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Şekiller sola dayalı olmalı ve rakamlarla numaralandırılmalıdır. Şekil başlığı numarası ile birlikte, 11 punto, şeklin altında, kelimelerin baş harfleri büyük sola dayalı yazılmalıdır. Kalın veya eğik yazı şeklinde olmamalıdır. Şekil numarasından sonra nokta işareti konup şekil adı yazılmalıdır. Şekil içindeki yazılar ise 9 punto olmalıdır. Şekil ile şekil başlığı arasında boşluk, bırakılmamalıdır. Şeklin başlığı, şeklin altında yer almalıdır. Kaynak kullanılmış ise parantez içinde şekil altına yazılmalıdır. Şekillere, metin içinde mutlaka atıfta bulunulmalıdır. Şekilden önce ve sonra metin ile şekil arasındaki boşluk 1 satır olmalıdır.

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Examination of Football Fans' Perception of Reputation and Happiness Levels

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ABSTRACT

Ensuring the loyalty and sense of belonging of fans, who are among the most significant stakeholders of a team, is increasingly important for maintaining the team's reputation. In this context, the study was conducted to examine the spectator-based reputation and happiness levels of Kahramanmaras Spor fans. The study utilized correlational research and causal-comparative methods. The Happiness Scale developed by Demirci and Ekşi (2018) and the Spectator-Based Sports Team Scale developed by Yavuz Eroğlu S. and Eroğlu E. (2020) were used as measurement tools. Descriptive statistics and normality test were used to analyze the data. "Anova", "Independent Sample t Test" and "Pearson correlation" analysis were used to analyze the data obtained. The study, in which a convenience sample was used, was conducted with 413 fans in 2022. A statistically significant difference was found between the total scores of the happiness scale and the spectator-based sports team reputation scale and the variables of age and marital status. While no significant difference was observed between the Happiness Scale scores and the education level variable, a significant difference was found between the total scores of the Spectator-Based Sports Team Reputation Scale and education level. In addition, it was concluded that there was a significant positive and weak relationship between the scores of happiness and spectator-based sports team scale perceptions. The findings suggest that commitment to sports teams and various aspects of these teams positively affect fans' happiness, though this effect is weak.

Keywords: Sport, football, fans, happiness, reputation

INTRODUCTION

Sport is a significant phenomenon that greatly influences the social, cultural and economic structures of societies (Metin, Eratlı & Şirin, 2022). Football is one of the most widespread and popular sports globally (Şirin, 2021). The popularity of football leads football clubs to be evaluated not only with their sporting performances but also with their fans (Armstrong & Giulianotti, 2001). Fans are regarded as one of the most valuable assets of a football team and play a crucial role in shaping the overall reputation of the club (Karpat, 2015, Bauer, Stokburger-Sauer, & Exler, 2008).

The behaviour of football fans is one of the key factors that significantly influence the audience-based reputation of clubs. In this context, analyzing the happiness levels of the fans and their loyalty to the team can contribute to the overall reputation and brand value of the club.

The reputation of football clubs is shaped not only by their on-pitch success, but also by the relationships they cultivate with their fans (Davies, Chun, Da Silva, & Roper, 2003). The club-fan relationship directly impacts the social perception

and brand value of the club. In the reputation management literature, fan satisfaction and happiness are critical for the sustainable success of clubs (Filo, Lock, & Karg, 2015, Erdem & Koçak, 2016). While fan satisfaction increases the loyalty and commitment of fans to the club, negative fan behaviors can damage the reputation of the club.

The level of happiness of the fans and the strength of their ties with the club have a direct impact on the reputation of the club. Football fans assess their relationship with their clubs within the framework of social identity theory (Tajfel & Turner, 1986). According to the social identity theory, individuals feel that they belong to certain groups and take pride in the achievements and reputation of these groups. In this context, Kahramanmaraş Spor fans identify themselves with the accomplishments and reputation of the club.

Fan happiness can be defined as the satisfaction level of individuals with their relationship with the club (Gül & Gürbüz, 2018; Hoye, Nicholson, & Brown, 2015). Happy fans tend to demonstrate greater loyalty to their clubs, which positively impacts the clubs' reputations. Moreover, fan happiness may also increase participation in the club's social responsibility projects (Walker & Kent, 2009).

Measuring the happiness levels of the fans of such a well-established club is of great importance for the reputation management strategies of the club. As a result of this importance, this study was conducted to examine the audience-based reputation and happiness levels of Kahramanmaraş Spor fans. Considering the importance of fan satisfaction and loyalty in the reputation management of football clubs, Kahramanmaraş Spor needs to strengthen its relations with its fans. In this context, it is suggested that the happiness levels of the fans and their loyalty to the club should be measured regularly and strategies should be developed in the light of these data.

METHOD

This study was conducted to examine the spectator-based reputation and happiness levels of Kahramanmaraş Spor fans. Using convenience sampling, data were collected from 413 fans in 2022. Signatures were obtained from the families of the participants under the age of 18 in order to take part in our study as voluntary participants.

Data Collection Tools

Happiness Scale: In the scales we used in the study, the Happiness Scale was developed by Demirci and Ekşi (2018). The scale data were scored with a 5-point Likert-type rating. The scale consists of 6 items and one factor. The factor loadings of the items in the scale ranged between .59 and .78. The results indicate that the Happiness Scale is a valid and reliable measurement tool that can be used to determine the happiness levels of fans. In the reliability analysis, the Cronbach's Alpha value was determined to be 0.86.

Spectator Based Sport Team Scale: The original form of the scale was developed by Wonseok et al. (2015). Consisting of 19 items and 6 factors, the Turkish validity and reliability of the scale was conducted by Yavuz Eroğlu and Eroğlu (2020). These factors are team performance, team tradition, social responsibility, spectator orientation, management quality and financial performance. Scale data were scored with a 7-point Likert-type rating. The internal consistency coefficient of Croanbach Alpha was determined as 0.91 by Yavuz Eroğlu and Eroğlu (2020). The high score obtained from the scale indicates that the scale is a valid and reliable measurement tool. In the analysis conducted to test the reliability of the scale, Cronbach's Alpha value was determined as 0.94.

Data Analysis

In the analysis of the data obtained as a result of the scales applied in the research, $p<5$ was taken as the significance level and SPSS 26.0 was used as the software program. The data were tested using various analytical techniques appropriate for the research questions. To assess whether the data followed a normal distribution, normality tests were performed by examining the Kurtosis and Skewness values. If these Skewness and Kurtosis values take a value between (+1,5) and (-1,5), it can be said that the data set shows a normal distribution (Tabachnick & Fidell, 2013). The Independent t-test was used for pairwise comparisons, one-way analysis of variance (ANOVA) test for multiple comparisons and Spearman correlation analysis was used to determine the relationship between two variables.

RESULTS

It was concluded that 39% of the athletes participating in the study were 36-45 years old and 3.9% were 46 years old and above, 53.3% were single and 46.7% were married, 38.5% were working in the private sector and 0.7% were retired, 34.9% were high school graduates and 34.4% were university graduates, 49.9% played football for 11-15 years and 13.9% for 16 and above years.

Table 1. Normality and Reliability Test Results

Variables	Skewness	Kurtosis	Cronbach Alpha
Happiness Scale	-,594	,089	0.86
Spectator Based Sport Team Scale	-,396	-,825	0.94

According to the analysis results in Table 1, the data set is normally distributed in terms of skewness and kurtosis and parametric tests were used in the analyses. The reliability test of the obtained data was performed and as shown in Table 1, Cronbach's alpha (α) was found to be 0.86 for the Happiness Scale and 0.94 for the Spectator-Based Sports Team Scale. The results reveal that the scale is a 'highly reliable' measurement tool.

Table 2. ANOVA test Analysis Results of the Happiness Scale according to the age variable of the fans

Happiness Scale	Age	N	X̄	ss	df	F	p
Happiness Scale Total Score	18 years and under	20	4,28	0,825	4	9,922	**0,00**
	19-25 years old	102	3,49	0,951			
	26-35 years old	114	3,89	0,579			
	36-45 years	161	3,93	0,584			
	46 and above	16	3,44	0,887			

Table 3. ANOVA Test Analysis Results Regarding Spectator-Based Sports Team Scale According to Age Variable of Fans

Spectator Based Sport Team Scale	Age	N	X̄	ss	df	F	p
Team performance	18 years and under	20	3,78	2,049	4	4,102	**0,00**
	19-25 years old	102	3,02	1,681			
	26-35 years old	114	3,30	1,568			
	36-45 years	161	3,77	1,412			
	46 and above	16	3,33	1,408			
Team tradition	18 years and under	20	5,11	1,303	4	2,825	**0,02**
	19-25 years old	102	4,88	1,240			
	26-35 years old	114	4,78	1,166			
	36-45 years	161	5,14	,978			
	46 and above	16	4,43	1,613			
Social responsibility	18 years and under	20	3,75	1,996	4	3,325	**0,01**
	19-25 years old	102	3,80	1,411			
	26-35 years old	114	3,52	1,609			
	36-45 years	161	4,17	1,341			
	46 and above	16	3,78	1,591			
Audience orientation	18 years and under	20	4,90	1,015	4	6,292	**0,00**
	19-25 years old	102	3,89	1,123			
	26-35 years old	114	3,83	1,399			
	36-45 years	161	4,36	1,069			
	46 and above	16	4,04	1,480			
Management quality	18 years and under	20	3,71	1,971	4	8,984	**0,00**
	19-25 years old	102	3,02	1,792			
	26-35 years old	114	3,33	1,812			
	36-45 years	161	4,22	1,514			
	46 and above	16	3,58	1,561			
Financial Performance	18 years and under	20	3,71	1,658	4	1,386	0,23
	19-25 years old	102	3,02	1,802			
	26-35 years old	114	3,17	1,702			
	36-45 years	161	3,38	1,502			
	46 and above	16	2,87	1,720			
Spectator-based Sport Team Scale Total Score	18 years and under	20	4,14	1,508	4	5,033	**0,00**
	19-25 years old	102	3,62	1,198			
	26-35 years old	114	3,65	1,308			
	36-45 years	161	4,17	1,046			
	46 and above	16	3,68	1,362			

According to Table 3, no significant difference was found between the age variable of the fans and financial performance among the sub-dimensions of the spectator-based sports team scale (p>0.05). However, a significant difference was found between the other sub-dimensions of team performance, team tradition, social responsibility, spectator orientation, management quality and total of spectator-based sports team scale (p<0.05). Looking at the rank averages, the averages of the fans in the 36-45 age group were higher than the averages of the fans in the other age groups. As the age of the fans increases, their loyalty to the team increases.

Table 4. Anova Test Analysis Results Regarding the Happiness Scale According to the Education Status Variable of the Fans

Happiness Scale	Education Status	N	X̄	ss	df	F	p
Happiness Scale	Literate	2	3,50	,000	5	1,493	0,191
	Primary School	28	3,87	,618			
	High School	144	3,88	,700			
	Associate Degree	76	3,62	,947			
	Bachelor Degree	142	3,80	,707			
	Postgraduate Degree	21	3,94	,573			

According to Table 4, no significance was found between the level of education and happiness perceptions of the fans (p>0.05). However, the happiness levels of the fans with postgraduate degrees are higher than the fans with other education levels. We can say that the level of happiness increases as the level of education increases.

Table 5. Anova Test Analysis Results Regarding the Spectator-Based Sports Team Scale According to the Educational Status Variable of the Fans

Spectator Based Sport Team Scale	Education Status	N	X̄	ss	df	F	p
Team performance	Literate	2	2,33	,000	5	1,171	0,323
	Primary School	28	3,46	1,561			
	High School	144	3,50	1,627			
	Associate Degree	76	3,11	1,781			
	Bachelor Degree	142	3,59	1,468			
	Postgraduate Degree	21	3,30	1,251			
Team tradition	Literate	2	2,33	,000	5	7,556	**0,00**
	Primary School	28	4,63	1,218			
	High School	144	4,98	1,148			
	Associate Degree	76	4,48	1,457			
	Bachelor Degree	142	5,23	,852			
	Postgraduate Degree	21	5,22	,740			
Social responsibility	Literate	2	1,50	,000	5	5,476	**0,00**
	Primary School	28	3,97	1,258			
	High School	144	3,73	1,535			
	Associate Degree	76	3,35	1,539			
	Bachelor Degree	142	4,18	1,447			
	Postgraduate Degree	21	4,54	,827			
Audience orientation	Literate	2	2,66	,000	5	5,747	**0,00**
	Primary School	28	4,86	,590			
	High School	144	4,09	1,028			
	Associate Degree	76	3,74	1,435			
	Bachelor Degree	142	4,10	1,351			
	Postgraduate Degree	21	4,80	,573			

Management quality	Literate	2	1,00	,000	5	6,196	**0,00**
	Primary School	28	4,58	1,156			
	High School	144	3,52	1,716			
	Associate Degree	76	3,11	1,850			
	Bachelor Degree	142	3,70	1,804			
	Postgraduate Degree	21	4,79	,799			
Financial Performance	Literate	2	1,33	,471	5	2,445	**0,03**
	Primary School	28	3,91	1,642			
	High School	144	3,24	1,575			
	Associate Degree	76	2,84	1,867			
	Bachelor Degree	142	3,29	1,577			
	Postgraduate Degree	21	3,36	1,666			
Spectator-based Sport Team Scale Total Score	Literate	2	1,84	,074	5	4,859	**0,00**
	Primary School	28	4,22	1,093			
	High School	144	3,84	1,200			
	Associate Degree	76	3,43	1,369			
	Bachelor Degree	142	4,03	1,166			
	Postgraduate Degree	21	4,35	,634			

According to Table 5, no significant difference was found between the educational status variable of the fans and team performance among the sub-dimensions of the spectator-based sports team scale ($p>0.05$). However, a significant difference was found between the other sub-dimensions of team tradition, social responsibility, spectator orientation, management quality, financial performance and total of spectator-based sports team scale ($p<0.05$). When the rank averages are analyzed, the mean scores of the fans with postgraduate degrees on the spectator-based sports team scale are higher than those of the fans with other education levels. We can say that as the level of education increases, the level of commitment to the team increases.

Table 6. Independent Sample t Test Analysis Results Regarding the Happiness Scale According to the Marital Status Variable of the Fans

Happiness Scale	Marital Status	N	X	ss	df	F	p
Happiness Scale Total Score	Single	220	3,72	,848	4	31,957	**0,01**
	Married	193	3,91	,594			

According to Table 6, a significant difference was found between the marital status variable and happiness perceptions of the fans ($p<0.05$). As a result of the analyses, it was determined that married fans had higher happiness levels than single fans.

Table 7. Independent Sample t Test Analysis Results Regarding the Spectator-Based Sports Team Scale According to the Marital Status Variable of the Fans

Spectator Based Sport Team Scale	Marital Status	N	X	ss	df	F	p
Team performance	Single	220	3,28	1,708	4	24,534	**0,03**
	Married	193	3,62	1,410			
Team tradition	Single	220	4,85	1,244	4	3,001	0,06
	Married	193	5,06	1,032			
Social responsibility	Single	220	3,77	1,573	4	6,089	0,18
	Married	193	3,97	1,404			
Audience orientation	Single	220	4,05	1,225	4	,740	0,30
	Married	193	4,18	1,229			

Management quality	Single Married	220 193	3,29 4,02	1,813 1,614	4	18,475	**0,00**
Financial Performance	Single Married	220 193	3,03 3,45	1,813 1,614	4	2,123	**0,00**
Spectator Based Sport Team Scale Total Score	Single Married	220 193	3,72 4,05	1,813 1,614	4	11,766	**0,00**

According to Table 7, no significant difference was found between the marital status variable of the fans and team tradition, social responsibility and spectator orientation among the sub-dimensions of the spectator-based sports team scale ($p>0.05$). However, a significant difference was found between the other sub-dimensions of team performance, management quality, financial performance and total of spectator-based sports team scale ($p<0.05$). When the rank averages are analyzed, the average of the spectator-based sports team scale of married fans is higher than single fans.

Table 8. Correlation Analysis Between Happiness Scale and Spectator-Based Sport Team Scale

		H.S	SBST.S	Team performance	Team tradition	Social responsibility	Audience orientation	Management quality	Financial Performance
H.S	**r**	1	,366**	,283**	,348**	,324**	,350**	,306**	,223**
	p		,000	,000	,000	,000	,000	,000	,000
SBST.S	**r**		1	,850**	,721**	,886**	,722**	,920**	,772**
	p			,000	,000	,000	,000	,000	,000
Team performance	**r**			1	,582**	,706**	,523**	,753**	,568**
	p				,000	,000	,000	,000	,000
Team tradition	**r**				1	,622**	,359**	,561**	,499**
	p					,000	,000	,000	,000
Social responsibility	**r**					1	,589**	,780**	,554**
	p						,000	,000	,000
Audience orientation	**r**						1	,680**	,443**
	p							,000	,000
Management quality	**r**							1	,676**
	p								,000

H.S: Happiness Scale, SBST.S: Spectator Based Sport Team Scale

Pearson correlation analysis was performed to determine whether there is a significant relationship between happiness and spectator-based sports team scale and its sub-dimensions. As a result of the analysis, there is a significant positive and weak relationship between the scores of happiness and spectator-based sports team scale perceptions (Pearson R = 0,366**; p = 0,00 < 0,01). When the spectator-based sports team scale levels of the fans were analyzed according to the sub-dimensions; a weak relationship was found for team performance, team tradition, social responsibility, spectator orientation, management quality and financial performance sub-dimensions (Pearson R=0,283**-0,348**-0,324**-0,350**-0,306**-0,223**; p = 0,00 < 0,01).

DISCUSSION AND CONCLUSION

It was determined that there were significant differences between the age variable and happiness levels of Kahramanmaraş Spor fans. It was observed that there were significant differences between the age groups, especially between the fans aged 18 and under and the fans aged 46 and over ($p<0.05$). Analysis of the rank averages revealed that the happiness levels of fans aged 18 and under were higher, while the happiness levels of fans aged 46 and over significantly decreased. These findings reveal that there is a decrease in the happiness levels of the fans with increasing age. This situation can be explained by the increase in the responsibilities of individuals as they get older, the increase in anxiety levels and the effect of the cost of living. Similarly, Erdem and Koçak (2016) stated that changes in individuals' living conditions and increasing responsibilities may cause a decrease in happiness levels as age increases. Çakmak et al. (2022) suggest that young fans express their loyalty and support for their clubs more enthusiastically and this increases their happiness levels. Karpat (2015) states that older individuals are under more economic pressure than younger fans and this situation negatively affects their general life satisfaction and happiness levels. In addition, unfulfilled nostalgic expectations of fans in this age group regarding past club achievements may also decrease their happiness levels.

The relationships between the age variable of Kahramanmaraş Spor fans and the sub-dimensions of the spectator-based sports team scale were analyzed. Significant differences were found between the age variable of the fans and team performance, team tradition, social responsibility, spectator orientation, management quality and the total of the spectator-based sports team scale ($p<0.05$). Looking at the rank averages, it was determined that the averages of the fans in the 36-45 age group were higher than the other age groups. These findings show that as the age increases, the loyalty of the fans to the team increases. It is recommended that the club should increase the satisfaction and loyalty of all fan groups by developing strategies (Fan Club and Community Formation, Football Schools and Academies, Training and Seminars, Special Events and Meetings, Social Responsibility Projects, Transportation and Comfort Improvements, E-Sports Events and Tournaments, etc.) for different age groups.

The finding of significant differences between age groups in the sub-dimension of team performance indicates that the importance that fans attach to team performance increases as age increases. Madrigal (1995) stated that older fans follow the performance of their teams more closely and consider this performance as an important indicator of their loyalty to the club.

Team tradition is related to the historical achievements and cultural heritage of the club. It was observed that the importance given to team tradition by the fans in the 36-45 age group was particularly high. This shows that older fans value the historical achievements and cultural heritage of the club more. Gladden and Funk (2001) emphasise that commitment to the history and traditions of clubs creates a strong bond between fans and this bond is stronger especially for middle-aged and older fans.

Significant differences were also found between age groups in the social responsibility sub-dimension. This finding indicates that as age increases, fans' interest in the social responsibility projects of the club increases. Walker and Kent (2009) stated that older fans follow the contributions of their clubs to the society and social responsibility projects more closely and give more importance to these projects.

The finding of significant differences between age groups in the spectator orientation sub-dimension shows that older fans attach more importance to the attitudes and services of their clubs towards their fans. Matsuoka, Chelladurai and Harada (2003) state that older fans are more satisfied with the services and activities of their clubs towards the fans and this satisfaction increases their loyalty to the club.

The finding of significant differences between age groups in the management quality sub-dimension indicates that older fans attach more importance to the management quality of their clubs. This finding is supported by Yoshida, Heere, and Gordon (2015). The researchers stated that older fans follow the management performance of their clubs more closely and that this performance significantly affects their loyalty to the club. These findings suggest that as age increases, fans' loyalty to the team increases. It is recommended that the club should develop strategies for different age groups to increase the satisfaction and loyalty of all fan groups.

The relationship between education level and happiness is a frequently discussed topic in the literature. Many studies show that higher levels of education are generally associated with higher levels of happiness and life satisfaction (Diener, Suh, Lucas, & Smith, 1999; Lyubomirsky, King, & Diener, 2005). Education can increase individuals' opportunities to find a job, raise their income level and create social capital, which can increase overall life satisfaction (Frey & Stutzer, 2002). However, the

lack of a significant relationship between education level and happiness in this study may reflect the effects of different cultural and social contexts. The effect of education level on happiness may depend on many factors such as the economic situation of the country where the individual lives, the quality of the education system, the status of the labour market and social support networks (Veenhoven, 2008). The lack of effect of education on happiness is shaped by many factors such as cultural norms, social class differences, social ties, personal values and psychological states as well as the level of education of the individual. It can be said that education may not be the key to happiness for every individual, and that a number of social and cultural factors other than education also play a major role in happiness.

Research has shown that individuals with higher levels of education generally show more commitment to sports teams. It is stated that the increase in the commitment of educated individuals to sports teams may be due to the fact that these individuals have more knowledge about sports and team culture and can establish a stronger bond with the team (Koca & Aşçı, 2011). In addition, increasing the level of education may increase individuals' trust in sports teams by making them more aware of issues such as social responsibility and management quality. This may positively affect their commitment to the team (Aydın & Uğurlu, 2019).

A significant positive and weak relationship was found between happiness and spectator-based sport team scale perceptions. This finding shows that fans' commitment to their sports teams has a positive effect on their happiness levels, but this effect is weak. When the sub-dimensions of the spectator-based sport team scale were analyzed, weak positive relationships were found between team performance, team tradition, social responsibility, spectator orientation, management quality and financial performance and happiness. These findings suggest that various aspects of sport teams have a positive effect on fans' happiness levels, but this effect is relatively weak. Wann (2006) states that sports fans' commitment to their teams has positive effects on overall happiness and life satisfaction. Zhao, Zhao, and Sun (2024) concluded that emotional satisfaction strongly mediates the relationship between team quality and fan loyalty, and fans take pride and pleasure in their team's achievements. Participation in sport events and commitment to sport teams can strengthen individuals' social ties, increase their sense of belonging, and contribute to overall life satisfaction (Wann, 2006; Kim, Lee, & Kang, 2012; Shakina, Gasparetto & Barajas, 2020; Romero-Jara, Solanellas, Munoz & Lopez-Carril, 2023). However, the findings of this study suggest that the impact of commitment to sport teams and various aspects of teams (e.g., team tradition, social responsibility) on fans' happiness is limited. This suggests that many other factors (e.g., personal relationships, health status, economic status) may also play an important role in influencing individuals' happiness (Diener et al., 1999).

In conclusion, this study reveals that commitment to sports teams and various aspects of these teams have a positive effect on fans' happiness, but this effect is weak.

FUTURE STUDIES

It shows that sports clubs need to develop more comprehensive strategies to increase the happiness of their fans. These strategies should include not only sporting success but also social responsibility projects, management quality and financial performance. Strategies such as social media interaction, fan club and community formation, digital content production, special products and discounts for young people, family events, football schools and academies, training and seminars, special events and meetings, transport and comfort improvements, E-Sports events and tournaments, nostalgic content and events, etc. can be developed. Each of these strategies aims to increase the loyalty and satisfaction of the team's fans of all age groups. In order to generalize the research findings, it is recommended to replicate and extend future research by using a large sample of different sports teams with different historical backgrounds, performances, and financial status. It is suggested that sports team managers should focus on the spectators in order to create and maintain reputation, thus increasing the sense of identity among fans.

Author Contributions

S.Ö: data collection. M.M: data analysis and original draft preparation. M.M: review and editing. All authors have read and agreed to the published version of the manuscript.

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The research was conducted in accordance with the Declaration of Helsinki after obtaining approval from Osmaniye Korkut Ata University Social Scientific Research and Publication Ethics Board on 24.01.2024 (Decision number: 2024/1/9).

Informed Consent Statement

Informed consent was obtained from all subjects involved in this study.

Data Availability Statement

Datasets are available through the corresponding author upon reason-able request.

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Conflicts of Interest

The authors unequivocally assert that this research was undertaken while devoid of any commercial or financial affiliations that might be perceived as potential conflicts of interest.

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Leisure Time Internet Usage and Online Gambling Addiction: Investigation of Individuals Playing Gambling

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ABSTRACT

This study aimed to examine the relationship between leisure time activities, internet gambling and internet gambling addiction levels of individuals regarding their demographic characteristics. The descriptive scanning model, which was widely used in social sciences, was preferred in this study. The study group included a total of 356 participants, 222 male and 134 female. The participants consisted of university students, graduates, individuals who gamble on online platforms, and individuals reached through social media groups. Demografic information form, "Leisure Time Internet Usage" scale and "Online Gambling Addiction" scale were used data collection tool in the study. In the statistical presentation of the data, normality analyses and descriptive statistical analyses, independent sample t-test, one-way analysis of variance (ANOVA) and Pearson correlation test were performed. According to the results, statistically significant differences were found in the variables of gender, education level, welfare status, leisure time period and gambling reason on the leisure time internet usage and online gambling addiction of the gamblers. Statistically significant relationship did not detected between online gambling addiction and leisure time internet usage sclaes. The research results revealed that the impact of online gambling on individuals' leisure time activities varies according to demographic characteristics and that was an important factor in understanding the lifestyles of individuals with gambling addiction.

Keywords: Online gambling, Leisure internet usage, gambling addiction

INTRODUCTION

The rapid development of technology and the impact of digitalization on every aspect of life have radically changed the structure and content of individuals' leisure time activities. The Internet has become not only a means of accessing information, but also a platform that individuals prefer for socializing, entertainment, and relaxation. In particular, Internet-based activities have become central to their leisure time habits. Leisure time Internet use includes all kinds of activities, such as online shopping or playing games, regardless of whether it occurs working hours or off-hours. In addition, individuals' purposes for using the Internet have diversified considerably; activities such as online shopping, digital games, social media use, and online gambling have gained popularity (Gao et al., 2020).

Online gambling is becoming a common leisure activity that attracts people's attention for various reasons (Díaz et al., 2023). The ease of access to online gambling platforms (websites) makes gambling easier and provides the opportunity to gamble from anywhere and at any time through smartphones, computers and other technological devices (Törrönen et al., 2020). Easy access eliminates the need to travel and makes gambling easier (McBride & Derevensky, 2017). However, it can be said that such activities go beyond the entertainment dimension of leisure activities and

have the risk of creating potential negative effects on individuals.

In recent years, it has been observed that there was a significant increase in online gambling advertisements. In particular, since 2016, the doubling of advertising expenditures of online casinos has increased the visibility and accessibility of online gambling (Henriksen et al., 2022). This increase is reflected in the promotion of online casinos through television advertisements, thus reaching a wide audience (Håkansson & Widinghoff, 2019). Furthermore, the widespread usage of digital and social media advertising in the gambling industry has become a major concern due to its potential negative impact on vulnerable consumers, including individuals in medium and high-risk groups (Gainsbury et al., 2016).

Online gambling addictions of individuals who use the internet in their leisure time are an important social and psychological problem today. Online gambling is spreading rapidly thanks to the easy access and anonymity of users, and this increases the risk of addiction. Research shows that Online gambling has more addictive properties than traditional gambling methods. In particular, the constant accessibility of online gambling increases users' gambling behaviors, and this creates a basis for addiction development (Lee et al., 2012; Gainsbury et al., 2014). It has been found that individuals who gamble online have higher impulsivity levels than those who gamble offline (Han et al., 2018). This situation shows that factors such as easy access and privacy provided by online gambling can trigger impulsive behaviors (López-Torres et al., 2021). As a result, online gambling addiction is directly related to individuals' use of the internet in their leisure time. In this context, increasing awareness about gambling addiction and taking preventive measures are of critical importance for the health of individuals (Auer & Griffiths, 2012; Wood & Williams, 2011; Tomei et al.,2022).

This study aims to examine the place of online gambling in leisure activities and the levels of online gambling addiction according to the demographic characteristics of individuals. In addition, the effects of variables such as gender, welfare status and education on online gambling addiction and leisure internet usage were discussed. In this context, the study aimed to provide important data both to understand the approach of individuals to leisure activities and to discuss the individual and social consequences of these activities

METHOD

Research Model

The descriptive scanning model, which was widely used in social sciences, was preferred in this study. This model is based on the data collection process aimed at determining the characteristics of a specific group that is the subject of research. The descriptive scanning model aims to define the problem, individual or object within the scope of the research, as it is, in its natural conditions (Karasar, 2012). In the study, the survey method, which was frequently used in scanning models, was adopted as the data collection tool.

Research Group

The study group of the research consisted of individuals determined by the convenience sampling method, which is one of the non-random sampling methods, and who volunteered to participate in the study. The study group included a total of 356 participants, 222 male and 134 female, with a mean age of 21.89. The participants consisted of university students, individuals who gamble on online platforms, and individuals reached through social media groups. The main purpose of this method was to allow all individuals who want to participate in the study to be included in the sample. Participant recruitment continued until the targeted sample size was reached.

Data Collection Tools

In the data collection process of the research, personal information form, Leisure Time Internet Usage Scale (LIUS) and Online Gambling Addiction Scale (OGAS) were used

Personal Information Form: The personal information form developed by the researcher included questions about the participant's age, gender, marital status, welfare status, leisure period, university graduation, and gambling reasons.

Leisure Time Internet Usage Scale: The "Leisure Time Internet Usage" scale, developed by Şimşek and Çevik (2023), was used to analyze the basic structures of leisure time internet usage and participation in internet activities. The scale consisted of 16 items and social interaction, shopping, Multimedia usage, information/self-improvement sub-dimensions. It had a 5-point Likert-type evaluation. There was no reverse-coded expression in the scale. The reliability coefficient (Cronbach's Alpha) for this research was determined to be 0.74.

Online Gambling Addiction Scale: The "Online Gambling Addiction" scale, developed by Karaibrahimoğlu et al. (2021) to determine the levels of online gambling addiction, was used. The scale consisted of 21 items and motivation, addiction and negative psychology sub-dimensions. It had a 5-point Likert-type evaluation. There was no reverse-coded expression in the scale. The reliability coefficient (Cronbach's Alpha) for this research was determined to be 0.85.

Data Collection

The data collection tools used in the study were developed online via Google Forms and the participants were allowed to answer the questions via mobile devices. In the instructions prepared for the data collection process, detailed explanations for filling in the measurement tools were included. The study was conducted following the principle of voluntariness, and forms that were incomplete or incorrectly completed by the participants were excluded from the scope of the study. Valid and appropriate forms were evaluated.

Data Analysis

Statistical analyses performed within the scope of the research were performed using the SPSS 25 statistical package program. Statistical methods used in the analysis of data include frequency, arithmetic mean, standard deviation, t-test for independent samples, single factor analysis of variance (ANOVA), Tukey multiple comparison tests and Pearson correlation analysis. To evaluate the applicability of parametric tests, the normal distribution of the data was examined with Skewness and Kurtosis tests, and the equality of variances was examined with Levene test (Tabachnick, 2013). Cronbach Alpha internal consistency coefficients were calculated for the reliability analyses of the scales. The significance level was accepted as 0.05 in statistical analyses.

RESULTS

Table 1. t Test Result of Online Gambling Addiction Scale Sub-dimension and Gender Veriable Mean Scores

	Gender	N	$\overline{X}$	Sd	df	t	p
Motivation	Male	222	2.68	0.82	274.17	2.32	0.02*
	Female	134	2.46	0.85			
Addiction	Male	222	2.29	0.90	298.88	2.65	0.00*
	Female	134	2.03	0.83			
Negative psychology	Male	222	2.23	0.90	296.88	2.44	0.01*
	Female	134	2.00	0.84			
(OGAS) Total	Male	222	2.46	0.69	284.66	3.08	0.00*
	Female	134	2.23	0.67			

*p<.05

When Table 1 was examined, it was determined that there was a statistically significant difference between the participants' online gambling addiction sub-dimensions and total score mean according to their gender. According to this result, it was noticed that male participants had higher mean than female participants. It was determined that male participants had higher mean than female participants in all sub-dimensions of the online gambling addiction scale and total score.

Table 2. t Test Result of Leisure Usage Scale Sub-dimension and Gender Variable Mean Scores

	Gender	N	$\overline{X}$	Sd	df	t	p
Social interaction	Male	222	3.89	0.99	261.65	-1.02	0.30
	Female	134	4.01	1.08			
Shopping	Male	222	3.03	1.04	270.35	-4.09	0.01*
	Female	134	3.51	1.09			
Multimedia usage	Male	222	4.00	0.82	287.25	0.14	0.88

	Female	134	3.99	0.79			
Information/ self-improvement	Male	222	3.80	0.96	268.37	0.68	0.49
	Female	134	3.73	1.01			
(LIUS) Total	Male	222	3.67	0.57	268.64	-1.79	0.07
	Female	134	3.79	0.60			

**p<.05*

When table 2 was examined, no statistically significant difference was found between the participants' total scores of social interaction, Multimedia Usage, Information/self-improvement sub-dimensions and (LIUS) from the leisure time internet usage sub-dimensions (p<.05). On the other hand, it was determined that female participants had a higher mean score than male participants in the shopping sub-dimension from the leisure time internet usage scale sub-dimensions

Table 3. t Test results of Online gambling addiction scale sub- dimensions and educational status mean scores

	University Graduation	**N**	$\overline{X}$	**Sd**	**df**	**t**	**p**
Motivation	Graduate	45	2.97	0.91	54.74	3.19	0.00*
	Non-Graduate	311	2.54	0.82			
Addiction	Graduate	45	2.61	1.03	52.98	3.41	0.00**
	Non-Graduate	311	2.13	0.85			
Negative psychology	Graduate	45	2.56	0.98	54.26	3.36	0.00**
	Non-Graduate	311	2.08	0.86			
(**OGAS) Total**	Graduate	45	2.77	0.77	53.74	4.15	0.00**
	Non-Graduate	311	2.31	0.66			

***p<.05*

When table 3 was examined, it was determined that there was a statistically significant difference between participants' online gambling addiction sub-dimensions and online gambling addiction total score mean according to their educational status. According to this result, it was noticed that university graduate participants have higher mean scores than non-university graduate participants in all sub-dimensions of the online gambling addiction scale and total scores.

Table 4. Leisure Internet Usage Scale Sub-dimension and educational status mean scores

	University Graduation	**N**	$\overline{X}$	**Sd**	**df**	**t**	**p**
Social interaction	Graduate	45	3.62	0.96	59.54	-2.33	0.02*
	Non-Graduate	311	3.98	1.03			
Shopping	Graduate	45	3.01	1.23	53.91	-1.33	0.18
	Non-Graduate	311	3.24	1.06			
Multimedia usage	Graduate	45	4.05	0.77	59.28	0.45	0.65
	Non-Graduate	311	3.99	0.81			
Information/self improvement	Graduate	45	3.75	1.03	55.95	-0.21	0.83
	Non-Graduate	311	3.78	0.97			
(LIUS) Total	Graduate	45	3.61	0.69	52.92	-1.31	0.19
	Non-Graduate	311	3.73	0.56			

**p<.05*

When Table 4 was examined, no statistically significant difference was found between the Shopping, Multimedia usage, Information/self-improvement sub-dimensions and LIUS Total scores of the participants in the leisure time internet usage sub-dimensions (p<.05). On the other hand, it was determined that the participants who were not university graduates had a higher mean score than the participants who were university graduates in the social interaction sub-dimension of the leisure time internet usage sub-dimensions and that there was a statistical difference (p<.05).

Table 5. One-way Analysis of Varience Results of Online Gambling Addiction Scale Sub-dimensions regarding welfare status

	Welfare Status	N	$\overline{X}$	Sd.		Sum of Squares	df	F	p	Difference
Motivation	1-Good	67	2.73	093	Between Groups	7,402	2	5.32	0.01*	2-3
	2- Medium	208	2.47	0.79	Within Groups	245,578	353			
	3-Bad	81	2.79	0.85	Total	252,980	355			
	Total	356	2.60	0.84						
Addiction	1-Good	67	2.24	1.04	Between Groups	4,549	2	2.91	0.04*	2-3
	2- Medium	208	2.10	0.79	Within Groups	275,244	353			
	3-Bad	81	2.38	0.94	Total	279,793	355			
	Total	356	2.19	0.88						
Negative Psychology	1-Good	67	2.29	1.02	Between Groups	4,880	2	3.11	0.06	-
	2- Medium	208	2.04	0.83	Within Groups	276,908	353			
	3-Bad	81	2.28	0.88	Total	281,788	355			
	Total	356	2.14	0.89						
(OGAS) Total	1-Good	67	2.49	0.84	Between Groups	5,776	2	6.14	0.01*	2-3
	2- Medium	208	2.27	0.61	Within Groups	166,032	353			
	3-Bad	81	2.55	0.70	Total	171,808	355			
	Total	356	2.37	0.69						

*p<.05

Table 5 showed that the results of one-way analysis of variance (ANOVA) of the online gambling addiction scale (OGAS) sub-dimensions in terms of welfare status. In the "Motivation" sub-dimension, significant differences were found between the groups (F=5.32, p=0.01), especially between moderate (2) and poor (3) welfare status. Significant differences were also observed in the "Addiction" sub-dimension (F=2.91, p=0.04), again between moderate (2) and poor (3) welfare status. However, no significant difference was found between the groups in the "Negative Psychology" sub-dimension (F=3.11, p=0.06). OGAS total score showed significant differences (F=6.14, p=0.01), especially between moderate (2) and poor (3) welfare status. These results showed that welfare status has a significant effect on the online gambling addiction sub-dimensions, especially on motivation and total addiction scores.

Table 6. One-way analysis of variance results of Online Gambling Addiction Scale sub-dimensions regarding the gambling reason

	Gambling Reason	N	$\overline{X}$	Sd		Sum of Squares	df	Mean Square	F	p	Difference
Motivation	1-Pleasure	130	2.41	0.80	Between Groups	8,806	2	4,403	6.36	0.01*	1-3
	2-Excitement seeking	94	2.60	0.91	Within Groups	244,174	353	0,692			
	3-Earn money	132	2.77	0.79	Total	252,980	355				
	Total	356	2.60	0.84							
Addiction	1-Pleasure	130	2.02	0.85	Between Groups	6,864	2	3,432	4.43	0.01*	1-2
	2- Excitement seeking	94	2.37	0.93	Within Groups	272,929	353	0,773			
	3-Earn money	132	2.23	0.85	Total	279,793	355				
	Total	356	2.19	0.88							

	1-Pleasure	130	1.90	0.86	Between Groups	12,422	2	6,211			
Negative psychology	2- Excitement seeking	94	2.33	0.90	Within Groups	269,367	353	0,763	8.13	0.01*	1-2 1-3
	3-Earn money	132	2.25	0.86	Total	281,788	355				
	Total	356	2.14	0.89							
	1-Pleasure	130	2.18	0.67	Between Groups	7,811	2	3,906			
(OGAS) Total	2- Excitement seeking	94	2.47	0.75	Within Groups	163,996	353	0,465	8.40	0.01*	1-2 1-3
	3-Earn money	132	2.49	0.63	Total	171,808	355				
	Total	356	2.37	0.69							

*p<.05

When Table 6 was examined, significant differences were found between the mean scores in all sub-dimensions and total scores of online gambling addiction according to gambling reason. According to the result, it was determined that individuals whose reason for gambling was pleasure have higher mean scores on the motivation, negative psychology and online gambling addiction scale total score than individuals whose reason for gambling is to earn money, and there was a statistically significant difference. Furthermore, it was determined that individuals whose reason for gambling was pleasure have lower mean scores on the addiction, negative psychology and online gambling addiction scale total score than individuals whose reason for gambling was to seek excitement, and there was a statistically significant difference.

Table 7. One-way analysis of variance results of Online Gambling Addiction Scale sub-dimensions regarding the leisure time period

	Leisure Time Period	**N**	$\overline{X}$	**Sd**		**Sum of Squares**	**df**	**Mean Square**	**F**	**p**	**Difference**
Motivation	1-Well	82	2.80	0.93	Between Groups	5,241	2	2,620	3.73	0.02*	1-3
	2-Enough	197	2.57	0.80	Within Groups	247,739	353	0,702			
	3-Poor	77	2.44	0.81	Total	252,980	355				
	Total	356	2.60	0.84							
Addiction	1-Well	82	2.23	0.96	Between Groups	0,326	2	0,163	0.20	0.20	-
	2-Enough	197	2.20	0.84	Within Groups	279,467	353	0,792			
	3-Poor	77	2.14	0.92	Total	279,793	355				
	Total	356	2.19	0.88							
Negative psychology	1-Well	82	2.10	0.93	Between Groups	0,670	2	0,335	0.42	0.42	-
	2-Enough	197	2.13	0.86	Within Groups	281,118	353	0,796			
	3-Poor	77	2.22	0.91	Total	281,788	355				
	Total	356	2.14	0.89							
(OGAS)	1-Well	82	2.47	0.79	Between Groups	1,174	2	0,587	1.21	1.21	-
Total	2-Enough	197	2.36	0.63	Within Groups	170,633	353	0,483			

3-Poor	77	2.30	0.72	Total	171,808	355
Total	356	2.37	0.69			

*p<.05

When Table 7 was examined, a significant difference was found in the motivation sub-dimension of online gambling addiction according to the leisure time period, but no statistically significant differences were found in the other sub-dimensions and the total score of the scale (p>0.05). According to this result, it was seen that the mean score of the motivation sub-dimension of individuals with well leisure time period was higher than those with poor leisure time period.

Table 8. Correlation Test Results of the Leisure Internet Usage and Online Gambling Addiction Scales

	LIUS (Total)	**OGAS (Total)**
LIUS (Total)	1	
OGAS (Total)	0.056	1

There was not any statistically significant relationship was found between the two variables according to the conducted correlation analysis between online gambling addiction and leisure time internet usage sclaes. Since this situation did not provide any data to establish a causal link between the variables, it was not deemed appropriate to conduct a regression analysis.

DISCUSSION AND CONCLUSION

Nowadays, with the development of technology and the increase in welfare levels, there was an increase in people's leisure time. The increase in people's access to new technologies and the internet has changed the form of leisure time activities. The internet becoming a leisure time activity was becoming increasingly common as individuals participate in various online activities for entertainment, socialization and relaxation. Studies showed that leisure internet use covers a wide range of activities such as browsing websites, playing games and watching videos (Gao et al., 2020; Zhou et al., 2014; Dyck et al., 2011).

