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The Relatıonshıp between Mental Toughness and Mındfulness in Athletes

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Abstract

In this study, it is aimed to reveal the relationship between mental toughness and mindfulness in athletes. A total of 414 athletes, 167 female and 247 male, aged between 18 and 32, participated in the research conducted with the relational screening model. In the study, data are collected using "Personal Information Form", "Mental Toughness Scale" and "Mindfulness Scale in Sports". Descriptive statistics, independent groups t-test, Pearson correlation and Regression analyzes are used to evaluate the data. When the findings obtained in terms of mental toughness are evaluated; the mental toughness levels of the athletes do not differ significantly according to the variables of gender, licensed sports and being a national athlete ($p>.05$); it is determined that there is no significant relationship with age and sports years ($p>.05$). On the other hand, it is determined that the level of mental toughness shows a significant difference according to the sport branch variable ($p<.05$). When the findings obtained in terms of mindfulness are evaluated; the mindfulnes level of the athletes do not differ significantly according to the variables of gender, licensed sports, being national athlete and sports branch ($p>.05$); it is determined that there is no significant relationship with age and sports years ($p>.05$). In addition, it is determined that there is a significant relationship between the mental toughness levels of the athletes and their mindfulness levels, and their mindfulness predict mental toughness ($p<.05$). As a result, it has been demonstrated that the role of mindfulness is important in increasing mental toughness in athletes.

Keywords: sports, athlete, mental toughness, mindfulness.

Introduction

In parallel with the development of sports in the historical process, it is seen that the study areas of sports sciences have also expanded. Sport psychology is among the developing branches of sport sciences in recent years. The American Psychological Association defines sport psychology as "the branch of science that aims to scientifically and systematically examine the psychological processes associated with sporting performance or participation in sporting activities". The Association for Applied Sport Psychology defines sport psychology as "the branch of science that examines the mental and psychological consequences that affect the motivation/impulse to participate in physical activities (sport or exercise) and that occur in people as a result of participation in physical activities." The European Federation of Sport Psychologists defines sport psychology as "the branch of science that aims to scientifically and systematically examine the psychological processes associated with sporting performance or participation in sporting activities". The European Federation of Sport Psychologists, on the other hand, defined sport psychology as "the psychological process that occurs as a result of people's individual or group participation in physical activities, as a result of the psychological examination of sports and infrastructure-related activities" (Demir, 2019).

One of the most important factors that make sport psychology important is that there are psychological components that make up sportive performance. As it is known, increasing performance in sportive activities in modern social life is not only possible by developing physical performance parameters at a high level. In addition, there are also psychological elements that affect performance in athletes, and the development of these elements is also important in terms of performance. Although athletes have high physical readiness levels, they may also experience some psychological problems. For this reason, many high-level athletes have high levels of psychological characteristics such as controlling anxiety, goal setting, concentration and motivation as well as physical performance parameters. In addition to these psychological parameters, studies show that mental toughness in athletes is among the components that affect performance (Karabacak, 2021). According to Yazıcı (2019), athletes who are interested in both individual and team sports experience high levels of stress during training and competitions. Every athlete who is interested in performance sports, especially those who play in high-level leagues, needs to learn to cope with stress for high performance. High stress coping skills of athletes are closely related to their psychological structure. Because each of the psychological characteristics and abilities of athletes plays a protective role in the fight against stress. In this context, mental toughness contributes to athletes to be more psychologically tough against internal and external stressors. Studies in the literature (Sezgin, 2012) also support the view that high mental toughness level is an effective factor in coping with stress. In addition to physical and physiological factors, studies show that mental toughness also affects sportive performance (Jones, Hanton & Connaughton 2002).

Another psychological factor that affects performance in athletes is the level of mindfulness and mindfulness studies applied to athletes (Carraça Serpa, Guerrero & Rosado, 2018; Bühlmayer, Birrer, Röthlin, Faude & Donath 2017). In recent years, mindfulness has been one of the most frequently emphasized topics in the field of sport psychology as well as in research on human psychology. In addition, the starting point of mindfulness is the science of positive psychology. From a conceptual point of view, mindfulness is a mental process that enables an individual to be minimally affected by negative conditions and to concentrate more on what he/she is doing. Due to these characteristics, the concept of mindfulness is derived

from the English word "mindfulness" and has become popular in the scientific world (Develi, Güğerçin & İplik, 2017). According to Kesler (2020), successes and failures in sports can be attributed to many reasons. The main factors affecting performance are physical mobility, physiological elements and psychological structure. Each individual participating in sporting activities has to consider the motivation to participate in sports, the ability to combat stress and the optimal performance mood to support performance development. In addition, they should also consider the level of mindfulness as a factor affecting performance. The fact that mindfulness is an important performance component in athletes has contributed to the acceleration of studies in this field (Tingaz, 2020). Based on this information, this study aims to examine the relationship between mental toughness and mindfulness in athletes.

