



**COMPARISON OF BODY COMPOSITION OF ACTIVE AND INACTIVE FEMALE
STUDENTS**

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ABSTRACT

Body composition is one of the factors affecting the physical fitness which has a significant effect on physiological responses to exercise. This study aimed to evaluate and compare the body composition of active and inactive students of Shahrood Azad University. This is a (causal-comparative) cross-sectional survey and the population of the stud consists of 7000 Azad University students aged 20-25 years old. The sample of the study consisted of 150 students divided into two groups, namely a control group (inactive students, n=75) and an experimental group (active students, n=75). The body composition indices were calculated using a body composition analyzer. To classify and calculate the mean and standard deviation of the sample, descriptive statistics was used and Kolomogrove-Smirnov test showed the normal distribution of the data. Inferential statistics and t-test were run to compare the means of variables in active and inactive groups at significant level of ($P < 0/05$). The SPSS version 19 was used to analyze the data. There is a difference ($t = 12.675; .05 > p$) between the body composition of active and inactive female students of Shahrood Azad University. Body composition is an important factor for health indicating a person's mental and physical fitness. In general, it can be concluded that physical activities as a convenient, easy, and inexpensive strategy and approach, are necessary more than before to promote the mental health among college students.

Keywords: Body composition, active and inactive girls, lean mass, fat mass, Body Mass

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INTRODUCTION

Limitations on physical activity the achievements of the mechanical life in the present era lead to overweight which is the cause of many other chronic diseases such as hypertension, type II diabetes, strokes and myocardial infarction, and cancers with the highest mortality rate [1]. The prevalence of overweight and obesity is rapidly increasing in developing countries as in the industrialized countries [2]. In most of the epidemiological studies, anthropometric indices and body composition such as waist size, body mass index, a ratio of waist size to hip size and the waist-to-height ratio are used to evaluate the prevalence of overweight and obesity and the body fat distribution [3]. Extensive research on the body composition effective for health has proposed various indicators including e fat percentage, body mass index, and weight – to-hip ratio (WHR). Research findings have shown that waist- to-hip ratio and body mass index are appropriate predictors for VLDL-C and systolic and diastolic in both females and male [4, 5, 6, 7 & 8].

With regard to the fact that no academic study has been conducted on the body composition and physical activity of female college students; hence, the researcher aims to fill this gap in the research and to investigate whether active and inactive

female students are different in terms of body composition.

METHODOLOGY

The current study is a cross-sectional study (causal-comparative). The number of 7000 Islamic Azad University students with an age range from 20 to 30 years will participate in the study after filling out the PAR-Q & YOU questionnaire form and signing the consent form of the company, who are a sample of 150 students, grouped into two experimental (active) and control (inactive) groups of 75 members.

Body composition parameters including height, weight, age, body mass index (BMI), waist to hip ratio (WHR), body fat percentage (BF%), total body fat mass, body muscle mass, ratio of intracellular to extracellular water, hands being balanced together, feet being balanced together, limbs being balanced with the body and basal metabolism, the amount of protein, minerals and total body water were measured using a body composition analyzer, and in total, a score was calculated for each individual's physical fitness (out of 100 points) and output body composition indicators were obtained. The Kolomogrove-Smirnov test showed the normal distribution of the data. An independent t-test was used to compare the average of variables between two groups of

active and inactive at a significant level ($P < 0.05$). All data analysis of the study was performed using SPSS statistical software package version 19.

RESULTS

The results showed that the average body composition of active girls is 85.24, while it was reported to be 70.76 in inactive students. The mean fat mass is 15 kg in active girls, while it is 34 kg in inactive girls. The average lean body mass is 26 kg in active girls and is 19 kg in inactive girls.