Online gambling has also become a recreational activity within leisure Internet use, but the recreational nature of Online gambling may conceal potential risks, especially for adolescents and vulnerable groups (Wong & So, 2013).

According to the research results, It was determined that there was a statistically significant difference between the participants' online gambling addiction scale sub-dimensions and the total score averages of the LIUS according to gender (p<.05) and this difference was seen to be in favor of males. In other words, it can be said that males were more addicted to online gambling than females. When the literature was examined, there were studies that reached similar conclusions. The results obtained in the study conducted by Çakal and Subaşı (2023) on gambling addiction were consistent with the results of this study. On the contrary, the study conducted by Merkouris et al. (2016) revealed that some characteristic features of gambling addiction were more common in females. When a general literature review based on gender was made, it was understood that males were more addicted to online gambling than females. For example, in the study conducted by Wong and So on high school students in Hong Kong, it was determined that the participation rate of males in online gambling was 82.9% and that of females was 17.1% (Wong & So, 2013). This situation showed that males tend to engage in online gambling more in their leisure time activities. In another study conducted by Lee and his colleagues, the relationship between internet addiction and pathological gambling was examined and it was determined that males exhibited higher levels of impulsivity and therefore were more prone to online gambling (Lee et al., 2012). Impulsivity was defined as an important personality trait that increased the risk of addiction and can be effective in transforming leisure time preferences into pathological tendencies. Male's higher impulsivity levels may lead them to use online gambling more intensively as an entertainment tool in their leisure time. In Karlsson et al.'s study, a strong relationship was found between problematic gambling behaviors and internet use, and it was found that this situation was more common in males (Karlsson et al., 2019). These results supported that male's tendency to spend their leisure time on online gambling is more pronounced than female's and that this situation affected addiction levels. In conclusion, studies conducted in the context of leisure time showed that males were at greater risk for online gambling

addiction than females. The results provided a critical basis for the development of preventive policies and intervention strategies for online gambling addiction in leisure time activities. Taking gender differences into account can contribute to the design of effective programs to reduce the risk of addiction, especially in males. In the process of prevention and treatment of gambling addiction, help can be obtained from social support groups, especially women can come together with people who have similar experiences, talk about the difficulties they face and receive emotional support, which can contribute positively to the treatment process.

When the research results were examined in terms of leisure time internet use and gender, a significant difference was found in the shopping sub-dimension of the leisure time internet usage scale ($p<.05$). This difference was seen to be in favor of females. In this case, it can be said that females use the internet more for shopping in their leisure time. These results were parallel to many studies in the literature (Šramová & Pavelka, 2019; Rose & Dhandayudham, 2014; Acılar, 2022; Akhlaq & Ahmed, 2016). Öztürk and Ayaz-Alkaya stated that internet addiction was especially common among young females and that this was associated with online activities such as shopping (Öztürk & Ayaz-Alkaya, 2021). This situation showed that female's increased use of the internet for shopping may be linked to internet addiction. Female's increased use of the Internet for shopping was also associated with social interaction and leisure time management. Wang stated that inadequate leisure time management can lead to internet addiction and this situation may be more pronounced among women (Wang, 2018). In this context, the way females manage their leisure time can affect activities such as internet shopping. In addition, Machimbarrena and colleagues state that misuse of the internet can lead to psychological problems and that this was more common among women (Machimbarrena et al., 2019). This situation showed that female's greater use of the Internet for shopping may also be related to psychological effects.

In the comparison between the participants' educational status and online gambling addiction, higher results were obtained in the mean scores of university graduates compared to those who did not graduate ($p<.05$). It was observed that university graduate participants had higher online gambling addiction than those who did not graduate. When the literature was examined, Gainsbury (2015) observed that individuals with online gambling addiction had higher education levels. In addition, Yan et al. (2016) stated that online gambling addiction was related to education level and may differ in individuals with different education levels. Gambling addiction can have important consequences not only at the individual level but also at the societal level. Mowrer et al. Emphasize the importance of implementing gambling education and prevention programs on university campuses. Such programs were critical for raising awareness of gambling addiction and taking preventive measures (Mowrer et al., 2016). Neighbors et al. showed that university students' gambling behaviors interact with social norms and the gambling behaviors of other individuals. This suggested that university graduates may be more prone to gambling addiction (Neighbors et al., 2015). In addition, there were studies in the literature that did not support this study (Effertz et al., 2018; Vallés, 2021; Lelonek-Kuleta and Bartczuk, 2021).

Comparisons made between the participants' leisure time internet usage sub-dimensions showed that there was no statistically significant difference especially for the "Shopping", "Multimedia usage", "Information/self-improvement" sub-dimensions ($p<.05$). These results revealed that educational status did not have a significant effect on the use of these sub-dimensions of the internet. For example, Kuss and Griffiths stated that the use of social networks can negatively affect individuals' interactions with real-life communities (Kuss & Griffiths, 2011). This situation showed that the internet can increase individuals' sense of loneliness instead of social interaction. Therefore, similar usage habits can be observed between university graduates and non-graduates in these sub-dimensions. On the other hand, it was determined that non-university graduate participants had a higher mean in the "Social interaction" sub-dimension and there was a statistically significant difference ($p<.05$). This situation suggests that university graduates meet their social interaction needs in different ways. Elms and his colleagues examined the interaction between online shopping and physical store shopping and stated that the Internet plays a complementary role in shopping behaviors (Elms et al., 2016). In this context, it can be thought that individuals without a university degree tend to meet their social interaction needs more over the Internet.

When the relationship between online gambling addiction and welfare status of the individuals participating in the study was examined, it was determined that there was a statistically significant difference between individuals with low welfare and those with medium welfare. This difference showed that individuals with low welfare have higher levels of gambling addiction compared to individuals with medium welfare. These results revealed the effect of

welfare level on gambling addiction and suggested that individuals in the low welfare group may be more tended to gambling addiction. There were many studies in literature that low welfare level was associated with gambling addiction. For example, a study by Custer and Milt (1985) revealed that individuals with low welfare levels were more tended to gambling addiction. The study showed that low welfare level can increase individuals' motivation to gamble, and this situation may increase the risk of gambling addiction (Zhao et al., 2017). In addition, another study by Grun and McKeigue (2000) stated that low socioeconomic status was associated with gambling addiction and that this situation increased the frequency of gambling in individuals (Poe, 2019). There were several reasons why individuals with low welfare tend to gamble more to explain the relationship between gambling addiction and welfare status. First of all, individuals with low welfare levels may see gambling as a solution to their financial difficulties. This may cause gambling to function as a kind of escape mechanism (Fluharty & Paul, 2022). In addition, it was thought that individuals with low welfare levels may be more affected by social norms and environmental factors towards gambling. These individuals may be more tended to gambling in line with the pressures and expectations from their social environment (Mowrer et al., 2016). However, the effect of low welfare on gambling addiction was also related to the psychological state of individuals. Individuals with low welfare levels may encounter psychological problems such as stress, anxiety, and depression more. This may lead them to use gambling as a coping mechanism (Neighbors et al., 2015). In addition, it was thought that low welfare individuals have less awareness of gambling addiction and did not have enough information about it (Teeters et al., 2013). As a result, it was found that individuals with low welfare levels have higher levels of gambling addiction compared to individuals with medium welfare levels. This situation emphasizes the effect of low welfare levels on gambling addiction and showed that individuals in this group require more support and intervention for gambling addiction. Educational institutions and health services should develop awareness-raising programs and support services for individuals with low welfare levels.

When participants' reasons for gambling were analysed, it was seen that the effect of gambling motivations on Online gambling addiction varied on the basis of sub-dimensions. In the 'motivation' sub-dimension, a significant difference between the groups was determined between those who gambled for pleasure and those who gambled to earn money. This result indicated that gambling motivations were effective on gambling addiction levels. Hagfors et al. stated that gambling motivations were related to gambling behaviours and that gaining profit and positive emotions were among the most common gambling motivations (Hagfors et al., 2022). It can be concluded that the level of gambling addiction of those who play for pleasure may be lower than those who play with the purpose of earning money. In the 'addiction' sub-dimension, a significant difference was detected between those who play for pleasure and those who seek excitement in gambling behaviour. This indicated that excitement seeking has a significant effect on gambling addiction. Thrill seeking may increase the frequency of gambling by causing individuals to seek risky and intense emotional experiences. Individuals with high levels of thrill seeking in leisure activities may be expected to get more satisfaction from these activities and prefer such experiences more frequently. Moreover, it can be said that recreational activities had a strong impact on the psychological development and identity perception of the individual (Beşikçi & Dinç, 2022). The study of Sundqvist et al. (2016) revealed that thrill seeking was associated with problematic gambling behaviours. In this context, it was considered that thrill seeking strengthens individuals' motivation to gamble and may increase their addiction levels. Individuals who were seeking excitement may have higher frequency of gambling and higher addiction levels.

In the 'Negative Psychology' sub-dimension, there was a significant difference between the groups, and this difference was found between those who play for pleasure and those who seek excitement, and between those who play for pleasure and those who aim to make money. This emphasised the relationship between the negative psychological effects of gambling and motivations. Parhami et al. stated that gambling was associated with intrinsic positive reinforcements, and this may increase gambling addiction (Parhami et al., 2012). Gambling motivations may also influenced individuals' psychological states. In OGAS total scores, differences were deceted between those who gambled for pleasure and those who gambled for excitement, and between those who gambled for pleasure and those who gambled to make money. These results indicate that the effect of the reasons for gambling on Online gambling addiction varies in terms of sub-dimensions. In a studty conducted by Mathieu et al., (2020), a relationship was detected between gambling motivations and gambling violence and emphasised that these motivations may affect gambling behaviours. Gambling motivation can be concluded to be an significant factor affecting the gambling addiction levels of individuals. As a result, significant differences were found between the sub-dimensions of the Online gambling addiction

scale and the reasons for gambling. Thus, these results emphasise the effect of gambling motivations on gambling addiction and show that motivations should be considered in the fight against gambling addiction.

The analysis conducted in the 'Motivation' sub-dimension of the Online gambling addiction scale revealed the effect of leisure on gambling motivations. A significant difference was detected between individuals with a good level of leisure and individuals with insufficient leisure time. According to this result, adequate leisure may strengthen individuals' motivation to gamble by increasing their search for social interaction and entertainment. Wang and Bellringer (2022) stated that leisure increased individuals' participation in social and entertaining activities and this may affect their motivation to gamble. The impact of leisure on gambling motivations was also important in terms of strengthening individuals' social connections and increasing their psychological well-being. Wang and Bellringer demonstrated that leisure activities significantly affected individuals' social commitment, which in turn modulated their gambling behaviours (Wang & Bellringer, 2022). In this context, sufficient leisure may support individuals' pursuit of social interaction and entertainment by increasing their motivation to gamble.

On the other hand, no significant difference was found between the groups in the 'Addiction' and 'Negative Psychology' sub-dimensions. This suggested that the effect of leisure on gambling addiction and negative psychological states was limited. Gambling addiction affected by many factors such as individuals' living conditions, psychological states and social interactions. Therefore, it can be concluded that leisure duration alone did not play a predictive role on gambling addiction. In conclusion, these results suggested that leisure had a significant effect on online gambling addiction only in the motivation dimension, while it did not have an effect on the other sub-dimensions. This situation emphasised the importance of leisure management in the fight against gambling addiction and showed that programs that encourage individuals to use their leisure more efficiently should be developed.

According to the correlation analysis between online gambling addiction and leisure internet usage, no statistically significant relationship was detected. These results also coincide with some studies in literature. For example, Gainsbury and colleagues (2015) did not find a relationship between online gambling addiction and online social interactions (Zhao et al., 2017). Similarly, Kuss and Griffiths (2012) did not find a significant relationship between internet addiction and gambling addiction (Poe, 2019). These results supported that individuals' internet usage habits did not have a direct effect on gambling addiction. In conclusion, the correlation analysis between online gambling addiction and leisure internet usage showed that there was no statistically significant relationship between the two variables. Therefore, the regression analysis was unnecessary and did not provide data to establish a causal link between the variables. These results suggested that more comprehensive research on gambling addiction should be conducted, and more variables should be considered to understand the effects of individuals' internet usage habits on addiction.

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C.F.R: data collection. T.B: data analysis and original draft preparation. C.F.R, T.B: review and editing. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The research was conducted in accordance with the Declaration of Helsinki after receiving approval from the Ethics Committee of the Health Sciences Institute of Manisa Celal Bayar University on 29.02.2024 (Approval No.: 06/779).

Informed Consent Statement

Informed consent was obtained from all subjects involved in this study.

Data Availability Statement

Datasets are available through the corresponding author upon reason-able request.

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Conflicts of Interest

The authors unequivocally assert that this research was undertaken while devoid of any commercial or financial affiliations that might be perceived as potential conflicts of interest.

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The Form of Happiness in the Digital Age: Examining the Effect of Internet Usage in Digital Leisure on Flow Experience

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A B S T R A C T

The aim of this study is to examine the effect of internet usage on the flow experience of university students participating in digital leisure activities. The study utilized the relational screening model, one of the quantitative research methods. The demographic information form created by the researchers, the Leisure Internet Usage Scale (LIUS) and the Digital Leisure Flow Experience Scale (DLFES) were used as measurement tools. When the findings were examined, no significant difference was found in leisure internet usage in terms of gender variable, while significant differences were found in terms of digital leisure flow experience. When the participants were examined in terms of digital device usage time, significant differences were found in terms of leisure internet usage, shopping and multimedia usage sub-dimensions, and digital leisure flow experience. A positive relationship was found between digital leisure internet use, social interaction and information/self-improvement sub-dimensions, and flow experience. In addition, it was concluded that the purposes of digital leisure internet usage, social interaction and information/self-improvement, were predictors of flow experience. The results obtained are examined comparatively with different studies in the discussion section.

Keywords: Leisure, digital leisure, digital leisure flow experience

INTRODUCTION

Changes in the dynamics of social life in line with the developments in information and communication technologies have undoubtedly directly affected the leisure experiences of individuals (Blanco, 2015; Er and Cengiz, 2023a). While technological developments have presented solutions and facilitations for daily responsibilities in human life, they have also changed the leisure experiences for the individual and society. Today, individuals spend their leisure on digital platforms for purposes such as games, entertainment, socialization and communication, without time and space limitations, through internet connection, in a more economical and easily accessible way compared to traditional activities (Er and Cengiz, 2023b; Ho and Cho, 2024).

While this situation reveals the concept of digital leisure (Nimrod and Adoni, 2012; Blanco, 2015; Lopez Sintas et al., 2017a; Lopez Sintas et al., 2017b; Er and Cengiz, 2023a), it necessitates examining the changing experiences of individuals and the activities that comprise a significant part of their leisure preferences with their reasons and consequences. The preference for internet-related activities as a leisure experience has been the subject of many studies in recent years (Zhou et al., 2014; Spracklen, 2015; Wang et al., 2015; Gallistl and Nimrod, 2020; Şimşek, 2024). However, it is also possible to say that internet use in leisure is linked to the happiness level of individuals (Viklund and Forsman, 2022; Sui et al., 2023; Mei and Lin,

2023). It is thought that this state of happiness that individuals achieve is related to the flow experience they experience through internet use in their leisure. Individuals who experience flow through digital leisure activities can spend more time on these activities, thus experiencing the process of being happy or staying in the flow more.

It may be useful to examine the general picture in terms of the time individuals spend on internet use and the purposes of use, in terms of scientific studies being addressed with current world data. According to the January-2024 data of We Are Social, one of the most comprehensive studies on digital experiences on a community basis and published at regular intervals, 5.35 billion people between the ages of 16-64 have access to the internet worldwide, and this figure constitutes 66.2% of the total world population. When examined in terms of time spent in this comprehensive report, according to the world average, individuals will spend an average of 6 hours and 40 minutes per day on internet use as of 2024. When the last 10 years are taken as a basis, it is seen that the number of internet users in terms of the world population has almost doubled between 2014-2024, and it is possible to say that the time spent on digital platforms is increasingly covering a large part of daily life.

Table 1. Internet Usage Statistics- 2024

Internet Usage Purposes		Visited Websites & Apps	
Finding Information	%60,9	Chat and messaging	%94,7
Staying in touch with friends and family	%56,6	Social networks	%94,3
Watching videos, tv shows or movies	%52,3	Search engine sor web portals	%80,7
Keeping up to date with news and events	%51,9	Shopping, auctions, or classifieds	%74,3
Researching how to do things	%49,4	Maps, parking, or location-based services	%54,4
Finding new idea sor inspiration	%46,1	Email	%49,5
Accessing and listening to music	%45,1	Music	%48,1
Researching products and brands	%43,7	Weather	%42,2
Filling up spare time and general browsing	%42,6	Entertainment	%40,6
Education and study-related purposes	%38,8	News	%40,3
Researching places, vacations and travel	%37,9	Games	%32,4
Researching health issues and healthcare products	%35,2	Mobility services (e.g. ride-hailing, bike hire)	%28,6
Managing finances and savings	%34,2	Banking, investing, or insurance	%26,6
Business-related research	%29,9	Sports	%25,8
Gaming	%29,3	Travel	%24,5

Source: We are Social, 2024

When this study is examined in terms of the geography where it was conducted, Turkey is seen to be well above the world population with 86.5% of the total population having access to individual internet use. In addition, it is seen that an average of 6 hours and 57 minutes is spent on internet use in Turkey per day, and it is possible to say that this data is also above the world average. When examined in terms of age range, it is seen that women in the 16-24 age group, including university students, spend 7 hours and 32 minutes on internet use, and men spend 7 hours and 7 minutes; and women spend 7 hours and 3 minutes on internet use, and men spend 7 hours and 13 minutes on internet use among individuals between the ages of 25-34. When Table 1 is examined, details are shown in terms of the purposes of internet use presented in the report and the frequency of participation in the websites visited and the applications used (We Are Social, 2024). The specified data show that internet-based activities are preferred significantly in terms of duration and frequency in human life as a leisure activity worldwide. However, it also reveals the need to examine the reasons for individuals' preferences in activities (social interaction, shopping, multimedia use or information/personal development) and the flow experience in terms of the time they spend.

***Digital Leisure and Internet Usage**:* Participation in internet-based activities for different purposes during leisure has become an integral part of daily life today with the influence of popular culture (Spracklen, 2015). This situation is not limited to the home environment (Sintas et al., 2017a), but continues to be used for different purposes such as gaming, entertainment, communication and socialization in the work environment (Coker, 2011; 2013; Kausar et al., 2021; Gellmers and Yan, 2023) or by high school and university students (Wang et al., 2015; Kaas and Uğur, 2017; Wang, 209; Ludvík et al., 2020; Er and Cengiz, 2023a; Sintas et al., 2023). The situation where individuals evaluate their leisure experiences through digital technologies or internet-based activities is conceptually addressed as digital leisure in the literature. The concept of digital leisure is defined by Er and Cengiz (2022) as "the type of leisure in which individuals participate

with free will in digital environments for different purposes such as games, entertainment, socialization and communication without any spatial limitation through the use of digital technologies, or in other words, individuals' evaluation of their leisure experiences through the use of digital technologies."

In the literature on internet use, Zhou et al. (2014) grouped internet users as informative and instrumental users, entertainment users, communication users and advanced users; while Şimşek and Çevik (2023) considered the purposes of internet use in leisure as social interaction, shopping, multimedia use and information/personal development. Şimşek (2024) also states that there are differences in the leisure internet usage habits of different generations X, Y and Z. It can be said that the amount of leisure internet usage, in other words, the duration and frequency of participation, is also an important factor. On the other hand, Lamberti et al. (2023) categorized leisure internet activities in young individuals as information-seeking, social interaction/communication, entertainment and transaction activities. Similarly, Er and Cengiz (2023b) categorized digital leisure participation purposes in a broader sense as gaming, entertainment, socialization and communication. This situation is seen to have negative consequences, especially in adolescents, leading to addiction and social anxiety (Doshi et al., 2024; Moñino-García, 2024). It can be said that other studies in the literature on the subject are addressed as problematic internet use in terms of different age groups or generations. It has been observed that long-term use of the internet as a leisure activity is associated with negative behaviors and outcomes such as lack of sleep and decreased sleep quality in children (Kim et al., 2018), excessive weight gain and obesity due to inactivity and lack of participation in physical activity (Aghasi et al., 2020), and gambling addiction in adolescents (Moñino-García, 2024). Since excessive use of the internet in leisure includes some risk factors in terms of quality of life and mental health, it is recommended that it should be in a controlled structure so that it does not turn into problematic use (Gao et al., 2020).

It is also possible to talk about the positive outcomes of leisure internet usage. There are studies that show that leisure internet use supports subjective well-being by increasing the level of leisure satisfaction and quality of life, especially in older individuals (Choi and Lehto, 2009; Heo et al., 2011; Huang et al., 2023). Although it is considered as a passive leisure activity, there are studies that show that leisure internet use is related to the happiness level of individuals and address the positive outcomes (Wei et al., 2017; *Sun et al., 2023).*

Digital Leisure and Flow Experience*:* The flow experience, which is assumed to be affected by digital leisure internet use in the study, can be expressed as a subjective state within positive psychology that causes individuals to forget everything except the activity itself, such as time and fatigue, when they are fully involved in the activity (Csikszentmihalyi, 2014). The flow experience is a psychological state and reflects the state of consciousness resulting from discipline. Individuals reach a state of balance between the difficulties in the activities and the skills and abilities required to overcome these difficulties within the specified mood (Elkington, 2011). This experience, which is essentially enjoyable, is a state accompanied by loss of self-consciousness and self-empowerment (Hoffmann and Novak, 1996). It is an experience that increases the level of satisfaction beyond the feeling of fun due to the pleasure received from the intensity of the activity (Clarke and Haworth, 1994; Ghani and Dehpande, 1994). The most important function of the flow experience, which is closely related to leisure activities, is to provide enjoyable experiences to its participants (Csikszentmihalyi, 1992). All these definitions about the flow experience are also descriptive of participation in internet-based activities that dominate the majority of leisure in today's societies. It is known that individuals lose their sense of time and participate in these activities for long periods of time while spending a significant portion of their time on these activities.

Individuals can use the internet for different purposes such as communication (Allaby and Shannon, 2020), health (2020), education (Renuka and Grunathan, 2017), personal development (Iemtom, 2019), shopping (Hyun, 2022), socialization (Saleh, 2024) in their leisure. In addition to this situation, examining the studies on the flow experience in leisure internet usage is important due to the size of the time allocated to internet-based activities. Individuals can experience flow through social platforms using the internet for entertainment and socialization purposes, especially when they are bored, looking for a meaningful activity, or want to experience more leisure (Leung, 2020). When individuals use social media applications as an internet-based leisure activity for shopping purposes, they can also reach the flow experience in line with hedonic search (Shahpasandi et al., 2020). Flow experience constitutes an important theoretical framework for understanding information communication systems and technology use in leisure. In line with this conceptual structure of the flow experience, individuals can interact with their skills through digital devices through the use of

the internet, increase their social relationships, and enjoy this situation by concentrating for long periods of time (Kaur et al., 2016).

Digital leisure flow experience was first conceptualized by Er and Cengiz (2023b). Considering that digital leisure participation, which emerged as a result of the evaluation of leisure activities through digital technologies, provides individuals with the experience of flow, the concept of "digital leisure flow experience" was introduced. The Digital Leisure Flow Experience Scale (DLFES) was developed to measure the conceptualized structure. In the conceptual structure of the scale, the following dimensions were used, which express the components of the flow experience; balance of difficulty and skill in the activity, combination of action and awareness, clear goals, instant feedback, focus on the task, sense of control, loss of self-consciousness, transformation of time, and autotelic experience. In line with the given conceptual information and literature; It constitutes the subjective aspect of the study by revealing the necessity of examining the flow experience in terms of the time and frequency allocated to internet use, which is an important preference point for university students in terms of their leisure experiences today. In this direction, the aim of the study is to examine the effect of digital leisure internet usage on the flow experience. The hypotheses and research model related to the study are as follows:

H_1: There is a significant relationship between internet usage and digital leisure flow experience of university students participating in digital leisure activities.

H_2: Internet usage of university students participating in digital leisure activities has an impact on their digital leisure flow experience.

H_3: There is a significant difference in the internet usage and flow experience of university students participating in digital leisure activities in terms of gender variable.

H_4: There is a significant difference in the internet usage and flow experience of university students participating in digital leisure activities in terms of the digital device usage time variable.

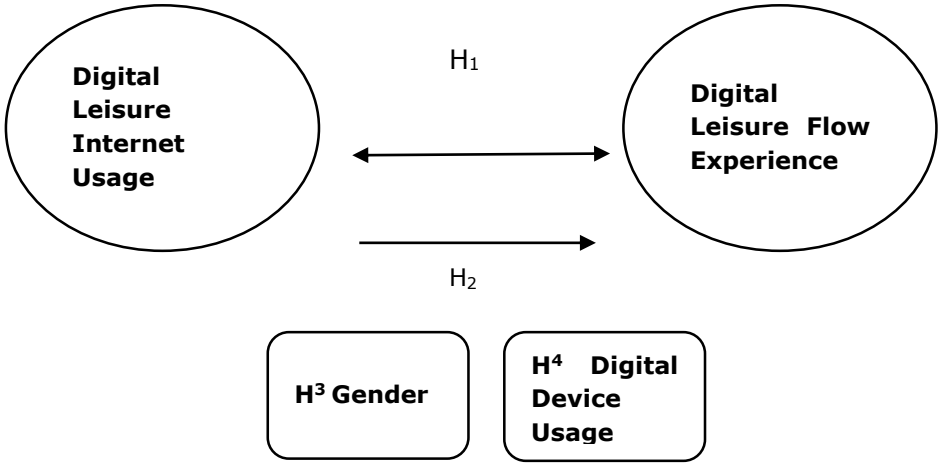

Figure 1: Research Model

METHOD

Study Desing

In the study, the survey design, one of the quantitative research methods, was selected as the research design. The survey design examines the relationship between variables by testing a sample in the universe as a quantitative description of trends, attitudes and thoughts in the universe. The research design also helps researchers answer three questions: a) descriptive questions b) questions about the relationships between variables and c) questions about the predictive relationships that occur between variables over time (Cresswell and Cresswell, 2021:147).

Study Group

The sample group of the study consists of 462 female (55.1%) and 377 male (44.9%) university students with an average age of 24.63±3.671 who use the internet for different purposes in their digital leisure. The reason for choosing university students as the sample group is that individuals in the university student universe in Turkey are the group that uses the internet most intensively for different purposes in their digital leisure (We Are Social, 2024). In the selection of university students who participated in the study, probability-based sampling techniques, simple random sampling technique,

were used. This technique allows each element in the defined universe to have an equal and independent chance of being included in the study. Each sample unit has an equal chance of being included in the study and the selection of one does not prevent the other (Coşkun et al., 2019).

Table 2. Demographic Information of Study Group

Age	$\bar{X}$	S.s.
	24.63	3.671
Gender	N	%
Female	462	55.1
Male	377	44.9
Digital Device Preference	N	%
Computer/Tablet	103	12.3
Mobile Phone/Smart Phone	702	83.7
Television	17	2.0
Game Console	17	2.0
Digital Device Usage Time	N	%
1-2 hours	331	39.4
3-4 hours	276	32.9
5 hours and above	232	27.7
Digital Device Usage Purpose	N	%
Education and/or research (searching for information and doing homework, etc.)	20	2.4
Communication	274	32.7
Playing games	144	17.2
Shopping	44	5.2
Social networking sites (Twitter, Instagram, etc.)	283	33.7
Follow news and/or sports events	8	1.0
Listening to music and/or watching movies, videos, etc.	65	7.7

When Table 1 is examined, it is determined that university student participants prefer phones with a high percentage of 83.7% in digital leisure internet use, while other digital devices are distributed as computers/tablets 12.13%, television 2% and game console 2%. It is seen that participants spend 1-2 hours on these activities with 39.4%, 3-4 hours with 32.9% and 5 hours and above with 27.7% in their daily digital device usage time. In terms of the purpose of digital device usage, the most important preferences of individuals are social networking sites with 33.7% and communication purposes with 32.7%. These purposes are followed by playing games with 17.2%, listening to music and/or watching movies, videos etc. with 7.7%, shopping with 5.2%, education and/or research (searching for information and doing homework etc.) with 2.4% and news and/or sports events with 1%

Data Collection Tools

Demographic information form, Leisure Internet Usage Scale (LIUS) and Digital Leisure Flow Experience Scale (DLFES) were used as data collection tools in the study.

Demographic Information Form: The demographic information form created by the researchers was created to collect data on the participants' age, gender, digital device preference, digital device usage duration and purpose of digital device usage.

Leisure Internet Usage Scale (LIUS): Leisure Internet Usage Scale (LIUS) was developed by Yıldırım Şimşek and Çevik (2023) to examine the conceptual structure of internet usage in leisure and to analyze internet participation. The scale consists of a total of 16 items and 4 sub-dimensions. These sub-dimensions represent the purpose of internet use in leisure time as social interaction, shopping, multimedia source and information/self improvement. The scale, which has a 5-point Likert-type structure, is evaluated as 1-strongly disagree and 5-strongly agree. In the current study, the Cronbach Alpha reliability coefficients of the scale were determined as social interaction α=.71; shopping α=.81; multimedia source α=.71 and information/personal development α=.83. Table 2 shows the mean scores and reliability coefficients for both scales used in the study.

Digital Leisure Flow Experience Scale (DLFES): The Digital Leisure Flow Experience Scale (DLFES) was developed by Er and Cengiz (2023) in order to measure the flow experiences of individuals participating in digital leisure activities. In the development of the scale, the conceptual structure of flow experience (Csikszentmihalyi, 1990; Nakamura and Csikszentmihalyi, 2002; Csikszentmihalyi, 2014) and its relationship with leisure experience (Stebbins, 2010), as well as the studies of Kelly (1990) for his views on the

experience of quality leisure and Nimrod and Adoni (2012), who examined the conceptual dimensions of digital leisure.

The sub-dimensions of the scale were determined as experience, activity, and time in line with these approaches. The scale consists of 17 items and 3 sub-dimensions, and digital leisure flow experience can be measured through the total score. The scale, which has a 7-point Likert-type structure, has options of 1-strongly disagree and 7-strongly agree. When the Cronbach Alpha reliability coefficients of the scale were examined in the current study, it was calculated as α=.94 for experience; α=.91 for activity, α=.91 for time and α=.97 for the total score of DLFES. The data obtained show that the scale has a highly reliable structure (George and Mallery, 2019).

Table 3. Avarage Scores Relating to Scales

		N	X̄	S.s.	α
Leisure Internet Usage	Social Interaction	839	2.0401	.76232	.71
	Shopping	839	2.2726	.86625	.81
	Multimedia Usage	839	2.0679	.68056	.71
	Information/Self-improvement	839	2.0420	.68048	.83
Digital Leisure Flow Experience	Experience	839	4.6500	1.55282	.94
	Activity	839	4.8656	1.56012	.91
	Time	839	4.8019	1.52456	.91
	Digital Leisure Flow Experience	839	4.7454	4.7454	.97

Data Collection

The necessary ethics committee permission for the collection of data and the conduct of the study was obtained from the Istanbul Aydın University Social and Human Sciences Ethics Committee with the commission decision dated 21.12.2023. In this regard, the demographic information form and scales prepared were collected online and face to face. The necessary information about the study was provided to the participants in the data collection forms.

Analysis of Data

SPSS 25 package program was used in the analysis of the data. In the statistical presentation of the obtained data, arithmetic mean, standard deviation and frequency values were presented. In order to examine the normality distribution of the data set, Shapiro-Wilk (Field, 2009) and Skewness and Kurtosis tests (Tabachnick and Fidell, 2013) were used and it was determined that the data showed a normal distribution. In order to examine the differences in digital leisure internet use and flow experience of university student When Table 3 is examined, the results of the independent samples t-test applied to examine the differences in terms of gender variable are shown. According to these results, no significant differences were found in terms of gender variable in the Leisure Internet Usage Scale, social interaction (t=.041; p=.967), shopping (t=-1.110; p=.267), multiple media sources (t=.565; p=.572) and information/personal development (t=1.844; p=.066). Significant differences were found in participants, Independent Samples T-Test was applied to compare the differences in terms of gender variable and Single Factor Analysis of Variance-ANOVA was applied for comparison in terms of digital device usage time variable. Pearson Correlation Test was used to examine the relationship between leisure internet usage and digital leisure flow experience. In line with the results obtained from this test, Multiple Linear Regression Analysis was applied to examine the effects of the sub-dimensions of leisure internet usage, social interaction and information acquisition/personal development, among which a positive relationship was found, on the digital leisure flow experience.

FINDINGS

Terms of gender variable in the Digital Leisure Flow Experience Scale (DLFES) experience (t=5.109; p=.000), activity (t=4.562; p=.000), time (t=4.478; p=.000) and total score (t=4.992; p=.000). In terms of gender variable, it can be said that all the differences in the sub-dimensions and total scores of DLFES are in favor of female participants. This result reveals that female participants have a higher flow experience in their leisure internet use than male participants.

Table 4. Independent Samples T-test Results According to Gender Variable

Variable	Gender	N	X	Sd	t	df	p
Social Interaction	Female	462	2.04	.71	.041	750.096	.967
	Male	377	2.03	.81			
Shopping	Female	462	2.24	.75	-1.110	697.383	.267
	Male	377	2.31	.98			
Multimedia Usage	Female	462	2.08	.63	.565	754.684	.572
	Male	377	2.05	.72			
Information/Self improvement	Female	462	2.08	.61	1.844	723.500	.066
	Male	377	1.99	.75			
Experience	Female	462	4.89	1.43	5.109	754.740	.000*
	Male	377	4.34	1.63			
Activity	Female	462	5.08	1.41	4.562	735.954	.000*
	Male	377	4.59	1.68			
Time	Female	462	5.01	1.39	4.478	745.155	.000*
	Male	377	4.54	1.62			
Digital Leisure Flow Experience	Female	462	4.97	1.36	4.992	746.030	.000*
	Male	377	4.46	1.58			

*<0.05

When Table 4 is examined, no significant difference was found in terms of the duration of digital device usage variable in leisure internet usage, social interaction (F=2.568; p=.077) and information/personal development (F=.241; p=.786). Significant differences were found in the sub-dimensions of the Leisure Internet Usage Scale, shopping (F=23.938; p=.000) and multimedia source (F=5.212; p=.006). As a result of the Tukey Post-Hoc test conducted in order to determine the source of significant differences; it was determined that the significant difference in the shopping sub-dimension was between those whose participation time for shopping purposes was 1-2 hours and 3-4 hours and between those who used 1-2 hours and 5 hours and above. In terms of the multimedia source sub-dimension, it can be said that the significant difference was seen between those whose usage time was 1-2 hours and 3-4 hours and between those who used 3-4 hours and above. The results reveal that as the daily digital device usage time increases in leisure internet usage, individuals engage in more shopping and multimedia source-based participation.

Table 5. Single Factor Analysis of Variance (ANOVA) According to Digital Device Usage Duration Variable

Variable		Sum of Squares	df	Mean Square	F	P	Sig. Dif.
Social Interaction	Between Groups	2.973	2	1.487	2.568	.077	-
	Within Groups	484.009	836	.579			
	Total	486.982	838				
Shopping	Between Groups	34.061	2	17.030	23.938	.000*	1-2 1-3
	Within Groups	594.759	836	.711			
	Total	628.820	838				
Multimedia Usage	Between Groups	4.780	2	2.390	5.212	.006*	1-3 2-3
	Within Groups	383.348	836	.459			
	Total	388.128	838				
Information/Self-improvement	Between Groups	.223	2	.112	.241	.786	-
	Within Groups	387.820	836	.464			
	Total	388.043	838				
Experience	Between Groups	430.140	2	215.070	113.046	.000*	1-2 1-3 2-3
	Within Groups	1590.490	836	1.903			
	Total	2020.631	838				
Activity	Between Groups	367.097	2	183.548	91.743	.000*	1-2 1-3 2-3
	Within Groups	1672.564	836	2.001			
	Total	2039.660	838				
Time	Between Groups	379.851	2	189.926	101.267	.000*	1-2 1-3 2-3
	Within Groups	1567.906	836	1.875			
	Total	1947.757	838				
Digital Leisure Flow Experience	Between Groups	399.878	2	199.939	115.164	.000*	1-2 1-3 2-3
	Within Groups	1451.398	836	1.736			
	Total	1851.276	838				

*<0.05

It was concluded that there were significant differences in the Digital Leisure Flow Experience Scale (DLFES) experience (F=113.046; p=.000), activity (F=91.743; p=.000) and time (F=101.267; p=.000) sub-dimensions and total score (F=115.164; p=.000). As a result of the Tukey Post-Hoc test used to examine the source of significant differences, it was determined that the significant differences in all sub-dimensions and total score of DLFES were between those whose participation duration was 1-2 hours and 3-4 hours; between those whose participation duration was 1-2 hours and 5 hours and above; between those whose participation duration was 3-4 hours and 5 hours and above. In line with the results, it is possible to say that participation in the range of 1-2 hours is more effective than participation in 3-4 hours and above 5 hours; and participation in the range of 3-4 hours is more effective than participation in 5 hours and above in terms of flow experience. Therefore, it can be said that as the time spent using digital devices decreases, the digital leisure flow experience increases.

Table 6. Pearson Correlation Test for the Relationship Between Leisure Internet Usage and Digital Leisure Flow Experience

				Digital Leisure Flow Experience			
		Variable		**Time**	**Activity**	**Experience**	**Digital Leisure Flow Experience**
Leisure Internet Usage		Social Interaction	r	.082*	.042	.105**	.082*
			p	.018	.227	.002	.017
		Shopping	r	-.035	-.001	.020	-.012
			p	.305	.976	.568	.734
		Multimedia Usage	r	.045	.050	.079*	.058
			p	.191	.146	.023	.091
		Information/Self-improvement	r	.268**	.264**	.255**	.274**
			p	.000	.000	.000	.000

**<0.01 *<0.05

When the Pearson correlation test results for the relationship between leisure internet usage and digital leisure flow experience are examined in Table 5; a positive, low-level relationship was found between the social interaction sub-dimension of the Leisure Internet Usage Scale (LIUS) and the Digital Leisure Flow Experience Scale (DLFES) time (r=.082; p=.018), experience (r=.105; p=.002) and DLFES total score (r=.082; p=.017), while no significant relationship was found with the activity (r=.042; p=.227) sub-dimension.

No significant relationship was found between the shopping sub-dimension of the Leisure Internet Usage Scale and the Digital Leisure Flow Experience Scale (DLFES) time (r=-.035; p=.305), activity (r=-.001; p=.976), experience (r=.020; p=.568) and total score (r=-.012; p=.734).

Based on the positive relationship between the sub-dimensions of social interaction and information /self improvement regarding leisure internet usage and digital leisure flow experience, Multiple Linear Regression Analysis was used to test the direct effect. According to the results, the R value showing the value of the relationship between the variables was determined as .082 and .274 as in the correlation test. The R2 value explains how much of the dependent variable, digital leisure flow experience, depends on the independent variable, social interaction and information/self-improvement, and the independent variable, social interaction and information/self-improvement, of leisure internet usage. Accordingly, 7.8% of the digital leisure flow experience depends on the purposes of social interaction and information. The adjusted R2 value shows how much of the dependent variable, digital leisure flow experience, is explained by the independent variables, social interaction and information/self-improvement (Gürbüz and Şahin, 2018). The 7.6% variance in the digital leisure flow experience shows that it is predicted by the social interaction and information /self-improvement sub-dimensions of leisure internet usage.

A positive, low-level correlation was found between the multimedia source sub-dimension of the Leisure Internet Usage Scale and the experience (r=.079; p=.023) sub-dimension of the Digital Leisure Flow Experience Scale. However, no significant difference was found between the multimedia source sub-dimension and time (r=.045; p=.191), activity (r=.050; p=.146) and DLFES total score (r=.058; p=.091).

A positive, low-level relationship was found between the information acquisition/personal development sub-dimension of the Leisure Internet Usage Scale and the time (r=.268; p=.000), activity (r=.264; p=.000), experience (r=.255; p=.000) sub-dimensions of the Digital Leisure Flow Experience Scale and the total score of the DLFES (r=.274; p=.000).

Table 7. Results of Multiple Linear Regression Analysis for Predicting Digital Leisure Flow Experience

Dependent Variable	Independent Variable	B	Standart Error	β	t	p	Binary r	Partial r	Tolerance	VIF
Digital Leisure Flow Experience	Constant	3,645	,171		21,366	,000				
	Social Interaction	-,129	,074	-,066	-1,739	,082	,082	-,060	,764	1,308
	Information/Self-improvement	,667	,083	,306	8,046	,000	,274	,268	,764	1,308
R=,280a R2=,078 Adj. R2=,076 F=35.433 p=.000										

DISCUSSION AND CONCLUSION

This study was conducted to investigate the effects of internet usage purposes on the flow experience of university students participating in digital leisure activities. The hypotheses established within the framework of the research and the results obtained will be discussed in this section together with the relevant literature. It is seen in the literature that the relationship between Internet use and flow experience has been the subject of many studies for a long time (Novak and Hoffman, 1997; Chen et al. 2000; Rettie, 2001; Thatcher, 2008; Voiskounsky, 2012; Yang et al., 2014). In recent years, the existence of studies on internet usage, which constitutes an important choice point in terms of individuals' leisure experiences, is also seen (Er and Cengiz, 2023a; Lamberti et al., 2023; Şimşek and Çevik, 2023). In this study, the relationship between the purposes of internet usage as a digital leisure activity and digital leisure flow experience was examined.

When the results of Hypothesis 1 of the study were examined, it was determined that there was a positive relationship between the social interaction and information/self-improvement sub-dimensions of internet usage purposes of university students participating in digital leisure activities and digital leisure flow experience. In connection with this relationship, the results of Hypothesis 2 concluded that the social interaction and information/self-improvement dimensions of internet usage of university students in digital leisure had an effect on digital leisure flow experience.

When the literature on the social interaction and socialization dimensions of internet-based activities in leisure is examined; Wang et al. (2015) revealed that a positive relationship was detected between the tendency to continue using the internet in leisure and the flow experience in their study conducted with university students. Leung (2020) revealed that individuals experience flow when they are bored, feel the need for meaningful participation, and use the internet for information search, socialization, and entertainment purposes in order to increase their leisure participation. Brailovskaia et al. (2020) examined the relationship between individuals' reasons for social media use, symptoms such as stress, anxiety, depression, and flow experiences and identified five different main reasons for use in their study. These were determined as information search, social interaction search, boredom, escape from negative emotions, and search for positive emotions. The study results draw attention to the relationship between reasons such as escape from negative emotions and search for positive emotions and the flow experience. Valtchanov and Parry (2016) stated in their study on individuals in adolescence that digital leisure activities help individuals to overcome time and space limitations and ensure social interaction. Chang et al. (2023) concluded in their study on elderly individuals participating in digital leisure activities that participation in activities for the purpose of socialization is associated with the flow experience. Er and Cengiz (2023a) concluded that digital leisure participation purposes (gaming, entertainment, socialization, and communication) including internet-based activities have a positive effect on experiencing digital leisure flow. Yao et al. (2023) revealed that the use of social media for the purpose of communication and socialization has a direct effect on the flow experience. In addition, they stated that elderly individuals can be helped to establish a balance between high-level skills and difficulties in experiencing flow by supporting them in seeking social support resources through digital leisure. These results are parallel to the results of the current study.

