Evaluation of State and Trait Anxiety Levels among Students with No Prior Knowledge of Skiing Before and After the Implementation of a Skiing Course

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ABSTRACT The aim of this study was to evaluate state and trait anxiety levels of students with no prior skiing experience before and after undertaking a skiing course.The study was conducted with 56 students (25 female, 31 male) with a mean age of 21.64±2.05.The 40-item State and Trait Anxiety Inventory (STAI) was administered to participating students. The collected data was analyzed using the SPSS 16.0 package program. In this study, no significant difference was identified between the pre- and post-test state and trait anxiety levels of the students with respect to their departments and gender (p>0.05).In conclusion, it was observed that the pre- and post-test state and trait anxiety levels were not affected by such factors as department and gender.

INTRODUCTION

Nowadays, many factors that affect the level of sports performance are mentioned when assessing some of these factors, some of which are considered under the name of environmental factors, while the others are considered under the name of the internal factors. One of the athlete's internal factors is a psychological factor (Karabulut 2013).

It is well-known that the performance of athletes and players of sports are affected by numerous psychological factors in which one of the most important is "anxiety."Anxiety is a psychological state in which motivation is affected by fear and similar feelings, andone of the most common causes of anxiety is subconscious memories relating to a frightening or undesirable stimulation/experience. Whenever a situation which a person has unconsciously conditioned him/herself to fear is encountered, he/she will feel an inexplicable and disquieting sense of anxiety (Morgan 2000). State anxiety is defined as "the expression of complex emotive reactions by an individual when faced with a source of environmental stress or threat" (Ikizler 1993). Trait anxiety, on the other hand, is defined as "the tendency of individuals to be uneasy, concerned and pessimistic, and to display excessive sensitivity and intense emotional reactions, which are independent of environmental conditions (Ikizler 1993). Trait anxiety cannot be observed directly from an individual's behavior; however, the intensity and frequency of state anxiety reactions that are observed at different times and conditions can serve as indicators (Oner 2004).

There are two forms of observable anxiety. It has been suggested that individuals with high trait anxiety levels consider many different situations to be being threatening to them (Ozgul 2003). In this regard, there have been various studies that focused on identifying the effect of an individual's trait anxiety levels on their aggression levels, and the role that gender and sport activities play within the context of this effect (Woods 1998). When evaluating the effect of movement, sports and exercise on people, it is necessary to also take age into account, as age-related changes and differences may lead to different levels of anxiety in individuals (Konter 1997). Skiing is less dangerous as a sport than many others that involve physical contact, such as football, boxing and wrestling, and can be performed by persons of all ages. It is preferred over many other pastimes as an outdoor fresh-air sport because it is entertaining and increases physical endurance.

Skiing across the World

Skiing has been practiced by humans for over 5000 years. The first skis were constructed from ash, birch and pine, and to reduce friction, the underside pines skis were covered with tar, while the underside of skis made from birch were covered with leather (Morpa 1984).

Skis are thought to have been used in Siberia, Mongolia and Altai, and their use spread lat-

er towards North America, the Balkans and Ana-
tolia, including the northwestern direction to-
wards Scandinavia and Iceland. The first ski was
discovered in Sweden in 1921 during an archeo-
logical excavation, and was identified as being
4500 years old; while the first skiing club in the
world was founded in Norway by Fridtj of Nans-
en in 1877, and was called "Ski Clup de Cristina."
More skiing clubs were established in Germany
in 1890, in Austria in 1894, in France in 1901 and
in the United Kingdom in 1903 .The Internation-
al Ski Federation (*Federation International de
Ski*, FIS), centered in Bern, was founded in 1924,
and skiing events were included in the winter
Olympics program that same year.The FIS orga-
nized the first "cross-country skiing" competi-
tions in 1925, and the first "alpine skiing" com-
petitions in 1931. These competitions held sepa-
rately and in different locations every four years
(Morpa 1984).

