

The comparison of general health in athlete and non-athlete women

Ghorban Hemati Alamdarloo,¹ Majid Chahardah Cheric,² Maryam Doostzadeh,¹ Zahra Nazari¹

¹Special Education Department, ²Physical Education Department, Faculty of Psychology and Education, Shiraz University, Shiraz, Iran

Abstract

The aim of the present study was to compare the general health in athlete and non-athlete women. The statistical population of the present study included all athlete and non-athlete women in Shiraz, Iran. The sample consisted of 764 subjects (382 athletes, 382 non-athletes) that the athletes sample selected by Gerjesy and Morgan's sample size table and non-athletes sample selected by purposeful sampling method. The General Health Questionnaire (Goldberg, 1978) was used for measuring the general health. Independent t-test and multivariate analysis of variance (MANOVA) tests were used for data analysis. The results showed a significant difference between athlete and non-athlete women in the general health and its subscales ($p < 0.05$). According to this finding, general health in athletes is better than non-athlete women. Regarding the findings of this study, it can be argued that sport activities are effective in improving general health of women.

Introduction

Providing health for everyone in the community is one of the

most important issues in each country (Ferguson, Coulson, & Barnett, 2011). According to the definition of the World Health Organization (2013), mental health is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community. Therefore, in assessing the general health of individuals, one should not only focus on traditional health indicators such as mortality and disease, but also the perception of people about their quality of life (physical, mental and social status).

Since the mental disorders of mothers affect their children's development, considering the general health of women is important because of the vital role they play as a workforce, mother, care giver and citizen. Women's participation as a workforce also strengthens economic growth, so that women's economic efficiency is one of the keys to the success of the modern economy as well as the welfare of the family. Therefore, social and economic policies should seek to increase the mental and physical health of women (Duggan, 2016). In general, the promotion of physical and mental health has become an important concern all over the world (Saxena, Funk, & Chisholm, 2015). Exercise and physical activities have many benefits for the health and well-being of individuals (Biddle, Gurley, & Mutrie, 2015). Research evidences suggest the positive effect of exercise on the health of individuals. For example, Marleir *et al.* (2015) demonstrated a direct relationship between participation in sports activities with mental health. Jewett *et al.* (2014) concluded that participation in school sports activities during puberty is a significant predictor of symptoms of depression and stress in adulthood. In addition to the above findings, the results of study of Matalbi and Nourbakhsh (2010) indicated that there is a significant difference between athlete and non-athlete groups in mental health, physical symptoms, anxiety, sleep disturbance and social function. These results indicated that participation in sports activities has significant effects on mental health. Babiss and Gangwisch (2009) also indicated that with the increase in participation in sports activities, the probability of depression and suicidal ideation were respectively reduced by 25% and 12%.

In summary, taking into account the important role that women play in family, community and economics, it is important to pay attention to their general health. Because the lack of women's health can cost a lot to any society and country. Therefore, the present study was conducted to compare general health in athlete and non-athlete women so that it becomes a step forward to fill the research gaps in this area as well as preventive and interventional measures are performed to improve the general health in women. The research questions of the present study included:

Is there a significant difference between the athlete and non-athlete women in term of general health?

Correspondence: Ghorban Hemati Alamdarloo, Faculty of Education and Psychology, Special Education Department, Shiraz University, Eram Square, Shiraz, Iran.

Tel.: +98-711-6134654 - Fax: +98-711-6286441.

E-mail: ghemati@shirazu.ac.ir

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Is there a significant difference between the athlete and non-athlete women in term of subscales of general health?

Materials and Methods

Population, sample, and sampling method

The research method was causal-comparative. The statistical population of the study included all athlete and non-athlete women in Shiraz, Iran. In the present study, the athletes sample selected by Gerjesy and Morgan 'sample size table method. After receiving the total statistical population of the athletes (women) from the active sport boards of Shiraz (the total number of athletes women in Shiraz was $N=47442$ in 2015), $n=382$ were selected as the athletes sample. The sample of non-athlete women was also $n=382$ who were selected by purposeful sampling method. In the way that after completing the questionnaire by the athlete subject, she was asked to introduce a non-athlete friend who would have the criterion to enter the research, and in this way, non-athlete samples were also equally selected as the athletes. It is worth noting that athlete women had at least 5 years of continuous sporting experience in team and individual sports, and non-athlete women were who had no sports activity for at least 5 years. Sample characteristics for athlete and non-athlete women are presented in Table 1. There were no significant differences in in the mean age, educational level, and family income between the two groups (Table 1).

