THE EFFECTS OF THE MENTAL TRAINING SKILLS ON THE PREDICTION OF THE SPORTS SCIENCES FACULTY STUDENTS' ANXIETY LEVELS

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Received: 19.11.2019 Accepted: 16.05.2020 Published: 07.06.2020

ABSTRACT
This research was conducted to predict the anxiety level of the Sport Sciences Faculty students. In the study, mental fundamental skills, mental performance skills, interpersonal skills, self talk and mental imagery variables were accepted as predictive variables and it was aimed to determine the effect of these variables on anxiety level. The study group of the research consisted of 286 athletes from various sports branches studying at the Faculty of Sports Sciences of a state university. In the research, the Sport Mental Training Questionnaire (SMTQ) and Trait Anxiety Scale were used as data collection tool. In study, Multiple Linear Regression Analysis technique was used between mental training skill and anxiety level variables of Faculty of Sports Sciences students. Pearson product-moment correlation coefficient (r) was used to calculate the relationships between variables. Independent sample T-test technique was applied for differences of mental training skills factors and anxiety levels according to the variables of gender and sports branch, which are independent variables. As a result of the research, mental fundamental skills, mental performance skills, interpersonal skills, self talk and mental imagery variables together give a moderate and significant relationship with anxiety level \[R=.60; R^2=.36; p<.05\]. These five variables together explain approximately %36 of the total variance. Also, it was found that male participants are more successful than female participants in sub-dimension of mental performance skills, but according to the their total SMTQ mean scores, it was determined that there is no difference between male and female athletes. In addition, in male participants, it was concluded that individual sports participants are more successful than team sports participants in sub-dimension of mental performance skills but according to the their total SMTQ mean scores, it was seen that there is no difference between individual sports participants and team sports participants. In female participants, anxiety levels of the individual sports participants are lower than the team sports participants. Finally, it was found that age and sport age have a positive and significant relationship with mental training skill. In conclusion, it is suggested that a training program for the use of mental training skills is prepared and regularly implemented by athletes.

Keywords: Mental training, anxiety, student.
INTRODUCTION

Concepts such as sports or athlete are often associated with physical strength. It would not be wrong to say that the muscular and athletic bodies that athletes have caused this idea. But mental strength and skills, as well as physical strength and skills, are an important component of sporting success. Through the developments and scientific researches in sports psychology after the Second World War, mental strength and skills have gained an important place in the training programs of the athletes and started to be an important part of the successes.

The popularity and academic development of sports psychology has progressed with the political and social importance given to competitive sports in the post-Cold War era (Gee, 2010). Today, sports psychology is a vibrant and exciting field with a bright future. Sports and exercise psychology have been growing worldwide and sports psychology specialists have been working in more than seventy countries (Weinberg & Gould, 2015). After these great developments, the importance of mental skills gradually increased and they took their place in training programs together with physical training. Today, it is known that many successful athletes work with sports psychologists and receive support in overcoming competition pressure and success anxiety. As a matter of fact, there are studies in the literature showing that mental skills are an important component of sporting success (Amasiatu, 2013; Choi, Choi, Nam, Cho, Hwang, & Kwon, 2010; Fontani, Migliorini, Benocci, Facchini, Casini, & Corradeschi, 2007; Kulak, Kerkez & Aktas, 2011; Li-Wei, Qi-Wei, Orlick & Zitzelsberger, 1992; Mizuguchi, Nakata, Uchida & Kanosuel, 2012; Slimani, Tod, Chaabene, Miarka & Chamari, 2016). Based on the research results mentioned above, it would not be wrong to say that mental skills such as imagery and self-talk affect sports performance.

One of the pioneers of the idea that mental actions affect muscle movements in sports is the famous British physiologist William Benjamin Carpenter. Carpenter tried to explain this situation with the concept of ideomotor and included this concept in his books (Carpenter, 1855, 1874). In addition, Stock and Stock (2004) stated that the concept of ideomotor has German roots. Baccarini (2011) stated that the concept of embodied simulation put forward by Gallese (2005) is the equivalent of ideomotor movements today. In summary, it can be said that the concept of ideomotor is the historical basis of mental training.

Mental training was defined as implicit rehearsals of physical activity in the absence of any observable muscle movement (Denis, 1985). Mental training is the ability of imaging in brain, that is, to imagine his state in the game (Akandere, A. & Er, 2018). Motor imagery is defined as the movement imagined in the mind from the perspective of the first person (McAvinue & Robertson, 2008). Mental training has an important power in improving the performance of the athlete (Altintas & Akalan, 2007). Although it was seen that the components of mental training are used in different fields such as medicine (Cocks, 2014) and music (Aleman, Nieuwenstein, Böcker & De Haan, 2000; Keller, 2012), the main focus was generally on athletes’ performance (Weinberg, 2008).
When the literature is examined, it is seen that scientific research has been conducted on the mental training and benefits of its components for many different sports branches. Post, Mullins and Wrisberg (2010) investigated the effect of pre-game mental imagery on free throw in basketball and determined that the performance of athletes increased. Smith, Wright, Allsopp and Westhead (2007) examined the effect of imagery on penalty shootout in hockey players and stated that the performance of the athletes using the imagery types increased. Post, Muncie and Simpson (2012) investigated the effect of mental imagery on the performance of swimmers and stated that imagery improves the performance of swimmers. Nagar and Noohu (2014) stated that mental imagery affects power and balance. Özdal, Akcan, Abakay and Dağlıoğlu (2013) examined the effect of mental training on shooting skill in football and reached the conclusion that mental training applied with physical training improved shooting skill. Robin, Dominique, Toussaint, Blandin, Guillot and Her (2007) investigated the effect of motor imagery on the service return accuracy and determined that the imagery improved the service return accuracy. Patrick and Hrycaiko (1998) investigated the effect of mental training on endurance and stated that it improves performance. In addition to the studies mentioned above, it is seen that there are other scientific studies on the benefits of mental training and its components (Bar-Eli & Blumenstein, 2004; Diment, 2014; Visek, Harris & Blom, 2013). The results of the mentioned researches above also show that mental training may have an important share in increasing athlete’s performance when it is applied regularly.

