LOOK ACADEMIC PUBLISHERS
OPEN ACCESS

INTERNATIONAL JOURNAL OF ENVIRONMENTAL & SCIENCE EDUCATION
2016, VOL. 11, NO. 10, 3259-3275

# Responses to the Competitive State Anxiety Inventory-2 by the Athletes Participated in the (IJF) Judo Grand Prix Competition, Samsun 2015 in Turkey

Yavuz Selim Agaoğlu[a]

[a]Gaziosmanpaşa University, Tokat, Turkey

**ABSTRACT**

The judo is a popular sport which people engaged in more than 178 countries at any age in the world. Besides its popularity, the studies on this field continue to increase gradually. The purpose of this study, therefore, is to measure pre-competition anxieties, and to evaluate data obtained of the pre-competition concerns of the judo athletes who participated in the IJF Grand Prix competition, Samsun 2015 in Turkey. The questionnaires of the Competitive State Anxiety Inventory-2 (CSAI-2) were asked the Judo athletes who participated in the IJF Grand Prix Competition prior to the 31 to 59 minutes before the competition. There were no significant differences between countries and between Turkey and other countries with each other. Quantitative variables were analyzed according to sex. No significant difference was found between sub-dimensions (somatic anxiety, cognitive anxiety, self-confidence) in Section I and Section II (p-value <0.05). Considering the correlation between sub-dimensions of the countries, no significant difference was found between them (p-value <0.05).

**KEYWORDS**
Anxiety, judo, competitive state anxiety inventory-2 (CSAI-2), sport, grand prix competition

**ARTICLE HISTORY**
Received 20 June 2016
Revised 06 July 2016
Accepted 07 July 2016

## Introduction

Anxiety, dysphonia, somatic signs refer to a state of uneasiness that can be accompanied by tension symptoms. As a result, situations that cause failure, misfortune and danger may be seen in individuals (Corman 2003). The anxiety occurs in individuals prior to the competition due to the concerns related to the competition (Alexander 2009).

There are many academic studies investigated the impact of anxiety on sport performance. Anxiety is due to the athlete who does not know either how to beat

**CORRESPONDENCE** Yavuz Selim Ağaoğlu ysagaoglu@gmail.com

stress. In addition, anxiety also expresses the interpretation of psychological arousal. On the other hand, some different theoretical models have been developed to describe the anxiety for sport competitions (Craft et al., 2003).

Yerkes and Dodson's research on the sport anxiety/performance relationship was initially based on the inverted-U hypothesis. According to this hypothesis, there is a curvilinear relationship between physiological arousal and performance. Moderate levels of arousal were generally associated with better performance, whereas arousal levels that were too high or too low led to poorer performance (Craft et al., 2003).

Anxiety attracts the attention of researchers as a major issue in the field of sports psychology. Anxiety can show itself by fear of negative results or waiting anxiously. Anxiety may be caused by unwanted emotions, stress and tension with physiological symptoms. Symptoms of anxiety can lead to sport-related anxiety disorder; persistent sadness, fear and so on.

Anxiety consists of two parts as cognitive and somatic anxiety. The first one is the mental part of concerns. In this case, negative expectations or negative assessments of the person may cause mental anxiety (Martens et al., 1999). Cognitive anxiety may be caused by negative image and negative thoughts created by the person about himself/herself. On the other hand, somatic anxiety expresses itself with a person's physical symptoms (Lane et al., 1999). Somatic anxiety concerns the physiological and behavioral dimensions of anxiety. Physiological and behavioral dimensions directly influence the person as a result of excitement and show sudden development (Martens et al., 1990). Somatic anxiety expresses itself by physical symptoms of the person such as stomach cramps, shivering and sweeting palms. Besides, the increased heart rate may be caused by a tension in muscles (Lane et al., 1999). The self-confidence in an individual increases by the nature of this sport. For this reason, the virtues of manhood and humility incurred are based principally on a sense of self-confidence (Gil 1978).

