



SPORMETRE

The Journal of Physical Education and Sport Sciences
Beden Eğitimi ve Spor Bilimleri Dergisi

DOI: 10.33689/spormetre.1560136
Research article



Geliş Tarihi (Received): 02.10.2024

Kabul Tarihi (Accepted): 21.03.2025

Online Yayın Tarihi (Published): 30.03.2025

IMAGERY AND COMPETITIVE ANXIETY IN TURKISH NATIONAL ATHLETES: A STUDY ON ORAN 2022 MEDITERRANEAN GAMES*

Tolga Şinoforoğlu^{1†} , Simge Yalçın¹ 

¹Kütahya Dumlupınar University, Faculty of Sport Sciences, Department of Coaching Education, Kütahya, Türkiye

Abstract: This study was conducted to examine the relationship between imagery use and competition anxiety in athletes competing in the Oran 2022 Mediterranean Games. The study participants, which was designed in the relational survey model, consisted of 163 athletes competing on behalf of Turkey in the Oran 2022 Mediterranean Games. The athletes voluntarily responded to the “Sport Competitive Anxiety Test-Adult Form” and “Imagery Inventory in Sport” online during and after the games. The data was analyzed with Pearson correlation and multiple enter regression model after the normality test. As a result, it was concluded that there was a significant relationship between athletes' use of imagery and their competitive anxiety, and it was also found that the “motivational general arousal” and “motivational general mastery” sub-dimensions of imagery explained 34% of competition anxiety. In this context, it is considered that practicing imagery exercises in addition to physical training can help reduce high competition anxiety in athletes.

Keywords: Imagery, competitive anxiety, mental training, national athlete, Mediterranean Games

TÜRK MİLLİ SPORCULARDA İMGELEME VE YARIŞMA KAYGISI: ORAN 2022 AKDENİZ OYUNLARI ÜZERİNE BİR ARAŞTIRMA

Öz: Bu çalışma, Oran 2022 Akdeniz Oyunları'nda yarışan sporcularda imgeleme kullanımı ve yarışma kaygısı arasındaki ilişkiyi incelemek amacıyla yapılmıştır. İlişkisel tarama modelinde tasarlanan çalışmanın katılımcılarını, Oran 2022 Akdeniz Oyunları'nda Türkiye adına yarışan 163 sporcu oluşturmuştur. Sporcular, oyunlar sırasında ve sonrasında “Sporda Yarışma Kaygısı Ölçeği - Yetişkin Formu” ve “Sporda İmgeleme Envanteri”ni çevrimiçi ortamda gönüllü olarak yanıtlamıştır. Veriler normallik testinin ardından Pearson korelasyonu ve çoklu enter regresyon modeli ile analiz edilmiştir. Sonuç olarak, sporcuların imgeleme kullanımı ile yarışma kaygıları arasında anlamlı bir ilişki olduğu sonucuna varılmış, ayrıca imgelemenin “motivasyonel genel uyarılmışlık” ve “motivasyonel genel ustalık” alt boyutlarının yarışma kaygısının %34'ünü açıkladığı tespit edilmiştir. Bu bağlamda, fiziksel antrenmanlara ek olarak imgeleme egzersizleri uygulamanın sporculardaki yüksek yarışma kaygısını azaltmaya yardımcı olabileceği düşünülmektedir.

Anahtar Kelimeler: İmgeleme, yarışma kaygısı, zihinsel antrenman, milli sporcu, Akdeniz Oyunları



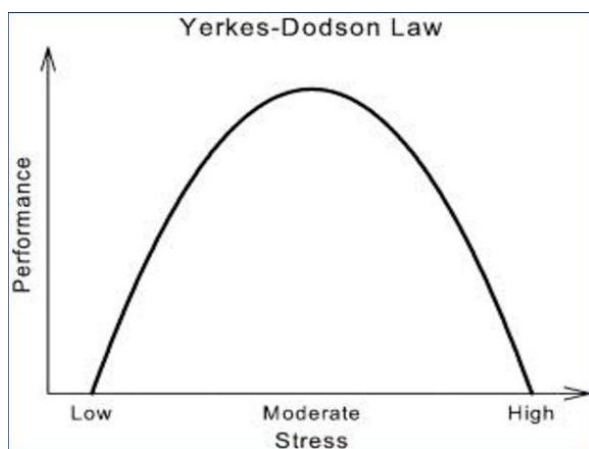
* The abstract of this research was presented as an oral presentation at the 20th International Sports Sciences Congress in Antalya, Turkey.

† Corresponding Author: Tolga Şinoforoğlu, Assoc. Prof., E-mail:tolgasinoforoglu@yahoo.com

