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Examination of Mental Toughness, Anxiety, and Generalized Anxiety Disorder-7 (GAD-7) Levels of Elite and Amateur Cyclists

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Abstract

Nowadays, it is an accepted fact that in order to achieve high performance in sports environment, the athlete's psychological competence is as important as his/her physical competence. Cycling is an activity performed by large masses all over the world for recreational, health, and performance purposes. This study aims to examine some psychological variables (mental toughness, anxiety and worry, and Generalized Anxiety Disorder levels) of amateur and elite cyclists. The sample of the study consisted of 124 amateur and 95 elite volunteer cyclists between the ages of 15-41 (N=219) who cycle throughout Turkey. Personal information form, Mental Toughness Scale, Worry and Anxiety Scale, and Generalized Anxiety Scale-7 prepared considering the DSM-IV SCID-I clinical interview guide were used as data collection tools in the study. Independent t-test and ANOVA statistical analyses were used in the analysis of the study. As a result of the analyses, (1) men's mental toughness levels were found to be higher than women's, but there was no significant difference between them ($p>0.05$). (2) It was found that women's levels of worry and anxiety and generalized anxiety disorder were higher than men's ($p<0.001$). (3) Elite cyclists' mental toughness levels were found to be higher than amateurs ($p<0.05$). (4) Amateur cyclists' worry and anxiety levels were higher than elite cyclists' ($p<0.005$). (5) Cyclists' mental toughness levels were high, while worry and anxiety, and generalized anxiety disorder levels were moderate. As a result, this study shows that the levels of mental toughness, anxiety and generalized anxiety disorder of cyclists may vary depending on gender, age and sport level (amateur/elite).

Keywords: Bicycle, athlete, mental endurance, worry, anxiety.

Özet

Elit ve Amatör Bisikletçilerin Zihinsel Dayanıklılık, Anksiyete ve Yaygın Anksiyete Bozukluğu-7 (YAB-7) Düzeylerinin İncelenmesi

Günümüzde spor ortamında yüksek performans elde etmek için sporcunun fiziksel yeterliğinin yanı sıra psikolojik yeterliğinin de önemli olduğu kabul edilmiş bir gerçektir. Bisiklet sürme, rekreasyonel, sağlık ve performans amaçlı tüm dünyada geniş kitlelerce yapılan bir aktivitedir. Bu çalışma amatör ve elit bisikletçilerin bazı psikolojik değişkenlerini (zihinsel dayanıklılık, endişe ve kaygı ile Yaygın Kaygı Bozukluğu düzeyleri) incelemeyi

amaçlamaktadır. Araştırmanın örneklemini Türkiye genelinde bisiklet kullanan 15-41 yaş aralığındaki 124 amatör ve 95 elit gönüllü bisikletçi (N=219) oluşturmuştur. Araştırmada veri toplama aracı olarak kişisel bilgi formu, Zihinsel Dayanıklılık Ölçeği, Endişe ve Anksiyete Ölçeği ile DSM-IV SCID-I klinik görüşme kılavuzu göz önüne alınarak hazırlanan, Yaygın Anksiyete Ölçeği-7 kullanılmıştır. Araştırmanın analizinde bağımsız t test ve ANOVA istatistiksel analizleri kullanılmıştır. Analizler sonucunda (1) erkeklerin zihinsel dayanıklılık düzeylerinin kadınlara göre daha yüksek bulunmuş ancak aralarında anlamlı fark çıkmamıştır (p>0,05). (2) Kadınların endişe ve kaygı ile yaygın kaygı bozukluğu düzeylerinin erkeklere göre daha yüksek olduğu tespit edilmiştir (p<,001). (3) Elit bisikletçilerin zihinsel dayanıklılık düzeylerinin amatörlere göre daha yüksek olduğu tespit edilmiştir (p<0,05). (4) Amatör bisikletçilerin endişe ve kaygı düzeyleri elit bisikletçilere göre daha yüksektir (p<,005). (5) Bisikletçilerin zihinsel dayanıklılık düzeyleri yüksek düzeydeyken endişe ve kaygı ile yaygın kaygı bozukluğu düzeyleri orta düzeydedir. Sonuç olarak bu araştırma bisiklet sporcularının zihinsel dayanıklılık, endişe ve kaygı ile yaygın kaygı bozukluğu seviyelerinin cinsiyet, yaş ve spor düzeyi (amatör/elit) değişkenlerine bağlı olarak değişebileceğini göstermektedir.

Anahtar Kelimeler: Bisiklet, sporcu, zihinsel dayanıklılık, endişe, anksiyete.