According to Murphy, biological preparedness functional anxiety of an athlete may cause certain physiological changes that directly affects his/her performance. This changes increase muscle tension, heart rate and respiratory rate and so on. Besides, high anxiety negatively affects the cautiousness and flexibility of the athlete. Anxiety occurs when athletes feel an important and strong treat against themselves. This treat may be an injury, shame or loss of prestige (Murphy, 2005).

Coaches should support and help their athletes to control and manage anxiety (Weinberg and Gould 1998). Actually, anxiety might be harmless to some degree. Hardy et al. stated that each athlete should have an anxiety zone and try to have the optimum performance within this zone. Exceeding this zone may negatively affect the performance of the athlete. This also suggests that each athlete has an anxiety zone which is individual and it changes according to various individual features (age, gender, sports year, emotional status etc.). Many individual factors (self-confidence, self-esteem and anxiety) influence the performance (Kolayıs and Sarı 2011).

Many social and cultural factors can affect self-esteem. Our thinking about how other people perceive us or how we are evaluated by other people in the community affects our self-esteem. In addition, social comparison is also a factor affecting self-esteem (Kolayıs and Sarı 2011).

The high rate of anxiety manifests itself as a reaction occurring in stressful competitive sports. This type of spiritual concerns can be expressed as unwanted emotional states. Therefore, it can have an effect of limiting the athlete's capacity. Sports psychologists try to understand how anxiety affects the performance of athletes.

Anxiety can be defined as a situation about a definition of tension occurring subjectively (Spielberg 1966). It can also be defined as "tendency to perceive a threat to the conditions and to respond with feelings of anxiety and stress against these situations" (Lynette et al., 2003). There is a correlation between anxiety and performance. If physiological arousal is low, cognitive anxiety performance is affected positively. On the other hand, if physiological arousal is high, performance is affected negatively. Physiological arousal is associated with the effect on athletic performance (Patel et al., 2010).

An inherent aspect of competitive athletics is the need for athletes to meet the demands of competition and to perform well under pressure. Depending on how the athlete perceives the demands of competition, he or she may interpret pressure situations in a variety of ways (Craft et al., 2003). A mental and behavioral effort of people is important to cope with stress to improve their athletic performance. Stress in sport is an integral part of the competitor. Coping with stress is the cognitive and behavioral effort of the athlete to deal with stressful situations with internal and external demands.

Judo sport was created by combining many different martial arts. Therefore, the main aim of judo is the pursuit of reaching mental and physical perfection (Kalina, 2000). Judo combat is an acyclic, intermittent physical effort with two athletes in a body-to-body confrontation, and where both are trying to attain the same goal: to take down their opponent before the time is up, or to control their opponent once he/she has been brought down (through immobilization, choke holds, and joint locking) until time of the match is up (Hernández-García et al., 2009).

Judo is one of the most exciting grappling sports in the world. Judokas wear a thick jacket called either judogis or gi in their competitions. The gi helps judokas to use different tactics and techniques (Amtmann and Cotton 2005).

The essential idea of judo is spending effort to reach the perfection and fitting to universal humanitarian principles to achieve this goal. At the same time, this sport can be expressed as a way of life for a judoist (Hoff 1998).

Considering that a judo match is an interval activity consisting of maximal (explosive) effort interrupted by short breaks, the authors assumed that strength and power are relevant determinants of success. On the other hand, the complexity of the combat structure, as well as a large number of techniques used in a fight, may suggest that cognitive abilities and coordination also represent key determinants for success in judo (Drid 2010).

