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Investigation of Athletes Mental Training and Exercise Addiction Levels

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Abstract

This study was conducted to examine the relationship between mental training and exercise addiction in exercising athletes. The study group of the research consisted of a total of 243 university students, 94 (38.7%) female and 149 (61.3%) male, studying at the Faculty of Sports Sciences. "Personal Information Form", "Mental Training Inventory in Sport" and "Exercise Addiction Scale" were applied to the participants as data collection tools. In the analysis of the data, firstly, it was checked whether the research group had a normal distribution (skewness and kurtosis values). Since normal distribution was not obtained, Mann-Whitney U test were used. In the findings, it was found that male athletes were higher than female athletes in the sub-dimensions of mental performance skills, exercise addiction and postponement of individual social needs and conflict ($p<0.05$). When the differences between departments were analyzed, no significant difference was found in athletes' mental training and exercise addiction scores ($p>0.05$). When the relationship between mental training and exercise addiction was examined, it was seen that there was a positive moderate relationship ($p<0.05$). As a result, it was concluded that the mental training and exercise addiction levels of the participants differed according to gender, but did not differ significantly across different departments they studied.

Keywords: Mental training, Exercise addiction, Athlete

Introduction

Sport, which usually focuses on physical training, has changed over time and nowadays psychological training has gained an important place to improve athletic performance (Kaplan & Andre, 2021). Today, with the understanding of psychological factors in athlete performance, athletes benefit from mental training as well as conditioning (Altıntaş & Akalan, 2008).

Mental training in sport is defined as the systematic and consistent application of mental or psychological skills in order to improve performance, increase enjoyment of exercise and achieve satisfaction in physical activity. Mental training enables athletes to identify obstacles hindering their performance and overcome them through psychological tests. It is suggested that mental skills and mental techniques should be evaluated separately in order to make more accurate interpretations when examining the effects of these trainings on performance (Yarayan & İlhan, 2018).

Exercise can be conceptualized as a planned, structured and repetitive set of complex movement activities performed with sufficient frequency, intensity and duration to be effective in promoting healthy living and also plays an important role in disease prevention (Berczik et al. 2012). Exercise improves mental health by reducing anxiety, depression and negative mood and improving self-esteem and cognitive function (Sharma et al. 2006). During exercise, metabolites and heat are produced, which affect the constant state of the internal environment. Depending on the form of exercise, sooner or later feelings of fatigue and exhaustion will appear. The physiological role of these sensations is to protect the exerciser from the harmful effects of exercise (Ament & Verkerke, 2009). However, the replacement of activities done to be healthy with exercises that increase in load over time, tire and wear out the body, and become indispensable to the extent of disease causes negative effects. One of the important concepts addressed when expressing the negative aspects of exercise is exercise addiction (Demir & Türkeli, 2019).

Exercise addiction (EA) describes a state of excessive or abusive exercise behavior in which moderate to intense physical activity becomes a compulsive behavior (Godoy-Izquierdo et al. 2023). 'Addicted' exercisers are likely to exercise for intrinsic rewards and experience uncomfortable feelings of withdrawal when they are unable to exercise (Landolfi, 2013). In addition to physical injuries and re-injuries caused by exaggerated amounts of exercise without proper rest and recovery, social and psychological difficulties are also evident in exercise addiction. Inability to sleep and concentrate, restlessness and painful withdrawal symptoms (similar to substance dependence) are also daily symptoms in exercise addiction. These negative consequences are so severe that they interfere with normal daily functioning. Exercise addiction is therefore a serious psychological illness that clinicians should understand, recognize and prevent as much as possible (Vardar, 2012).

Mental training is a psychological skill and an important factor in improving athlete performance. It shows that mental training has positive effects on performance and other psychological skills. Mental training has positive effects on performance and psychological skills, but excessive exercise can become addictive over time. In the study, it can be said that exercise is beneficial but too much of it can have a negative effect on individuals. When the literature is examined, although studies have been conducted on exercise addiction (Cicioğlu et al. 2019; Demir & Türkeli, 2019; Zengin & Kirkbir, 2020; Çingöz & Mavibaş, 2022; Erdoğan & Mutlu Bozkurt, 2022; Aydın & Soyer, 2023) and mental training (Kozak et al. 2021; Arı et al. 2022; Cevahircioğlu et al. 2023) no research has explored the relationship between these two concepts. From this point of view, it is thought that it is a matter of

curiosity whether there is a relationship between mental training and exercise addiction of sport sciences faculty students. For this reason, this study was conducted to examine the mental training and exercise addiction levels of students studying at the faculty of sport sciences in terms of some variables.