It would not be wrong to say that as well as increasing the performance of athletes, mental training is in close relationship with anxiety, which is one of the variables that affect performance. Anxiety is an emotion characterized by somatic signs of anxiety and blood pressure, if an individual predicts impending danger, disaster or misfortune. In this case, the body often activates itself with reactions such as tension of the muscles, rapid breathing and rapid heartbeat to meet the perceived threat (APA, n.d.). Anxiety is widely regarded as a complex psychological phenomenon and is probably one of the most difficult emotions to identify and diagnose. Performance anxiety refers to an unpleasant psychological state in response to the perceived threat regarding to perform a task under pressure (Cheng, Hardy & Markland, 2009). Humara (1999) stated that anxiety has a significant effect on performance in his meta analysis. The relationship between arousal and performance can be explained by the inverted U hypothesis. The basic principle of the hypothesis is that as the arousal increases from very low to medium levels, there is a simultaneous improvement in performance. When the level of arousal reaches a medium level, performance reaches its peak. Performance worsens quickly when arousal goes above medium (Raglin, 1992). As a matter of fact, there are studies showing that high anxiety level negatively affects performance (Aksoy, 2016; Parnabas, Parnabas & Parnabas, 2015; Woodman & Hardy, 2003).

Mental training can be used to reduce anxiety to the desired level. As a matter of fact, Galloway (2016) stated that a successful mental training program will reduce stress to a more manageable level. Since anxiety is in the field of study of most disciplines, especially psychology, there are many studies on anxiety in the literature. However, the number of studies examining the effect of mental training on anxiety seems to be limited. Some
of these studies were mentioned below. Mamassis and Doganis (2004) emphasized the importance of the seasonal mental training program in regulating performance variables such as anxiety and self-confidence. In addition, Kolayiş and Taşkıran (2011) stated that mental imagery training can be used to regulate the level of anxiety. Savoy (1993) stated that the one-year mental training program reduces the pregame anxiety of the athlete. Savoy and Beitel (1997) concluded that the mental training program implemented throughout the season provides a continuous decrease in the cognitive and somatic anxiety of athletes. Vadoa, Hall and Moritz (1997) stated that imagery can be used to help control competition anxiety. In addition, it is seen that there are other studies on anxiety and mental training as well as the studies mentioned above (Beauchamp, Bray & Albinson, 2002; Koivula, Hassmen & Fallby, 2002; Martin, Moritz & Hall, 1999; Shackell & Standing, 2007). Based on the results of the above-mentioned studies, it can be interpreted that mental training can improve performance and be effective in regulating anxiety, one of the variables that affect performance.

Research Question

What is the effect of mental training skills on prediction of anxiety levels of sports sciences faculty students?

Sub-Questions

1. What are the mental training skills and anxiety levels of the Sports Sciences Faculty students?
2. Do the mental training skill and trait anxiety scores of the Sports Sciences Faculty students differ according to their gender?
3. Do the mental training skill and trait anxiety scores of the male and female students of Sports Sciences Faculty differ according to sports branch variable?
4. Is there a relationship between mental training skill, anxiety, age and sports age of the Faculty of Sports Sciences students?

Aim and Importance of the Research

This research was conducted to predict the anxiety level of the Sport Sciences Faculty students. In the study, mental foundational skills, mental performance skills, interpersonal skills, self talk and mental imagery variables were accepted as predictive variables and it was aimed to determine the effect of these variables on anxiety level. The number of studies in the literature on the relationship between mental training skills and anxiety of the Sports Sciences Faculty students is quite limited (Fortes, Lira, Lima, Almeida & Ferreira, 2016; Khodayari, Saiari & Dehghani, 2011; Mousavi & Meshkini, 2011; Sangari, Fotrousi & Masrour 2012). While the above-mentioned research focuses on the relationship between mental training and anxiety, this research focuses on what level mental training skills predict anxiety. For this reason, it is thought that the research will be a reference for the studies to be carried out on this subject.
METHOD

Research Design

Correlational survey model was used in this research. Survey researches are studies that aim collecting data to determine certain characteristics of a group (Büyüköztürk et al., 2019). According to Karasar (2008), survey models are research approaches aiming to describe a situation that existed in the past or still exists as it exists.