Instruments

General Health Questionnaire-28 (GHQ28) has been developed by Goldberg (1978). This questionnaire has 28 items and four subscales including somatic symptoms (items 1–7); anxiety (items 8–14); social dysfunction (items 15–21), and severe depression (items 22–28). This scale is a four-point Likert scale from not at all (zero), no more than usual (score 1), rather more than usual (score 2), much more than usual (score 3). The total possible score on the GHQ 28 ranges from 0 to 84 and the high score in this questionnaire indicates a greater disorder in mental health of individuals (Goldberg, 1978). Numerous studies have investigated reliability and validity of the GHQ-28 in various populations. Malakouti, Fatollahi, Mirabzadeh, and Zandi (2007) reported that the Cronbach's alpha, split-half coefficients and test-retest reliability were 0.9, 0.89 and 0.58 respectively and recommended that for identifying individuals with a psychiatric diagnosis, GHQ28 has a sensitivity 0.83, specificity 0.76. Sakakibara, Miller, Orenczuk, Wolfe, and Team, (2009) in their research reported that the GHQ-28 correlates well with the Hospital Depression and Anxiety Scale (HADS). In the present study, the reliability of the questionnaire was also obtained using Cronbach's alpha method as 0.73 for somatic symptoms, as 0.82 for anxiety, as 0.71 for social dysfunction,

as 0.86 for depression symptoms, and 0.88 for the total score. It should be noted that the participants individually completed the paper and pencil version of SHS which took about 15 minutes.

Ethical considerations

Athlete and non-athlete women gave consent for their participation in this study. The participants were aware of the purpose of the study and they have the right to leave the study any time they will. They were assured that all their information would remain confidential. The ethical review board of the regional Sports and Youth Organization approved the study.

Results

Table 2 presents the scores of general health and its subscales in athlete and non-athlete women. (It should be noted that in the general health questionnaire, the higher the individual scores the more general health problems he has).

As shown in Table 2, there is a difference between the mean of the two groups. To examine this difference, independent t-test and multivariate analysis of variance were used.

Actually, in order to answer the question whether there is a significant difference between the total general health score of athlete and non-athlete women, independent t-test was used and the results are presented in Table 3. It is worth noting that the results of Kolmogorov-Smirnov test showed that the distribution of data in all research variables was normal ($p>0.05$). Also, in order to examine the homogeneity of variances, Levine test was used. This test was not significant for the total score of general health ($p\geq 0.05$), thus the use of independent t-test is possible.

As can be seen in the table, the comparison of total score of general health between athlete and non-athlete women has shown that there is a significant difference between athlete and non-athlete women in general health. The average score of non-athletes in general health is higher than the average score of athletes [$t(2\ 762) = 9.46, p<.01$]. Also, to answer the question whether there is a significant difference between the subscales of general health in athlete and non-athlete women, multivariate analysis of variance test was used. Before performing the multivariate analysis of variance, the Levin test was first used to determine the homogeneity of variances, but this test was not significant for any of the variables ($p\geq 0.05$). As a result, the use of MANOVA is allowed. Also, the homogeneity of variance and covariance matrices was examined by the Box's M Test. Results showed that the Box's M value was not significant ($p\geq 0.05$), and consequently the homogeneity between covariates was established. It is worth noting that the results of Kolmogorov-Smirnov test showed that the distribution of data in all research variables was normal ($p>0.05$).

Table 1. Sample characteristics for athlete and non-athlete women.

| | Athlete women ($n=382$) | Non-athlete women ($n=382$) |
|---|------------------------------|----------------------------------|
| Mean age (years) (SD) | 26.09 (8.32) | 26.88 (8.65) |
| Range (years) | 19-60 | 18-60 |
| Educational level (%): < 12 years (> 12 years) | 31.68 (68.32) | 32.72 (67.28) |
| Family income (%): ($\leq 10,000,000$ IRR, $10,000,001-30,000,000$ IRR, $\geq 30,000,001$ IRR) | (28.9, 50.00, 21.1) | (23.1, 52.3, 24.6) |

US\$1 = 47730 IRR.

Based on the data observed in Table 4, the effect of the group on the linear combination of dependent variables is significant. For this reason, MANOVA has been used to determine that this effect is significant on which of the dependent variables, and the results are presented in Table 5.

As seen in Table 5, there was a significant difference between the mean scores of athlete and non-athlete women in the subscale of somatic symptoms ($F=88.71$, $df=1$, $p<0.01$). Thus, the mean scores of athlete women in the subscale of somatic symptoms ($\bar{X}=3.97$) is lower than the mean scores of non-athlete women ($\bar{X}=6.60$). Also, a significant difference was observed between the mean scores of athlete and non-athlete women in the subscale of anxiety ($F=56.49$, $df=1$, $p<0.01$). Thus, the mean scores of athlete women in the subscale of anxiety ($\bar{X}=4.38$) are lower than the mean scores of non-athlete women ($\bar{X}=6.61$). Also, there was a significant difference between the mean scores of athlete and non-athlete women in the subscale of social dysfunction ($F=13.29$, $df=1$, $p<0.01$). Thus, the mean scores of athletes women in the subscale of social dysfunction ($\bar{X}=6.96$) were less than the mean scores of non-athlete women ($\bar{X}=8.07$). Also, a significant difference was observed between the mean scores of athlete and non-athlete women in the subscale of severe depression ($F=53.90$, $df=1$, $P<0.01$). Thus, the mean scores of athlete women in the subscale of severe depression ($\bar{X}=2.14$) are lower than the mean