INTRODUCTION

In today's world, an athlete's psychological state plays a significant role in their success or failure, and with many athletes, while physically capable of competing in a sporting event, may experience some mental negativity and frustration. All of this creates a sense of anxiety for upcoming matches that can lead to athletes not performing well enough (Akarçeşme, 2004; Tavacıoğlu, 1999). Competitive anxiety, which refers to the feeling of anxiety in the sports environment, is defined as "an unpleasant psychological state in response to perceived stress related to the performance of a task under pressure" (Cheng et al., 2009). Elite sport can be characterized by adaptation to pressure situations with optimal performance levels. Athletes must be able to cope with the stress and anxiety that often accompany their preparations and performances. It is not surprising, therefore, that competition anxiety has attracted a significant amount of researcher interest (Jones, 1995). Most sports psychology researchers have a multidimensional conceptualization of competitive anxiety. More specifically, they separate anxiety into somatic and cognitive components. Morris et al. (1981) defined somatic anxiety as "one's perception of the physiological-emotional elements of the experience of anxiety, that is, symptoms of autonomic arousal and unpleasant emotional states such as nervousness and tension" (p. 541), while cognitive anxiety was defined as "cognitive elements of anxiety, such as negative expectations and cognitive worries about oneself, the present situation, and potential outcomes" (Morris et al., 1981). Athletes can interpret pressure situations in various ways, depending on how they perceive the demands of competition (Martens et al., 1990). This may be related to how the athlete perceives anxiety. The anxiety perceived by athletes can put them in a difficult situation. It has been observed that some athletes experience a fall in performance to the point of "suffocation" when they are stressed and anxious. For this reason, the relationship between anxiety and athletic performance has attracted great interest among researchers in the field of sport psychology (Craft et al., 2003). Studies on the relationship between competition anxiety and performance started based on the Inverted U hypothesis (Yerkes & Dodson, 1908). In this hypothesis, a curvilinear relationship between physiological arousal and performance is assumed and it is stated that an optimal (moderate) level of arousal will lead to high performance, while very high or very low levels of arousal may lead to low performance (Gould & Krane, 1992; Spielberger, 1989; Yerkes & Dodson, 1908). (Figure 1).

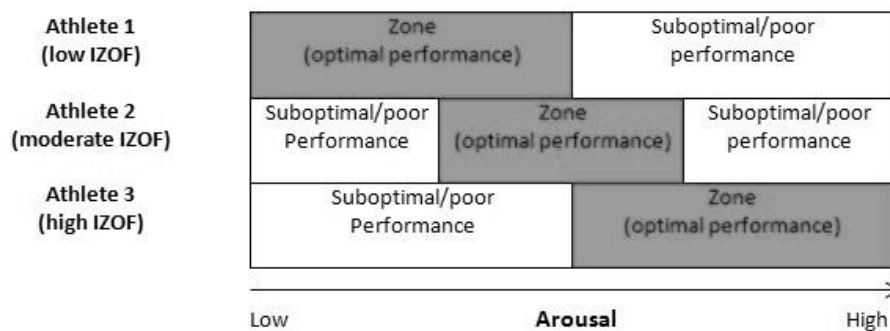
Figure 1.



Yuri Hanin, in his IZOF (Individual Zones of Optimal Functioning) theory, argued that there is an optimal range of functioning that shapes performance. IZOF suggests that there are

individual differences in the way athletes respond to anxiety. Accordingly, some athletes are successful with low levels of anxiety, while others tend to be successful with high levels of anxiety. (Hanin, 2000) Once athletes are in their optimal performance zone, it means that they are at an optimal level of anxiety. It was stated that when an athlete experiences too high or too low anxiety, this can prevent performance as the athlete is out of their optimal zone (Hanin, 2007). (Figure 2).

Figure 2.



Based on all this information, various mental training methods such as breathing exercises, meditation, autogenic practices, and relaxation exercises can reduce competitive anxiety to reach optimal performance (Stevenson, 2009). Another recommended strategy for controlling anxiety is the use of mental imagery (Barr & Hall, 1992; Salmon et al., 1994). According to one definition, imagery is the ability to create an idea or picture in the mind (Gawain, 2007). Moreover, imagery is described as “an experience in which real experiences are imitated”. The thing being imagined can be seen, movements can be felt while imagining, or images of sounds, tastes, and smells can be experienced without actual experiences (Hall, 2001). Imagery theories and models in sport encompass a multifaceted and dynamic framework aimed at understanding the cognitive, psychophysiological, and neuropsychological processes underlying mental rehearsal and visualization. From cognitive perspectives, theories such as the Psychoneuromuscular Theory, Symbolic Learning Theory, and Bioinformational Theory emphasize the role of imagery in facilitating motor learning, skill acquisition, and cognitive rehearsal. Psychophysiological models, including the Functional Equivalence Hypothesis, Triple Code Model, and Psychophysiological Model, elucidate the mechanisms through which imagery influences neuromuscular activation, arousal regulation, and physiological adaptation. Neuropsychological theories, such as Simulation Theory, Mental Imagery and Brain Mechanisms, and Dual Coding Theory, provide insights into the neural substrates and cognitive representations involved in mental imagery processes. Together, these theoretical frameworks contribute to a comprehensive understanding of imagery's role in sport performance and offer practical applications for athletes, coaches, and sport psychologists (Baddeley, 1992; Feltz & Landers, 1983; Hall & Martin, 1997; Jeannerod, 2001; Smith et al., 2007). Imagery serves two functions, motivational and cognitive (Paivio, 1985). These functional distinctions are reflected in differences in image content. The cognitive function is mainly concerned with the mental practice of skills and general game strategies, while the motivational function involves symbolizing various goal-oriented states (imagining winning a competition) and images related to general physiological and emotional arousal (imagining the stress and excitement of competitions). Thus, athletes can imagine a specific skill without thinking of a behavioral goal, and emotional states without any specific cognitive component (i.e., skills or strategies). They can also visualize both functions at the same time. For

example, they may imagine themselves experiencing an emotional “high” and at the same time successfully performing a specific skill (Vadoa et al., 1997). Sport skills can be visualized in three ways. In internal imagery, the athlete is inside his/her own body and can practice by looking at his/her surroundings from the first eye; in external imagery, the athlete can see himself/herself practicing the skill from the third eye, or the athlete can train by imagining another person performing the ideal skill (Beşiktaş, 2005). Imagery provides athletes with physical skills such as improving learned skills and correcting mistakes, as well as mental skills such as emotion regulation, concentration, and self-confidence development (Kızıldağ, 2007). In addition, when athletes return to the field after an injury or a break in sports for any reason, the increase in their anxiety levels due to injuries or negativities they experience when they return to the field brings with it a decrease in their self-confidence. Imagery can help athletes to overcome these anxieties (Morris et al., 2005).

