ORIGINAL ARTICLE

The Role of Resilience and Hardiness in Mental Health of Athletes and Non- athletes

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ABSTRACT
Based on theories of personality, the research considers the role of resilience and hardiness in mental health of athletes and non- athletes and compares the two groups. 300 men and women (n = 150 athletes and 150 non- athletes) who were selected by convenience sampling, were subjected. The Connor- Davidson Resilience Scale (CD- RIS), Ahvaz Hardiness Inventory (AHI) and General Mental Health Questionnaire (GHQ) were employed to evaluate resilience, hardiness and mental health respectively. The data was analyzed through T- tests, Pearson correlation, multiple regression analysis, and multivariate analysis of variance. Two groups (athletes and non- athletes) differed significantly in resilience, hardiness and mental health. In addition, the results showed that there was a significant relationship between mental health and resilience and hardiness in both groups. It is more indicative in the research that resilience in company with hardiness could increase mental health of athletes and non- athletes. The findings revealed the importance and essentiality of hardiness and resilience in predicting mental health of the athletes and non- athletes. The research results indicated that the athletes had a higher rate of resilience, hardiness and mental health than those of the non- athlete group.
Keywords: Resilience, Mental toughness, Mental health, Athlete and Non- athlete

INTRODUCTION

Mental health is the essential prerequisite. It is critical to improve the quality of human life . Undoubtedly, mental health plays a key role in ensuring the dynamism and efficiency of any community. Mental health is linked with the internal enabling features or internal sources of power. Despite the adverse conditions and negative events, benefiting from these internal resources increases people's ability of adaptive development to maintain their mental health. On the one hand, exercise plays an important role in mental health so that the slogan for World Health Day in 2002 was "Move for Health ". On the other hand, the application of psychology in sport has been specifically emphasized. Now, psychologists know very well that human mind is directly affected by physical condition of his body and mutually, his body and limbs actions are affected by his mental ambiance [1].

Hardiness and resilience are among the variables that can modulate the stress and adjust the adverse effects of life. In other words, resilience is the optimistic adaptation in response to adverse life circumstances [2]. A resilient person processes a bad situation more optimistically and perceives capabilities in him to deal with it. Certainly, the resilience is not steadiness against damage or threatening conditions and it is not passiveness in the face of dangerous conditions; rather, it is active and constructive participation in the environment. It is, also, the ability to balance one's bio-psychological life in dangerous condition. It can shield a person against the danger and the consequences of exposure to risk factors [3]. Resilience can be said to be a successful adaptation which is appeared in the battleground of sufferings and depilating stresses [4]. Early theories on the resilience emphasized on the characteristics associated with positive outcomes in the face of life's calamity and adversity. Later, these types of researches considered the external protective factors, such as efficient schools and relationships with supportive adults, to be effective in resilience recovery. Current theories regard resilience as multi-dimensional construction combined of natural variables [5]. Hardiness is another psychological construct

that may be predicative of mental health in people. Hardiness is a personality structure comprising the three related general dispositions of commitment, control, and challenge [8]. Believing in change, transformation, dynamism of life and the attitude that every event is not necessarily a threat to human health and safety, result in cognitive flexibility and tolerance to stressful events as well as ambiguous situations . Resilient people are fiercely committed to what they do and devote themselves to their goal. They feel they have got the mastery of the situations and they are the determinant. They consider the challenges and life changes as opportunities for progression and advancement but not limits or threat [6]. Hardiness acts as a shield against stress in various situations of life [6, 7]. Hardiness reduces the risk of stress- related physical illness, mental illness and functional- behavioral weakness through the activation of transformational coping strategies (active, determinative) instead of returning coping strategies (denial, avoidance). Studies showed that there is a positive relationship between the hardiness and physical health. Hardiness is a source of internal strength, which reduces the negative effects of stress [6]. Furthermore, resilience and hardiness showed significant negative correlation with anxiety and depression, suggesting that hard and resilient people can deal with variety of adverse effects [9]. The studies by Maddi and Hess [7] showed that athletes interpret the competitions to be less stressful and see them as manageable, challenging and ideal situations [10]. Studies are indicative of the fact that resilience and hardiness has a relationship with mental health in athletes non- athletes. Due to the above and based on theories of resilience and hardiness, it seems that athletes use more effective coping strategies in dealing with stressful situations – the strategies which reduce the risk of stress- related physical and mental illness as well as the behavioral and performance weakness and improves psychological well-being and mental health of the athletes. According what is said, the research is aimed to study the role of resilience and hardiness in mental health of athletes and non- athletes. Therefore, the following hypotheses were formulated and it was tried to test them through suitable statistical methods:

1) There is difference between athletes and non- athletes regarding resilience, hardiness and mental health.
2) Resilience and hardiness has a relationship with the mental health of the athletes and non-athletes.