Material and Method

Research Model

In this study, in which the relationship between mental toughness and mindfulness in athletes was examined, "relational screening model" was used among quantitative approaches. The relational survey model is expressed as "research models that aim to determine the presence and / or degree of change between two or more variables together" (Karasar, 2018).

Research Group

The research group consists of 414 active athletes in Turkey, 167 of whom are female and 247 of whom are male, aged between 18 and 32. In determining the research group, different sampling techniques from different population sizes used to minimize sampling errors in social sciences were used. In this context, the research was conducted in accordance with the 384 population corresponding to the largest universe for α= 0.05 (Yazıcıoğlu & Erdoğan, 2004). In addition, since the athlete groups were in different environments and camps, convenience sampling (Altunışık, Çoşkun, Bayraktaroğlu & Yıldırım, 2007) was preferred. Convenience sampling is "the shortest way to obtain data quickly and cheaply" (Karagöz, 2017). Descriptive information about the athletes is presented in Table 1.

Table 1. Descriptive Statistics Results for Athletes

Gender	**n**	**%**	$\overline{X}_{age}$	$\overline{X}_{year\ of\ sport}$
Female	167	40,3		
Male	247	59,7		
Sport Branch	**n**	**%**		
Team Sport	182	44,0		
Individual Sport	232	56,0		
Certified Athlete Status	**n**	**%**		
Yes	321	77,5	22,15±3,51	8,73±4,37
No	93	22,5		
National Athlete Status	**n**	**%**		
Yes	116	28,0		
No	298	72,0		
Total	**414**	**100,0**		

According to Table 1, 40.3% (n=167) of the athletes were female and 59.7% (n=247) were male; 44.0% (n=182) were engaged in team sports and 56.0% (n=232) were engaged in individual sports; 77,5% (n=321) were certified athletes and 22,5% (n=93) were not certified athletes; 28,0% (n=116) were national athletes and 72,0% were not national athletes. Finally, it was determined that the mean age of the athletes was 22.15±3.51 and the mean number of years of sport was 8.73±4.37.

Data Collection Tools

"Personal Information Form", "Mental Toughness Questionnaire", and "Mindfulness Inventory for Sport" were used in the study. Detailed information about the measurement tools is given below.

Personal Information Form

In the study, the "Personal Information Form" created by the researcher was used to determine some demographic information about the athletes. In this form, it was aimed to reach information such as gender, age, years of sport, licensed sports, nationality and sports branches of the athletes.

Mental toughness questionnaire (MTQ)

The Mental Toughness Questionnaire (MTQ) developed by Madrigal et al. (2013) and adapted into Turkish by Erdoğan (2016) was used to determine the mental toughness levels of athletes. The measurement tool has 11 items and a 5-point Likert-type scale and is scored as (1) strongly disagree and (5) strongly agree. In the study conducted by Erdoğan (2016), it was found that the Cronbach Alpha internal consistency coefficient of the measurement tool was α=.87. As a result of this study, the Cronbach Alpha internal consistency coefficient of the measurement tool was found to be α=.93.

Mindfulness Inventory for Sport (MIS)

"Mindfulness Inventory for Sport" scale developed by Thienot et al. (2014) and adapted into Turkish by Tingaz (2020) was used to measure the mindfulness levels of athletes. The scale consists of 3 sub-dimensions as awareness (5 items), non-judgment (5 items), refocusing (5 items) and a total of 15 items. The scale has a 6-point Likert-type structure and is scored as (1) "not at all true" and (6) "very true". The scale also gives a total score. The non-judgment sub-dimension items are reverse coded. The Cronbach Alpha internal consistency coefficient of the scale was calculated as α=.82 for the sub-dimensions: Awareness: α=.81, Nonjudgment: α=.70, Refocusing: α=.77 (Tingaz, 2020). As a result of this research, the Cronbach Alpha internal consistency coefficient of the scale was calculated as α=.78 and for the sub-dimensions Awareness: α=.74, Nonjudgment: α=.76, Refocusing: α=.75.