When scientific studies are examined, it is seen that imagery is an important and effective practice for sportive performance (Short et al., 2001). In the literature, studies also indicate the positive effects of imagery on anxiety (Jing et al., 2011; Öztürk, 2023; Pile et al., 2021; Vadoa et al., 1997). Besides, scientific researches show that information and materials, laboratories, technological studies, and technical and tactical skills are very important for scientists and coaches to maximize sportive performance. However, when champion athletes are examined, it is seen that they pay attention to psychological training as well as physical training and manage to eliminate performance fluctuations by minimizing external stimuli that affects their performance (Civan, 2001). On the other hand, it was stated that one of the main factors affecting the level of anxiety is the experience of the athlete (amateur or elite athlete). In this context, it is known that elite athletes have higher anxiety levels than amateur athletes (García et al., 2017). Gender and age play pivotal roles in shaping imagery utilization and competitive anxiety among athletes in sports. Research in the literature indicates that females often employ imagery for cognitive purposes, such as technique refinement and strategic planning, while males tend to utilize imagery for motivational purposes, emphasizing confidence-building and arousal (Richardson, 1991). Additionally, age-related variations in imagery strategies have been observed, with younger athletes leaning towards sensory-based imagery due to their limited competitive experience, while older athletes engage in more cognitive rehearsal and self-regulation techniques. These gender and age differences intersect with the experience of competitive anxiety, as recent studies consistently demonstrate that females and younger athletes report elevated levels of pre-competition anxiety compared to their male and older counterparts. Understanding these intricate relationships is crucial for developing targeted interventions to enhance athletes' performance and psychological well-being in sports contexts (Hall et al., 1990; Munroe et al., 1998; Roberts et al., 2008). Considering all this information, it is considered that imagery exercises are effective on athletes' anxiety. In this regard, this study aimed to investigate the relationship between imagery use and competitive anxiety and to examine to what extent imagery is effective in regulating competitive anxiety. in athletes competing in the Oran 2022 Mediterranean Games.

MATERIALS AND METHODS

Research Model

This research is a quantitative study designed in the relational survey model since it aims to explain the relationship between competitive anxiety and imagery level. Relational survey model is defined as a type of research that reveals the presence or explains the degree of change between two or more variables (Karasar, 2006). Multiple regression analysis was used to explain the cause-and-effect relationships between two or more independent variables

affecting a variable with a model and to determine the level of influence of these independent variables.

Participants

The participant group of the study consisted of 169 out of 319 Turkish national athletes competing in the Oran 2022 Mediterranean Games. After normality analysis, 6 outliers were eliminated, and the sample of the study was determined as 163 athletes. In this regard, 51% of the total number of athletes competing were included in the study. The total sample of 163 athletes consisted of 60 female athletes and 103 male athletes. Among these athletes, 68 were team players and 95 were individual players. 35% of the athletes were 20 years old and younger, 34.4% were between 21–25 years old, and 30.7% were 26 years old and older.

Data Collection

The data were collected online through Google Forms. Age, gender, and the athlete's branch constituted the demographic information form. Data were collected during and after the competitions. After voluntarily answering the demographic information form, the athletes answered the 21-item Imagery in Sport Inventory and the 15-item Sport Competitive Anxiety Test - Adult Form. Regarding the reliability of the scales used for the current study, the Cronbach's Alpha coefficient for the “cognitive imagery” sub-dimension of the Imagery in Sport Inventory was calculated as .97, for the “motivational specific imagery” sub-dimension as .93, for the “motivational general arousal” sub-dimension as .89, and for the “motivational general mastery” sub-dimension as .94. It was calculated as .82 for the Sport Competitive Anxiety Test-Adult Form (SCAT-A). It is reported in the literature that a value of .80 and above is highly reliable (Hair et al., 2010). Therefore, it is seen that the scales are reliable for the study.

Participation in this study was voluntary, and the participants also provided informed consent to publish the information from this research while maintaining the confidentiality of their personal details. This study was approved by the *** University Ethics Committee at the meeting numbered *** on August 15, 2022. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Imagery Inventory in Sports

The Turkish adaptation of the Imagery in Sport Inventory developed by Barr and Hall (1992) to determine the imagery styles of athletes was conducted by Kızıldağ (2007) The Imagery in Sport Inventory consists of 21 items in which judgments are evaluated according to seven evaluation steps. The inventory has four sub-dimensions called “cognitive imagery,” “motivational specific imagery,” “motivational general-arousal,” and “motivational general-mastery.” The Imagery in Sport Inventory was calculated as .97, so reliability is ensured for the participant group of the current study. In the scale consisting of 21 items and 4 sub-dimensions, each sub-dimension is scored within itself. Cognitive Imagery consists of 9 items, Motivational Specific Imagery consists of 5 items, Motivational General Arousal consists of 4 items and Motivational General Mastery consists of 3 items. A high score on the scale indicates a high level of imagery.

Cognitive Imagery

The cognitive imagery sub-dimension refers to items that include cognitive characteristics such as practicing the skill perfectly, correcting mistakes, developing strategies, learning, and practicing game plans. Cognitive imagery is used for the correct execution of specific skills.

This type of imagery has been used in the development of many skills, from the golf swing to the free throw in basketball (Paivio, 1985).

Motivational Specific Imagery

Motivational specific imagery sub-dimension includes specific performance goals. Feelings such as winning, being congratulated for their performances, and pride in winning increase the motivation of athletes. Paivio (1985) found that athletes who used Motivational Specific Imagery were better at maintaining goal-related tasks.