When the literature on shopping, which is another dimension related to the purposes of internet use in leisure, is examined; Hyun et al. (2022) drew attention to the relationship between social networking sites for shopping purposes and the flow experience and their intentions to shop again. Wang and Wang (2020) concluded that there is a relationship between the information seeking

behavior of online shoppers and the flow experience in their study on university students. While Hsu et al. (2012) revealed that there is a positive relationship between online shopping behavior and flow experience, Xu et al. (2021) similarly found that online shopping behavior has a positive relationship with flow experience in their study on individuals who shop via social media. Özkara et al. (2017) drew attention to the relationships between the dimensions of flow experience such as pleasure, perceived control, and the combination of action and awareness with individuals' online shopping and purchasing intentions. While the mentioned studies draw attention to the positive relationship between the use of the internet for online purchasing services and flow, this study concludes that shopping-oriented internet use has no relationship with experiencing flow.

When studies on the flow experience created by participation in internet-based activities for gaming purposes in digital leisure are examined, it is possible to say that the use of the internet for gaming purposes is an important source for experiencing flow (Takatalo et al., 2015; Kaye, 2016; Er and Cengiz, 2023a). Kim (2022) argues that with the widespread use of technology, social media platforms have significantly changed individuals' experiences in real life and on the internet with participation for shopping, socializing, entertainment, work, and health-fitness purposes. In a study examining how fitness YouTube channel attributes and fitness YouTuber attributes affect the flow experience, satisfaction, and behavioral intention of YouTubers who exercise at home through a fitness YouTube channel, it was revealed that individuals' flow experience is significantly affected by information quality, visual content, and physical attractiveness. Xu et al. (2023) emphasized the flow experience of individuals in their study on individuals who use the internet for listening to music on online music platforms. Yang and Lee (2018) examined television platforms that are accessed through internet connection instead of traditional media within the framework of streaming experience and drew attention to the direct relationship between content quality and flow experience, while it was concluded that functionality and ease of use in terms of experiences indirectly affect the perceived benefit through streaming experience. Based on the results of this study in the literature, it is possible to talk about the direct and indirect relationships or effects of flow experience with purposes such as listening to music, watching videos, playing games or watching television, which are multimedia sources of the internet. However, in this study, no relationship was found between digital leisure internet usage and digital leisure flow experience in terms of multimedia sources.

When the literature on the dimension of information and self-improvement in terms of leisure internet usage is examined, there are studies focused on online learning, as well as studies on experiencing flow through leisure internet-based activities. Pilke (2004) revealed the opportunity to experience flow in information and communication technologies, especially in internet browsers, in the behavior of information search/acquisition. Similarly, Chen et al. (2000) revealed that internet use can provide enjoyable experiences through the flow state, and this can positively affect an individual's subjective well-being and increase the person's happiness and life satisfaction. The study emphasizes that internet use is an activity that directly produces extremely pleasurable experiences such as the combination of action and awareness, loss of self-consciousness, feeling of time distortion, and enjoyment, which constitute the dimensions of flow, and facilitates flow. Esteban-Millat et al. (2014), in their study examining the effect of flow experience on student behavior in virtual learning environments, revealed that as the process in which students experience flow in the online learning process increases, the positive effects and outcomes they obtain increase at the same level. Mak et al. (2019) examined the effects of a gamified online learning platform on students' flow experience through their leisure reading habits and revealed that many students initially experienced flow through extrinsic motivation, and later in the study, they enjoyed the reading process because the online reading activity itself became a pleasure (autotelic experience) and even the perception of time disappeared. These preferences of individuals regarding internet browsers have also led to the emergence and proliferation of social media applications over time, and they have turned to this area and offered the opportunity to experience flow (Kaur et al., 2016; Pelet et al., 2017; Cuevas et al., 2021; Zhou et al., 2024).

When the results of Hypothesis 3 are examined, no significant difference was found in the dimensions of social interaction, shopping, multimedia sources and information/self-improvement in internet use of university students participating in digital leisure activities in terms of gender variable, while significant differences were found in the digital leisure flow experience total score and time, activity and experience sub-dimensions in terms of gender variable. In line with this result, while leisure internet use does not create any difference in terms of women and men; that is possible to say that women experience flow more than men when their mean

scores in terms of time, activity, experience and digital leisure flow experience total score are examined.

In previous studies, Ono and Zavodny (2003) examined the differences in men and women's internet use and the changes in these differences, and as a result, they stated that women were significantly less likely to use the internet than men in the mid-1990s, but this gender difference in being online disappeared by the 2000s. They stated that women continued to use the internet less frequently and less intensively than men. While no problem was detected in terms of access in terms of the gender variable in terms of the period, it was suggested that there were differences in terms of participation duration and frequency. In a similar study, Wasserman and Abbott (2005) stated that women had a higher frequency of access than men but preferred to use the internet less. They also revealed that participation purposes and preferences differed. Bujala (2012) stated that women spent less time using the internet and had less online experience. Basically, it is emphasized that gender differences are changed by participation purposes or content, men prefer games, music, movies and humorous content more, and in addition, gender differences are not significant. Thanuskodi (2013) examined the gender differences of university students who use the internet for purposes such as information search, communication, education, and multimedia, and revealed that there is no dominant difference in internet use by any gender. He showed that users have equal access, but some usage differences occur, and this is due to the fact that individuals are exposed to technological devices at a high rate due to their educational experiences, regardless of gender. Lamberti et al. (2023) examined internet use and traditional leisure activities in young people according to gender and age and revealed that there is a difference in leisure internet use according to gender variable. The study argues that as women's leisure increases in terms of duration, their satisfaction levels decrease. Sultana and Imtiaz (2018) examined the differences in the internet usage patterns of university students and found that men preferred female participants more for gaming purposes, while women used it more for commercial purposes compared to men.

When digital leisure flow experience examines, Stavropoulos et al. (2013) concluded that men experience a higher level of flow in the study in which they examined the flow experience in internet use according to gender differences. Yang and Quadir (2018) reported that women experience a higher level of flow than men in the study in which they examined the flow experience and gender differences in digital game-based learning, although their motivational factors are similar. Wang et al. (2015) reported that no difference was detected in the flow experience for male and female participants in the study they conducted on university students' leisure internet use. Er (2023) found significant differences in the digital leisure flow experience sub-dimensions of time, activity, experience and total score in the study in which he examined the relationship between university students' participation purposes in digital leisure activities, flow experience and satisfaction levels. It was concluded that male participants had a higher flow experience in digital leisure activities compared to women.

When the results of Hypothesis 4 are examined, it is concluded that there is a significant difference in terms of internet usage purposes and usage time variable in flow experience of university students participating in digital leisure activities. It is seen that these differences are in the dimensions of shopping and multimedia use in terms of internet usage in digital leisure. In terms of flow experienced in digital leisure, it is concluded that flow experience increases as the time spent in digital environment decreases in time, activity, experience and total flow experience. This situation can be summarized as flow experience increases as digital device usage time decreases. It can be said that the most up-to-date and concrete data on the subject is We Are Social 2024 reports. According to the report created from different sources and data providers, it is seen that individuals between the ages of 16-64 spend 6 hours and 40 minutes per day in internet-based activities according to the world average as of 2024. As presented in the literature section of the study, the main reasons for individuals to use the internet during this period include many areas of life such as information search, communication, following multimedia sources, searching for entertaining activities, searching for products and services for shopping, education, health, finance, games. These results support the fact that individuals spend a significant portion of their lives using digital devices for different purposes (We Are Social, 2024). On the other hand, no studies have been identified in the literature on the differences created by digital device usage time in terms of flow experience. In this study, it was determined that as the duration of digital device usage decreases in terms of internet use in digital leisure, the flow experience increases.

This study has revealed that internet use as a digital leisure activity is associated with the flow experience, and that internet participation in leisure for social interaction and information/self-improvement affects the flow experience. The study

has not determined that the gender variable is a factor that creates a difference in terms of the purposes of leisure internet use, but it has revealed differences in terms of the flow experienced in digital leisure. Similarly, the duration of digital device use stands out as a variable that creates a difference in terms of shopping, multimedia use and experiencing flow in digital leisure. The results obtained are important in terms of explaining the enjoyable aspect of digital platforms, which constitute an important preference point in terms of individuals' leisure experiences, and therefore the flow experienced in leisure by the internet. It is thought that the study will contribute to the literature as an enlightening study in terms of determining the differences, positive and negative aspects of digital leisure experiences of individuals and societies in every way. However, the study has some limitations in terms of the university student sample group, internet usage preferences and motivational factors that individuals prefer more in terms of duration-frequency. In this direction, experimental studies can be conducted on different groups within different theories and conceptual approaches. In addition, considering the results of the hypotheses tested in the study, it can be recommended that the internet, which is used intensively and frequently by individuals especially in university years in their leisure, be supported with training or applications that guide conscious use.

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Author Contributions

B.E & R.C.: data collection. B.E.: data analysis and original draft preparation. R.C.: review and editing. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The research was conducted in accordance with the ethics committee permission for the collection of data and the conduct of the study was obtained from the Istanbul Aydın University Social and Human Sciences Ethics Committee with the commission decision dated 21.12.2023. In this regard, the demographic information form and scales prepared were collected online and face to face.

Informed Consent Statement

Informed consent was obtained from all subjects involved in this study.

Data Availability Statement

Datasets are available through the corresponding author upon reason-able request.

Conflicts of Interest

The authors unequivocally assert that this research was undertaken while devoid of any commercial or financial affiliations that might be perceived as potential conflicts of interest.

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Consumers' Use of Smartphone Fitness Applications: Adaptation of the Unified Technology Acceptance and Usage Model-2 to Turkish Culture

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A B S T R A C T

This paper highlights technological changes and developments in the field of participation sports allow individuals to track their performances, provide feedback and be more motivated for physical movement through various features via smartphone fitness applications. These technological changes in the sports industry provide individuals with the opportunity to embody sports products or services at the same time. These concretization attempts allow marketers to be more user-oriented, especially in the field of smartphone fitness applications. In this context, the purpose of the research is to test the suitability of smartphone fitness applications by consumers in Turkish culture in line with the "Unified Technology Acceptance and Use Model-2" (UTAUT-2). A total of 385 (X̄Age=34.63±10) participants, 226 (X̄Age=34.35±10.72) female and 159 (X̄Age=35.04±8.86) male, participated in the study. Participants were given a "Personal Information Form" and "UTAUT2 Fitness Smartphone App Scale", which consists of 7 sub-dimensions and 21 items developed in line with UTAUT-2 for smartphone fitness applications and in which the items are evaluated in a 7-point Likert type, is presented. The SmartPLS 4 program was used to test the model in Turkish culture.

Keywords: Smartphone apps, Fitness, UTAUT-2, Consumer behaviour

INTRODUCTION

Technological tools are central to consumers' daily lives due to their convenience and ease of use (Ruiz, Ruiz, Bocengra & Fernandez., 2022). In this process, which has culminated in the advent of the "Internet of Things" (Tiryaki & Önder 2022) from the concept of traditional internet browsers, users are now able to interact on a frequent basis in their daily lives in order to comprehend, adapt to and even direct technological changes. The academic field, on the other hand, has demonstrated a keen interest in this transformation and has endeavored to investigate and comprehend it. In the present era, the pervasive integration of computers, the internet and internet-based technologies into the lives of individuals in the new millennium has prompted researchers to undertake studies on the utilization and consequences of these technologies (Demir & Akbulut, 2017).

Significant and rapid changes in the field of technology have a considerable impact on the sports industry. In a study conducted in (2011) by Kwak & McDaniel was found that the internet-based sports business structure had developed rapidly and had increased in importance, particularly in the context of sports marketing initiatives. In their 2011 study, the researchers indicate that organizations in the sports industry have made a significant investment in their websites and emphasize that this investment generates substantial revenues. Similarly, Ha, Kang & Pil (2015) asserted that technology has transformed the perception of sports products and services, as well as consumption habits among

sports fans. They also emphasized that the incorporation of sophisticated features in mobile phones provides a diverse range of service options. The profusion of technology-based options has facilitated the rapid and convenient engagement of sports fans with the event, enabling them to disseminate information and participate in the proceedings remotely, whether during or outside the event itself. The advent of these features serves to differentiate the product and service experience in the sports industry. Conversely, Kim, Rogol & Kim (2017) highlighted the significant influence of technological advancement in their research, asserting that technological products, such as mobile phones and tablets, have become integral components of consumers' daily lives. Additionally, the study emphasized the utilization of smartphone applications as a means of maintaining connectivity with one's surroundings, conducting online transactions and accessing various services.

In the present era, there exists a multiplicity of smartphone applications that are utilized on a daily basis by individuals. In contrast to traditional internet browser users, Jeong, Young & Chung (2022) found that individuals who use phone smart applications create a different social structure. Such applications, which can be created independently, can be easily aligned with the interests, needs and desires of individuals (Ruiz et al., 2022). To illustrate, in the context of spectator sports, fans engage in a more participatory process of information gathering about their team through smartphone applications, in contrast to the more passive consumption of information typically associated with traditional media. In contrast to traditional media, fans can access more specific and up-to-date information about their team through smartphone applications prepared by the clubs. This allows for a more efficient and goal-oriented process of information gathering. This process of technological change prompts managers and marketers to develop products and services that facilitate fan participation, rather than solely focusing on the production of services and content (Hwang, Yang, Williams & Pedersen, 2020).

Technological changes in the field of participatory sports have attracted the attention of both marketers and academics. Mobile applications and other technological devices afford individuals the ability to more effectively monitor their performance development, receive feedback on their performance, and engage in physical movement through a range of features (Toker & Oc, 2022). Technological advancements in the domain of sports products have enabled individuals and the field of sports science to enhance the tangible experience of these products (Ruiz et al., 2022). Such embodiment initiatives have prompted marketers to adopt a more user-oriented approach, particularly in the context of exercise smartphone applications. In 2021, the sports technology market was dominated by health, physical activity and exercise applications, which accounted for 5.18% of the market. Of these applications, 35% of users practiced several times a week and 40% practiced four times a week (Ruiz et al., 2022). In 2021, the number of health and fitness apps available on the Apple and Google Play app stores exceeded 32,700. A recent study has revealed that one in five smartphone users have a health-related mobile application installed on their device. Nevertheless, the adoption rate of health and fitness apps (19%) remains comparatively low in comparison to social media (40%) and gaming apps (60%) (Ruiz et al., 2022). It is therefore evident that there is a need for researchers and marketers to develop a superior application, identify relevant factors and structure applications in a manner that encourages individuals engaged in health-related pursuits (Yuan, Wenjuan & Kanthawala, 2015). In accordance with this necessity, the field of online consumer behavior has begun to capture the interest of marketers and researchers. In a study conducted in various countries in 2016, over 20% of internet users made purchases online, with over 50% of US internet users doing so. This can be considered the beginning of a shift in consumer behavior (Şen, 2017).

It is crucial for the existing literature to identify the factors that influence the intention to use a technology product. The intention to use technology is identified as a significant indicator in the adoption of technology products (Binyamin & Hoque, 2020). The identification of factors influencing the intention to use technology will facilitate the development of a conceptual framework for understanding consumer behavior in the digital domain. Similarly, Yim, Byon, Baker & Zhang (2020) propose that millennial sports fans, who are adept at using technology, exhibit greater self-confidence than other fans. Yim et al. (2020) argue that after purchasing a product or service, individuals he emphasized that factors such as the speed of comparing prices with internet sites and the ease of obtaining information about products and services have altered consumption habits.

The impact of technological advancement on consumer behavior underscores the necessity for studies in this field to be conducted with due promptness. The growing prevalence of fitness applications is of particular significance for manufacturers engaged in marketing activities with respect to this domain. The utilization of technology and the degree of satisfaction it provides to the

consumer is a significant factor in terms of increasing the frequency of use or preference of the relevant product. In order to gain a deeper insight into consumer behavior, the present study seeks to investigate the utilization of fitness-related smartphone applications within the context of the technology acceptance model, with a particular focus on consumer satisfaction. By enhancing the efficacy of such applications, manufacturers can potentially boost the engagement of individuals in physical activity, thereby fostering a greater commitment to healthy living (Dhiman Arora, Dogra & Gupta 2019).

Technology Acceptance Model

The acceptance and utilisation of technology by individuals represents one of the most developed and researched topics in the field of information systems. The behaviour of consumers in accepting technology-related innovations and the factors affecting this use have been tested with a variety of models in numerous studies. A number of studies have examined the acceptance and use of technology from a psychological and social perspective (Venkatesh, Thong & Xin 2012). Utilising the "Theory of Reasoned Action" (Fishbein & Ajzen, 1975), Davis (1989) developed the 'Technology Acceptance Model' (Cheng, Huang & Lai, 2020). Adapted from the Theory of Reasoned Action proposed by Fishbein and Ajzen in 1975, the Technology Acceptance Model, proposed by Fred D. Davis in 1986, is based on the theory that individuals in the work environment (Aksoy, 2020). This model has been employed to identify the factors influencing individuals' intention to utilize a range of technological products. The Technology Acceptance Model (TAM), initially proposed in 1986, is a theoretical framework that seeks to explain individuals' intention to utilize technology-based products. This is achieved by examining the concepts of perceived ease of use and perceived benefit (Şen, 2017).

The model posits that the behavioral use of a technology is influenced by individuals' behavioral intention towards that technology product. Behavioral intention can be defined as the strength of the intention to perform a specific behavior (Binyamin & Hoque, 2020). An individual's intention to utilize technology is predicated on their attitude and perception towards said technology. In accordance with the "Technology Acceptance Model", the perceived usefulness and perceived ease of use of a technology influence the user's attitude towards it. The attitude towards use and the perceived benefit serve to determine the behavioral intention to use. Behavioral intention is a key determinant of actual use (Dal, 2021). The Technology Acceptance Model (TAM) is a model that measures individuals' intentions and desires to use technology based on three fundamental elements. The Technology Acceptance Model-1 has been the subject of criticism on the grounds of its limited number of variables. Over time, the model has been developed by the addition of different variables, which have then been tested in a variety of studies (Barbosa, Fernandez, Pedrogosa & Carrion 2021).

In this study, the 'Unified Technology Acceptance and Use Model-2' (UTAUT-2), which is one of the models used to measure the intention to use technology, will be employed.

The reason for employing this model is that, in contrast to other models, it places the consumer at the center of the analysis (Venkatesh et al., 2012). Venkatesh et al. (2012) highlighted that previous models were developed to examine technology acceptance and usage intention. In contrast, this novel model underscores the necessity to assess technology products that have been developed with significant financial investment to serve consumers from a unique perspective, one that incorporates consumer content. Yuan et al. (2015) investigated the factors influencing the continued use of health apps. The combined technology acceptance and usage model, which is consumer-oriented, was employed in the study to identify the factors influencing the use of fitness applications and their impact on health, intention to use, and continuity of use (Yuan et al., 2015). Toker & Oç (2022) developed a model for the utilization of technology products in their research, which focused on motivation, exercise type and content in sports. Within this model, 'UTAUT-2' was employed to identify the content-awareness features in sports technology products and the adaptation of users' perception of innovation. In their study on the use of smartphone applications in sports centers for health and consumer satisfaction, Barbosa et al., 2021) employed the UTAUT-2 model, which is consumer-oriented.

In this study, the UTAUT-2 model was employed to examine the factors influencing consumer usage intentions and behaviors with regard to smart exercise applications. The use of this model was deemed appropriate. In the study conducted by Venkatesh, Thong & Xin (2012), the UTAUT2-2 model was employed. He set out the objectives of developing the model as follows:

- The objective was to define three new subdivisions derived from the previous study in order to reveal consumers' adaptation to technology.
- The second objective was to improve the relationship between the existing factors of

the Technology Acceptance and Use Model-1 and to create a more comprehensive framework.

- To identify the relationship between consumer factors and technology with regard to the new sub-sections.

Venkatesh et al. (2012) developed the Unified Technology Acceptance and Use Model-2 by restructuring and expanding upon the Unified Technology Acceptance and Use Model (1). The findings of studies conducted in the field of social sciences have led to the questioning of the accuracy of the Unified Technology Acceptance and Use Model (Ruiz et al., 2022). It has been suggested that the model is not as reliable as previously thought (Tiryaki, 2022). In the creation of the Unified Technology Acceptance and Use Model-2, the 'voluntariness of use variable' present in the Unified Technology Acceptance and Use Model was removed, and 'hedonistic motives' were incorporated into the new model to indicate use. The objective was to ascertain whether price value affects the decision to use the product, and whether quality and economic price influence this decision. Additionally, the intention was to identify whether habit variables act as an antecedent and influence repeated behavior (Venkatesh et al., 2012).

Habit:The behaviors exhibited by individuals are involuntary, resulting from prior experiences that have been learned and internalized.

(Tiryaki & Önder, 2022). Individuals may exhibit varying degrees of habituation based on the duration of their experience with the technology product (Venkatesh et al., 2012).

Hedonistic Motives: This refers to the extent to which the individual believes that the technology product in question is enjoyable (Tiryaki & Önder, 2022). Although there is considerable variation in the way hedonistic motives are defined in different studies, there is a general consensus that they refer to the perception of pleasure (Binyamin & Hoque, 2020). This factor plays a role in individuals' search for innovation, particularly during the initial encounter with technology. The utilization of the technology product over time may result in a search for innovation and information. This pursuit may have a lesser effect on the utilization of the technology product based on hedonistic motives (Venkatesh et al., 2012).

Effort Expectancy: This is the belief that individuals can perform their desired behavior with the least effort when using a technology product that they are willing to use (Venkatesh et al., 2012). Research indicates that consumers are more inclined to utilise technology products that necessitate minimal effort (Binyamin & Hoque, 2020).

Performance Expectation: The capacity to continue the behavior subsequent to the utilization of the targeted technology product is defined as the degree of expected gains (Venkatesh et al., 2012). Previous research indicates a strong correlation between performance expectancy and behavioural intention (Zuiderwiik, Jansen & Dwivedi, 2015).

Social Influence: This can be defined as the degree to which individuals perceive that important figures believe they should adopt a new system (Tiryaki & Önder, 2022). Those who can provide social influence may include former colleagues, family members, relatives, or friends. Previous research has investigated social influence within the scope of subjective factors and social factors (Binyamin & Hoque, 2020).

Facilitating Conditions: Facilitating situations are defined as situations that may occur in the environment that may facilitate or complicate the use of technology (Barbosa et al., 2021). The intention to use is positively affected when individuals are familiar with or have knowledge about the technology product (Barbosa et al., 2021). The concept of price value is closely linked to the perceived benefits that consumers derive from a product and their willingness to pay for these benefits. In the context of smartphone applications, there are three principal categories of pricing: free, paid, and premium, which encompasses high-featured paid options (Yuan et al., 2015).

Behavioral Intention and Usage Behavior Relationship: Behavioral intention can be defined as the probability that an individual will perform a given behavior. It is a strong determinant of behavior (Tiryaki, 2021). It is frequently demonstrated in research that behavioral intention is the most significant factor influencing individuals' use of technology products (Barbosa et al., 2021). In the Technology Acceptance Model, intention to use is found to explain approximately 40% of actual use (Dal, 2021). The extant literature indicates that it is appropriate to employ the causal relationship between individuals' intentions, beliefs, and actual behaviors as a conceptually dependent variable in the investigation of the intention to utilize a technology product or service (Tiryaki, 2021). An individual's favorable intention towards a technology product or service will result in a favorable response towards that product or service that there is a robust correlation between behavioral intention and consumer satisfaction (Barbosa et al., 2021).

In this context, the purpose of the research is to test the suitability of smartphone fitness applications

by consumers in Turkish culture in line with the UTAUT-2.

METHOD

A quantitative research method was used in this study. The aim was to adapt the UTAUT-2 scale and the frequency of use scale to the Turkish culture, and the relevant literature was reviewed to determine the sample size. According to the International Test Commission (2018), the sample size that can adequately reveal the psychometric structure of a scale is at least 200 participants. The age range of the participants in this study was determined by considering the validity and reliability studies of the scales used in the study (Dhiman at al., 2019; Barbosa et al., 2021) (Büyüköztürk, Cakmak, Akgün, Karadeniz & Demirel, 2019). Furthermore, in adaptation studies in the literature, the demographic characteristics of the sample group are expected to be the same as the target group of the original scale (Erkuş, 2007; Çapık, 2018). For this reason, the original studies (Dhiman at al., 2019; Barbosa et al., 2021) were used as the basis for determining the relevant sample group for the current study and the criterion sampling method, one of the purposive sampling types, was used. Accordingly, the sample size for this study was determined to be 324 participants aged 18 years and older who use fitness smartphone applications.

In order to adapt the UTAUT-2 Fitness Smartphone App Scale and the Frequency of Use and Consumer Sub-Satisfaction Scale to Turkish culture, participants were presented with the Personal Information Form, the UTAUT-2 Fitness Smartphone App Scale which were accompanied by an information note (Information and Consent Form) regarding the content and purpose of the research. The necessary permissions were obtained from Dhiman et al. (2019) for the UTAUT-2 Fitness Smartphone App Scale via email.

1. ***The Personal Information:*** Form is provided below for reference. The researcher devised this instrument to determine the personal characteristics (age, gender, sports experience, etc.) of the participants in the study.

2. ***The UTAUT-2 Fitness Smartphone Application Scale:*** The scale was developed by Dhiman at al. (2019) with the objective of determining the factors affecting the participants' use of smartphone applications. The scale comprises 27 items and nine sub-dimensions. The sub-dimensions are indicated by the number of items, as follows: Performance Expectancy (3), Effort Expectancy (3), Social Influence (3), Facilitating Conditions (3), Hedonic Motives (3), Price Value (3), Behavioral Intention (3), Self-Identity (3) and Personal Innovativeness (3). Dhiman et al. (2019) employed the existing UTAUT-2 model, extending his research with the sub-dimensions of self-identity (3) and personal innovativeness (3). However, as these concepts (self-identity and personal innovativeness) were not included in the current research as the original UTAUT-2 model does not incorporate these subsections and does not represent the area of interest of the present research, it was excluded from the scale. Although the UTAUT-2 model originally included a price value sub-heading, in the research conducted by (Toker & Oc, 2022) and (Barbosa et al., 2021) the price value from the UTAUT-2 model was not included due to the fact that smartphone applications can be used free of charge. In this study, "Price Value" was not included in the research due to fitness apps can be used free of charge. The scale employed in the present study consisted of 21 items and seven sub-dimensions, namely Performance Expectancy (3), Effort Expectancy (3), Social Influence (3), Facilitating Conditions (3), Hedonic Motives (3), Habit (3), and Behavioural Intention (3). The Cronbach alpha values for all sub-dimensions are above 0.70. The scale employs a 7-point Likert format, with 1 indicating strong disagreement and 7 indicating strong agreement.

The most crucial phase of adaptation studies is the translation from the target language to the source language, otherwise known as face validity. Accordingly, the standard procedure proposed by Brislin (1986) for the translation-back translation method was adhered to. The scale was translated from English to Turkish by three academic members who have field knowledge and proficiency in the English language. Subsequently, the three translations were provided to two experts, one of whom was an information technology expert and one of whom was a sports science expert, along with the original text of the scale. They were then asked to select the most appropriate expressions from the translations for use in the original scale. Following this process, the Unified Technology Acceptance and Use Model-2 scale was finalized in Turkish.

The adapted Turkish scale was then provided to two referees with expertise in the field of English, who translated it back into English. The original text of the scale was then compared with the translated text to determine the most appropriate version. Following the completion of the translation process, a pilot study was conducted to ascertain the language comprehensibility of the scale. To this end, the Turkish version of the scale was finalized in accordance with the feedback received from 50

individuals who utilize fitness smartphone applications.

The scales were transferred to the digital domain via Google Form and administered to participants aged 18 years and over, residents of Istanbul, who utilize fitness smartphone applications. The convenience sampling method was employed, which refers to the type of sample that the researcher can reach. This method was selected for ease of delivery, speed and cost-effectiveness.

The first page was the info form, the second the consent form. Those participants who gave their approval to both forms proceeded to complete the scales as part of the research process. Once the required number of participants was reached, the scale was removed from the publication and transferred to Smart Pls 4.

In order to examine the psychometric properties of the Turkish form of the UTAUT-2 Fitness Smartphone Application Scale a descriptive research method was employed which enables statistical inference to be made over the target population. The research was designed as a cross-sectional study, which involves the collection of data from a specific group over a defined period of time. In order to make a general judgement about the universe from the research methods, the survey model, which refers to the process of screening a group of samples or samples to be taken from the universe, was employed.

Prior to analysis, the data set was subjected to a comprehensive examination to identify and exclude erroneous data, blank and missing data, and extreme values, in order to ensure the integrity and reliability of the research results.

While PLS-SEM does not require a normal distribution condition, this does not indicate that it should be the preferred method when the data are normally distributed (Hair, Risher, Sarstedt & Ringle, 2019; Sarstedt, Ringle & Hair, 2021). Accordingly, for the present data set, the calculation of the arithmetic mean, standard deviation, kurtosis, and skewness coefficients was conducted. The kurtosis-skewness coefficients fell within the range of +2 to -2, indicating that the data align with the criteria for a normal distribution (George & Mallery, 2019).

In order to adapt the measurement model to Turkish culture, the following were analysed: convergent validity, discriminant validity and the goodness of fit values of the construct. The factor loading, average variance explained (AVE) and composite reliability (CR) values for convergent validity, Cronbach's alpha and rho_c values for convergent validity and reliability, and the Fornell-Larcker (1981) criterion for discriminant validity were examined. Additionally, the SRMR, NFI and R2 values were analyzed to assess the goodness of fit of the measurement model. The Smart PLS 4 software was employed for the related analyses, with a significance level of 0.05 for the data.

RESULTS

Table 1. UTAUT-2 Factor Loading Values for Smartphone Fitness Measurement Model

Measurement Items Sub-Dimensions	Items	$\bar{X}$ score	sd	Factor Loading
Behavioral Intentions	1	4,39	0,28	0,959
	2	4,01	0,26	0,966
	3	4,06	0,24	0,970
Performance Expectancy	1	4,85	0,41	0,912
	2	4,81	0,29	0,958
	3	3,52	0,35	0,938
Effort Expectancy	1	5,27	0,48	0,880
	2	5,43	0,40	0,916
	3	5,58	0,39	0,922
Social Influence	1	3,52	0,35	0,938
	2	3,44	0,24	0,971
	3	3,53	0,30	0,953
Hedonic Motives	1	4,95	0,27	0,964
	2	4,91	0,22	0,976
	3	4,62	0,29	0,958
Facilitating Conditions	1	6,09	0,65	0,761
	2	6,10	0,59	0,804

	3	5,54	0,52	0,855
Habits	1	3,70	0,48	0,877
	2	2,40	0,42	0,907
	3	3,19	0,46	0,888

Table 1 shows the scores, standard deviations and factor loadings of all items in the measurement model.

Table 2. Smartphone Fitness Applications Measurement Model Sub-Dimensions, Items, Rho_c, Alpha Coefficients, CR and AVE Values

Measurement Items Sub-Dimensions	**rho_c**	**Cronbach's Alpha**	**CR**	**AVE**
Behavioral Intentions	0.976	0,96	0,98	0,93
Performance Expectancy	0.955	0,92	0,96	0,88
Effort Expectancy	0.932	0,89	0,93	0,82
Social Influence	0.968	0,95	0,97	0,91
Hedonic Motives	0.977	0,96	0,98	0,93
Facilitating Conditions	0.849	0,75	0,85	0,65
Habits	0.920	0,87	0,92	0,79

When analyzing Table 2, it can be seen that the Cronbach's alpha values, which indicate the internal consistency coefficients of the scales in the measurement model, vary between 0.75 and 0.96. Within the convergent validity of the measurement model, the average variance values (AVE) were above 0.50, the composite reliability (CR) values were between 0.85 and 0.98 and the rho_c values, another composite reliability criterion, were between 0.849 and 0.977.

Table 3. Fornell-Larcker Criterion for Smartphone Fitness Apps Measurement Model

	BI	**EE**	**FC**	**H**	**HM**	**PE**	**SI**
BI	0,965						
EE	0,474	0,906					
FC	0,401	0,590	0,807				
H	0,788	0,371	0,301	0,890			
HM	0,726	0,594	0,471	0,650	0,966		
PE	0,734	0,615	0,479	0,637	0,733	0,936	
SI	0,585	0,315	0,270	0,682	0,556	0,530	0,954

Table 3 shows that the relevant values meet the Fornell-Larcker criterion, with the other variables in the same row and column being equal to or greater than the values in the other variables

Figure 1 illustrates the structure of the model developed for smartphone fitness applications in line with UTAUT-2

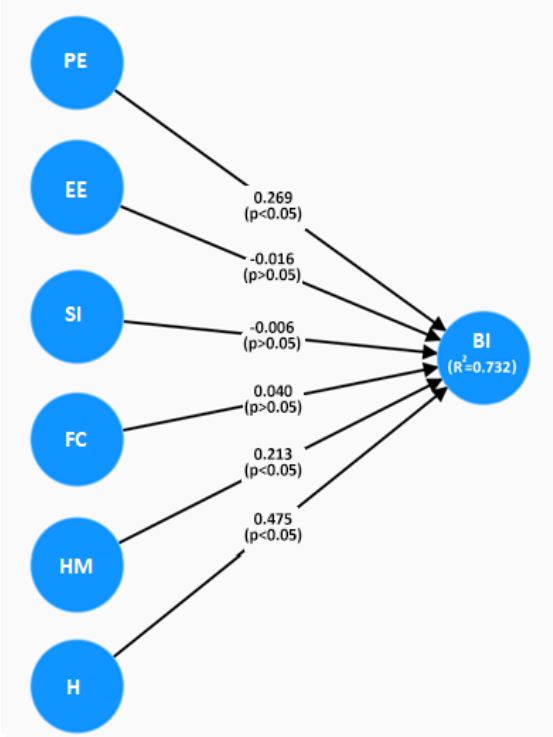

Figure 1. UTAUT-2 Smartphone fitness applications measurement model (PE=Performance Expectancy, EE=Effort Expectancy, SI=Social Influence, FC= Facilitating Conditions, HM=Hedonistic Motives, H=Habbit)

The findings obtained from the analyses conducted to determine the goodness of fit of the model indicate that the model is at an acceptable level (SRMR=0.066, NFI=0.87). Performance expectancy (β=0.269, p<0.05) hedonic motivation (β=0.213, p<0.05) habit (β=0.475, p<0.05) were found to be statistically significant in explaining behavioural intentions. On the contrary, it was found that Effort expectancy (β=-0.016, p>0.05) social influence (β=-0.006, p>0.05) facilitating conditions (β=0.040, p>0.05) were statistically insignificant. As illustrated in Figure 1, the partial least squares regression analysis revealed that the measurement model sub-dimensions explained 73.2% of the behavioural intention to use smartphone fitness applications.

DISCUSSION AND CONCLUSION

The objective of this study is to evaluate the efficacy of the measurement model developed for fitness smartphone applications within the context of UTAUT-2, with a particular focus on its applicability within the Turkish culture.

Partial least squares regression is a statistical method that is employed to predict a set of dependent variables from a set of independent variables. Smart PLS is the preferred method within the scope of this research due to its suitability for analysing complex models comprising multiple constructs and indicators, its efficacy in small sample groups and its frequent use in the field of social sciences, particularly in recent years (Purwanto & Sudargini, 2021).

In the field of adaptation studies, the validity, reliability and goodness of fit criteria of the measurement model are typically subjected to examination (Sarstedt et al., 2021). Three conditions are expected to be met for convergent validity (Hair et al., 2019). The first of these is that each item in the measurement model must have a value of 0.50 or above. According to the current findings, the factor loading of all items is above 0.75, thus meeting this condition. The second condition is that the CR and Cronbach's Alpha values should be higher than 0.70 (Tavakol & Dennick, 2011).

Upon analysis of the findings, it was determined that Cronbach's Alpha values were 0.75 and above, while CR values were 0.85 and above. Additionally, it was established that AVE values should exceed 0.50, as proposed by Fornell and Larcker (1981).

In all sub-dimensions, the associated AVE values exceed 0.65. Furthermore, the composite reliability criterion, denoted as rho_c, exhibited a range of values between 0.849 and 0.977. The value of .70 and above indicates that the relevant structure provides internal consistency as a whole (Hair, Hult, Ringle, et al., 2021). The Fornell-Larcker (1981) criterion is a method used to evaluate discriminant validity within the scope of SEM (Structural Equation Modelling). This entails a comparison of the square root of the average variance extracted (AVE) of each construct with the correlations between that construct and all other constructs in the model. Upon examination of Table 3, it becomes evident that the constructs within the model satisfy the requisite condition. In terms of the goodness of fit of the model, values below 0.08 for the SRMR are indicative of a good fit, while a value of 0 indicates a perfect fit (Sarstedt et al., 2021). The results demonstrate that the model exhibits a good fit level, with an SRMR value of 0.066. Conversely, while the NFI value exceeding 0.90 is deemed an appropriate fit criterion (Hooper, Coughlan & Mullen, 2008; Çakır, 2019), a value exceeding 0.80 indicates an acceptable fit. The findings demonstrate that the model is nearly at the optimal fit level (NFI=0.87) and meets the acceptable fit level condition, although it does not meet the optimal fit level condition. This study is comparable to the original study and lends support to the original measurement model (Dhiman et al., 2019).

The findings demonstrate that each sub-dimension in the measurement model accounts for 73.2% of consumers' behavioural intention to use

fitness apps in line with the UTAUT-2 model (Figure 1). In simpler terms, the current model provides an explanation of the factors influencing user behaviour and offers valuable insights into the motivations behind the use of smartphone fitness apps (Ringle, Sarstedt, Mitchell & Gudergan, 2020).

In conclusion, the measurement model developed for the assessment of fitness smartphone apps within the scope of UTAUT-2 is validated and reliable for the Turkish cultural context.

LIMITATION AND FUTURE STUDIES

The sample size of the study is constrained by the number of participants that the researcher is able to recruit. As a consequence of the adaptation of the measurement model to Turkish culture, the findings of the present study offer only limited insight into the model. The utilisation of free fitness app applications by the sample group resulted in the exclusion of the price value sub-dimension from the model. In future studies, it would be beneficial to expand the sample group and limit it to participants using paid apps in order to gain a deeper understanding of the effect of the price value dimension on the model. Furthermore, it would be advantageous to employ a variety of research methods and techniques, such as interviews and open-ended questions, in new studies to expand the current model with new dimensions and gain insight into cultural differences.

Author Contributions

The conceptual framework of the research was created by G.D. while A. G. was responsible for data collection, analysis and conceptual relations with research data. The final version of the research was checked and edited by G.D.

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Institutional Review Board Statement

The research was conducted in accordance with the Declaration of Marmara University, after receiving approval from the Ethics Committee of the faculty of Health Sciences Marmara University on 06.06.2024 (Approval No.: 2024/ 26-06).

Informed Consent Statement

Informed consent was obtained from all subjects involved in this study.

Data Availability Statement

Datasets are available through the corresponding author Aykut Gümüş upon reason-able request.

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Conflicts of Interest

The authors Aykut Gümüş and Gökalp Demir unequivocally assert that this research was undertaken while devoid of any commercial or financial affiliations that might be perceived as potential conflicts of interest.

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Examining the Gender Perception and Self-Efficacy Levels of Female Volleyball Players

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ABSTRACT

This study aims to examine the gender perception and self-efficacy levels of female volleyball players. The study group consists of 249 female volleyball players who actively play in the teams under the TVF in the 2023-2024 Turkish Volleyball Season. In order to collect data; The Gender Perception Scale developed by Altınova and Duyan (2013) and the Athlete Self-Efficacy Scale developed by Koçak (2020) were used. The study data were tested using the SPSS 24.00 package program. One Way ANOVA test was used. Significant differences were observed in the self-efficacy levels of female volleyball players participating in the study according to the age and experience year variables ($p<0.05$). It was determined that older volleyball players had higher self-efficacy and experienced volleyball players had higher self-efficacy levels. A significant difference was found in the gender perception levels of female volleyball players according to the variables of age, education level and years of experience ($p<0.05$). It was determined that the gender perception of young volleyball players was higher than that of older volleyball players, that high school graduates had higher gender perception levels than university and postgraduate graduates, and that the gender perception level increased as experience increased. It was determined that the gender perception and self-efficacy levels of female volleyball players were high. In addition, significant differences were found according to the variables of age, education level and years of experience.

Keywords: Female Volleyball Players, Gender Perception, Self-Efficacy.

INTRODUCTION

In many places, gender plays a role in society. The gender difference in birth intervals can disrupt the balance of population growth and was an important factor in gender inequalities and discrimination. The cultural structure of society is also formative at this point. In historical and cultural change processes, gender is produced by society. This structure, in fact, is a biological structure, but also makes cultural definitions and distinctions through abstract adjectives. It integrates men and women with their social status and roles. Therefore, women face many inequalities (Özkan, 2019).

In today's world, sports have become an indispensable part of social life. Sports, which are the subject of psychological and sociological research, have been seen as a mirror of societies. In addition, sports are of vital importance for the psychosocial development of individuals (Medeni, 2024). It is effective in socializing individuals with self-confidence in terms of personality development and character formation. It develops practical thinking skills and supports them to live a healthy life in terms

of physical, mental, and psychological aspects. It is also effective in protecting and getting rid of stress and anxious lifestyles (Güçlü & Yentür, 2008).

Women who are involved in sports, as athletes, employees, or fans, frequently create a buzz with the discrimination they encounter. Women are often subjected to psychological violence by encountering harassment, discrimination, and therefore sexist attitudes. As a result of this sexist approach, their social anxiety levels may increase and they may have to struggle with serious psychological disorders, and they may even become individuals in need of medical intervention (Buldan, 2018).

It is important for athletes to be able to perform at the highest level and demonstrate their talents in line with their capacities in order to achieve the targeted success in sports branches (Özbek & Yoncalık, 2019). Sexist behaviors in sports environments cause women to distance themselves from sports, feel worthless and inadequate, and also reduce their self-efficacy levels. Self-efficacy is the individual's thoughts about whether they can cope with the challenges they face (Barut, 2008). Aydin (2006) stated that in cases where people's self-efficacy perceptions are high, possible failure will not lead to a negative tendency in effort-giving behavior.

The concept of self-efficacy is one of the cognitive perception factors that affect the behaviors of the person (Ateş & Ateş, 2023). Bandura states that past experiences, family, school, personality perception, circle of friends and maturity affect self-efficacy perception and emphasizes four effects of self-efficacy perception. These are selection process, coping with negativity, motivation and problem process. In short, individuals with high self-efficacy levels have higher motivation and higher goals (Çelik & Gümüşdağ, 2023). One of the most important issues that affects the extent of the behavior and resistance to difficulties and how long it will take in the process of struggling with difficulties is motivation. Motivation is also directly related to self-efficacy. An athlete with a low level of self-efficacy will struggle less with difficulties and make less effort. The effect of self-efficacy on an individual also varies according to the field. In the sports environment, sports self-efficacy stands out as sports. Sports self-efficacy is the area where the athlete's personal self-efficacy perception is displayed only for his/her sports skills. It indicates the athlete's belief in the adequacy of his/her personal sports skills (Şimşek, 2022).

