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INFLAMMATION PREDICTS PERFORMANCE IN MARATHONERS WITH EXERCISE-INDUCED BRONCHOCONSTRICTION

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KEYWORDS: Exercise-induced bronchoconstriction; marathon runners; inflammation; performance.

INTRODUCTION

Exercise-induced bronchoconstriction (EIB) is defined as a transient narrowing of the airways that occurs after exercise⁽¹⁾. The objective of this study was to investigate the role of inflammation and aerobic capacity in performance of non-professional marathon runners with and without EIB.

METHODS

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Thirty-eight male amateur marathon race participants in the International Marathon of São Paulo, 2012, were recruited. The study was approved by the ethics committee on human research of the Federal University of São Paulo under the number 0573/11. All participants underwent pulmonary function testing, cardiopulmonary test and peripheral blood analysis to measure creatine phosphokinase (CPK) and high-sensitivity C-reactive protein (CRP_{HS}).

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RESULTS

Twenty-nine athletes showed normal results in pulmonary function test and 9 subjects present a decrease higher than 10% in expiratory forced volume in first second, characterizing an EIB diagnosis. Statistically difference was found in maximal oxygen consumption (EIB negative group mean: 47.75; EIB positive group mean: 43.91; $p=0.02$). No difference was observed between groups analyzing the race finishing time (EIB negative group mean: 4h 32min 34sec; EIB positive group mean: 4h 26min 34sec; $p=0.74$). The negative EIB group presented a negative moderate correlation between marathon finishing time and VO_{2max} ($\rho = -0.532$ and $p=0.005$). There was found a significantly positive correlation between marathon finishing time and CRP_{HS} ($\rho=0.714$; $p=0.04$), and between marathon finishing time and Δ CPK ($\rho=0.719$; $p=0.04$), both measured immediately after the marathon, in EIB positive group. The EIB negative group did not show any correlation with biomarkers.

DISCUSSION

The correlation result found in EIB negative group as expected showed that the aerobic performance it's predicted by aerobic capacity⁽²⁾. The positive correlation between marathon finishing time and both CRP_{HS} , a conventional biomarker of systemic inflammation and a CPK a marker of damage tissue, shows that in EIB subjects inflammation and damage tissue influence the EIB athletes' performance^(3,4).

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CONCLUSION:

Our results shows that inflammation and damage tissue seems to play an important role in EIB positive runners performance, and that the aerobic capacity can be used as a predictor of performance only in non-EIB subjects.

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