ALTERATIONS IN BMI, BLOOD PRESSURE EXERCISE WITH ONE TO THREE TIMES PER WEEK WITH SOMEONE WHO DO NOT EXERCISE IN STUDENTS OF TEHRAN MEDICAL BRANCH OF AZAD UNIVERSITY, 2011

FARIDEH SHOJAEI*, NOUSHIN SHABANI-ASL
Department of Physical Education, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran

Received - 08.12.2017; Reviewed and accepted - 11.01.2018

ABSTRACT

Background and Aim: These days, no one can dispute the fact that, in addition to positively affecting physical health, exercising also has the same effect on people’s mental health. Given that young male and female university students, as the young academic population, play a substantial role in the health and well-being of any society, the present study investigated the differences in BMI and blood pressure in students who exercised for four and a half months one to three times a week in comparison with students who did not exercise in Islamic Azad University of Medical Branch of Tehran in 2016. Methods: In this case-series study, 100 students from Islamic Azad University of Medical Branch of Tehran who had entered the university in 2011 were randomly selected for the study and were investigated. The participants’ demographic information and their history of diseases were gathered through a researcher-developed questionnaire, and their blood pressure was measured. BMI and blood pressure were measured and compared in the three groups after four and a half months of exercising. The data collected were analyzed by SPSS version 18 through using descriptive-analytical statistics and chi-squared statistical test (X² test). Results: Of the 100 participants in the study, 50 students were female, and 50 were male. Forty-eight percent of the participants did not exercise, 34% exercised once a week, and 18% exercised three times a week. The mean blood pressure change before exercising was 2.2 for systolic, and 1.45 for diastolic blood pressures and the mean BMI change was 0.6 kg/m². Conclusion: The differences in the mean amounts for these three indexes before and after exercising were shown to be statistically significant (P<0.0001), furthermore, the amount of change in BMI and blood pressure differed based on the amount of exercise, in a way that the highest amount of change was for participants who exercised three times a week.

Keywords: BMI, Blood Pressure, Exercise, Students, Tehran, Iran.

INTRODUCTION

Exercising is considered a healthy way to gain, maintain, and improve health, which not only improves physical health but also affects people’s mental health and brings about happiness and liveliness [1]. Exercising increases the basic energy consumption in the body, which is accompanied by an increase in oxygen consumption in cells and causes effective metabolism in the body and burns extra fat [2]. However, the effect that exercising leaves on the body depends on the type and intensity of exercising, varying from minor to substantial metabolic and physical effects [3, 4]. Exercising may have different effects on different populations, and university students, as an example of a relatively inactive population, can improve their health by increasing their daily physical activity [5]. Fast walking is highly beneficial for the health and proper functioning of the heart, since the heart is a muscular organ, and anything that causes more blood circulation in a muscle strengthens it. Besides, regular walking decreases blood pressure [6]. Furthermore, the risk of developing a brain stroke due to blood clots is 40% lower for people who walk for 20 minutes every day. Walking can decrease the risk of colon cancer, maybe because walking causes the substances in the intestines to move and causes the residual waste substances to be exerted. Regular exercising can decrease the risk of developing the Alzheimer’s disease and combats reduction of mental abilities [7]. In 2002, the motto of the WTO was “activity is the key to health.” It was stated that 30 minutes of daily moderate physical activity has the same effects on health as fast walking does [8]. Hypertension is one of the main causes of having a disabled society. It doubles the risks of cardiovascular diseases, including coronary artery disease, congestive heart failure, ischemic stroke, kidney failure, and peripheral vascular disease [9]. Hypertension due to the prevalence of h in association with cardiovascular diseases is major healthcare problems in industrialized and developing countries [10], which has considerably increased in the Middle East, too [11]. BMI is nowadays used as the most common and most important screening tool since in most cases there is a direct relationship between BMI and the total amount of fat in the body. The present study aims at investigating the differences in BMI and blood pressure in students who exercised for four and a half months once or three times per week in comparison with students who did not exercise in Islamic Azad University of Medical Branch of Tehran. The students had entered the university in 2011.

METHODS

In this case-series study, 100 students from Islamic Azad University of Medical Branch of Tehran who had entered the university in 2011 were randomly selected for the study and were investigated. The participants’ demographic information and their history of diseases were gathered through a researcher-developed questionnaire, and their blood pressure was measured. The criteria for entering the study were: being a student, not having underlying diseases, not being a smoker, not taking prescription or OTC medicines, and consenting to participate in the study. The participants fell into the three categories of the group that does not exercise, the group that exercises once a week, and the group that exercise three times a week, and the amount of difference in their BMI and blood pressure were measured and compared in the three groups after four and a half months of exercising. The data collected were analyzed by SPSS version 18 through using descriptive-analytical statistics and chi-squared statistical test (X² test)[12, 14]. Moreover, P<0.05 was considered as the significance level.