Motivational General-Mastery

It is seen that the items in the motivational general mastery sub-dimension involve higher-level motivational skills. Motivational general mastery serves the athlete to be mentally strong and controlled, and it is known that athletes who use this type of imagery more have more mastery-related skills (Hall et al., 1998).

Motivational General-Arousal

It is observed that the items in the motivational general arousal imagery sub-dimension cover the arousal levels of the athletes. Athletes who use this type of imagery try to keep their arousal levels under control and learn ways to cope emotionally. In addition, this sub-dimension of imagery is used to control arousal level and anxiety while preparing for competition (White & Hardy, 1998).

Sport Competition Anxiety Test for Adults (SCAT-A)

SCAT-A (Sport Competition Anxiety Test for Adults), the first test to measure the level of anxiety in sports, was developed by Martens in 1977 (Koruç et al., 2005). The adaptation of SCAT-A into Turkish was conducted by Koruç et al. (2005) In the item analysis of SCAT-A, the lowest values between .43 and .72 were obtained for the 10 items excluding filler items. Cronbach-Alpha internal consistency coefficient was found to be .79. The test-retest reliability of the scale was reported to be high ($r=.90$). The scale consists of 15 items and is answered in the triple likert type. In SCAT scale, 10 items (2, 3, 5, 6, 8, 9, 11, 12, 14 ve 15) reveal the information about the continuous anxiety of the competition, while 5 items (1, 4, 7, 10 ve 13) consist of filling questions that are not evaluated. The total score in SCAT-A ranges from 10 (low anxiety) to 30 (high anxiety). If the evaluation scores of the scale are <17 , it has a low anxiety score, $17-24$ has a moderate anxiety score of, > 24 has a high anxiety score.

Data Analysis

The data was analyzed in SPSS 26.0. First, normal distribution analysis was applied to the data. The normal distribution analysis of data distribution was performed by looking at the kurtosis and skewness values. Accordingly, the Skewness and Kurtosis values of the data are between ± 1 for the gender variable for competition anxiety and between ± 1 for team athletes and individual athletes. The skewness kurtosis values for each subgroup in imagery are between ± 1 . Their standard errors are also between ± 1 . All these values indicate that the normality assumption is ensured for the data set in the current study (Hair et al., 2013). Based on this, parametric tests were considered appropriate, and the data were analyzed by Pearson correlation and multiple enter regression method. The assumptions of normal distribution of the data, a linear relationship between the variables and multiple regression were met since there was no multicollinearity problem among the independent variables.

RESULTS

This study was conducted to examine the relationship between imagery use and competition anxiety in athletes competing in the Oran 2022 Mediterranean Games. The results of the study are presented in the tables below. They are divided into two main categories: first, demographic information about the participants; and the second, the results and interpretations derived from the application of the Imagery inventory in sports and the Sport competition anxiety test for adults (SCAT-A). Relevant explanations accompany tabulated findings.

Table 1. One-way ANOVA analysis of imagery and competitive anxiety scales according to the age variable

	Variables	n	x	Ss	F	p
Imagery	Age 20 and under	57	96.86	4.64	.209	.81
	Age between 21–25	56	92.61	4.93		
	Age 26 and over	50	95.22	4.71		
	Total	163	94.90	2.74		
Competitive Anxiety	Age 20 and under	57	16.82	4.54	1.461	.23
	Age between 21–25	56	17.20	3.46		
	Age 26 and over	50	18.14	4.10		
	Total	163	17.36	4.07		

* $p < 0,05$

Table 1 shows the results of the one-way ANOVA test according to the age of the participants. According to this, there was no significant relationship between the ages of the participants and their competitive anxiety scores and imagery total scores ($p > .05$).

Table 2. Independent sample T-Test of Competitive Anxiety Scale and Imagery Inventory on gender variable

Variables	Groups	n	x	Ss	t	Sd	p
Competitive Anxiety	Female	60	18.38	.46	2.49	161	.052
	Male	103	16.76	.41			
Imagery	Female	60	95.85	4.24	.26	161	.088
	Male	103	94.34	3.58			

Table 2; when evaluated in terms of the sample of the current study, according to the results of independent sample t-test; no significant relationship was found between the competitive anxiety scores of female athletes (Mean =18.38, SD=.46) and male athletes (Mean =16.76, SD=.41) ($p > .05$). Likewise, no significant relationship was found between the total imagery scores of female athletes (mean =95.85, SD=4.24) and male athletes (mean =94.34, SD=3.58) ($p > .05$).

Table 3. Independent sample t-Test of Competitive Anxiety Scale and Imagery Inventory Inventory in terms of sport branch

Variables	Groups	n	x	Ss	t	Sd	p
Competitive Anxiety	Team	68	16.27	4.12	-2.91	161	.004*
	Individual	95	18.12	3.88			
Imagery	Team	68	93.29	35.42	-.49	161	.623
	Individual	95	96.04	34.87			

* $p < 0.05$

Table 3; evaluated in terms of the sample of the current study, the results of the independent sample T-test showed that the competition anxiety scores of individual athletes (mean =18.12, SD=3.88) were higher than those of team athletes (mean =16.27, SD=4.12) $t(161) = -2.91$,

$p < .05$. No significant relationship was determined in terms of sports branch in imagery ($p > .05$).