Skiing in Turkey

To cope with the difficult natural conditions,
the Turks and Ottomans use a type of shoe with
upwards-pointing tips known as an "ivik," which
functioned as a ski.The first adoption of modern
skiing by the Turks took place in 1915 with the
formation of military ski units within the armed
forces of the Ottoman Empire (Morgan T 2000).
In the same year, the armed forces began giving
skiing training at its skiing camps in Erzurum
Kerim Hitli Tabyasi, under the lead and tutor-
ship of Albert Bilstein from Austria.

Later, in 1930, skiing was adopted as a civil-
ian sport in Turkey through the efforts of Herr
Ridel, a German physical education teacher at
the Ankara Gazi Education Institute and the High
School of Agriculture. These schools also pro-
vided the necessary equipment for skiing.In
1933, a group of faculty members from the Istan-
bul Galatasaray High School began skiing onU-
ludag Mountain, and the inclusion of skiing in
1935 in the activities of the Turkish Mountain-
eering and Winter Sports Federation, presided
over by Latif Osman Cikigil, marked the begin-
ning of official skiing activities and organizations
in Turkey. The first skiing competition in Turkey
to be organized according to international rules
was held in 1944 through the efforts of Asim Kurt.
Official skiing activities in Turkey began to be
overseen and organized by the Ice Skating and
Winter Sports Federation in 1986, and the Turk-

ish Skiing Federation was founded in 1990. In
1990, the Turkish Skiing Federation added grass
skiing into its activities, and began organizing
international competitions in this branch of
sports in Turkey (Morgan 2000).

The main skiing centers in Turkey include
those at Budi (Agri), Beydaglari (Antalya), the
Elmadag (Ankara), Merkez (Bitlis), Yolcati (Bin-
gol), Kartalkaya (Bolu), Uludag (Bursa), Palando-
ken (Erzurum), Zigana (Gumushane), Sarikamis
(Kars), Erciyes (Kayseri), Ilgaz (Kastamonu) and
Bolkar (Erzincan).

MATERIAL AND METHODS

Implementation of the Skiing Course

The study was conducted with 56 students
aged 18–27, all of whom were attending the Er-
ciyes University School of Physical Education
and Sports Teaching, Coaching Training, Sports
Management and Recreation, and were receiv-
ing education in the Department of Physical Ed-
ucation and Sports. All students were taking part
in a skiing course for the first time. The partici-
pants were administered with the State and Trait
Anxiety Inventory (STAI) twice as part of the
study, once before and once after taking part in
the skiing course. Prior to administering the in-
ventory, all participating students were informed
of the aim and the importance of the study.

The first inventory was administered in a
classroom environment before starting the ski-
ing course, while the second inventory was ad-
ministered after completion of the skiing course
at Erciyes Mountain in the Kayseri Province.

In addition to the inventory, a personal infor-
mation form was also provided to the students on
which the students were required to record their
name, their smoking status, information on any
sports they took part in on a regular basis, their
age, and the grade they received during the ap-
plied course in the presence of three observers.

State and Trait Anxiety Inventory

The State and Trait Anxiety Inventory (STAI),
which consists of 40 items, was administered to
all participating students.The participants were
asked to answer each question in the state anxi-
ety inventory on a scale of one to four, as: (1)
Not at all, (2) *Somewhat*, (3) *Moderately s*o and
(4) *Very much so*.The optional answers to the

trait anxiety inventory, on the other hand, were (1) *Almost never*, (2) *Sometimes*, (3) *Often* and (4) *Almost always*.

These inventories consist of two types of expressions,which are (1) direct expressions, and (2) reverse expressions. Direct expressions describe negative feelings, while reverse expressions describe positive feelings. When scoring reverse expressions, answers with a weighted value of 1 are considered as having a score of 4, while answers with a weighted value of 4 are considered as having a score of 1. In direct expressions, answers with a value of 4 are considered as indicative of a high level of anxiety. In reverse expressions, on the other hand, answers with a value of 1 indicate a high level of anxiety, while answers with a value of 4 indicate a low level anxiety.The statement "I feel uneasy" is an example of a direct expression, while the statement "I feel calm" is an example of an indirect expression. As such, assigning a score of 4 for the statement "I am uneasy", and assigning a score of 1 for the statement "I feel calm" both indicate a high level of anxiety (Oner 2004).