Research Group

The study group of the research consisted of 286 athletes from various sports branches studying at the Faculty of Sports Sciences of a state university. 162 (56.6%) of the participants are male and 124 (43.4%) are female. In addition, 122 (42.7%) of the participants are from the individual sports, 164 (57.3%) of them are from the team sports. Percentage and frequency distributions of the students of the Faculty of Sport Sciences participating in the study according to categorical variables were given in table 1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>162</td>
<td>56.6</td>
</tr>
<tr>
<td>Female</td>
<td>124</td>
<td>43.4</td>
</tr>
<tr>
<td>Sports Branch</td>
<td></td>
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<tr>
<td>Individual Sport</td>
<td>122</td>
<td>42.7</td>
</tr>
<tr>
<td>Team Sport</td>
<td>164</td>
<td>57.3</td>
</tr>
</tbody>
</table>

Data Collection Tools

In the research, the Sport Mental Training Questionnaire (SMTQ), which was developed by Behnke, Tomczak, Kaczmarak, Komar and Gracz (2017), adapted to Turkish by Yarayan and İlhan (2018), was used to determine the participants’ mental training skills. In addition, Trait Anxiety Subscale of the State-Trait Anxiety Inventory, which was developed by Spielberger, Gorsuch and Luschene (1970), adapted to Turkish by Öner and Le Compte (1983), was used to determine the trait anxiety levels of the participants.

The Sport Mental Training Questionnaire (SMTQ)

The Sport Mental Training Questionnaire (SMTQ) was developed by Behnke et al. (2017) and adapted to Turkish by Yarayan and İlhan (2018). Questionnaire consists of 20 items and 5 sub-dimensions (Mental Fundamental Skills, Mental Performance Skills, Interpersonal Skills, Self Talk, Mental Imagery) and is evaluated in the 5-point Likert type. It was determined by Yarayan and İlhan (2018) that the internal consistency coefficients of the questionnaire vary between 0.82 and 0.91 (Yarayan & İlhan, 2018). Cronbach alpha value for current research was calculated for subdimensions and SMTQ total as .74, .73, .83, .86, .77 and .89 respectively.
Trait Anxiety Scale

Trait Anxiety Scale is the subscale of the State-Trait Anxiety Inventory developed by Spielberger et al. (1970) and adapted to Turkish by Öner and Le Compte (1983). The scale is a 4-point Likert-type scale. Items 1, 6, 7, 10, 13, 16, 19 of the scale are scored reversed. The lowest score that can be obtained from the scale is 20 and the highest score is 80. An increase in the score obtained from the scale means that the level of anxiety also increases. It was calculated by Öner and Le Compte, (1983) that the internal consistency coefficient of the scale as 0.86 (Öner & Le Compte, 1983). Cronbach alpha value for current research was calculated as .84.

Data Analysis

First of all, scores of the students of the Faculty of Sport Sciences related to SMTQ factors were calculated. Mental fundamental skills, mental performance skills, interpersonal skills, self talk, mental imagery, which are the factors of mental training, were considered as independent variables in the problem of research. The dependent variable was made ready by taking the sum of the points obtained from the anxiety scale. In the second step, normality and linearity hypotheses were examined to determine whether the data set is suitable for regression analysis. The results regarding the normality and linearity hypotheses were given in graphic 1-2 below.
When the data in graphic 2 were examined, it was seen that the scatter diagram created for standardized residual values and standardized predicted values show a linear relationship and the points tended to accumulate around an axis. It can be stated that the histogram and normal distribution curves created for standardized predicted values also show an approximate distribution to normal. Accordingly, it can be said that the data set meets the assumptions of multiple linear regression analysis.

In the study, data were analyzed by using SPSS 25 (Statistical Package for Social Science for Personal Computers) program. In the analysis of the research question, Pearson product-moment correlation coefficient ($r$) was used to calculate the relationships between variables. Multiple linear regression analysis technique was used between mental training skills and anxiety variable of Faculty of Sports Sciences students. In the interpretation of regression analysis, standardized Beta ($\beta$) coefficients and t-test results related to their significance were taken into consideration. In the analysis of the first sub-question of the research, descriptive statistics of the mental training and anxiety levels of the participants were analyzed. In the analysis of the second sub-question of the research, independent samples t-test was used to compare the mental training skill and trait anxiety scores of the students of the Faculty of Sports Sciences according to gender variable. In the analysis of the third sub-question of the research, independent samples t-test was used to compare the mental training skill and trait anxiety scores of the male and female students of the Faculty of Sports Sciences according to sports branch variables. In the analysis of the fourth sub-question of the study, the relationship between the participants’ mental training skills, anxiety levels, age and sports age was analyzed by Pearson Moments Product Correlation technique. In the analysis of the data, .05 significance level was based. In this research, ethical principles were followed in data collection, data analysis, quoting and all other processes.
FINDINGS (RESULTS)

Findings and Interpretation Regarding Prediction of Anxiety Levels of the Sports Sciences Faculty Students

In the research question, it was investigated whether there is a significant relationship between the anxiety scores of the athletes and mental fundamental skills, mental performance skills, interpersonal skills, self talk and mental imagery variables. Multiple linear regression analysis was performed to reveal this relationship. Analysis results were given in table 2.