METHOD

The outline of the research was ex-post facto research (correlation, causal-comparative) in which, two groups of subjects (150 athletes and 150 non- athletes) were studied. Statistical population included athletes and non- athletes. Sampling method of the research was convenience sampling method. In the research, 300 subjects aged between 14 and 50 years participated in the study. Sampling was conducted for athletes in clubs and in Physical Training Organization of Iran. The study made use of Connor-Davidson inventories, Ahvaz Hardiness Inventory (AHI) and General Health Questionnaire. The questionnaires were provided to athletes and non- athletes. After describing the purpose of the study, they were asked to fill out the questionnaires.

Data collection instruments

Resilience inventories (CD- RIS): The scale was developed by Connor and Davidson (2003) going through the research literature of resilience circuit from 1991 to 1979. Psychometric properties of the scale were administered to the subjects in the 6 groups including community sample, primary care outpatients, general psychiatric outpatients, clinical trial of generalized anxiety disorder, and two clinical trials of PTSD. The developers of the scale believed that it soundly distinguishes those with greater resilience from those with lesser resilience in clinical and non- clinical groups and can be used in clinical and research situation. The scale comprises of 25 items, each being ranged in Likert scale from zero (completely false) to five (always true). Each test is scored by the sum of the values obtained out of the question. Therefore, a minimum and a maximum score a person can take in the test is 25 and 125 respectively. The scores are ranged from 0 to 100 with higher scores reflecting greater resilience.

The results of factor analysis suggest that CD- RISC contains five factors taking account of perceived personal competence, confidence in personal instincts / tolerance of negative emotion, positive acceptance of change and safe relationships, control and spiritual effects.

Connor and Davidson have concluded Cronbach's alpha coefficient to resilience scale at 0.89. Moreover, retest reliability coefficient of the method in a 4- week interval was 0.87. The scale was standardized by Mohammadi in Iran [11]. He used Cronbach's alpha to determine the reliability of Connor- Davidson Resilience Scale and reported the reliability coefficient at 0.89.

The scores of Connor- Davidson Resilience Scale had significant positive correlation with kobasa's Hardiness scale. they have significant negative correlation with Perceived Stress Scale and Sheehan stress vulnerability scale. These results are indicative of the concurrent validity of the scale.

To determine the validity of this scale, first, correlation of each expression with total score of the category was calculated and then, factor analysis was employed. Correlation coefficient of each score with total score, except for item 3, was measured between 0.41 and 0.64. Subsequently, the scale statements were factor analyzed using principal component analysis. Before extraction of the factors, based on the correlation matrix, two indexes (KMO) and Bartlett's test of sphere city were calculated. KMO Value was 0.87 and the chi- square value in Bartlett test was 5556.28, both showing adequacy of evidence for factor analysis.

Ahvaz Hardiness Inventory (AHI): This questionnaire was developed and validated in Shahid Chamran University of Ahvaz by Kiamarthy, Najjarian and Mehrabizadeh- honarmand to assess psychological hardiness.

The questionnaire contains 27 items. Every item has four options say "never", "rarely", "sometimes" and "often". Except for statements of 6, 21, 17, 13, 10, and 7, which are graded inversely for their negative loadings, values 0, 1, 2 and 3 are considered to score each item. Range of scores in this questionnaire is from 0 to 81, high scores indicating greater psychological hardiness in person.. Coefficients obtained at 0.65, 0.67 and 0.62 respectively and all the coefficients were significant at $p < 0.001$. In addition, concurrent validity was calculated for the construct definition of "psychological hardiness", in which, the validity of the results was satisfactory.