During the research process, we see that there are a limited number of studies examining the gender perceptions and self-efficacy levels of female volleyball players. For this reason, this study aims to contribute to the literature by examining the gender perceptions and self-efficacy levels of female volleyball players

METHOD

Research Design

This study aims to examine the gender perception and self-efficacy levels of female volleyball players participating in the 2023-2024 volleyball season in terms of certain variables. The study examines the relationships between some demographic characteristics of female volleyball players (age, marital status, number of children, education status, average monthly income level and duration of playing volleyball) and gender perception and self-efficacy levels with a descriptive approach. The descriptive research model is a method used to reveal and explain an existing situation.

Study Group

The study group consists of 249 female volleyball players, 48 of whom are married and 201 of whom are single, playing in different leagues and teams in the 2023-2024 Turkish Volleyball Season. Data were collected using a convenience sampling method. In order to represent the universe, it was deemed appropriate to determine the sample size using a non-random simple sampling method (Altunışık et al., 2017).

Table 1. Findings on Participants' Demographic Information

Variables	Groups	n	%
Civil Status	Married	48	19,3
	Single	201	80,7
	Total	249	100,0
Age	17-20 Ages	106	42,6
	21-24 Ages	86	34,5
	25 and Above Ages	57	22,9
	Total	249	100,0
Education Level	High School	52	20,9
	University	161	64,7
	Postgraduate	36	14,5
	Total	249	100,0
Volleyball Playing Years	1-3 Years	103	41,4
	4-6 Years	64	25,7
	7-9 Years	37	14,9
	10 and Above Years	45	18,1
	Toplam	249	100,0

Data Collection Tools

For data collection purposes; the "Gender Perception Scale'' developed by Altınova and Duyan (2013) and the "Athlete Self-Efficacy Scale'' developed by Koçak (2020) were used.

Gender Perception Scale: The Gender Perception Scale, developed by Altınova and Duyan (2013), is an assessment tool designed to evaluate the gender roles and perceptions of adult individuals and provides information about the individual himself/herself. The reliability analysis results calculated for the Gender Perception Scale were calculated with the Cronbach Alpha coefficient. This coefficient was calculated as r.87 for the scale. For our study, this coefficient was calculated as r.95. The scale developed to measure the individual's gender perception was designed as a 5-point Likert-type scale with 25 items, 10 positive and 15 negatives (Altınova & Duyan, 2013).

Athlete Self-Efficacy Scale: The athlete self-efficacy scale, developed by Koçak (2020), is related to how competent athletes see themselves in sports. The scale, consisting of a total of 16 questions, has a total of four sub-dimensions: sports branch competence, psychological competence, professional thought competence and personality nativeness. The scale is rated as 1- I do not agree, 5- I completely agree. The Cronbach Alpha value, which is considered as the reliability value, was found to be .88 (Koçak, 2020). For our study, the Cronbach Alpha value was calculated as .96 (Tabachnic & Fidell, 2013).

Data Analysis

The data of the study were tested using SPSS 24.0 package program. In order to determine whether the data conformed to normal distribution, kurtosis and skewness values were examined; According to Tabachnick and Fidell (2013), if these values are within the range of ±1.5 (in our study, Skewness: -.431, Kurtosis: -.820 for Gender Perception and Skewness: -.702, Kurtosis: .458 for Athlete Self-Efficacy), it was calculated and it was accepted that parametric tests could be applied. Percentage distributions, standard deviations, frequencies and arithmetic means were examined for the descriptive statistics of the participants. In the analysis of paired groups, t-test was used for independent samples, and one-way analysis of variance (ANOVA) was used in the comparative analysis of three or more groups. Tukey test, one of the Post-Hoc tests, was used to determine which groups the difference between the groups originated from. The significance level was applied as 0.05 in all statistical analyzes applied. When the analysis results are considered, considering the histogram graphics, Q-Q Plot curve, the closeness of the median and mean, and the necessity of the skewness and kurtosis values to be within the range of ±1.5, it has been determined that the variables comply with the normal distribution. Since the sample size is 249, it was decided to conduct normality tests in the study on the grounds that a sample size over 30 brings the distribution closer to normal according to the Central Limit Theorem (Çakır & Sesli, 2013)

RESULT

Table 2. Results of the Distribution of Participants' Mean Scores on the Gender Perception Scale and Athlete Self-Efficacy Scale.

Scales	n	$\bar{x}$	Ss	Skewness	Kurtosis
Gender Perception Scale	249	3,78	,83	-,431	-,820
Athlete Self-Efficacy Scale	249	3,67	,89	-,702	,458

When Table 2 is examined, it is seen that the average score ($\bar{x}$=3.78) that female volleyball players received from the Gender Scale is at a moderate level. When the Athlete Self-Efficacy scale is examined, it is determined that the average score ($\bar{x}$=3.67) of female volleyball players is at a moderate level. Since the results regarding data normality are ±1.5, it can be said that normality is achieved (Tabachnick & Fidell, 2013).

Table 3. Comparison of the Differences in the Athlete Self-Efficacy Scale and Its Sub-Dimensions Based on the Age of Female Volleyball Players.

Scale and Sub-Dimensions	Age	n	$\bar{x}$	Ss	F	p	Tukey
Sports Branch Efficacy	17-20 Ages (1)	106	3,75	1,01	3,28	,04*	1-2
	21-24 Ages (2)	86	3,47	0,94			
	25 and Above (3)	57	3,41	0,73			1-3
Psychological Efficacy	17-20 Ages (1)	106	3,79	1,07	6,95	,00*	2-1
	21-24 Ages (2)	86	3,43	0,91			
	25 and Above (3)	57	4,01	0,70			2-3
Professional Thinking Efficacy	17-20 Ages (1)	106	3,74	1,05	5,90	,00*	2-1
	21-24 Ages (2)	86	3,31	0,97			
	25 and Above (3)	57	3,78	0,78			2-3
Personality Efficacy	17-20 Ages (1)	106	3,87	1,10	6,34	,00*	2-1
	21-24 Ages (2)	86	3,48	0,97			
	25 and Above (3)	57	4,06	0,90			2-3
Athlete Self-Efficacy General (ASES)	17-20 Ages (1)	106	3,79	0,96	5,13	,01*	2-1
	21-24 Ages (2)	86	3,43	0,89			
	25 and Above (3)	57	3,81	0,64			2-3

**p<0,05; One Way ANOVA Test*

In the ANOVA conducted to examine the differences in the Athlete Self-Efficacy Scale (ASS) and its sub-dimensions in terms of the age group variable of the participating female volleyball players in Table 3; a statistically significant differentiation was observed between the Athlete Self-Efficacy Scale (ASES) and the age group variable (F=5.13, p=0.01, p<0.05). As a result of the post-hoc (Tukey) test, it was determined that the female volleyball players in the 17-20 age range ($\bar{x}$=3.79) and in the 25 and above age range ($\bar{x}$=3.81) had higher athlete self-efficacy levels than the female volleyball players in the 21-24 age range ($\bar{x}$=3.43). A statistically significant differentiation was observed between the age groups in the "Sports Branch Proficiency" Sub-Dimension (F=3.28, p=0.04, p<0.05). According to the Tukey test results, it was determined that the "Sports Branch Proficiency" levels of female volleyball players in the 17-20 ($\bar{x}$=3.75) age group were higher than the 21-24 ($\bar{x}$=3.47) and 25 and above ($\bar{x}$=3.41) age groups. A statistically significant difference was found in the "Psychological

Proficiency'' Sub-Dimension in terms of age variable (F=6.95, p=0.00, p<0.01). It was observed that the "Psychological Proficiency'' levels of female volleyball players in the 17-20 age group ($\bar{x}$=3.79) and 25 and above age group ($\bar{x}$ =4.01) were higher than the 21-24 age group ($\bar{x}$=3.43). A significant difference was found in the "Professional Thinking Competence'' Sub-Dimension in terms of age variable (F=5.90, p=0.00, p<0.01). It was found that female volleyball players in the 17-20 age groups ($\bar{x}$=3.74) and 25 and above age groups ($\bar{x}$ =3.78) had higher "Professional Thinking Competence'' levels than female volleyball players in the 21-24 age group ($\bar{x}$=3.31). A significant difference was found in the "Personality Competence'' Sub-Dimension in terms of age variable (F=6.34, p=0.00, p<0.01). It was determined that female volleyball players in the 17-20 age groups ($\bar{x}$=3.87) and 25 and above age groups ($\bar{x}$=4.06) had higher "Personality Competence" levels than female volleyball players in the 21-24 age group ($\bar{x}$=3.48).

Table 4. Comparison of Gender Perception Scale Differences Among Female Volleyball Players Based on Age

Scale	Age	n	$\bar{x}$	Ss	F	p	Tukey
Gender Perception Scale (GPS)	17-20 Ages (1)	106	3,94	,75	4,34	,01*	1-3
	21-24 Ages (2)	86	3,71	,80			
	25 and Above Ages (3)	57	3,57	,96			

**p<0,05; One Way ANOVA Test*

In the ANOVA conducted to examine the difference in average scores of female volleyball players in terms of age groups in Table 4; a statistically significant difference was observed between the Gender Perception Scale (GPS) and the age groups variable (F=4.34, p=0.01, p<0.05). As a result of the post-hoc (Tukey) test, it was determined that female volleyball players in the 17-20 age range ($\bar{x}$=3.94) had higher levels of gender perception than female volleyball players in the 25 and above age range ($\bar{x}$=3.57).

Table 5. Comparison of the Differences in the Athlete Self-Efficacy Scale and Its Sub-Dimensions Based on the Educational Status of Female Volleyball Players.

Scale and Sub-Dimensions	Education Level	n	$\bar{x}$	Ss	F	p	Tukey
Sports Branch Efficacy	High School (1)	52	3,75	,95	2,73	,07	
	University (2)	161	3,59	1,00			
	Postgraduate (3)	36	3,28	,36			
Psychological Efficacy	High School (1)	52	3,78	1,05	1,87	,16	
	University (2)	161	3,76	,97			
	Postgraduate (3)	36	3,43	,75			
Professional Thinking Efficacy	High School (1)	52	3,87	,89	5,48	,01*	3-1
	University (2)	161	3,61	1,03			
	Postgraduate (3)	36	3,17	,76			3-2
Personality Efficacy	High School (1)	52	3,87	1,06	0,44	,65	
	University (2)	161	3,73	1,05			
	Postgraduate (3)	36	3,85	,93			
Athlete Self-Efficacy General (ASES)	High School (1)	52	3,81	,84	2,01	,14	
	University (2)	161	3,67	,94			
	Postgraduate (3)	36	3,43	,64			

**p<0,05; One Way ANOVA Test*

In the ANOVA conducted to examine the differences in the ASES (Athlete Self-Efficacy Scale) and its sub-dimensions in terms of the educational status groups variable of the participating female volleyball players in Table 5; a statistically significant difference was observed between the "Professional Thinking Competence'' from the sub-dimensions of the Athlete Self-Efficacy Scale and the age and age groups variable (F=5.48, p=0.01, p<0.05). As a result of the Post-hoc (Tukey) test, it was determined that the "Professional Thinking Competence'' levels of female volleyball players who graduated from high school ($\bar{x}$=3.87) and 25 and university ($\bar{x}$=3.59) were higher than the female volleyball players who graduated from postgraduate programs ($\bar{x}$=3.17). On the other hand, no statistically significant difference was observed in the sub-dimensions of "Sports Branch Competence'', "Psychological Competence'', "Personality Competence'' and Athlete Self-Efficacy General average scores and educational status variable groups (P>0.05).

Table 6. Comparison of Gender Perception Scale Differences Based on the Educational Status of Female Volleyball Players.

Scale	Education Level	n	$\bar{x}$	Ss	F	p	Tukey
Gender Perception Scale (GPS)	High School (1)	52	4,34	0,58	18,71	,00*	1-2
	University (2)	161	3,58	0,79			
	Postgraduate (3)	36	3,84	0,96			1-3

**p<0,05; One Way ANOVA Test*

In the ANOVA conducted to examine the difference in the average score of the participating female volleyball players from the Gender Perception Scale (GPS) in terms of the educational background variable in Table 6; a statistically significant difference was observed between the Gender Perception Scale (GPS) and the educational background variable (F=18.81, p=0.00, p<0.01). As a result of the Post-hoc (Tukey) test, it was determined that the gender perception levels of female volleyball players who were high school graduates ($\bar{x}$=4.34) were higher than the female volleyball players who were university graduates ($\bar{x}$=3.58) and postgraduate graduates ($\bar{x}$=3.84).

Table 7. Comparison of the Differences in the Athlete Self-Efficacy Scale and Its Sub-Dimensions According to the Experience Years of Female Volleyball Players.

Scale and Sub-Dimensions	Volleyball Playing Years	n	$\bar{x}$	Ss	F	p	Tukey
Sports Branch Efficacy	1-3 Years (1)	103	3,37	,96	5,44	0,00*	1-4
	4-6 Years (2)	64	3,50	,78			
	7-9 Years (3)	37	3,79	,95			2-4
	10 and Above Years (4)	45	3,97	,93			
Psychological Efficacy	1-3 Years (1)	103	3,61	,97	2,76	0,04*	1-4
	4-6 Years (2)	64	3,64	1,01			
	7-9 Years (3)	37	3,69	,98			
	10 and Above Years (4)	45	4,08	,80			
Professional Thinking Efficacy	1-3 Years (1)	103	3,40	,97	3,75	0,01*	1-4
	4-6 Years (2)	64	3,64	,93			
	7-9 Years (3)	37	3,64	1,05			
	10 and Above Years (4)	45	3,97	,95			
Personality Efficacy	1-3 Years (1)	103	3,62	1,06	2,97	0,03*	1-4
	4-6 Years (2)	64	3,87	,98			
	7-9 Years (3)	37	3,64	1,14			
	10 and Above Years (4)	45	4,13	,87			
Athlete Self-Efficacy General (ASES)	1-3 Years (1)	103	3,50	,91	4,01	0,01*	1-4
	4-6 Years (2)	64	3,66	,86			
	7-9 Years (3)	37	3,69	,85			
	10 and Above Years (4)	45	4,04	,81			

**p<0,05; One Way ANOVA Test*

In the ANOVA conducted to examine the differences in the Athlete Self-Efficacy Scale (ASS) and its sub-dimensions in terms of the experience group variable of the participating female volleyball players in Table 7; a statistically significant differentiation was observed between the Athlete Self-Efficacy Scale (ASS) and the experience group variable (F=4.01, p=0.01, p<0.05). As a result of the post-hoc (Tukey) test, it was determined that the athlete self-efficacy levels of female volleyball players with 10 and above years of experience ($\bar{x}$=4.04) were higher than those with 1-3 years of experience ($\bar{x}$=3.50). A statistically significant differentiation was observed between the experience groups in the "Sports Branch Proficiency" Sub-Dimension (F=5.44, p=0.00, p<0.01). According to the Tukey test results, it was determined that the female volleyball players in the 10 and above years ($\bar{x}$=3.97) experience group had higher "Sports Branch Competence" levels than the female volleyball players in the 1-3 years ($\bar{x}$=3.37) and 4-6 years ($\bar{x}$=3.50) experience groups. A statistically significant difference was found in the "Psychological Competence" Sub-Dimension in terms of the experience year variable (F=2.76, p=0.04, p<0.05). It was observed that the female volleyball players in the 10 and above years ($\bar{x}$=4.08) experience groups had higher "Psychological Competence" levels than the female volleyball players in the 1-3 years ($\bar{x}$=3.61) experience group. A significant difference was found in the "Professional Thinking Competence" Sub-dimension in terms of the experience year variable (F=3.75, p=0.01, p<0.05). It was found that the female volleyball players in the experience group with 10 and above years ($\bar{x}$=3.97) had higher "Professional Thinking Competence" levels than the female volleyball players in the experience group with 1-3 years ($\bar{x}$=3.40). A significant difference was found in the "Personality Competence'' Sub-dimension in terms of the experience year variable (F=2.97, p=0.03, p<0.05). It was found that the female volleyball players in the experience group with 10 and above years ($\bar{x}$=4.04) had higher "Personality Competence" levels than the female volleyball players in the experience group with 1-3 years ($\bar{x}$=3.50).

Table 8. Comparison of Gender Perception Scale Differences Based on the Experience Years of Female Volleyball Players

Scale	Volleyball Playing Years	n	$\bar{x}$	Ss	F	p	Tukey
Gender Perception Scale (GPS)	1-3 Years (1)	103	3,67	0,73	6,59	,00*	1-3
	4-6 Years (2)	64	3,56	1,00			2-3
	7-9 Years (3)	37	4,16	0,74			
	10 and Above Years (4)	45	4,04	0,71			2-4

**p<0,05; One Way ANOVA Tes*

In the ANOVA conducted to examine the difference in the average scores of the participating women volleyball players from the Gender Perception Scale (GPS) in terms of the experience group variable in Table 8; a statistically significant difference was observed between the Gender Perception Scale (GPS) and the experience group variable (F=6.59, p=0.00, p<0.01). As a result of the post-hoc (Tukey) test, it was determined that the gender perception levels of women volleyball players with 7-9 years of experience ($\bar{x}$=4.16) were higher than those with 1-3 years ($\bar{x}$=3.67) and 4-6 years ($\bar{x}$=3.56) of experience, and women volleyball players with 10 and more years of experience ($\bar{x}$=4.04) were higher than those with 4-6 years ($\bar{x}$=3.56) of experience.

DISCUSSION AND CONCLUSION

The research was conducted to examine the gender perception and self-efficacy levels of female volleyball players who took part in the 2023-2024 volleyball season.

When the general self-efficacy average scores of the participating female volleyball players were examined, it was determined that there was a significant difference in the levels of exhibiting athlete self-efficacy levels. The athlete self-efficacy scale differs in terms of the age variable. Accordingly, It was observed that the athlete self-efficacy average scores of female volleyball players aged 17-20 and 25 and above were higher than their 21-24 age colleagues. Contrary to our study, Asan (2023) determined that the self-efficacy of athletes did not differ in terms of the age variable in his study with athletes in different branches. Koçak (2023) observed a difference in terms of the age variable in his study on the athlete self-efficacy of female handball players. This is parallel to our study. Do Amaral et al. (2021) stated that the self-efficacy levels of athletes also increase with increasing age. It is thought that this difference is due to the fact

that athletes gain more experience with age and therefore become more autonomous in the requirements of the sport they are involved in.

A statistically significant difference was also observed in gender perception scores according to the age variable; it was determined that the gender perception levels of female volleyball players aged 17-20 were significantly higher than those aged 25 and above. Alabaş et al. (2019) did not observe a significant difference in terms of the age variable in their study on the gender of university students. In support of our study, Gencer et al. (2021) found that the gender perception of students aged 17-24 differed from that of students in other age groups in their study on the gender perception of university students. It is evaluated that the reason for this difference is that the person assumes the behavioral patterns along with the value judgments and norms of the society in which he/she exists in terms of socialization over time.

When the average scores of women volleyball players from the self-efficacy scale were examined according to the educational status variable, it was observed that the self-efficacy levels of women volleyball players did not differ according to the educational status variable. Contrary to our study, Malete et al. (2013) found differences in self-efficacy levels according to the educational status variable in their study on the self-efficacy of coaches. In a study conducted on the self-efficacy levels of volleyball coaches in parallel with our study, it was determined that the self-efficacy levels of coaches did not differ in terms of the educational status variable (Akyüz, 2024). It is thought that this result is due to the fact that the personality traits of individuals in the sports environment are shaped together with the sports branch they play.

When the gender perceptions of participating women volleyball players are examined according to the educational status variable; it is observed that the gender perception levels of high school graduate women volleyball players are significantly higher than those of university and postgraduate graduate women volleyball players. Contrary to our study, Çifçi (2018) found in his study that as the educational status increases, the gender perception also increases. In the study titled "Determination of the Relationship Between Gender Perception and Socio-Economic Variables'' by Altuntaş and Altınova (2015), no significant difference was observed in the education levels of male participants. It is thought that this difference between the literature and our study is due to the difference in the sample group. Individuals in the sports environment exhibit much different personality traits than other individuals in the social structure.

A statistically significant difference was also observed in the self-efficacy level score averages of female volleyball players regarding their years of experience. It was determined that women who have been playing volleyball for 10 or more years have higher self-efficacy levels than women who have been playing for 1-3 years. Contrary to our study, Asan (2023) determined that there was no significant difference according to the variable of years of experience in his study examining the self-efficacy of athletes in different sports branches. When the literature is examined, there are studies that support our study, indicating that as the athlete's experience increases, the level of self-efficacy also increases (Cihan, 2014; Özkan, 2019; Koçak & Çolak, 2023). Sports, by its nature, require serious willpower and discipline. This process continues with experience, and as athletes are exposed to pressure, they learn to cope with it, thus strengthening their self-efficacy levels.

Statistically significant differences were also observed in the gender perception scale mean scores of female volleyball players regarding their years of experience. It was determined that women who had been playing volleyball for 7-9 years had higher levels of gender perception than women who had been playing volleyball for 1-3 and 4-6 years, and that women who had been playing volleyball for 10 years and above had higher gender perception scores than women who had been playing volleyball for 4-6 years. Contrary to our study, Özkan (2019) did not observe any significant difference according to the years of experience variable in his study examining the gender of female university student football players. Similarly, in Karaçil's (2022) study examining the gender perception of preschool teachers, no significant difference was observed according to the years of experience variable. It is thought that the reason for this difference between the literature and our study is that the study sample was handled in a sportive environment.

As a result, it was observed that the gender perception and self-efficacy levels of female volleyball players were high in the context of this study. This situation can be explained by the fact that female athletes have developed strong personality traits due to the nature of sports and have constantly reinforced these traits. It is also thought that self-esteem levels may play a determining role in these findings. Future studies can support the current findings and contribute to the

literature by examining the effects of these variables in more detail.

Author Contributions

O. A. : data collection. O. A.: data analysis. O. A., M. D.: original draft preparation. O.A.. M. D.: review and editing. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The research was conducted in accordance with the ethics committee permission for the collection of data and the conduct of the study was obtained from the Dicle University Social and Human Sciences Ethics Committee with the commission decision dated 26.12.2023.

Informed Consent Statement

Informed consent was obtained from all subjects involved in this study.

Data Availability Statement

Datasets are available through the corresponding author upon reason-able request.

Conflicts of Interest

The authors unequivocally assert that this research was undertaken while devoid of any commercial or financial affiliations that might be perceived as potential conflicts of interest.

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The Effect of Mindfulness on Moral Decision-Making Attitudes in Athletes: Moderated Mediation Control of Moral Metacognition and Emotional Intelligence*

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A B S T R A C T

This study has been conducted to determine the effect of conscious awareness of sports high school students on moral decision-making attitudes and the mechanism that underlies this effect. 899 sports high school students (284 female and 615 male) participated in this research conducted in the relational screening model. When examining the data, SPSS and AMOS programs have been used. In the analysis of the data, confirmatory factor analysis was first performed to test the measurement model. And in the examination of the hypotheses of the study, regression analysis based on correlation test and Bootstrap method were used. In the study, significant positive relationships are identified between mindfulness and moral decision-making attitude, moral metacognition, and emotional intelligence. According to the results of regression analysis based on the Bootstrap method, the indirect effect of mindfulness on moral decision-making attitude through moral metacognition (Hypothesis I) has been found to be significant. The regulatory role of emotional intelligence (Hypothesis II) in the effect of mindfulness on moral metacognition has been observed to be significant. In situations where emotional intelligence is low and medium, the effect of conscious awareness on moral metacognition is significant and when high, it has been observed to be insignificant. In the indirect effect of mindfulness on moral decision-making through moral metacognition, the regulatory effect of emotional intelligence (Hypothesis III) has been found to be insignificant. It has been observed that mindfulness positively affects the attitude of moral decision-making through moral metacognition in sports high school students, and the effect of mindfulness on moral metacognition is regulated by emotional intelligence. However, it has been found that the situational mediating role of emotional intelligence is not effective in the effect of mindfulness on moral decision-making attitudes through moral metacognition.

Keywords: Mindfulness, moral decision-making, moral metacognition, emotional intelligene, moderated mediation

INTRODUCTION

Mindfulness and Moral Decision-Making Attitude: Mindfulness, which is often used as mindfulness in conceptual terms, has taken its source from meditation practices in Eastern culture in line with religious teachings based on Buddhist philosophy (Sun, 2014), and has started to be used frequently in Western culture, especially in recent years, by

*This study was produced from Emrah Seçer's PhD thesis and presented as a paper at the 7th academic sports research congress.

using it to regulate dysfunctional emotional states (Cairncross, 2019). It adopts the principle of focusing on the emotions and experiences experienced in the "moment" by minimizing the effects of situations that have happened or are likely to occur (Bishop et al., 2004). It has been emphasized that mindfulness (Kabat-Zinn, 2023; Ortet et al., 2020), which includes taking attention under control, adopting an accepting, open and unprejudiced attitude, has an important place in the structures which play a role in the control and coordination of these variables.

Morality is considered a guiding element in the direction of ethical values in individuals' daily lives and reasoning processes and plays an effective role in emotions (Kohlberg, 1964). With the acceleration of life of the individual and extra practices should be done to develop over time. Care should be taken to develop skills (Kızılkaya & Yılmaz, 2024). Mindfulness, which has many definitions in the literature, is defined as making sense of emotions (Göncü & Balcı, 2023), being aware of the moment and stimuli (Baltzell & Summers, 2017), being kind when communicating with other individuals, not judging, and being aware of the moment with a human acceptance by establishing harmony (Germer et al., 2013), and being aware of the events that occur in the individual's mental structure and social life (Özyeşil et al., 2011). While the positive results of mindfulness practices are emphasized in studies conducted on different groups (Creswell, 2017), it is pointed out that it increases psychological well-being by reducing negative emotional states in a study on athletes (Myall et al., 2023). In addition, research results are showing that scenario-based mindfulness practices increase motivation before, during and after a match in competitive athletes (Coimbra et al., 2021; Gao & Zhang, 2023). It is important to incorporate mindfulness practices into the sports environment by increasing the awareness of athletes to increase sporting performance (Anderson et al., 2021). In this way, it is stated that individuals will benefit from moving away from negative behaviors and negative habits (Çelik & Akgün, 2024) and taking the right steps in decision-making (Yavuz et al., 2019). Effective decision-making is seen as one of the important cognitive skills and is important for sportive success (Çetin & Kara, 2024). Mindfulness and ethical or moral decision-making attitudes in athletes are increasingly found in the literature as important psychological elements that shape the ethical behavior of athletes and improve their performance. The interaction of these two concepts can increase both individual and team level success by enabling athletes to make more conscious, ethical and strategic decisions (Gardner & Moore, 2017).

Morality (Akbuğa, 2018), which is considered as a concrete phenomenon that affects society and the elements it contains and shapes personality traits such as temperament and character, is defined as "The behaviors and rules that individuals in a society are obliged to follow." (TDK, 2024). Decision, on the other hand, is explained as "An evaluation system that affects actions, a judgment made by reasoning about a problem that needs to be concluded." (TDK, 2024). Decision-making, which is considered an emotional process as well as a cognitive one (Tuncer et al., 2022), is based on choosing the logical and rational one among alternatives (Robbins et al., 2013). Moral decision-making attitude is considered a reflection of the individual's reasoning skills in different situations that develop with age (Chiasson et al., 2017). Through mindfulness and attention, it is thought that positive changes can be achieved in the moral decision-making process (Zheng et al., 2023) and compromising moral values can be prevented (Ming et al., 2024). It is also noteworthy that structured mindfulness trainings significantly reduce negative situations in the moral decision-making process (Arahuete & Pinazo, 2024), and increases moral reasoning (Pandey et al., 2018) and decision-making skills (Du et al., 2023). Despite these facts, they state that it is not enough to reveal the effect of contemporary mindfulness-based practices on moral structure (Berryman, 2024; Berryman et al., 2023).

The Mediating Role of Moral Metacognition: Throughout history, human beings have needed cognitive elements to develop these features in addition to their thinking and learning abilities to continue their lives. Metacognition, which has difficulty in defining its characteristics in different disciplines due to its abstract scope, is stated to apply techniques to obtain inferences about the actions of the individual (Moritz & Lysaker, 2018). The concept, which was first established as "metamemory" in the literature (Flavell, 1976), was evaluated as "metacognition" in the process (Flavell, 1979). Metacognition is defined as the ability to assess subjectively and process cognitive practices and learning styles (Jager et al., 2005), awareness (Kuhn & Dean, 2004), observation and control of ideas (Martinez, 2006). It is thought to be related to cognitive variables and to contain detailed data of cognitive technological developments, many new situations that need solutions have emerged, and it has become inevitable for individuals to face various conflicts in this context and to take an active role in decision-making processes. The intense experience of emotions in sports environments causes individuals to face moral dilemmas more frequently in decision-making processes. In such dilemma situations, the decision-making process requires

cognitive evaluation and analysis (McMahon & Good, 2015). In this process, the ability to make decisions by social norms is of great importance. Therefore, the need for individuals to gain and develop moral awareness skills comes to the fore (Ömürlü, 2018).

The Regulatory Role of Emotional Intelligence: "Emotional intelligence", the foundations of which were laid by Thorndike (1920) with social intelligence, started to be the subject of many researches in the process and gained an international dimension with the book "Emotional Intelligence" written by Goleman (1995). It is defined as understanding the mental structures of others (Jordan, 2016), orienting towards the goal through self-control (Özbek & Boztepe, 2017), using general competencies (Bar-on, 2005), and helping social peace (Hasson, 2019). Emotional intelligence, which has gained a place in different areas of human life, has started to gain a place in sports environments and athlete behavior/performance. Although it is assumed that sports are done for pleasure and entertainment (Sit & Lindler, 2005), it is emphasized that emotional states have effects on performance (Mellalieu et al., 2009). In these cases, it is thought that individuals can guide the decision-making processes that they will face at critical points.

Current Research: It is stated that sport has an important impact on the character and moral development of individuals, which is based on its relationship with social morality and behavior (Gürpınar, 2014). It is stated that moral development plays an important role in the cognitive processes of individuals and contributes to the analysis and evaluation of contradictory situations encountered, especially in distinguishing between good and evil (Kohlberg, 1964). Physical education programs are used as an effective tool in the moral development of students at basic education levels (primary, secondary, high school) (NASPE, 2004). In this context, the role of physical education and sports in the development of moral values such as honesty, virtue and tolerance is of great importance (Shields & Bredemeier, 1995). Many values, behaviors and attitudes that are necessary for individuals to sustain their lives in society and gain social acceptance can be gained through sports. For this reason, sport is seen as an important phenomenon for the individual and society in terms of investigating the moral decision-making process and the reasons underlying this process. Sport has a dynamic structure that includes various situations such as winning and losing. It is very difficult to make and implement morally correct decisions in these processes. However, it is thought that individuals who can make morally correct decisions in instant situations can maintain these attitudes in their daily lives. Considering the impact of the moral decision-making process on the individual and society, studies in this field are of great importance.

This study aims to examine the relationship between mindfulness levels and moral decision-making attitudes of students studying in sports high schools and actively participating in sports activities, to evaluate the mediating role of moral metacognition and the moderating effect of emotional intelligence in this relationship. The hypotheses of the research in this context were determined as follows;

H1: Mindfulness has an indirect effect on moral decision-making attitude through moral metacognition (mediating effect-indirect effect).

H2: Emotional intelligence has a moderating role in the effect of mindfulness on moral metacognition (moderation).

H3: Emotional intelligence has a moderating role in the indirect effect of mindfulness on moral decision-making attitude through moral metacognition (moderated mediation).

METHODOLOGY

Research Model

In the study conducted to determine the effect of mindfulness level on moral decision-making attitudes in sports high school students and the mediating role of moral metacognition and the regulatory role of emotional intelligence in this effect, the relational screening model was used. Relational survey models, which are considered within the scope of quantitative research methods, are frequently used to determine the relationships between two or more variables and their increases and decreases (Christensen, Johnson & Turner, 2015). Considering that the identification of simple relationships in social field research may be insufficient to fully understand social reality, it is stated that how the relationship is realized (mediator) and in which situations it changes (moderator) is important. In addition, it is stated that such research is valuable in terms of improving existing knowledge and gaining a unique perspective on the relationship mechanism (Gürbüz, 2021). This study was supported by Atatürk University Scientific Research Projects Coordination Unit (Project Code: SDK-2023-12391). The theoretical model to be tested in the research is presented in Figure 1.

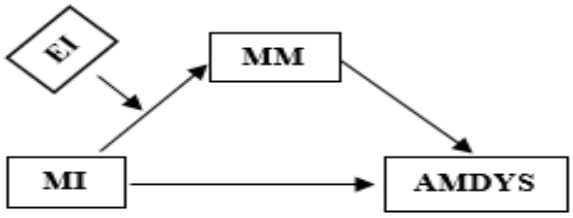

Figure 1. Proposed Moderated Mediation Model

Research Group

The research group was determined by the criterion sampling method, which is one of the purposive sampling methods within the scope of random sampling methods in which participants are determined by forming from people, facts, events, etc. with certain characteristics (Büyüköztürk et al., 2023). As criteria, (a) studying in sports high schools, (b) actively practicing licensed sports, (c) being located in a close and accessible location to collect data more healthily were determined. Based on these criteria, 899 students (224 female and 615 male) studying in Sports High Schools in Erzincan, Erzurum, Trabzon, Tokat, Giresun, Gümüşhane and Van provinces participated in the study voluntarily. Demographic information of the research group is shown in Table 1.

Table 1. Demographic Characteristics of the Research Group

Variable	Group	n	%
Gender	Female	284	31.6
	Male	615	68.4
Branch	Football	315	35.0
	Volleyball	136	15.1
	Basketball	50	5.6
	Handball	69	7.7
	Wrestling	76	8.5
	Athletics	112	12.5
	Boxing-Muaytai	26	2.9
	Swimming	11	1.2
	Badminton	24	2.7
	Tennis - Table Tennis	11	1.2
	Judo	11	1.2
	Gymnastics	3	0.3
	Arm Wrestling	15	1.7
	Weightlifting	6	0.7
	Taekwondo	13	1.4
	Shooting	3	0.3
	Winter Sports	18	2.0
Income Status	Low	75	8.3
	Middle	600	66.7
	High	224	24.9
	Group	Min-Max	Mean ± SD
Age	Female	13-18	15.70±1.227
	Male	13-18	15.85±1.191
	General	13-18	15.80±1.204
Sport Age	Female	1-14	5.69±3.398
	Male	1-15	6.02±3.003
	General	1-15	5.92±3.135

Data Collection Tools

Mindfulness Inventory for Sport (MIS) Scale: It is a 6-point Likert-type scale developed by Thienot et al. (2014) and adapted into Turkish by Tingaz (2020). As a result of the confirmatory and explanatory factor analysis of the scale, it is stated that the scale consists of 15 items and three sub-dimensions (Awareness, Nonjudgment, Refocusing) and all items in the "Nonjudgment" dimension of the scale are reverse coded. As a result of the confirmatory factor analysis (CFA) conducted during the adaptation phase, it was determined that the goodness of fit values ($\chi 2$ =158.77 (sd=86, p<.01), $\chi 2$/sd=1.84, RMSEA=0.08, GFI=0.86, CFI=0.95, IFI=0.95) were sufficient. Cronbach's alpha coefficient of the scale was calculated as α=.82. For the sub-dimensions, it was calculated as α=.81, α=.70, α=.77 respectively.

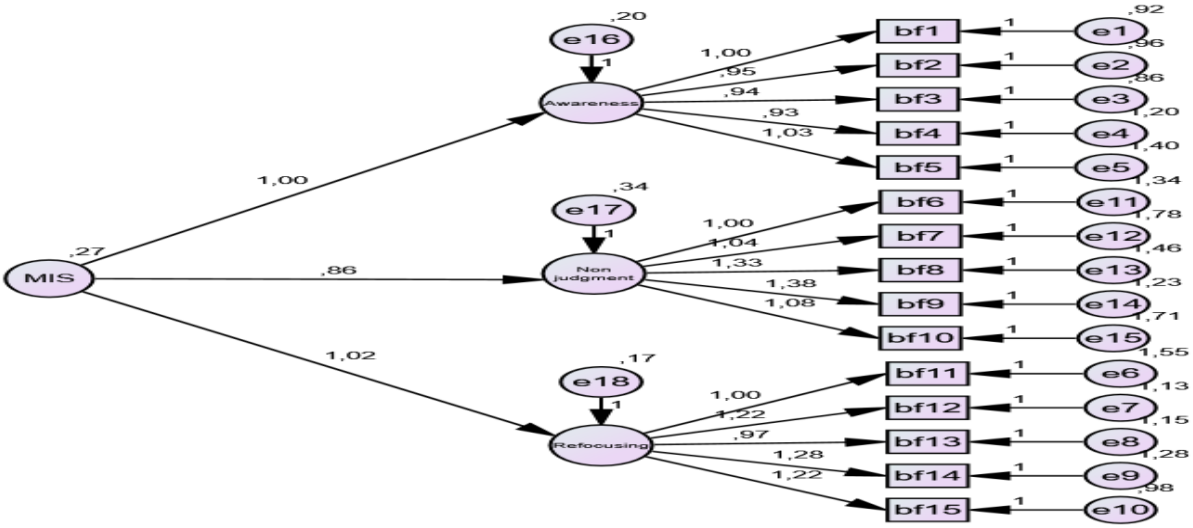

Figure 2. CFA Results of the Mindfulness Inventory for Sport Scale

Attitudes to Moral Decision-making in Youth Sport Scale (AMDYSS): The scale adapted into Turkish by Gürpınar (2014) was developed by Lee et al. (2007). As a result of confirmatory and explanatory factor analysis, it is seen that the 5-point Likert-type scale consists of 9 items and three sub-dimensions (Acceptance of Cheating, Acceptance of Gamesmanship, Keep Winning in Proportion). Items 1, 2, 4, 5, 6, 8 are reverse-coded. As a result of confirmatory factor analysis during the development phase of the scale, goodness of fit values (Chi-square/sd=2.85; GFI= 0.96; AGFI= 0.93; CFI= 0.96; NNFI= 0.94; RMSEA= 0.068; SRMR= 0.047) were found. Cronbach's alpha coefficient for the whole scale was α=.76, while the sub-dimensions were α=.77, α=.67, α=.59, respectively.

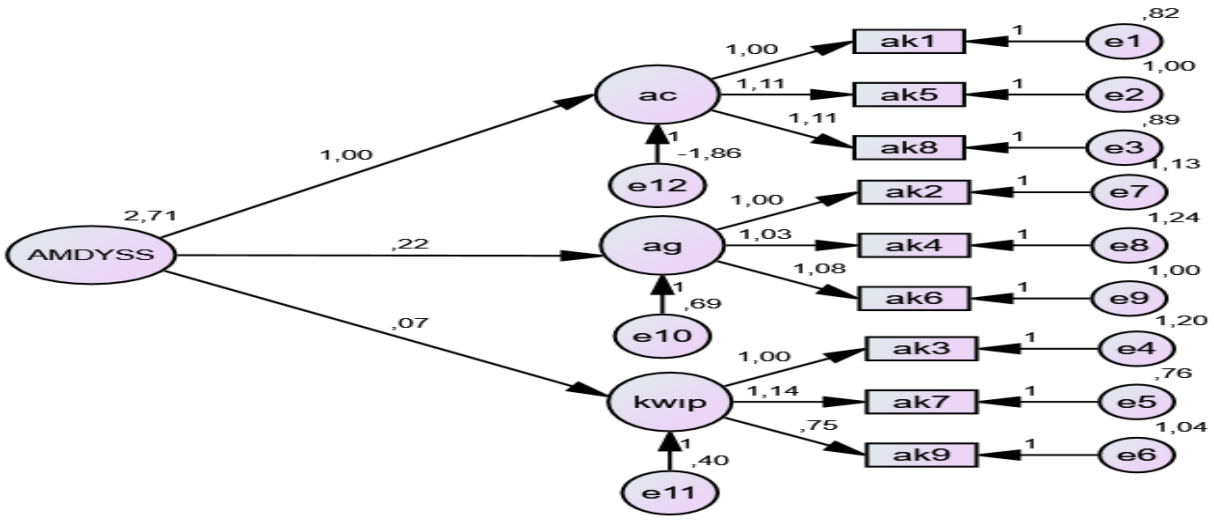

Figure 3: CFA Results of the Attitudes to Moral Decision-Making in Youth Sport Scale

Moral Metacognition Scale: The scale was developed by McMahon and Good (2016) and adapted into Turkish by Çelik and Sarıçam (2018). The scale, which is evaluated on a 6-point Likert scale, consists of 20 items and 4 sub-dimensions (regulation of cognition, declarative cognition, procedural cognition, conditional cognition). Cronbach's alpha coefficients of the scale were α=.89 for the whole scale and α=.60, α=.78, α=.64, α=.67 for the dimensions, respectively.

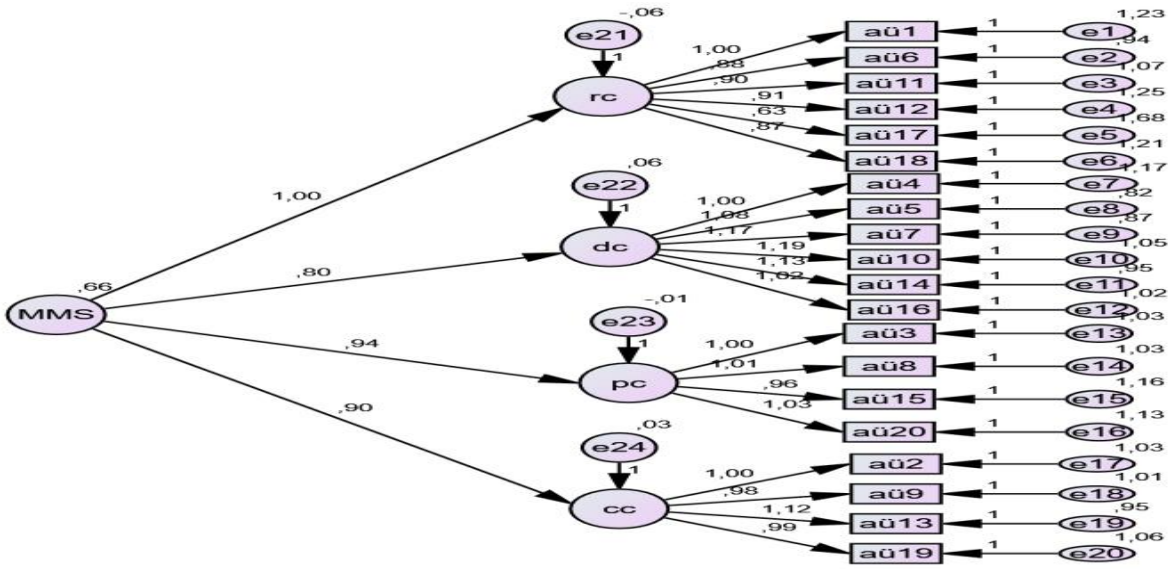

Figure 4. CFA Results of Moral Metacognition Scale

Emotional Intelligence Scale: The scale used by Aslan and Özata (2008) was first revised as 33 items by Schutte et al. (1998) and then as 12 items by Chan (2004). The 5-point Likert scale was found to have high reliability (Cronbach Alpha=0.82-0.86) in Chan's study. In the sub-dimensions of the scale, emotional appraisal: α=.87, empathic sensitivity: α=.83, positive emotional management: α=.88, positive utilization of emotional: α=.85.

