



## Evaluation of the lipid profile of medicine students before and after adherence to student athletic association

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### Introduction

Physical activity is often related to health benefits for the population, which may be direct or indirect [1-2]. As an example of indirect benefits, there is an improvement in brain functionality and sleep [1]. As for the direct ones, one can mention the prevention of cardiovascular, metabolic, and immunological diseases, namely the reduction of diastolic blood pressure, increased insulin sensitivity and lipid circulation, molecules that are quantified to analyze the lipid profile of people [1-2]. Thus, the characterization of total cholesterol (TC), HDL, LDL, and triglycerides (TG) is important to assess the risk of cardiovascular disease, since these parameters are closely related to these dysfunctions, being one of the main causes of mortality in men and women in Brazil [2].

On the other hand, the practice of physical exercise is characterized as an important prevention and treatment factor to regulate lipid metabolism [3]. In this way, the sedentary lifestyle profile can be classified by the amount of energy spent, calculating the metabolic equivalents (METs), which are associated with oxygen consumption every minute in any activity, which can be daily activities and exercises physical themselves [4]. As the pedagogical requirements of the medical course demand many hours of study, students end up leading a more sedentary life, thus increasing the risk of this population to develop dyslipidemia and cardiovascular diseases, such as atherosclerosis and hypertension [5].

Therefore, this study aimed to evaluate the lipid profile of students before and after six months of joining student athletic association at a medical school.

### Methods

#### Study Design and Development

This study is classified as a longitudinal, prospective, and field research. Before any procedure and intervention, participants were informed about the risks and benefits in the Informed Consent Form delivered in duplicate and signed by the researchers and the participants before the start of data collection. Furthermore, the participants were categorized by number on a spreadsheet to maintain the confidentiality of the information obtained. In this way, blood samples were collected to trace the lipid profile (TC, HDL, LDL, triglycerides, VLDL, non-HDL) of medical students from the interior of São Paulo who accepted to participate in the physical activities of student athletic association, such as athletics, basketball, drums, field football, futsal, handball, judo, swimming, field or table tennis, volleyball and chess. In addition, the frequency with which the participants performed these physical exercises during the week was evaluated. Before each blood collection, the student answered two questionnaires to assess the individual profile, in which there were questions such as age and sport of interest, physical activity profile and the amount of time, in minutes, that the participant performed the physical activity per week.

#### Ethical Approval

This study was approved by the CEP/CONEP Research Ethics Committee in accordance with CNS resolution nº 466/12 under registration nº 3.126.544.

### Results

Of the 31 students who agreed to participate in the

study in the first semester, only six remained at student athletic association after one semester, two men and four women. After analyzing the questionnaires of the 31 participants, it was found that most participants smoked and only two students reported not using alcohol weekly. Differently, about half used medications, including anxiolytics and contraceptives.

With regard to the diet adopted on a daily basis, all claimed to ingest large amounts of carbohydrates and a minority stated that they adopted a diet rich in lipids. After six months that the students joined student athletic association and performed physical activities, the analysis of the lipid profile of the six students showed that 80% (n=5) had increased levels of triglycerides, with 40% (n=3) of them having values above the reference value (150mg/dL).

In relation to total cholesterol, there was improvement in only one student, unlike HDL, whose levels were better in 66.6% (n = 4) of the sample. Furthermore, LDL levels were better in four of the six students evaluated (66.6%). Taking into account the energy expenditure of each physical activity by the participants, values from six (6) to 29.5 METs were observed, with a median of 12.5 and an average of 17.44, results similar to those observed in other studies. As for the level of physical activity, a large part of the sample was considered irregularly active or very active; data also observed in previous studies in the health area. It was not possible to establish a correlation between the lipid profile and the type of sports offered by student athletic association. In addition, there was no agreement in the diet followed by the participants in this research in relation to the diet recommended by the Ministry of Health.

## Conclusion

The practice of sports in student athletic association by medical students improved the lipid profile of students, causing an increase in HDL and a reduction in LDL. Furthermore, it was observed that the increase in total cholesterol was closely associated with the increase in HDL, a fact that may be related to the practice of physical activity, showing the importance of student athletic association in stimulating sport during graduation. In addition, only one participant who practiced more intense physical activity also had lower levels of total cholesterol and LDL, in addition to HDL with ideal results. And, considering the amount of METs in the female and male populations, the same results of this research were observed in two other researches. Regarding the level of physical activity, a large part of the sample was considered irregularly active or very active, a fact also found in other scientific articles in the

health area. In this way, these data can help professors and organizations, such as athletic ones, to promote awareness-raising work for students from higher education institutions.

**Keywords:** Lipid profile. Physical activity. Medicine. Study.

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Nil.

## Ethics approval

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## Informed consent

The patient signed the consent form.

## Funding

Not applicable.

## Data sharing statement

No additional data are available.

## Conflict of interest

The authors declare no conflict of interest.

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