Judo is a sport whose performance explanation is a complex task, since it can be determined by several physical abilities, besides technical, tactical and also psychological aspects. The main action desired by a judoka during a shiai (match in tournament) or randori (sparring in which both participants practice attacking and defending) is the throwing of the opponent, seeking scores that lead to winning. This action can occur once or several times, depending on the score for the throw, thus affecting the duration of the match (Detanico et al., 2012). The

competitors are divided into categories according to their age and weight. Besides the psychological and emotional factors, technical skills and tactical strategies are also important. In addition, physiological factors such as coordination, flexibility, strength, velocity, aerobic and anaerobic endurance are also important. High level of physical capacity is required for using technical skills and delaying fatigue (Pocecco, 2012).

Indeed, judo is an individual sport, which is played indoors on a tatami and its training increases equilibrium, coordination, speed, strength, suppleness, skill, endurance and resistance (Triki et al., 2012). Effects of dehydration on immune functions after a judo practice session. Judo is classified as combat and contact sport. Players attempt to subdue their opponent by holding them in close proximity in judo competitions (Chishaki et al., 2013).

The sport of judo refers to gentleness. This can be defined as the absence of weapons and using the power under control. Judo is one of the combat sports and it is performed within sense of gentleness (Amtmann and Cotton 2005).

Kano was born in 1860 in western Japan. Jigoro Kano named this sport in 1882 after his training hall Kodokan (Ko do kan) and called his style of jujutsu 'judo' (ju do, way of 'gentleness' or 'giving way', in Kano's translation) (Sato 2013). In 1882, Jigoro Kano has laid the foundations of judo sport in Japan (Sato 2013). Kano is remembered as the creator of judo. Judo continues to be one of the most popular sports in the world (Imamura and Johnson 2003). Jigoro Kano is an instructor combined his knowledge and morals with physical education (Matsumoto 1996).

Judo, a martial art of Japanese origin, features scenes of confrontation where aggression is challenged and codified by a collection of rules including the greeting ritual (Clément, 2001). Recent information provided by the International Judo Federation (IJF) indicated that 178 National Federations over 5 continents are currently practicing judo (Imamura and Johnson 2003). Judo is an Olympic sport practiced worldwide. The competitions are divided by weight classes, as is done in wrestling and other combat sports. This classification system aims to equalize differences in strength, leverage and agility among competitors. Judo comprises seven weight classes (Artioli et al., 2010).

Judo competition has been a part of the Summer Program of the Olympic Games for men since 1964 (1992 for women) and has become one of the most highly practiced sports worldwide (Nishime 2007).

The two underlying basic principles of judo advocated by Kano were 'maximum efficiency' (seiryoku zenyo) and 'mutual benefit' (jita kyoei), to be achieved both through the training of techniques on the mat and through a broader, morally upward, attitude towards life and society (Miarka et al., 2011).

One of judo's major principles, seiryoku zenyou, can be translated as "the most effective use of one's spiritual and physical strength" (Matsumoto, 1996). Judo matches lasts 3 to 10 minutes depending on various factors. But the regulation time for national and international matches is one 5-minute period (Amtmann and Cotton, 2005).

The Competitive State Anxiety Inventory–2 (CSAI–2) is an important instrument widely used to measure anxiety before the match. The CSAI–2 takes its place among the measurement techniques, and it is the most well-known one (Martens et al., 1990). The CSAI-2 measures, in addition to cognitive and somatic

anxiety, the self-confidence. (Vadocz et al., 1997). Consequently, the CSAI-2 is recognized as a widely used measuring means all over the world to measure the competition anxiety (Woodman and Hardy 2003). The Competitive State Anxiety Inventory-2 (CSAI–2) has been used more than other systems as an instrument of research for the studies in this field (Jones and Uphill, 2004). The Competitive State Anxiety Inventory–2 has focused, for the last 20 years, on the researches carried out in the field of sport psychology as the preferred method to measure anxiety (Mellalieau et al., 2003).