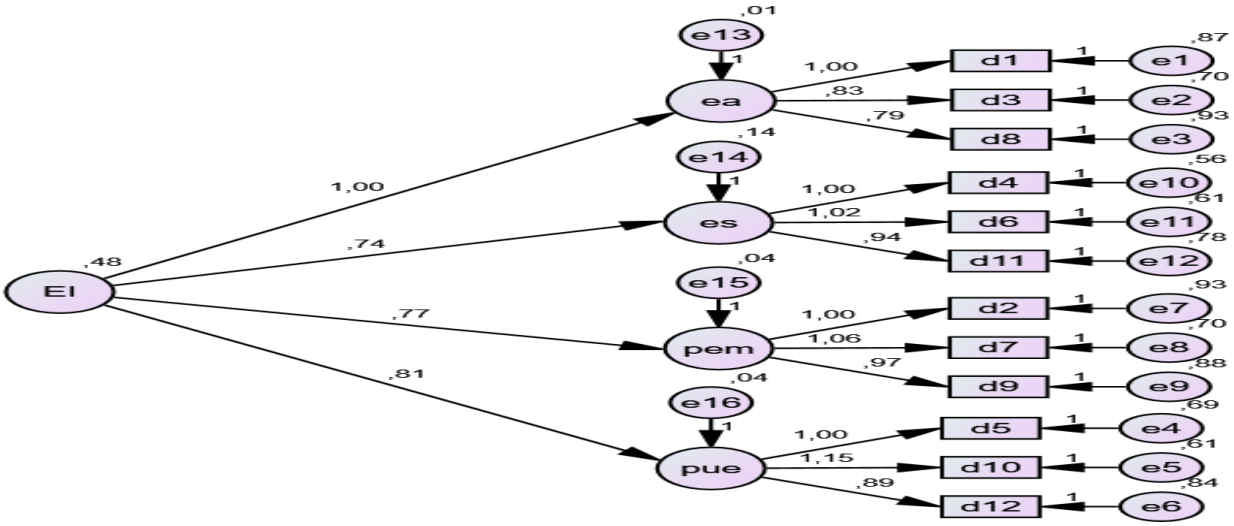

Figure 5. CFA Results of Emotional Intelligence Scale

Within the scope of this study, Level 2 confirmatory factor analyses were conducted to test the construct validity of all scales. Since the data met the normality criteria, Maximum Likelihood calculation method was utilized. As a result of CFA, goodness of fit values accepted in the literature were obtained. The goodness of fit values of the scales used in the study and the values referenced in the literature are given in Table 2.

Table 2. Goodness of Fit Indices and Threshold Values Used in SEM

Index	Good Fit	Acceptable	MIS	AMDYSS	MMS	EIS
X2/df	<3	<3(X2/df)<5	2.901	3.237	3.428	4.081
GFI	>.95	>.90	0.963	0.981	0.938	0.963
CFI	>.95	>.90	0.930	0.968	0.927	0.932
RMSEA	<.05	<.08	0.046	0.050	0.052	0.059
SRMR	<.05	<.08	0.043	0.038	0.038	0.040

Reference values are taken from Byrne, 2016 & Gürbüz, 2021.

Ethical Approval and Procedure: The data of the study were collected after the decision of Erzincan Binali Yıldırım University Human Research Health and Sports Ethics Committee (protocol no: 20.02.2023-02/11) and the research application permission of the Ministry of National Education General Directorate of Vocational and Technical Education (dated 28.03.2023 and numbered E-62045208-605.01-73247518) after the informed consent of the participants was obtained. Participants were informed that they could withdraw from the study at any time. All procedures performed in this study were by the 1964 Declaration of Helsinki and ethical standards.

The study aimed to examine the effect of Sports High School students' Mindfulness (MI) on their moral decision-making attitudes (AMDYS) and the mechanisms underlying this effect. First, the mediating role of moral metacognition (MM) in the relationship between MI and AMDYS was tested (Model 4). Second, the moderating effect of emotional intelligence (EI) on moral metacognition of mindfulness was examined (Model 1). Finally, the moderated mediating role of emotional intelligence in the indirect effect of mindfulness on moral decision-making attitudes through moral metacognition was tested (Model 7).

Data Analysis

Before analyzing the data, outliers and missing values were examined using IBM SPSS 25 software (IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY, USA). Then, the data were examined for conformity to a normal distribution and the relationships between the independent, dependent, mediator and moderator variables in the study were tested with Pearson correlation analysis. The suitability of the data in terms of normal distribution was examined by the Mahalanobis distances, Z values, skewness and kurtosis values of the calculated scale scores. It is stated that if the skewness and kurtosis values are between +1 and -1, the data are normally distributed (Hair et al., 2014). In addition, it was determined that the Z values were also within the appropriate ranges (-3/+3). In addition, linear relationships between the variables were checked with a scatter diagram and it was seen that there was no deviation in the distribution. The correlation values between the variables were also examined and it was determined that there was no multicollinearity problem since no value above .80 was encountered (Büyüköztürk, 2023). In addition, the tolerance and VIF values obtained from the data gave results confirming that there was no multicollinearity between independent variables (Tolerance > 0.2, VIF < 10).

AMOS 24 program was used to test the factor structure of the measurement tools used in the study. After confirming the factor structure of the measurement instruments, regression analysis based on the Bootstrap method was applied to test the hypotheses of the study (Hayes, 2022). The hypotheses were tested using Process Macro version 4.2. developed by Hayes (2022). Model 4 to test the first hypothesis of the study "Mindfulness has an indirect effect on moral decision-making attitude through moral metacognition.", model 1 to test the second hypothesis "Emotional intelligence has a moderating role in the effect of mindfulness on moral metacognition." Model 1 was used to test the first hypothesis and model 7 was used to test the third hypothesis "Emotional intelligence has a moderating role in the indirect effect of mindfulness on moral decision-making attitude through moral metacognition". In the analyses, the Bootstrap technique and the 5000 sample option were preferred. In mediation and moderating effect analyses conducted with the Bootstrap technique, the 95% confidence interval (CI) values obtained as a result of the analysis should not contain 0 (zero) to support the research hypothesis (Hayes, 2022; Preacher & Hayes, 2008).

RESULTS

In this section, the data obtained from the scales to determine the relationship between mindfulness and moral decision-making of students studying in sports high school and actively engaged in sports, and the mediating role of moral metacognition and the moderating role of emotional intelligence in this relationship are analyzed and reported.

In the study, the relationships, descriptive analyses and reliability values between the MI, AMDYS, MM and EI levels of sports high school students are presented in Table 3.

Table 3. Correlation Between Variables and Descriptive Analyses

Variables	MI	AMDYS	MM	EI	X	Ss	Skewness	Kurtosis	Cronbach
MI	1				61.34	6.89	.075	.501	.794
AMDYS	.069**	1			33.29	6.74	-.355	-.380	.732

MM	.279**	.137**	1	90.55	15.30	-.496	.273	.906
EI	.361**	.189**	.592**	1	48.48	7.44	-.613	.100	.825

p<.05, **p<.01 (Abbreviations: MI: Mindfulness; AMDYS: Moral Decision-Making Attitude; MM: Moral metacognition; EI: Emotional Intelligence)

When the table is examined, it is determined that there are statistically significant relationships between all of the variables of MI, AMDYS, MM and EI of sports high school students. There is a medium level relationship between MI and AMDYS (r=.069, p<.01), a low level relationship between MI and MM (r=.279, p<.01), a medium level relationship between MI and EI (r=.361, p<.01), a low level relationship between AMDYS and MM (r=.137, p<.01) at a low level, between AMDYS and EI (r=.189, p<.01) at a low level and between MM and EI (r=.592, p<.01) at a medium level.

Table 4. Bootstrap Regression Analysis Results

Variables	MM			EI			AMDYS		
	b (a)	LLCI	ULCI	b	LLCI	ULCI	b	LLCI	ULCI
Model 1 (H1)									
MI (X)	.619***	.480	.759	-	-	-	.054	-.011	.120
MM (M)	-	-	-	-	-	-	.053***	.024	.083
R2		.078						.021	
Boostrap indirect impact	Mindfulness→ Moral Metacognition→ Moral Decision-Making Attitude b=.033, 95% CI [.014, .055]								
Model 2 (H2)									
MI (X)	.160**	.035	.285	-	-	-	-	-	-
EI (W)	1.154***	1.037	1.270	-	-	-	-	-	-
X.W (Interaction)	-.015*	-.029	-.000	-	-	-	-	-	-
R2		.359			-		-		
Model									
MI (X)	0.160	.035	.285	-	-	-	.054	-0.011	0.120
MM (M)	-	-	-	-	-	-	.053***	.024	.083
EI (W)	1.154***	1.037	1.270	-	-	-	-	-	-
R2		0.021			-		-		
	Mindfulness→ Moral Metacognition→ Moral Decision-Making Attitude								
Low EI	.014	.003	.030						
Middle EI	.008	.000	.019						
High EI	.002	-.007	.014						
Modareted Mediation Index	-.000	-.001	.000						

***p<.05, **p<.01, ***p<.001**

The mediation effect was tested to test the first hypothesis of the study (Mindfulness→ Moral Metacognition→ Moral Decision-Making Attitude). Accordingly, it was determined that the indirect effect of mindfulness on moral decision-making attitude through moral metacognition was significant (b=.033, 95% CI [.014, .055]). In Table 4, it was seen that the predictor variables included in the regression model according to Model 1 explained approximately 2.1% (R2=.021) of the change in moral decision-making attitude. In line with these findings, H1 was supported.

In order to test the second hypothesis of the study, a regression model showing the moderating effect (Model 2) was established. The effects of mindfulness (path b1), emotional intelligence (path b2) and interactional term (path b3) on the outcome variable moral metacognition were found to be significant. The fact that the b value of the interactional term (Int_1/X.W) variable, which shows the moderating effect, is significant means that emotional intelligence has a moderating effect (b=-.015, 95% CI (.-.029, .-.0008], p<.05). As a result of the slope analysis, the effects of the moderating variable are shown graphically in Figure 6. When the details of the moderating effect are examined, it is seen that the effect of mindfulness on moral metacognition is significant when emotional intelligence is low (b=.273, 95% CI [.112, .433], p<.001) and moderate (b=.153, 95% CI [.027, .278], p<.01). In addition, it was determined that the relationship between mindfulness and moral decision-making attitude was not significant when emotional intelligence was high (b=.048, 95% CI [.-119, .215], p=.573). In sum, as the level of

emotional intelligence increased, the effect of mindfulness on moral metacognition decreased. In line with these findings, H2 was supported.

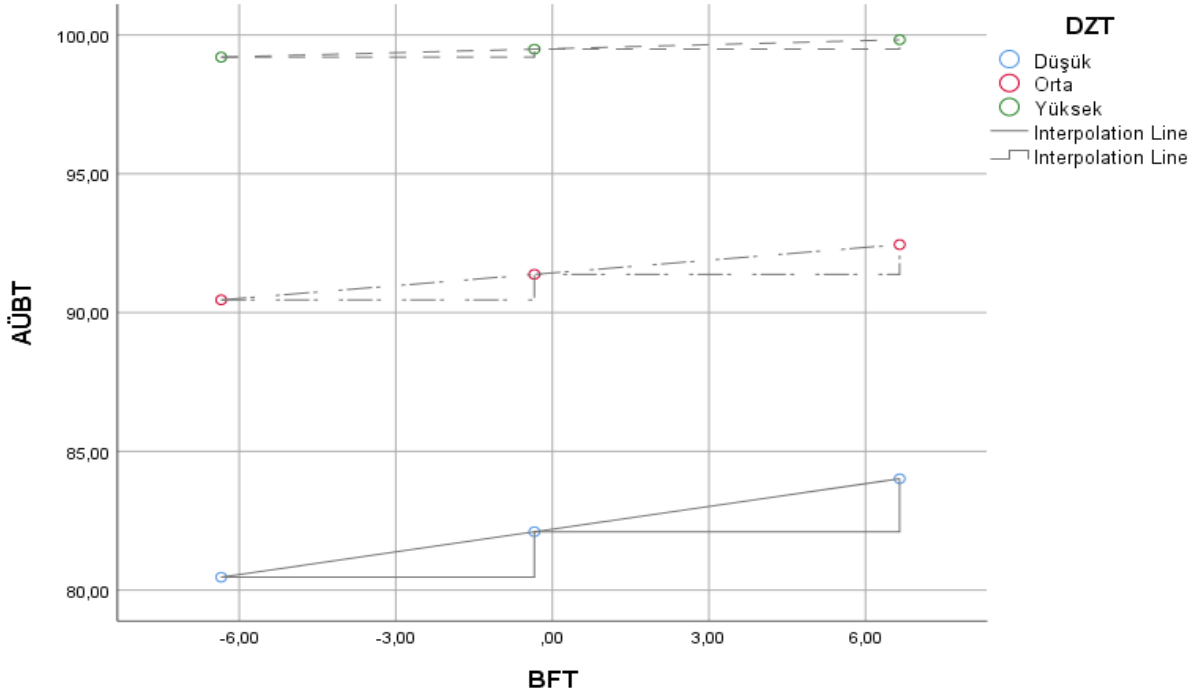

Figure 6. Graphical Illustration of the Regulatory Effect of Emotional Intelligence

In order to test the third hypothesis of the study, a moderated mediation regression model in which emotional intelligence is a moderated mediator was established. Firstly, the effects of low, medium and high emotional intelligence on the effect of mindfulness on moral decision-making attitude were tested. When the confidence intervals (CIs) obtained with the bootstrap technique were examined, it was found that when emotional intelligence was low (-7.4839), the effect of mindfulness on moral decision-making attitude through moral metacognition was significant (b=.014 95% CI [.003, .030]), and when emotional intelligence is moderate (.5161), the effect of mindfulness on moral decision-making attitude through moral metacognition is significant (b=.008 95% CI [.000, .019]). However, in the case of high emotional intelligence (7.5161), the effect of mindfulness on moral decision-making attitude through moral metacognition was not significant (b=.002 95% CI [.-007, .014]). Finally, it was tested whether the indirect effect of mindfulness (X) on moral decision-making attitude (Y) through the mediating variable moral metacognition (M) depends on emotional intelligence (W), that is, whether there is a moderated mediation role. The insignificant value of the index of moderated mediation (b=-.000 95% CI [.-001, .000]) indicates that emotional intelligence is not a moderating variable in the indirect effect of mindfulness on moral decision-making attitude through moral metacognition. Accordingly, H3 is not supported.

DISCUSSION

In the study, it was determined that the effect of mindfulness on moral decision-making attitude through moral metacognition was significant, in other words, moral metacognition had a mediating role in the effect of mindfulness on moral decision-making attitude. The moderating role of emotional intelligence on the effect of mindfulness on moral metacognition was statistically significant and the effect of mindfulness on moral metacognition became insignificant as emotional intelligence increased. The moderating role of emotional intelligence in the indirect effect of mindfulness on moral decision-making attitude through moral metacognition was statistically insignificant. In this section, the findings obtained from the study are discussed comprehensively in relation to the existing literature.

Table 5. Hypotesis Test Results of the Study

Hypotheses	Results
H1: Mindfulness has an indirect effect on moral decision-making attitude through moral metacognition (mediating effect-indirect effect).	Acceptance
H2: Emotional intelligence has a moderating effect on the effect of mindfulness on moral metacognition (moderating).	Acceptance
H3: Emotional intelligence has a moderating effect on the indirect effect of mindfulness on moral decision-making attitude through moral metacognition (moderated mediation).	Not Accepted

Cognitive capacity is among the basic features that distinguish humans from other beings. Thanks to mindfulness, which is at the center of this capacity, individuals can keep their emotions and activities under control (Arslantürk & Şamyanlı, 2021). Mindfulness has an important place in learning and teaching processes, and when it is integrated into an effective education system, it allows students to both increase their academic achievement and make more progress towards self-realization. Considering the lack of mindfulness practices, it is stated that the studies on this subject aim to raise awareness and eliminate this deficiency (Ghanizadeh, Makiabadi, & Navokhi, 2019). In the reflection of awareness in the field of sports, it is stated that it will contribute to athletes achieving the performance goals they set (Thienot, 2013). In addition, it is stated that mindfulness training can be effective for athletes to perform at an optimal level (Thompson et al., 2011) and contribute to their ability to regulate their emotions (Hill & Updegraff, 2012; Gross et al., 2018; Yılmaz et al., 2024). In addition, it is also thought that mindfulness plays a role in the moral decision-making process. Cevahirlioğlu et al. (2024) stated in their study that as the level of mindfulness increases, effective decision-making skills also increase. It is pointed out that athletes with high levels of mindfulness can remain calmer in stressful situations and thus make more effective decisions. Similarly, Ruedy and Schweitzer (2010) state that individuals with high levels of mindfulness are more sensitive and sensitive about exhibiting morally inappropriate behaviors. As mindfulness embodies positive social values such as empathy and cooperation (Hafenbrack et al., 2021), it supports individuals to make positive decisions, reduces prejudices (Schindler & Friese, 2022), and contributes to the development of cognitive analysis skills (Berry et al., 2023).

In the contemporary education system, instead of transferring stereotyped and ready-made information to students, it is considered a primary goal that individuals can access the right information by conducting research, using this information effectively, managing their mental processes and developing high-level cognitive skills (Göldağ & Kanat, 2018). In addition, as individuals of the future, raising students equipped with cognitive skills such as increasing their thinking capacities, decision making and problem-solving to cope with the challenges of real life should be one of the main goals of the education system. Recent studies reveal that cognitive competencies such as new knowledge generation, awareness level and thinking skills are becoming increasingly important (Tuzcuoğlu, 2018). Metacognition, which evaluates events, processes, information and psychological structures related to the interpretation, organization and control of thought, includes the individual's self-awareness, conscious monitoring and the ability to regulate understanding (Wells & Cartwright-Hatton, 2004). Students with high metacognitive awareness can think more strategically, exhibit higher performance and realize more effective learning processes compared to those with low metacognitive awareness (Soyer & İnaler, 2024). Metacognition, which is thought to be developed through mindfulness-based training (Posner et al., 2015), also includes cognitive processes such as attention, memory, and control Pearman et al., 2020; Verhaeghen, 2021). While these processes affect the decision mechanisms of the individual, it is stated that the level of metacognition is one of the important factors in moral decision-making attitude (Miliken, 2018). It is stated that moral metacognition, a special field of metacognition, plays a mediating role between high mindfulness and psychological variables (e.g., decision-making and decision-making) (Deniz et al., 2017). In addition, it is stated that mindfulness-oriented mental experiences closely interact with morality and moral learning (Cheruvalath, 2019).

The self-regulation component of mindfulness creates a link between the control mechanism of an individual over his/her emotions and the concept of emotional intelligence. In this context, the individual's conscious management of his/her own emotions and behaviors and reflecting them outwardly also contributes to the correct understanding and synthesis of the actions of the individuals in front of him/her (Schutte & Malouff, 2011). It is stated that emotional intelligence is a fundamental element in the decision-making processes of individuals (Trinidad et al., 2004), individuals with high levels of emotional intelligence can make the right decisions by using their

psychological skills effectively and exhibit positive performance outcomes in both general and sporting contexts (Laborde et al., 2016). This is because individuals with high emotional intelligence not only have the ability to recognize and evaluate their own emotions but also show the ability to understand and evaluate the emotions of others (Libbrecht et al., 2014). It is stated that there is a significant relationship between cognitive processes and emotions (Reynolds, 2006) and there is a positive relationship between mindfulness and emotional intelligence (Koole, 2009). In addition, it has also been revealed that mindfulness supports individuals to make morally correct decisions by increasing self-esteem (Goldin & Gross, 2010).It is based on research findings and information from the literature;

Awareness training for parents, educators and community members, especially at an early age,

Various shows, cinema screenings and TV shows are organized by contacting the relevant institutions, and case studies and TV shows are organized on difficult-to-understand concepts such as cognition, metacognition and morality, and the subjects are brought to an understandable level,

Including more content on ethical values in education programs,

Conducting studies on different age groups, communities, etc. by adding different variables to obtain more reliable results in terms of social reality,

It is recommended to conduct studies using qualitative, mixed, longitudinal and single-person research models to investigate the results of mindfulness-based education, moral development and changes in emotional intelligence in depth.

Author Contributions

E.S: data collection. E.S.: data analysis and original draft preparation. E.S., E.T. and İ.U: review and editing. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in this study.

Data Availability Statement

Datasets are available through the corresponding author upon reason-able request.

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Conflicts of Interest

The authors unequivocally assert that this research was undertaken while devoid of any commercial or financial affiliations that might be perceived as potential conflicts of interest.

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Investigation of Kinesiophobia, Psychological Performance and Achievement Motivation Levels of Athletes

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ABSTRACT

The study aimed to investigate the relationships among athletes' levels of kinesiophobia, psychological performance, and achievement motivation, as well as the effects of variables such as gender, sport branch, sports license, and athletic background on these concepts. The research was conducted using quantitative methods and designed as a descriptive study, involving a total of 371 athletes. The "Tampa Kinesiophobia Scale", the "Psychological Performance Assessment in Sports Scale" and the "Sport-Specific Achievement Motivation Scale" were utilized for data collection. The data exhibited a normal distribution and were analyzed using parametric methods. No significant differences were observed concerning the gender variable. However, statistically significant differences were identified in kinesiophobia levels based on sport branch, in both kinesiophobia and achievement motivation levels based on sports license, and in achievement motivation levels based on athletic background. Additionally, a weak negative correlation was found between kinesiophobia and psychological performance, while a moderate positive correlation was identified between psychological performance and achievement motivation. In this context, it is suggested that gender, sport branch, sports license, and athletic background are significant variables influencing kinesiophobia, psychological performance, and achievement motivation, and that the relationships among these concepts may directly impact athletes' performance.

Keywords: Kinesiophobia; Psychological Performance; Achievement Motivation; Athletic Performance

INTRODUCTION

Kori et al. (1990) characterized kinesiophobia as "an intense, unfounded, and incapacitating horror of engaging in physical action and action, originating from a perception of sensitization pain injury or re-injury" (Knapik et al., 2011). When individuals believe that repeated exposure to specific stimuli will intensify their pain or distress, avoidance or withdrawal behaviors are likely to emerge. Over time, this can lead to the development of kinesiophobia. Evasion behavior, a result of this fear, is often considered a natural response disability; however, when extended, it negatively impacts physical and psychological functionalities (Larsson et al., 2014; Vincent et al., 2013). Fear of movement or reinjury subsequently results in restricted activities, long-term cessation of physical engagement, increased depression, and greater disability. Reducing every single day activity and functionalities capacities as a strategy to prevent pain often leads to reduced physical mobility, out of use, injury, and the chronic persistence of pain.

Kinesiophobia is linked to the amygdala and insula, which are important structures of the limbic system in the brain (Meier et al., 2016). These regions are the main anatomical centers where emotions are processed, which play a role in the regulation of fear and anxiety in particular, as well as memory processes and survival instincts (Phelps et al., 2001). Fear is a defense mechanism for survival that involves innate or learned emotional

responses. Learned fear can cause an individual to develop an avoidance or escape response to a specific situation, stimulus or event that the individual has experienced or observed in the past. In particular, situations that pose a potential threat such as pain or suffering may predispose individuals to the emergence of learned fear (Riccio et al., 2009).

Individuals with fear of re-injury may experience physical and psychological discomfort such as fatigue, exhaustion and pain by worrying about the possible consequences of movements. This may lead them to develop an over-controlled and idiosyncratic behavior model in order to avoid past negative experiences (Özkal et al., 2017; Uçurum & Kalkan, 2018).

In this context, Oğuz (2025) examined the effect of physical activity on kinesiophobia and quality of life and found that there was a decrease in kinesiophobia levels in repeated measurements taken at 0, 8 and 20 weeks. Although the result obtained has a positive effect on the individual, individuals with kinesiophobia often avoid higher levels of physical activity due to permanent and unnecessary sensitivity in their bodies. However, systematically increasing physical activity levels is typically considered a prerequisite for recovery. Studies have shown that individuals with high levels of kinesiophobia exhibit reduced physical performance and significant limitations in physical activity (Schmidt, 2003). Considering these limitations, it is important for athletes to have both physical and psychological well-being in order to improve their performance. In this context, the concept of psychological performance is an important factor that contributes to the psychology of athletes.

Since the 1930s, public and private institutions have employed various methods to assess both individual and organizational performance. During the 1970s, theoretical and empirical research on performance and its evaluation witnessed a significant rise. Despite this growing body of literature, a universally accepted definition of performance has yet to be established (Erkış, 2014).

Performance is a concept that assesses the outcomes of an activity, either qualitatively or quantitatively, in relation to a predetermined objective and structured plan. In other words, it refers to the extent to which a specific goal has been achieved (Özer, 2009). Additionally, performance encapsulates the attainment of planned objectives while also encompassing service efficiency, productivity, and resource optimization in production processes (Kubalı, 1999). It is further defined as the degree to which a task is completed under specified conditions or the results achieved by an employee in fulfilling assigned responsibilities within a given timeframe (Bayram, 2006).

Psychological performance in sports has emerged as one of the primary focuses of contemporary sports research. The influence of psychological science on preventing performance declines, maintaining peak performance, and surpassing standard levels of achievement has gained increasing significance. In this context, many sports clubs have incorporated sports psychologists, performance coaches, and other psychological counseling professionals into their organizational structures. Efforts to manage fluctuations in psychological performance and enhance it are no longer confined to physical parameters but increasingly involve the support of abstract psychological processes. Consequently, psychological performance is progressively being recognized as an equally critical component alongside physical performance in enhancing and sustaining athletic success (Aydoğan & Konaş, 2022).

Gucciardi and Gordon (2011) defined psychological performance as a set of internal values, attitudes, emotions, cognitions and behaviors that an individual develops through experience and that enable him/her to achieve his/her goals consistently. This concept shapes the individual's approach, reactions and evaluation processes in the face of both positive and negative perceived pressures, challenges and adversities.

Psychological performance is considered as both a personality trait and a state of mind. Mental resilience is a concept that includes being realistic, confident, humorous, tough, practical and having a mature temperament (Jones, 2002). However, in recent years, researchers have argued that it is insufficient to limit mental resilience only to reactions to difficulties. This is because this concept also encompasses factors that help the individual to maintain focus and motivation while structures and processes are running smoothly (Crust, 2009).

Mentally resilient individuals tend to be social and outgoing. Due to their capacity to stay composed and at ease, they are frequently more competitive and experience lower anxiety levels than others. Moreover, their high self-confidence and strong belief that they are in control of their own destiny contribute to them being less affected by competition and challenges (Horsburgh et al., 2009). Therefore, it can be said that these characteristics of psychological performance also interact positively with athletes' motivation.

A clear understanding of the concept of motivation is essential for achieving high

performance in a given task. Therefore, athletes who actively participate in sports or have an interest in athletic activities must comprehend and internalize this process. Motivation, which is rooted in the fundamental principles of sports and sports psychology, plays a crucial role in various aspects of an athlete's performance and development (Terzioğlu, 1992).

Athlete motivation is driven by two main factors: intrinsic and extrinsic motivation. Intrinsic motivation develops as a result of the athlete playing sports voluntarily and being satisfied with the feeling of winning. This type of motivation directly affects the athlete's drive to achieve success. Athletes with high intrinsic motivation prefer to be in environments where their performance is evaluated and they have the opportunity to achieve success. The attitudes and approaches of coaches are of great importance in increasing the achievement motivation of athletes. For this reason, coaches need to determine how to approach athletes and the effectiveness of their training methods by conducting various tests and measurements. This is due to the direct correlation between athlete motivation and performance (Yiğit, 2019).

Achievement motivation elucidates the reasons behind individuals' engagement in specific activities, the persistence of effort in completing challenging tasks, and how this effort is maintained over extended periods (Hayashi, 1996). Individuals with high need for achievement show more dedication to their work and try to improve their performance to a better level than other individuals. Research shows that people with a high need to succeed have a higher success rate than people with a low fear of failure (Cüceloğlu, 1999). The connection between the intensity of motivation and success is evidently crucial, particularly in the domain of sports. Individuals with lower motivation levels are more prone to experiencing failure. People generally tend to avoid uncomfortable situations while seeking environments that provide them psychological satisfaction and peace of mind. These avoidance and seeking tendencies play an important role in an individual's motivational structure. Whichever orientation becomes dominant, the individual's motivation is shaped in that direction. In this context, achievement motive may manifest itself in the form of avoiding failure or the tendency to succeed, while social motives may manifest themselves in the form of gaining respect or avoiding rejection (Aydın, 2001). In terms of athletes, achievement motive refers to intrinsic motivation towards competitions and is closely related to the concepts of self-confidence, strength, competence, and individual expertise. Individuals with high levels of these characteristics are thought to be more likely to participate in environments where they can achieve success compared to those with lower levels (Cox, 1990).

For athletes to achieve success, it is essential that they accurately assess their proficiency within their respective disciplines and possess a clear understanding of their skill levels. Upon reaching their targeted performance level, athletes may no longer feel compelled to strive for further improvement. Such circumstances can result in a balance between the risk of failure and the hope of success. While suboptimal performance may suffice in certain disciplines or competitions, it is generally perceived as a failure under standard conditions. Therefore, it is crucial for athletes to establish their own benchmarks for success within their specific fields (Mungan, 1995).

For coaches working in sports disciplines, the primary factor influencing an athlete's performance is the integration of physiological, biological, and psychological attributes that drive action. In this context, fostering athletes' motivation by considering their personality traits, belief systems, personal aspirations, and existing technical skills facilitates their development and enhances their ability to achieve their desired success (Çakıroğlu, 1987).

Misconceptions regarding the concept of motivation in sports activities are common. The first of these is the confusion between motivation and stimulation. Pre-competition or halftime speeches delivered by coaches to energize athletes are often mistakenly equated with motivation. The second misconception relates to positive thinking. While emphasizing hard work in both team and individual sports or acknowledging the presence of talented athletes can foster a positive mindset, it does not inherently constitute motivation (Tiryaki & Gödelek, 1997).

In light of these discussions, this study aims to examine the relationship between the concepts of kinesiophobia, psychological performance and achievement motivation, which may positively or negatively affect athletic performance. It will also examine how these concepts are influenced by variables such as gender, sport branch, sports license, and athletic background

METHOD

Research Model

This study was conducted using quantitative methods and designed as a descriptive study (Baltacı, 2018).

Study Group

This study was carried out on 371 athletes involved in either individual or team sports. The study was conducted with 371 volunteers, of which 174 (%46.9) were female and 197 (%53.1) were male. It was found that 187 (%50.4) of the athletes were involved in team sports, 257 (%69.3) had a sports license and 76 (%20.5) had "1-2 years" of sports experience. Non-probability convenience sampling was used to select the sample for the study. When evaluated using quantitative research methods, this study is descriptive in nature, examining the predictive effects of relationships between variables. The research was conducted in accordance with the Declaration of Helsinki after receiving approval from the Ethics Committee of the Health Sciences Institute of Ankara Yıldırım Beyazıt University on 01.07.2024 (Approval No.: 06/779).

Data Collection Tools

The demographic information of the individuals participating in the study and information on independent variables were obtained by using the "Personal Information Form", "Tampa Kinesiophobia Scale", "Psychological Performance Evaluation Scale in Sport" and "Sport Specific Achievement Motivation Scale".

Personal Information Form: This questionnaire, developed by the researchers, contains questions on the socio-demographic characteristics of the participating athletes. The Personal Information Form included questions about the participants' gender, sport branch, sport license and athlete background.

Tampa Kinesiophobia Scale: Tampa Kinesiophobia Scale was developed by Vlaeyen et al. (1995) and Turkish adaptation and validity and reliability analysis were conducted by Yılmaz et al. (2011). The tampa kinesiophobia scale is a 17-question scale to measure the fear of re-injury. The questions in the scale are evaluated in likert type between "1- Strongly Disagree" and "4-Strongly Agree". As a result of the questionnaire, the person receives a score between the lowest 17 and the highest 68 points according to his/her answers. The higher the scores obtained from the scale, the higher the person's fear of movement and injury (Vlaeyen et al., 1995). In this study, the Cronbach's alpha coefficient of the scale was found to be 0.71.

Psychological Performance Assessment in Sports Scale: Psychological Performance Assessment in Sports Scale developed by Aydoğan and Konaş (2022) was used. The scale was designed as a five-interval measurement tool. Participants' degree of agreement with the scale items was categorized as (1) "Never", (2) "Rarely", (3) "Sometimes", (4) "Mostly" and (5) "Always". The scale consists of 32 items and 3 sub-dimensions. In this study, the Cronbach Alpha coefficient of the scale was found to be 0.85.

Sport-Specific Achievement Motivation Scale: "Sport Specific Achievement Motivation Scale" was developed by Wills (1982) and Turkish adaptation and validity and reliability analysis were conducted by Tiryaki and Gödelek (1997). Scale aims to measure achievement motivation. The scale was designed as a five-interval measurement tool. The scale includes three sub-dimensions: showing strength, approaching success and avoiding failure. In this study, the Cronbach Alpha coefficient of the scale was found to be 0.83.

Procedure and Data Analysis

The data collected from the athletes were analysed by examining their frequencies, arithmetic means, standard deviations, t-tests, ANOVA analyses and pearson correlation coefficients. A decision regarding parametric and non-parametric conditions was made based on skewness and kurtosis values (Alpar, 2001). The skewness and kurtosis results of all sub-dimensions of the scales used in the study were examined and showed that all values fell within the ±3 range. Skewness and kurtosis values within this range indicated that a univariate normal distribution was achieved in the data (Büyüköztürk, 2014). The data were analysed using the IBM SPSS 23 software package, with a type I error rate of 5%. The statistical data collected are systematically presented in the findings section according to the purpose of the research.

Table 1. Skewness and Kurtosis Values Regarding the Normality of the Research Scales and Sub-Dimensions.

Variable	n	$\overline{X}$	ss	Min	Max	Skew	Kurt
Kinesiophobia	371	2.22	0.36	1.06	3.76	0.17	0.76
Physical and Cognitive Anxiety	371	2.58	0.81	1.00	5.00	0.32	-0.15
Motivation	371	4.03	0.86	1.00	5.00	-1.12	0.98
Self Confidence	371	3.48	0.82	1.00	5.00	-0.30	-0.05
Psychological Performance Level	371	3.14	0.52	1.00	4.69	-0.42	1.49
Showing Strength	371	3.37	0.45	2.08	4.83	0.12	0.51
Approaching Success	371	3.70	0.51	1.82	4.82	-0.54	0.99
Avoiding Failure	371	3.01	0.74	1.18	5.00	-0.32	-0.10
Sport Specific Achievement Motivation Level	371	3.41	0.44	1.90	4.75	0.09	0.89

n=Number of Participants, X=Mean, ss=Standard Deviation, Min.=Minimum, Max.=Maximum

In Table 1. it is seen that the Skewness Kurtosis values of the scales and sub-dimensions used in the research are within the range of ±3. Therefore, parametric analysis methods were used in the study (Alpar, 2001; Kalaycı, 2008).

RESULTS

Table 2. Results of t-Test for Kinesiophobia, Psychological Performance, and Achievement Motivation Mean Scores According to Athletes' Gender

Variable	Gender	n	$\overline{X}$	ss	sd	t	p
Kinesiophobia	Female Male	174 197	2.24 2.19	0.38 0.34	369	1.23	0.21
Psychological Performance	Female Male	174 197	3.13 3.15	0.52 0.51	369	0.25	0.80
Achievement Motivation	Female Male	174 197	3.39 3.43	0.40 0.46	369	0.90	0.36

n=Number of Participants, X=Mean, ss=Standard Deviation, sd=Degrees of Freedom, t=Type of Analysis, p=Significance Level p<0.05.

Table 2, the mean scores of the athletes regarding the levels of "Kinesiophobia", "Psychological Performance" and "Achievement Motivation" were analyzed according to the gender variable. It is seen that there is no statistically significant difference in the levels of "Kinesiophobia", "Psychological Performance" and "Achievement Motivation" (p>0.05). In addition, it is seen that the mean kinesiophobia scores of female athletes are higher than male athletes, while the mean scores of psychological performance and achievement motivation scores of male athletes are higher than female athletes.

Table 3. Results of t-Test for Kinesiophobia, Psychological Performance, and Achievement Motivation Mean scores by Athletes' Sport Branch

Variable	Sport Branch	n	$\overline{X}$	ss	sd	t	p
Kinesiophobia	Team Individual	187 184	2.25 2.18	0.36 0.36	369	1.97	**0.05**
Psychological Performance	Team Individual	187 184	3.12 3.16	0.51 0.52	369	0.79	0.42
Achievement Motivation	Team Individual	187 184	3.42 3.41	0.44 0.44	369	0.05	0.95

n=Number of Participants, X=Mean, ss=Standard Deviation, sd=Degrees of Freedom, t=Type of Analysis, p=Significance Level p<0.05.

Table 3, the mean scores of the athletes regarding "Kinesiophobia", "Psychological Performance" and "Achievement Motivation" levels were analyzed according to the sport branch variable. It is seen that there is a statistically significant difference in the levels of "Kinesiophobia" and the mean scores of team athletes on kinesiophobia are higher ($p<0.05$). There was no statistically significant difference in "Psychological Performance" and "Achievement Motivation" levels ($p>0.05$). In addition, it is seen that the mean psychological performance scores of individual athletes are higher than team athletes, and the mean achievement motivation scores of team athletes are higher than individual athletes.

Table 4. Results of t-Test for Kinesiophobia, Psychological Performance, and Achievement Motivation Mean scores by Athletes' Sport License

Variable	Sports Licence	n	$\overline{X}$	ss	sd	t	p
Kinesiophobia	Exists	257	2.25	0.36	369	2.99	**0.00**
	Nonexists	114	2.13	0.34			
Psychological Performance	Exists	257	3.17	0.51	369	1.48	0.13
	Nonexists	114	3.08	0.53			
Achievement Motivation	Exists	257	3.45	0.44	369	2.26	**0.02**
	Nonexists	114	3.34	0.43			

n=Number of Participants, X=Mean, ss=Standard Deviation, sd=Degrees of Freedom, t=Type of Analysis, p=Significance Level $p<0.05$.

Table 4, the mean scores of the athletes regarding "Kinesiophobia", "Psychological Performance" and "Achievement Motivation" levels were analyzed according to the variable of sports license. It is seen that there is a statistically significant difference in the levels of "Kinesiophobia" and "Achievement Motivation" and the mean scores of kinesiophobia, psychological performance and achievement motivation of athletes with sports license are higher ($p<0.05$). There was no statistically significant difference in "Psychological Performance" levels ($p>0.05$).

Table 5. ANOVA Results for Kinesiophobia, Psychological Performance, and Achievement Motivation Mean Scores by Athlete Sport Background

Variable	Athletic Background	n	$\overline{X}$	ss	sd	F	p
Kinesiophobia	0-12 Months	24	2.19	0.29	5	0.48	0.78
	1-2 Years	76	2.19	0.34			
	3-4 Years	75	2.27	0.38			
	5-6 Years	59	2.21	0.33			
	7-8 Years	65	2.19	0.38			
	9 Years +	73	2.22	0.39			
Psychological Performance	0-12 Months	24	2.94	0.62	5	0.97	0.43
	1-2 Years	76	3.11	0.46			
	3-4 Years	75	3.15	0.52			
	5-6 Years	59	3.20	0.48			
	7-8 Years	65	3.18	0.58			
	9 Years +	73	3.13	0.50			
Achievement Motivation	0-12 Months	24	3.21	0.46	5	3.32	**0.00**
	1-2 Years	76	3.40	0.39			
	3-4 Years	75	3.31	0.45			
	5-6 Years	59	3.42	0.41			
	7-8 Years	65	3.50	0.46			
	9 Years +	73	3.52	0.41			

n=Number of Participants, X=Mean, ss=Standard Deviation, sd=Degrees of Freedom, F=Type of Analysis, p=Significance Level $p<0.05$.

Table 5, the mean scores of the athletes in relation to "Kinesiophobia", "Psychological Performance" and "Achievement Motivation" based on the sport background variable. The results show that there is a statistically significant difference in the levels of "Achievement Motivation" ($p<0.05$). Although it was seen that the achievement motivation levels of athletes with a sports history of

nine years or more were higher, in the Post-Hoc test conducted to see which group the difference was due to, it was seen that this difference was due to athletes with a sports history of years or more, as in the averages. There was no statistically significant difference in the levels of "Kinesiophobia" and "Psychological Performance" (p>0.05).

Table 6. Pearson Correlation Coefficients Results Regarding Athletes' Levels Kinesiophobia, Psychological Performance and Achievement Motivation.

N=371	K	P.P	A.M
Kinesiophobia	1	-.232**	.038
Psychological Performance		1	.441**
Achievement Motivation			1

*p<0.05 (2-tailed)**p<0.01 (2-tailed)

Table 6 presents the results of the correlation analysis of the relationship between the total scores of "Kinesiophobia", "Psychological Performance" and "Achievement Motivation" of the participant athletes. In this context, a low level negative correlation was observed between kinesiophobia and psychological performance levels of athletes. However, it was also found that there was a positive moderate relationship between psychological performance and achievement motivation levels.

DISCUSSION AND CONCLUSION

This study examines the relationship between the concepts of kinesiophobia, psychological performance, achievement motivation, and their potential impact on athletic performance, with a view to establishing whether these factors may exert a positive or negative influence. Furthermore, the study considers the influence of additional variables, including gender, sport branch, sport license, athletic background on these concepts.

When kinesiophobia, psychological performance and achievement motivation levels were analyzed in terms of gender variable (Table 2.), it was seen that there was no statistically significant difference in kinesiophobia, psychological performance and achievement motivation of athletes (p>0.05). However, it is seen that the mean kinesiophobia of female athletes is higher than that of male athletes, and the mean psychological performance and achievement motivation of male athletes is higher than that of female athletes. In this context, this result shows that athletes' fear of injury, psychological performance and achievement motivation are at similar levels regardless of gender. When the studies in the literature were examined, it was seen that in parallel with our study, there were studies that did not obtain statistical difference in terms of gender in kinesiophobia levels (Kvist et al., 2005; Steffen er al., 2009), studies that did not obtain statistical difference in psychological performance levels (Şahan, 2007; Yıldız, 2019) and studies that did not obtain difference in terms of gender in achievement motivation levels (Aydoğdu et al., 2018; Kavas, 2018).

When kinesiophobia, psychological performance and achievement motivation levels were analyzed in terms of the sport branch variable (Table 3.), it was seen that there was a statistically significant difference in the kinesiophobia levels of the athletes (p<0.05). There was no statistically significant difference in psychological performance and achievement motivation (p>0.05). However, it is seen that the averages of kinesiophobia and achievement motivation of team athletes are higher than individual athletes, and the averages of psychological performance of individual athletes are higher than team athletes. In this context, this result shows that athletes who are interested in team sports are generally affected by the fear of injury due to the fact that it involves contact and bilateral struggle. When the studies in the literature are examined, it is seen that there are studies that obtained statistical differences in terms of the sport branch variable in kinesiophobia levels in parallel with our study (Weiss & Troxel, 2006).

When kinesiophobia, psychological performance and achievement motivation levels were examined in terms of sports license variable (Table 4.), it was seen that there was a statistically significant difference in kinesiophobia and achievement motivation levels of athletes (p<0.05). There was no statistically significant difference in their psychological performance (p>0.05). However, it is also seen that the averages of kinesiophobia, psychological performance and achievement motivation of athletes with a sports license are higher than those without a sports license. In this context, it is thought that this result is due to the fact that athletes with sports licenses feel the fear of injury during the preparation periods for competitions and during competition times, and that they can remain success-oriented despite this feeling. When the studies in the literature are

examined, it is seen that there are studies that obtained statistical differences in kinesiophobia levels in terms of sports license variable (Mutlu & Çakmak Yıldızhan, 2023) and achievement motivation variable (Kavas, 2018) in parallel with our study.