INTRODUCTION

While cycling offers physiological and psychological benefits in daily life, its role as a competitive sport also emphasizes the pursuit of high performance. It is an accepted fact that both psychological and physical competence are necessary to achieve high performance (14). Among these psychological factors, mental toughness stands out as one of the most critical components. One of the most basic elements of these psychological competencies is mental toughness. Mental resilience, defined as the power to recover after difficult life experiences or the ability to overcome changes and difficulties that may occur, is a process of achieving success or adaptation that reduces the negative effects of stress and encourages adaptation. On the other hand, scholars define mental toughness as the ability to cope with pressure and challenges in a way that minimizes the impact on performance (19). In any sport where all competitors are equal, using technical skills consistently and being a champion athlete requires mental toughness (34). Mental toughness is a condition considered to be associated with high performance in sports competitions. The mentally strong athlete is likely to overcome some challenges and be successful in a competition. The importance of mental endurance, especially in competitive sports, has been mentioned in the literature (21). Several studies, many methods and approaches to increase mental resilience are stated. Additionally, other studies suggest that the determination of mental toughness may be affected by genetics, education, experience, and environmental factors (25). For example, in a study, it was stated that individuals with more sports history and experience had higher mental endurance levels and better performance than individuals with less sports experience (3).

On the other hand, one of the most basic elements of psychological competencies is worry and anxiety. Most coaches or athletes believe that there should be "zero" anxiety to achieve the highest level of performance. While an optimal level of sports-related performance anxiety is considered healthy, excessive anxiety negatively affects athlete performance. Various factors can lead to the development, severity, and persistence of performance anxiety in sports (8). Fear of failure in sports, performance anxiety, increased perception of stress, higher risk of burnout, and higher levels of anxiety have been associated with sports anxiety (29). In contrast, mental training, motivation, concentration, and psychological skills such as focus, goal setting, and self-confidence are very important factors in reducing anxiety to a moderate level and achieving high performance in sports events. Additionally, positive thinking and emotional control are important components of this process (12).

Mentally strong athletes have a range of responses that can maintain mood, composure, and strength. The relationship between mental toughness and performance has been consistently demonstrated in studies involving cognitive and motor skills. Elite athletes have higher levels of mental toughness than lower-level performers. Studies have used a variety of psychological variables, such as emotions, affects, pain perceptions, or other factors, as potential ways to maintain mental toughness in sports (36).

The development of anxiety and the effect of exercise on the brain is affected by psychological mechanisms. Exercise-specific determinants of anxiety and worry focused on anxiety while explaining the metacognitive system of 'Generalized Anxiety Disorder (GAD)'. In recent years, anxiety in sports has become one of the most

talked about elements (34). It is known that anxiety, emotional, and personality factors are of great importance in sports competitions, but individuals' anxiety states include different emotional reactions. These include being tense, anxious, and nervous, negative thoughts (worries), and physiological changes (stomach problems, muscle cramps, and headaches). Therefore, stress and anxiety management are very important for individuals. "Autogenic work is needed in sports to eliminate stress" (10; as cited in 35). The variety of negative thoughts created by anxiety creates a situation in which individuals cannot understand their environment. This situation is seen with an increase in individuals' tension and restlessness (24; as cited in 34). Trait and state anxiety theory provides a general framework for examining the main variables that involved in stress and anxiety situations and includes the investigation of possible relationships between these variables (43). According to Wells, excessive and difficult-to-manage anxiety is the hallmark of the disorder (GAD). Anxiety is diagnosed not only based on symptoms but also serves as an effective assessment and coping tool that examines a person's thoughts and beliefs (46). As with most psychiatric disorders, the root cause of GAD is not fully understood. The adaptive nature of anxiety makes it difficult to distinguish between normal and pathological levels of stress disorder, as well as to distinguish between psychosocial and biological factors. Psychosocial and biological factors are likely interdependent (40). GAD is most commonly associated with depression and personality disorders, as well as other mental illnesses (39). In general, the main features that distinguish anxiety in GAD from other anxiety are; its prevalence, its chronic and harmful effects on functionality. Although it is important in all sports branches, mental endurance becomes even more important, especially in branches where the cyclist must compete with his opponent and the environment. This research will contribute significantly to the literature, as there is very limited research on mental toughness, anxiety, worry, and Generalized Anxiety Disorder in sports. For this reason, the discussion regarding the results of the research will be done indirectly.

METHOD

In this research, the relational survey model was used to determine the relationships between two or more dependent variables without intervention. These model studies are generally studies in which the relationship between two or more dependent variables is determined and examined without interfering with these variables (20). In this study, the mental toughness, worry, anxiety levels, and generalized anxiety disorder 7 levels of elite and amateur cyclists were examined.

