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Original Article

Eating disorders and body image in athlete and non-athlete females

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Abstract

Eating disorders and body image significantly impact the physical and mental health of females. This study aimed to compare eating disorders and body image between athlete and non-athlete females. The research design employed a casual-comparative approach. The statistical population included all female students at Mohaghegh Ardebili University in 2019, with 30 female students from the physical education selected through convenience sampling as the athlete group. Additionally, 30 female students without regular physical activity were chosen as the non-athlete group. Data were collected using the Eating Attitudes Questionnaire-26 and the Self-Body Multidimensional Relationship Questionnaire. The obtained data were analyzed through multivariate analysis of variance using SPSS software, Version 22. The results revealed that mean scores of eating disorders in female athletes were lower than those in non-athlete females, while the mean scores of body image in athlete females were higher than in non-athlete females ($P < 0.05$). In conclusion, the results of this study suggest that exercise can contribute to the reduction of eating disorders and improvement of body image in females.

Keywords

Eating disorders
Body image
Females
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Non-athletes

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Introduction

Eating disorder is one of the most common psychiatric disorders in men and especially in women. It has various psychological and physical consequences for people (Cooper, Raily, Siegel, Coniglio, & SadehSharvit, 2020) and it is also considered the most refractory psychiatric disorder. In addition, it is highly associated with other mental health (Elmquist, Shorey, Anderson & Stuart, 2017). Eating disorder is abnormal method of eating the meals and it involves the uncontrolled thoughts and behaviors such as morbid eating patterns (Wassenaar, Friedman & Mehler, 2019). The evidence demonstrated that overeating is an important clinical and relatively common problem between young women. As a result, deeper perception about the pathology of these disorders can have an important role in preventive and therapeutic actions (Skinner, Rojas & Veilleux, 2017). Veses et al. (2012) have demonstrated that the young people with low and medium physical fitness are more at risk of developing an eating disorder than individuals with higher physical fitness. Michou and Costarelli (2011) in their studies indicated that the eating disorder is lower in female athletes than non-athlete one. On the other hand, there is many evidence that show nutritional disorder are directly related to multiple factors. Dissatisfaction from body image is the most powerful factor of nutritional disorder and in the recent years many studies increasingly focused on this field (Pope, Khalsa & Bhasin, 2017).

Body image is a multi-dimensional, dynamic, unstable, and social concept that has been formed by combining the attitudes, emotions, and personal and social values (Kogure, Lope, Ribeiro, Mendes, Kodato & et al, 2020). Body image includes cognitive and behavioral assessments of size, appearance, function, the shape of the body, and the body health (Markey, Dunaev, August, 2020). Dissatisfaction with body is a major concern, because it is associated with psychiatric disorder such as decreased self-esteem, depression, and anxiety (Stefano, 2016). The studies demonstrated that the women pay more attention to their body image and appearance than men. With consider to the age and sex differences, this condition may become a disorder and it has adverse effect on various aspects of a person's life (Sheikh & Mosleminezhad, 2014). The body image of the female athletes has been evaluated in the several studies in the various fields. The studies show that the physical activities and exercise lead to increased satisfaction with

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body image (Hausenblas & Downs, 2006). The results of the study that has performed by Blum, Johnson, & Rodgers (2010) demonstrated that athletes have better perceived body image than non-athletes.
Generally, there are few studies about evaluation of psychological conditions such as eating disorders and body image in female athletes, and the results are contradictory. On the other hand, these factors among female athletes have been studies in the west countries, but there are little studies in this field in Iran. Therefore, with regard to the importance of the role of sport in women and also with consider to the increasingly prevalence of these conditions among adolescents and young people and its adverse outcomes on mental and physical health, addressing these factors and their effects is particularly important. So the present study has been done with the purpose of comparing the eating disorder and body image in athlete and non-athlete females.

Methods

Participants

The present research design was descriptive and causal-comparative. The statistical population of this research consisted of all athletic and non-athletic female students of Mohaghegh Ardebili University in 2019. Among them, 30 female students in physical education branch, who have participated in the aerobic exercises at least 3 sessions per week up to 2 years, were selected by convenience sampling. Also, 30 female students without any regular physical activity were chosen as non-athletic group. According to minimum sample size law in causal-comparative studies, which is mentioned 20 individuals for each group (Delavar, 2012), 30 people were selected for each group as samples in order to increase the external validity of the research. The inclusion criteria were: no history of cardiopulmonary diseases, age range from 18 years to 36 years and participating in the regular sports activities in the last two years for athletic group. Exclusion criteria include those who have answered the questions incompletely.

