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Acute phase response to moderate and high intensity aerobic exercise in sedentary young males

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ACUTE PHASE RESPONSE TO MODERATE AND HIGH INTENSITY AEROBIC EXERCISE IN SEDENTARY YOUNG MALES

INTRODUCTION

Exercise induced local inflammatory response is accompanied by a systemic response known as the acute phase response (APR) (1). Inflammatory response is essential and promotes tissue healing. However, improper regulation of inflammation can lead to excess tissue damage. IL-6 is the main cytokine involved in the induction of APR, which includes synthesis of certain proteins in the liver such as c-reactive proteins (CRP). To date a few studies compared the acute exercise-induced IL-6 and CRP responses to moderate and high intensity aerobic exercise. Therefore, the aim of this study was to compare APR to one bout of aerobic exercise of moderate and high intensities in sedentary young males. Furthermore, we aimed to evaluate the impact of IL-6 released during exercise on CRP generation.

METHODS

Eighteen young sedentary volunteers (age range 20-26 years, BMI: <25) were assigned to either moderate (ME, n: 8, 60% VO₂max) or high (HE, n: 10, 75% VO₂max) intensity exercise groups. Each group ran on the treadmill for 30 minutes at the respective exercise intensities. Blood samples were collected before, immediately after and 2 h after the exercise session to determine IL-6 and CRP levels. IL-6 and CRP were measured by nephelometry and ELISA, respectively. The data analyzed by paired t-test and ANOVA with repeated measures (General Linear Model).

Results: A single bout of both moderate and high intensity exercise induced significant increases in serum CRP and IL-6 levels ($p < 0.05$), however, no significant difference was observed between experimental groups (time x group effects) ($p > 0.05$). There was no significant correlation between serum levels of IL-6 and CRP either at immediately or 2 h after exercise ($p > 0.05$).

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DISCUSSION

Findings of this study demonstrated that a single bout of both moderate and high intensity aerobic exercise increased serum IL-6 and CRP concentrations in untrained males. Exercise intensity didn't seem to affect the magnitude of the increase in either IL-6 or CRP within the limits of this study. Moreover, there was no association between IL-6 and CRP at any observation consistently with the literature (2). Therefore, it seems that there are other factors stimulating CRP synthesis in response to acute exercise other than IL-6.

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