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## The effect of physical activity on general health of nursing students of Hamadan University of Medical Sciences in 2016

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### ABSTRACT

**Background & objectives:** Studies have shown that physical activity has decreased in all age groups, especially in teenagers, and sedentary life is one of the most important threatening of public health. This study aimed to determine the effect of physical activity on social and general health of nursing students.

**Methods:** In this study, of nursing students who met the inclusion criteria, 60 persons were randomly selected, then equally and randomly were allocated to two groups. The intervention group, according to plan carried out by a specialist in exercise physiology, did physical activity for 8-week, the control group received no intervention. At the beginning and the end of the study period, general health status with GHQ28 questionnaire (in both groups) and body composition with the body composition analysis device (only in the intervention group) were measured and compared

**The results:** In the intervention group the mean and standard deviation of the general health score before and after the intervention were  $34.90 \pm 22.15$  and  $15.70 \pm 5.13$  respectively ( $P < 0.001$ ). In the control group the mean and standard deviation of the pre-test and post-test of the general health score were  $35.27 \pm 11.42$  and  $35.50 \pm 7.16$

respectively ( $P=0.087$ ). General health status in the experimental group after the intervention compared to the control group was significantly improved ( $P<0.001$ ).

**Conclusions:** Doing Regular exercise for at least 8 weeks can improve the general health indicators, including physical symptoms, depression, anxiety, insomnia, social and functional health of students.

**Keywords:** Exercise, Physical activity, General health

## INTRODUCTION

Based on the definition of the World Health Organization in 2014, physical activity, refers to any body movement produced by the contraction of skeletal muscles such as walking, swimming and home affairs that cause substantial energy expenditure beyond resting values. According to recommends of this organization, adults aged 18 to 64 years should do at least 150 minutes a week (for example, 5 times a week and every 30 minutes) moderate-intensity aerobic physical activity [1]. Regular physical activity, even in small amounts, has significant health benefits including the reduction of mortality [2]. Today, achieving the desired physical activity between the ages of 18 and 24 years quickly dropped [3].

According to the finding of descriptive study, which was done in England in 2012, from 215 nursing students studied only 8/23% had appropriate physical activity based on the guidelines of the World Health Organization [4]. Also in Germany in a study with 266 nursing students only 9/18% during the week had at least three sessions of physical activity [5]. In Iran, this ratio is much lower compared to other countries. Based on existing findings, only 10 percent of the students have exercise activities in Iran [6]. Lack of physical activity at an optimal level, will increase the risk of diseases such as stroke, diabetes, breast cancer, colon cancer, hypertension and cardiovascular disease [7,8].

In addition to the problems mentioned in nurses, Lack of regular exercise by nurses and not having a health-promoting lifestyle, one of the barriers to encourage patients to exercise and active lifestyle. On the other hand, nurses who personally embrace physical activity are more likely to encourage their patients to improve their health through physical activity or diet [9]. On the others hand, physical activity with impact on physical confidence can lead to improve the quality of people's lives [3]. Health-promoting lifestyle was not quite favorable in nursing students and physical activity aspect is the lowest level in the dimensions of health promoting behaviors [10]. Since nursing students in the future as providers of services to clients, are role models for clients, in this study, the effect of body composition in nursing students in their general health was examined.

## MATERIALS AND METHODS

This is semi-experimental study that was done with participates nursing undergraduates in 2016. With regard to the Inclusion criteria (age range 18 to 24 years, of developing heart disease, diabetes and certain psychiatric disorders) 60 nursing male students from the second semester to semester 6 were selected through the convenient sampling method. For maintain uniform conditions in both groups, random allocation method was used in the two intervention and control groups.

Experimental group, Trained sports intervention by using the Sport version FITT and American College of Sports Medicine (ACSM) Protocols Under the specialist of Sports Medicine for 8 weeks, 3 sessions per week, a total of 24 sessions, each session lasting 20-60 minutes' time. In the control group, no intervention took place. Public health status in study units was measured one time before and once after the intervention and compared with each other. Exclusion criteria also included: Absence in three consecutive meetings or a quarter of all training sessions, increased heart rate to the HR-MAX in the experimental group, Intolerance exercise protocol in the experimental group, Lack of access to the control group to assess the end of the period.

The data collection tool for general health status was GHQ28 questionnaire. This questionnaire was translated into Persian and validation by Taghavi and et al and alpha coefficient for the total scale was reported 90% in the Iranian community [11]. From 28 questions on this questionnaire question 1 to 7 relate to scale of physical symptoms, question 8 to 14 relate to symptoms of anxiety and sleep disorders, question 15 to 21 relate to assessment of social function symptoms and finally Questions 22 to 28 were assessed symptoms of depression.

SPSS 16 was utilized to analyze the data. Further to descriptive statistics, first Kolmogorov-Smirnov test was used to assure the normal distribution of variables and then independent t-test was utilized. The significance level was 5%.

## RESULTS

The average age of the participants in the intervention and control groups were  $20.69 \pm 1.27$  and  $20.93 \pm 2.08$  respectively. There was not statistically significant difference in terms of the average age of both groups ( $P=0.94$ ). Intervention group, in terms of semester, 6 students (20%) belonged to the second and third semester, 8 students (20/7 %) belonged to the fourth semester, and also the number of students for each of the fifth and sixth semesters was 5 people (7/16%).

In the control group, students studied from the semester, from the second semester, third, fourth, fifth and sixth were selected in equal proportions, 20% ( $n = 6$ ). The results of the Chi - square test showed no significant difference between students in terms of semester in both control and intervention groups ( $P = 0.97$ ).