According to the regression analysis results in Table 2; When the bilateral and partial correlations between the predictive variables and the dependent variable were examined, it was seen that there was a negative and moderate relationship between the anxiety level of the athletes and their mental fundamental skills (r = -0.47). When other variables were checked, it is seen that the correlation coefficient between the two variables is calculated as r = -0.26. There is a negative and moderate (r = -0.51) relationship between anxiety level and mental performance skills of athletes. When other variables were checked, the correlation between the two variables was calculated as -0.31. There is a negative and moderate relationship (r = -0.33) between anxiety level and interpersonal skills of athletes. When other variables were checked, the correlation between the two variables was calculated as -0.09. There is a positive and weak (r = 0.03) relationship between the anxiety level of the athletes and self talk variable. When other variables were checked, the correlation between the two variables was calculated as 0.26. There is a negative and weak (r = -0.27) relationship between anxiety level of athletes and mental imagery. When other variables were checked, the correlation between the two variables was calculated as 0.03.

In addition, the participants' mental fundamental skills, mental performance skills, interpersonal skills, self talk and mental imagery variables together give an moderate and significant relationship with anxiety level [R = 0.60; R² = 0.36; p < 0.05]. These five variables together explain approximately %36 of the total variance.

Graphic 6. Relationship Between Anxiety Total and Interpersonal Skills

Graphic 7. Relationship Between Anxiety Total and Self Talk

Graphic 8. Relationship between anxiety total and mental mental imagery
According to the standardized regression coefficient (β), the relative importance order of the predictive variables on the level of anxiety is mental performance skills, mental fundamental skills, self talk, interpersonal skills and mental imagery. When the T-test results related to the significance of the regression coefficients are examined, it is seen that the variables of mental fundamental skills, mental performance skills, interpersonal skills, self talk and mental imagery are a significant predictor of athletes’ anxiety levels (t = 22.179; p<.05).

According to the results of the regression analysis, the regression equation related to prediction of the anxiety levels of the athletes is given below.


### Findings Related To Mental Training Skills and Anxiety Levels of Faculty of Sports Sciences Students

| Table 3. SMTQ and Trait Anxiety Scales Mean Scores of Participants |
|------------------------|------------|-----|
| Scales                 | N          | \(\bar{X}\) | SD  |
| Mental Fundamental Skills | 286        | 4.14 | .68 |
| Mental Performance Skills | 286        | 3.78 | .65 |
| Interpersonal Skills | 286        | 4.41 | .64 |
| Self Talk | 286        | 3.97 | .77 |
| Mental Imagery | 286        | 4.14 | .75 |
| SMTQ Total | 286        | 4.06 | .53 |
| Trait Anxiety Total | 286        | 2.01 | .39 |

When table 3 is analyzed, it is seen that the mean score of the participants obtained from SMTQ is \(\bar{X}=4.06\). The mean scores of the participants from the sub-dimensions of the SMTQ were found as \(\bar{X}=4.14, \bar{X}=3.78, \bar{X}=4.41, \bar{X}=3.97, \bar{X}=4.14\) respectively. According to these results, it can be said that the mental training skills of the athletes participating in the research are above average. In addition, it is seen that the mean score of the participants obtained from trait anxiety scale is \(\bar{X}=2.01\). According to this result, it can be said that the trait anxiety scores of the athletes participating in the research are at average level.

### Findings Related To Mental Training Skills and Anxiety Levels of Sport Sciences Faculty Students By Gender

| Table 4. T-test Results For The Difference of Participants’ SMTQ Mean Scores by Gender |
|------------------------|------------|-----|-----|-----|-----|
| Scales                 | Gender     | N   | \(\bar{X}\) | SD  | df | t    | p   |
| Mental Fundamental Skills | Male       | 162 | 4.19 | .69 | 284 | 1.490 | .137 |
|                         | Female     | 124 | 4.07 | .67 | 284 |    |     |
| Mental Performance Skills | Male       | 162 | 3.86 | .68 | 284 | 2.430 | .016* |
|                         | Female     | 124 | 3.68 | .60 | 284 |    |     |
| Interpersonal Skills | Male       | 162 | 4.37 | .65 | 284 | -1.265 | .207 |
|                         | Female     | 124 | 4.46 | .64 | 284 |    |     |
| Self Talk | Male       | 162 | 4.03 | .76 | 284 | 1.527 | .128 |
|                         | Female     | 124 | 3.89 | .78 | 284 |    |     |
| Mental Imagery | Male       | 162 | 4.16 | .77 | 284 | -1.56 | .877 |
|                         | Female     | 124 | 4.18 | .74 | 284 |    |     |
| Total                  | Male       | 162 | 4.08 | .56 | 284 | 1.062 | .289 |
|                         | Female     | 124 | 4.02 | .49 | 284 |    |     |
| Trait Anxiety          | Male       | 162 | 1.97 | .37 | 284 | -1.786 | .075 |
|                         | Female     | 124 | 2.06 | .40 | 284 |    |     |

When Table 4 is examined, it is seen that there is a statistically significant difference only in the mental performance skills sub-dimension (p<.05). It was concluded that there was no significant difference between participants in other sub-dimensions and in the total score by gender. It is understood that the difference in mental performance skills sub-dimension is in favor of male athletes. The mean score of male participants in this sub-dimension is $\bar{X}=3.86$ and the mean score of female participants is $\bar{X}=3.68$. According to this result, it can be said that male participants are more successful in mental performance skills than female participants but according to the total SMTQ mean scores, it is seen that there is no difference between male and female athletes. Also, it is seen that there is no statistically significant difference between the participants' trait anxiety scores. Trait anxiety mean score of male participants is $\bar{X}=1.97$ and mean score of female participants is $\bar{X}=2.06$. According to these results, it can be said that the trait anxiety of athletes does not differ by gender.