General Health Questionnaire (GHQ): General Health Questionnaire was developed by Goldberg and Hiller (1979) . Based on self- reporting method, The questionnaire is an ideal screening device for identifying people with psychiatric disorders . The self-administered questionnaire focuses on two major areas: The inability to carry out normal functions, and the appearance of new and distressing phenomena. General Health Questionnaire can be considered as a set of questions consisting of the lowest levels of the common symptoms of the sickness in psychiatric disorders. So, it can discriminate psychiatric patients as a general category from those who consider themselves healthy . Therefore, it is not the purpose of this questionnaire to achieve a specific diagnosis of mental illness hierarchy. Rather, its main purpose is to create a distinction between mental illness and mental health. The questionnaire consists of four subscales: 1) somatic symptoms (physical symptoms), 2) anxiety and insomnia, 3) social dysfunction and 4) severe depression. The total score is the sum of the scores obtained. The existence of four subscales has been proven based on the statistical analysis (factor analysis) of the responses.

1) Subscale A considers about how people feel about their health status and their fatigue and take account of corporal symptoms. This subscale evaluates physical sensory perceptions often associated with emotional arousal. Items of this scale were marked with the letter A in the questionnaire. Numbers 1 to 7 are related to this scale.

2) Subscale B involves those which are associated with anxiety and insomnia. Seven items related to this scale (8 to 14) were marked with the letter B in this questionnaire.

3) The third subscale (C) measures the scope of a person's ability against the professional challenges and everyday life problems and reveals their feelings about how to deal with common life situations. Seven items related to this subscale (15 to 21) in the questionnaire have been distinguished with the letter C.

4) Subscale D contains substances linked with severe depression and suicidal tendencies. Seven items distinctive of the scale are marked with the letter D in the questionnaire.

The total score of an individual is obtained by the sum of four subscale scores.

Scoring of the General Health Questionnaire is conventionally done in two ways: Goldberg scoring method (0- 0- 1- 1) that assigns a score of 0 for responses 1 and 2 and a score of 1 for responses 3 and 4 . In this case, the maximum score of a subject would be 28. Each scale construes any score exceeding the value of 6, and totally the scores above 22, as achieving casernes. The other way is Likert scoring method (0- 1- 2-3) , which assigns, from right to left, a score of 0 for response 1, a score of 1 for response 2, a score of 2 for response 3 and a score of 3 for response 4. In this procedure, the maximum score of a subject will be 84.

FINDINGS

Table (1) shows statistical characteristics of subjects in accordance with their scores of resilience, hardiness and mental health in athletes and non- athletes.

Table 1. Mean and standard deviation of resilience, hardiness and mental health

Athletes			Non- athletes		
Variable	Mean	SD	Variable	Mean	S D
resilience	72 / 85	11 / 54	resilience	47 / 69	16 / 04
Hardiness	54 / 41	10 / 12	Hardiness	39 / 01	12 / 35
Mental health	13 / 24	8 / 08	Mental health	27 / 50	12 / 64

Table 2 . The results of the multivariate analysis of variance comparing the resilience and mental health in athletes and non- athletes

Sources of variation	Index	Sum of squares	Degrees of freedom	Mean square	Abundance	Significance level
Effect	Resilience	46039.412		46039. 412	235. 825	
Group		56420.698	1	159. 227		0. 000
Error			489			
Effect	Mental health	15236.813	1	15236. 813		
Group		33577.373		112. 676	135. 227	0. 000
Error			489			

In Table (2) the results of multivariate variance analysis on comparing resilience and mental health showed that since the value of F is equal to 84/ 235 with the freedom degree of (1 and 289) , it is significant as to item resilience at the alpha level of 0.05 . Therefore, we can conclude that there is a significant difference between resilience of athletes and that of non- athletes. Comparing the mean of two groups (Table 1) showed that resilience mean of athletes was greater than that of non- athletes. The results of multivariate analysis of variance on mental health also showed that since F-value is equal to 135 / 227 ,with the freedom degree of (1 and 289), it is significant as to item mental health at the alpha level of 0.01. Thus, it can be concluded that there is a significant difference between mental health of athletes and that of non- athletes. Comparing the mean of the two groups (Table 1) indicated that mental health mean of athletes was greater than that of non- athletes.

