ORIGINAL ARTICLE

Exercise addiction in individuals who exercise regularly

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Abstract

Background and Study Aim: Addiction has significant effects on individuals who exercise regularly, influenced by factors such as age and gender. This study aimed to measure the exercise addiction levels among university students who regularly engage in fitness activities.

Material and Methods: The Exercise Addiction Scale was used to determine the participants' levels of exercise addiction. This scale was administered to 198 voluntary participants (students), including 101 women and 97 men. A demographic information form was used to collect data regarding participants' gender, age, years of training, and levels of national athleticism. To compare differences between two independent groups, independent t-tests and One-Way ANOVA multiple comparison tests were applied to identify differences between variables.

Results: Results revealed significant differences in the tolerance development and passion subscales based on gender, with results favoring women. No statistically significant difference was found in the subdimension of excessive focus and mood changes based on years of athletic experience. In contrast, individuals with 1-3 years of experience had significantly higher scores in the postponement of individual-social needs compared to those with 4-6 years of experience. In the subdimension of tolerance development and passion, individuals with 1-3 years of experience scored significantly higher than those with 4-6 years and those with 11 or more years of experience. However, no significant differences in exercise addiction scores were observed based on age or national athlete status.

Conclusions: Results suggest that the risk of exercise addiction may be mitigated by fostering a balanced approach to sports participation. Emphasizing both health and social engagement, rather than solely performance, may help individuals maintain a healthier relationship with exercise.

Keywords: addiction, exercise addiction, sports, gender differences, tolerance development

Introduction

Exercise, widely promoted as beneficial for health, can, however, lead to negative consequences when it becomes excessive and compulsive. This emerging problem, known as exercise addiction, has become a subject of increasing concern in recent years. The stress and fatigue of working life have led people to seek activities that allow them to relax physically, mentally, and spiritually [1]. Undoubtedly, one of the most important of these activities is exercise, which is considered a subclass of physical activity. Moreover, exercise positively affects mood by promoting the production of endorphins, helping people feel happier [2]. Additionally, it supports physiological development by regulating oxygen capacity, metabolism, strength, endurance, and body fat percentage [3, 4, 5].

Exercise is defined as a set of movements based on the planned and voluntary repetition of activities aimed at promoting healthy living and supporting physical, social, and emotional development [2, 6, 7, 8]. Katra [9] stated in his study that excessive exercise may have negative effects on individuals' mental and physical functions. A review of the literature reveals studies that support this hypothesis. Some studies [10, 11, 12, 13] indicate that exercise addiction can lead to a decrease in time spent with family and social circles, as well as a reduction in participation in various activities. Additionally, symptoms of exercise addiction may include constant feelings of inadequacy, the perception that exercise is insufficient, and psychological pressure to achieve desired performance levels [14].

Exercise addiction can be defined as a condition in which the level of exercise becomes uncontrollable, resulting in increased duration, frequency, and intensity. This leads to weakened relationships with the individual's social environment, insufficient time allocation, inability to participate in social activities due to exercise intensity, and a reorganization of life around exercise activities [15]. Exercise addiction was first noted by Baekeland [16] in studies examining the effects of exercise deprivation on sleep patterns. The concept was later popularized by Glasser [17] and further explored by Sachs and Pargman [18, 19], who introduced the term 'running addiction' [20].

Veale [21] developed specific criteria for diagnosing exercise addiction, based on the substance dependence criteria in the DSM-IV.

doi:10.15561/20755279.2024.0602

According to these criteria, the presence of at least three of the specified indicators within a 12-month period may lead to significant disturbances and issues in individuals. Exercise addiction may develop depending on factors such as tolerance, withdrawal effects upon cessation, intention effects, loss of control, time commitment, reduction in other activities, and persistence despite negative consequences [22]. Demir et al. [22] identify key signs of exercise addiction, including the need to increase intensity (tolerance), experiencing anxiety or fatigue when exercise is reduced (withdrawal), exercising more than intended, and losing control over exercise habits. Other indicators are prioritizing exercise over other activities and continuing to exercise despite negative consequences. In another study, Demir et al. [23] noted that factors like duration, intensity, desire, and fatigue can directly impact exercise addiction levels. Consequently, symptoms may include an inability to stop, feeling a need for more exercise, extending workout time, and prioritizing exercise over social activities.