Research Model

This research used a quantitative research method, the relational screening model. This model is generally used in research where the relationship between two or more dependent variables is determined and examined without intervening in these variables. In this research, the mental toughness, worry, and anxiety levels and generalized anxiety disorder-7 levels of elite and amateur cyclists were examined. Amateur cyclists participating in this study must be using a normal bicycle, not have a license, and not have participated in competitions. Elite cyclists must be using a bicycle used in different competitions, have a license for at least one year, and have participated in competitions.

Participants

The research group consists of volunteer cyclists across Türkiye in 2023. A total of 219 participants between the ages of 15-41 were included in the study. In this study, the dependent variables of elite and amateur cyclists are mental toughness, worry, and anxiety level (EAS), and generalized anxiety disorder-7 (GAD-7) levels; Gender, age, and group (amateur-professional) status constitute the independent variables. The required qualification numbers have been determined within the scope of the literature. It is stated in the literature that this potential can be sufficient for the relevant analyses of 5 to 10 times the item (Brown, 2015; Kline, 2023). The powers that the dimensions used are much higher than this criterion due to the development of the dimensions used from 11 items.

Relationships between Demographic Variables were examined with ANOVA analysis and the results are presented in Table 1.

Table 1. Descriptive statistical information regarding the study group

Variables		n	%
Gender	Female	70	32,0
	Male	149	68,0
Age	15-17	34	15,5
	18-25	67	30,6
	26-33	47	21,5
	34-41	71	32,4
Group	Amateur	124	56,6
	Elite	95	43,4
	Total	219	100,0

When Table 1 is examined, it is seen that 32.0% of the participants are women and 68.0% are men. 15.5% of the participants are 15-17 years old, 30.6% are 18-25 years old, 21.5% are 26-33 years old, and 32.4% are 34-41 years old It is seen that 56.6% of the participants are amateurs and 43.4% are elite athletes.

Data Collection Tools

Mental Toughness Scale (MTS):

Mental Toughness Scale was developed by Madrigal et al., (26), and Turkish validity and reliability were tested by Erdoğan (9). The scale is a five-point Likert-type scale, ranging from strongly disagree to completely agree (strongly disagree 1, disagree 2, undecided 3, agree 4, and completely agree 5). The lowest score that can be obtained in the scale scoring is 11 and the highest score is 55. High scores indicate high mental toughness and low scores indicate low mental toughness. In this study, the Cronbach alpha value of the Mental Toughness Scale was determined to be 0.888.

Worry and Anxiety Scale (WAS)

The Turkish validity and reliability of the Worry and Anxiety Scale (WSS) developed by Dugas et al., (7) was adapted to Turkish by Akyay (1). WAS is a Likert-type scale with, 11 items and nine points (0-8). The score that can be obtained in EAS is between 0-80. In this study, the Cronbach alpha value of the Worry and Anxiety Scale was determined as 0.898.

Generalized Anxiety Disorder-7 Scale (GAD-7)

Generalized Anxiety Disorder-7 Scale (GAD-7) was developed by Spitzer et al. (35). The validity and reliability study of the scale in Turkish was conducted by Konkan (23). According to DSM IV-TR criteria, the GAD-7 scale is a scale that measures generalized anxiety disorder and is a self-assessment type. It is a Likert-type scale [four points between 0-3, (0) never, (1) many days, (2) more than half of the days, (3) almost every day. The obtained score can be between 0-21 on the scale. Scale scores; between 0-4 points were considered as mild, 5-9 points as moderate, 10-14 points as high, and 15-21 points as severe anxiety. Eight was determined as the threshold value for the diagnosis of GAD-7. In this study, GAD-7 Cronbach's alpha value was determined as 0.833.

Analysis of Data

The data obtained from the research were evaluated using the SPSS Windows 29.00 program. Skewness-kurtosis values were examined to determine the suitability of the data for normal distribution. One-way ANOVA was used to compare age scale scores since the data conformed to normal distribution; Independent groups t-test analyses were used to compare gender, group structure (amateur, professional), and scale scores. The statistical significance level was taken as 0.05.

Ethical approval and institutional permission

This study was conducted in accordance with the Declaration of Helsinki. The study was approved by the Pamukkale University Non-Interventional Clinical Research Ethics Committee on Number: E-60116787-020-503218. Written consent forms were obtained from all participants.

FINDINGS

Gender relationships between the variables were examined with T-test analysis and the results are presented in Table 2.