**Findings Related To Mental Training Skills and Anxiety Levels of Athletes By Sports Branch**

<table>
<thead>
<tr>
<th>Table 5. T-test Results For SMTQ and Trait Anxiety Scores According to the Sports Branches of Male and Female Participants.</th>
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<tbody>
<tr>
<td>Gender</td>
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When Table 5 is examined, it is seen that there is a statistically significant difference only in the mental performance skills sub-dimension (p<.05). It was concluded that there was no significant difference among the participants in the other sub-dimensions and in the total score by sports branch. It is understood that the difference in mental performance skills sub-dimension is in favor of male individual sports athletes. The mean score of male individual sports participants in this sub-dimension is $\bar{X}=3.98$ and the mean score of male team sports participants is $\bar{X}=3.76$. According to this result, it can be said that individual sports participants are more successful than team sports participants in their mental performance skills but according to the total SMTQ mean scores, there is no difference between individual sports participants and team sports participants. Also, it is seen that there is a statistically significant difference between participants' trait anxiety according to their sports branches (p<.05). It is understood that this difference is in favor of the participants of female individual sports branch. The mean score of female individual sports participants is $\bar{X}=1.93$ and the mean score of female team sports participants is $\bar{X}=2.13$. According to these results, it can be said that the anxiety levels of the individual sports participants are lower than the team sports participants.

### Findings Related To Relationship Between The Mental Training Skills and Anxiety Levels of Athletes and Age and Sports Age Variables.

#### Table 6. Results of The Pearson Product-Moment Correlation Showing The Relationship Between The Mental Training Skills, Anxiety Levels, Age and Sports Age Variables of Participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>A</th>
<th>SA</th>
<th>TAT</th>
<th>MFS</th>
<th>MPS</th>
<th>IS</th>
<th>ST</th>
<th>MI</th>
<th>MTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>.598**</td>
<td>-.212**</td>
<td>.150**</td>
<td>.218**</td>
<td>.118*</td>
<td>.048</td>
<td>.065</td>
<td>.169**</td>
</tr>
<tr>
<td>SA</td>
<td>.598**</td>
<td>1</td>
<td>-.174**</td>
<td>.117*</td>
<td>.190**</td>
<td>.115*</td>
<td>.080</td>
<td>.072</td>
<td>.154**</td>
</tr>
</tbody>
</table>

*p<.01  
**p<.05

When table 6 is examined, it is seen that there is a positive and significant relationship between the participants' age (A) and mental fundamental skills (MFS), mental performance skills (MPS), interpersonal skills (IS), mental training total score (MTT) and that there is negative and significant relationship between participants' age and trait anxiety total score (TAT). Similarly, it was found that there is a positive and significant relationship between the participants' sport age (A) and mental fundamental skills (MFS), mental performance skills (MPS), interpersonal skills (IS), mental training total score (MTT) and that there is negative and significant relationship between participants' sport age and trait anxiety total score (TAT).

### CONCLUSION and DISCUSSION

This research was conducted to predict the anxiety level of the Sport Sciences Faculty students. In the study, mental foundational skills, mental performance skills, interpersonal skills, self talk and mental imagery variables were accepted as predictive variables and it was aimed to determine the effect of these variables on anxiety level. In addition, the variables used in the research were examined according to gender and sports branch.
Considering the mean scores from the SMTQ and its sub-dimensions, it can be said that mental training skills of participants are above average. Considering the use of mental skills at the top of the factors affecting sports success, this result is considered important (Amasiatu, 2013; Mizuguchi et al., 2012; Savoy, 1997). In their study on university students who are elite athletes, Turgut and Yaşar (2019) found that the level of participants' use of mental training skills is above average. Aktepe (2006) determined that athletes participating in his study had high ability to use mental training. In their study, Kara and Hoşver (2019) stated that the mental training skills of the participants were above average. Although the literature generally focuses on applied studies, (Kaufman, Glass & Pineau, 2018; Mamassis & Doganis, 2004; Visek, Harris & Bloom, 2013; Wrisberg, Loberg, Simpson, Withycombe & Reed, 2010) it is seen that the current research findings are similar to previous survey researches. Nonetheless, it can be stated that the participants can control their emotions while they are under pressure, they want to compete even if they are pressured during the competition, they can use strategies by considering their strengths and weaknesses, they act according to the balances in the team, they can use the mental imagery feature before the competition and they do not have a focus problem after the failures.