For this reason, attitudes toward exercise are especially important for individuals who engage in sports, as exercise has significant physical, mental, emotional, and social effects. However, exercising excessively and uncontrollably may lead to negative outcomes, countering its potential benefits. Therefore, the aim of this research is to examine the levels of exercise addiction in individuals who regularly exercise at fitness centers.

Materials and Methods

Participants

The population of this study consists of individuals who regularly exercise in Konya (Turkey). The sample group includes 101 women and 97 men, totalling 198 students, selected from this population through convenience sampling and who volunteered to participate in the research. Convenience sampling is considered 'the most straightforward way to obtain data quickly and cheaply' [24].

Participation in the study was voluntary, and informed consent was obtained from all participants. Participant confidentiality was ensured, with all responses anonymized. The study adhered to international ethical standards, including the principles of the Declaration of Helsinki. This research received approval from the Ethics Committee of the Selçuk University Faculty of Sports Sciences (Ethics Committee Report No. 141, dated 26.12.2023).

Study Design

This study employed a comparative method from quantitative research techniques and utilized the 'Exercise Addiction Scale.' A demographic information form was also used to gather data on participants' gender, age, years of training, and national athlete status.

Exercise Addiction Scale (EAS)

The EAS consists of three factors: 'Excessive Focus and Mood Changes' (items 1-7), 'Postponement of Individual-Social Needs and Conflict' (items 8-13), and 'Tolerance Development and Passion' (items 14-17). The scale uses a 5-point Likert format, with scores categorized as follows: 1-17 (normal), 18-34 (low risk), 35-51 (risk), 52-69 (dependent), and 70-85 (high-level dependent).

Statistical Analysis

Statistical analysis of the data was conducted using the Statistical Package for Social Sciences (SPSS) Version 22.0 software. Since the skewness and kurtosis values for the normality test fell within the ±2 range, parametric tests were applied [25]. A significance level of $p<0.05$ was set. Independent t-tests were used to compare differences between two independent groups, while One-Way ANOVA tests were applied for comparisons involving more than two independent groups.

Table 1 presents the comparison of participants' exercise addiction levels by gender. No statistically significant differences were observed in the subdimensions of excessive focus and mood changes or in the postponement of individual-social needs. However, a significant difference was found in the subdimension of tolerance development and passion. Female participants showed notably higher levels in this area.

Table 2 presents the comparison of participants' exercise addiction levels based on age. According to the data, no statistically significant differences were found in the subdimensions of excessive focus and mood changes, postponement of individual-social needs, or tolerance development and passion.

Analysis of the data regarding participants' years of athletic experience (see Table 3) showed no statistically significant difference in the subdimension of excessive focus and mood changes. In the subdimension of postponement of individual-social needs, individuals with 1-3 years of athletic experience had significantly higher average scores compared to those with 4-6 years of experience. Additionally, individuals with 7-10 years of experience showed significantly higher scores than those with 4-6 years. In the subdimension of tolerance development and passion, individuals with 1-3 years of experience scored significantly higher than those with 4-6 years and those with 11 or more years of experience.

According to Table 4, which presents the comparison results related to participants' national athleticism status, no statistically significant differences were found. This applied to the subdimensions of excessive focus and mood changes, postponement of individual-social needs, and tolerance development and passion.

Table 5 shows the results of the correlation

Table 1. Comparison Results of Data by Gender Factor

Addiction Subdimensions	Gender	N	x	Sd	t	p
Excessive Focus and Mood Changes	Female	101	28.48	3.39	1.17	0.24
	Male	97	27.92	3.32		
Postponement of Individual-Social Needs	Female	101	16.93	5.83	1.60	0.11
	Male	97	15.65	5.43		
Tolerance Development and Passion	Female	101	14.81	2.36	2.68	.008*
	Male	97	13.94	2.22		

Note. * - p<0.05

Table 2. Comparison Results of Data by Age Factor

Addiction Subdimensions	Age	N	x	Sd	F	p
Excessive Focus and Mood Changes	18-19	26	28.08	3.35	0.39	0.76
	20-21	73	28.53	2.07		
	22-23	88	27.97	4.17		
	24-25	11	28.18	3.22		
Postponement of Individual-Social Needs	18-19	26	18.12	6.12	2.01	0.11
	20-21	73	15.23	5.17		
	22-23	88	16.74	5.87		
	24-25	11	15.64	5.14		
Tolerance Development and Passion	18-19	26	14.69	2.26	2.35	0.07
	20-21	73	14.38	1.96		
	22-23	88	14.51	2.60		
	24-25	11	12.64	1.96		