Table 2. Comparison of the mental toughness, worry and anxiety, and generalized anxiety disorder-7 statistical analysis results of the cyclists participating in the study according to gender variable

The dependent variable	Gender	n	$\bar{x}$	Sd	t	*p*
Mental Toughness	Female	70	45,28	6,951	-1,233	0,219
	Male	149	46,60	7,566		
Worry and Anxiety	Female	70	32,61	19,521	3,856	0,000**
	Male	149	22,51	17,373		
Generalized Anxiety Disorder-7	Female	70	7,48	4,817	3,435	0,001**
	Male	149	5,26	4,275		

** p<0,05; *p<0,001*

As a result of the independent sample t-test statistical analysis, no significant difference was found in the mental toughness level total scores of male and female cyclists (p>.05; Table 2). However, when the total mean scores of worry and anxiety were examined, a significant difference was detected between male and female cyclists (p<.000). Table 2 shows that the total mean scores of female cyclists for worry and anxiety are higher than the mean scores of male cyclists. Finally, when the generalized anxiety disorder-7 total mean scores were compared between genders, a significant difference was detected against women (p<.001). Accordingly, the generalized anxiety disorder-7 total average scores of female cyclists are higher than male cyclists.

Age relationships between the variables were examined with Anova test analysis and the results are presented in Table 3.

Table 3. Comparison of the statistical analysis results of mental toughness, anxiety, and generalized anxiety disorder-7 of the cyclists participating in the study according to their age variable.

The dependent variable	Age	n	$\bar{x}$	Sd	F	*p*	Difference
Mental Toughness	15-17¹	34	48,14	6,742	1,274	0,284	
	18-25²	67	45,35	6,498			
	26-33³	47	46,702	6,527			
	34-41⁴	71	45,67	8,811			
	Total	219	46,18	7,385			
Worry and Anxiety	15-17¹	34	30,05	17,677	18,766	0,000**	4<1 3<2 4<2 4<2
	18-25²	67	35,91	20,146			
	26-33³	47	24,21	16,859			
	34-41⁴	71	15,08	11,901			
	Total	219	25,73	18,650			
Generalized Anxiety Disorder-7	15-17¹	34	6,64	4,650	6,808	0,000**	3<2 4<2
	18-25²	67	7,70	5,314			
	26-33³	47	5,27	3,943			
	34-41⁴	71	4,49	3,492			
	Total	219	5,97	4,563			

p<0,05; **p<0,001*

When Table 3 is examined, no significant difference was detected in the total mental toughness level scores of the participants according to the age variable (p>.05). The results of the total mean scores of Worry and Anxiety showed a statistically significant difference according to the age variable (p<.000). Tukey HSD post hoc analysis was performed to determine which groups the differences occurred. As a result of the analysis, it was determined that there were significant differences between the 15-17 age group and the 34-41 age group, the 18-25 age group and the 26-33 age group, and the 34-41 age group and the 34-41 and 26-33 age groups (Table 3). When the generalized anxiety disorder-7 total score averages were compared, a statistically significant difference was found between the age groups (p<.000). As a result of the Tukey HSD post-hoc

analysis performed to determine in which groups the difference occurred, a significant difference was found between the 18-25 age groups, 26-33 age groups, and 34-41 age groups (Table 3).

Amateur and elite cyclists' relationships between the variables were examined with T-test analysis and the results are presented in Table 4.

Table 4. Comparison of the mental toughness, worry and anxiety, and generalized anxiety disorder-7 statistical analysis results of the research participants according to amateur and elite cyclists

The dependent variable	Group	N	$\bar{x}$	Sd	t	*p*
Mental Toughness	Amateur	124	45,32	6,444	-1,982	0,049*
	Elite	95	47,30	8,360		
Worry and Anxiety	Amateur	124	28,12	18,530	2,185	0,030*
	Elite	95	22,62	18,439		
Generalized Anxiety Disorder-7	Amateur	124	6,02	4,277	0,174	0,862
	Elite	95	5,91	4,935		

p<0,05*

As a result of the independent sample t-test statistical analysis, a statistically significant difference was found in the total mental toughness level scores of amateur and elite cyclists (p<.05). Accordingly, on the one hand, it was determined that the mental endurance mean scores of elite cyclists were higher than amateur cyclists, and on the other hand, the total mean scores of anxiety and anxiety state of amateur cyclists were found to be higher than the mean scores of elite cyclists (p <.05). Finally, there was no significant difference between the generalized anxiety disorder-7 total mean scores of amateur cyclists and the mean scores of elite cyclists (p>.05) (Table 4).