Table 4. Pearson correlation analysis of the relationship between imagery sub-dimensions and competitive anxiety

Variables	n	m	Ss	1	2	3	4	5	6
1. Cognitive Imagery		41.82	15.41	1					
2. Motivational Specific Imagery		22.80	9.10	.884**	1				
3. Motivational General-Arousal		15.66	6.92	.768**	.821**	1			
4. Motivational General-Mastery	163	14.58	5.59	.931**	.890**	.779**	1		
5. Branch		1.58	.49	.068	-.008	-.001	.069	1	
6. Competitive Anxiety		17.35	4.07	-.119	-.041	.221**	-.123**	.224**	1

** $p < 0.01$

When the relationship between the sub-dimensions of the imagery in sport inventory and the competitive anxiety scale scores is examined in Table 4, it is seen that there is a significant positive relationship between competition anxiety and the motivational general arousal sub-dimension of the imagery in sport inventory ($r = .221$, $p < .05$). There is a significant negative relationship between motivational general mastery sub-dimension and competitive anxiety ($r = -.123$, $p < .05$). There is no significant relationship between cognitive imagery and motivational specific imagery sub-dimensions and competitive anxiety ($p > .05$).

Table 5. Multiple enter regression analysis of imagery predicting competitive anxiety

Predictor Variable	B	Standar d Error	β	t	p	R	ΔR^2	Tolerance	VIF
Cognitive Imagery	-.090	.050	-.340	-1.805	.073			.115	8.728
Motivational Specific Imagery	-.011	.075	-.025	-.149	.881			.146	6.831
Motivational General-Arousal	.519	.068	.882	7.622	.000	.608	.342	.303	3.298
Motivational General-Mastery	-.351	.056	-.482	-2.499	.014			.109	9.171

Constant: Competitive Anxiety

Table 5 reveals that the motivational general arousal (.882, $p < .05$) sub-dimension and motivational general mastery (-.482, $p < .05$) sub-dimension are significant predictors of competition anxiety. It can be said that these two sub-dimensions have an effect of 34.2% on the total variance. This means that 34.2% of competitive anxiety can be explained by these variables.

DISCUSSION

The present study examined the relationship between imagery use and competitive anxiety in Turkish national athletes and investigated whether imagery significantly predicts competitive anxiety. In the current study, it is seen that imagery in Turkish national athletes is significantly related to athletes' competitive anxiety, and it is also concluded that the use of imagery together with its sub-dimensions explains 34% of competition anxiety.

The demographic information form of the study consisted of age, gender, and sports branch. Accordingly, when the data were evaluated in terms of gender variables, no significant relationship was found between female and male athletes' anxiety levels ($p > .05$). No

significant difference was also found in the use of imagery in athletes in terms of gender variables ($p > .05$). When the literature is examined, there are studies that support the results of the current study. Birol and Elmas (2018); Bozdağ (2021); Ulucan (2020) reported that there was no significant difference between the mean scores of male and female athletes in the sub-dimensions of cognitive imagery, motivational specific imagery, motivational general arousal, and motivational general mastery. Similarly, when the difference between gender and imagery sub-dimensions was examined in a study, it was found that there was no statistically significant difference between all sub-dimensions ($p > 0.05$), however, males had higher mean scores in cognitive imagery and motivational imagery sub-dimensions than females. On the other hand, it was also found that females had higher motivational general mastery and general arousal sub-dimension averages than males. In a study comparing the imagery styles of team athletes, it was stated that there was no difference between genders in female and male athletes (Doğan, 2019) and the results of another study by Karademir (2018), in which imagery styles in individual and team athletes were examined, also showed that there was no difference in any of the sub-dimensions of imagery in terms of gender variable. There are also studies in the literature that do not support the findings of the current study. Kızıldağ (2007), reported that there was a significant difference between the mean scores of male and female athletes in the sub-dimensions of Cognitive Imagery, Motivational Specific Imagery, and Motivational General Arousal in his study on athletes engaged in different sports branches. According to another study, when the scores of individual and team athletes were compared according to their gender, there was a significant difference only between motivational general arousal values ($p < 0,05$). Female athletes were found to have higher levels of motivational general arousal than male athletes (Dumangöz, 2009). The contrary results in the studies may be related to the participant group's characteristics, individual differences, and athletic status. In the literature, it is stated that elite athletes use imagery more than beginner athletes in this situation (Salmon et al., 1994).

Considering the age factor, which is another variable of the current research, no significant relationship or difference was found in terms of age variable on competitive anxiety and imagery ($p > .05$). When the literature was examined in terms of age variable, some studies found similar findings with the current research as well as studies that did not support the research. Kartal (2017) did not find a significant difference in imagery sub-dimensions according to age in his study, but when the mean values were examined, it was found that the mean values of cognitive imagery, motivational specific imagery, and motivational general mastery sub-dimensions of older athletes were higher. This may be because older athletes have more game experience. In another study, it was reported that there was no relationship between age, sports age, and imagery (Dumangöz, 2009). On the other hand, Parker and Lovell (2012) stated that imagery differed according to age groups in their study and revealed that participants in the 20–21 age group had higher imagery scores than the 12–13 age group. Mulder et al. (2007) also reported that older participants had worse motor imagery abilities than younger participants. Güvendi (2016) stated in their study that there was a significant difference between age groups and imagery only in the “motivational general mastery” sub-dimension. This may be explained by the fact that more experienced athletes use motivational general mastery imagery. In a study carried out with 245 students, when the scores of the imagery in sports inventory were analyzed according to the age of the participants, it was seen that the 22–25 and 26 and over age groups had significantly higher scores than the 18–21 age group in the sub-dimensions of cognitive imagery, motivational general arousal, motivational general mastery and the total mean score of imagery in sport (Bozdağ & Ergin, 2021). When the literature is examined, as seen in the findings of the above studies, it is observed that there are as many studies that have a consensus about the relationship between imagery and age or

the relationship between anxiety and age as there are those that do not. For this reason, it is considered that there is a need for more studies on the age variable with different groups.