When the participants' SMTQ mean scores by gender were examined, a significant difference was found in the mental performance skills sub-dimension in favor of males. In their study on athletes, Nicholls, Polman, Levy and Backhouse (2009) achieved a result in favor of male participants. In their study, Habacha, Molinaro and Dosseville (2014) emphasized that gender is an important parameter and there is a difference in favor of males. From this point of view, there are studies supporting the current research results in the literature. Nonetheless, according to the results of the research, it can be stated that male participants are better than females in the ability to maintain their physical and mental comfort during the competition, to adapt to the distracter factors for performance, to re-focus as soon as possible even if they experience loss of control during the competition. In addition, another result obtained in the research is that mental performance skills differ statistically according to the sports branch. Male participants who are interested in individual sports are more likely to use mental performance skills than those who do team sports. It is believed that this is due to the fact that individual athletes are more free in self-decision making and implementation.

When the mean score obtained from the Trait Anxiety Scale is examined, it can be said that the participants have an average level of anxiety. Ford, Idefonso, Jones and Arvinen-Barrow (2017) stated that anxiety was extremely normal and at a certain level in this sample group. In their study on high level athlete, Schaal et al (2011) determined that the participants had many source of anxiety and worry. In her study on university students, Öz (2019) determined that the participants' trait anxiety status was at an average level. In his study, Öztürk (2019) concluded that the participants felt an average level of anxiety. It was also seen in the literature that there are other researchers who have reached similar results (Civan, Arı, Görücü & Özdemir, 2010; Nacar, İmamoğlu, Karahüseyinoğlu & Açağ, 2011; Türkçapar, 2012). When the mean score obtained from the trait anxiety scale is examined, it can be stated that the participants think them to can not overcome their work, they worry about unimportant things, they are afraid to face difficulties and they care about their
disappointments in certain periods. However, it can be said that they are generally satisfied and happy with their lives.

When the anxiety states of the participants were examined according to the gender variable; it was determined that there was no statistically significant difference. In his study on athlete university students, Dönmez (2013) determined that there was no significant difference between anxiety and gender. In their study on athletes, Karabulut and Mavi-Var (2019) stated that there was no difference between the participants' trait anxiety and gender. Macila (2013) found that there was no significant difference between gender and trait anxiety. Also, there are studies in the literature that conclude that anxiety differs according to gender (Hardy, Woodman & Carrington, 2004; Jones & Cale, 1989; Jones, Swain & Hardyly, 1991; Swain & Jones, 1991, Wiggins, 1998). Therefore, it is not possible to make a generalization between the state of anxiety and gender. It is thought that the reason of this result due to the difference of the sample groups. Another result of the research is that there is a statistically significant difference between the participants' trait anxiety according to their sports branches. Analysis results show that anxiety levels of individual sports participants are lower than team sports participants in females. Civan et al. (2010) determined that individual sports participants had lower levels of anxiety than team sports participants. Başaran (2008) and Civan (2001) also reached similar results in their study. These results show that individual sports participants are better than team sports participants in anxiety control. Individual sports athletes are different from other branch athletes due to the nature of their branches, as they make individual decisions and create their own strategies. It is thought that having the control mechanism essentially reduces anxiety.

As another result of the research, it was concluded that the level of anxiety decreased as the experience of being licensed athlete of participants increased. Therefore, it can be stated that the competition experience also reduces the level of anxiety. There are studies that can help explain the anxiety feature in the literature. Mamassis and Doganis (2004) stated that mental training has a positive effect on trait anxiety level. Smith, Smoll and Cumming (2007) determined that the mental training program reduces the level of anxiety. Moghadam, Sayadi, Samimifar and Moharer (2013) determined that mental awareness training significantly reduces anxiety. Englert and Bertams (2012) stated that individual control reduces negative anxiety effects and increases the performance of athletes under pressure. Gardner, Vella and Magee (2015) concluded that the reduction of cognitive anxiety positively affects sports performance. Nonetheless, it is seen that mental training practices contribute to the self-confidence, increase the level of motivation and have an impact on the reduction of anxiety (Beauchamp, Bray & Albinson, 2002; Koivula, Hassmen & Fallby, 2002; Martin, Moritz & Hall, 1999; Shackell & Standing, 2007; Vadoa et al., 1997). Research results show that there is a moderately significant relationship between mental training skills and anxiety level. Nonetheless, it has been demonstrated with the results of the research that the predictive variables explained 36% of the anxiety level. It is known that a successful mental training program has a positive effect on stress and anxiety (Galloway, 2016). The high level of anxiety can make difficult that the individual focus on what he is doing and can cause him to be unsuccessful (Parnabas et al., 2015; Woodman & Hardy, 2003). The current research results have reinforced that mental
training is an important factor in reducing anxiety. It was thought that the reason of this result is due to the participants' inner motivation, identity competence among individuals, achievement of success-oriented thinking, ability to use perceptual and cognitive skills. From this point of view, it can be stated that mental training skills are an important feature in predicting the level of anxiety.

**RECOMMENDATIONS**

The use of mental training skills stands out as an important factor in controlling anxiety levels of individuals. Examining the features that are also related to anxiety from this perspective can contribute to the literature. For this reason, it is recommended that the mental training feature is studied by modeling with the variables of success, performance, focus and psychological capital. In addition, it is suggested that a training program for the use of mental training skills is prepared and regularly implemented.

**ETHICAL TEXT**

In this article, journal writing rules, publishing principles, research and publishing ethics rules, journal ethics rules are followed. The authors are responsible for all kinds of violations related to the article.

