

The Effect of Aerobic Activities on Depression and Anxiety Symptoms and Sleep Disturbances of Female Students

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Abstract: Physicians believe that physical fitness as a proper ground to achieve appropriate psychological conditions, accordingly the aim of this study was to investigate the effect of physical activity on sleep disorder and symptoms of anxiety and depression in female students. In this study, 50 untrained female students were randomly divided into two groups. The average age of students in the experimental and control groups were 21.76 and 20.94 years respectively. The mental health of students was evaluated by general health questionnaire containing 28 questions. Data were analyzed by t test using SPSS software. Results showed that there were significant differences in the symptoms of anxiety, depression and impaired sleep between experimental and control group ($P < 0.01$). The average score of anxiety symptoms and impaired sleep in experimental group before and after of physical exercises were 7.08 and 4.6 respectively and the average score of depression in experimental group before and after physical exercises were 4.16 and 1.96 respectively ($P < 0.05$) which could be indicated better mental health and the positive effect of physical activity on mental health in experimental students. On the other hand the control group did not differ in mentioned parameters. It could be concluded physical activity seems essential as a appropriate strategy for improving mental health due to fewer psychological problems in the experimental group.

Key words: Mental Health • Physical Exercise • Depression • Anxiety • Impaired Sleep

INTRODUCTION

If people in past centuries were exposed to contagious diseases than anything else, nowadays lower risk of this type was encountered because of better hygienic conditions around the world, today. Whatever is more striking, existing of different mental disorders with more variety and severity. Depression is a dander sense to the relatives, a sense of futility and absurdity relating to the meaning of life and the inability to achieve happiness that it covers a wide range of negative emotions [1].

Considering the fact that exercise may play an important role in the health of body and soul, strongly favored for the young students and as a strategy, it can be used to develop their mental health, therefore the research on exercise and physical activities in relation to

students' mental health is a priority, so perhaps it would help to promote their mental health [1]. Landers *et al.* [2] stated that, it was previously thought that exercise activities is only useful good for health but exercise can also be effective in promoting mental health.

Paluska and Schwenk [3] showed that aerobic exercise or strength training significantly reduces the symptoms of depression and also regular exercise improves symptoms of anxiety

Craft *et al.* [4] have shown that regular physical activity may improve insomnia also reported that regular movements can be statistically useful in improving the quality of sleep in depressed females. Another research has shown that athletes are in better mental health than non-athletes. Pour Soltani [5] recorded that there are significant differences in the mental health between disabled athletes and disabled non-athletes.

In another study, self-confidence of athlete students and that of non-athlete students were compared and concluded that self-confidence of athlete students significantly more positive than that of non-athlete student confidence [6]. Therefore, the purpose of this study was to survey the effect of regular physical activity on impaired sleep, anxiety and depression in female students.

MATERIALS AND METHODS

This study is a semi-experimental, in this way; the mental health questionnaire was given to in both groups of subjects before and after physical exercise and their mental health had been evaluated. Information was obtained through questionnaires with active participation of students; statistical sample was approximately 3,000 female students of Sanandaj branch, Islamic Azad University. Sampling method was stratified random, first, regarding to the number of schools and their students, sampling were made using appropriate allocation and experimental students were selected, for selecting of students, the number of students in each school with collaboration of computer center were determined, Then fifty female students were randomly chosen and divided to two groups (experimental and control groups). After coordinating with both groups, mental health assessment was done on the due date, then the mental health of all students based on the 28-item General Health Questionnaire (GHQ) Goldberg and Hiller were tested for mental health and in next step, experimental group were subjected to physical fitness training (Stretching, smooth running, exercise program, etc) for a period of 4 weeks, 3 sessions per week and 60 minutes per session. After completion of training all sample students (n=50) were re-test by the mental health questionnaire and then the data were collected and analyzed. For scoring of the questionnaire, a simple method of GHQ-28 was used, on the base this method, each of the test questions was scored with 4 degrees (0, 1, 2 and 3), then each individual obtained a score from 0 to 42. Research conducted in Iran have approved that the validity and reliability of the questionnaire is at the high level, the reasons for using of this questionnaire (28 - GHQ) could be as follows:

- This test was normalized and standardized in Iran
- The test assessed several psychological aspects including: physical symptoms, anxiety and insomnia, social dysfunction symptoms and depressive symptoms

- This test is used in more than 70 countries and the psychologists and experts have been approved it as valid test.
- Because there are not a lot of pertinent questions (28 questions), students can answer them without fatigue and with patience and accuracy in a short time (about six minutes) (10).