DISCUSSION AND CONCLUSION

In this study, no statistically significant difference was found in the mental endurance mean scores between male cyclists and female cyclists. While some studies in the literature support this result, some studies do not. For example, it has been reported that men's mental toughness levels are higher than women's and that there is a significant difference in favor of men at the total score level of mental toughness sub-dimensions (22). In another study, a significant difference was found in the total scores of mental toughness levels of male athletes compared to female athletes. The results of these studies were conducted. It was found to be contrary to the results of our research. Other studies support our research. For example, there was no significant difference between male and female athletes in terms of mental toughness. In another example, it has been reported that there is no difference in the mental toughness levels of tennis players in terms of the gender variable (17). The reason for these differences in the studies may be due to the difference in the subject group of our study and the different scales used.

The research result shows male cyclists' total worry and anxiety scale scores were lower than female cyclists. This result is different from some previous studies. For example, no statistically significant difference was found in any parameter of cycling athletes according to gender (16; 28; 11). In another study, no difference was found in anxiety levels according to gender (24). The reason these studies differ from the results of our study can be explained by using different scales and different subject groups and sports branches. In light of the answers given by female cyclists, the reason why they feel more anxiety and anxiety is that it may be due to situations such as financial issues, future anxiety, health, traffic accidents, and technical malfunction.

In our study, female cyclists' GAD-7 total mean scores were higher than male cyclists. While this result is supported by some previous studies, it is not supported by most studies. For example, in his thesis research, Kankurtay (18) found that women's generalized anxiety disorder (GAD-7) scores were higher than men's. On the other hand, in different studies conducted on this subject, it has been seen that there are many studies indicating that GAD-7 does not differ according to gender. In other studies, conducted; It has been reported that women's trait anxiety levels are higher (2). As a result, studies in the literature reveal contradictory results. This may be due to the different sample groups and individual and demographic characteristics of the participants in the studies.

In our research, no significant difference was detected in the total mental toughness level scores of the participants according to the age variable. While this result is similar to some studies in the literature, it differs from some other studies. For example, a study stated that there was no relationship between teachers' mental toughness levels and age (33). Another study found that there was no difference in the mental toughness levels of the participants according to age (39). The results of these studies are similar to the results of our study. On the other hand, a study found that there is a difference in the level of mental toughness depending on the age variable, that it is in favor of athletes between the ages of 24-29 and 30-35 compared to athletes between the ages of 18-23, and that as the age of the athletes increases, their mental toughness levels also increase (38). In another study, it was found that mental toughness increases in direct proportion to age (28). In a different study, the psychological skills, mental toughness, and anxiety of 174 elite handball players were examined in terms of age and it was determined that there was no difference in terms of the age variable (24). This discrepancy may be due to: The reason for this difference in our study may be that only individual athletes are examined; in related studies, however, both individual and team athletes are included. Also, it is conducted with different sports branches and different subject groups.

In our research, the results of the total mean scores of the participants on the Worry and Anxiety Scale (WAS) are respectively; 18-25, 15-17, and 26-33-year-old cyclists' EAS scores were moderately high compared to 34-41-year-old cyclists according to the age variable. EAS scores of 34-41-year-olds were at low levels. In another study, there was no difference between the anxiety profiles of elite athletes and non-athletes; It has been determined that young athletes have higher anxiety according to the age variable (30). The result of this research supports the result of the research conducted.

In this study, according to GAD-7 total scores, it was observed that the GAD-7 mean scores of 18-25-year-old cyclists were medium-high, while the GAD-7 mean scores of 26-33 and 34-41-year-old cyclists were low. As a result of the research, we can say that GAD-7 levels decrease with increasing age in cyclists. In this research, we think that factors such as experience, being determined, being more consistent, and psychological superiority in coping with stress may be among the main reasons for the difference according to the age variable. However, studies on generalized anxiety disorder-7 (GAD-7) have obtained different results. For example, in the study on "Development, validation, and feasibility of a general yoga-based intervention for Generalized Anxiety Disorder (GAD)", 8 out of 20 patients between the ages of 18-50 were included in the study, and as a result, patients experienced a subjective change in anxiety scores and severity after the intervention (27). In a thesis study conducted by Demir (6), a weak relationship was found between the age variable and trait anxiety. In his thesis study, Beksaçi determined that trait anxiety varies according to age and that anxiety levels are higher at younger ages. When other studies were examined, it was seen that there were studies supporting that GAD was not related to age. In his study, Kankurtay determined that there was no significant difference in GAD-7 scores according to the age variable. However, another study also stated that generalized anxiety may decrease or may not change with age (33). These contradictory findings across different studies suggest that age may interact with other variables.