Data Collection

Before the research data were collected, the necessary permissions were obtained from the Ethics Committee of Bayburt University to conduct the research. After the permission, the questionnaire and scale questions, which were transferred to the online environment through Google form, were delivered to the athletes who continue their active sports life through their coaches. At the beginning of the application, the necessary information about the research (purpose of the research, duration of the research, that identity information will be kept confidential, participation is voluntary, and it will only be used for scientific purposes) was stated to the athletes in writing in the Google form questionnaire entry and the voluntary

participation consent button was added. Data were collected online from athletes who read the written instructions and voluntarily participated in the study.

Data Analysis

The data collected in the study were checked one by one and transferred to the SPSS 25.0 pack program after numerical coding. Before deciding on the statistical analyses to be applied to the data, the skewness and kurtosis values were checked to see whether the data were normally distributed. After the normality test, it was determined that the data were distributed in the range of -2,....,+2. These values were accepted to be in accordance with the normal distribution (George & Mallery, 2001). Independent groups t-test, Pearson correlation and regression analyses were used to evaluate the data. Significance level was accepted as $p<.05$ in statistical analyses.

Findings

In this section, the data obtained from the athletes participating in the study and statistical findings related to these data are given.

Table 2. t-Test Comparison Results of Athletes' Mental Toughness Scores According to Gender

	Gender	n	$\overline{X}$	ss	t	p
Mental Toughness	Female	167	45,72	6,49	,38	,71
	Male	247	45,45	7,99		

Table 2 shows the results of the "independent samples t-test" used to compare the mental toughness scores of the athletes according to gender. As a result of the analysis, no statistically significant difference was found in the mental toughness scores of the athletes according to gender ($p>.05$).

Table 3. t-Test Comparison Results of Athletes' Mental Toughness Scores According to Certified Athlete Status

	Certified Athlete	n	$\overline{X}$	ss	t	p
Mental Toughness	Yes	321	45,70	7,59	,74	,46
	No	93	45,05	6,80		

Table 3 shows the results of the "independent samples t-test" used to compare the mental toughness scores of the athletes according to their status as certified athletes. As a result of the analysis, no statistically significant difference was found in the mental toughness scores of the athletes according to their status as certified athletes ($p>.05$).

Table 4. t-Test Comparison Results of Athletes' Mental Toughness Scores According to National Athlete Status

	National Athlete	n	$\overline{X}$	ss	t	p
Mental Toughness	Yes	116	46,41	7,71	1,47	,14
	No	298	45,22	7,28		

Table 4 shows the results of the "independent samples t-test" used to compare the mental toughness scores of the athletes according to their status of being a national athlete. As a

result of the analysis, no statistically significant difference was found in the mental toughness scores of the athletes according to their status of being a national athlete (p>.05).

Table 5. t-Test Comparison Results of Athletes' Mental Toughness Scores According to Sport Branch

	Sport Branch	n	$\overline{X}$	ss	t	p
Mental Toughness	Team Sport	182	44,68	7,71	-2,14	,03
	Individual Sport	232	46,25	7,12		

In Table 5, the results of the "independent samples t-test" used to compare the mental toughness scores of the athletes according to the sport branch are given. As a result of the analysis, a statistically significant difference was found in the mental toughness scores of the athletes according to the sport branch (p<.05). According to this, the mental toughness scores of individual athletes are significantly higher than those engaged in team sports.

Table 6. t-Test Comparison Results of Athletes' Mindfulness Scores According to Gender

	Gender	n	$\overline{X}$	ss	t	p
Awareness	Female	167	25,50	2,72	,88	,38
	Male	247	25,25	3,00		
Nonjudgment	Female	167	13,59	4,66	1,47	,14
	Male	247	12,93	4,34		
Refocusing	Female	167	23,86	3,43	-1,42	,16
	Male	247	24,36	3,60		
Mindfulness	Female	167	62,95	5,63	,78	,44
	Male	247	62,53	5,04		

Table 6 shows the results of the "independent samples t-test" used to compare the mindfulness scores of the athletes according to gender. As a result of the analysis, no statistically significant difference was found in the mindfulness scores of the athletes according to gender (p>.05).