The state anxiety scale has ten reverse expressions, which are item numbers 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20.The trait anxiety scale, on the other hand, has seven reverse expressions, which are item numbers 21, 26, 27, 30, 33, 36 and 39. Scoring can be performed in two different ways – either manually or by computer (Oner 2004). Manual scoring is carried out as follows. Two separate keys are prepared for the direct and reverse expressions. In this approach, one of the keys will be used to calculate the total weighted score of the direct expressions, while the second key will be used to calculate the total weighted score of the reverse expressions.The total weighted score obtained for the reverse expressions will then be subtracted from the total weighted score for the direct expressions, and apreviously determined and constant value will then be added to the resulting total weighted score.This constant value is 50 for the state anxiety scale, and 35 for the trait anxiety scale.The final calculated score will be the person's anxiety score (Oner 2004).

Interpretation of Scores

The range of possible scores that can be achieved in both scales is 20–80. A high score indicates a higher level of anxiety, while a low score indicates a lower level of anxiety.The same approach is applied when interpreting the scores according to their percentage order. In other words, a lower percentage order (1, 5, 10) will indicate a lower level of anxiety.The mean scores observed during the administration of the scales varied between 36 and 41.

Statistical Analyses

Statistical analyses of the collected data were performed using the SPSS 16.0 package program.The normality of the pre- and post-test state and trait anxiety scores, and the evaluation scores of the class teacher were tested using the Shapiro-Wilk test. In case a p-value <0.05 was obtained, the scores of the participating students were analyzed further using non-parametric methods.The Wilcoxon t test was used to compare the pre and post-test state and trait anxiety scores of the participating students. The Kruskal-Wallis H test was employed to evaluate whether there was any difference in the state and trait anxiety levels with respect to the departments of the participating students. Furthermore, the Mann-Whitney U test was used to determine whether gender or previous sport activities/experiences had any effect on their state and trait anxiety levels.

RESULTS

The results showed that the pre-test trait anxiety score of the female students was 48.24±4.24, while the post-test score was 47.64±5.78; and the pre-test trait anxiety score of the male students was 44.61±4.46, while the post-test score was 45.75±3.71. Additionally, the pre-test state anxiety score of the female students was 41.04±11.71, while the pre-test score of the male students was 33.39±10.12. The post-test state anxiety score of the female students was 40.96±11.97, while the post-test score of the male students was 37.45±10.87 (Table 1).

Based on this data, it was determined that the pre- and post-test state and trait anxiety scores of female were very close to each other and it could be said that the state and trait anxiety of the female students didn't change. However the higher female scores than male scores show that state and trait anxiety of the female students higher than those of the male students (high scores indicate a high level of anxiety and

Table 1: Anxiety scores of participants before and after taking part in the skiing course (Wilcoxon signed t-test)

N=56	Female			Male		
	Before the skiing course	After the skiing course	P	Before the skiing course	After the skiing course	P
Trait Anxiety	48.24 ± 4.74	47.64 ± 5.78	0.397	44.61 ± 4.46	45.75± 3.71	0.945
State Anxiety	41.04 ± 11.71	40.96 ±11.97	0.443	33.39 ±10.12	37.45 ± 10.87	0.596

low scores indicate a low level anxiety). It was also observed that the post-test state anxiety scores of the male students were lower than their pre-test scores. While there is no statistically significant difference (Wilcoxon signed t-test) between the pre- and post-test anxiety scores (Table 1), this result may indicate that the negative feelings of the male students could be increased after the skiing course.

The study analyses indicated that, according to the Wilcoxon signed rank-s test, the difference between the pre-test and post-test anxiety scores was not significant. According to the results of the Spearman's rho test, shown in Table 2, a weak and negative relationship was identified between the students' post-test performance/success scores and their post-test trait anxiety scores (Fig. 1), while a very weak relationship was identified

Table 2: Anxiety Levels (Spearman's rho test)

|	Application score	
	Spearman's rho	p
Trait	-0.208	0.124
State	-0.155	0.255

between the students' post-test performance/success scores and their post-test state anxiety scores (Fig. 2). This indicates that the above mentioned relationships were not significant, despite being closely interrelated.