RESULTS

Of the 100 participants in the study, 50 students were female, and 50 were male. Forty-eight percent of the participants did not exercise, 34% exercised once a week, and 18% exercised three times a week. The mean systolic blood pressure before exercising was 118.45 mm/Hg, and diastolic blood pressure was 76.8 mm/Hg. Also, the initial BMI was 23.9 kg/m². The mean blood pressure change before exercising was 2.2 for systolic, and 1.45 for diastolic blood pressures and the mean BMI change was 0.6 kg/m². The differences in the mean amounts for these three indexes before and after exercising were shown to be statistically significant (P<0.0001)(Table 1). The mean change in BMI and blood pressure were not significant among males and females based on gender (P>0.05). Furthermore, the amount of change in BMI and blood pressure differed based on the amount of exercise, in a way that the highest amount of change was for participants who exercised three times a week (P<0.05).
DISCUSSION

Exercising plays a substantial role in stabilizing natural blood circulation and other physiological activities in the body. The scientist believes that, despite living at the age of robots without much activity for humans, exercising can be a desirable tool for providing healthy entertainment and maintaining physical health. Regular exercising improves bone density, increases muscle flexibility and power, and maintains body fitness in people [15, 16]. Exercising can have different effects on different populations. University students, as an example of a relatively inactive group, can improve their health by increasing the level of their daily physical activity. To this end, the present study investigated the differences in BMI and blood pressure in students who exercised for four and a half months once or three times per week in comparison with students who did not exercise Islamic Azad University of Medical Branch of Tehran. The students had entered the university in 2011. The results of the study showed that the mean change in before exercise systolic blood pressure was 2.2, the mean change in diastolic blood pressure was 1.45, and the mean BMI change was 0.6 kg/m² (P=0.0001). In the Borsheim et al. (2003) study, it was stated that the amount of consumed oxygen in the after-exercising phase is high for a longer period in longer and heavier forms of exercise, and this causes a change in fat level [17]. In our study, regular exercise for four and a half months left a desirable effect in reducing body fat percentage in the investigated people. However, the effectiveness of exercising for those who exercised three times a week was significantly higher than for those who exercised once a week. So et al. (2010) in China showed that exercising more than two times a week compared with exercising less than two times a week among university students resulted in reduced systolic and diastolic blood pressure, an effect independent of the effect of exercising on BMI [18]. In our study, all the three factors including systolic and diastolic blood pressure and BMI showed a significant reduction after exercising three times a week. The amount of reduction for participants who exercised three times a week was significantly larger than the amount of participants who exercised once a week. In Levin et al. (2003) in America, it was postulated that the effect of type and intensity of exercising on BMI in adolescents is larger for boys than for girls [19], while in the present study the amount of change in all the investigated factors was the same for males and females. In Fasting et al. (2008) in Norway, it was shown that low levels of physical activity results in an increase in BMI and also diastolic blood pressure in adolescents [20], while in our study a decrease in BMI and diastolic blood pressure was witnessed for the group who exercised once a week. In Bogdanis et al. (2013) in Greece, it was shown that shorter, less intensive exercising has smaller physical effects than longer, more intensive exercising, reporting a statistically significant difference [21]. These results are in line with the findings of the present study. Also, in Mann et al. (2013) in South Africa, it was reported that the two factors exercising intensity and people’s physical properties are the most important factors determining the physical effects of exercising [22]. We found the same results in the present study regarding the intensity of exercising.

CONCLUSION

The results of the present study showed that exercising has a beneficial role in regulating blood pressure and BMI in the body for both males and females, with exercising more often leaving better effects. It is suggested that a comprehensive plan be developed to increase the number of times university students exercise during the week, and more studies with larger samples be conducted in other populations in order to confirm the findings obtained in the present study.

REFERENCES


Table 1: Mean of Systolic and Diastolic blood pressure and BMI.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before Exercise</th>
<th>After Exercise</th>
<th>P-value</th>
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<tr>
<td>Blood Pressure (mm/hg)</td>
<td>Systolic</td>
<td>Diastolic</td>
<td>Systolic</td>
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<tr>
<td></td>
<td>118.45</td>
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<td>116.23</td>
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<tr>
<td>Body Mass Index (BMI)(kg/m²)</td>
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