Descriptive statistics and test t (independent t test) were used to analyze of data, all calculations and statistical procedures were performed using SPSS17 statistical software.

RESULTS

In this study, total individual who participated in the research were 50 samples that divided to two groups (25 individuals as control and 25 individuals as experimental group). There is no age limit for participants in the study, the average age of students in the experimental group and control group were 21.76 and 20.94 years respectively. Results showed that there were significant differences in sleep disorders and depression and anxiety symptoms between experimental and control group ($P < 0.001$). The average score of anxiety symptoms and impaired sleep in the experimental group before and after exercise were 7.08 and 4.60 and average score of depression in the experimental group before and after exercise were 4.16 and 1.96, respectively and had significant difference with control group ($P < 0.05$) which indicating better mental health practice and the positive effect of physical activity on mental health of students, whereas the control group did not differ.

DISCUSSION

In the past two decades, exercise as an important therapeutic strategy has been studied to maintain and enhance the mental health of the people [7-9], several groups of researchers emphasized very beneficial role of physical activity in reducing symptoms of depression and stress and recommended doing it either alone or in combination with antidepressants as a treatment strategy [10, 11]. Although the mechanism of the effect of exercise on mood disorders had not been specifically identified and is under investigation, groups of investigators indicated the positive effects of anaerobic exercise (short time and intense activities) in these patients [12, 13]. Many researchers believe that aerobic exercise (continuous and slow activity) can alter

Table 1: Information about students' mental health of control group

Mental Health				
	Control group before testing		Control group After testing	
	Mean	Standard Deviation	Mean	Standard Deviation
Scores	33.48	7.511	33.12	7.31

Table 2: Participants' scores on each of the four branches of the mental health scale

	Anxiety and sleep disorders		Depression	
	Mean	Standard Deviation	Mean	Standard Deviation
Control group before testing	8.76	2.47	7.04	2.58
Control group After testing	8.76	2.36	6.92	2.23
Experimental group before testing	7.08	1.75	4.16	1.34
Experimental group After testing	4.6	1.73	1.96	1.17

numerous hormonal and neurotransmitter release [14]. Many studies have shown that aerobic exercise can lead to the release of endorphins and other neurotransmitters that have a positive impact on people's mood [15, 16], Peutz *et al.* [17] have shown that aerobic exercise resulted in increasing feelings of energy and reducing fatigue, on the other hand, one of the problems is depressed insomnia and its complications. Not getting enough sleep at night, leading to reduced normal performance in the morning, aerobic exercises and their metabolic effects can act as a sedative drug; therefore, people went deep sleep during the night and in the next day, their nervous system will be mentally ready for routine works [17]. According to tables, scores of symptoms of anxiety and depression and sleep disorders for students who have done physical activity were lower which showed that physical activity had a positive effect on students' mental health. The results of current study is consistent with the results Paluska *et al.* [3] who showed that aerobic exercise or strength training significantly reduced depressive symptoms, similarly, Hadad [18] showed that student athletes had better mental health than non-athlete students. Likewise, Mcconville [19] stated that 9 important factors are involved in psychological health and happiness that the most important of them, it is turning to sport and physical activity. Due to the similarity of the subjects in this study, it can be stated that likely a variable which induced differences among students, was regular exercise which resulted the experimental groups had positive fillings about mental health. Rejeski [20] believes that exercise even result no changes in physiological, but can promote mental and social health of people. Research results suggest that

athletes compared with the general population can obtain a higher rate of positive psychological characteristics and mental health characteristics of athletes significantly differs to non-athletes. Although the mechanism that causes regular physical activity can improve mental health is not clear accurately, but various theories are expressed to explain Figure out this relationship, from the aspects of psychological mechanisms, enhance communication theory and the theory of perverse sense have been proposed.

CONCLUSION

According to the results of the study, it could be stated that regular exercise can cause gaining in physical and mental health and appropriate physical activity can maintain confidence and also one of the ways to control and treat anxiety and depression in this vulnerable people, especially regular and aerobic exercises such as long running, walking, swimming and cycling that can be almost done a long period of time and lead to physiological changes in the body and reduce stress-induced reactions, therefore according to lower psychological problems in athletes, it could be suggested that physical activity as an appropriate, easy and affordable approach for increasing mental health among students seems to be more necessary.

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