DISCUSSION

State anxiety and trait anxiety are commonly investigated factors in sports psychology, although we were able to identify only a few previ-
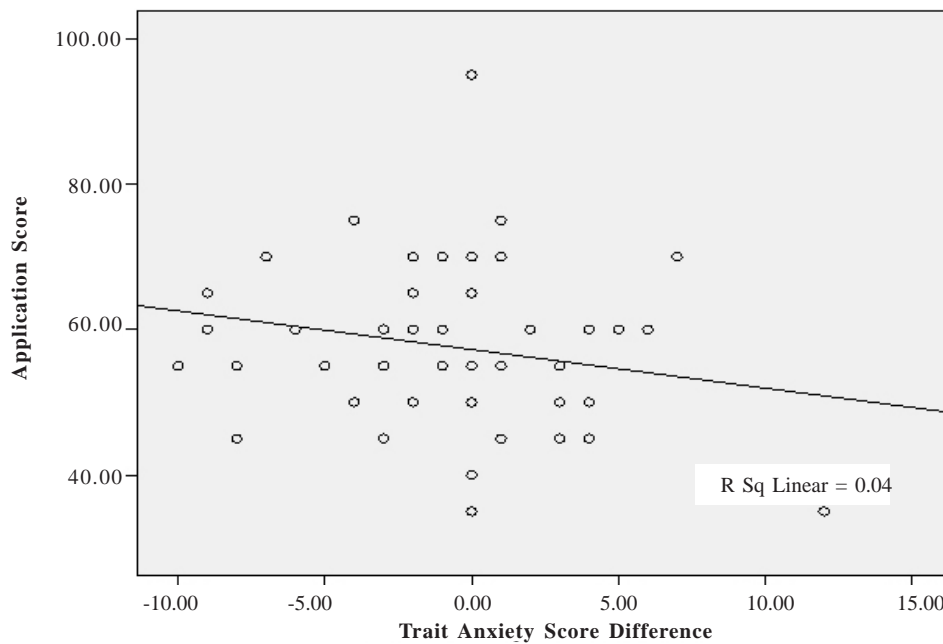
Fig. 1. Trait anxiety score difference
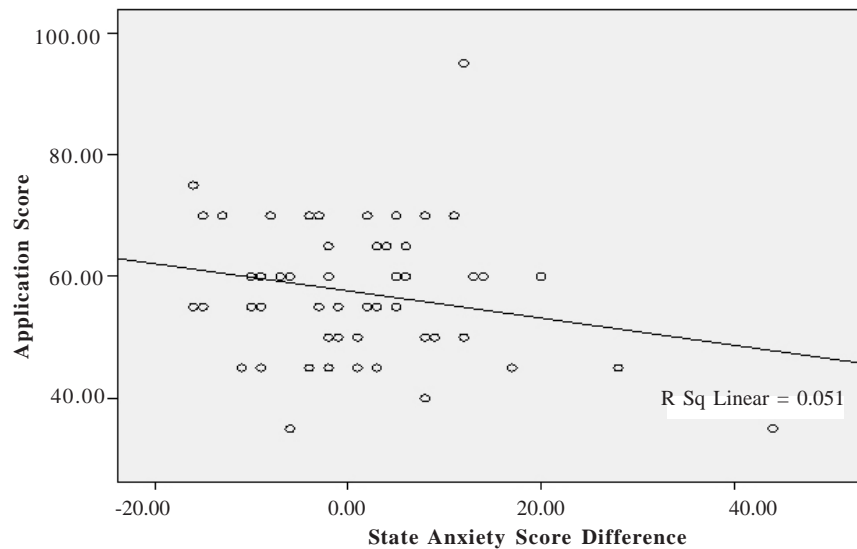
Fig. 2. State Anxiety Score Difference

ous studies of state anxiety and trait anxiety which are related to the specific sport of skiing. The study found that both the pre- and post-test state and trait anxiety scores of the female participants were higher than those of the male participants. In addition, it was observed that the state and trait anxiety scores of the female participants decreased following the applied skiing course, while the scores of the male participants increased. According to the Wilcoxon t test, the difference between the pre- and post-test anxiety scores was not significant (p>0.05), while the Spearman's rho test identified a weak and negative relationship between the students' post-test performance/success scores and their post-test trait anxiety score. Moreover, there is a very weak relationship between the students' post-test performance/success scores and their post-test state anxiety scores. The results of the statistical analyses indicated that the above mentioned relationships were not significant, despite being closely interrelated. The questionnaires administered during the study asked the study participants such questions as whether they took part in sports, or whether they smoked. Tests were then carried out to determine whether their state and trait anxiety scores affected their skiing education. The Mann Whitney U test identified no statistically significant effect (p>0.05).