When kinesiophobia, psychological performance and achievement motivation levels were analyzed in terms of athletic background variable (Table 5.), it was seen that there was a statistically significant difference in the achievement motivation levels of the athletes ($p<0.05$). There was no statistically significant difference in kinesiophobia and psychological performance ($p>0.05$). However, it is also seen that the averages of kinesiophobia, psychological performance and achievement motivation of athletes with an athletic background of 3-4 years or more are higher than those with an athletic background of 3-4 years or less. In this context, this result is thought to be due to the fact that athletes with more athletic background feel that they are closer to achieving success in their sports branch. When the studies in the literature are examined, it is seen that there are studies that obtained statistically significant differences in achievement motivation in terms of athletic background variable in parallel with our study (Özgün et al., 2017; Filiz & Demirhan, 2018).

As a result, it was seen that the variables of gender, sport branch, sport license and athletic background may have a positive or negative effect on kinesiophobia, psychological performance and achievement motivation levels and performances of the athletes participating in the study. In addition, our study showed that the concepts of kinesiophobia, psychological performance and achievement motivation, which are thought to have a significant effect on athletes, are negatively and positively related to each other. In the light of these findings, it is suggested that considering the effects of kinesiophobia, psychological performance and achievement motivation on performance would be beneficial for athletes in their ongoing sport careers. In addition, it is thought that it would be advantageous to continue training and competitions in accordance with these concepts. In order to underline the potential advantages that athletes can gain from these concepts, it is suggested to organize meetings and training sessions specifically focused on these topics. In addition, it is also recommended that the relationships between the aforementioned concepts and other factors that may positively affect performance be investigated in terms of different age categories, sports branches or variables such as amateur and professional status. The study population of this research is male and female adult athletes and is limited to 371 athletes practicing team and individual sports branches. The results obtained in the study can only be generalized to people who have similar characteristics with the participants in the sample of the study.

Author Contributions

HAG: Study Design, HAG: Data Collection, HAG: Literature Search, HAG: Statistical Analysis and Original Draft Preparation, HAG: Review and Editing. Author have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The research was conducted in accordance with the Declaration of Helsinki after receiving approval from the Ethics Committee of the Health Sciences Institute of Ankara Yıldırım Beyazıt University on 01.07.2024 (Approval No.: 06/779).

Informed Consent Statement

Informed consent was obtained from all subjects involved in this study.

Data Availability Statement

Datasets are available through the corresponding author upon reason-able request.

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Conflicts of Interest

The author unequivocally assert that this research was undertaken while devoid of any commercial or financial affiliations that might be perceived as potential conflicts of interest.

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Evaluation of the Relationship between Athlete Self-Efficacy and Mental Toughness in Rugby Players

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ABSTRACT

This research aimed to examine the relationship between athlete self-efficacy and mental toughness of rugby athletes. The research sample consisted of 167 (79 female, 88 male) athletes over the age of 18 competing in the Turkish Rugby first league in 2022. To collect data in the research, "Personal Information Form", "Mental Toughness Inventory in Sports" and "Athlete Self-Efficacy Scale" were used. Frequency and percentage values, as well as parametric tests such as Pearson Correlation Test and independent samples t test, were used in statistical analyses. Statistical significance level was taken as $p<0.05$ in the analyses. According to the results obtained in the research, it can be said that there is a moderate positive relationship between the mental endurance of rugby athletes and their athlete self-efficacy. In addition, male rugby players' athletic self-efficacy and mental endurance are higher than female rugby athletes. While the mental endurance levels of rugby athletes do not vary according to age, the athlete self-efficacy levels of rugby players aged 23 and over are higher than those under the age of 23. Mental toughness and athlete self-efficacy levels do not differ according to educational status. As rugby players' athletic experience increases, their athlete self-efficacy and mental endurance also increase.

Keywords: Athlete, rugby, self-efficacy, mental toughness.

INTRODUCTION

It has been revealed by research that physical and technical performance alone are not sufficient to achieve high-level performance and success in sports (Yalcin & Turan, 2021), and that psychological skills, just like physical and technical skills, should be systematically studied and developed (Weinberg & Gould, 2015).

Rugby, one of the highly competitive sports, is a team sport that includes physical parameters such as endurance, strength, speed, agility, intense contact, and requires strategic thinking (Gabbett et al., 2007). Although rugby is a team sport, individual talents and skills are also very important. The psychological skills of rugby athletes are an important factor in achieving and maintaining high performance (Batista et al., 2019). This situation emphasizes that rugby athletes need to be physically and psychologically prepared for competitions.

Athlete self-efficacy is considered one of the important psychological factors affecting performance in sports. Athlete self-efficacy is the belief of athletes in their abilities to be successful in

the sport they are interested in (Koçak, 2020) and is a more complex structure than beliefs related to performing different situational tasks and motor skills such as hitting the ball hard and curved or hitting the opponent's field (Feltz et al., 2008). Athlete self-efficacy is an important variable that affects athletes' behaviors and thoughts in different situations (Yılmaz et al., 2020) and affects athletes' level of initiative and success in target behavior (Koçak & Çolak, 2024). With this feature, athlete self-efficacy guides athletes in determining goals and roadmaps (Taiwo, 2015). According to Koçak (2020), athletes with high athlete self-efficacy beliefs have higher levels of realistic goal setting, effort, resistance to difficulties, motivation and effective stress management.

Mental endurance is one of the important psychological skills thought to affect success in sports (Güven & Yazıcı, 2020). Mental endurance is known as the ability of an athlete to recover quickly in difficult situations, to minimize the negative effects of the stress they are exposed to, to maximize concentration, to adapt to the environment and psychological resilience (Altıntaş, 2015). Mental endurance is considered an important factor affecting performance in addition to the skills, technical and tactical characteristics of successful athletes (Gucciardi & Gordon, 2011). The concept of mental endurance, which was initially seen as an element of personality, has begun to be evaluated as an indicator of psychological performance for athletes in later periods (Güvendi et al., 2018).

When the relevant literature is examined, studies investigating the relationship between athlete self-efficacy and performance in sports (Singh et al., 2009; Valiante & Morris, 2013; Beattie et al., 2016) draw attention. Studies examining the relationship between mental toughness and performance (Newland et al., 2013; Cowden, 2017; Guszkowska & Wójcik, 2021) are also seen. However, it has been observed that studies examining athlete self-efficacy and mental toughness together (Brace et al., 2020; Aizava et al., 2023) are available in the international literature but are limited among national publications (Yıldız, 2017; Koçyiğit, 2022). On the other hand, studies examining the relationship between athlete self-efficacy and mental toughness in a sports branch such as rugby, where competition is at a high level and psychological factors can affect performance, could not be found. Based on this, it is thought that determining the relationship between athlete self-efficacy and mental toughness level in rugby athletes is important in terms of contributing to the literature.

This study aims to examine the relationship between rugby athletes' athlete self-efficacy and mental toughness. The research questions determined for this purpose are given below.

Is there a statistically significant relationship between rugby athletes' athlete self-efficacy and mental toughness?

Is there a statistically significant difference between rugby athletes' athlete self-efficacy and mental toughness according to gender?

Is there a statistically significant difference between rugby athletes' athlete self-efficacy and mental toughness according to age categories?

Is there a statistically significant difference between rugby athletes' athlete self-efficacy and mental toughness according to their education level?

Is there a statistically significant difference between rugby athletes' athlete self-efficacy and mental toughness according to their duration of sportsmanship?

Is there a statistically significant difference between rugby athletes' athlete self-efficacy and mental toughness according to whether they are national athletes or not?

METHOD

Research Model

This research was designed in the relational screening design, which is one of the quantitative research methods. Relational screening models are studies that examine the degree of change or existence of many variables together (Fraenkel & Wallen, 2009). The research was initiated with the permission of the Aksaray University Human Research Ethics Committee dated 25.04.2022 (Protocol No: 2022/02-52; Ethics Committee Decision Number: E-34183927-000-00000712396).

Study Group

The universe of the study consists of male and female athletes competing in the Turkish Rugby League. The sample of this study consists of 167 athletes who are over the age of 18 (20.10±4.82 years old) competing in the Turkish Rugby 1st League in 2022. The research sample was reached by random sampling method. Some demographic information of the sample group is summarized in Table 1.

Table 1. Personal characteristics of the athletes participating in the study

Variable	Category	n	Percentage %
Gender	Women	79	47,3
	Men	88	52,7
Age	18-22 age	111	66,4
	23 +	56	33,6
Educational Status	High School	104	62,3
	Undergraduate	63	37,7
Athlete Duration	1-3 years	134	80,2
	4 years +	33	19,8
Total		167	100,0

Table 1 shows that 47.3% of the athletes participating in the study were female, 52.7% were male; 111 participants were between the ages of 18-22, and 56 participants were over 23 years old.

Data Collection Tools

The research data were obtained using the survey technique. Personal Information Form, Athlete Self-Efficacy Scale and Mental Toughness Inventory in Sports were used to collect the data.

Personal Information Form: It was created by the researchers to determine the demographic characteristics of the athletes in the study sample. Questions were included regarding gender, age, education status, duration of sportsmanship and national sportsmanship status, which are thought to be effective on the dependent variables determined within the scope of the study.

Athlete Self-Efficacy Scale: The Athlete Self-Efficacy Scale developed by Koçak (2020) was used to evaluate the self-efficacy of rugby athletes. The scale is a 5-point Likert type and consists of 16 items in total. This scale is a 5-point Likert type and consists of the sub-dimensions of sports branch competence, psychological competence, professional thought competence and personality competence.

Mental Toughness Inventory in Sports: It was developed by Sheard et al. (2009) to determine the mental toughness levels of athletes and was adapted to Turkish by Altıntaş (Altıntaş & Koruç-Bayar, 2016). The inventory consists of 14 items and 3 sub-dimensions. In addition to general mental toughness, it was designed with three sub-dimensions, namely Confidence, Control and Continuity, and a 4-point Likert structure.

Analysis of Data

The data collected within the scope of the study were first examined in terms of descriptive statistics. Whether the data were suitable for normal distribution was evaluated with skewness-kurtosis and stem-leaf scatter. In the data set determined to have normal distribution, the Pearson correlation test was used to determine the relationship between athlete self-efficacy and mental toughness, and whether the participants' gender, age, education status, sports age, and national status variables differed according to their categories was analyzed with the independent groups t-test. SPSS-22 package program was used in the analysis of the data. In the study, $p<0.05$ was accepted as a statistically significant value.

RESULTS

Descriptive statistics such as arithmetic mean, standard deviation, median, skewness-kurtosis and Cronbach's Alpha of the dependent variables used in the study are summarized in Table2.

Table 2. Descriptive statistics on mental toughness and athlete self-efficacy

Scale	Dimensions	$\bar{X}$±S.S.	Median	Skewness	Kurtosis	Cr α
Mental Toughness	Scale total	2,90 ± 0,34	2,86	,348	,267	,734
	Confidence	3,03 ± 0,44	3,00	,259	-,127	,711
	Continuity	3,30 ± 0,42	3,25	-,246	-,165	,794
	Control	2,29 ± 0,59	2,25	,115	-,033	,687
	Scale total	3,75 ± 0,68	3,81	-,544	-,273	,892

Athlete Self-efficacy	Sport Discipline Efficacy	3,49 ± 0,87	3,50	-,487	-,075	,785
	Psychological Efficacy	3,95 ± 0,83	4,00	-,764	,267	,736
	Professional Thought	3,63 ± 0,79	3,75	-,251	-,464	,765
	Personality Efficacy	3,93 ± 0,77	4,00	-,533	-,381	,718

When the skewness and kurtosis coefficients of the dependent variables used in the study are examined, it is seen that the skewness and kurtosis coefficients for all variables are in the range of (-1, +1). In the literature, it is stated that the skewness and kurtosis coefficients between +1.5 and -1.5 (Tabachnick & Fidell, 2013) are sufficient to accept the existence of a normal distribution. Accordingly, it can be said that the data of this study conform to a normal distribution. In addition, the Cronbach's Alpha values obtained as a result of the reliability analysis conducted for the measurement tools showed that the scales can be used reliably in this sample.

According to the arithmetic mean values in Table 2, it can be said that rugby athletes generally received the highest score in the continuity sub-dimension of their mental toughness and the lowest score in the control sub-dimension. In terms of athlete self-efficacy, it is seen that the highest average is in the psychological competence sub-dimension and the lowest average is in the sports branch competence sub-dimension.

Pearson correlation analysis was conducted to determine the relationships between the mental toughness of athletes and athlete self-efficacy, and the findings are presented in Table 3.

Table 3. Evaluation of the relationship between mental toughness and athlete self-efficacy

Scales	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Confidence	1							
2.Control	,16*	1						
3. Continuity	,41**	,18*	1					
4.MT-Total	,78**	,65**	,67**	1				
5.SDE	,50**	,06	,46**	,47**	1			
6.PSE	,39**	,16*	,49**	,47**	,53**	1		
7.PTE	,29**	,09	,36**	,34**	,52**	,60**	1	
8.PE	,48**	,09	,39**	,45**	,60**	,71**	,61**	1
9. ASES-Total	,50**	,12	,51**	,52**	,80**	,85**	,81**	,87**

*p<0,05; **p<0,01; MT=Mental Toughness, ASES: Athlete Self-Efficacy Scale, SDE: Sports Discipline Efficacy, PSE: Psychological Efficacy, PTE: Professional Thought Efficacy, PE: Personality Efficacy

When the correlation matrix in Table 3 is examined, it is seen that there is a moderate, positive and statistically significant relationship (r=,52; p<0,01) between the total mental toughness (MT) and total athlete self-efficacy (ASES). Similarly, there are positive and statistically significant correlations between the MT and athlete self-efficacy sub-dimensions ranging from 0,34 to 0,47. There are positive correlations between the ASES and mental toughness sub-dimensions ranging from 0,12 to 0,51.

Whether there is a statistically significant difference between the athletic self-efficacy and mental toughness levels of rugby players according to gender was analyzed using an independent groups t-test. The results are summarized in Table 4.

Table 4. Comparison of mental toughness and athlete self-efficacy according to gender

Scale	**Dimension**	**Gender**	**n**	**$\bar{X}$±S.S.**	**t**	**p**
Mental Toughness	Scale total	Women	79	2,84 ± ,33	2,044	,043*
		Men	88	2,95 ± ,34		
	Confidence	Women	79	2,93 ± ,43	2,786	,006*
		Men	88	3,12 ± ,42		
	Continuity	Women	79	3,31 ± ,41	0,088	,930
		Men	88	3,30 ± ,44		
	Control	Women	79	2,24 ± ,58	1,087	,279
		Men	88	2,34 ± ,60		
	Scale total	Women	79	3,63 ± ,75	2,092	,038*

		Men	88	3,86 ± ,59		
Athlete Self-efficacy	Sport Discipline Efficacy	Women	79	3,26 ± ,98	3,180	,002*
		Men	88	3,69 ± ,71		
	Psychological Efficacy	Women	79	3,93 ± ,93	0,247	,805
		Men	88	3,97 ± ,73		
	Professional Thought Efficacy	Women	79	3,51 ± ,84	1,930	,055
		Men	88	3,74 ± ,73		
	Personality Efficacy	Women	79	3,83 ± ,88	1,576	,117
		Men	88	4,02 ± ,64		

*p<0,05

When the analysis results presented in Table 4 are examined, it is seen that there is a statistically significant difference in favor of male athletes according to the MT total scores (t=2,044; p=,043) and MT confidence dimension scores (t=2.786; p<0.05). There is no statistically significant difference in the continuity and control sub-dimensions of the mental toughness scale (p>0,05).

It is seen that there is a statistically significant difference in favor of male athletes according to the participants' ASES total scores (t=2,092; p<0,05) and the sport discipline efficacy dimension scores (t=3,180; p<0,05). There is no significant difference in the psychological efficacy, professional thought efficacy and personality efficacy dimensions of athlete self-efficacy according to gender (p>0,05).

The mental toughness and athlete self-efficacy levels of rugby athletes according to the age variable were compared with the independent groups t test and the findings are given in Table5.

Table 5. Comparison of mental toughness and athlete self-efficacy according to age

Scale	**Dimension**	**Age**	**n**	**$\bar{X}$±S.S.**	**t**	**p**
Mental Toughness	Scale total	18-22	111	2,89 ± ,34	0,039	,969
		23 +	56	2,90 ± ,32		
	Confidence	18-22	111	3,01 ± ,44	0,620	,536
		23 +	56	3,06 ± ,44		
	Continuity	18-22	111	3,34 ± ,41	1,752	,082
		23 +	56	3,22 ± ,46		
	Control	18-22	111	2,27 ± ,61	0,636	,525
		23 +	56	2,33 ± ,56		
Athlete Self-efficacy	Scale total	18-22	111	3,67 ± ,67	2,021	**,045***
		23 +	56	3,90 ± ,68		
	Sport Discipline Efficacy	18-22	111	3,35 ± ,88	2,847	**,005***
		23 +	56	3,75 ± ,80		
	Psychological Efficacy	18-22	111	3,91 ± ,81	0,840	,402
		23 +	56	4,03 ± ,88		
	Professional Thought Efficacy	18-22	111	3,57 ± ,75	1,358	,176
		23 +	56	3,75 ± ,86		
	Personality Efficacy	18-22	111	3,86 ± ,77	1,608	,110
		23 +	56	4,07 ± ,74		

*p<0,05

According to the analysis results in Table 5, it was determined that the mental toughness of rugby players did not show any statistically significant difference according to the age variable (p>0,05).

On the other hand, the athlete self-efficacy of rugby players aged 23 and over was significantly higher than those under 23 (t=2,021; p<0,05). A similar difference was found in the sub-dimension of sports discipline efficacy. The sports discipline efficacy of

athletes aged 23 and over was significantly higher than those under 23 (t=2,847; p<0,05). There was no significant difference in the psychological efficacy, professional thought efficacy and personality efficacy dimensions of athlete self-efficacy according to age (p>0,05).

The mental toughness and athlete self-efficacy of rugby players according to their educational status were compared with the independent groups t test (Table 6).

Table 6. Comparison of mental toughness and athlete self-efficacy according to educational status

Scale	Dimension	Education	n	$\bar{X}$±S.S.	t	p
Mental Toughness	Scale total	High School	104	2,92 ± ,33	0,937	,350
		Undergraduate	63	2,86 ± ,35		
	Confidence	High School	104	3,04 ± ,43	0,323	,747
		Undergraduate	63	3,01 ± ,44		
	Continuity	High School	104	3,36 ± ,42	2,437	,016*
		Undergraduate	63	3,20 ± ,42		
	Control	High School	104	2,29 ± ,60	0,204	,838
		Undergraduate	63	2,31 ± ,60		
Athlete Self-efficacy	Scale total	High School	104	3,72 ± ,67	0,760	,449
		Undergraduate	63	3,80 ± ,70		
	Sport Discipline Efficacy	High School	104	3,40 ± ,88	1,601	,111
		Undergraduate	63	3,63 ± ,85		
	Psychological Efficacy	High School	104	3,96 ± ,79	0,170	,865
		Undergraduate	63	3,93 ± ,90		
	Professional Thought Efficacy	High School	104	3,59 ± ,77	0,828	,409
		Undergraduate	63	3,70 ± ,83		
	Personality Efficacy	High School	104	3,92 ± ,77	0,760	,449
		Undergraduate	63	3,95 ± ,77		

*p<0,05; **p<0,01

According to Table 6, a significant difference was found between the mental toughness of the athletes according to the educational status variable in the continuity dimension of MT (t=2,437; p<0,05). Accordingly, the mental toughness of the athletes with a high school education level is higher than the athletes with a higher education level.

On the other hand, no significant difference was found in the MT scale total, confidence and control dimensions, and ASES and its sub-dimensions according to educational status (p>0.05).

The mental toughness of the rugby athletes and the athlete self-efficacy were compared with the independent groups t-test according to the sportsmanship duration categories, and the results are summarized in Table 7.

Table 7. Comparison of mental toughness and athlete self-efficacy according to duration of athletics

Scale	Dimension	Athletic duration	n	$\bar{X}$±S.S.	t	P
Mental Toughness	Scale total	1-3 years	134	2,89 ± ,33	2,944	,004*
		4 years +	33	3,05 ± ,34		
	Confidence	1-3 years	134	2,97 ± ,43	3,697	,000*
		4 years +	33	3,27 ± ,36		
	Continuity	1-3 years	134	3,29 ± ,44	0,557	,578
		4 years +	33	3,34 ± ,38		
	Control	1-3 years	134	2,26 ± ,59	1,412	,160
		4 years +	33	2,42 ± ,63		
Athlete Self-efficacy	Scale total	1-3 years	134	3,68 ± ,68	2,737	,007*
		4 years +	33	4,04 ± ,60		
		1-3 years	134	3,34 ± ,88	5,819	,000*

	Sport Discipline Efficacy	4 years +	33	4,07 ± ,56		
	Psychological Efficacy	1-3 years	134	3,92 ± ,85	0,965	,336
		4 years +	33	4,08 ± ,74		
	Professional Thought Efficacy	1-3 years	134	3,59 ± ,72	1,255	,211
		4 years +	33	3,79 ± ,93		
	Personality Efficacy	1-3 years	134	3,86 ± ,79	2,358	,020*
		4 years +	33	4,21 ± ,63		

*p<0,05

According to the analysis results presented in Table 7, rugby players with a sports age of 4 years and above have significantly higher mental toughness than rugby players with a sports age of 1-3 years (t=2,944; p<0,05). Again, in the MT confidence sub-dimension, rugby players with a sports age of 4 years and above have higher confidence levels than rugby players with a sports age of 1-3 years (t=3,697; p<0,05). There is no significant difference in the continuity and control dimensions (p>0,05).

According to Table 7, rugby players with a sports age of 4 years and above have higher athlete self-efficacy levels than those with a sports age of 1-3 years (t=2,737; p<0,05). A similar difference is also found in the dimensions of ASES sports discipline efficacy (t=5,819; p<0,05) and personality efficacy (t=2,358; p<0,05). There is no significant difference in the dimensions of psychological efficacy and professional thought efficacy (p>0,05).

DISCUSSION

When the findings obtained in this study were evaluated, it was determined that there was a significant relationship between athlete self-efficacy and mental toughness of high-level rugby athletes. This relationship shows that athlete self-efficacy and mental toughness increase and decrease together and in the same direction. Literature information supports the findings obtained in this study. For example, in studies conducted on athletes in different sports branches (Chen & Cheesman, 2013; Newland et al., 2013; Koçyiğit, 2022; Aizava et al., 2023; Koçak & Çolak, 2024), results were obtained indicating that athletes' self-efficacy can be a determinant for their mental toughness. This relationship between athlete self-efficacy and mental toughness was found to be largely valid on the basis of sub-dimensions. It was determined that there was no significant relationship between the sub-dimensions of athlete self-efficacy and the control sub-dimension of mental toughness, whereas the relationships between the sports branch and psychological competence sub-dimensions of the athlete self-efficacy scale and mental toughness were relatively higher.

When the gender variable findings of the study were examined, it was determined that there was a statistically significant difference in favor of male athletes in both athlete self-efficacy and mental toughness. It was determined that there was a significant difference in favor of male athletes in the sports branch of athlete self-efficacy and the confidence sub-dimensions of mental toughness. There are research results in the literature that are parallel to this finding (Demir & Çelebi, 2019; Kalkavan et al., 2020; Koç & Gençay, 2021; Şahinler & Beşler, 2021) and research results that are not similar (Ilhan, 2020; Sarı et al., 2020; Kocaekşi & Yıldırım, 2020; Ramolale et al., 2021).

No significant relationship was found between the mental toughness of rugby players and their age categories. Studies in the literature that did not find a significant correlation between mental toughness and age (Sarı et al., 2020) support this finding. However, there are studies reporting that the mental toughness of athletes varies according to age (Demir & Çelebi, 2019; Kalkavan et al., 2020; Ilhan, 2020; Şahinler & Beşler, 2021; Koç & Gençay, 2021). According to the age variable, it was determined that there was a significant difference between the athlete self-efficacy of rugby players, and that the athlete self-efficacy of athletes aged 23 and over was significantly higher than that of athletes under 23. In the literature, it is possible to come across studies reporting that athlete self-efficacy increases as age increases (Asan, 2023).

A significant difference was found in the continuity sub-dimension of mental toughness according to the educational status variable. It has been observed that athletes with secondary education have higher mental toughness than athletes with higher education. It is possible to come across studies in the literature that support this finding (Şahinler & Beşler,

2021) and contradict it (Sarı et al., 2020). It has been determined that there is no significant difference between the athlete self-efficacy according to the educational status variable of top-level rugby athletes.

According to the findings obtained in the study, rugby players with more than 4 years of athletic experience have higher mental toughness and athlete self-efficacy levels than those with less than 4 years. Guszkowska and Wójcik (2021) and Yarayan et al. (2018), stated that mental toughness increases as athletic experience increases. Similarly, Koçak (2019) and Koçak and Çolak (2024) reported a positive relationship between experience and self-efficacy in athletes.

As a result, there is a positive relationship between athlete self-efficacy and mental toughness in rugby players. Male rugby players have higher athlete self-efficacy and mental toughness. While the mental toughness levels of rugby players do not change according to age, the athlete self-efficacy levels of rugby players aged 23 and over are higher than those under 23. In addition, the mental toughness and athlete self-efficacy levels do not change according to educational status. As the athletic experience of rugby players increases, their athlete self-efficacy and mental toughness also increase.

Considering the research results and literature information obtained, studies can be conducted to increase the athlete self-efficacy and mental toughness levels of female and short-term athletic rugby players. On the other hand, since it is a new sport in Turkey, the number of athletes playing rugby at the elite level is low. One of the biggest limitations of this study is the small sample size despite reaching all high-level athletes. It is thought that research to be conducted especially on the youth athlete sample will be important in subsequent studies. Similar studies can be conducted with different sample sizes and different variables. Qualitative research methods can be used to obtain more in-depth information.

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The Relationship Between Leisure Satisfaction Levels and School Commitment of Physical Education and Sports School Students

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A B S T R A C T

This study aims to examine the relationship between leisure satisfaction and school commitment among students enrolled at Batman University's School of Physical Education and Sports. The research encompasses students from the Departments of Physical Education and Sports Teaching, Coaching Education, and Sports Management, including both regular and evening education programs. A total of 533 students participated. The study employed a correlational survey model, a type of quantitative research design. The Organizational Commitment Scale (Meyer & Allen, 1997) and the Leisure Satisfaction Scale (Beard & Ragheb, 1980) were utilized to assess students' school commitment and leisure satisfaction, respectively. The data were analyzed using SPSS. Tests such as t-test, ANOVA, and post-hoc analyses were conducted. The results showed significant differences in school commitment based on gender, age, income, and type of leisure activity, but not by department or duration of education. No significant differences were found in leisure satisfaction regarding demographic variables. However, a moderate, positive correlation was observed between school commitment and leisure satisfaction, suggesting that higher school commitment levels are associated with higher leisure satisfaction.

Keywords: Physical education and sport, leisure time, school commitment

INTRODUCTION

Physical education and sports comprise structured activities—such as games, sports, and gymnastics—designed to enhance individuals' physical and mental health, as well as their motor abilities. These activities are governed by rules that may vary depending on environmental conditions and the individual characteristics of participants. Sport, on the other hand, represents a more specialized and competitive form of physical education, where performance is shaped by technical, aesthetic, physiological, and psychological factors (Aracı, 2001).

The Industrial Revolution, often cited as the onset of modernity, significantly reshaped the perception and use of leisure time. With reduced reliance on manual labor and the formalization of working hours, individuals began to allocate more time for personal and recreational activities. Leisure thus emerged not only as a marker of modern life but also as a vital element influencing social and cultural identity, as well as modes of thought and living (Cunningham, 2016).

Over the years, numerous scholars—including sociologists, psychologists, and educators—have explored the concept of leisure from a variety of theoretical perspectives. In contemporary societies, whether industrialized or in transition, the meaning and value of leisure are closely intertwined with socio-cultural, economic, and political contexts. In addition, leisure has been linked to psychological constructs such as motivation, satisfaction, attitudes, and perceived barriers. It encompasses both the free time individuals possess, and the activities undertaken during that time (Gürbüz & Henderson, 2013).

Hung (2012) categorizes the benefits of leisure into three main dimensions: physical, psychological, and social. Physically, increased mechanization in modern life has led to sedentary lifestyles, which in turn have contributed to various health issues. Engaging in physical activity during leisure time is one effective means of counteracting these effects (Tel, 2008). Psychologically, well-organized leisure can help individuals detach from the stress of work and life, promoting mental well-being and personal happiness (Aydoğan & Gündoğdu, 2006). Socially, leisure activities fulfill the fundamental human need for socialization, a need that has persisted from prehistoric times to the present day (Aydoğan & Gündoğdu, 2006).

The concept of commitment is defined as an active—not passive—process that reflects an individual's investment of energy and engagement. In educational settings, commitment is evident when students concentrate, remain attentive, and willingly pursue tasks not as obligations, but as meaningful steps toward personal goals (Schlechty, 2011).

School commitment is widely recognized as a multidimensional construct, encompassing behavioral, emotional, and cognitive dimensions (Fredricks et al., 2004). Behavioral commitment involves participation in academic and extracurricular activities, success in school-related tasks, and reduced likelihood of school dropout. Emotional commitment refers to students' feelings of attachment to teachers, peers, and the school environment, as well as their willingness to engage in schoolwork. Cognitive commitment reflects students' self-directed learning strategies and perseverance, particularly in the face of academic challenges. Together, these dimensions provide a comprehensive understanding of students' school engagement and dedication.

METHOD

Research Model

This study employed a correlational survey design to examine whether a statistically significant relationship exists between leisure time satisfaction and the sub-dimensions of school commitment among students in regular and evening education programs within the Departments of Physical Education Teaching, Coaching Education, and Sports Management at our university.

A correlational survey design is a quantitative research method used to explore the presence and nature of relationships between two or more variables. It aims to identify whether changes in one variable are associated with changes in another, and if so, to determine the direction and strength of this relationship (Karasar, 2011).

Research Group

The participants of this study consisted of undergraduate students enrolled in the Departments of Physical Education and Sports Teaching, Coaching Education, and Sports Management at Batman University's School of Physical Education and Sports during the 2023–2024 academic year.

The population of this study consisted of 810 undergraduate students enrolled in the Departments of Physical Education and Sports Teaching, Coaching Education, and Sports Management at Batman University's School of Physical Education and Sports. The sample included 533 students selected from these departments.

Of the participants, 68.5% were male and 31.5% were female. In terms of age distribution, 35.1% were aged 17–20, another 35.1% were aged 21–24, 7.9% were aged 25–29, and 6.4% were aged 30 and above.

Regarding their fields of study, 42.2% of the participants were from Coaching Education, 19.9% from Physical Education and Sports Teaching, 11.6% from Sports Management (evening education), and 26.3% from Sports Management (regular education).

When examined by the length of enrollment, 13.5% had been studying for less than one year, 84.1% for one to four years, and 2.4% for five to seven years.

In terms of monthly income, 36.8% of the students reported an income of less than 500 TL, 40.3% between 501–1000 TL, 8.6% between 1001–1750 TL, 2.8% between 1751–3000 TL, and 11.4% above 3000 TL.

As for their leisure interests, 6.9% engaged in music-related activities, 76.5% in sports, 0.8% in artistic pursuits, 4.9% in outdoor or extracurricular activities, and 10.9% in other forms of recreation.

The detailed demographic distribution of the participants is presented in Table 1.

Table 1. Demographic Information of the Students

		Frequency	Percentage
Gender	Male	328	68,5
	Female	205	31,5
Age	Age 17 to 20	187	35,1
	Age 21 to 24	270	50,7
	Age 25 to 29	42	7,9
	30 years and older	34	64
Department	Coaching	225	42,2
	Physical Education and Sports Teaching	106	19,9
	Sports Management (evening education)	62	11,6
	Sports Management (mainstream education)	140	26.3
The Duration of Your Education at the University	Less than 1 year	72	13,5
	1 to 4 years	448	84,1
	5 to 7 years	13	2,4
Monthly Income	less than 500 TL	196	36,8
	501-1000 TL	215	40,3
	1001-1750 TL	46	8,6
	1751-3000 TL	15	2,8
	over 3000 TL	61	11,4
Leisure Activities	Musical activities	37	6,9
	Sports activities	408	76,5
	Artistic activities	4	0,8
	Outdoor Activities	26	4,9
	Other activities	58	10,9

Data Collection Tools

The data collection instrument used in this study consisted of three sections. The first section included seven questions designed to gather demographic information from the participants, including gender, age, department, type of study (regular or evening), duration of study, monthly income, and types of leisure activities they engaged in.

The second section comprised the Organizational Commitment Scale, originally developed by Meyer and Allen (1997) and adapted into Turkish by Wasti (2000), which was used to assess students' level of commitment to their university.

The third section included the Leisure Satisfaction Scale, developed by Beard and Ragheb (1980) and adapted to Turkish by Gökçe and Orhan (2011), aiming to measure the participants' satisfaction with their leisure time activities. In the scales included in the measurement tool, a five-item Likert-type scale was used (1. Strongly Disagree, 2. Disagree, 3. Neither Agree nor Disagree, 4. Agree, and 5. Strongly Agree).

Data Analysis

The normality test conducted to determine the appropriate analysis methods for the different hypotheses suggested in the research is shown in Table 2. Based on George and Mallery's (2003) statement that skewness and kurtosis values should vary between -2 and +2 for the data to be normally distributed; therefore, it was determined that school commitment and leisure satisfaction variables were normally distributed. T-test and ANOVA were performed because the data obtained from the scales showed mainstream distribution and post-hoc analysis was performed in cases of a significant difference. Additionally, a correlation analysis was performed to determine the relationship between leisure satisfaction and school commitment.

Table 2. Normality Test

	Average	Skewness	Kurtosis
School Commitment	2,8984	0,271	-0,110
Leisure Satisfaction	-0,745	-0,745	0,302

RESULTS

The t-test of the mean scores of the participants' school commitment and leisure satisfaction levels scale for gender variable is shown in Table 3.

Table 3. T-Test Results of School Commitment and Leisure Time Activity Satisfaction Levels by Gender Variable

	Gender	N	$\bar{X}$	S	sd	t	p
School Commitment	Female	205	2,69	0,78	531	-4,38	0,00*
	Male	328	3,03	0,88			
Leisure Satisfaction	Female	205	3,67	0,91	531	0,17	0,87
	Male	328	3,65	0,91			

***p<0.05**

The mean scores on the School Commitment Scale differed significantly by gender, t(531) = –4.38, p < 0.05. Specifically, male students (M = 3.03) demonstrated a significantly higher level of school commitment compared to female students (M = 2.69). However, no significant gender difference was found in the mean scores of the Leisure Activity Satisfaction Scale, t(531) = 0.17, p > 0.05.

Table 4 presents the descriptive statistics of the participants' school engagement and leisure time activities satisfaction levels for the age variable.

Table 4. Descriptive Statistic of School Commitment and Leisure Activities by Age Variable

	Age	N	$\bar{X}$	SS
School Commitment	Age 17 to 20	187	2,96	0,87
	Age 21 to 24	270	2,80	0,82
	Age 25 to 29	42	2,93	0,92
	30 years and older (D)	34	3,30	0,97
Leisure Satisfaction	Age 17 to 20	187	3,60	0,94
	Age 21 to 24	270	3,63	0,88
	Age 25 to 29	42	3,83	0,96
	30 years and older (D)	34	4,01	0,78

The highest mean scores on the school commitment scale were observed in participants aged 30 years and above (X=3.30) and the lowest in participants aged 21 to 24 years (X=2.80). The highest mean score on the leisure satisfaction levels scale was observed in participants aged 30 years and over (X=4,01), and the lowest mean score was observed in participants aged 17 to 20 years (X=3,60).

Table 5 presents the one-way variance test (ANOVA) conducted to understand whether the participants' levels of school engagement and leisure time satisfaction differ according to their ages.

Table 5. Anova Test Results of School Commitment and Leisure Satisfaction Levels by Age Variable

	Source of Variance	Total Sum of Squares	sd	Mean of Squares	F	Significant Difference p	
School Commitment	Intergroup	8,75	3	2,92	4,00	0,01*	D-B
	Intra-group	388,28	529	0,73			
	Total	397,03	532				
Leisure Satisfaction	Intergroup	6,40	3	2,14	2,62	0,06	
	Intra-group	431,11	529	0,82			
	Total	437,52	532				

In Table 5, a significant difference was observed when the mean school commitment scores of the participants were analyzed by age variable, F (3,529) =4.00, p<0.05. The participants over 30 (D)

(X=3.30) had higher levels of school dedication than the participants between 21 and 24 (B) (X=2.80), according to the post-hoc (tukey hsd) results, which were used to determine which age ranges this difference was between. There is no significant difference between the participants' leisure satisfaction levels and the age variable, F (3,529) =2.62, p>0.05.

Table 6 presents the descriptive statistics of the participants' levels of school engagement and leisure time satisfaction activities for the age variable.

Table 6. Descriptive Statistics of School Commitment and Leisure Activities by Department of Study Variable

	The Department Studied in	**N**	**X̄**	**SS**
School Commitment	Coaching (A)	225	2,84	0,87
	Physical Education and Sports Teaching (B)	106	3,00	0,82
	Sports Management (Evening Education)(C)	62	2,90	0,92
	Sports Management (Mainstream Education) (D)	140	2,90	0,97
Leisure Satisfaction	Coaching (A)	225	3,56	0,94
	Physical Education and Sports Teaching (B)	106	3,84	0,88
	Sports Management (Evening Education) (C)	62	3,70	0,96
	Sports Management (Mainstream Education) (D)	140	3,67	0,78

The mean scores of the school commitment scale were highest in physical education and sports teaching (X=3,00) and lowest in coaching education (X=2,84) according to the department variable. The highest mean score on the leisure satisfaction levels scale was seen in physical education and sports teaching (X=3,84) and the lowest mean score was seen in coaching education (X=3,56).

Table 7 presents the one-way variance test (ANOVA) conducted to understand whether the participants' levels of school engagement and leisure time satisfaction differ according to the department they study.

Table 7. Anova Results of School Commitment and Leisure Satisfaction Levels by Department of Study Variable

	Source of Variance	**Total Sum of Squares**	**sd**	**Mean of Squares**	**F**	**p**
School Commitment	Intergroup	1,94	3	0,65	0,87	0,46
	Intra-group	395,10	529	0,75		
	Total	397,03	532			
The highest mean Satisfaction	Intergroup	5,98	3	2,00	2,44	0,63
	Intra-group	431,54	529	0,82		
	Total	437,51	532			

In Table 7, when the mean scores of the participants' school commitment are examined in terms of the department they study, no significant difference is found, F (3,529) =0.87, p>0.05. Again, there is no significant difference between the participants' leisure satisfaction levels and the department where they study at, F (3,529) =2.44, p>0.05.

Table 8 presents the descriptive statistics of the participants' levels of school engagement and leisure time satisfaction activities for the variable of the duration of schooling.

Table 8. Descriptive Statistics of School Commitment and Leisure Activities by Duration of Education Variable

	Study Period	N	X̄	SS
School Commitment	less than 1 year (A)	72	3,20	1,09
	1 to 4 years (B)	448	2,85	0,81
	5 to 7 years (C)	13	2,83	0,94
Leisure Satisfaction	less than 1 year (A)	72	3,67	1,15
	1 to 4 years (B)	448	3,66	0,86
	5 to 7 years (C)	13	3,62	0,89

The highest mean scores of the school commitment scale were observed in the participants who studied less than 1 year (X=2,84) and the lowest in the participants who studied for 5 to 7 years (X=2,83). The highest mean score of the leisure satisfaction levels scale was observed in participants who studied less than 1 year (X=43,67) and the lowest mean score was seen in participants who studied for 5 to 7 years (X=3,62).

Table 9 shows the one-way variance test (ANOVA) conducted to understand whether the participants' levels of school engagement and leisure time satisfaction differ according to the duration of education.

Table 9. Anova Test Results of School Commitment and Leisure Satisfaction Levels by Duratin of Education

	Source of Variance	**Total Sum of Squaressd**		**Mean of Squares**	**F**	**p**
School Commitment	Intergroup	7,06	2	3,54	0,82	0,08
	Intra-group	389,95	530	0,74		
	Total	397,03	532			
The highest mean Satisfaction	Intergroup	0,24	2	0,12	0,15	0,95
	Intra-group	437,50	530	0,82		
	Total	437,52	532			

In Table 9, no significant difference was found when the mean scores of the participants' school commitment were analyzed by the duration of their education, F (2,530) =0.82, p>0.05. Similarly, no significant difference was found between the participants' leisure satisfaction levels and the duration of their education in their department, F (2,530) =0.15, p>0.05.

Table 10 presents the descriptive statistics of the participants' levels of school engagement and leisure time satisfaction activities for the monthly income variable.

Table 10. Descriptive Statistics of School Commitment and Leisure Activities by Montly Income Variable

	Monthly Income	**N**	**$\bar{X}$**	**SS**
School Commitment	less than 1000 TL (A)	196	3,02	0,88
	1001-2500 TL (B)	215	2,76	0,79
	2501- 4000 TL (C)	46	2,71	0,64
	4001-6000 TL (D)	15	2,67	0,53
	over 6000 TL (E)	61	3,19	1,11
Leisure Satisfaction	less than 1000 TL (A)	196	3,58	1,04
	1001-2500 TL (B)	215	3,72	1,21
	2501- 4000 TL (C)	46	3,45	1,25
	4001-6000 TL (D)	15	3,42	2,13
	over 6000 TL (E)	61	3,95	1,08

The highest mean scores of the school commitment scale were seen in the participants over 6000 TL (X=3,19) and the lowest in the participants between 4001 and 6000 TL (X=2,67) according to the monthly income levels of the students. The highest mean score of the leisure satisfaction levels scale was above 6000 TL (X=3,95) and the lowest mean score was seen in participants with 4001 to 600 TL (X=3,42).

Table 11 shows the one-way variance test (ANOVA) conducted to understand whether the participants' school engagement and leisure time satisfaction levels differ according to their monthly income levels.

Table 11. Anova Test Results of School Commitment and Leisure Satisfaction Levels by Income Level

	Source of Variance	**Total Sum of Squares**	sd	**Mean of Squares**	F	p	**Significant Difference**
School Commitment	Intergroup	14,22	4	3,56	4,90	0,01	D-E
	Intra-group	382,81	528	0,73			
	Total	397,03	532				
The highest mean Satisfaction	Intergroup	10,05	4	2,51	3,10	0,15	-
	Intra-group	427,48	528	0,81			
	Total	437,52	532				

In Table 11, a significant difference was observed when the mean school commitment scores of the participants were analyzed by income levels, F (4,528) =4.90, p<0.05. The participants in the range of 4001–6000 TL (D) (X=2,67) had lower school commitment levels than the participants in the range of over 6000 TL (E) (X=3,19), according to the results of the post-hoc (tukey hsd) conducted to determine which income groups this difference was between. There was no significant difference between the participants' leisure satisfaction levels and the monthly income variable F (4,528) =3.10, p>0.05.

Table 12 presents the descriptive statistics of the participants' levels of school engagement and leisure time satisfaction activities in terms of the type of leisure time activity.