Material and Method

Ethics Committee Permission

This study was carried out based on the permission received from Tekirdağ Namık Kemal University Scientific Research and Publication Ethics Committee with the decision numbered 442898 dated 10.05.2024.

Research Model

A relational screening design, one of the quantitative research approach, was used in the research. Relational screening designs are research models that aim to determine the existence and/or degree of co-variation between two or more variables (Karasar, 2011).

Research Group

The appropriate sampling method was used in the study. Appropriate sampling is defined as selecting the sample from accessible, easily applicable units and using individuals who want to participate in the study voluntarily (Büyüköztürk et al., 2019). The study consists of a total of 243 students (mean age = 21,08±,16; sports age=7,79±,27) years sample includes 94 female students (mean age = 20,80±2,25 years) and 149 male students (mean age = 21,26±2,82 years), studying at Tekirdağ Namık Kemal University Faculty of Sports Sciences in the spring semester of the 2023-2024 academic year.

Table 1. Demographic information of the participants

Variables	Group	Frequency	Percentage
Gender	Women	94	38.7
	Men	149	61.3
Studying Department	Physical Education and Sports Teaching	129	53.1
	Sports Management	114	46.9

Table 2. Descriptive statistics of scale and sub-dimension scores

Scale and Sub-Dimensions	N	Mean	SD	Skewness	Kurtosis
Mental training inventory in sports	243	79.13	12.31	-1.855	7.343
Mental basic skills	243	15.86	2.82	-1.347	3.936
Mental performance skills	243	22.82	4.16	-1.295	3.677
Interpersonal skills	243	16.65	2.76	-1.912	6.660
Intrapersonal	243	11.77	2.18	-1.343	3.202
Mental stimulation	243	12.00	2.15	-1.284	3.725

Exercise addiction scale	243	60.34	10.91	-.616	1.756
Overfocus and emotional change	243	27.99	4.55	-.542	4.241
Postponement of individual-social needs and conflict	243	18.27	5.24	-.268	-.734
Development of tolerance and passion	243	14.06	3.51	-1.203	.137

N: Number; SD: Standard deviation

Data Collection

Data were collected through a survey with the voluntary participation of students at Tekirdağ Namık Kemal University Faculty of Sports Sciences. In this context, volunteer participants were informed about the surveys and they were informed that that their answers would only be used for scientific research.

Data Collection Tool

The Scale Used in the Research consists of three (3) sections. One of these is the personal information form and provides information about the gender, department, age and sports age of the participants.

The Sports Mental Training Inventory (SZAE) developed by Behnke et al. (2017) and adapted to Turkish by Yarayan and İlhan (2018) was used to measure the participants' mental training levels, and the Exercise Addiction Scale (EBÖ) developed by Tekkurşun-Demir, Hazar and Cicioğlu (2018) was used to measure exercise addiction.

Sports Mental Training Questionnaire (SMTQ): This scale, developed to measure mental techniques and skills in the sports environment, is a 5-point Likert-type scale consisting of 5 sub-dimensions and 20 items. The evaluation of the answers given to the questions is as follows: 5 for strongly agree, 1 for strongly disagree (Yarayan & İlhan, 2018).

Exercise Addiction Scale (EAS): The scale consists of three sub-dimensions: “excessive focus and emotional change”, “postponement of individual-social needs and conflict”, “tolerance development and passion”. EAS consists of a total of 17 items and does not include reverse items. The score ranges of the Exercise Addiction Scale, developed in a five-point Likert type, are as follows: “1-17 normal group, 18-34 low-risk group, 35-51 risk group, 52-69 dependent group, 70-85 highly dependent group” (Tekkurşun Demir et al., 2018).

Data Analysis

In the statistical analysis of the data, it was checked whether it had a normal distribution (skewness and kurtosis values -1.5, +1.5) (Tabachnick and Fidell, 2013). According to the normality test, nonparametric tests were used for data that did not show normal distribution. Accordingly, the Mann-Whitney U test was applied to independent groups. Spearman Rank Correlation test was applied to examine the relationship between the data. SPSS 18 statistical package program was used to evaluate the data obtained from the participants. If the coefficient is less than 0.30, the relationship is considered weak; if it is between 0.30 and 0.70, it is considered moderate; if it is greater than 0.70, it is considered high (Köklü, Büyüköztürk & Çokluk, 2007). Effect sizes (Cohen's d) were calculated for the significance of the comparisons. The thresholds for effect size statistics are as follows: <0.20 = insignificant, 0.20-0.59 small, 0.6-1.19 = medium, 1.2-1.99 = large, ≥ 2.0 very large (Hopkins et al., 2009). The significance level was taken as 0.05.