Table 3. Comparison Results of Data by Years of Athletic Experience Factor

Addiction Subdimensions	Athletic Experience (years)	N	x	Sd	F	p	Tukey
Excessive Focus and Mood Changes	1-3[a]	51	27.75	3.38	2.16	0.09	
	4-6[b]	100	28.73	2.65			
	7-10[c]	37	27.86	3.99			
	11 and above[d]	10	26.50	5.84			
Postponement of Individual-Social Needs	1-3[a]	51	17.59	6.09	4.32	.006*	a>b b<c
	4-6[b]	100	14.95	5.57			
	7-10[c]	37	18.16	5.07			
	11 and above[d]	10	16.40	2.67			
Tolerance Development and Passion	1-3[a]	51	15.18	2.65	4.71	.003*	a>b a>d
	4-6[b]	100	14.16	1.79			
	7-10[c]	37	14.41	2.64			
	11 and above[d]	10	12.50	2.92			

Note. * - p<0.05; a,b,c,d - groups classified by years of athletic experience

Table 4. Comparison Results of Data by National Athleticism Factor

Addiction Subdimensions	Nationality	N	x	Sd	t	p
Excessive Focus and Mood Changes	Yes	20	27.05	4.61	-1.21	0.24
	No	178	28.33	3.18		
Postponement of Individual-Social Needs	Yes	20	16.25	5.71	-0.04	0.97
	No	178	16.31	5.67		
Tolerance Development and Passion	Yes	20	14.20	2.71	-0.37	0.71
	No	178	14.40	2.29		

Table 5. Exercise Addiction Correlation Analysis

Addiction Subdimensions		Excessive Focus and Mood Changes	Postponement of Individual-Social Needs	Tolerance Development and Passion
Excessive Focus and Mood Changes	r	1	.185*	.316*
	p		.016	.000
Postponement of Individual-Social Needs	r	.185*	1	.509*
	p	.016		.000
Tolerance Development and Passion	r	.316*	.509*	1
	p	.000	.000	

*. Correlation is significant at the 0.05 level.

analysis for the exercise addiction scale. The analysis reveals a low-level positive relationship between the subdimension of excessive focus and mood changes and the subdimensions of postponement of individual-social needs and tolerance development and passion. Additionally, a moderate positive correlation was found between postponement of individual-social needs and tolerance development and passion.

Discussion

This study aims to compare the levels of exercise addiction among students engaging in regular exercise. The results indicate no statistically significant differences in exercise addiction levels based on participants' age or national athlete status. However, gender differences were observed, with female participants showing higher levels in the tolerance development and passion subdimension. Additionally, individuals with 1-3 years of athletic experience scored higher in certain subdimensions, such as postponement of individual-social needs and tolerance development, compared to those with more extended experience. A low to moderate positive correlation was also found between the subdimensions, suggesting that various aspects of exercise addiction are interrelated.

The initial findings of the study examined exercise addiction levels in relation to gender. The analysis revealed a significant difference in the subdimensions of tolerance development and passion, with female participants scoring higher. In contrast, Üstün and Öz [26] found significant differences favoring male participants in exercise addiction, specifically in the dimensions of continuity, tolerance, reduction of other activities, and time.

Çingöz and Mavibaş [1] found a significant difference in exercise addiction levels between male and female participants, with higher levels observed in women. In a study examining exercise addiction among future coaches, Arslanoğlu et al. [5] found a difference in the postponement of individual-social needs and conflict subdimension, favoring men. Similarly, Demir and Türkeli [23] found significant differences favoring male participants in the postponement of individual-social needs and in the development of tolerance and passion subdimensions.

In a study examining exercise addiction levels among marathon runners, men were found to have higher levels of exercise addiction than women [27]. Lichtenstein and Jensen [28] also identified a significant gender difference in groups with and without exercise addiction. Conversely, Rudolph [29] found that female participants had higher exercise addiction levels than male participants. Similarly, a study examining individuals studying physical education and sports determined that female participants exhibited more intense exercise addiction [30].