Table 3 . Results of independent t-test compared to hardiness in athletes and non- athletes

	Group	Count	Mean	Standard deviation	T	Degree of freedom	Significance level
	Athletes	150	58. 413	10. 1208	14. 878		0.000
Hardiness	Non- athletes	150	39. 013	12. 353		298	

As the data results of independent T-test shows in able 3, the item hardiness is significant at Alpha level of 0.05 because T value equals to 14.878 and degrees of freedom is 298. Therefore, we can conclude that there is a significant difference between athletes and non- athletes in hardiness. The comparison of the mean of the two groups (Table 1) indicated that hardiness mean of athletes was greater than that of non-athletes.

Table 4. The results of the Pearson correlation matrix regarding the relationship between resilience and hardiness in athletes and non- athletes

Variable		1	2	3
Athletes	Resilience	1		
	Hardiness	0. 730 **	1	
	Mental health	- 0. 673**	- 0. 632 **	1
Non- athletes	Resilience	1		
	Hardiness	0. 812**	1	
	Mental health	- 0. 670 **	-0 .677**	1

Table (4) : According to table 4, r value equals to - 0.673 athletes and -0.670 non- athletes and that, concerning the relationship between resilience and mental health, r is -0.632 athletes and -0.677 non-athletes. So, the relationship between hardiness and mental health is significant at 0.5. Therefore, the null hypothesis is rejected and the research hypothesis is confirmed by 95 percent. In other words, the resilience and hardiness of athletes and non- athletes bear a significant relationship and this relationship is negative and reversed. That is to say, as the amount of resilience and hardiness increases in the athletes and non-athletes, their mental health is improved and vice versa.

Table 5. Hierarchical regression analysis of variance predicting mental health of athletes and non-athletes through resilience and hardiness

Athletes	Sum of squares	Degree of freedom	Mean of squares	F	Significance level
Model 1	Regression 4353. 65	1	4353. 657		
	Remaining 5265. 68	143	36. 823	118 / 232	0 / 000a
	Total 9619. 33	144			
Model 2	Regression 4739. 41	2	2369. 708		
	Remaining 4879. 92	142	34. 366	68 / 956	0 / 000b
	Total 9619. 33	144			

Non- athletes	Sum of squares	Degree of freedom	Mean of squares	F	Significance level
Model 1	Regression 10417. 89 Remaining 12761. 61 Total 23179. 50	1 144 145	10417. 894 88. 622	117.554	0. 000a
Model 2	Regression 11705. 30 Remaining 11474. 44 Total 23179. 50	2 143 145	5852. 542 80. 242	72. 937	0. 000b

Table 6. Hierarchical regression coefficients of the variables predicting mental health of athletes and non-athletes from athletes and non- athletes

Criterion variable	Model	Variable	Not standardized coefficients β standard deviation	β standard	T value	Sig	R	R²
Mental health of athletes	1	Dependent Resilience	47. 87 3 .23 0. 04 - 0 .47	-0 . 673	14.821 -10.873	0.000 0.000	0.673a	0.453
	2	Dependent Resilience Hardiness	3. 22 50. 60 0. 06 - 0 .32 0. 07 - 0 .23	-0 .459 -0. 293	15.690 -5.245 -3.350	0.000 0.000 0.001	.0702b	
Mental health of non- athletes	1	Dependent Resilience	52. 55 2 .45 - 0 .52 0. 04	-0.670	21.410 -10.842	0.000 0.000	0.670a	0.449
	2	Dependent Resilience Hardiness	56. 53 2. 53 - 0 .27 0.08 - 0 .41 0 .10	-0.342 -0.404	22 .270 - 3 .395 - 4 .005	0.000 0.001 0.000	0.711b	0.505

Table (5) and (6): The findings of these tables show that the F-value calculated for regression analysis is significant at (P < 0 / 50). Therefore, the studied regression is statistically significant. According to the regression results, firstly, resilience was involved and explained, by itself 45 / 3 percent of the athlete's mental health variance as well as 44 / 9 percent of the non- athlete's mental health variance. Based on standardized beta coefficients, by any unit change in variance, resilience makes a significant difference in mental health in the amount of 0/ 673 (athletes) and 0/ 670 (non- athletes). Secondly, when hardiness is included on the account, variance increased to 49 /3 percent (athletes) and 50/5 percent (non- athletes) meaning that resilience together with hardiness can be more explanative in the improvement of the mental health of the athletes and non- athletes.