**REFERENCES**


SPOR BİLİMLERİ FAKÜLTESİ ÖĞRENCİLERİNİN KAYGI DÜZEYLERİNİN YORDAMASINDA ZİHİNSEL ANTRENMAN BECERİLERİNİN ETKİSİ

ÖZ


Anahtar Kelimeler: Zihinsel antrenman, kaygı, öğrenci.
GİRİŞ

Spor ya da sporcu gibi kavramlar, genellikle fiziksel güç ile birlikte anılır. Sporcuların sahip olduğu kaslı ve atletik vücutların bu düşünceye neden olduğunu söylemek yanlış olmayacaktır. Fakat sporda fiziksel güç ve beceriler kadar zihinsel güç ve beceriler de spordanın önemli bir bileşenidir. İkinci Dünya Savaşı sonrasında spor psikolojisinde yaşanan gelişmeler ve bilimsel araştırmalarla zihinsel güç ve beceriler sporcuların antrenman programlarında önemli bir yer edinmiş ve değerlendirmelerin önemli bir parçası olmuştur.

Spor psikolojisinin popülaritesi ve akademik gelişimi Soğuk Savaş sonrası dönemde rekabetçi spora verilen politik ve sosyal önlemlerle hızla ilerlemiştir (Gee, 2010). Bugün spor psikolojisi parmakrendik bir nesne, canlı ve heyecan verici bir alandır. Spor ve egzersiz psikolojisi dünyada yavaş bir büyüme göstermektedir ve yetişmenin fazla ülkede spor psikolojisi uzmanları çalışmaktadır (Weinberg & Gould, 2015). Bu büyük gelişmelerden sonra zihinsel becerilerin önemi giderek artmış ve fiziksel antrenmanlara birlikte antrenman programlarında yerini almıştır. Günümüzde pek çok başarılı sporunun spor psikolojisi ve psikoloji uzmanı tarafından çok önemlidir (Amasiatu, 2013; Choi, Choi, Nam, Cho, Hwang ve Kwon, 2010; Fontani, Migliorini, Benocci, Facchini, Casini ve Corradeschi, 2007; Kulak, Kerkez ve Aktaş, 2011; Li-Wei, Qi-Wei, Orlick ve Zitzelsberger, 1992; Mizuguchi, Nakata, Uchida ve Kanosue, 2012; Slimani, Tod, Chaabene, Miarka ve Chamari, 2016). Yukarıda belirtilen araştırma sonuçlarından hareketle, zihinsel becerilerin spor performansını etkilediğini söylemek yanlış olmayacaktır.


antrenman becerilerinin kaygıyı ne düzeyde yordadığı üzerinde durulmaktadır. Bu nedenle araştırmanın bu konuda yapılacak çalışmalar için bir referans teşkil edeceğidir.

**YÖNTEM**

**Araştırma Deseni**


**Çalışma Grubu**

Araştırmanın çalışma grubunu bir devlet üniversitesi Spor Bilimleri Fakültesi’nde öğrenim gören çeşitli spor branşlarından 286 sporcu oluşturmaktır. Katılımcıların 162’si (%56,6) erkek, 124’sü (%43,4) kadın katılımcıtır. Bunun yanı sıra katılımcıların 122’si (%42,7) bireysel sporlardan birini, 164’ü (%57,3) takım sporlarından birini yapmaktadır. Araştırmaya katılan Spor Bilimleri Fakültesi öğrencilerinin kategorik değişkenlere göre yüzde ve frekans dağılımları tablo 1’de verilmiştir.

<table>
<thead>
<tr>
<th>Değişkenler</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cinsiyet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erkek</td>
<td>162</td>
<td>56,6</td>
</tr>
<tr>
<td>Kadın</td>
<td>124</td>
<td>43,4</td>
</tr>
<tr>
<td>Spor branşı</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bireysel Sporlar</td>
<td>122</td>
<td>42,7</td>
</tr>
<tr>
<td>Takım Sporları</td>
<td>164</td>
<td>57,3</td>
</tr>
</tbody>
</table>

**Veri Toplama Araçları**


**Sporda Zihinsel Antrenman Envanteri**

Envanter 20 madde ve 5 alt boyuttan (Zihinsel Temel Beceriler, Zihinsel Performans Becerileri, Kişilerarasi Beceriler, Kendinle Konuşma, Zihinsel Canlandırma) oluşmaktadır ve 5’li Likert tipinde değerlendirilmiştir. Verilerin analizinde envanterin yapı geçerliliğine ilişkin olarak Açıklayıcı Faktör Analizi ve Doğrulayıcı Faktör Analizi iç tutarlığın belirlenmesi için ise, Cronbach Alfa güvenirlik analizi kullanılmıştır. Açıklayıcı faktör analizi sonucu belirlenen 5 faktör yapısı SZAEn’in %69.219’unu açıklamaktadır. Doğrulayıcı faktör analizi sonuçlarında uyum iyiliği indeks değerleri, $x_2$/sd($x_2=303.69$, sd=164)=1.85, GFI=0.91, CFI=0.95, NFI=0.91, AGFI=0.88,

BULGULAR

Spor Bilimleri Fakültesi öğrencilerinin Kaygı Düzeylerinin Yordanmasına İlişkin Bulgular ve Yorum

Araştırma probleminde, sporcuların kaygı puanları ile zihinsel temel beceriler, zihinsel performans becerileri, kişilik-gecebilir beceriler, kendisi ile konuşma ve zihinsel antrenman değişkenleri arasında anlamlı bir ilişki olup olmadığı araştırılmıştır. Söz konusu ilişkiyi ortaya koymak için çoklu doğrusal regresyon analizi yapılmıştır. Analiz sonuçları tablo 9'de verilmektedir.