The findings of the current study indicate that the anxiety levels of team athletes are lower than those of individual athletes ($p < .05$). Regarding the literature; Dumangöz (2009), in his study comparing the imagery and anxiety levels of individual, and team athletes, reported that the imagery values of athletes involved in individual sports were higher than those of athletes involved in team sports. In addition, when the trait anxiety scores were examined, it was expressed that athletes who were involved in individual sports had higher levels of trait anxiety. These findings are supportive of the current research.

The results of the current study indicate that competitive anxiety and imagery are significantly related, and imagery is a significant predictor of competitive anxiety. Accordingly, the “motivational general arousal” sub-dimension of imagery and competitive anxiety are related in a positive way ($p < .05$). The “motivational general mastery” sub-dimension is in a negative relationship with competitive anxiety ($p < .05$). In addition, the “motivational general arousal” sub-dimension and “motivational general mastery” sub-dimension are significant predictors of competitive anxiety ($p < .05$). Especially, it is seen that the sub-dimension of “motivational general arousal” can be quite effective on competitive anxiety. Motivational general arousal focuses on emotional experiences in the sport context and represents feelings of relaxation, stress, arousal, and anxiety about sports competition (Murphy & Martin, 2002). Consequently, these two sub-dimensions can explain 34% of the total variance. There are studies supporting these findings in the literature. Güvendi (2016), in a study conducted with elite academy league football players, found that there was a significant relationship between the trait anxiety levels of athletes and all sub-dimensions of imagery ($p < .05$). Furthermore, athletes who used imagery exercises more often had lower levels of trait anxiety. However, since the current research was not designed in a cause-and-effect relationship, it is thought that more studies focusing on the cause-and-effect relationship are required another study revealing the positive effect of imagery on anxiety was conducted with 57 American athletes and indicated that visual imagery skill and motivational general arousal sub-dimension explained cognitive anxiety in the regression model. It was also stated that visual imagery skills explained physical anxiety (Vadoa et al., 1997).

Akman (2019) reported that there was no significant effect on anxiety in cognitive imagery, motivational special imagery, and motivational general mastery sub-dimensions, while there was an effect on the motivational general arousal sub-dimension. This result is also similar to the present study. In his master's thesis, Bayköse (2014) stated that there was a significant difference in the cognitive imagery sub-dimension, while there was no significant difference in the motivational specific imagery, motivational general arousal, and motivational general mastery sub-dimensions. Some studies in the literature do not support the results of the current study. Kolayış et al. (2015) examined the relationship between imagery and anxiety and stated that no significant relation was observed. Contrary to this finding, it is reported in the literature that there is a significant correlation between the level of “motivational general arousal” and anxiety (Vurgun, 2010). Likewise, other studies have also reported that imagery is associated with anxiety and positively affects anxiety (Jing et al., 2011).

CONCLUSIONS AND RECOMMENDATIONS

As a result, when the current study's findings are evaluated on the athletes participating in the Oran 2022 Mediterranean Games, it is seen that there is a significant negative relationship between athletes' use of imagery and their competitive anxiety, and imagery is a significant

predictor factor of anxiety. The pressure to win, the expectation of high performance, the fear of losing, and the anxiety of disappointment can be quite high for elite national athletes. This can lead to a higher-than-optimal level of competitive anxiety in athletes. Based on this information, it is thought that practicing mental exercises in addition to physical training and adding imagery exercises to these exercises may effectively reduce or regulate athletes' competition anxiety. This study is limited to the Oran 2022 Mediterranean Games. Since the study did not measure performance, it was not determined that imagery directly affected performance. Since it was researched in the relational survey model, it cannot be said that there is a cause-and-effect relationship, however, it can be said that with the increase in experimental studies on imagery and anxiety in the field, more explanatory results can be reached about the subject.

The present study tried to shed light on how to identify a method for athletes with competitive anxiety to manage their anxiety. It is seen that the use of imagery can be a tool for athletes to control their anxiety. It is an undeniable fact that only physical skills are not enough in competition; the importance of using psychological skills is obvious. Therefore, considering the results of this study, it is recommended to use imagery exercises to regulate anxiety in athletes. It is thought that especially coaches and sport psychologists will help athletes with the anxiety problems they experience. In this direction, increasing the number of experimental studies on this subject is also recommended.

REFERENCES

- Akarçeşme, C. (2004). *The relationship between and performance values in voleyball*. Master Thesis, Gazi University, Ankara.
- Baddeley, A. (1992). Working memory. *Science*, 255(5044), 556-559. <https://doi.org/10.1126/science.1736359>
- Barr, K., & Hall, C. (1992). The use of imagery by rowers. *International Journal of Sport Psychology*, 23(3), 243-361.
- Bayköse, N. (2014). *Examining The Imagination Styles of Athletes Dealing with Different Branches at the University Level*. Master Thesis, Selçuk University, Konya.
- Beşiktaş, M. Y. (2005). *The role and importance of imagination in the preparation for sports contests*. Master Thesis, Marmara University, İstanbul.
- Biröl, S., & Elmas, L. (2018). The Effect of Imagery Level to The Perceptions of Achievement in Adolescents Participating Sportive Recreation Activities. *The Journal of International Anatolia Sport Science*, 3(5), 249-259. <https://doi.org/10.22326/ijass.28>
- Bozdağ, B., Ergin, M. (2021). Investigation of the Imagination Usage Levels of the Students of The Faculty of Sports Sciences. *Atatürk University Research in Sport Education and Sciences*, 23(1).
- Cheng, W.-N. K., Hardy, L., & Markland, D. (2009). Toward a Three-Dimensional Conceptualization of Performance Anxiety: Rationale and Initial Measurement Development. *Psychology of Sport and Exercise*, 10(2), 271-278. <https://doi.org/https://doi.org/10.1016/mj.psychsport.2008.08.001>
- Civan, A. (2001). *Comparison of the pre and post game state and trait anxiety levels of individual and team athletes*. Master Thesis, Selçuk University, Konya.
- Craft, L. L., Magyar, T. M., Becker, B. J., & Feltz, D. L. (2003). The Relationship Between the Competitive State Anxiety Inventory-2 and Sport Performance: A Meta-Analysis. *Journal of Sport & Exercise Psychology*, 25, 44-65.