Instrument

Eating Attitude Test-26 (EAT-26):

The eating Attitude Test-26 (EAT-26) is a validated questionnaire widely used to measure symptoms and features of eating disorders (Garner, Olmsted, Bohr, & Garfinkel, 1982). It consists of 26 questions, with three components: dieting, food preoccupation, and oral control. Scoring is done on a 6-point scale from always to never, and the total sum of Eat-26 scores ranges from zero to 78. The EAT has a three-factor structure: dieting, food preoccupation, and oral control. The EAT-26 had a Cronbach alpha of 0.96 in the current study. The cut-off score indicating at risk of disordered eating attitudes and behaviors is 20 or above (Garner, Olmsted, Bohr, & Garfinkel, 1982). The EAT-26 has previously been used in several study countries, such as Thailand and Vietnam. For example, the Thai version of the EAT-26 has good criterion related validity (Kaewporndawan, Pariwatcharakul, Pimratana, 2013). In the study of Mollazadeh Esfanjani, Azari, Rouhi & Mohammadi (2012) to evaluate the validity of the test, Cronbach's alpha coefficient was used, which was 0.82 for the whole scale.

Multidimensional Body Self-Relations Questionnaire (MBSRQ):

The MBSRQ is a self-report inventory that assesses peoples' attitudes toward the different aspects of body image intended to be used for adults and adolescents (Cash, 2000). Two forms of the MBSRQ are available. The full, 69-item version consists of 10 subscales: Evaluation and Orientation vis-à-vis Appearance, Fitness, and Health/Illness, plus OP, SCW, and the BASS. Internal consistency for the subscales of the MBSRQ ranged from 0.67 to 0.85 for males and 0.71 to 0.86 for females. The short form of MBSRQ-AS is a 34-item measure that consists of five subscales: AE, AO, OP, SCW, and the BASS. The current study used the short version of MBSRQ. High scores on this measure indicate increased dissatisfaction with general body image. Internal consistencies of the subscales ranged from 0.76 to 0.86 and test-retest reliabilities ranged from 0.75 to 0.93. Convergent validity was also confirmed. In the Persian form of this questionnaire, Cronbach's alpha coefficient for face evaluation subscale is 0.88, face orientation is 0.85, fitness evaluation is 0.83, fitness orientation is 0.79, physical satisfaction is 0.94 and mental weight is 0.91. Also, the reliability of the test-retest with a two-week interval for the face evaluation subscale was 0.78, the face orientation was 0.75, the fitness evaluation was 0.71, the fitness orientation was 0.69, the physical satisfaction was 0.89 and the mental weight was 0.84 was obtained (Ahmadnia & Fanoudipour, 2009).

Procedure

First, among eligible individuals, 30 female athletes (based on 3 sessions in Week of participation in aerobic sports activities up to 2 years before the start of the investigation) and 20 inactive people (who had no history of regular exercise) were selected by convenience sampling. According to the Questionnaires of personal information and medical history, none of the subjects has a history of heart diseases, respiratory diseases and the use of drugs affecting Research result. All subjects filled out and signed an informed consent form for participating in the study. All necessary tips about the importance and the method of performing the study and also the method of collaborating was presented orally to the subjects. Then subjects answered the Questionnaires.
Data Analysis: The data were analyzed using descriptive statistics (mean and standard deviation) and inferential statistics (multivariate analysis of variance) by SPSS-22 software.

Result

According to the results, the mean age and standard deviation of athletic group were 28.66 and 5.8001, while for the non-athletic group; they were 26.93 and 5.88, respectively. Table 1 demonstrates mean and SD of eating disorders and body image variables for both two groups.

Table 1. Mean and standard deviation of eating disorders and body image in athlete and non-athlete females

Group	Female athletes		Non-athlete females	
	M	SD	M	SD
Eating disorders	18.36	8.25	30/90	9.80
Body image	168.20	7.52	145.03	9.47

As shown in Table 1, the mean score and standard deviation of eating disorders in female athletes is lower than non-athlete females and the mean score and standard deviation of body image in female athletes is higher than non-athlete females. In order to consider variances, Levene's test was run the results of which demonstrated equality of variances (eating disorders, p> .05, F= 1.513, body image, p > .05, F=3.577). The results of Test box (p >.05; F= .928) confirmed the assumption of similarity of variance–covariance matrices.

Table 2. Results of multivariate variance analysis test (MANOVA) on the variables of the research

	Variables	SS	df	MS	F	P
Group	Eating disorders	2356.26	1	2356.26	28.67	0.01
	Body image	8050.41	1	8050.41	110.92	0.01
Error	Eating disorders	4765.66	58	82.16		
	Body image	4243.76	58	73.16		
Total	Eating disorders	43530.00	60			
	Body image	1484921.00	60			

According to the Table 2, there is a significant difference between the two groups in the mean scores of eating disorders and body image, and female athletes have a higher scores in body image and lower scores in eating disorders than non-athlete females.

Discussion

The present study has been performed by the aim of comparison of eating disorder and body image in athlete and non-athletic females. The result demonstrated that there is significant difference between two athlete and non-athlete group in eating disorder and body image; so that the female athletes have less eating disorder than non-athlete one. Also, female athletes have a better body image than non-athlete one.