In the experimental group the mean and standard deviation of public health before and after the intervention were  $51/22 \pm 60/31$  and  $13/5 \pm 70/15$  respectively and this difference was statistically significant ( $P < 0.001$ ). In the control group the mean and standard deviation of public health before and after the intervention were  $35/27 \pm 11/42$  and  $35/50 \pm 7/16$  respectively and this difference was not statistically significant ( $P = 0.87$ ). (Table 1)

**Table-1: Comparing the scores of public health before and after the intervention within intervention and control groups**

Group	Mean $\pm$ SD		T	P-value
	Before	After		
Intervention group	$31.60 \pm 22.51$	$15.70 \pm 5.13$	4.67	< 0/001
Control group	$35.27 \pm 11.42$	$35.50 \pm 7.16$	0.16	0.87

Before the intervention, a statistically significant difference was not observed in the between pre-test results both groups ( $P = 0.19$ ). But after the intervention, public health score in the control group significantly had reduced ( $P < 0.001$ ). (Table 2)

**Table 2: Comparing the scores of public health before and after the intervention between intervention and control groups**

Group	Intervention group	Control group	T	P-value
	Mean $\pm$ SD	Mean $\pm$ SD		
Before	$31.60 \pm 22.51$	$35.27 \pm 11.42$	1.33	0.19
After	$15.70 \pm 5.13$	$35.50 \pm 7.16$	12.31	< 0/001

Before the intervention, between the experimental and control groups in terms public health subscales (scale of physical symptoms, symptoms of anxiety and sleep disorders, assessment of social function symptoms and assessing symptoms of depression) was not observed statistically significant difference ( $P > 0.05$ ). But after the intervention, the results were indicated a significant increase in mean scores of all subscales of public health in the intervention group than the control group ( $P < 0.05$ ). (Table 3)

**Table 3: Comparing the scores of public health subscales before and after the intervention**

Subscales	Group	Before		After	
		Mean $\pm$ SD	P-value	Mean $\pm$ SD	P-value
Physical symptoms	Interventional	8.2 $\pm$ 7.5	0.24	3.9 $\pm$ 1.6	< 0/001
	Control	8.5 $\pm$ 2.2		9.3 $\pm$ 2.3	
Symptoms of anxiety and sleep disorders	Interventional	8.3 $\pm$ 3.5	0.38	5.4 $\pm$ 2.2	< 0/001
	Control	9.5 $\pm$ 9.2		9.5 $\pm$ 2.2	
Social functions, symptoms	Interventional	8.8 $\pm$ 3.05	0.83	3.9 $\pm$ 1.7	< 0/001
	Control	8.9 $\pm$ 3.07		9.6 $\pm$ 2.7	
Symptoms of depression	Interventional	7.1 $\pm$ 4.4	0.15	3.4 $\pm$ 2.4	< 0/001
	Control	8.85 $\pm$ 4.7		9.6 $\pm$ 3.9	

## DISCUSSION

In this study implementation of regular physical exercise activities led to improve the general health status of nursing students in total and subscales level (physical symptoms, symptoms of anxiety and sleep disorders, assessment of social function symptoms and assessing symptoms of depression) in the experimental group compared to the control group.

The results of some studies have shown that more active and better physical fitness is associated with better general health [12]. In a descriptive study by Naghibzadeh and et al which was conducted at Ilam University of Medical Sciences, between physical fitness and physical health, anxiety, insomnia, social dysfunction and depression was observed statistically significant difference. But between social functioning subscale and physical fitness were not a significant difference [13].

The results of our study of the effects of exercise on anxiety, sleep disorders and depression are consistent with the results of the Naghibzadeh Study. In our study, unlike the Naghibzadeh study, social function score in the experimental group was significantly increased. This conflict Might be due to differences in the method of study. In our study, applied active intervention, and exercise implemented under the supervision of the sports medicine specialist. Naghibzadeh Study was a cross-sectional that perform on students, those who had passed the physical education course.

Hosseini and et al in a systematic review examined the Lifestyle Health promotion among nursing students. Results showed that health-promoting lifestyle in nursing students were not desirable and physical activity was the lowest level among the dimensions of health promoting behaviors [10]. In another study, Dehghani et al has examined the effect of regular exercise on problem-focused coping with stress in nursing students at Guilan University of Medical Sciences for 6 weeks. The results showed a significant difference between the mean score of problem-focused coping methods before and after the intervention in Interventional group. Stress not examined in our study, but doing regular exercise activities for 8 weeks had improved anxiety symptoms [6].

Amir Nejad and et al. studied the effects of eight-session exercise on social development and general health in male students of Islamic Azad University of Sari. The results of this study showed that regular exercise improved social development index, physical symptoms, depression, social dysfunction and general health in the intervention group. In the control group, no significant improvements were observed in the indices [14]. In our study, physical activity led to reduced depression, anxiety and social dysfunction in students that this result is consistent with Amir Nejad study.

Hawker's study in England, between physical activity and nursing student's mental health, including self-esteem, anxiety, depression and life satisfaction showed a significant relationship [4]. In our study, physical activity led to reduced depression, anxiety in students that this result was consistent with Hawker's study.

Nikbakht and et al in the research, compared the relationship between physical fitness and body composition with general health in overweight and obese high school student girls. The findings of this study showed that there is a significant relationship among the components of body composition, body fat mass and fat free mass between BMI and symptoms of social functioning and general health. The researchers concluded that signs of social function will be weaker if overweight or obese is high [15]. In our study in the experimental group, body mass index was significantly decreased compared to before the intervention, also general health and social functioning scores had improved compared to before the study.

## CONCLUSION

Doing regular exercise for at least 8 weeks can lead to Improving of general health parameters such as physical symptoms, depression, anxiety, sleep disorders and the social function of nursing students.

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