- Cumming, J., Olphin, T., & Law, M. (2007). Self-Reported Psychological States and Physiological Responses to Different Types of Motivational General Imagery. *Journal of Sport & Exercise Psychology*, 29, 629-644. <https://doi.org/10.1123/jsep.29.5.629>
- Doğan, E. (2019). Comparison of Imagery Styles of Female and Male Athletes. *Gaziantep University Journal of Sport Science*, 4(3), 373-381. <https://doi.org/10.31680/gaunjss.605586>
- Dumangöz, P. D. (2009). *Analogy of Imagination and Anxiety Level in the Sportspeople Dealing with Individual and Team Sports*. Master Thesis, Sakarya University, Sakarya.
- Feltz, D. L., & Landers, D. M. (1983). The Effects of Mental Practice on Motor Skill Learning and Performance: A Meta-Analysis. *Journal of Sport Psychology*, 5(1), 25-57.
- García, M. R. V., Romo, S. R. E., Garcia Quiñonez, O. F., Feriz Otaño, L., & Torres, A. (2017). Pre-Competitive Anxiety in High-Performance, Amateur and Novice Karate. *Revista Cubana de Investigaciones Biomedicas*, 36(2), 239-247.
- Gawain, S. (2007). *Yaratıcı İmgeleme* (S. Ayanbaşı, Trans.). Akaşa Yayınevi.
- Gould, D., & Krane, V. (1992). The arousal-athletic performance relationship: Current status and future directions. In *Advances in sport psychology*. (pp. 119-142). Human Kinetics Publishers.
- Guvendi, B., Bilgin, U. (2016). Investigate the Relationship Between Imagery and Anxiety in Elite Academy Soccer League. *International Journal of Psychiatry and Psychological Researches*. <https://doi.org/10.17360/UHPPD.2016723149>
- Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate Data Analysis: A Global Perspective* (7. ed.).
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2013). *Multivariate Data Analysis*. Pearson Education Limited.
- Hall, C., Rodgers, W., & Barr, K. (1990). The Use of Imagery by Athletes in Selected Sports. *The Sport Psychologist*, 4(1), 1-10. <https://doi.org/10.1123/tsp.4.1.1>
- Hall, C. R. (2001). Imagery in sport and exercise. In H. A. Hausenblas & R. N. Singer (Eds.), *Handbook of research on sport psychology* (2 ed.). John Wiley and Sons.
- Hall, C. R., Mack, D. E., Paivio, A., & Hausenblas, H. A. (1998). Imagery Use by Athletes: Development of the Sport Imagery Questionnaire. *International Journal of Sport Psychology*, 29, 73-89.
- Hall, C. R., & Martin, K. A. (1997). Measuring Movement Imagery Abilities: A Revision of the Movement Imagery Questionnaire. *Journal of Mental Imagery*, 21(1), 141-154.
- Hanin, Y. L. (2000). *Emotions in Sport*. Human Kinetics.
- Hanin, Y. L. (2007). *Emotions and athletic performance: Individual zones of optimal functioning model*. Human Kinetics.
- Hanton, S., & Jones, G. (1999). The Effects of a Multimodal Intervention Program on Performers: II. Training the Butterflies to Fly in Formation. *The Sport Psychologist*, 13(1), 22-41. <https://doi.org/10.1123/tsp.13.1.22>
- Jeannerod, M. (2001). Neural Simulation of Action: A Unifying Mechanism for Motor Cognition. *NeuroImage*, 14(1), 103-S109. <https://doi.org/10.1006/nimg.2001.0832>
- Jing, X., Wu, P., Liu, F., & Wu, B. (2011). Guided Imagery, Anxiety, Heart Rate, and Heart Rate Variability During Centrifuge Training. *Aviation Space and Environmental Medicine*, 82(2), 92-96. <https://doi.org/10.3357/ASEM.2822.2011>