Table 3. Internal consistency coefficient (α) of mental training inventory and exercise addiction scale in sports

Scales and Sub-dimensions	Number of Items	Cronbach Alpha (α)
Mental training inventory in sports	20	.947
Mental basic skills	4	.824
Mental performance skills	6	.840
Interpersonal skills	4	.892
Intrapersonal	3	.802
Mental stimulation	3	.789
Exercise addiction scale	17	.881
Overfocus and emotional change	7	.860
Postponement of individual-social needs and conflict	6	.772
Development of tolerance and passion	4	.829

In Table 3, the Cronbach α coefficients of the attitude scale and sub-dimensions of the mental training inventory in sports are 70 and above, which is considered sufficient for the reliability of the test scores. In line with these findings, it was concluded that the data of the Mental Training Inventory in Sports and Exercise Addiction Scale were reliable (Kalaycı, 2010).

Findings

Table 4. Mental training and exercise addiction in sports according to gender variable Mann Whitney U test results

Variables	N	Gender	Mean Rank	Sum of Ranks	U	P	η²
Mental basic skills	94	Women	112.84	10607.00	6142.000	.102	
	149	Men	127.78	19039.00			
Mental performance skills	94	Women	105.26	11232.00	5429.500	.003*	.318
	149	Men	132.56	18414.00			
Interpersonal skills	94	Women	119.49	11232.00	6767.000	.649	
	149	Men	123.58	18414.00			
Intrapersonal	94	Women	120.37	11315.00	6850.000	.794	
	149	Men	123.03	18331.00			
Mental stimulation	94	Women	122.11	11478.00	6993.000	.985	
	149	Men	121.93	18168.00			
Mental training	94	Women	113.59	10677.50	6212.500	.138	

inventory in sports	149	Men	127.31	18968.50			
Overfocus and emotional change	94	Women	116.00	10904.00	6439.000	.288	
	149	Men	125.79	18742.00			
Postponement of individual-social needs and conflict	94	Women	107.79	10132.00	5667.000	.012*	.306
	149	Men	130.97	19514.00			
Development of tolerance and passion	94	Women	115.29	10837.00	6372.000	.233	
	149	Men	126.23	18809.00			
Exercise addiction	94	Women	110.44	10381.50	5916.500	.042*	.245
	149	Men	129.29	19264.50			

*p<.05

Table 4 shows the Mann Whitney U test analysis to reveal the differences in the levels of mental training and exercise addiction in sports according to the gender of the participants. A significant difference was found in the mental performance skills, postponement of individual-social needs and conflict sub-dimensions and the exercise addiction scale of male and female participants ($p<0.05$). When the effect size value was examined, it was determined that the female and male athletes variable had a small effect on the mental performance skills (η^2 =.318), postponement of individual-social needs and conflict (η^2 =30) sub-dimensions and the exercise addiction (η^2 =.245) scale.

Table 5. Results of the Mann Whitney U test for mental training and exercise addiction in sports according to the department variable

Variables	N	Department	Mean Rank	Sum of Ranks	U	P
Mental basic skills	129	Physical Education and Sports Teac.	126.43	16309.00	6782.000	.290
	114	Sports Management	116.99	13337.00		
Mental performance skills	129	Physical Education and Sports Teac.	124.47	16056.00	7035.000	.557
	114	Sports Management	119.21	13590.00		
Interpersonal skills	129	Physical Education and Sports Teac.	127.17	16405.50	6685.500	.208
	114	Sports Management	116.14	13240.50		
Intrapersonal	129	Physical Education and Sports Teac.	126.96	16378.00	6713.000	.221
	114	Sports Management	116.39	13268.00		
Mental stimulation	129	Physical Education	126.74	16350.00	6741.000	.249

		and Sports Teac.				
	114	Sports Management	116.63	13296.00		
Mental training inventory in sports	129	Physical Education and Sports Teac.	127.21	16409.50	6681.500	.209
	114	Sports Management	116.11	13236.50		
Overfocus and emotional change	129	Physical Education and Sports Teac.	122.74	15833.00	7258.000	.861
	114	Sports Management	121.17	13813.00		
Postponement of individual-social needs and conflict	129	Physical Education and Sports Teac.	122.24	15769.00	7322.000	.955
	114	Sports Management	121.73	13877.00		
Development of tolerance and passion	129	Physical Education and Sports Teac.	118.43	15277.50	6892.500	.396
	114	Sports Management	126.04	14368.50		
Exercise addiction	129	Physical Education and Sports Teac.	122.22	15767.00	7324.000	.958
	114	Sports Management	121.75	13879.00		

In Table 5, no significant difference was found as a result of the Mann Whitney U test conducted between the mental training and exercise addiction levels in sports according to the departments in which the participants studied (p>.05).