Table 7. t-Test Comparison Results of Athletes' Mindfulness Scores According to Certified Athlete Status

	Certified Athlete	n	$\overline{X}$	ss	t	p
Awareness	Yes	321	25,20	2,92	-1,94	,05
	No	93	25,86	2,74		
Nonjudgment	Yes	321	13,14	4,40	-,47	,64
	No	93	13,39	4,76		
Refocusing	Yes	321	24,25	3,57	,95	,34
	No	93	23,85	3,43		
Mindfulness	Yes	321	62,59	5,52	-,94	,35
	No	93	63,10	4,33		

Table 7 shows the results of the "independent samples t-test" used to compare the mindfulness scores of the athletes according to their status as certified athletes. As a result of the analysis, no statistically significant difference was found in the mindfulness scores of the athletes according to their status as certified athletes (p>.05).

Table 8. t-Test Comparison Results of Athletes' Mindfulness Scores According to Being a National Athlete

	National Athlete	n	$\overline{X}$	ss	t	p
Awareness	Yes	116	25,29	2,92	-,28	,80
	No	298	25,37	2,88		
Nonjudgment	Yes	116	13,08	4,45	-,33	,74
	No	298	13,24	4,49		
Refocusing	Yes	116	24,41	3,68	,89	,37
	No	298	24,06	3,48		
Mindfulness	Yes	116	62,78	5,46	,18	,86
	No	298	62,67	5,22		

Table 8 shows the results of the "independent samples t-test" used to compare the mindfulness scores of the athletes according to their status of being a national athlete. As a result of the analysis, no statistically significant difference was found in the mindfulness scores of the athletes according to their status of being a national athlete (p>.05).

Table 9. t-Test Comparison Results of Athletes' Mindfulness Scores According to Sport Branch

	Sport Branch	n	$\overline{X}$	ss	t	p
Farkındalık	Team Sport	182	25,15	2,80	-1,23	,22
	Individual Sport	232	25,50	2,96		
Yargılamama	Team Sport	182	13,48	4,51	1,17	,24
	Individual Sport	232	12,97	4,45		
Yeniden Odaklanma	Team Sport	182	23,78	3,40	-1,93	,06
	Individual Sport	232	24,45	3,62		
Bilinçli Farkındalık	Team Sport	182	62,42	4,92	-,97	,34
	Individual Sport	232	62,92	5,55		

Table 9 shows the results of the "independent samples t-test" used to compare the mindfulness scores of the athletes according to their sport branch. As a result of the analysis, no statistically significant difference was found in the mindfulness scores of the athletes according to the sport branch (p>.05).

Table 10. Results of the Relationship Between Athletes' Mental Toughness Scores and Mindfulness Scores

		Awareness	Nonjudgment	Refocusing	Mindfulness
Mental Toughness	r	,36**	-,20**	,40**	,30**
	p	,00	,00	,00	,00

Table 10 shows the results of the "Pearson correlation" analysis showing the relationship between athletes' mental toughness scores and mindfulness scores. As a result of the analysis, there were moderate positive correlations between mental toughness and mindfulness (r=,36), refocusing (r=,40) and mindfulness (r=,30) scores and low negative correlations with non-judgment (r-,20) (p<.05).

Table 11. Regression Analysis Results for Prediction of Mental Toughness

Model	B	Std. Error	β	t	p

Fixed	15,97	3,99	---	4,01	,00
Awareness	,56	,13	,22	4,17	,00
Nonjudgment	,03	,08	,02	,32	,75
Refocusing	,62	,11	,30	5,45	,00
R= ,44	R^2_{adj}= ,19				
$F_{(3,410)}$ = 33,27	p= ,01				

Dependent variable=Mental toughness

Table 11 shows the results of the multiple linear regression analysis conducted to determine the predictive power of athletes' mindfulness on mental toughness. As a result of the analysis, it is seen that the regression model is statistically significant. When the t-test results regarding the significance of the regression coefficients were analyzed, it was found that mindfulness (β= ,22; t=4,17; p=00) and refocusing (β= ,30; t= 5,45; p=.00) were significant predictors of mental toughness. It can be stated that 19% of the total variance of mental toughness is explained by mindfulness.

Discussion and Conclusion

In this study, it was aimed to examine the relationship between mental toughness and mindfulness in athletes.