- Jones, G. (1995). More Than Just a Game: Research Developments and Issues in Competitive Anxiety in Sport. *British Journal of Psychology*, 86(4), 449-478. <https://doi.org/10.1111/j.2044-8295.1995.tb02565.x>
- Karademir, T., Türkçapar, Ü., Açak, M., Eroğlu, H. (2018). Investigation of Imaging Patterns in Athletes with Individual and Team Sports. *Atatürk University Research in Sport Education and Sciences*, 20(3).
- Karasar, N. (2006). *Bilimsel araştırma yöntemleri*. Ankara: Nobel.
- Kızıldağ, E. (2007). *Athletes' imagery style in different sports*. Master Thesis, Mersin University, Mersin.
- Kolayış, H., Sarı, İ., & Köle, Ö. (2015). Investigating the Relationship among Imagery, Motivation and Anxiety in Female Athletes from Team Sports. *Spormetre the Journal of Physical Education and Sport*, 13(2), 129-136. https://doi.org/10.1501/sporm_0000000277
- Koruç, Z., Öztürk, F., Yılmaz, V., Bayar, P., & Kağan, S. (2005). Sport Competitive Anxiety Test-A Turkish Adaptation SCAT-A. *Hacettepe Journal of Sport Sciences*, 18(3).
- Martens, R., Burton, D., Vealey, R. S., Bump, L. A., & Smith, D. E. (1990). Development and Validation of the Competitive State Anxiety Inventory-2 (CSAI-2). In R. Martens, R. S. Vealey, & D. Burton (Eds.), *Competitive Anxiety in sport* (pp. 117-190). Human Kinetics.
- Morris, L., Davis, D., & Hutchings, C. (1981). Cognitive and Emotional Components of Anxiety: Literary Review and Revised Worry-Emotive Scale. *Journal of Educational Psychology*, 73(4), 541-555. <https://doi.org/https://doi.org/10.1037/0022-0663.73.4.541>
- Morris, T., Spittle, M., & Watt, A. P. (2005). *Imagery in sport*. Human Kinetics Books.
- Mulder, T., Hochstenbach, J. B., van Heuvelen, M. J., & den Otter, A. R. (2007). Motor Imagery: The Relation between Age and Imagery Capacity. *Human Movement Science*, 26(2), 203-211. <https://doi.org/10.1016/j.humov.2007.01.001>
- Munroe, K. J., Hall, C. R., Simms, S., & Weinberg, R. S. (1998). The Influence of Type of Sport and Time of Season on Athletes' Use of Imagery. *Sport Psychologist*, 12, 440-449.
- Murphy, S. M., & Martin, K. A. (2002). The use of imagery in sport. In T. S. Horn (Ed.), *Advances in sport psychology* (2 ed., pp. 405-439). Human Kinetics.
- Öztürk, G. (2023). Imagery: A review. *Psikiyatride Güncel Yaklaşımlar*, 15(3), 488-497. <https://doi.org/10.18863/pgy.1150955>
- Paivio, A. (1985). Cognitive and Motivational Functions of Imagery in Human Performance. *Canadian Journal of Applied Sport Sciences*, 10(4), 22-28.
- Parker, J., & Lovell, G. (2012). Age Differences in the Vividness of Youth Sport Performers' Imagery Ability. *Journal of Imagery Research in Sport and Physical Activity*, 7(1). <https://doi.org/10.1515/1932-0191.1069>
- Pile, V., Williamson, G., Saunders, A., Holmes, E. A., & Lau, J. Y. F. (2021). Harnessing emotional mental imagery to reduce anxiety and depression in young people: an integrative review of progress and promise. *Lancet Psychiatry*, 8(9), 836-852. [https://doi.org/10.1016/s2215-0366\(21\)00195-4](https://doi.org/10.1016/s2215-0366(21)00195-4)
- Richardson, J. T. E. (1991). Gender differences in imagery, cognition, and memory. In *Mental images in human cognition*. (pp. 271-303). North-Holland. [https://doi.org/10.1016/S0166-4115\(08\)60519-1](https://doi.org/10.1016/S0166-4115(08)60519-1)
- Roberts, R., Callow, N., Hardy, L., Markland, D., & Bringer, J. (2008). Movement Imagery Ability: Development and Assessment of a Revised Version of The Vividness of Movement Imagery Questionnaire. *Journal of Applied Sport Psychology*, 30(2), 200-221. <https://doi.org/10.1123/jsep.30.2.200>
- Salmon, J., Hall, C., & Haslam, I. (1994). The Use of Imagery By Soccer Players. *Journal of Applied Sport Psychology*, 6(1), 116-133. <https://doi.org/https://doi.org/10.1080/10413209408406469>

- Short, S. E., Afremow, J., & Overby, L. (2001). Using Mental Imagery to Enhance Children's Motor Performance. *Journal of Physical Education, Recreation and Dance*, 72(2), 19-23.
- Smith, D., Wakefield, C., Allsopp, A., & Westhead, H. (2007). It's All in the Mind: PETTLEP-Based Imagery and Sports Performance. *Journal of Applied Sport Psychology*, 19(1), 80-92. <https://doi.org/10.1080/10413200600944132>
- Spielberger, C. D. (1989). *State-trait anxiety inventory: Bibliography* (2 ed.). Consulting Psychologists Press.
- Stevenson, R. K. (2009). *The super mental training book*. Create Space Independent Publishing Platform.
- Tavacıoğlu, L. (1999). *Spor Psikolojisi: Bilişsel değerlendirmeler*. Bağırgan Yayınevi.
- Ulucan, H., ve Bölükbaşı, T. (2020). Examining the Imagination Styles of Athletes Dealing with Different Branches at the University Level. *International Journal of Bozok Sport Sciences*, 1(1), 1-10.
- Vadoa, E. A., Hall, C. R., & Moritz, S. E. (1997). The relationship between competitive anxiety and imagery use. *Journal of Applied Sport Psychology*, 9(2), 241-253. <https://doi.org/10.1080/10413209708406485>
- Vurgun, N. (2010). *Adaptation of sport imagery questionnaire to Turkish, and effects of sport imagery on competitive anxiety and sport confidence*. PhD Thesis, Ege University, İzmir.
- White, A., & Hardy, L. (1998). An In-Depth Analysis of the Uses of Imagery By High-Level Slalom Canoeists and Artistic Gymnasts. *The Sport Psychologist*, 12(4), 387-403.
- Williams, S., Cumming, J., & Balanos, G. (2010). The Use of Imagery to Manipulate Challenge and Threat Appraisal States in Athletes. *Journal of Sport & Exercise Psychology*, 32(3), 339-358. <https://doi.org/10.1123/jsep.32.3.339>
- Yerkes, R. M., & Dodson, J. D. (1908). The Relation of Strength of Stimulus to Rapidity of Habit-Formation. *Journal of Comparative Neurology and Psychology*, 18(5), 459-482. <https://doi.org/10.1002/cne.920180503>