The first finding of the study which stated the female athletes have less eating disorder than non-athlete one is consistent with the findings of the studies which have been done by Wollenberg, Shriver, & Gits (2015); Michou & Costarli (2011); Veses,, Martinez-Qomz, Qomz- Martinez, Vicente- Rodriquerz, & Castillo et al, 2012). For explaining this finding, it can be said that emphasis on loss weight of women through media is one of the main concerns related to weight, bad body image, and tendency to lose weight among many girls and women (Bratland-Sanda & Sundgot-Borgen, 2013). While non-athletic people have more dissatisfaction with their body weight, they have higher score on the scale of eating attitude (Wollenberg, Sheriver, & Gits, 2015). Physical activity influences the reward system. Food is considered as a natural reward that possesses hedonic components, comparable to a substance of abuse that is a result of conditioning through similar brain pathways, which can be influenced by physical activity (Hone-Blanchet & Fecteau, 2014). Evidence also shows that physical activity can help decrease cravings (Drenowatz, Evensen, Ernstsen, Blundell, & Hand, 2017) and that food addiction, cravings, and eating disorder share similar pathways, thus supporting this potential mechanism. Also, physical activity influences negative affect. Some studies have shown that physical activity had a possible effect on neurotransmitters affecting mood, such as serotonin or endorphin secretion, and other neuroprotective functions (Ströhle, 2009; Helmich, Latini, Sigwalt, Carta, Machado, & Velasques, 2010). The benefits of physical activity on behavioral strategies allow the reduction of stress and improvement in mood through the hypothalamus-pituitary-adrenal axis (Childs & de Wit, 2014; Stathopoulou, Powers, Berry, Smits & Otto, 2006) and thus addressing the underlying mechanism by increasing the tolerance of negative affect. Therefore, physical activity could have an indirect effect on eating disorders through its influence on mood, stress, and anxiety. There are many exercise-induced physiological processes associated with appetite control, which includes the stimulation of gastric emptying, increase in appetite-related peptides such as peptide tyrosine (PYY) and glucagon-like peptide-1 (GLP-1), and a positive balance in substrate oxidation (King, Horner, Hills, Byrne, & Wood, 2012). In addition, the repeated practice of PA affects body composition in terms of lean and fat mass, which provokes changes in resting metabolic rate, and thus influences daily energy intake and thus daily energy needs (Blundell, Gibbons, Caudwell, Finlayson & Hopkins, 2015). Combined with these processes, the timing of physical activity could also contribute to decreasing eating disorders.

The second finding of the study about better body image

in female athletes than non-athlete ones is consistent with the findings of the studies of Soulliard, Kauffman, Fiterman- Harris, Peri and Rose (2019), Hosenblass and Falloon (2006), as well as Bloom, Johnson and Rodgers (2010). For explaining this finding, it can be said that people have a strong desire for having a muscular body, and such people are more satisfied with their limbs and bodies. Also, they experience less anxiety from their body image (McCreary & Saucier, 2009). Physical activity is one of the required methods for an ideal body structure, and this method has been preferred by many people in the recent years. People get a chance for having a better appearance through physical activity; therefore, people with new appearance find positive attitudes about their physical characteristics. High body satisfaction is associated with good body function, so female and male athletes are more satisfied with their bodies. (Tazegul, & Guven, 2018). Physical exercise has positive role in improvement of the body image by increasing the self-confidence. The Researcher found that improvement of appearance and shape of body promotes mental characteristics such as self-concept, self-worth, and self-confidence. Therefore, exercise may be a therapeutic strategy for people with dissatisfaction with their body shape (Smith & Petrie, 2008). An athlete's positive body image and engagement in athletics may function as a protective factor against body concerns, such as thin-ideal messages in a way that is not present for non-athletes. With regard to body appreciation, previous research has found that higher levels of body appreciation protect against thin-ideal internalization, particularly among women (Andrew, Tiggemann, & Clark, 2015; Halliwell, 2013). Thus, it has been suggested that athletics could be protective against women's self-objectification (Bissell, 2004; Fredrickson & Roberts, 1997). Participating in sport and having a positive body image may be a protective factor against anxiety. The studies have shown that the higher satisfaction from body shape especially among women protect them against ideal slimming messages (Andrew, Tiggemann & Clark, 2015).

Conclusion

According to the present study, female athletes have less eating disorder than non-athlete one. In addition, they have better body image than non-athlete females. So it is suggested that the more opportunities and places will be provided for women's physical activity. Also, these results reveal the necessary for paying more attention to women's mental health. This study had some limitations. It has been conducted on athlete and non-athlete females in Mohaghegh Ardabili University who were selected by convenience sampling. Therefore, caution should be considered in generalizing the results. It is suggested that random sampling methods be used to increase the generalizability of the results and repeated on other university students.

Disclosure statement

No potential conflict of interest was reported by the authors.

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