Table 6. The relationship between the sports year variable and mental training and exercise addiction in sports

Variables		**Mental training inventory in sports**	**Exercise addiction**
Sports age	**rho**	.252**	.157**
	p	000	.015

*p<.05

In Table 6, it was found that there was a low level positive significant relationship between the sports year of the students studying at the faculty of sports sciences and mental training and exercise addiction (p<0.05).

Table 7. Relationship between mental training and exercise addiction in sports

Variables	**MBS**	**MPS**	**IS**	**IP**	**MS**	**SMTQ**	**OEC**	**PISNC**	**DTP**	**EAS**

Mental basic skills	1	.633*	.636**	.483**	.598**	.820**	.491**	.159*	.367*	.362**
Mental performance skills	.633**	1	.531**	.453**	.567**	.816**	.389**	.260**	.372**	.366**
Interpersonal skills	.636**	.531**	1	.458**	.732**	.796**	.442**	-.026	.224**	.190**
Intrapersonal	.483**	.453**	.458**	1	.539**	.675**	.365**	.083	.276**	.258**
Mental stimulation	.598**	.567**	.732**	.539**	1	.816**	.480**	.063	.344**	.292**
Mental training inventory in sports	.820**	.816**	.796**	.675**	.816**	1	.498**	.142*	.367**	.348**
Overfocus and emotional change	.491**	.389**	.442**	.365**	.480**	.498**	1	.294**	.561**	.700**
Postponement of individual-social needs and conflict	.159*	.260**	-.026	.083	.063	.142*	.294**	1	.615**	.835**
Development of tolerance and passion	.367**	.372**	.224	.276**	.344**	.367**	.561**	.615**	1	.860**
Exercise addiction scale	.362**	.366*	.190**	.258**	.292**	.348**	.700**	.835**	.860**	1

*p<.05

Table 7 shows the results of the spearman rank correlation analysis conducted to determine whether there is a relationship between EAS and SMTQ. According to the analysis, it was determined that there was a positive and moderately significant relationship between the "mental training" and "exercise addiction" of the participants participating in the study ($p<0.05$). While a positive moderately significant difference was found between the "mental training inventory in sports" and the "overfocus and emotional change" and "tolerance development and passion" sub-dimensions, a positive low level significant difference was found between the "postponement of individual social needs and conflict" sub-dimension. According to the findings obtained from the participants in the study; it was determined that there was a positive moderately significant difference between the "exercise addiction scale" and the "basic mental skills" and "mental performance skills" sub-dimensions, while there was a positive low level significant difference between the "interpersonal skills", "intrapersonel" and "mental visualization" sub-dimensions.

Discussion and Conclusion

In the study, the mental training and exercise addiction levels of students studying at the faculty of sport sciences were examined in terms of various variables. According to the findings of this study, high was found that the mean scores of the participants from the mental training inventory in sport and exercise addiction. As a result of the analyzes conducted on the

research group included in the study, it was determined that there was a significant difference in the mental performance skills sub-dimension of the mental training levels of the athletes in terms of gender variable, there was a significant difference between male and female students in terms of postponement of individual-social needs and conflict sub-dimensions and exercise addiction. Erman et al. (2023) found that there was a statistically significant difference in the mental performance skill levels of male athletes compared to female athletes. In another study conducted on athletes, it was emphasized that there was a result in favor of male students in the sub-dimension of mental performance skills, while they reported that mental training levels did not differ according to gender status variable (Yüksel & Orhan, 2021). When the literature is examined, unlike the findings of this research, there are also studies reporting that female athletes have high mental skills (Kara & Hoşver, 2019; Kozak et al., 2021; Arı et al., 2022). With this, in their study on exercise addiction of students studying at the faculty of sports sciences Tekkurşun-Demir and Türkeli (2019) found that the postponement of individual-social needs and conflict sub-dimensions were statistically significant in male athletes compared to female athletes. In another similar study, they reported that there were significant differences between male and female participants as a result of comparing exercise addiction status, and that male participants had higher levels than female participants (Çingöz & Mavibaş, 2022). Contrary to these studies, when we examined another study, the level of exercise addiction was compared according to gender and it was found that there was no statistical difference (Gök, 2023). It is thought that the reason for these differences in the current research and the studies in the literature is due to the sample groups. At the same time, Habacha, Molinaro and Dosseville (2014) stated in their study that gender is a parameter that should be taken into consideration.