Bingol et al. have been working on the topic "Determining the Anxiety Levels before Games

of National Taekwondo Team Athletes who are Studying at Universities". Players were grouped according to their gender. Observations showed that the difference between genders does not have much difference in the anxiety level among players. Researchers have experienced this situationdue to the specificities of National Teakwondo Players (Bingol et al. 2012). Dursun and his colleagues have observed that students with work experience in business have lower levels of anxiety and hopelessness with their study topic "Labour Market Prospects of University Students with work Experiences and the Relationship Between Hopelessness and Anxiety Levels". Learning and gaining experience during the process of intern or short-term and full-time work, facilitates their integration and helps them to adapt to work, which overall affects the students mental health in a positive way. Studies have supported this view (Dursun 2012).

In his study, the researcher identified no difference between genders with respect to their state anxiety scores, while the trait anxiety score of the female study participants were significantly higher. Ozgul (2003) argued that the higher trait anxiety scores of the female participants may be due to their tendency to exhibit intense emotive reactions, such as mistrust in others, uneasiness, feelings of loneliness, excessive emotionality and increased sensitivity under stress. It was sug-

gested that these emotive reactions were, in turn, likely to be caused by the difficulties they experienced in their educational life, as well as the difficulties associated with living apart from their families (Ozgul 2003). In Engur's study entitled "The Effect of the Motivation to Succeed on the State Anxiety Level of Elite Athletes" that was conducted on 279 athletes (55 female, 224 male), no statistically significant difference was identified between the anxiety levels of the two genders which concurs with the results of our study (Engur 2002). In Ogut's (2004) study entitled "The Comparison of Trait Anxiety Levels and Self-Respect in Sports," no relationship was observed between the total trait anxiety scores of the two genders (Ogut 2004). In a study conducted by Ozbekci, no relationship was identified between the gender of athletes/players and their level of anxiety during competitions (Ozbekci 1989).

In a study of Taekwondo proponents conducted by Yucel no significant difference was observed in the state and trait anxiety levels with respect to gender, and the relationship between gender and the trait anxiety score was not found to be significant (Yucel 2003). In sporting activities, failure or lack of success results generally in higher levels of state anxiety. In a previous study it was observed that the level of anxiety increased among students in the event of their performance not meeting expectations (Artok 1994).

The study of *Masami H and his colleagues* which was conducted at the University football team showed us that athletes with low trait anxiety levels result with decrease in their performance, where as athletes with high trait anxiety level have increase with their performance (Masami 2012).

Sporting competitions lead to higher levels of trait anxiety among the sportsmen and women as well as athletes. A relationship exists between the level of anxiety and sport performance, and the level of anxiety is further influenced by independent variables such as gender and their past level of experience in the relevant sport (Gumus 2002).

CONCLUSION

In conclusion, no significant difference was observed between the findings of previous studies performed in this area, which was the case also for the present study.

The researcher believes that the quality of data obtained in this study can be further improved by increasing the sample size, by applying additional inventories to students, by increasing the time period between the pre- and post-test administration of the inventories, and by also including in the study sample of older individuals with sedentary lifestyles.

It is suggested to do another studies, on the more high altitude and in the different age groups.

REFERENCES

Artok F 1994. *Universitelerarasi Basketbol Musabakalarina Katilan Basketbolcularin Mac Oncesi Durumluk Kaygi Duzeylerinin Performanslarina Etkisi.* Master Thesis, Unpublished. Adana: Cukurova Universitesi Sosyal Bilimler Enstitusu.