Table 2. Mean and standard deviation of general health and its subscales in two groups.

| Groups | Athlete women ($n=382$) | | Non-athlete women ($n=382$) | |
|----------------------|------------------------------|------|----------------------------------|-------|
| | M | SD | M | SD |
| Total General health | 17.46 | 9.01 | 25.33 | 13.52 |
| Somatic symptoms | 3.97 | 4.35 | 6.60 | 3.27 |
| Anxiety | 4.38 | 3.52 | 6.61 | 4.61 |
| Social dysfunction | 6.96 | 4.20 | 8.07 | 4.21 |
| Severe depression | 2.14 | 2.56 | 4.04 | 4.35 |

Table 3. The results of independent T-test for general health in two groups.

| General Health, Groups | n | M | SD | T | df | P |
|------------------------|-----|-------|-------|------|------|-------|
| Athlete Women | 382 | 17.46 | 9.01 | | | |
| Non-athlete Women | 382 | 25.33 | 13.52 | 9.46 | 762 | 0/001 |

scores of non-athlete women ($\bar{X}=4.04$).

Table 4. The results of MANOVA for general health' subscales in two groups.

| Effect | Value | F | Hypothesis df | Error df | P |
|---------------|-------|-------|-----------------|------------|-------|
| Wilks' Lambda | 0.878 | 26.47 | 4.000 | 759 | 0.001 |

Table 5. The results of MANOVA for general health' subscales in two groups.

| Variables | SS | df | MS | F | P |
|--------------------|-----------|------|-----------|-------|-------|
| Somatic symptoms | 1.319.393 | 1 | 1.319.393 | 88.71 | 0.001 |
| Anxiety | 952.368 | 1 | 952.368 | 56.49 | 0.001 |
| Social dysfunction | 235.309 | 1 | 235.309 | 13.29 | 0.001 |
| Severe depression | 687.991 | 1 | 687.991 | 53.90 | 0.001 |

Discussion and Conclusions

The purpose of this study was to compare general health in athlete and non-athlete women. The findings of this study indicated that general health in athlete women is better than non-athletic women. In explaining this finding, it can be argued that sport and physical activity has a positive and significant correlation with mental health and can be prevented or controlled various illnesses as a behavioral pattern throughout life (Parker *et al.*, 2011).

Also, the findings of this study indicated that somatic symptoms in athletes are less than non-athlete women. In explaining this finding, it can be argued that regular physical activity has a positive effect on the physical health of individuals (Kohl & Cook, 2013). In this regard, various studies have indicated that physical activity has been relevant with reducing the risk of cardiovascular disease (Lear *et al.*, 2017; Carnethon, 2009), Blood Pressure (Diaz & Shimbo, 2013), and Diabetes (Campbell, Kime, & McKenna, 2017). In general, physical activity and regular exercise can prevent diseases and somatic symptoms (Beebe *et al.*, 2005). In this regard, there is evidence to suggest that a higher level of physical activity has a greater protective effect on physical illness (Colman & Dave, 2013).

Also, the findings of this study indicated that anxiety symptoms in athletes' women are less than non-athlete women. Anti-anxiety effects of exercise and physical activities can be explained based on various mechanisms, including physical, physiological and psychological mechanisms of exercise. Biologically, exercise can have anti-anxiety effects through providing access to physical fitness (Kohl & Cook, 2013). Moreover, exercise and physical activities has an effect on the level of neurotransmitters that involved in anxiety (Stubbs *et al.*, 2017). Psychologically, sport, exercise and physical activities can reduce anxiety through increasing a self-confidence (White, Kendrick & Yardley, 2009). In addition to the findings above, the results of this study indicated that social dysfunction in athlete women is lower than non-athlete women. In explaining this finding, it can be stated that sports activities, especially group sports, increase social skills and thereby improving their social performance through increasing women's self-efficacy and communication capabilities. In another explanation, it can be noted that sports activities enhance the social skills through enhancing social expression and assertiveness, thereby improves their social performance (Petitpas, Van Raalte, Cornelius, & Presbrey, 2004).

Also, the findings of the study indicated that depression symptoms in athlete women is lower than non-athlete women. In explaining this finding, it can be stated that physical activities and exercise can be effective in reducing the symptoms of depression (Pickett, Yardley & Kendrick, 2012) through increasing sense of competence, independence, and communication with others (Faulkner & Carless, 2006), increasing self-esteem and improving physical self-concept (White *et al.*, 2009), avoiding negative thoughts (Craft, 2005), the improvement of positive emotions and the reduction of negative emotions (White *et al.*, 2009).

It is suggested that future research should consider longitudinal studies on this issue, because the conclusion on causality requires longitudinal studies. Also, a clinical interview should also be used in future studies, in addition to self-report questionnaires. Regarding the findings of this study, it can be argued that sport is the best way to promote general health and can be considered as a way of preventing diseases and reducing healthcare costs. Also, psychotherapists can use exercise along with other therapies or as an alternative to improve mental disorders.



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