Table 12. Descriptive Statistics of School Commitment and Leisure Activities by Leisure Time Activity Type Variable

	Leisure Activities	**N**	**$\bar{X}$**	**SS**
School Commitment	Musical activities	37	2,89	0,83
	Sports activities (B)	408	3,00	0,86
	Artistic activities (C)	4	2,53	0,42
	Outdoor Activities (D)	26	2,37	0,68
	Other activities (E)	58	3,46	0,79
Leisure Satisfaction	Musical activities	37	3,41	0,98
	Sports activities (B)	408	3,72	0,87
	Artistic activities (C)	4	3,94	0,65
	Outdoor Activities (D)	26	3,70	0,89
	Other activities (E)	58	3,31	1,03

The highest mean score of the school commitment scale was other activities (X=3,46) and the lowest mean score was outdoor activities (X=2,37) when analyzed according to the type of leisure activities performed by the students. The highest mean score of the leisure satisfaction levels scale was artistic activities (X=3,94), and the lowest mean score was other activities (X=3,31).

Table 13 presents the one-way variance test (ANOVA) conducted to understand whether the participants' levels of school engagement and leisure time satisfaction differ according to the type of leisure time activity.

Table 13. Anova Results of School Commitment and Leisure Satisfaction Levels by Leisure Activity Type

	Source Of Variance	Total Sum of Squares	sd	Mean of Squares	F	p	Significant Difference
School Commitment	Intergroup	22,78	4	5,70	8,04	0,01	B-D, D-E
	Intra-group	374,25	528	0,71			
	Total	397,03	532				
Leisure Satisfaction	Intergroup	11,23	4	2,81	3,48	0,08	-
	Intra-group	426,29	528	0,81			
	Total	437,52	532				

In Table 13, when the mean school commitment scores of the participants were analyzed in terms of the type of their leisure activities, a significant difference was observed F (4,528) =8.04, p<0.05. The study employed post-hoc (tukey hsd) analysis to ascertain which leisure activities caused the difference.

There was a relationship between non-space activities (D) (X=2,37), sports activities (B) (X=3,00), and other activities (E) (X=3,46), according to the findings of the post-hoc (tukey hsd) analysis conducted to determine which leisure time activities this difference is between.

Table 14 shows the correlation analysis for the relationship between school engagement levels and leisure time satisfaction for the question "Is there a significant relationship between the participants' school engagement levels and leisure time satisfaction?".

Table 14. Corelation Analysis Between School Commitment Leisure Satisfaction

Leisure Satisfaction		
School Commitment	Pearson Corr.	0,40
	p	0,00
	N	533,00

Table 14 indicates that there is a moderate, positive, and significant relationship between school commitment levels and leisure satisfaction, r=0.40, p<0.05. It can be said that as school commitment levels increase, leisure satisfaction also increases. Looking at the coefficient of determination (r^2=0.16), it can be said that 16% of the entire variance in school commitment levels is due to leisure satisfaction.

DISCUSSION AND CONCLUSIONS

This study aimed to determine whether different demographic factors had an impact on the level of school commitment and leisure satisfaction among students studying at Batman University School of Physical Education and Sports. In the first part of the study, conceptual information was provided regarding physical education and sports, leisure time, and school commitment. The second part included a detailed explanation of the methodology used in conducting the research. In the results section, the findings obtained from the analyses were presented.

A significant difference was observed between the school commitment levels of the participants and the gender variable. It was concluded that the average level of school commitment of male participants was higher than that of female participants. This finding is consistent with the study conducted by Gülle (2013), who found a significant difference between the commitment of physical education teachers and gender, with male teachers demonstrating higher levels of commitment than female teachers. Similarly, Sarı (2013), in his study examining the school commitment levels of high school students, concluded that male students had significantly higher levels of school commitment. On the other hand, Ceylan (2022) reported a significant difference in favor of female students in terms of school commitment levels. Likewise, in the study conducted by Savi (2011), it was determined that female students had significantly higher levels of school commitment compared to male students when the relationship between school commitment and gender was examined.

In our study, no significant difference was found between the participants' leisure satisfaction levels and the gender variable. This result is supported by the study conducted by Ardahan and Lapa (2010), in which no significant difference was found between leisure satisfaction and gender among university students. Similarly, Hadi et al. (2021), in their research on individuals participating in sports-

related recreational activities, concluded that there was no significant difference in the leisure satisfaction levels of male and female participants. However, in their study conducted with youth center members, Sönmezoğlu et al. (2014) found that female participants had higher levels of leisure satisfaction compared to males. This finding suggests that women may experience greater satisfaction from leisure activities, particularly in terms of education and relaxation.

In our study, a significant difference was found in the participants' mean school commitment scores with the age variable. According to the results of the analysis conducted to determine which age groups this difference was observed in, it was found that participants aged 30 years and above exhibited higher levels of school commitment compared to those aged between 21 and 24 years. In a similar vein, Savi (2011) determined that the participants' total mean scores on the school commitment scale differed significantly according to age. Likewise, Bellici (2015) concluded that students' school commitment varied significantly based on age.

In our study, no significant difference was found between the leisure satisfaction levels of the participants and the age variable. This result is in parallel with the findings of Erdemli and Yaşartürk (2020), who conducted a study with students from the physical education and sports teaching department and reported no significant difference between leisure satisfaction and age. Similarly, in his study conducted with university students, Yaşartürk (2019) found no significant relationship between leisure satisfaction and age, which aligns with the results of our research.

In our study, no significant difference was found when the mean scores of the participants' school commitment were analyzed in terms of the department they were studying in. It was observed that the highest mean scores on the school commitment scale belonged to students in the physical education and sports teaching department, while the lowest scores were observed in the coaching education department. In a study conducted by Direk (2020) with 240 participants studying at Akdeniz University, no significant difference was found between the department variable and school commitment levels. Similarly, in our study, no significant difference was found between the leisure satisfaction levels of the participants and their academic departments. The highest mean score for the leisure satisfaction scale was observed among students in the physical education and sports teaching department, whereas the lowest mean score was observed among students in the coaching education department. In support of this finding, Aktop and Göksel (2023) concluded that there was no significant difference between the leisure time interests of students in different departments within the faculty of sports sciences.

In our study, no significant difference was found when the mean scores of school commitment were analyzed based on the duration of the study. According to the results, the highest mean scores on the school commitment scale were observed among students who had been studying for less than one year, whereas the lowest mean scores were recorded among those who had been studying for five to seven years. aktosfaction scale was found among those who had studied for less than one year, and the lowest mean score was found among those who had studied for five to seven years.

In our study, a significant difference was found in the mean school commitment scores of participants based on their income levels. Post-hoc analyses conducted to determine which income groups differed revealed that participants earning between 4001–6000 TL had lower school commitment levels compared to those earning above 6000 TL. Similarly, Fulya (2019) found a significant relationship between income level and school commitment in her study with 1278 university students. However, in contrast to this finding, Arastaman (2009) reported that students with low and medium income levels had statistically significantly higher school commitment scores compared to students with high-income levels.

In our study, no significant difference was found between the participants' leisure satisfaction levels and their monthly income. The highest mean score for the leisure satisfaction scale was observed among participants with a monthly income above 6000 TL, while the lowest score was observed among those with an income between 4001–6000 TL. These findings are consistent with the study conducted by Erdemli and Yaşartürk (2020), who found no significant difference between students' leisure satisfaction and income levels. Similarly, Yiğit (2018), in a study involving 485 students, concluded that leisure satisfaction activities did not differ significantly according to income level.

In our study, a significant difference was found when the mean school commitment scores of participants were analyzed based on the types of leisure activities they engaged in. Post-hoc analyses revealed that this difference was observed among those participating in sports activities, extracurricular activities, and other types of activities. The highest mean scores on the school commitment scale were found among those participating in sports activities, while the lowest

scores were observed among those involved in extracurricular activities. On the other hand, no significant difference was found between participants' leisure satisfaction levels and the types of leisure activities they engaged in. The highest mean score for leisure satisfaction was observed in participants involved in artistic activities, while the lowest was observed in those engaged in other types of activities. Kara (2000) concluded in his study that participants generally placed greater importance on sports activities such as aerobics, step, fitness, and tennis. Similarly, Balcı (2003) found that university students preferred to spend their leisure time engaging in popular sports such as football, basketball, volleyball, table tennis, swimming, chess, and backgammon.

In conclusion, the literature indicates that studies on commitment within educational institutions have generally focused on the commitment of academic staff and teachers. However, considering that universities have a unique structure and that students represent the fundamental component of the academic environment, conducting studies on students' commitment to their universities can be just as valuable. Such research can contribute meaningfully to enhancing the effectiveness of university education and to better understanding student engagement.

Finally, our study revealed a moderate, positive, and statistically significant relationship between the participants' levels of school commitment and their levels of leisure satisfaction.

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Systematic Analysis of the Relationship Between Physical Activity Levels and Psychological Well-Being in Firefighters

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ABSTRACT

Firefighting is widely recognized as one of the most physically and psychologically demanding professions. Firefighters frequently operate in high-risk environments, facing traumatic events, extreme temperatures, heavy protective equipment, irregular shifts, and time-critical decisions. These challenges contribute to elevated rates of stress, burnout, and long-term health issues among personnel. Given this context, there is a growing interest in the role of physical activity as a mechanism not only for enhancing operational performance but also for mitigating psychological strain. This systematic review synthesizes data from 62 peer-reviewed studies published between 2000 and 2024, examining the relationship between physical activity and psychological well-being in firefighters. The analysis reveals that structured fitness interventions—particularly high-intensity functional training (HIFT)—are highly effective in improving both physiological and psychological outcomes. HIFT programs, which replicate real-life firefighting tasks, have been shown to enhance cardiovascular endurance, muscular strength, and agility. More importantly, they contribute significantly to reductions in stress, anxiety, depression, and symptoms of burnout. Overall, the findings underscore the essential role of individualized physical activity programs in enhancing both mental and physical health among firefighters. The review advocates for the implementation of multi-component wellness programs within fire departments, including regular fitness assessments, customized exercise protocols, and access to mental health resources. Moreover, the study identifies the need for future longitudinal research to assess the sustained impact of such interventions, particularly with respect to demographic variables such as age, gender, and years of service. In conclusion, physical activity should be considered not just a supportive health practice, but a critical determinant of occupational resilience and long-term well-being in the firefighting profession.

Keywords: Firefighters, physical activity, psychological well-being

INTRODUCTION

In today's world, fires and natural disasters pose significant threats at both individual and societal levels, profoundly impacting our lives. Factors such as climate change, increasing population density, and urbanization have contributed to the rising frequency and intensity of these events. From wildfires to earthquakes, floods to hurricanes, these disasters not only result in loss of life and property but also lead to long-term environmental and economic challenges. Preparing for such crises requires effective risk management, prevention, and response strategies, emphasizing the importance of building resilient communities to mitigate the impact of future disasters (IPCC, 2021; UNDRR, 2022).

Firefighting is a profession that combines extreme physical demands with high psychological stress. Firefighters frequently encounter traumatic incidents, long and irregular work hours, hazardous environments, and life-threatening situations (Guidotti, 1992; Ras et al., 2023). These factors can result in elevated levels of stress, burnout, and other

mental health challenges, making it imperative to investigate strategies to support their well-being.

Physical fitness is a cornerstone of firefighting performance. Studies have shown that higher levels of fitness are associated with better occupational performance and reduced risk of injuries (Michaelides et al., 2011; Antolini et al., 2015). Moreover, maintaining physical activity is crucial for mitigating psychological strain. For example, Crombez-Bequet and Legrand (2024) demonstrated that regular physical activity significantly reduces burnout symptoms, while Andrews et al. (2019) emphasized the mood-enhancing effects of structured exercise interventions.

The interplay between physical activity and psychological well-being is multifaceted. Physical activity serves as a buffer against occupational stress by enhancing resilience and improving mood (Klaperski & Fuchs, 2021; Holland-Winkler et al., 2024). Furthermore, fitness programs tailored to firefighting demands, such as high-intensity functional training (HIFT), have shown to improve both physical readiness and mental resilience (Chizewski et al., 2021; Perroni et al., 2021). These interventions not only enhance individual performance but also contribute to team effectiveness and overall safety.

The use of personal protective equipment (PPE) presents another dimension of complexity. While essential for safety, PPE increases physiological stress and can exacerbate feelings of discomfort and fatigue (Ramezanifar et al., 2023; Li et al., 2022). Adaptive training and recovery strategies are therefore critical to offset these challenges and promote long-term well-being (Kim & Lee, 2016; Papadakis et al., 2024).

Chronic health conditions, such as cardiovascular disease and musculoskeletal disorders, are prevalent among firefighters, further highlighting the need for regular physical activity. Research by Bond et al. (2022) and Glasgow et al. (2024) suggests that fitness plays a preventive role in combating these conditions, thereby supporting both physical and psychological health. In light of these findings, this paper systematically analyzes existing research to explore the relationship between physical activity levels and psychological well-being among firefighters. By identifying evidence-based strategies, we aim to inform interventions that enhance the health, performance, and job satisfaction of this critical workforce.

The purpose of this study is to systematically examine the role of physical activity in managing the high levels of physical and psychological stress experienced by firefighters, and its impact on occupational performance and overall health. Specifically, the study aims to evaluate the effectiveness of structured exercise programs—particularly high-intensity functional training (HIFT)—in improving firefighters' physical fitness, psychological resilience, stress levels, burnout symptoms, and long-term health outcomes. Furthermore, the study investigates the benefits of integrating psychological interventions (e.g., mindfulness, cognitive-behavioral therapy) into physical training routines, offering a holistic approach to mitigating the physical and mental burdens associated with the use of personal protective equipment (PPE) and other job-related demands.

METHOD

This analysis includes peer-reviewed studies published between 1990 and 2025. Databases searched include PubMed, Scopus, and Web of Science. The data obtained in the study are presented according to the year of the study, author names, the methods used, and the results obtained. Inclusion criteria included studies involving firefighters, examining physical activity levels and psychological outcomes, and providing quantitative or qualitative data. 62 studies were included based on relevance and methodological rigor.

Table 1. Studies Contucted on Firefighters

Authors	Year	Title	Method	Content	Results
Achmat, G., Malema, M., Erasmus, C., Kanaley, J., & Leach, L.	2024	Perceptions Experiences and Challenges of Physical Activity among Firefighters with Coronary Heart Disease Risk Factors in the City of Cape Town Fire and Rescue Services	Qualitative research, surveys, and interviews	Perceptions and challenges of physical activity among firefighters in Cape Town	Emphasized the importance of physical activity, highlighted challenges, and provided solutions
Allison, P., Tiesman, H. M., Wong, I. S., Bernzweig, D.,	2022	Working hours, sleep, and fatigue in the public safety sector: A	Review study	Working hours, sleep, and fatigue in the public safety sector	Long working hours and insufficient sleep lead to fatigue,

James, L., James, S. M., ... Patterson, P.D.		scoping review of the research			compromising safety
Andrews, K. L., Gallagher, S., & Herring, M. P.	2019	The effects of exercise interventions on health and fitness of firefighters: A meta-analysis	Meta-analysis	Effects of exercise interventions on health and fitness of firefighters	Exercise interventions significantly improve health and fitness levels of firefighters
Antolini, M. R., Weston, Z. J., & Tiidus, P. M.	2015	Physical fitness characteristics of a front-line firefighter population	Cross-sectional study	Physical fitness characteristics of front-line firefighters	High physical fitness levels among firefighters, with areas for improvement
Beitia, P., Stamatis, A., Amasay, T., & Papadakis, Z.	2022	Predicting firefighters' physical ability test scores from anaerobic fitness parameters & mental toughness levels	Cross-sectional study	Predicting firefighters' physical ability test scores from anaerobic fitness parameters and mental toughness levels	Anaerobic fitness and mental toughness significantly influence firefighters' physical ability test scores
Bond, C. W., Waletzko, S. P., Reed, V., Glasner, E., & Noonan, B. C.	2022	Retrospective longitudinal evaluation of male firefighter's body composition and cardiovascular health	Retrospective longitudinal study	Body composition and cardiovascular health of male firefighters	Improvement in body composition and cardiovascular health over time
Brown, A.	2014	Weight loss advice, diet, physical activity and obesity among firefighters	Doctoral dissertation	Weight loss advice, diet, physical activity, and obesity among firefighters	Emphasized the importance of diet and physical activity in combating obesity
Calavalle, A. R., Sisti, D., Mennelli, G., Andolina, G., Del Sal, M., Rocchi, M. B., ... & Stocchi, V.	2013	A simple method to analyze overall individual physical fitness in firefighters	Cross-sectional study	A simple method to analyze overall individual physical fitness in firefighters	The method was found effective in assessing firefighters' physical fitness
Chizewski, A., Box, A., Kesler, R. M., & Petruzzello, S. J.	2021	High intensity functional training (HIFT) improves fitness in recruit firefighters	Experimental study	High-intensity functional training (HIFT) improves fitness in recruit firefighters	HIFT significantly improved fitness levels of recruit firefighters.
Crombez–Bequet, N., & Legrand, F.	2024	Enhancing firefighters' mental health with exercise: Evaluating the effects of a 7-week long physical activity intervention on burnout and other well-being related constructs	Experimental study	Effects of a 7-week physical activity intervention on burnout and other well-being constructs in firefighters	Physical activity improved mental health and reduced burnout among firefighters
Darabont, D. C., Cioca, L. I., Bejinariu, C., Badea, D. O., Chivu, O. R., & Chiș, T. V.	2024	Impact of personal protective equipment use on stress and psychological well-being among firefighters: Systematic review and meta-analysis	Systematic review and meta-analysis	Impact of personal protective equipment use on stress and psychological well-being among firefighters	Significant effects of personal protective equipment use on stress and psychological well-being
Del Sal, M., Barbieri, E., Garbati, P., Sisti, D., Rocchi,	2009	Physiologic responses of firefighter recruits during a supervised live-fire work performance test	Experimental study	Physiologic responses of firefighter recruits during a supervised	The live-fire work performance test was effective in assessing physiological

M. B., & Stocchi,V.				live-fire work performance test	responses of firefighter recruits
D'Isabel, S., Berny, L. M., Frost, A., Thongphok, C., Jack, K., Chaudhry, S., ... & Smith, D. L.	2023	The effect of mild to moderate COVID-19 infection on the cardiorespiratory fitness of firefighters	Cross-sectional study	Effect of mild to moderate COVID-19 infection on the cardiorespiratory fitness of firefighters	COVID-19 infection had negative effects on the cardiorespiratory fitness of firefighters
Farinha, V. M., Borba, E. F. D., Santos, P. P. D., Ulbrich, A. Z., Ribeiro Jr, E. J. F.& Tartaruga,P.	2024	Association of Physical and Emotional Parameters with Performance of Firefighters: A Systematic Review	Systematic review	Association of physical and emotional parameters with performance of firefighters	Physical and emotional parameters significantly influence firefighters' performance
Frost, C., Toczko, M., Merrigan, J. J., & Martin, J. R.	2021	The effects of sleep on firefighter occupational performance and health: A systematic review and call for action	Systematic review	Effects of sleep on firefighter occupational performance and health	Sleep deprivation negatively affects firefighters' performance and health
Fyock-Martin, M. B., Erickson, E. K., Hautz, A. H., Sell, K. M., Turnbaugh, B. L., Caswell, S. V., & Martin, J.	2020	What do firefighting ability tests tell us about firefighter physical fitness? A systematic review of the current evidence	Systematic review	What firefighting ability tests tell us about firefighter physical fitness	Ability tests are effective in assessing firefighters' physical fitness
Games, K. E., Winkelmann, Z. K., McGinnis, K. D., McAdam, J. S., Pascoe, D. D., & Sefton, J.	2020	Functional performance of firefighters after exposure to environmental conditions and exercise	Experimental study	Functional performance of firefighters after exposure to environmental conditions and exercise	Environmental conditions and exercise affect firefighters' functional performance
Glasgow, T. E., Burch, J. B., Arcan, C., Reading, J. M., Theal, M., Cyrus, J. W., Fuemmeler, B.F.	2024	A Scoping Review of Firefighters' Health Behaviors and Chronic Diseases	Scoping review	Health behaviors and chronic diseases among firefighters	Identified key health behaviors and chronic diseases affecting firefighters
Gonzalez, D. E., Forbes, S. C., Zapp, A., Jagim, A., Luedke, J., Dickerson, B. L., ... & Kreider, R. B.	2024	Fueling the Firefighter and Tactical Athlete with Creatine: A Narrative Review of a Key Nutrient for Public Safety	Narrative review	Importance of creatine for firefighters and tactical athletes	Highlighted the benefits of creatine for firefighters and tactical athletes
Gordon, R. A., Sokoloski, M. L., Zumbro, E. L., Irvine, C. J., Oldham, M., & Morgan, N.	2024	Skeletal muscle fitness and physiology as determinants of firefighter performance and safety: a narrative review	Narrative review	Skeletal muscle fitness and physiology as determinants of firefighter performance and safety	Emphasized the importance of skeletal muscle fitness for firefighter performance and safety
Gross, S. L.	2021	Vaping, Smoking, Dual Use, and Stealth Vaping/Smoking Among First Responders: Law Enforcement, Firefighters, and Paramedics/Emergency	Experimental study	Vaping, smoking, dual use, and stealth vaping/smoking among first responders	Discussed the prevalence and impact of vaping and smoking among first responders

		Medical Technicians (EMT)			
Guidotti, T. L.	1992	Human factors in firefighting: ergonomic-, cardiopulmonary-, and psychogenic stress-related issues	Review study	Ergonomic, cardiopulmonary, and psychogenic stress-related issues in firefighting	Identified key human factors affecting firefighters' performance and well-being
Gutiérrez-Arroyo, J., García-Heras, F., Carballo-Leyenda, B., Villa-Vicente, J. G., Rodríguez-Medina, J.	2023	Effect of a high-intensity circuit training program on the physical fitness of wildland firefighters	Experimental study	High-intensity circuit training program on the physical fitness of wildland firefighters	High-intensity circuit training
Jitnarin, N., Poston, W. S., Haddock, C. K., & Jahnke, S. A.	2019	Tobacco use among women firefighters	Cross-sectional study	Examines tobacco use among women firefighters	Identified high prevalence of tobacco use and associated health risks
Kim, S., & Lee, J. Y	2016	Development of firefighting performance test drills while wearing personal protective equipment	Experimental study	Development of performance test drills for firefighters wearing PPE	Established effective drills to assess performance while wearing PPE
Klaperski, S., & Fuchs, R.	2021	Investigation of the stress-buffering effect of physical exercise and fitness on mental and physical health outcomes in insufficiently active men: A randomized controlled trial	Randomized controlled trial	Examines the stress-buffering effects of physical exercise and fitness	Found significant improvements in mental and physical health outcomes
Lajoso-Silva, N., Bezerra, P., Silva, B., & Carral, J. M. C.	2021	Functional training in Portuguese firefighters: impact of functional training with or without personal protective equipment	Experimental study	Impact of functional training with or without PPE on Portuguese firefighters	Functional training improved fitness, with or without PPE
Lane, A.	2024	Mental health outcomes and psychosocial risk factors in wildland firefighters and support staff	Doctoral dissertation	Examines mental health outcomes and psychosocial risk factors in wildland firefighters	Identified key risk factors and provided recommendations for mental health support
Lee, N., Kim, J. H., Kim, J. Y., & Kim, S. S.	2018	Association between workplace discrimination and depressive symptoms among firefighters in South Korea	Cross-sectional study	Examines the association between workplace discrimination and depressive symptoms among firefighters	Found a significant association between workplace discrimination and depressive symptoms
Li, J., Zhu, W., Wang, Y., & Li, J.	2022	Efficacy of cooling garments on exertional heat strain recovery in firefighters: a systematic review and meta-analysis	Systematic review and meta-analysis	Examines the efficacy of cooling garments on exertional heat strain recovery in firefighters	Cooling garments were found to be effective in reducing heat strain
Lindberg, A. S., Malm, C., Oksa, J., & Gavhed, D.	2014	Self-rated physical loads of work tasks among firefighters	Cross-sectional study	Examines self-rated physical loads of work tasks among firefighters	Identified high physical loads and associated risks

Lockie, R. G., Dulla, J. M., Higuera, D., Ross, K. A., Orr, R. M., Dawes, J. J., & Ruvalcaba, T. J.	2022	Body composition and fitness characteristics of firefighters participating in a health and wellness program: Relationships and descriptive data	Cross-sectional study	Examines body composition and fitness characteristics of firefighters in a health and wellness program	Found significant relationships between body composition, fitness, and job performance
Marcel-Millet, P., Cassirame, J., Eon, P., Williams-Bell, F. M., Gimenez, P., & Grosprêtre, S.	2023	Physiological demands and physical performance determinants of a new firefighting simulation test	Experimental study	Examines the physiological demands and physical performance determinants of a new firefighting simulation test	Identified key performance determinants and provided recommendations for training
Michaelides, M. A., Parpa, K. M., Henry, L. J., Thompson, G. B., & Brown, B. S.	2011	Assessment of physical fitness aspects and their relationship to firefighters' job abilities	Cross-sectional study	Examines the relationship between physical fitness aspects and firefighters' job abilities	Found significant relationships between physical fitness and job performance
Morris, C. E., & Chander, H.	2018	The impact of firefighter physical fitness on job performance: A review of the factors that influence fire suppression safety and success	Review study	Reviews the impact of physical fitness on firefighter job performance	Emphasized the importance of physical fitness for fire suppression safety and success
Nazari, G., Lu, S., & MacDermid, J. C.	2021	Quantifying physiological responses during simulated tasks among Canadian firefighters: a systematic review and meta-analysis	Systematic review and meta-analysis	Examines physiological responses during simulated tasks among Canadian firefighters	Identified key physiological responses and provided recommendations for training
Noll, L.	2024	Assessing the physical readiness of UK firefighters to return to work following injury: Developing a return-to-work tool	Doctoral dissertation	Develops a return-to-work tool for assessing the physical readiness of UK firefighters following injury	Provided a comprehensive tool for assessing physical readiness to return to work
Nowak, A., Molik, B., Wójcik, A., Rutkowska, I., Nowacka-Dobosz, S., Kowalczyk, M., & Marszałek, J.	2018	Physical Activity and Injuries Relating to Physical Fitness of Professional Firefighters	Cross-sectional study	Examines the relationship between physical activity, injuries, and physical fitness of professional firefighters	Found significant relationships between physical activity, injuries, and physical fitness
Papadakis, Z., Stamatis, A., & Beitia, P.	2024	Personal protective equipment impacts firefighters' anaerobic fitness	Cross-sectional study	Examines the impact of personal protective equipment on firefighters' anaerobic fitness	Found significant impacts of PPE on anaerobic fitness.
Pawlak, R., Clasey, J. L., Palmer, T., Symons, T. B., & Abel, M. G.	2015	The effect of a novel tactical training program on physical fitness and occupational performance in firefighters	Experimental study	Examines the effect of a novel tactical training program on physical fitness and occupational performance in firefighters	Found significant improvements in physical fitness and occupational performance.

Perroni, F., Cardinali, L., Cignitti, L., Gobbi, E., Grugni, F., Amatori, S., ... & Guidetti, L.	2021	Are there sex differences in physiological parameters and reaction time responses to overload in firefighters?	Cross-sectional study	Examines sex differences in physiological parameters and reaction time responses to overload in firefighters	Found significant sex differences in physiological parameters and reaction time responses.
Perroni, F., Guidetti, L., Cignitti, L., & Baldari, C.	2014	Psychophysiological Responses of Firefighters to Emergencies: A Review	Review study	Reviews psychophysiological responses of firefighters to emergencies	Identified key psychophysiological responses and provided recommendations for training.
Ramezanifar, S., Shakiba, Z., Pirposhteh, E. A., Poursadeghiyan, M., & Sahlabadi, A. S.	2023	The effects of personal protective equipment on heart rate, oxygen consumption and body temperature of firefighters: A systematic review	Systematic review	Examines the effects of personal protective equipment on heart rate, oxygen consumption, and body temperature of firefighters	Found significant effects of PPE on heart rate, oxygen consumption, and body temperature.
Ras, J., Botha, J., Burger, Y., Ras, W., & Leach, L.	2024	Knowledge and behaviours regarding physical activity of firefighters in the city of cape town fire and rescue service–A cross-sectional study	Cross-sectional study	Examines knowledge and behaviours regarding physical activity of firefighters in Cape Town	Identified key knowledge gaps and provided recommendations for improving physical activity
Ras, J., Kengne, A. P., Smith, D. L., Soteriades, E. S., November, R. V., & Leach, L.	2022	Effects of cardiovascular disease risk factors, musculoskeletal health, and physical fitness on occupational performance in firefighters—A systematic review and meta-analysis	Systematic review and meta-analysis	Examines the effects of cardiovascular disease risk factors, musculoskeletal health, and physical fitness on occupational performance in firefighters	Found significant effects of cardiovascular disease risk factors, musculoskeletal health, and physical fitness on occupational performance
Ras, J., Smith, D. L., Kengne, A. P., Soteriades, E. S., & Leach, L.	2023	Physical fitness, cardiovascular and musculoskeletal health, and occupational performance in firefighters	Cross-sectional study	Examines the relationship between physical fitness, cardiovascular and musculoskeletal health	Found significant relationships between physical fitness, cardiovascular and musculoskeletal health, and occupational performance
Ras, J., Smith, D. L., Soteriades, E. S., Kengne, A. P., & Leach, L.	2022	A pilot study on the relationship between cardiovascular health, musculoskeletal health, physical fitness and occupational performance in firefighters	Pilot study	Examines the relationship between cardiovascular health, musculoskeletal health, physical fitness, and occupational performance in firefighters	Firefighters with higher levels of physical fitness demonstrate better musculoskeletal health and improved job performance
Rosner, B.	2024	A pilot study on the relationship between cardiovascular health, musculoskeletal health, physical fitness and occupational	Pilot study	Examines the relationship between cardiovascular health, musculoskeletal health, physical	Firefighters with higher levels of physical fitness demonstrate better musculoskeletal health and

		performance in firefighters		fitness, and occupational performance in firefighters	improved job performance
Rosner, B.	2024	The impact of human performance initiatives in improving physical readiness and resiliency in firefighters	Review	Discusses initiatives aimed at improving physical readiness and resiliency in firefighters	Highlights the importance of targeted human performance initiatives in enhancing firefighter readiness and resilience
Ruby, B. C., Coker, R. H., Sol, J., Quindry, J., & Montain, S. J.	2023	Physiology of the wildland firefighter: Managing extreme energy demands in hostile, smoky, mountainous environments	Research article	Focuses on the physiological challenges faced by wildland firefighters in extreme environments	Wildland firefighters face extreme energy demands that require tailored fitness and nutrition strategies
Schmit, M., & Debeliso, M.	2019	The relationship between firefighters' physical performance characteristics and simulated firefighting demands	Research article	Explores how physical performance characteristics align with firefighting task demands	Physical performance characteristics significantly influence the ability to meet simulated firefighting demands
Serrano-Ibanez, E. R., Corras, T., Del Prado, M., Diz, J., & Varela, C.	2023	Psychological variables associated with post-traumatic stress disorder in firefighters: A systematic review	Systematic review	Examines psychological factors linked to PTSD in firefighters	Identifies key psychological variables contributing to PTSD and suggests strategies for mitigation
Sheaff, A. K., Bennett, A., Hanson, E. D., Kim, Y. S., Hsu, J., Shim, J. K., ... & Hurley, B. F.	2010	Physiological determinants of the candidate physical ability test in firefighters	Research article	Analyzes the physiological determinants of physical ability tests for firefighters	Identifies critical physiological factors that predict performance in physical ability tests
Skinner, T. L., Kelly, V. G., Boytar, A. N., Peeters, G. G., & Rynne, S. B.	2020	Aviation rescue firefighters' physical fitness and predictors of task performance	Research article	Investigates physical fitness and its impact on task performance in aviation rescue firefighters	Physical fitness is a strong predictor of task performance in aviation rescue scenarios
Soteriades, E. S., Smith, D.L., Tsismenakis, A. J., Baur, D. M., & Kales, S. N.	2011	Cardiovascular disease in US firefighters: A systematic review	Systematic review	Reviews the prevalence and risk factors of cardiovascular disease in US firefighters	Cardiovascular disease is a leading health concern among US firefighters, requiring targeted prevention strategies
Stone, B. L., Alvar, B. A., Orr, R. M., Lockie, R. G., Johnson, Q. R., Goatcher, J., & Dawes, J. J.	2020	Impact of an 11-week strength and conditioning program on firefighter trainee fitness	Intervention study	Evaluates the effectiveness of a structured strength and conditioning program	The program significantly improved fitness levels in firefighter trainees
Taborri, J., Pasinetti, S., Cardinali, L.,	2021	Preventing and monitoring work-related diseases in	Literature review	Reviews sensor-based systems for monitoring and	Sensor-based systems hold promise for

Perroni, F., & Rossi, S.		firefighters: A literature review on sensor-based systems and future perspectives in robotic devices		preventing work-related diseases in firefighters	preventing and monitoring occupational diseases
Windisch, S., Seiberl, W., Schwirtz, A., & Hahn, D.	2017	Relationships between strength and endurance parameters and air depletion rates in professional firefighters	Research article	Explores the relationship between physical fitness parameters and air consumption rates during firefighting tasks	Strength and endurance significantly impact air depletion rates in firefighting tasks
Wohlgemuth, K. J., Conner, M. J., Tinsley, G. M., Palmer, T. B., & Mota, J. A.	2024	Strategies for improving firefighter health on-shift: A review	Review	Discusses strategies to enhance firefighter health during shifts	Emphasizes the importance of on-shift interventions to improve health and performance
Xu, D., Song, Y., Meng, Y., István, B., & Gu, Y.	2020	Relationship between firefighter physical fitness and special ability performance: Predictive research based on machine learning algorithms	Predictive research	Analyzes the relationship between physical fitness and special ability performance in firefighters using machine learning	Machine learning algorithms effectively predict special ability performance based on physical fitness metrics
Xu, H., Zhang, L., Jin, Z., Cao, B., Wang, A., Liu, Z., & Wang, F.	2025	Physiological and perceptual responses of firefighters wearing protective clothing under various training environment and activity conditions	Research article	Investigates physiological and perceptual impacts of protective clothing in different training scenarios	Protective clothing significantly affects physiological responses and performance in varied training environments
Zare, S., Hemmatjo, R., Allahyari, T., Hajaghazadeh, M., Hajivandi, A., Aghabeigi, M., & Kazemi, R.	2018	Comparison of the effect of typical firefighting activities, live fire drills, and rescue operations at height on firefighters' physiological responses and cognitive function	Comparative study	Compares the physiological and cognitive effects of different firefighting activities	Different firefighting activities have distinct impacts on physiological responses and cognitive function

DISCUSSION AND CONCLUSION

It is noteworthy that studies on fires and natural disasters have increased significantly after 2010. This trend can be attributed to the growing visibility of the impacts of global climate change, the increasing frequency and in tensity of natural disasters, and the complexities brought about by urbanization and population growth. Particularly in the last decade, scientific and technological advancements have enabled more comprehensive and interdisciplinary research on disaster management, the effects of climate change, and resilience to crises. Moreover, international initiatives such as the United Nations' Sustainable Development Goals and reports published by the IPCC have heightened the importance given to these issues, leading governments, NGOs, and academic institutions to allocate more resources to this field. Studies conducted during this period play a critical role in providing the scientific foundation for policies aimed at mitigating the effects of disasters and building more resilient communities.

Given the increasing focus on disaster resilience, the findings of this analysis underscore the pivotal role of physical activity in enhancing both the physical and psychological well-being of firefighters. The findings of this analysis underscore the pivotal role of physical activity in enhancing both the physical and psychological well-being of firefighters. Physical activity serves as a critical intervention to mitigate stress, reduce burnout, and improve resilience. For instance, studies such as Crombez-Bequet and Legrand (2024) and Klaperski and Fuchs (2021) demonstrate how structured exercise interventions act as stress buffers, directly improving mental health outcomes.

Incorporating elements such as strength training, cardiovascular exercises, and flexibility routines can address the multifaceted physical demands of firefighting. Michaelides et al. (2011) linked higher physical fitness levels to enhanced decision-making abilities and lower stress during emergency situations. Moreover, studies by Lockie et al. (2022) and Papadakis et al. (2024) highlighted the correlation between anaerobic fitness and better handling of high-pressure scenarios, reducing the psychological toll.

Programs tailored to the specific occupational needs of firefighters, such as those integrating live-fire drills or equipment handling, further optimize outcomes. Ramezanifar et al. (2023) emphasized that functional training combined with simulated firefighting activities helps participants acclimate to real-life stressors, mitigating anxiety and improving confidence. Similarly, studies by Ras et al. (2022) and Ras et al. (2023) underscored the importance of regular fitness assessments to monitor progress and adapt programs to evolving physical and mental requirements.

Mental health benefits are another critical outcome of structured fitness programs. Serrano-Ibanez et al. (2023) reported a significant reduction in post-traumatic stress disorder (PTSD) symptoms among firefighters engaging in regular exercise. Programs combining physical activity with mindfulness or relaxation techniques showed additional efficacy in managing occupational stress (Holland-Winkler et al., 2024).

Lastly, innovative approaches such as virtual reality-based fitness training and sensor-based monitoring systems are gaining traction. Taborri et al. (2021) suggested that these technologies not only enhance physical training efficiency but also provide real-time feedback to address mental well-being, further bridging the gap between physical activity and psychological resilience.

The integration of high-intensity functional training (HIFT) has proven to be an effective strategy for improving job-specific fitness and psychological resilience, as highlighted by Chizewski et al. (2021) and Michaelides et al. (2011). These programs are essential for preparing firefighters to meet the physical and mental demands of their profession, particularly under high-pressure scenarios.

However, the impact of personal protective equipment (PPE) on stress and physical strain remains a challenge. Li et al. (2022) emphasize the need for adaptive strategies, such as cooling garments and ergonomically designed PPE, to alleviate these burdens. Incorporating such innovations into regular training can help reduce discomfort and enhance overall well-being.

Long-term health outcomes, including the prevention of chronic conditions, also rely heavily on maintaining physical activity levels. Bond et al. (2022) and Glasgow et al. (2024) provide compelling evidence for the role of fitness in managing cardiovascular and musculoskeletal health, further reinforcing its importance.

Psychological well-being is equally influenced by physical activity. Serrano-Ibanez et al. (2023) and Lane (2024) highlight how regular exercise, combined with mental health interventions, significantly reduces PTSD symptoms and improves overall resilience. Such integrated approaches are critical for fostering a healthier and more effective workforce.

While PPE is essential for firefighter safety, its physical and psychological burdens necessitate adaptive training strategies and ergonomic innovations. Li et al. (2022) documented the physiological burden of PPE, such as increased heart rate and oxygen consumption. Adaptive training programs, as described by Kim and Lee (2016), can help mitigate these effects.

Soteriades et al. (2011) and Glasgow et al. (2024) reported high rates of chronic conditions, such as cardiovascular disease, among firefighters. Regular physical activity, as shown by Bond et al. (2022) and Ras et al. (2023), plays a preventive role. Furthermore, Ras et al. (2022) emphasized the association between fitness, cardiovascular health, and occupational performance.

Serrano-Ibanez et al. (2023) and Lane (2024) explored psychological factors such as post-traumatic stress disorder and psychosocial risk. Structured fitness programs, combined with mental health interventions, were shown to reduce these risks.

The relationship between physical activity and psychological well-being in firefighters is well-established. Structured fitness programs not only enhance operational readiness but also improve mental health outcomes. Future research should explore long-term interventions and the role of organizational support in promoting firefighter well-being.

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A.C.: data collection. A.C., N. M.: data analysis and original draft preparation. N. M.: review and editing. All authors have read and agreed to the published version of the manuscript.

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Researchers do not have any personal or financial conflicts of interest with other people and institutions related to the research.

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Review of Studies in the Field of Sports Management and a Comparison with Türkiye

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ABSTRACT

This research aims to examine the bibliometric analysis of articles on sports management in the Web of Science (WoS) database, to reveal the perspective on sports management and to make a comparison specific to Türkiye. Firstly, 670 research articles on sports management were accessed from the WoS database and the data were analysed with the VOSviewer package program. As a result of the analysis, when the distribution of articles on sports management by years was examined, data was obtained as of 1992 and publications were seen to peak in 2021, and parallel declines were seen in publications in 2022 and 2023. According to the examination of citation data related to the subject of sports management, the most cited article with 137 citations "Sport-based entrepreneurship: Towards a new theory of entrepreneurship and sport", the most cited researcher with 3 publications and 166 citations "Ratten, Vanessa", the journal with the most publications (3) "Retos-nuevas Tendencias en Education Fisica Deporte", the journal with the most citations (137) "International Entrepreneurship and Management Journal", the institution with the most publications (2) "Deakin Grad Sch Business", and the institution with the most citations (137) was "Duquesne Univ". The highest level of collaboration between institutions was seen between "Karamanoğlu Mehmet Bey University" and "Rmit Univ". When looking at the countries with the most publications and citations, Spain was the country with the most publications (87) and the USA was the country with the most citations (616). In the common keyword network, the densest cluster with 5 keyword networks was the yellow cluster and the sparseest cluster with 2 keyword networks was the brown cluster. In the co-citation network of the authors, the densest red clusters were found with 12 clusters, and the least dense turquoise clusters were found with 3 clusters. As a result, it has been seen that there are many studies on sports management and that interest in the subject has increased. When looking at Türkiye specifically, it is seen that it ranks 5th among the countries with the most publications, with 29 publications and 100 citations. In line with the content analysis, it was concluded that there were many publications in the field of sports management in Türkiye, but they did not have sufficient impact in terms of content and scope.

Keywords: Sports management, Common keyword, Dense cluster, Co-citation

INTRODUCTION

Nowadays, sports are an important element that enables people to live healthy, quality, and balanced lives. Sports is also an area of activity that is good for people's psychological, mental, and spiritual health. Sports and their operations are used as a soft power element that triggers social dynamics and covers a multifunctional area with a large economic value. In recent years, social media platforms and developing sports technologies have increased the quality of sports goods and services, bringing success and quality in sports to the highest level. Sport, which also takes cultural interaction between societies to the highest level, has entered all areas of life today (Ekmekçi, Ekmekçi & İrmiş, 2013).

When we look at the legal regulations regarding sports and their operations in Türkiye, sports services are clearly stated in the 1982 Constitution. The 1982 Constitution gave the state the duty to establish sports infrastructure, enable its citizens to do sports, and open sports facilities. However, when we look at the processes and dynamics of fulfilling this responsibility, we see that politics and sports are

in a mutually beneficial relationship, and sports services and investments are supported according to political understanding and fandom. As in modern societies, the Turkish state must make sports an area that is completely independent from the public. In addition, the private sector should be encouraged, the concept of sponsorship should be developed and supported, and investments and incentives should be made in a fair, transparent, and auditable manner (Devecioğlu, 2005; Shiakou, et. al., 2025; Yılmaz, Genç & Safi, 2023).

When we look at the education process of sports in Türkiye, it is apparent that there is a comprehensive education process aimed at educating both students and academic staff through the education given in sports high schools, sports colleges, and sports faculties. When it comes to the subject of our study, which is sports management, as a high-potential field with different educational areas and all its structure and functionality; it is an educational field that educates students, trains well-equipped technical and managerial staff for private and public institutions, contributes to sports and their operations and science, and has positive effects on the society to be healthy and dynamic (Kurtipek, Güngör, Esentürk, İlhan & Yenel, 2020; Sevilmiş & Yıldız, 2022; Lera-López & Rapún-Gárate, 2005).