Another finding of the study, in the variable of the department they study in, no difference was detected. in the mean scores of the students' mental training and exercise addiction levels. Cevahircioğlu et al. (2023) stated that there was no statistically significant difference in the mental training scores of the participants according to the department variable. Therefore, we can say that the findings of the study support the findings of the current research. At the same time in another similar study, it was found that there was no statistically significant difference between the departments in which the students studied and their exercise addiction levels (Musa et al., 2021). At the same time in another similar study, it was found that there was no statistically significant difference between the departments in which the students studied and their exercise addiction levels (Musa et al., 2021). Tekkurşun-Demir and Türkeli (2019), students studying at the faculty participate emphasized that this situation is due to the fact in similar levels of exercise, think about similar levels of exercise during the day, and their recovery times and similar mental processes. On the other hand, in the studies conducted by Toktaş et al. (2022) and Üzgü et al. (2023), it was reported that there was a significant difference in the exercise addiction score averages of students studying at the faculty of sports sciences according to the department variable. For this reason, it can be said that the research findings include dissimilar results and differ from the findings of the current study. Since it is assumed that the students take different courses in the departments of sports sciences and their sports life experiences vary, it is thought that the lack of similarity between the findings is a natural result.

In addition, a positive significant relationship it has been detected between the participants' sports age and mental training and exercise addiction. Arı et al. (2022) reported a significant relationship between sports age and mental basic skills, mental performance skills and mental visualization skills sub-dimensions. Çelik and Güngör (2020) found that there was a positive and significant relationship between sports age and total scores of mental training in sports. In

their study on university students Çingöz and Mavibaş (2022), emphasized that there was a significant relationship as a result of comparing sports year and exercise addiction scores. In another similar study, was detected a relationship between the participants sports age and the total exercise addiction score (Cicioğlu et al., 2019). In addition to these studies, there are studies on the correlation of sports age with mental training and exercise addiction within the scope of the current literature (Kara and Hoşver, 2019; Öner and Cankurtaran, 2020; Erdoğan and Gülşen, 2020; Demirel and Cicioğlu, 2020; Aydın and Soyer, 2023). In this sense, the results obtained in the studies in the literature do not support the results of this study. It is thought that as the years of sports increase, the cognitive structures of athletes develop along with their physical structures. The increase in mental training levels in parallel with the increase in the sports year can be explained by this reason (Cevahircioğlu et al., 2023).

In the study, a significant relationship was detected between mental training and exercise addiction. In this context; while a positive moderately significant difference was found between the "mental training inventory in sports" scale and the "excessive focus and emotional change" and "tolerance development and passion" sub-dimensions, a positive low level significant difference was found between the "postponement of individual social needs and conflict" sub-dimension. According to the findings obtained from the participants in the study; it was determined that there was a positive moderately significant difference between the "exercise addiction scale" and the "basic mental skills" and "mental performance skills" sub-dimensions, while there was a positive low level significant difference between the "interpersonal skills", "Intrapersonal" and "mental visualization" sub-dimensions. Accordingly, it can be said that as a result of the increase in the exercise addiction levels of the participants, their mental basic and performance skills increased, but their interpersonal skills, Intrapersonal and mental visualization decreased. As a result of the current research, it was seen that there was no previous research conducted between these two scales in the literature.

Before the final results were drawn, it was determined limitation of the research when the universe of athletes was taken into consideration, the participants in this research represented students of a certain faculty, and the mental training skills and exercise addiction levels of the athletes were evaluated only with a scale. As a result, it was determined that the participants in the research group had high average scores for mental training skills in sports and exercise addiction, and that there was a positive, moderately significant relationship between mental training scores and exercise addiction scores. It was found that there were significant differences in mental performance skills, postponement of individual-social needs and conflict sub-dimensions and exercise addiction level of male and female athletes. It was concluded that the levels of mental training and exercise addiction in sports did not differ in terms of the department in which the participants studied. In addition, a significant relationship was found between students sports years and mental training and exercise addiction. In the light of these results, a directly proportional interaction was observed between the increase in exercise addiction of the athletes and the increase in their mental training levels. Since this study was conducted only on students at the Faculty of Sports Sciences, the research group can be expanded and conducted on more people in order to generalize these results. Similar studies conducted on individuals from different age groups and students studying in different disciplines can provide a more comprehensive understanding of the relationship between mental training and exercise addiction levels.

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