Çakır [31], in a study on the exercise addiction levels of university students, found that men had higher levels of addiction in the subdimension of postponement of individual-social needs. Another study on exercise addiction revealed that males differed statistically significantly from females across various addiction dimensions [32]. Additionally, a study examining the relationship between basic psychological needs and exercise addiction found that male participants experienced higher levels of exercise addiction [33].

Güneş [34] examined the relationship between exercise addiction and quality of life, finding that men had higher levels of exercise addiction. In a study on exercise addiction levels among individuals with physical disabilities, a significant difference favoring men was observed based on gender [35]. Conversely, Yılmaz [36] found that women had higher levels of exercise addiction than men. Similarly, Kaşka [37] found that exercise addiction scores were higher in men than in women.

According to the results, the decrease in the effects felt by female participants during exercise, along with their desire to increase intensity through more training, may contribute to a higher level of addiction compared to male participants. Women's tendency to dedicate more time to exercise and their impatience may also explain the higher prevalence of exercise addiction. In Birgönül's study [38], however, no significant gender difference was found in exercise addiction levels. Similarly, Başaran

et al. [39] did not identify any significant gender differences in exercise addiction levels among fitness center members.

Sadıq [40] found no significant difference in exercise addiction levels between male and female participants in his study. Similarly, Uzun [41], who examined exercise addiction levels in individuals undergoing sports training, found no significant gender difference. In a study on the relationship between eating behavior disorders and exercise addiction, no significant difference was observed between genders [42]. Lichtenstein et al. [43] also investigated exercise addiction levels in elite athletes and did not detect a statistically significant gender difference.

Age is a significant distinguishing factor among athletes, particularly in individual sports. It also plays a crucial role in team sports, allowing athletes to perform at their highest professional levels. The lack of significant age differences in our participant group does not imply that age has little impact on athletic performance. Instead, the close age range within the research group may explain the absence of significant differences in the analysis results. Additionally, similar levels of exercise addiction among athletes of comparable ages may clarify these findings. Çingöz and Mavibaş [1] obtained similar results, finding no significant differences in exercise addiction levels among participants.

Üstün and Öz [26] found no significant age-related differences in exercise addiction levels among participants in their study. Similarly, Yılmaz [36], who examined exercise addiction levels among sports sciences faculty students, also found no significant difference based on age. Sadıq [40] investigated exercise addiction levels in kickboxing, taekwondo, and muay thai athletes. His analysis revealed no significant differences according to the age factor.

In addition, several studies in the literature support our findings. Sucular [42] found no significant age-related difference in exercise addiction levels in his study. Lichtenstein et al. [43] also reported no difference in exercise addiction levels among elite athletes based on age. Similarly, Rock et al. [44] revealed no age-based changes in exercise addiction levels among students with eating disorders. İlbak [45] likewise found that exercise addiction levels in individuals engaged in sports did not vary with age.

According to our findings, beginners, being at the start of their sports journey, showed higher levels of exercise addiction compared to individuals with 4-6 years of experience. This may be due to their intense focus on exercise, often at the expense of basic needs like nutrition and social activities, as they strive to make progress in sports. This dedication may lead them to tolerate feelings of inadequacy by exercising more.

Additionally, individuals with 7-10 years of experience exhibited higher levels of exercise addiction than those with 4-6 years. A period of 7-10 years is often ideal for athletes aiming to compete professionally or to attain a specific role within their sport. For elite competitors, prioritizing exercise over diet and social life, as well as increasing exercise when they feel their current performance is insufficient, may explain the significant differences compared to those with 4-6 years of experience.

In their study, Kayhan et al. [14] found significant age-based differences in exercise addiction levels, specifically in the dimensions of tolerance, continuity, and overall scores. Similarly, Güler [33] noted that individuals in the 20-24 age group showed significant differences compared to older age groups. However, there are also studies that do not align with our findings.

Lichtenstein and Jensen [28] found significant age-related differences in participants' exercise addiction levels. Similarly, Güneş [34] found a low-level positive correlation between age and exercise addiction. Kaşka [37] also identified significant age-based differences in exercise addiction levels. Specifically, scores in the tolerance subdimension were significantly higher for participants aged 21-23 and 24-26 compared to those aged 30 and over.

In the study examining the mental endurance and exercise addiction levels of the participants, a significant difference was found in the control sub-dimension. It was observed that the mean scores of individuals in the 22-25 age group were significantly higher than those in the 18-21 age group [46].