The scale of Competitive State Anxiety Inventory (CSAI) occupies the largest place for the researches in the field of sport psychology (Raudsepp and Kais, 2008). The Competitive State Anxiety Inventory-2 (CSAI-2) is today's most often used scale for measuring anxiety in the field of sport psychology, and it is the one which measures also the situational anxiety. The studies on anxiety can be measured by physiological, behavioral, and cognitive procedures. The Competitive State Anxiety Inventory–2 (CSAI–2) has a construction for measuring cognitive anxiety, somatic anxiety, and self-confidence (Gant and Cox, 2004). The researchers developed the Competitive State Anxiety Inventory–2 (CSAI–2), which was originally designed to measure the cognitive and somatic components of competitive state anxiety. However, during the development of the questionnaire, the authors encountered a third factor, which they subsequently labeled `self-confidence' (Cerin et al., 2003). The scale of anxiety status takes part on at least two fundamental elements. Martens, Burton, Vealey, Bump, and Smith (1990) developed the scale of multi-directional anxiety status about sports. This tool is known as the Competitive State Anxiety Inventory–2 (CSAI–2) which can make interpretations about the cognitive and somatic situations differently, and it is also used for evaluating the state of self-confidence (Maynard, 1995).

Its capability of measuring the self-confidence besides the cognitive and somatic anxiety proves that the measuring tool is a reliable one (alpha reliability coefficients of .76 - .91), and for this reason, it is accepted as an eligible and effective instrument (Burton, 1988). As a result, three subscales which were the final version of the CSAI-2 took shape thereby; cognitive anxiety, somatic anxiety and self-confidence. Each of these scales has subscales comprised of 9 questionnaires (Craft et al., 2003).

The studies of anxiety can be measured and evaluated using the physiological, behavioral and cognitive procedures, but the most reliable results can be achieved by the self-report questionnaires (Spielberger and Hackfort, 1989).

Therefore, the researchers aim to eliminate the effects of cognitive and somatic anxiety that will affect the competition. Studies are focusing on determination of effects on athletic performance and results of these effects and finding solutions.

## Methodology

### *Participants*

The aim of this study was to measure and evaluate the competitive state anxiety for Judo athletes who participated IJF Grand Prix Competition prior to the 31 to 59 minutes before the competition at the city of Samsun in 2015 in

Turkey. Aforementioned study was carried out on 69 Judo athletes (n= 43 females, n= 26 males) who voluntarily participated in the study.

650 athletes from 70 countries are participating judo Grand Prix Competition organized by International Judo Federation (IJF) annually and gives points for participation in the Rio Olympics. The rankings were 1. Netherlands 2. Azerbaijan 3. Uzbekistan in Samsun Grand Prix Competitions.

## Measurement

Martens et al. (1990) develops the CSAI-2 to be a sport-specific measure of the competitive state anxiety subcomponents of somatic and cognitive anxiety. Thus CSAI-2 measures the separate components of state somatic anxiety and cognitive anxiety and self-confidence (Gant and Cox, 2004). Athletes are asked to indicate "how you feel right now" for each item on a 4-point Likert scale ranging from "not at all" to "very much so. Each of the three subscales has 9 items, which are summed to get a score representing the level of intensity the athlete is feeling for each component of anxiety, and for the self-confidence about performing. The direction scale for each item required participants to rate whether they perceived the intensity of their feeling to be facilitative or debilitative for performances on a 7-point scale ranging from -3 (too much debilitative) to +3 (too much facilitative). Thus, possible direction scores ranged from -27 to +27 for each of the cognitive anxiety, the somatic anxiety, and the self-confidence.

### *Procedure*

The time when the CSAI–2 was administered relative to the competition, from 24 hours prior to just 15 minutes, may also affect how well it predicts performance. An assessment of anxiety 24 hours before a competition may not yield the same information about one's anxiety state as when administered just 15 minutes prior to competition. With different studies using different times of assessment, different correlations with performance might well emerge (Craft et al., 2003). The participants in this study were asked to complete the questionnaires of CSAI-2 related to cognitive anxiety, somatic anxiety and self-confidence before a competition (31 to 59 minutes ago).

