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Archives of Applied Science Research, 2012, 4 (1):623-631

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# A Comparative Study on General Health Status of Athlete and Non-athlete Students in Kerman University of Medical Sciences (Sep.2010-June 2011)

Mohammad Pourranjbar<sup>1</sup>, Hosain Poursoltani<sup>2</sup>, Mohammad Rasoul Khodadadi<sup>3</sup> and Behrouz Ghorbanzadeh<sup>4</sup>

<sup>1</sup>Department of Physical Education, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

<sup>2</sup>Sport Science Research Center, Tehran, Iran

<sup>3</sup>Department of Physical Education and Sports of Payame Noor University, Tehran, Iran

<sup>4</sup>Ankara University School of Physical Education and Sports, Ankara, Turkey

## ABSTRACT

The present study was carried out to compare the general health status of athlete and non-athlete students of Kerman University of Medical Sciences. The study was a cross-sectional field survey in which a total of 351 students (203 non-athletes, 74 team athletes and 74 solo athletes) were studied. It was tried to select students from those who had been selected for participation or had already participated in student competitions. Data were collected through standard General Health Questionnaire containing four subscales of anxiety and insomnia, somatic symptoms, social dysfunction and severe depression. A complementary part for recording demographic features such as sex, age and field of study was added to the beginning of the questionnaire as well. Body weight and length were measured by health-O-meter scale (Germany). Data were analyzed through SPSS16. There was significant difference between athlete and non-athlete students in regard to the general health status ( $p < 0.003$ ,  $Z = -2.998$ ) and subscales of somatic symptoms ( $p < 0.024$ ,  $Z = -2.251$ ), anxiety and insomnia ( $p < 0.000$ ,  $Z = -4.134$ ), social dysfunction ( $p < 0.001$ ,  $Z = -3.255$ ) and severe depression ( $p < 0.021$ ,  $Z = -2.861$ ). There was also significant difference between athletes and non-athletes in regard to Body Mass Index ( $p < 0.014$ ,  $Z = -2.248$ ). Team and solo athletes showed significant difference in general health status ( $p < 0.019$ ,  $Z = -2.346$ ). In athlete students, there was no significant relationship between general health status and age ( $p < 0.369$ ,  $R = -0.076$ ), while in non-athlete students this relationship was significant ( $p < 0.004$ ,  $R = 2.212$ ). Considering the obtained results, encouraging students for doing exercise can improve their general health and physical statuses, sleep quality, social function, mental health and body mass index.

**Keywords:** General health, Athlete students, Non-athlete students.

## INTRODUCTION

According to Menninger “mental health” is defined as “an adjustment of human beings to the world and to each other with a maximum of effectiveness and happiness”. Mental health mainly emphasizes on improving personal and public health and is dependent on following four major principles: 1. Self-confidence and respecting self and others; 2. Identification of one’s own capabilities and shortcomings and others’; 3. Knowing that human beings’ behaviors are resulted from some factors dependent on their existence integrity; 4. Identification of needs, inspections and motives that cause the individual’s special behavior [16]. Psychological problems are usually started with anxiety and worry and if they are continued, they can be led to somatic disorders as well as psychic and social dysfunctions. In normal conditions, some types of anxieties, worries and psychological injuries can be ignored, but sometimes the intensity of these undesired factors is to the extent that prevents the individual from doing his/her daily routines. Psychological balance is dependent on several factors and facilities among them the most important ones are feeling of safety, feeling of being worthy, being free from anxiety, obsessive disorders or unexplained guilty feeling as well as morality growth. Those who suffer from psychological disorders are anxious, depressed, sad, annoyed and aimless (or have non-attainable and illusive goals). They also suffer from feeling guilty and have low self-esteem [6].

Today, the importance of physical education and exercise for all classes of the society especially for students who are always involved in mental activities and have significant roles in the future of the society is clear. It has been demonstrated in various studies that physical education not only has important role in more efficient use of leisure time, but also it decreases anxiety, depression and boring feelings and causes cheerfulness in students [2]. Physical activity is one of the strategies against excess weight gain and prevents diseases related to inactivity. So far, in the studies about mental health, just some psychic issues have been investigated, while it is well-known that inactivity, in addition to affecting psychological aspects, has significant effects on body too[8]. Therefore, investigating mental health in student population of our country is one of the issues requiring special attention. Mental health status of students is one of the important issues in any university and its purposeful and regular evaluation should be considered by all custodians and health researchers and specialists. By studying this topic, descriptive presentation of students’ mental health status is possible.