DISCUSSION AND CONCLUSION
The results showed that resilience and hardiness have a significant relationship with mental health in the athletes and non- athletes. This means that resilience, hardiness and mental health of athletes were much than those of non- athletes. The findings also revealed that resilience and hardiness can predict changes related to psychological well-being in athletes and non- athletes. The correlation between variables indicated that as resilience and hardiness increase, the psychological and mental health of athletes and non- athletes increases as well. Resilience in company with hardiness can be more explanative in the improvement of mental health of athletes and non- athletes.
According to this explanation, resilience results in positive adaptation through enhanced self-esteem as a mediated mechanism. This positive psychological feature helps the athlete to confidently increase his chances of success by enduring hardship and by positive conformity with grim experiences of contest [5, 12]. As their basic features, which increase their health, resilient people have more social power, develop remarkable problem solving ability, express greater self-determination and display stronger sense of purpose than the ordinary people. By strengthening competence and personal strength, resilience is linked with sporting success and mental health indicators [13]. Proportional to the tolerance of negative emotions, the athletes will be able to increase their probability of success in the action by focusing and guiding the mental forces and optimal use of technical and tactical abilities. it was proven that athletes have more resilience and that, resilient people express greater optimism and have more positive emotions than non- athletes. Therefore, athletes have better mental health and can be more successful in their life because these two factors increase their perseverance when faced with difficult problems of life .
Controlling is another component of resilience, which helps individuals to manage stressful situations and not only survive in the trials and tribulations of life but also achieve a new level of balance and positive growth. Controlling causes the athlete to get the mastery of the situations and that he is decisive. Sense of

dominating the situation causes the athlete to believe that his efforts will affect the life situations and he can change the course of events and determine the outcome of the match [15]. As a component of resilience, spirituality as a shield can increase a person's resistance to the stress of life on the one hand, and lead to excellence and perfection through positive adaptation on the other. Hard personality of the athletes causes them to devote themselves to the goals of sports and identify the suitable ways to achieve the goal through their commitment to the sport functions. Hardiness, also, causes the athlete to get the mastery of the situations through other component of hardiness say control and that he can be decisive. Championship makes the athlete to welcome stressful and dangerous sport situations instead of avoidance and passive resignation [6]. Furthermore, hardiness is indicative of a person's confidence in his ability to deal with various conditions. It increases independence and self-abidance and enhances performance. It also leads to a better life and improves conformity [14]. Resilient and hard people take use of active way of solving problem (the way that change the stress into a safe experience) to deal with problems. Therefore, in the face of adverse events, resilient and hard people have minimal risk level and alarm.

To explain the relationship between mental health and resilience and hardiness, it can be said that since athletes do sport, they develop more low-fat muscle tissue and consequently improve the proportion of High-density lipoprotein (HDL) to Low-density lipoprotein (LDL) commonly referred as good cholesterol and bad cholesterol levels respectively. This in turn reduces the risk of heart disease and protects the body against some types of cancer. In addition, people who exercise regularly, experience less anxiety and depression and feel better. This may be partly due to the release of sedative endocrine substances (enkephalins and endorphins) when mobility and exercise. It leads to a better mood. Resilience and hardiness have a relationship with mental and corporal health and, as an internal resistance, reduce the negative effects of stress. They prevent physical and mental disorders [16]. Kobasa and colleagues [8] stated that people who are under high stress but do not get sick, have a hard- working construct. In general we can say that sports activities can increase psychological resilience and hardiness of an individual. It seems that in sports, there are basis that can help and strengthen resilience and hardiness and pave the way for developing talents and better understanding of human abilities and bring safety, freshness, happiness, and relaxation. These basis control stress and result in happiness and mental health through creating pleasant and favorable environment and reducing muscle strain and eliminating weakness and debility. In other words, we can say that exercise increases an athlete's physical and mental ability and brings about resilience and hardiness.

Given the role of exercise in enhancing resilience and hardiness, it is recommended that Islamic Republic of Iran Broadcasting and educational institutions in cooperation with counselors and psychologists develop programs and plans about the role of the sports in resilience and hardiness as well as in improvement of public health to improve resilience and hardiness. In addition, it is proposed that researches be conducted on the subject by age, sex and education. It is because; resilience, hardiness and mental health are affected by age, sex and education. Moreover, researches are to be done and compared in order to identify factors affecting the relationship between mental health and resilience and hardiness in athletes and non- athletes,

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