When the findings regarding the mental toughness levels of the athletes according to their gender were examined, it was found that the mental toughness level did not differ according to gender, and in this context, the mental toughness levels of female and male athletes were similar. It can be thought that the basis of this result is that participation in sports positively affects the psychological structure of women and men. The results of previous studies also show that sports positively affect the psychological structure in both men and women (Bailey, Cope & Parnell, 2015; Garcia-Falgueras, 2015; Muraki, Tsunawake, Hiramatsu, & Yamasaki, 2000; Berger, 1996). In addition, studies have shown that the mental toughness levels of male and female athletes are similar. In a study conducted on this subject, it was aimed to examine the level of mental toughness in the light of demographic variables in athletes, 99 taekwondo, 106 kick boxing, and 125 muay thai athletes participated in the study. At the end of the study, it was reported that the mental toughness levels of athletes did not differ according to gender (Çoruh, 2020). In another study conducted on young handball players, it was determined that both the general level of mental toughness and the results of mental toughness sub-dimensions in handball players between the ages of 14-22 did not differ according to the gender of the athletes (Maraşlı, 2018).

There are also research findings revealing that the level of mental toughness in athletes differs according to gender (Nicholls et al., 2009). In a study conducted on elite runners, it was found that the mental toughness levels of male and female athletes differed significantly, and in this context, male athletes had higher mental toughness levels compared to female athletes (Andrew & Chen, 2014). In studies conducted on athletes in younger age groups, it is also stated that the mental toughness levels of male athletes are higher than female athletes (Merdan, 2020, p. 46). In another study conducted on this subject, it was aimed to examine the effect of gender factor on mental toughness in athletes, and 172 female and 214 male athletes participated in the study. At the end of the study, it was found that both the general mental toughness levels and the scores of the mental toughness sub-dimensions (confidence, control) of female and male athletes differed significantly (Sağlam, 2021). It can be thought

that the main reason for the high level of mental toughness in favor of male athletes at young ages is that male athletes are more resistant to physical challenges at young ages.

When the findings related to mental toughness levels according to the variable of being a certified athlete were examined in the study, it was found that the level of mental toughness did not differ according to being a certified athlete, and in this context, the mental toughness levels of certified and non-certified athletes were similar. This result can be attributed to the fact that both doing performance sports with a certificate and doing sports for a healthy life without a certificate improves psychological health. In the studies in the literature, it is stated that participation in sports in any way improves mental toughness rather than doing sports with a certificate. In a study conducted on this subject, it was found that the mental toughness levels of individuals who played in the school team, who played sports in a certified sports club and who were interested in sports individually without a certificate did not differ significantly (Köklü, 2020). In some studies, it is stated that the level of mental toughness is higher in certificate athletes. In the study conducted on orienteering athletes, it was found that the mental toughness levels of the athletes differed significantly according to their certified status. In the study in question, it was reported that the mental toughness levels of the athletes who prepared for orienteering competitions as certified athletes were higher compared to the participants who did sports as a leisure time activity (Peke, 2020).

When the findings related to the mental toughness levels according to the status of being a national athlete were examined, it was found that the mental toughness level did not differ according to the status of being a national athlete, and in this context, the mental toughness levels of national athletes and non-national athletes were similar. This result may be attributed to the fact that non-national athletes, like national athletes, train at high load intensity. In the studies in the literature, it is stated that being a national athlete is not an important determinant of mental toughness. In fact, in a study conducted on this subject, it was reported that the mental toughness levels of non-national athletes were higher compared to national athletes (Sağlam, 2021).

When analyzed according to the sport branch variable in the study, it was found that the mental toughness levels of the athletes showed significant differences. Within the scope of the research, athletes were divided into two groups as team sports and individual sports athletes according to their sports branches. When the differences between the groups were examined, it was found that the level of mental toughness in athletes interested in individual sports was higher than that of athletes interested in team sports. This result can be attributed to the fact that athletes in individual sports both do the training alone and achieve success in competitions thanks to their individual struggles. On the other hand, it is stated that in some sports, the sport branch is not determinant on mental toughness. In a study conducted on this subject, the mental toughness levels of 158 athletes interested in individual sports and 178 athletes interested in team sports were examined, and at the end of the study, it was found that the mental toughness levels of the participants did not differ according to the sport branch variable (Sağlam, 2021). It can be thought that the main reason for the lack of parallelism between the research findings is that the studies were conducted on athletes in different classes and age groups.