As can be seen, the active and high-quality education provided by the field of sports management and the training of well-equipped personnel has a positive impact on the spread of sports to the grassroots. At the same time, sports management education and training fields pave the way for sports to be done more consciously, to achieve global sports success, to organize quality sports organizations, and to build modern sports facilities, as in modern societies (Kahwa, Gargalianos & Yfantidou, 2021; Kurtipek, Güngör, Esentürk, İlhan & Yenel, 2020).

Students who graduate from sports management prepare themselves for the next stage in areas that require experiential development, such as internships and workers in related workplaces and public areas (Howes & Rode, 2024; Tolukan, Yıldız & Etlioğlu, 2024). Schwab, Dustin, Legg, Timmerman, Wells, & Arthur-Banning (2013) in their study addressed students about the richness of field-specific business lines in sports management and emphasized that sports business and operations should not be in conflict with similar fields such as tourism, culture, fine arts, dance and music, and that sports should work in harmony, rhythm, and coordination with these soft power elements.

Again Schwab, Legg, Tanner, Timmerman, Dustin, & Arthur-Banning, (2015) emphasized in their study that students in the field of sports management play a key role in sports and their operations and that students who graduate from the field of sports should be prepared according to new understanding and technologies in our changing and developing world. It has been stated that an educational model that serves all these understandings and innovations should be developed.

As stated above, sports management plays a key role in making sports more conscious and creating a healthier society. In societies where conscious and quality sports are practiced a peaceful understanding, love, and respect are prioritized. In addition, sports have an important role in building a healthy generation and a tolerant and honest society (Eliason et al., 2023; Oje & Zeimers, 2025; Sunay, 1998).

This study aims to emphasize the importance of sports management, reveal the scope and effects of academic studies on sports management, compare the effects of studies conducted specifically in Türkiye, and produce data that will contribute to the studies of academics in sports management. Therefore, it has become necessary to examine the academic studies related to sports management that have been conducted in the WoS database until today. In this research review; the distribution of studies related to sports management by years, the most published and cited articles, the researchers with the most publications and citations, the journals with the most publications and citations, institutions with the most publications and citations, co-author analysis, the countries with the most publications and citations, author common word analysis and co-citation analysis were examined, some data were reached and obtained data is presented visually below.

METHOD

Research Model

In this research, bibliometric analyses of 670 research articles related to sports management published in the WoS database were conducted. Gholampour, Noruzi, Gholampour & Elahi (2019) stated in their study that there are many ways and methods in the world in terms of research models, and one of these ways and methods is bibliometric analysis. The bibliometric method aims to reveal the distribution of the study over the years, the trend aspects of the study, and the impact it has left. In other words, the bibliometric analysis method reveals the relationship between authors, institutions, and countries within academic studies (Small, 1999). When viewed from another perspective, bibliometric analysis is an analysis

method that aims to reveal the academic world equivalent of the studies, namely the number of citations, citation average, distribution by years, author, words, and common collaboration network in terms of descriptive and performance effects (Al vd., 2010). In another definition, bibliometric analysis is a method that reveals the characteristics of publications on certain subjects comprehensively, rather than revealing the statistical significance of the mathematical data obtained (Pritchard, 1969).

Data Collection Tools

In creating the data, some classifications were made in the studies to be added to the research and some keywords were taken as criteria. Then, the date range, document type, and study area were determined. In the next stage, the keyword "sports management" was written, and while no criterion was determined as the starting year for the date range, 2023 was taken as the end date. Among the document scanning types, only articles were taken into consideration. The reason for using articles as a basis is that the content of other types of documents was not reachable. The scanning process was initiated by typing the keyword "sports management" into the WoS database and marking the "topic" research field to scan the data. After the scanning process, 670 articles were reached. In the next step, the data were transferred to the computer in "plain text file" format, and the data of the study were obtained. At the end of the study, the data obtained as a result of the classifications and criteria determined from the WoS database were mapped and visualized. When it comes to the limitation of the study, obtaining the data only from the WoS database, determining the sports/management fields in the field limitation of the research, selecting only articles from the academic studies conducted, and finally not classifying the content such as the methods used in the studies, gender of the author and sample group are other limitations of our study.

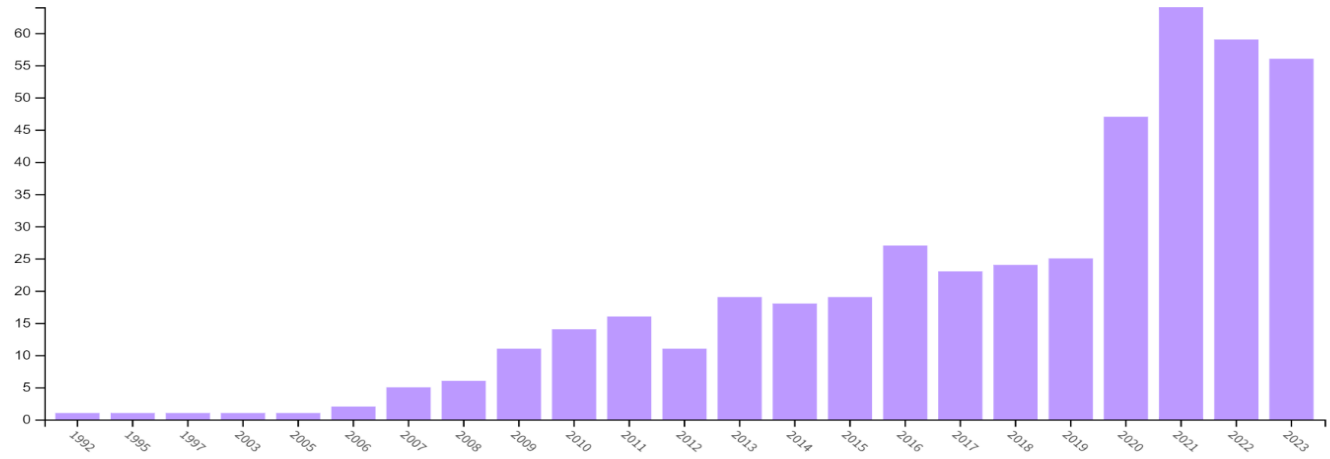
Data Analyses

As the first step in obtaining the analyses of this study; the distribution of research articles related to the subject of sports management in the Web of Science (WoS) database by years was examined, and in the second step; citation analysis, co-author analysis, co-citation analysis and keyword analysis of the articles related to the field were performed to obtain bibliometric data. In the third step, some networks and maps were created based on the results obtained from the bibliometric data, and the mapping of the obtained data was provided (Van Eck & Waltman, 2014; 2019).

RESULTS

In this study, bibliometric analysis of studies on sports management among journals in the WoS database was conducted.

Distribution of Articles on Sports Management by Years: In this research, the distribution of studies related to sports management by years was examined and analyzed according to the results of the data obtained from the WoS database. The findings of the research are shown in graph 1 below.



Graph 1. Distribution of Sports Management Studies by Years: When Graph 1 is examined, it is seen that the first publication on sports management in the WoS database was in 1992. While looking at the data between 1992 and 2005, there was no significant increase in the number of publications, and parallelism was observed in the number of publications between these years. There were gradual and serious increases starting from 2007 until 2011. Although there was a slight decrease in the increase rate in 2012, there was a significant increase again in 2013. A very slight decrease was observed in 2014, and it rose back to 2013 levels in 2015. There was a big increase in 2016 and a small decrease in publications in 2017. There were gradual

increases in 2018 and 2019, a very large increase was observed in 2020, and the real peak was seen in 2021. Finally, very slight gradual declines were observed in 2022 and 2023.

Most Cited Articles on Sports Management: According to the data obtained from the WoS database, information about the top 15 most cited articles on sports management is shown in Table 1

Table 1. Most Cited Articles

	Article name	Total citations	Citation average
1	"Ratten, V. (2011). Sport-based entrepreneurship: Towards a new theory of entrepreneurship and sport management. International Entrepreneurship and Management Journal, 7, 57-69."	137	9,79
2	"Breitbarth, T., & Harris, P. (2008). The role of corporate social responsibility in the football business: Towards the development of a conceptual model. European Sport Management Quarterly, 8(2), 179-206."	136	8
3	"Ji, S., Wan, C., Wang, T., Li, Q., Chen, G., Wang, J., ... & Chen, X. (2020). Water-resistant conformal hybrid electrodes for aquatic endurable electrocardiographic monitoring. Advanced Materials, 32(26), 2001496."	129	25,8
4	"Yang, H., Ji, S., Chaturvedi, I., Xia, H., Wang, T., Chen, G., ... & Chen, X. (2020). Adhesive biocomposite electrodes on sweaty skin for long-term continuous electrophysiological monitoring. ACS Materials Letters, 2(5), 478-484."	95	19
5	"Herm, S., Callsen-Bracker, H. M., & Kreis, H. (2014). When the crowd evaluates soccer players' market values: Accuracy and evaluation attributes of an online community. Sport Management Review, 17(4), 484-492."	77	7
6	"Yu, Z., & Wu, P. (2021). Water-resistant ionogel electrode with tailorable mechanical properties for aquatic ambulatory physiological signal monitoring. Advanced Functional Materials, 31(51), 2107226."	63	15,75
7	"Li, T., Sun, J., & Wang, L. (2021). An intelligent optimization method of motion management system based on BP neural network. Neural Computing and Applications, 33, 707-722."	49	9,8
8	"Anderson-Butcher, D., Riley, A., Amorose, A., Iachini, A., & Wade-Mdivanian, R. (2014). Maximizing youth experiences in community sport settings: The design and impact of the life sports camp. Journal of Sport Management, 28(2), 236-249."	46	4,18
9	"Wilson, B., Stavros, C., & Westberg, K. (2008). Player transgressions and the management of the sport sponsor relationship. Public Relations Review, 34(2), 99-107."	44	2,59
10	"Nweke, H. F., Teh, Y. W., Mujtaba, G., Alo, U. R., & Al-garadi, M. A. (2019). Multi-sensor fusion based on multiple classifier systems for human activity identification. Human-centric Computing and Information Sciences, 9, 1-44."	42	7
11	"Breitbarth, T., Hovemann, G., & Walzel, S. (2011). Scoring strategy goals: Measuring corporate social responsibility in professional European football. Thunderbird International Business Review, 53(6), 721-737."	41	2,93
12	"Jones, P., & Jones, A. (2014). Attitudes of sports development and sports management undergraduate students towards entrepreneurship: A university perspective towards best practice. Education+ Training, 56(8/9), 716-732."	38	3,45
13	"Nuviala, A., Grao-Cruces, A., Pérez-Turpin, J. A., & Nuviala, R. (2012). Perceived service quality, perceived value and satisfaction in groups of users of sports organizations in Spain. Kinesiology, 44(1.), 94-103."	38	2,92
14	"Hammerschmidt, J., Eggers, F., Kraus, S., Jones, P., & Filser, M. (2020). Entrepreneurial orientation in sports entrepreneurship- A mixed methods analysis of professional soccer clubs in the German-speaking countries. International Entrepreneurship and Management Journal, 16, 839-857."	33	6,6
15	"León-Quismondo, J., García-Unanue, J., & Burillo, P. (2020). Best practices for fitness center business sustainability: A qualitative vision. Sustainability, 12(12), 5067."	33	6,6

When Table number 1 is examined, it is seen that the most productive article with 137 citations and a citation average of 9.79 is the study titled "Sport-based entrepreneurship: Towards a new theory of

entrepreneurship and sport management" (Ratten, V. 2011). This study aims to develop a theory of entrepreneurship in sports management by investigating the relationship between entrepreneurship and sports. It is noteworthy that "Water-resistant conformal hybrid electrodes for aquatic endurable electrocardiographic monitoring" (Ji, S., Wan, C., Wang, T., Li, Q., Chen, G., Wang, J., ... & Chen, X. 2020) ranks first in the citation ranking with 129 publications and an average of 25.8 citations.

Researchers with the Most Publications and Citations on Sports Management: Considering the data obtained from the WoS database, the data of the top 15 researchers who published the most on sports management are shown in table 2.

Table 2. Researchers with the Most Publications

	Author	Number of Publications	Number of Citations
1	Ratten, Vanessa	3	166
2	Dominteanu, Teodora	2	1
3	Fernandez-Gavira, Jesus	2	1
4	Galvez-Ruiz, Pablo	2	1
5	Gonzalez-Serrano, Maria Huertas	2	4
6	Grimaldi-Puyana, Moises	2	1
7	Jesus Sanchez-Oliver, Antonio	2	1
8	Jones, Amanda	1	38
9	Jones, Paul	1	38
10	Farias, Gelcemar Oliveira	1	2
11	Nascimento, Juarez Vieira	1	2
12	Ouinaud, Ricardo Teixeira	1	2
13	Gotovic, Tea	1	4
14	Popovic, Toni	1	4
15	Relja, Renata	1	4

When looking at the data in Table number 2, in the ranking of researchers with the most articles in the field of sports management, "Ratten, Vanessa" ranked first as the most productive author with an average of 3 publications and 166 citations. According to the table, other researchers with 2 publications are; "Dominteanu, Teodora", "Fernandez-Gavira, Jesus", "Galvez-Ruiz, Pablo", "Gonzalez-Serrano, Maria Huertas", "Grimaldi-Puyana, Moises" and "Jesus Sanchez-Oliver, Antonio", respectively, while the publication numbers of other researchers are limited to 1.

According to the results obtained from the WoS database, information about the top 15 most cited researchers in sports management is shown in Table 3.

Table 3. Most Cited Researchers

	Author	Number of publications	Number of Citations
1	Ratten, Vanessa	3	166
2	Breitbarth, Tim	1	136
3	Harris, Phil	1	136
4	Li, Tuojian	1	49
5	Sun, Jinhai	1	49
6	Wang, Lie	1	49
7	Jones, Amanda	1	38
8	Jones, Paul	1	38
9	Celik, Talip	1	27
10	Mergan, Baris	1	27
11	İlkim, Mehmet	1	27
12	Chan, Chu-Chen	1	14
13	Chen, Su-Ching	1	14
14	Liao, Tsung-Yao	1	14
15	Lin, Yu-En	1	14

When looking at the data in Table number 3; "Ratten, Vanessa" ranks first as the researcher with the most citations in the field of sports management with 166 citations. When looking at the citation

average, "Breitbarth" came in second with 136 citations, and again "Tim and Harris, Phil" came in third with 136 citations. Although the authors have only 1 publication related to sports management, the fact that they have an average of 136 citations shows that they have a quality publication.

Journals with the most Publication and Citations on Sports Management: According to the data obtained from the WoS database, information about the top 15 journals that published the most on sports management is shown in Table 4.

Table 4. Journals with the most Publications.

	Journal name	Number of publications	Number of citations
1	"Retos-nuevas Tendencias en Education Fisica Deporte Recreaction"	3	2
2	"Thunderbird International Business Review"	2	29
3	"Economics & Sociology"	2	4
4	"Metalurgia International"	2	1
5	"Sport Tk-revista Euroamericana de Ciencias del Deporte"	2	1
6	"Sustainability"	2	4
7	"International Entrepreneurship and Management Journal"	1	137
8	"Education and Training"	1	38
9	"Movimento"	1	2
10	"Cogent Business & Management"	1	3
11	"European Sport Management Guarterly"	1	136
12	"Gander in Management"	1	2
13	"Journal of Career Development"	1	14
14	"Neural Computıng & Applications"	1	49
15	"Pakistan Journal of Medical & Health Sciences"	1	27

When looking at the data in Table number 4; "Retos-nuevas Tendencias en Educatıon Fisica Deporte Recreaction" ranks first as the journal with the most publications in sports management with 3 articles. The journals with 2 publications are "Thunderbird International Business Review", "Economics & Sociology", "Metalurgia International", "Sport Tk-revista Euroamericana de Ciencias del Deporte", and "Sustainability". One of the striking findings of the research is the "International Entrepreneurship and Management Journal" with 137 citations despite having only 1 publication, and the "European Sport Management Guarantee" with 136 citations.

According to the results obtained from the WoS database, the results of the top 15 most cited journals related to sports management are shown in Table 5.

Table 5. Most Cited Journals

	Journal name	Number of citations	Number of publications
1	"International Entrepreneurship and Management Journal"	137	1
2	"European Sport Management Guarterly"	136	1
3	"Neural Computing & Applications"	49	1
4	"Education and Training"	38	1
5	"Thunderbird International Business Review"	29	2
6	"Pakistan Journal of Medical & Health Sciences"	27	1
7	"Journal of Career Development"	14	1
8	"Economıc & Sociology"	4	2
9	"Sustainability"	4	2
10	"Revista Iberoamericana de Ciencias de la Actividad Fisica y el Deporte"	4	1
11	"Cogent Business & Management"	3	1
12	"Retos-nuevas Tendencias en Education Fisica Deporte Recreaction"	2	3
13	"Movimento"	2	1
14	"Gander in Management"	2	1
15	"Polish Journal of Management Studies"	2	1

When the data of Table number 5 are examined, "International Entrepreneurship and Management Journal" ranked first as the most cited journal with 137 citations. The second journal with 136 citations was "European Sport Management Guaterly", the third journal with 49 citations was "Neural Computing & Applications", the fourth journal with 38 citations was "Education and Training" and finally the fifth journal with 38 citations was "Thunderbird International Business Review". By examining these journals, it can be said that they are the most productive and influential journals related to sports management, as they are ranked first in terms of the number of publications and citation averages.

Institution with the Most Publication and Citations: When the results of WoS data are examined, information about the top 15 institutions that have published the most and received the most citations on sports management is shown in Table 6.

Table 6. Institution with the Most Publication and Citations

	Institution Name	**Number of articles**	**Number of citations**		**Institution Name**	**Number of citations**	**Number of articles**
1	Deakin Grad Sch Business	2	29	1	Duquesne Univ	137	1
2	Bucharest Acad Econ Studies	2	1	2	Univ Otago	136	1
3	Univ Pablo de Olavide	2	1	3	Shandong Univ	49	1
4	Univ Seville	2	1	4	Univ Plymouth	38	1
5	Duquesne Univ	1	137	5	Univ South Wales	38	1
6	Univ Fed Santa Catarına	1	2	6	Deakin Grad Sch Business	29	2
7	Univ Plymouth	1	38	7	Dept Phys Educ & Sports	27	1
8	Univ South Wales	1	38	8	Fac Sport Sci	27	1
9	Univ Split	1	4	9	Natl Dong Hwa Univ	14	1
10	Chaoyang Univ Technol	1	2	10	Natl Taiwan Normal Univ	14	1
11	Contraloría Gen Republ Guibdo	1	1	11	Univ Split	4	1
12	Cricket Australia	1	2	12	Molde Univ Coll	4	1
13	Dept Phys Educ & Sports	1	27	13	Univ Cent Lancashire Uçlan Cyprus	4	1
14	Fac Sport Sci	1	27	14	Univ Valencia	4	1
15	Kasetsart Univ	1	3	15	Univ Valladolid	4	1

By examining Table number 6, the most productive institutions are seen as "Deakin Grad Sch Business", "Bucharest Acad Econ Studies", "Univ Pablo de Olavide" and "Univ Seville" with two articles each. When the institutions are examined in terms of the number of citations; the institution with the most citations is detected as "Duquesne Univ" with 137 citations. "Univ Otago" with 136 citations is in the second place, "Shandong Univ" with 49 citations in the third place, "Univ Plymouth" and "Univ South Wales" with 38 citations in the fourth and fifth places, "Deakin Grad Sch Business" with 29 citations in the sixth place, "Dept Phys Educ & Sports" and "Fac Sport Sci" with 27 citations in the seventh and eighth places.

The strong collaboration network of 13 institutions is shown in Figure 1.

Co-Author Analysis Institutions Publishing on Sports Management*:* There have been reached to 648 institutions that made publications related to sports management when the results of the data obtained from the WoS database were examined and by applying 2 publication criteria to the institutions that made publications, the 13 institutions with the strongest collaboration emerged.

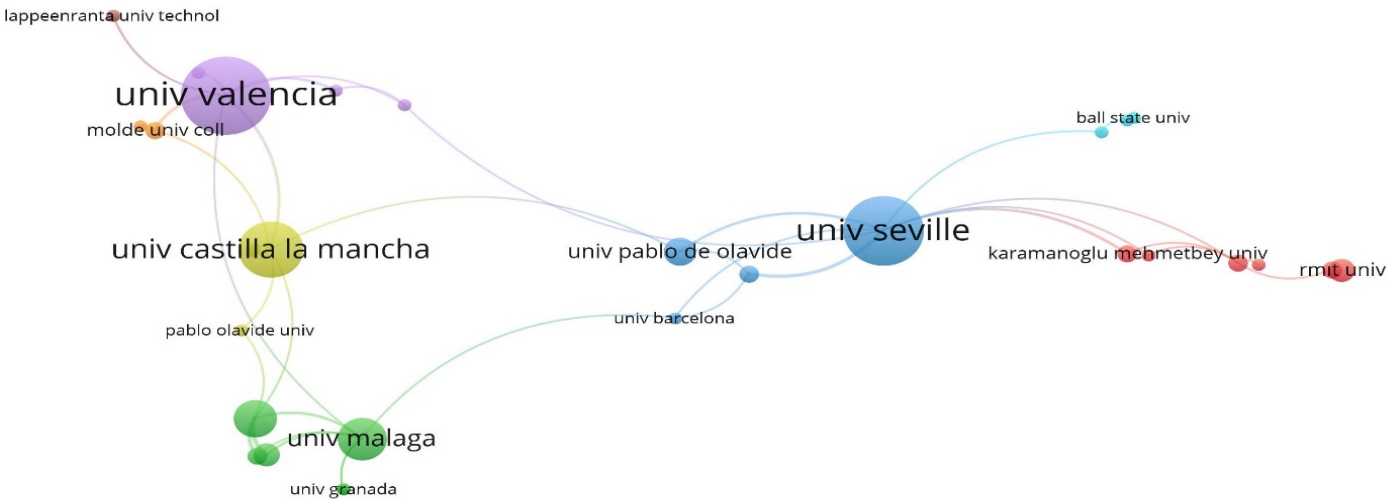


Figure 1. Strong Inter-Institutional Collaboration Network

When Figure 1, which presents the strong collaboration networks of the institutions, is examined, 13 institutions have been reached. It is seen that these 13 institutions, with strong collaboration between them, are shown in 7 different color clusters. Among the 7 different colored clusters, three different colored clusters stand out. It is seen that the highest collaboration is between the red clusters "Karamanoğlu Mehmet Bey University" and "Rmit Univ". It is noteworthy that a Turkish University is among the intense collaboration of institutions of the same color.

Countries with the most Publications and Citations on Sport Management: When the results obtained from the WoS database are examined, information about the top 15 countries with the most publications and most citations on sports management is shown in Table 7.

Table 7. Countries with the Most Publications and Citations

	Country Name	Number of articles	Number of citations		Country Name	Number of citations	Number of articles
1	Spain	87	385	1	ABD	616	55
2	ABD	55	616	2	Spain	385	87
3	China	49	373	3	China	373	49
4	Brazil	37	41	4	Singapore	237	4
5	Turkiye	29	100	5	New Zealand	214	5
6	Iran	22	15	6	Australia	191	21
7	Australia	21	191	7	Germany	174	10
8	Portugal	18	65	8	England	130	16
9	Colombia	17	18	9	Türkiye	100	29
10	England	16	130	10	Switzerland	97	7
11	Russia	12	7	11	Wales	79	3
12	Germany	10	174	12	Qatar	74	3
13	Canada	9	40	13	Portugal	65	18
14	France	8	48	14	Pakistan	52	5
15	Switzerland	7	97	15	Denmark	49	4

By analyzing the results of Table number 7, it is seen that Spain is the most productive country with 87 publications. According to the productivity numbers listed from top to bottom; the USA with 55 publications, China with 49 publications, Berazil with 37 publications, Türkiye with 29 publications, Iran with 22 publications, Australia with 21 publications, Portugal with 18 publications, Colombia with 17 publications, England with 16 publications, Russia with 12 publications, Germany with 10 publications, Canada with 9 publications, France with 8 publications and Switzerland with 7 publications are detected. In terms of citations, the USA stands out as the most influential country with 616 citations. When listed from top to bottom according to the number of citations; Spain with 385 citations, China with 373 citations, Singapore with 237 citations, New Zealand with 214 citations, Australia with 191 citations, Germany with 174 citations, England with 130 citations, Türkiye with 100 citations, Switzerland with 97 citations, Wales with 79 citations, Qatar with 74 citations, Portugal with 65 citations, Pakistan with 52 citations and Denmark with 49 citations are the notable countries.

Author Common Keyword Analysis Related to Sports Management: According to the results of the data obtained from the WoS database, a total of 1394 different author keywords were reached. Using keywords related to sports management at least 5 times was taken into consideration as criteria which led to the emergence of 23 different keywords. Common keyword networks related to sports management are shown in Figure 2.

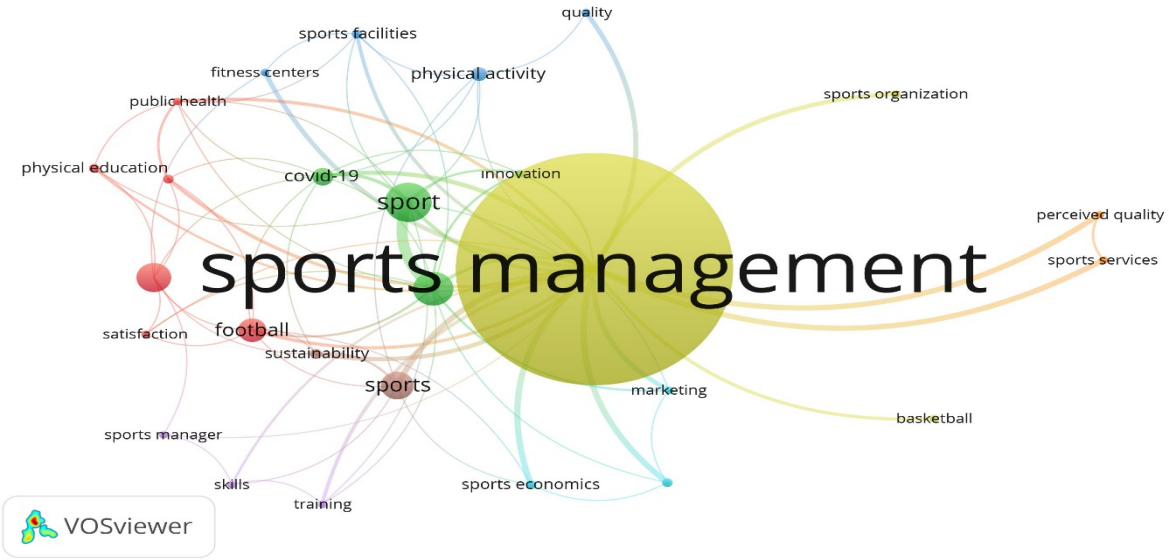


Figure 2. Sports Management Common Keyword Network

Looking at the data in Figure 2, which shows the most used keyword networks by writers on the subject of sports management, there were reached to 23 keywords which are the most used keywords by writers on the subject of sports management, and 5 keywords stood out in the yellow cluster, which is the densest cluster. The prominent keywords in the yellow cluster were; "Sports management", "Basketball", "Sports services", "Perceived quality" and "Sports organization". When the brown clusters, which are the least ones were examined, two keywords; "Sports" and "Sustainability" stood out.

Author Co-Citation Analysis Related to Sports Management: In the author co-citation analysis conducted according to the results of the data obtained from the WoS database, 12951 authors were detected. Ten citation criteria were determined regarding the subject of sports management, and as a result, 53 researchers were reached. Author co-citation networks of researchers are shown in Figure 3.

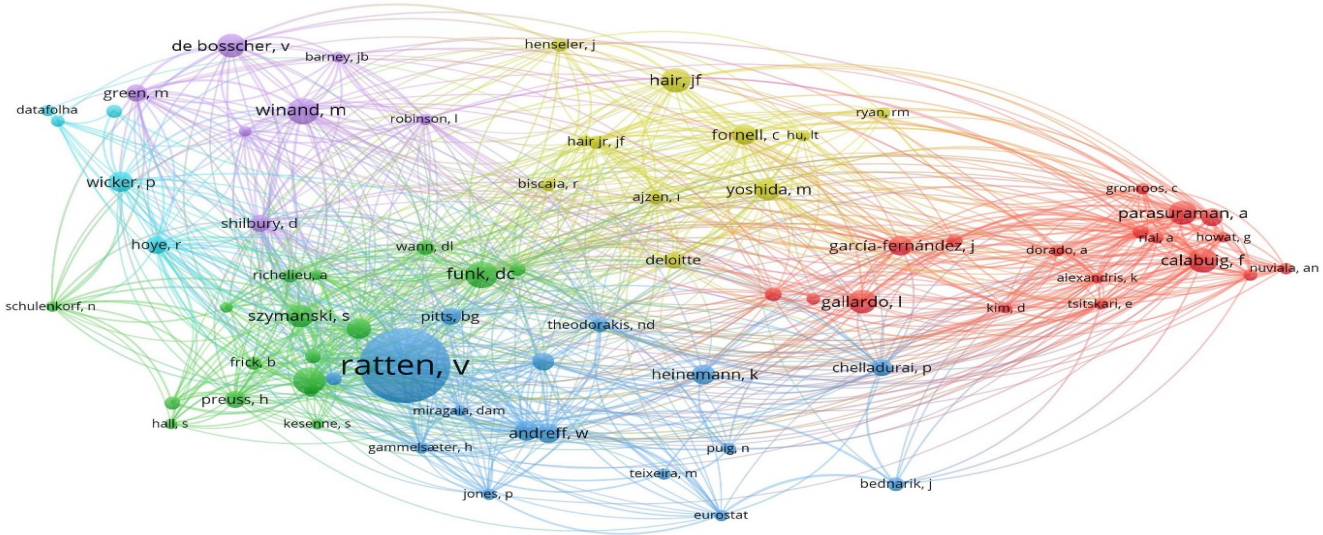


Figure 3. Co-Citation Network of Authors

Figure 3 includes co-citation network information of authors related to sports management. The data consists of 6 cluster groups with different colors. The noteworthy red clusters with the highest density are; "Gallardo, I, Garcia-Fernandez, J, Kim, D, Dorado, A, Alexandris, K, Tsitskari, E, Gronroos, C, Parasuraman, A, Rial, A, Howat, G, Calabuig, F, Nuviala, AN". In the turquoise-colored clusters where the density is lowest; "Wicker, P, Hoye, R, Dafafolha" are located. Co-cited researchers are in the same cluster and closer to each other. The authors in the yellow and green clusters are located in the middle of their 6 different colored clusters, indicating that they are in close collaboration with other clusters.

DISCUSSION

This study aims to conduct a bibliometric analysis of research articles on sports management in the Web of Science database and to reveal the perspective on sports management, and the scope and effects of studies conducted specifically for Türkiye. As a result of the literature review and analysis, some data were obtained. When Graph 1 was examined, it was seen that the first publication on the subject of sports management in the WoS database was in 1992. When the data between 1992 and 2005 were examined, there was no significant increase in the number of publications, and parallelism was observed in the number of publications between these years. There were gradual and serious increases starting from 2007 until 2011. Although there was a slight decrease in the increase rate in 2012, there was a significant increase again in 2013. A very slight decrease was observed in 2014, and it rose back to 2013 levels in 2015. There was a big increase in 2016 and a small decrease in publications in 2017. There were gradual increases in 2018 and 2019, a very large increase was observed in 2020, and the real peak was seen in 2021. Finally, very slight gradual declines were observed in 2022 and 2023 (Graph 1).

When we look at academic studies in the field of sports management in Türkiye, we come across theses written in the field of sports management in the Turkish YÖK national thesis center since 2000. As we approach the present day, it is seen that there has been a significant increase in the number of theses specific to the field of sports management, and the distribution of theses written in the field of sports management has been balanced over the years. In addition, it is seen that there was a significant increase in the number of theses in 2018 and 2019, and according to the national thesis center data in 2019, the rate of theses written specifically for the field of sports management was 27% (Biricik, 2020).

When the first table is analyzed according to the data obtained from the WoS database, it is seen that the most cited article with 137 citations and an average of 9.79 citations is the study titled "Sport-based entrepreneurship: Towards a new theory of entrepreneurship and sport management" (Ratten, V. 2011). This study aims to develop a theory of entrepreneurship in sports management by investigating the relationship between entrepreneurship and sports. It is noteworthy that "Water-resistant conformal hybrid electrodes for aquatic endurable electrocardiographic monitoring" (Ji, S., Wan, C., Wang, T., Li, Q., Chen, G., Wang, J., ... & Chen, X. 2020) ranks first in the citation ranking with 129 publications and an average of 25.8 citations. At the same time, in Ratten's (2011) study it was reported that entrepreneurship is necessary to increase competition in sports management and that entrepreneurship in sports management is not at the desired level (Table 1).

When the content of the data obtained in bibliometric studies is compared with the studies conducted in Türkiye, it is seen that a lot of work has been done on sports management. Yavuz, Mirzeoğlu & Kaymakçı (2018) revealed in their study the areas in which sports management subjects are covered. When the data of the article they wrote about academic studies in the field of Sports Management in Türkiye is examined; it is seen that the following topics come to the fore in the field of "organizational behavior (28%), Sports Management and Organization (27%), Sports Economics and Marketing (15%), Leadership and Managerial Competence (14%), Education (5%), Social Studies (5%), Media and Communication (4%), and Local Governments (2%)".

Pitts & Pedersen (2005) examined the ways and methods of research on sports management and reached some conclusions. According to the results obtained; it was stated that 233 of the studies written by 435 authors were conducted within the scope of empirical research and the subject areas covered the fields of Management and Organization Skills, Marketing in Sports and social media, and Sports Business.

When Table number 2 was analyzed according to the data obtained from the WoS database, "Ratten, Vanessa" ranked first as the most productive author with 3 publications related to sports management with an average of 166 citations. According to the table, other researchers with 2 publications were "Dominteanu, Teodora", "Fernandez-Gavira, Jesus", "Galvez-Ruiz, Pablo", "Gonzalez-Serrano, Maria Huertas", "Grimaldi-Puyana, Moises" and "Jesus Sanchez-Oliver, Antonio". The number of

publications of other researchers was limited to 1 (Table 2).

According to the examination of studies conducted in Türkiye, it is seen that the authors' studies do not receive enough attention internationally and they are not at the forefront in terms of being cited. A few important issues stand out as reasons for this. When the literature and quantitative data of the studies are examined, it is seen that many studies contain similar and close results and that results specific to the field of sports management are not of high quality and comprehensive enough to contribute to science. It was observed that the studies were mostly prepared according to the quantitative paradigm design, a survey was used as the data collection method, and the method of being easily accessible was adopted in the sample group selection. This situation prevents quality and effective publications in the international arena and brings about scientific doubt (Yavuz, Mirzeoğlu & Kaymakçı, 2018).

When the third Table is analyzed according to the data obtained from the WoS database, "Ratten, Vanessa" ranks first as the researcher with the most citations in the field of sports management with 166 citations. When looking at the citation average, "Breitbarth" came in second place with 136 citations, and "Tim and Harris, Phil" came in third place with 136 citations. Although the authors have only 1 publication related to sports management, the fact that they have an average of 136 citations shows that they have a quality publication (Table 3).

In a study conducted by Atalay (2017), similar conclusions have been reached regarding the reasons why authors and articles in Türkiye do not create enough impact in scientific studies. When the statistical data of the studies conducted in the field of sports management were examined, it was stated that some articles were problematic in terms of scientific evaluation. In particular, it was viewed that no clear and understandable information was provided regarding the research method used in 48 studies, the research design used in 41 studies, and the sampling method used in 40 studies. In field-specific studies, central areas such as athletes, coaches, federations, and ministries and their easy accessibility were generally taken as criteria as the sample group, and it was observed that a survey and semi-structured interview form were used as data collection tools.

By analyzing the fourth Table it can be said that according to the data obtained from the WoS database; "Retos-nuevas Tendencias en Educatıon Fisica Deporte Recreaction" ranks first as the journal with the most publications in sports management with 3 articles. The journals with 2 publications are "Thunderbird International Business Review", "Economics & Sociology", "Metalurgia International", "Sport Tk-revista Euroamericana de Ciencias del Deporte", and "Sustainability". One of the striking findings of the research is that "International Entrepreneurship and Management Journal", despite having only 1 publication received 137 citations, and "European Sport Management Guarantee" contains 136 citations (Table 4).

According to the data obtained from the WoS database, the data in Table number 5 shows that; "International Entrepreneurship and Management Journal" ranked first as the most cited journal with 137 citations. The second journal with 136 citations was "European Sport Management Guaterly", the third journal with 49 citations was "Neural Computing & Applications", the fourth journal with 38 citations was "Education and Training" and finally the fifth journal with 38 citations was "Thunderbird International Business Review". When the journals are examined, it is seen that they are the most productive and influential journals related to sports management, as they are placed near the top in terms of the number of publications and citation averages (Table 5).

As can be seen, the international studies are of very high quality in terms of content, scope, and method, and therefore have had a great impact. When looking at the studies conducted in the field of sports management in Türkiye, Atalay (2017) in his or her study stated that the correct answers were not received to the questions regarding data acquisition, analysis, method, purpose, and, scope in the studies conducted in the field of sports sciences in Türkiye, and he or she also stated that researchers did not use the correct research methods according to the scope and content of the studies and that this situation affected the quality of the research in Türkiye negatively. In addition, it has been explained that the acceleration of studies on sports management and its operations in the national and international academic world and the emergence of quality publications depend on the more understandable and comprehensive use of research methods.

Data supporting the above results were also obtained in another study. When the studies conducted in sports management were evaluated in terms of content and scope, it was observed that there were some methodological deficiencies (Tuncel, 2008).

When the data in Table number 6 was analyzed according to the data obtained from the WoS database, the most productive institutions stood out as "Deakin Grad Sch Business", "Bucharest Acad Econ Studies", "Univ Pablo de Olavide" and "Univ

Seville" with two articles each. When the institutions were examined in terms of the number of citations; the institution with the most citations was "Duquesne Univ" with 137 citations in the first place, "Univ Otago" with 136 citations in the second place, "Shandong Univ" with 49 citations in the third place, "Univ Plymouth" and "Univ South Wales" with 38 citations in the fourth and fifth places, "Deakin Grad Sch Business" with 29 citations in the sixth place, "Dept Phys Educ & Sports" and "Fac Sport Sci" with 27 citations in the seventh and eighth places (Table 6).

When the first Figure, which presents the strong collaboration networks of the institutions, is examined, 13 institutions have been reached. It is seen that these 13 institutions, where there is strong collaboration between them, are shown in 7 different color clusters. Among the 7 different colored clusters, three different colored clusters stand out. It is seen that the highest collaboration is between the red clusters which are "Karamanoğlu Mehmet Bey University" and "Rmit Univ". It is noteworthy that a Turkish University is among the intense collaboration between institutions of the same color (Figure 1).

By examining Biricik's (2020) study conducted in the field of sports management in Türkiye, it is reported that in the comparison of foundation and state universities in studies specific to sports management, public universities conducted more studies in sports management than foundation universities. It was also determined that most studies conducted in sports management belonged to Selçuk University.

When the data in Table number seven was analyzed according to the data obtained from the WoS database, Spain stood out as the most productive country with 87 publications. When listed from top to bottom according to productivity numbers; the USA with 55 publications, China with 49 publications, Berazil with 37 publications, Türkiye with 29 publications, Iran with 22 publications, Australia with 21 publications, Portugal with 18 publications, Colombia with 17 publications, England with 16 publications, Russia with 12 publications, Germany with 10 publications, Canada with 9 publications, France with 8 publications and Switzerland with 7 publications were detected. In terms of the number of citations, the USA stood out as the most influential country with 616 citations. When listed from top to bottom according to the number of citations; Spain with 385 citations, China with 373 citations, Singapore with 237 citations, New Zealand with 214 citations, Australia with 191 citations, Germany with 174 citations, England with 130 citations, Türkiye with 100 citations, Switzerland with 97 citations, Wales with 79 citations, Qatar with 74 citations, Portugal with 65 citations, Pakistan with 52 citations and Denmark with 49 citations are detected (Table 7).

When the data in the second Figure was analyzed according to the data obtained from the WoS database, the 23 most used keywords by the authors related to sports management were reached and 5 keywords came to the fore in the yellow cluster, which is the most dense cluster. The prominent keywords in the yellow cluster were; "Sports management", "Basketball", "Sports services", "Perceived quality" and "Sports organization". When the brown clusters, which are the least ones were examined, two keywords; "Sport" and "Sustainability" stood out (Figure 2).

Finally, when the data in Figure three was analyzed according to the data obtained from the WoS database, co-citation network information of authors related to the subject of sports management was obtained. The data consists of 6 cluster groups with different colors. The authors in the red cluster with the highest density are; "Gallardo, I, Garcia-Fernandez, J, Kim, D, Dorado, A, Alexandris, K, Tsitskari, E, Gronroos, C, Parasuraman, A, Rial, A, Howat, G, Calabuig, F, and Nuviala, AN". The authors in the turquoise clusters with the lowest density are "Wicker, P, Hoye, R, Dafafolha". Co-cited researchers are in the same cluster and closer to each other. The authors in the yellow and green clusters are in the middle of the 6 different colored clusters, indicating that they are in close collaboration with other clusters (Figure 3).

Bal & Pepe (2016) made some inferences in their study in the papers presented at the International Sports Sciences Congress held in Türkiye. It has been explained that the papers presented in the field of sports at congresses generally cover psycho-social areas and the findings are generally based on quantitative data.

As can be seen from the results obtained from the studies conducted in sports management, information management, the use of technology in sports and its operations, and the systematic and accurate acquisition of data contribute greatly to the academic world as added value. What is important here is that the digital and intelligent systems used to access information should reproduce information and contribute to the field of sports management (Bayter & Alaca, 2014). As a result, this study aims to emphasize the importance of sports management, reveal the scope and effects of academic studies on sports management, make a comparison with studies conducted specifically in Türkiye, and produce data that will contribute to the studies of academics in the field of sports management.

CONCLUSION

As a result of the analysis and findings, it has been seen that many journals, institutions, and authors in the international arena have conducted studies on the subject of sports management and have come to the fore with their citation averages. In this study, in which we aimed to reveal the distribution and effects of studies conducted in the field of sports management over the years, it was seen that there were many publications in the field of sports management in Türkiye, but sufficient impact was not demonstrated in terms of content and scope. Another result obtained is that Türkiye needs to produce higher quality and more unique publications in the field of sports management. It is thought that increasing the number and quality of academic studies on sports management in Türkiye will bring global awareness and productivity.

Author Contributions

The author conducted the study using the bibliometric analysis method, undertaking a thorough examination and organization of the material, and finalized the work by incorporating feedback and suggestions from expert academics. The author has read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

Since the study is a review, there was no need to obtain ethics committee approval.

Informed Consent Statement

Since the data in this study were obtained using the bibliometric method, no participants were involved.

Data Availability Statement

The data obtained from the bibliometric analysis method are available from the author upon request.

Acknowledgments

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Conflicts of Interest

The author unequivocally assert that this research was undertaken while devoid of any commercial or financial affiliations that might be perceived as potential conflicts of interest.

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