ANNALS OF RESEARCH IN SPORT AND PHYSICAL ACTIVITY

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ANNALS OF
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INFLUENCE OF VITAMIN D AND INFLAMMATION ON SLEEP DISORDERS IN SEDENTARY AND STREET RUNNERS

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KEYWORDS: Apnea; runners; sedentary; inflammation

INTRODUCTION

Sleep is a functional state, reversible and cyclical⁽¹⁾. Obstructive sleep apnea is a sleep disorder characterized by brief and recurring events of obstruction of the upper airway during sleep⁽²⁾. One of the most important actions of vitamin D is the control of the inflammatory response due to its potent immunomodulatory activity⁽³⁾. The aim of this study was to verify if serum levels vitamin D can influence sleep apnea syndrome in runners and sedentary.

METHODS

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Fifty-three individuals living in the city of São Paulo were recruited, being twenty-seven runners and twenty-six sedentary. The study was approved by the ethics committee on human research of the Federal University of São Paulo under number 049494/2016. All participants responded Berlin Questionnaire, that assesses the risk of obstructive sleep apnea and it was attributed the number 1 to Berlin questionnaire result "without risk of apnea" and the number 2 to "with risk of apnea" to work with the statistical analysis. They also underwent peripheral blood analysis to measure vitamin D and high-sensitivity C-reactive protein (CRP_{HS})

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RESULTS

The analysis of Berlin questionnaire showed that 3.70% of the runners present a risk of apnea, while this percentage was 38.46% in the sedentary group ($p=0.02$). The comparison of vitamin D and CRP_{HS} levels between groups was analyzed and reveals that the concentration of vitamin D is higher in runners (27.22 ± 5.9 ; 22.65 ± 7.4 ; $p=0.01$) and the CRP_{HS} concentration is lower in the group of runners (0.14 ± 0.1 ; 0.38 ± 0.5 ; $p=0.05$). There was observed a negative correlation between the result of Berlin questionnaire and the Vitamin D levels ($\rho=-0.412$, $p<0.05$).

DISCUSSION

Studies suggests that low vitamin D predispose or aggravates obstructive sleep apnea, an inflammatory disorder ⁽⁴⁾. However the prevalence of sleep apnea was significantly lower between runners, suggesting a positive effect of exercise in prevent this sleep disorder. The lowest values of CRP HS, can be assigned to the exercise itself and also to the low prevalence of sleep apnea between runners, taking into account that sleep apnea causes an inflammatory response. Otherwise, there is a correlation between higher levels of vitamin D and lower inflammatory response **Conclusion:** Our results suggests that inflammatory response, vitamin D levels and the quality of sleep are correlated. Otherwise the exercise seems to have a positive effect in reducing the risk of sleep apnea syndrome and to decrease the inflammatory response. Also exercise is associated with increased vitamin D levels, probably due to increased exposure to sunlight.

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