When the findings regarding the mindfulness levels of the athletes according to their gender were examined, it was found that the level of mindfulness did not differ according to gender, and in this context, the mindfulness levels of male and female athletes were similar. In the studies in the literature, it is generally stated that the mindfulness levels of athletes do not differ according to gender. In the study conducted on disabled athletes, it was aimed to

examine the factors related to the mindfulness levels of athletes, and it was reported that the mindfulness levels of physically disabled athletes and hearing impaired athletes did not differ according to gender (Gür, 2020). In another study conducted on young handball players and involving handball players between the ages of 14-22, it was determined that the level of mindfulness did not differ according to the gender of the athletes (Maraşlı, 2018).

In some studies in the literature and conducted on athletes, it has been reported that there are differences between the mindfulness levels of male and female athletes. The fact that the findings of these studies are not in parallel with the results obtained in this study may be attributed to the fact that the studies were conducted on athletes interested in sports branches with different characteristics. In a study conducted on wrestlers, it was reported that the mindfulness levels of female and male wrestlers differed according to gender, and the level of mindfulness was higher in male athletes compared to female athletes (Kesler, 2020). In another study conducted on elite level athletes, mindfulness levels of athletes were examined according to gender variable, and 175 male and 163 female athletes participated in the study. At the end of the study, it was found that the mindfulness levels of athletes differed according to gender, and according to the results obtained, it was determined that the level of mindfulness in female athletes was higher than male athletes (Kozak, Zorba & Bayrakdar, 2021).

When the findings regarding the level of mindfulness according to the variable of engaging in sports with a certificate in the study were examined, it was found that the level of mindfulness did not differ according to the status of being a certified athlete, and in this context, the mindfulness levels of certified and non-certified athletes were similar. In the study conducted by Bayram (2019), it was found that the mindfulness levels of university students who do and do not do sports do not differ significantly. In this context, it can be said that different psychological factors rather than sports participation are effective on mindfulness development.

In the study, when the findings regarding the level of mindfulness according to being a national athlete were examined, it was found that the level of mindfulness did not differ according to being a national athlete, and in this context, the level of mindfulness of national athletes and non-national athletes was similar. Although there are limited studies in the literature comparing the mindfulness levels of national and non-national athletes, it has been reported that the level of success of athletes and the type of competition in which they achieve success are not determinant on mindfulness in studies examining the level of mindfulness of athletes according to their amateur or professional level achievements (Tingaz, 2020). In another study examining the mindfulness levels of athletes interested in different sports, it was determined that both the mindfulness levels and the scores of the sub-dimensions of mindfulness of national and non-national athletes did not differ significantly (Vural & Okan, 2021). In another study conducted on elite athletes, the mindfulness levels of athletes were compared according to their status as amateur and professional athletes, and it was reported that the mindfulness levels of professional athletes were higher than amateur athletes (Kozak et al., 2021).

When analyzed according to the sport branch variable in the study, it was found that the mindfulness levels of the athletes did not differ significantly. In this context, it was determined that the mindfulness levels of athletes interested in team sports and athletes interested in individual sports branches were similar. It can be thought that both team sports and individual sports branches develop the mental structure in the emergence of this result. In

a study conducted by Gür (2020), the level of mindfulness in disabled athletes according to the sport branch variable was examined, and at the end of the study, it was reported that the level of mindfulness in hearing and visually impaired athletes did not differ according to the sport branch (team sports, individual sports) variable. In another study conducted by Bayram (2019) on this subject, it was aimed to examine the mindfulness levels of students according to their sporting status and sports branches of interest. In the study, it was determined that there was no significant relationship between the mindfulness levels of students who do and do not do sports and students who are interested in team and individual sports branches.

In the study, it was found that there was a significant positive relationship between mindfulness levels and mental toughness levels of athletes. In addition, it was determined that mindfulness had a significant effect on mental toughness, and in this context, 19% of the total variance of mental toughness was explained by mindfulness. The basis of this result may be that athletes with high levels of mindfulness use their mental functions better. Studies also show that participation in sports generally reduces the factors that negatively affect the mental structure, and that high levels of mindfulness positively affect the psychological structure (Chiesa & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004). The results of studies conducted on individuals in different age groups also show that there is a significant relationship between mindfulness and mental toughness (Okan, Yılmaztürk & Kürüm, 2020).