In our research, it was determined that the mental toughness level total scores of elite cyclists were higher than amateur cyclists (10). This result is similar to the results of studies in the literature. For example, it has been determined that national athletes have a higher level of mental endurance than non-national athletes and that being a national athlete is an element that increases the level of mental endurance (40). In our research, the total mean scores of amateur cyclists on anxiety and anxiety state (AAS) were higher than the mean scores of elite cyclists. In other words, it means that elite cyclists experience less worry and anxiety. This result is similar to studies conducted in the literature. For example, a study conducted on 97 elite and 114 non-elite competitive swimmers found that elite athletes interpreted anxiety states as facilitating performance more than amateur athletes. However, they stated that the anxiety intensity levels in amateur athletes were higher than in elite athletes (15).

In this study, no significant difference was found between the generalized anxiety disorder-7 total mean scores of amateur cyclists and the mean scores of elite cyclists. Although there is no direct research on generalized anxiety disorder-7 in athletes in the literature, the findings of our study are thought to support studies conducted in different fields in the literature (15; 4; 13; 5). For example, Jones et al. (15) reported that

there was no difference in the intensity of cognitive and somatic anxiety symptoms between amateur and professional athletes.

In this study, the mental toughness levels, anxiety and worry states, and generalized anxiety disorder-7 total average scores of cyclists were examined according to gender, age, and amateur and elite status. As a result; no significant difference was found between the mental toughness levels of female and male cyclists. Therefore, we can say that cycling does not affect mental toughness. In our study, the anxiety and worry states (WAS) and generalized anxiety disorder (GAD-7) of female cyclists were found to be higher than male cyclists. The fact that women feel more anxiety and worry and generalized anxiety while cycling may be the result of reasons such as health, traffic accidents, technical malfunctions, financial issues, and future anxiety. There was no difference between the mental toughness levels of cyclists according to the age variable. However, we can say that anxiety and worry states decrease with increasing age. The mental toughness levels of elite cyclists were higher than those of amateur cyclists. This is a result of elite cyclists' performance elements, such as competition, struggle, and endurance. The anxiety and worry levels (WAS) of amateur cyclists were higher than elite cyclists. The anxiety and worry levels of amateur cyclists were higher than elite cyclists. It can be said that the low generalized anxiety (GAD-7) scores of elite cyclists are the result of elite cyclists feeling similar situations to amateur cyclists (traffic accidents, health, technical malfunction, financial issues, and future anxiety).

REFERENCES

1. Akyay A. Endişe ve Anksiyete Ölçeği, Problemlere Karşı Olumsuz Tutum Ölçeği ve Bilişsel Kaçınma Ölçeği'nin Türkçeye Uyarlanması, Geçerliliği ve Güvenirliliği, (Yüksek Lisans Tezi), T.C. Üsküdar Üniversitesi Sosyal Bilimler Enstitüsü Klinik Psikoloji Anabilim Dalı, 2016.
2. Bal U, Çakmak S, Uğuz Ş. Anksiyete Bozukluklarında Cinsiyete Göre Semptom Farklılıkları. Arşiv Kaynak Tarama Dergisi. 2013;22(4):441-459.
3. Bull SJ, Shambrook CJ, James W, Brooks JE. Towards an Understanding of Mental Toughness in Elite English Cricketers. Journal of Applied Sport Psychology, 2005; 17(3), 209–227. https://doi.org/10.1080/10413200591010085
4. Büyüköztürk, Ş. Sosyal Bilimler İçin Veri Analizi El Kitabı. Ankara: Pegem Akademi, 2011.
5. Brenes GA, Knudson M, McCall WV, Williamson JD, Miller ME, Stanley MA. Age and racial differences in the presentation and treatment of Generalized Anxiety Disorder in primary care. Journal of Anxiety Disorders, 2008; 22(7), 1128-1136. https://doi.org/10.1016/j.janxdis.2007.11.011
6. Brown, TA. Confirmatory factor analysis for applied research (2nd ed.), Guilford Press, New York, 2015.
7. Chi G, Wang L. The association of sports participation with depressive symptoms and anxiety disorder in adolescents. Frontiers in public health, 2022; 10, 860994.Demir S. Üniversite öğrencilerinin bağlanma stilleri ile kaygı düzeyleri ve yetersizlik duyguları arasındaki ilişkinin incelenmesi (Yüksek Lisans Tezi), Beykent Üniversitesi, İstanbul, 2017.
8. Demir S. Üniversite öğrencilerinin bağlanma stilleri ile kaygı düzeyleri ve yetersizlik duyguları arasındaki ilişkinin incelenmesi (Yüksek Lisans Tezi), Beykent Üniversitesi, İstanbul, 2017.
9. Dugas MJ, Ladouceur R. Treatment of GAD: targeting intolerance of uncertainty into two types of worry. Behavior Modification, 2000; 24(5), 635-657.
10. Günay M, Şıktar E, and Şıktar E. Antrenman Bilimi, Gazi Yayıncılık, Ankara, 2019.
11. Elemırı A, Aly A. Mental toughness and its relationship to the achievement level of the weightlifters in Egypt. Turkish Journal of Sport and Exercise, 2014; 16(2), 63-69. https://doi.org/10.15314/tjse.13865
12. Erdoğan N. Zihinsel Dayanıklılık Ölçeği (ZDÖ): Türkçe'ye uyarlama, geçerlik ve güvenirlik çalışması. International Journal of Sport Culture and Science 4(Special Issue 2). 2016; 652-664.
13. Erdoğan N, Kocaekşi S. Psychological characteristics that elite athletes must have. Turkiye Klinikleri J Sports Sci. 2015; 7(2), 57-64.
14. Eroğlu O, Ünveren A, Ayna Ç, Müftüoğlu NE. Spor bilimleri fakültesindeki öğrencilerin sporda zihinsel dayanıklılık ve sporda ahlaktan uzaklaşma düzeyleri arasındaki ilişkinin incelenmesi. Türkiye Spor Bilimleri Dergisi, 2020; 4(2),100-110.
15. Gustafsson H, Lundkvist E, Podlog L, Lundqvist C. Conceptual Confusion and Potential Advances in Athlete Burnout Research. Perceptual and motor skills, 2016; 123(3), 784–791. https://doi.org/10.1177/0031512516665900
16. Herring MP, Johnson KE, O'Connor PJ. Exercise training and health-related quality of life in generalized anxiety disorder. Sports and Exercise Psychology, 2016; 27, 138-141. https://doi.org/10.1016/j.psychsport.2016.08.011
17. Jackson SA, Thomas PR, Marsh HW, Smethurst CJ. Relationships between Flow, Self-Concept, Psychological Skills, and Performance. Journal of Applied Sport Psychology, 2001; 13,129-153. https://doi.org/10.1080/104132001753149865
18. Jones G, Hanton S, Swain A. Intensity and interpretation of anxiety symptoms in elite and non-elite sports performers. Personality and Individual Differences, 1994; 17(5), 657–663. https://doi.org/10.1016/0191-8869(94)90138-4