At present, in many societies exercise is used as one of the therapeutic methods in the treatment of patients suffered from depression disorder and it has had beneficial outcomes [10]. According to a study by Ghaffari, the prevalence of depression in non-athletes is higher than that in professional and non-professional athletes. [4] Have reported higher prevalence of depression in male students compared to the female students and they have contributed this to the environmental factors. Tuson and Siniyor have concluded that acute exercise might be associated with decreased anxiety, but it does not seem to have any effect on other aspects of mental statue. In mental health status of team athletes, especially in subscales of social function and depression, has been better than that of solo athletes. [5] Believes that regular exercise not only is an efficient treatment for clinical depression, but also improves mental health of healthy individuals. The mentioned study aimed at finding whether sport activities have beneficial effects on students’ general health status and its subscales or not.

[13] Have concluded that the rate of functional disorder in team athletes and the rate of depression in non-athletes are higher. It should be added that the mentioned study has been performed on students and Body Mass Index and some underlying variables have been investigated in it as well. Have found a significant difference between athlete and non-athlete female students in regard to their mental health and this difference was seen only in subscales of somatic symptoms and social dysfunction. [17] in a study about the relationship between life style and general health of students, found significant relationship between general health and variables of exercise, nutrition, cigarette smoking, considering safety measures, stress control and gender, while there was no significant relationship between general health and students' age or school and residency status. In [1] study about the general health of students in Zahadan University of Medical Sciences, 38.8% of the students were suspicious of having physical or psychological disorders with significant difference between males and females. [10] Have reported significant difference between athlete and non-athlete students in regard to their mental health mean score. The results of [2] study showed no gender-based difference between athlete and non-athlete students in regard to mean BMI, even though BMI of male and female students had significant difference. Moreover, in the mentioned study significant difference was observed in general health status of athlete and non-athlete students based on their sex. However, it seems that most students are unaware of the positive effects of regular physical activities and the outcomes of inactivity such as depression. It should be mentioned that the increasing rate of depression in students affects not only their present academic success, but also their job-related performances in the future. As it was observed, according to the all previous studies, general health is dependent on having a healthy and quite life free from anxiety and depression and sports activities have a major role in this regard.

Lack of any related study on students of Kerman University of Medical Sciences and considering cultural and environmental differences motivated us to compare athlete and non-athlete students of Kerman University of Medical Sciences in regard to their general health status and its subscales as well as their BMI, weight and length.

## MATERIALS AND METHODS

This study was a cross-sectional survey. The study population included 4000 male and female students of Kerman University of Medical Sciences in the first semester of the academic year 2010-2011. Sample size consisted of 351 students (203 non-athletes, 74 team athletes and 74 solo athletes) selected through stratified randomized sampling and by using Morgan table. Athletes were mostly students who had been participated in the student competitions or had been selected for them. It should be mentioned that athlete students were classified based on their sport field (team sports including football, volleyball, basketball and running and solo sports including wrestling, karate, tennis and badminton).

### Data gathering instrument

General health was evaluated by General Health Questionnaire (GHO) consisted of 28 questions in four subscales of anxiety and insomnia, somatic symptoms, social dysfunction and severe depression. Responses were scored in a four-scale spectrum [never (0), *same as usual* (1), *more/worse than usual* (2) and *much more/worse than usual* (3)] in which lower score shows better status on that subscale [13]. The validity and reliability of this questionnaire for Iranian

population have been confirmed in several studies and its reliability has been 0.89 in Narimani study [13].

Six questions related to the demographic features of subjects (sex, age, field of study, sport field, year of education and history of sport activity) were added to the beginning of the questionnaire. Weight and length were measured by Health-O-Meter scale (Germany) and Body Mass Index was calculated accordingly (weight/length<sup>2</sup>).

**Data analysis**

Mean ±SD was used to describe the basic variables and general health status of the students. Kolmogorov-Smirnov was used to test the normality of score distributions. Spearman coefficient was used to find the relationship between age and general health status and Mann-Whitney-U test was applied to find the differences of general health status and its subscales among the three studied groups.

**RESULTS**

Demographic features of the studied subjects have been presented in table1. As it is seen, 42.14% of the participants were athletes and 57.06% were non-athletes. Mean length of athletes was 177.23±7.309Cm and that of non-athletes was 178.63±5.467Cm. Mean weight of athletes was 66.67±11.159Kg and that of non-athletes was 70.2±11.933Kg. Mean BMI of athlete and non-athlete students were respectively 21.216±3.461 and 22.031±3.482 that shows significant difference between the two groups (p<0.014, Z=-2.248).