In a similar study, it was aimed to examine the relationship between mental toughness levels and mindfulness levels of university students and to determine the mediating role of emotional intelligence in the relationship between mental toughness and mindfulness. At the end of the study, it was found that there was a significant positive relationship between the participants' mental toughness levels and mindfulness levels, and it was also determined that emotional intelligence level had a mediating role in the relationship between mental toughness and mindfulness (Deniz, Erus & Büyükcebeci, 2017). In a similar study conducted on adult individuals, it was found that as the level of mental toughness increased, the participants' mindfulness levels also increased, and in this context, there was a significant positive relationship between mindfulness and mental toughness level (Özer, 2018).

Although the studies examining the mental toughness and mindfulness levels of athletes are limited in the literature, it is seen that some studies have reached results that are not in parallel with the findings of this study. It can be thought that the reason for the lack of parallelism between the research findings lies in the fact that the studies were conducted on athletes in different age groups and league / classification levels. In the study conducted by Maraşlı (2018), it was aimed to examine the relationship between mental toughness and mindfulness level in young handball players, and 172 young handball players between the ages of 14-22 participated in the study. At the end of the study, it was determined that there was no significant relationship between the mental toughness levels of the athletes and their mindfulness levels.

One of the main reasons why a high level of mindfulness positively affects mental toughness is that mindfulness positively affects the cognitive elements associated with mental toughness. In a study conducted on this subject, it was stated that high levels of mindfulness have positive effects on self-management and self-efficacy, which are closely related to mental toughness. In the aforementioned study, it was stated that people with high levels of mindfulness provide self-control in the face of different situations and act in accordance with the plans they make thanks to the aforementioned characteristics and competencies. In addition, the phenomenon of patience, which is another element that creates mindfulness, is a

concept closely related to mental toughness. In this context, it is seen that individuals with high levels of mindfulness try to reach the result without acting hastily (Akçakanat & Köse, 2018).

Another reason for the positive effect of mindfulness level on mental toughness is that mindfulness affects factors related to mental toughness such as coping with stress and anxiety. In a study conducted on this subject, it was stated that a high level of mindfulness improves the individual's characteristics such as accepting the current situation, focusing on problems and psychological well-being. In the same study, it was stated that with a high level of mindfulness, the individual will be more tough in the face of psychologically damaging factors such as stress and depression (Arslan, 2018, p. 73). In addition, in many studies in the literature, it is stated that the level of mindfulness is a factor that strengthens the psychological structure and improves the ability to cope with challenging situations (Brown & Ryan, 2003; Kang, Choi & Ryu, 2009).

When the results of the research were evaluated, it was found that the mental toughness level of the athletes did not differ according to the variables of gender, being certified in sports and being a national athlete, but the mental toughness level differed according to the sport branch variable. According to the results obtained, it was determined that the level of mental endurance was high in favor of athletes interested in individual sports. When the findings related to the mindfulness levels of the athletes participating in the study were evaluated, it was determined that the mindfulness levels of the athletes did not differ significantly according to gender, being a certified athlete, being a national athlete and sport branch variables. As a result, it was determined that there is a significant relationship between the mental endurance levels of athletes and their mindfulness levels and that mindfulness directly affects mental endurance. It was concluded that these results were similar to the literature.

Considering the findings of this study, the following suggestions can be made;

- In the studies in the literature, it is generally seen that the mental toughness levels and mindfulness levels of athletes are examined according to demographic variables, and it is seen that studies examining the effects of different factors affecting performance in sport on mental toughness and mindfulness are limited. In this context, studies examining the relationship between different variables affecting performance in sport (personality, motivation, concentration, perceived social support, optimal performance mood, situational anxiety, achievement motivation, stress, etc.) and mental toughness and psychological resilience in athletes can be conducted.
- When the findings obtained in this study were evaluated, it was seen that mindfulness positively affected mental toughness. This situation reveals the idea that mindfulness practices can increase mental toughness in athletes. On the other hand, it was observed that the studies examining the effects of mindfulness on mental toughness were limited in the studies in the literature. In this context, studies examining the effects of mindfulness practices on mental toughness in athletes can be conducted.
- It is seen that studies examining the effects of mental toughness level and mindfulness on performance in athletes are limited. At this point, studies on the relationship between the level of mental toughness and mindfulness in athletes and sportive performance can be conducted.
- In this study, all demographic variables that may affect the psychological structures of athletes were not included. In this context, studies can be conducted to examine the effects of different demographic variables (education level of parents, socio-economic status, education level, marital status, etc.) on both mental toughness and mindfulness.

Conflict of Interest

The authors declared no conflicts of interest to authorship and/or publication of the article.

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Ethical Aspect of Research/Ethical Approval Statement

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