19. Juan MVT, Lopez A. Mental toughness of scholars athletics. Researchers World, 2015; 6(3), 22-31.
20. İlhan A. Mental endurance levels of tennis players. Journal of Global Sport and Education Research, 2020; 3(2), 28-35.
21. Kankurtay, S. Üniversite öğrencilerinde fonksiyonel olmayan tutumların yaygın anksiyete eğilimleri üzerindeki etkisinde bilişsel duygu düzenleme stratejilerinin aracı rolü (Yüksek Lisans Tezi), İstanbul Kent Üniversitesi Lisansüstü Eğitim Enstitüsü), 2020.
22. Kalkavan A, Özdilek Ç, Çakır G. Dağ bisikletçilerinin zihinsel dayanıklılık düzeylerinin araştırılması, Atatürk Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi. 2020; 22(2).
23. Karasar N. Bilimsel araştırma yöntemi, (32. Basım) Ankara: Nobel Akademik Yayıncılık, 2017; 109.
24. Kaya M, and Varol K. İlahiyat fakültesi öğrencilerinin durumluk-sürekli kaygı düzeyleri ve kaygı nedenleri Samsun örneği. Ondokuz Mayıs Üniversitesi İlahiyat Fakültesi Dergisi, 2004; 17(17), 31-63.
25. Kline RB. Principles and practice of structural equation modeling, Guilford publications, New York, NY. 2023.
26. Kuan G, Roy J. Goal Profiles, Mental Toughness, and Its Influence on Performance Outcomes among Wushu Athletes. Journal of Sports Science & Medicine, 2007; 6(CSSI-2), 28–33.
27. Koç İ, Gençay ÖA. Badminton sporcularının zihinsel dayanıklılık düzeylerinin çeşitli değişkenlere göre incelenmesi. Niğde Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi, 2021;15(1), 110-124.
28. Konkan R, Şenormancı Ö, Güçlü O, Aydin E, Sungur MZ. Yaygın Anksiyete Bozukluğu-7 (YAB-7) Testi Türkçe Uyarlaması, Geçerlik ve Güvenirliği. Archives of Neuropsychiatry/Noropsikiatri Arsivi, 2013; 50(1).
29. Kristjánsdóttir H, Erlingsdóttir AV, Sveinsson G, Saavedra JM. Psychological skills, mental toughness, and anxiety in elite handball players. Personality and Individual Differences, 2018; 134, 125–130. https://doi.org/10.1016/j.paid.2018.06.011
30. Liew GC, Kuan G, Chin NS, Hashim HA. Mental toughness in sport. German Journal of Exercise and Sport Research, 2019; 49(4), 381–394. https://doi.org/10.1007/s12662- 019-00603-3
31. Madrigal L, Hamill S, Gill DL. Mind over matter: The development of the Mental Toughness Scale (MTS). The Sport Psychologist, 2013; 27(1), 62–77. https://doi.org/10.1123/tsp.27.1.62
32. More P, Kumar V, Usha Rani MR, Philip M, Manjunatha N, Varambally S, Gangadhar BN. Development, validation, and feasibility of a generic yoga-based intervention for Generalized Anxiety Disorder. Complementary, 2021.
33. Nicholls AR, Polman RCJ, Levy A, Backhouse SH. Mental toughness in sport: Achievement level, gender, age, experience, and sport type differences. Personality and Individual Differences, 2009; 47(1), 73-75. https://doi.org/10.1016/j.paid.2009.02.006