Bingol H, Coban B, Bingol S, Gundogdu C 2012. Universitelerde Ogrenim Goren Taekwondo milli takim sporcularinin mac oncesi kaygi duzeylerinin belirlenmesi. *Selcuk University Journal of Physical Education and Sport Science*, 14(1): 121–125.

Dursun S Aytac P 2012. Universite ogrencilerinin isgucu piyasasina yonelik beklentileri ve is deneyimleri ile umutsuzluk ve kaygi duzeyleri arasindaki iliski uzerine bir arastirma. *Sosyal Bilimler Dergisi* 10(1).

Engur M 2002. *Elit Sporcularda Basari Motivasyonun, Durumluk Kaygi Duzeyleri Uzerine Etkisi.* Master Thesis, Unpublished, Izmir: Ege Universitesi Saglik Bilimleri Enstitusu.

Gumus M 2002. *Profesyonel Futbol Takimlarinda Puan Siralamasina Gore Durumluk Kaygi Duzeylerinin Incelenmesi.* Master Thesis Unpublished, Sakarya Universitesi Sosyal Bilimler Enstitusu, Sakarya.

Ikizler C 1993. *Sporda Basariyi Etkileyen Psikolojik Faktorler ve Psikolojik Antrenman.* PhD Dissertation, Unpublished. MU: Saglik Bilimleri Enstitusu. Istanbul.

Karabulut EO, Atasoy M, Kaya K, Karabulut A 2013. 13-15 Yas Arasi Erkek Futbolcularin Durumluk ve Surekli Kaygi Duzeylerinin Farkli Degiskenler Bakimindan Incelenmesi. *Ahi Evran Universitesi Kirsehir Egitim Fakultesi Dergisi (KEFAD)* 14(1): 243-253.

Konter E 1997. Profesyonel Futbolcularin Yas Gruplarinin, Durumluluk Kaygi Duzeylerine Etkis*i. I. Uluslararasi Spor Psikolojisi Sempozyumu, Mersin.*

Masami H, Akihora H 2012. The relationships among trait anxiety, state anxiety and the goal performance of penalty shoot-out by university soccer. *Plos One* 7(4): e35727. doi:10.1371 April 23.

Morgan T 2000. *Hacettepe Unv. Psikoloji Bolumu Ogretim Elemanlari), Psikolojiye Giris.* Ankara: Hacettepe Unv. Psikolji Bolumu Yayinlari, pp. 227-228.

Morpa Spor Ansiklopedisi 1984. *Morpa Kultur Yayinlari* Volume 4, Ankara.

Ogut R 2004. *Sporda Surekli Kaygi Duzeyi Ile Benlik Saygisinin Karsilastirilmasi.* Master Thesis, Unpublished. Izmir: Ege Universitesi Saglik Bilimleri Enstitusu Sporda Psikol-Sosyal Alanlar Anabilim Dali Programi.

Oner N, LeCompte A 2004. *Sureksiz Durumluk/Surekli Kaygi Envanteri.* 2nd Edition. Istanbul: Bogazici Universitesi Yayinevi.

Oner N 1977. *Durumluluk-Sureklilik Kaygi Envanterinin Turk Toplumunda Gecerligi.* PhD Dissertation, Unpublished. Ankara.

Ozbekci F 1989. *Farkli Spor Dallarinda Yasanan Musabaka Stres Duzeylerinin Arastirilmasi*, Master Thesis Unpublished. Istanbul: Marmara Universitesi Saglik Bilimleri Enstitusu Beden Egitimi ve Spor Ana Bilim Dali.

Ozgul F 2003. *Beden Egitimi ve Spor Yuksek Okulu Ogrencilerinde Durumluk ve Surekli Kaygi Duzeyleri*, Master Thesis, Unpublished. Sivas: Cumhuriyet Universitesi Saglik Bilimleri Enstitusu.

Woods B 1998. *Applying Psychology to Sport.* Hodder and Stoughton.

Yucel Ebru O 2003. *Taekwondocularin Durumluk ve Surekli Kaygi Duzeyleri ve Musabakalardaki Basarilarina Etkisi.* Master Thesis Unpublished. Ankara: Gazi Universitesi Saglik Bilimleri Enstitusu Beden Egitimi ve Spor Anabilim Dali.