**Table 1. Comparison of athlete and non-athlete students in regard to their BMI, Weight and Length**

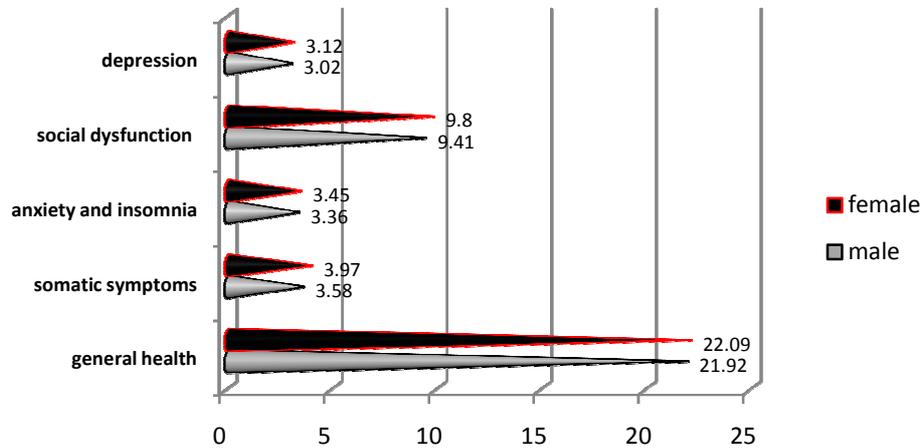
	non-athlete			athlete			
				team		solo	
male	%33.33	117		%12.53	44	%11.96	42
female	%22.79	80		%8.54	30	%9.11	32
	<b>BMI</b>	weight	length	<b>BMI</b>	weight	length	
mean	22.031	70.12	178.63	21.216	66.67	177.23	
SD	3.482	11.933	5.467	3.461	11.159	7.309	
range	16.94	56	22	14.45	47	41	
minimum	15.78	50	165	15.65	49	150	
maximum	32.72	106	187	30.10	96	191	

As it is seen in table 2, mean general health score of athlete and non-athlete students are 20±5.635 and 23.18±7.854 respectively.

**Table 2. Comparison of athlete and non-athlete students in regard to general health statuae**

general health	non-athlete	athlete
number	203	148
mean	23.18	20.00
SD	7.854	5.635
range	35	26
minimum	9	8
maximum	44	32

Graph 1 show that means general health score of male students has been lower in comparison to the female students. In other words, male subjects had better general health status compared to female subjects.



**Graph 1. Mean general health score and its subscales in students based on sex**

Since according to the results of Kolmogorov-Smirnov test, the studied variables did not have normal distribution, non-parametric tests were used.

As it has been presented in table 3, there is a significant difference between athlete and non-athlete groups in regard to general health status ( $p < 0.003$ ,  $Z = -2.998$ ); That is, athlete students have better general health status compared to non-athlete students due to having lower mean rank (157.01 vs. 189.85).

**Table 3. The results of Mann-Whitney test in regard to mean general health score of athlete and non-athlete students**

Variables		Mean of rank	number	Z	P
general health	athlete non-athlete			-	

In investigating the difference of athlete and non-athlete groups in four subscales of general health status by using Mann-Whitney test, significant difference was found in subscales of somatic symptoms ( $p < 0.024$ ,  $Z = -2.251$ ), anxiety and insomnia ( $p < 0.000$ ,  $Z = -4.134$ ), social dysfunction ( $p < 0.001$ ,  $Z = -3.255$ ) and severe depression ( $p < 0.021$ ,  $Z = -2.281$ ). The results have been shown in table 4.

**Table 4. The results of Mann-Whitney test in regard to subscale of general health mean score of athlete and non-athlete students**

general health subscales	number	Z	P
somatic symptoms		-	
anxiety and insomnia		-	
social dysfunction		-	
depression		-	

Since lower mean score is an evident of better general health statue, athlete students are in better condition than non-athletes in four subscales of general health statue (table 5).

**Table 5. Mean rank of athlete and non-athlete students in subscale of general health**

general health subscales		number	Mean of rank
somatic symptoms	athlete	351	161.85
	non-athlete		186.31
anxiety and insomnia	athlete		151.70
	non-athlete		194.96
social dysfunction	athlete		155.46
	non-athlete		190.97
depression	athlete		161.39
	non-athlete		189.74

There was also significant difference between athlete and non-athlete students in regard to BMI ( $p < 0.014$ ,  $Z = -2.248$ ). In other words, lower mean rank of athletes shows better health statue of them in comparison to non-athletes (164.59 vs. 191.66).

**Table 6. The results of Mann- Whitney test in regard to BMI of athlete and non-athlete students**

Variables		Mean of rank	number	Z	P
<b>BMI</b>	athlete	164.59	351	-2.468	0.014
	non-athlete	191.66			

As it is seen in table 7, team and solo athletes have significant difference in regard to their general health status ( $p < 0.019$ ,  $Z = -2.346$ ); that is, team athletes with lower mean rank were in better condition compared to non-athletes (66.25 vs. 82.75).