34. Önlü İ. *Amatör Olarak Futbol Oynayan Sporcuların Sürekli Kaygı ve Zihinsel Dayanıklılıklarının İncelenmes,.* (Yüksek Lisans Tezi), Selçuk Üniversitesi, Sağlık Bilimler Enstitüsü, Konya, 2022.
35. Özçelik İY. Elit Bayan Hentbolcularda Zihinsel Antrenmanın Yarışma Kaygısı ve Maç Performansına Etkisi (Basılmamış Doktora Tezi) On Dokuz Mayıs Üniversitesi Sağlık Bilimleri Enstitüsü, Samsun, 2012.
36. Özer U. *Zihinsel Antrenmanın Bilek Güreşçilerinin Zihinsel Dayanıklılık ve Spor Kaygı Düzeyi Üzerine Etkileri*, (Yayınlanmamış Yüksek Lisan Tezi) Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü, Denizli, 2024.
37. Patel DR, Omar H, Terry M. Sport-related performance anxiety in young female athletes. Journal of pediatric and adolescent gynecology, 2010; 23(6), 325–335. https://doi.org/10.1016/j.jpag.2010.04.004
38. Rice SM, Gwyther K, Santesteban-Echarri O, Baron D, Gorczynski P, Gouttebarge VDeterminants of anxiety in elite athletes: a systematic review and meta-analysis. British journal of sports medicine, 2019; 53(11), 722–730. https://doi.org/10.1136/bjsports-2019-100620
39. Saatçioğlu Ö. Yaygın anksiyete bozukluğunun tedavisi ve yeni yaklaşımlar. Klinik Psikofarmakoloji Bülteni. 2001; 11(1): 60-77
40. Sadock BJ, Sadock VA. Kaplan & Sadock's Concise Textbook of Clinical Psychiatry. 3rd Edition, Wolters Kluwer/Lippincott Williams & Wilkins, New York, 2008; 154.
41. Sezgin F. Relationships between teacher organizational commitment, psychological hardiness and some demographic variables in Turkish primary schools. Journal of Educational Administration, 2009; 47(5): 630-651.
42. Sheard M. Mental Toughness: The mindset behind sporting achievement. second edition, Hove, East Sussex: Routledge, 2013, ISBN 9780415578967
43. Spielberger CD. Stress and anxiety in sports. In Anxiety in sports, London: Taylor & Francis, 2021, 3-17.
44. Spitzer RL, Kroenke K, Williams JB. Lowe B. A brief measure for assessing Generalized Anxiety Disorder: the GAD-7 Archives of Internal Medicine, 2006; 166 (10), 1092-1097.
45. Tavacıoğlu L. Spor psikolojisi-bilişsel değerlendirmeler, 1. Basım, Ankara, Bağırgan Yayınevi, 1999.
46. Wells A. The Metacognitive Model of GAD: Assessment of Meta-Worry and Relationship With DSM-IV Generalized Anxiety Disorder, Cogn Ther Res, 2005; 29, 107–121. https://doi.org/10.1007/s10608-005-1652-0
47. Yarayan Y, İlhan E. Sporda zihinsel antrenman envanterinin (SZAE) uyarlama çalışması. Gazi Beden Eğitimi ve Spor Bilimleri Dergisi, 2018; 23(4): 205-218. https://doi.org/10.1016/j.ctim.2021.102776
48. Yüksel Ö, Orhan Ö. Farklı spor dalları ile ilgilenen sporcuların zihinsel antrenman düzeylerinin incelenmesi. Herkes İçin Spor ve Rekreasyon Dergisi. 2021; 3(2):56-63.
49. Wieser R, Thiel H. A survey of "mental hardiness" and "mental toughness" in professional male football players. Chiropractic & manual therapies, 2014; 22, 17. https://doi.org/10.1186/2045-709X-22-17