In a study examining exercise addiction levels in elite cyclists, significant differences were found. Individuals aged 23-26 years and individuals aged 27 years and older showed statistical differences in the sub-dimensions and total score of the exercise addiction scale compared to individuals aged 19-22 years [47].

Our research sample consists of individuals who regularly engage in exercise, making their duration of athletic involvement potentially influential on their levels of exercise addiction. According to our analysis, individuals who have exercised for 1-3 years exhibit higher levels of exercise addiction in the dimension of individual social needs being postponed compared to those who have exercised for 4-6 years. Additionally, those who have exercised for 7-10 years show significantly higher levels of exercise addiction compared to individuals exercising for 4-6 years. It was also found that in terms of tolerance development and passion, individuals who have exercised for 1-3 years differ significantly from those who have exercised for 4-6 years and for 11 years or more.

Sucular [42] reported findings similar to ours, identifying significant differences in average scores among individuals exercising for 0-2 years compared to those exercising for 2-4 and 4-6 years.

Furthermore, it was found that individuals exercising for 2-4 years had significantly lower average scores than those exercising for 4-6 years.Kalkavan et al. [48] also identified significant differences in exercise addiction levels based on years of athletic experience, concluding that individuals with fewer years of experience have significantly higher levels of exercise addiction compared to those with more experience. Similarly, İlbak and Altun [45] found parallels with our findings, although they noted that individuals with lower years of experience also exhibited lower levels of exercise addiction. Kaşka [37] demonstrated that individuals with more years of experience have significantly higher levels of exercise addiction compared to those with less experience.

Arslanoğlu et al. [5] examined the exercise addiction levels of coaches and found that coaches with 1-2 years of licensed athletic experience exhibited lower levels of exercise addiction than those with 3-5 years of experience.

Çingöz and Mavibaş [1] stated that the exercise addiction levels of those who worked less than 1 year were lower. However, it was revealed that the mean values of individuals who exercised for 5 years or more differed significantly.

Güler [33] concluded in his study that individuals who exercised between 5-8 years had a higher level of exercise addiction.

Significant differences were found in the exercise addiction scores of elite cyclists regarding their years of sportsmanship. Accordingly, the exercise dependence levels of individuals who have been practicing sports for 1-3 years were found to be considerably lower than other age groups [47].

Orhan et al [49] found that the mean scores of addicted individuals differed statistically significantly compared to symptomatic and asymptomatic individuals.

In his study, Yılmaz [36] concluded that there was no significant difference in exercise addiction levels based on years of athletic experience. As participants' years of athletic involvement increase, their levels of professionalism in their respective sports also tend to rise. Notably, some participants compete at the national athlete level. Our research findings included an analysis of exercise addiction levels based on national athlete status, which revealed no significant differences. Similarly, Aksoy [50] found no significant differences in exercise addiction levels based on national athlete status. Additionally, Levit et al. [51] reported no significant differences in exercise addiction levels between professional and amateur athletes. However, a study examining exercise addiction levels in professional and amateur football players found significant differences, with amateur athletes exhibiting higher levels of exercise addiction compared to their professional counterparts [52].

According to Table 5, positive relationships were found between the sub-dimensions of exercise addiction. It can be said that an increase in any of the sub-dimensions of exercise addiction will mean an increase in all other sub-dimensions. On the contrary, it is predicted that a decrease in the sub-dimensions may lead to a decrease in the other scores of the individual.

Conclusions

In conclusion, exercise addiction can be experienced early in athletes' careers and during professional years. At the beginning of their athletic journey, individuals may view exercise as a mandatory obligation, potentially leading to higher addiction levels. Over time, as professional athletes strive for self-improvement both mentally and physically, they may approach exercise not as an addiction, but as a means to achieve personal development and peak performance.

Furthermore, athletes are often willing to sacrifice basic and social needs in pursuit of success. If individuals view exercise not as a requirement but as preparation to perform at their best during competitions, it can transform from an addiction into a pathway toward personal achievement. Therefore, the primary challenge athletes face is to see exercise not as an obligation but as a stepping stone for growth. Each mental and physical step taken will bring them closer to success.

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Cite this article as:
Tüzer BF, Demirel H. Exercise addiction in individuals who exercise regularly. *Physical Education of Students,* 2024;28(6):327–335.
https://doi.org/10.15561/20755279.2024.0602

Received: 01.10.2024

Accepted: 19.11.2024; Published: 30.12.2024