**Table 7. The results of Mann- Whitney test in regard to general health status in team and solo athletes**

Variables		Mean of rank	number	Z	P
<b>general health</b>	team	66.25	148	-2.346	0.019
	solo	82.75			

Finally, Spearman coefficient of correlation showed that:

1. There is no significant relationship between general health statue of athletes and their age ( $p < 0.369$ ,  $R = -0.074$ ); In other words, in athletes this variable does not alter with age increase.
2. There is a significant relationship between general health statue of non-athletes and their age ( $p < 0.004$ ,  $R = 0.212$ ); In other words, in non-athletes, the general health statue decreases with age increase.

## DISCUSSION

The present study was performed to compare athlete and non-athlete students of Kerman University of Medical Sciences in regard to their general health statue and according to the obtained results athlete students had better general health statue. This finding is in agreement with the results of [2] and [17]. In Stock study subjects with more physical activity had the least physical problems which are similar to the results of the present study. In studies performed on handicapped athletes and non-athletes, similar results have been observed. For example, [16] has

reported significant difference between athlete and non-athlete handicapped subjects in regard to their general health statue and Canpiteti and Cortis have concluded in their studies that handicapped subjects who have physical activity have better general health statue in comparison to non-athlete handicapped individuals.

**Table 8. The results of Spearman coefficient of correlation in regard to general health status and age of students**

Variable		general health
1	age of athletes	N = 148
		r = -0.074
		Sig. (2-tailed) = 0.369
2	age of non-athletes	N = 203
		r = 0.212**
		Sig. (2-tailed) = 0.004

\*p<0.05

\*\*p<0.01

In regard to the subscales of general health statue, in the present study somatic symptoms, anxiety and insomnia, social dysfunction and severe depression were significantly lower in athlete students as compared with non-athlete students. This finding is in agreement with the results of study [13] in which significant difference have been reported between athlete and non-athlete subjects in regard to their mean scores of social dysfunction and depression. But such agreement was not observed for subscales of anxiety and insomnia and depression that might be due to the differences of the two studies in regard to their studied societies and subjects. For example, university students in comparison to other individuals have different psychological features and behavior. Ghafari too have reported lower rates of depression in athlete subjects which is again in line with the results of the present study [8].

We have also find a significant difference between athlete and non-athlete groups in their BMI; that is, athlete students had better condition in comparison to non-athletes, while [2] have not found any significant difference in BMI between athlete and non-athletes. This might be due to the fact that the two studies have been performed in two different societies and on subjects with different educational and living statues. Body is comprised of different elements and body weight is divided into a fat mass and fat-free mass. Fats are part of biologic compounds which are solvable in organic solvents. The most major substances released from fats hydrolysis are free fatty acids and too excess accumulation of lipids causes' fatness. Various factors cause fatness; the most important of them are genetic and environmental factors and life style. Since BMI has significant relationship with risk factors of cardiovascular diseases, the difference of athlete and non-athlete students in BMI shows the beneficial effects of physical activity on decreasing the rate of cardiovascular diseases. This fact has been asserted [3].

In the present study, the general health status of team and solo athletes showed significant difference in a way that team athletes with mean rank of 66.25 had better general health statue in comparison to the solo athletes with the mean rank of 82.75. This result is in line with the results found in some other studies such as [16] and [13]. Therefore, attention to the general health of solo athletes by sport trainers, especially in educational systems is much more important.

We did not find any significant difference between age and general health statue of athletes in this study. In other words, the general health of athletes, provided that it is in a good statue,

remains stable with age increase. Although by simple coefficients of correlation such as Spearman coefficient, this relationship cannot be determined, at least it can be proposed that general health statue of athletes is not dependent on their age or sport field. This finding is similar with the results of [16]. However, our results showed significant relationship between general health statue and age among non-athlete students; that is, the general health statue of non-athletes decreases with age increase. This finding is contrary to the findings [16] in explaining this finding; it can be proposed that age increase in students is associated with a kind of anxiety and worry about their future position. Moreover, since one of the factors threatening general health is stress [13] not having a joyful entertainment increases the rate of stress in non-athlete students leading to a lower general health.

In summary, it can be said that exercise is one of the factors causing better mental health and this fact has been emphasized in many studies and should be paid more attention in the students. Through active participation in sports activities, students find a chance to practice social life and its positive norms and it prevents them from abnormal social behaviors. Moreover, physical activity improves their general health statue. In studies performed about physiologic and biologic effects of physical activity and hormonal effects of exercise, the beneficial effects of exercise on mental health of individuals and consequently their general health statue have been proved.

Since athlete students found to have better BMI, general health statue and somatic condition as well as lower rates of anxiety and insomnia, social dysfunction and severe depression, more attention to the sports activities in the universities is highly suggested. Moreover, better general health of team athletes in comparison to solo athletes suggests more measures for encouraging students to participate in team sport activities.

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