Tablo 2. Katılımcıların Kaygı Düzeylerinin Yordanmasına İlişkin Çoklu Regresyon Analizi Sonuçları

<table>
<thead>
<tr>
<th>Model</th>
<th>Sabit</th>
<th>Standart Hata</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>İkili r</th>
<th>Kısımı r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zihinsel Temel Beceriler</td>
<td>-.899</td>
<td>.196</td>
<td>-.316</td>
<td>-4.575</td>
<td>.000</td>
<td>-.465</td>
<td>-.264</td>
</tr>
<tr>
<td>Zihinsel Performans Beceriler</td>
<td>-.701</td>
<td>.130</td>
<td>-.352</td>
<td>-5.386</td>
<td>.000</td>
<td>-.513</td>
<td>-.306</td>
</tr>
<tr>
<td>Kişilik-gecebilir Beceriler</td>
<td>-.268</td>
<td>.176</td>
<td>-.089</td>
<td>-1.527</td>
<td>.128</td>
<td>-.330</td>
<td>-.091</td>
</tr>
<tr>
<td>İçsel Konuşma</td>
<td>.702</td>
<td>.157</td>
<td>.247</td>
<td>4.470</td>
<td>.000</td>
<td>.030</td>
<td>.258</td>
</tr>
<tr>
<td>Zihinsel Canlandırma</td>
<td>.115</td>
<td>.232</td>
<td>.033</td>
<td>.494</td>
<td>.622</td>
<td>-.271</td>
<td>.029</td>
</tr>
</tbody>
</table>

R² = .596   R² = .355
F(5-280)=30.863   p=.000

Tablo 2'daki regresyon analizi sonuçlarına göre; yöndüren değişkenler ile bağımlı değişken arasındaki ikili ve kısmi korelasyonlar incelendiğinde, sporcuların kaygı düzeyi ile zihinsel temel becerileri arasında negatif yönde ve orta düzeyde (r=-.47) diğer değişkenler kontrol edildiğinde iki değişken arasındaki korelasyon katsayısının r=-.26 olarak hesaplandığı görülmektedir. Sporcuların kaygı düzeyi ile zihinsel performans becerileri arasında negatif yönde ve orta düzeyde (r=-.51) bir ilişki vardır. Diğer değişkenler kontrol edildiğinde iki değişken arasındaki korelasyon -.31 olarak hesaplanmıştır. Sporcuların kaygı düzeyi ile kişilik-gecebilir becerileri arasında negatif yönde ve orta düzeyde (r=-.33) bir ilişki vardır. Diğer değişkenler kontrol edildiğinde iki değişken arasındaki korelasyon -.09 olarak hesaplanmıştır. Sporcuların kaygı düzeyi ile kendi ile konuşma değişkeni arasında pozitif yönde ve zayıf (r=.03) ilişki vardır. Diğer değişkenler kontrol edildiğinde iki değişken arasındaki korelasyon .26 olarak hesaplanmıştır. Sporcuların kaygı düzeyi ile zihinsel antrenman becerileri arasında negatif yönde ve zayıf (r=-.27) bir ilişki vardır. Diğer değişkenler kontrol edildiğinde iki değişken arasındaki korelasyon .03 olarak hesaplanmıştır.

Ayrıca zihinsel temel beceriler, zihinsel performans becerileri, kişilik-gecebilir beceriler, kendisi ile konuşma ve zihinsel antrenman becerileri değişkenleri birlikte kaygı düzeyi ile orta düzeyde ve anlamlı bir ilişki vermektedir [R=.60; R²=.36; p<.05]. Söz konusu beş değişken birlikte toplam varyansın yaklaşık %36’sını açıklamaktadır.

Tablo 4 incelendiğinde, yalnızca zihinsel performans becerileri alt boyutunda istatistiksel olarak anlamlı bir farkın olduğu görülmektedir (p<.05). Diğer alt boyutta ve toplam puanında katılımcılar arasında cinsiyete göre anlamlı bir farkın olmadığı sonucuna ulaşılmıştır. Zihinsel performans becerileri alt boyutındaki farkın erkek sporcuların lehine olduğunu analizleretmektedir. Erkek katılımcıların bu alt büyütüte puanı \( \bar{X} = 3.86 \), kadın katılımcıların puanı ise \( \bar{X} = 3.68 \)’dür. Bu sonuca göre erkek katılımcıların zihinsel performans becerileri alt boyutundaki farkın erkek sporcuların lehine olduğu anlaşılmaktadır. Erkek katılımcıların bu alt büyütüte puanı \( \bar{X} = 3.86 \), kadın katılımcıların puanı ise \( \bar{X} = 3.68 \)’dür. Bu sonuca göre sporcuların sürekli kaygılarının cinsiyete göre farklılık göstermediği söylenebilir.