The average BMI is 20.28 kg in active girls and is 15.56 kg in inactive girls. Moreover, the average ratio of intracellular to extracellular water is 0.38 in active girls and is 0.39 in inactive girls and the mean mineral is 2.80 in active girls and is 2.46 in inactive girls. In addition, the average body water is 29.2 in active girls and is 25.08 in inactive girls, and finally, the ratio of protein is 7.75 in active girls and is 6.48 in inactive girls.

Table 1: Description of the body composition of active and inactive girls

body composition	Number	Mean	SD	Max	Min
active students	74	85.24	8.44	105	75
inactive students	74	70.76	4.80	78	60

Table 2: Comparison of the body composition of active and inactive girls

active and inactive	mean Difference	Std. Difference	Df	T	P value
Fat mass	-11.250	1.222	148	-9.165	0.001
Lean mass	11.480	.09154	148	12.541	0.001
Body composition	16.480	1.300	148	12.675	0.001
BMI	-13.720	1.0780	148	-12.725	0.001
intracellular to extracellular water of cell	0.0444	0.0036	148	12.270	0.001
Minerals	1.004	0.0902	148	11.131	0.001
Body water	7.800	0.6531	148	11.943	0.001
Protein	1.628	0.1473	148	11.045	0.001

Body composition of active students is different from that of inactive students at Shahrood Branch, Islamic Azad University. $t=12.675$ and $p < 0.05$

Body fat mass of active students is different from that of inactive students at Shahrood Branch, Islamic Azad University. $t = -9.165$ and $p < 0.05$

Lean body mass of active students is different from that of inactive students at Shahrood Branch, Islamic Azad University. $t=12.541$ and $p < 0.05$

CONCLUSION

The body composition of active students is different from that of inactive students at Shahrood Branch, Islamic Azad University ($t=12.675$ and $p < 0.05$). These findings are in line with the findings of the research by Lavrych (2014), Sylanpa (2011), Ghahremanloo (2006), but are incompatible with the results of the studies by Freya (2009). Human Body composition refers to the amount of water, the content of elements, variety of textures and type of

materials. Since, the body overall shape is formed by the components of body composition, and the studies conducted in the last decade indicate that the body composition is an important factor in the health profile of the person and his physical and mental fitness, thus, currently, the measurement of body composition is a common practice in many medical, health and sport centers. The body fat mass of active students is different from that of inactive students at Shahrud Azad University ($t = 9.165$ and $p < 0.05$). This finding is consistent with the findings of the studies by Atri (2012), and inconsistent with the findings of the studies by Eftekhari (2010) and Aminian (2006). The reason for such an inconstancy could be related to the fact that the previous researchers used the traditional caliper method to measure body fat while the researcher of the present study used the all-electronic body composition device to perform the experiment. The lean body mass of active students is different from that of inactive students at Shahrud Azad University ($t = 12.541$ and $p < 0.05$). This finding is consistent with the findings of the studies by Samadi (2012), Eftekhari (2012), Bahrololoum (2010) and inconsistent with the findings of the studies by Lee (2012) and Aminian (2010). The reason for such an inconstancy could be related to the difference in the population

of this study with those of the previous research since they have conducted their studies on both men and women while the researcher has conducted the research on female students who are considered as the young people of every society.

Physical activity not only is effective in reducing the prevalence of heart diseases, but is also effective on the incidence rate of physical illnesses and psychological disorders such as high blood pressure, anxiety as well as stress. Due to the maturity of the technology, everyday activities are largely limited and this has resulted in the cardiovascular events to become the second cause of death after traffic accidents. This issue in sedentary jobs, including academic careers is more important. On the other hand, the youth period is a period from which many high-risk diseases in middle and old age emanates, therefore, a student, in addition to having adequate knowledge about the effects of a proper physical activity, must have enough mobility as well. The issue that to what extent the current educational programs of students can be effective in increasing their physical activity and or their physical fitness is an issue that has been examined in several studies, but needs regular screening in order for a proper planning. In general, it can be concluded that physical activities, as an appropriate,

easy and cheap strategy and approach, are necessary more than ever to promote mental health among university students.

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