPLICATION AND ANALYSIS OF ALL-OUT'S WITH DIFFERENT TIMES DURATION IN RUNNING TAILED, HELD ON NON-MOTORISED TREADMILL

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Abstract

This project aimed to search for a better applicability of the three minutes all-out protocol through reduced testing in two minutes (AO2) and one minute (AO1) all-out, in obtaining aerobic and anaerobic parameters, in running tailed on non-motorized treadmill (NMT). Besides these, mechanical values of power, speed, force and physiological results of lactate and peak heart rate (HR peak) were also obtained and analyzed. The results of the study showed that for obtaining the data in aerobic and anaerobic AO1 and AO2 protocols were not possible. However, the mechanical values and the results of peak lactate and HR showed no significant differences by applying ANOVA and were significantly correlated (Pearson and ICC) among the three application times. And all the data presented is shown similar to previous studies.

Keywords: All-out, aerobic and anaerobic parameters, Non-motorised tread-mill

Introduction

The *all-out* three minutes (AO3) is a protocol, developed in cycle ergometer, by Vanhatalo, based on the classical model of critical power, arriving in a more practical way in the same aerobic and anaerobic parameters objectified through conventional application. Seeking for greater specificity, the AO3 was also validated in the non-motorized treadmill (NMT)². As it is considered an ergometer which favors the spontaneous production of speed and acceleration. Therefore, the main objective of this project was to investigate the possible obtaining of the same aerobic and anaerobic parameters found in AO3 through application of *all-out* times reduced to two (AO2) and one minute (AO1) in race tied in NMT. In addition, analyzing the results of mechanical strength, power and speed with the three times of application, as well as doing the same to the physiological values of lactate and heart rate peak.

Results and Discussion

There weren't observed significant correlations of ICC consistency and ICC absolute agreement for aerobic and anaerobic capacity between the three durations of all-out. The same occurred for the pearson correlation. Whereas by the application of ANOVA one-way, results can be seen in **Figure 1**.

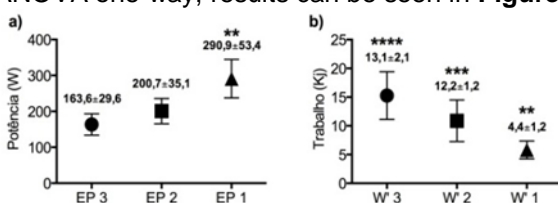


Figure 1. Comparison between aerobic capacities (EP) and anaerobic (W) between tests of all-out AO3, AO2 and AO1. * Unlike AO3 ** Unlike AO2 and AO3 *** Unlike AO3 and AO1 **** Unlike AO1 and AO2.

According to the results, it certifies that in relation aerobic capacity, the all-out three minute protocol is dependent on application time. And is believed to that the methodology adopted interfered in obtaining anaerobic capacity, due to their graphic representation for the entire area above the aerobic processes. Claiming that, for the anaerobic capacity, the AO3 would really the most appropriate.

With respect to the mechanical values, was possible observed the significant correlation between values of the peak power, average power, average force, average speed, time range for peak power for the three days of all-out. The same occurred to the peak HR and lactate peak. The evaluated were unaware how much time they would run on the respective days, and from that information and the results presented, it can be said that the participants did not adopt race strategy.

Conclusions

The set of results allowed the conclusion that for obtaining aerobic and anaerobic parameters, the AO1 and AO2 protocols were not viable. Thus, it is suggested studies to define better methods for addressing specific sports samples.

Acknowledgement

Special thanks to CNPq organ.

¹ Vanhatalo, A.; Doust, J. H.; Burnley, M. *Med Sci Sports Exerc*, **2007**, 39, 548-55.

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