### *Data Analysis*

Data are expressed as mean±standard deviation or median and interquartile range or frequency and percent. Independent sample t test was used to compare the continuous normal data between groups. Kruskal Wallis test was used to compare the continuous non-normal data among groups. For multiple comparisons between the pair-wise groups, Bonferroni-Correction Mann Whitney U test was used. Pearson correlation coefficient was used for correlation between variables. A p-value $<0.05$ was considered significant. Analyses were performed using SPSS 19 (IBM SPSS Statistics 19, SPSS inc., an IBM Co., Somers, NY).

## Results

In this study, judokas from 8 countries were included as the sample of the research. 55.1% (38) of these participants were Turkish judoists, while the remaining 44.9% (n=31) were from some other countries (French, Austria, England, Ukraine, Poland, Germany and Sweden) (Table 1).

**Table 1.** Distributions of qualitative variables.

| Variables | | n | % |
|---|---|---|---|
| Country | French | 3 | 4.3 |
| | Austria | 4 | 5.8 |
| | England | 5 | 7.2 |
| | Ukraine | 4 | 5.8 |
| | Poland | 4 | 5.8 |
| | Germany | 5 | 7.2 |
| | Sweden | 6 | 8.7 |
| | Turkey | 38 | 55.1 |
| Group Country | Foreign | 31 | 44.9 |
| | Turkish | 38 | 55.1 |
| Gender | Male | 26 | 37.7 |
| | Female | 43 | 62.3 |

The questionnaire applied on samples consists of two sections. In the study, sub-dimensions of section I and section II were investigated and the mean and standard deviation values were found. Somatic anxiety was found to be the lowest value for Section I, whereas self-confidence average was found to be the highest in total. In Section II, the highest value was found for self-confidence, while the lowest value was found for cognitive anxiety (Table 2).

**Table 2.** Distributions of quantitative variables

| CSAI-2 Sections | Sub-Dimensions | Mean | Standard Deviation |
|---|---|---|---|
| Section 1 | Somatic Anxiety | 18.81 | 4.31 |
| | Cognitive Anxiety | 19.54 | 4.8 |
| | Self Confidence | 23.19 | 4.06 |
| Section 2 | Somatic Anxiety2 | 0.06 | 9.01 |
| | Cognitive Anxiety2 | -3.28 | 8.01 |
| | Self Confidence2 | 5.41 | 8.53 |

Quantitative variables were analyzed according to sex. Considering sub-dimensions (somatic anxiety, cognitive anxiety, self-confidence) in both Section I and Section II, here was no significant difference between opposite genders (p-value <0.05). In terms of gender of the samples, somatic anxiety has the lowest value, whereas self-confidence has the highest average value in Section I, respectively. In Section II, self-confidence has the highest value while cognitive anxiety has the lowest value (Table 3).

**Table 3.** Distributions of quantitative variables according to gender

| CSAI-2 Sections | Sub-Dimensions | Gender | | p* |
|---|---|---|---|---|
| | | Male | Female | |
| | | M±SD | M±SD | |
| Section 1 | Somatic Anxiety | 18.00±4.28 | 19.3±4.31 | 0.227 |
| | Cognitive Anxiety | 19.77±4.67 | 19.4±4.93 | 0.757 |
| | Self Confidence | 22.96±3.91 | 23.33±4.19 | 0.717 |
| Section 2 | Somatic Anxiety2 | -0.96±9.64 | 0.67±8.66 | 0.469 |
| | Cognitive Anxiety2 | -3.69±8.54 | -3.02±7.77 | 0.739 |
| | Self Confidence2 | 4.96±10.06 | 5.67±7.58 | 0.757 |

*: Independent Samples t test was used.

**Table 4.** Distributions of quantitative variables according to all country

| Sub-Dimensions | All Country | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | French | Austria | England | Ukraine | Poland | Germany | Sweden | Turkey | p* |
| | (*n*=3) | (*n*=4) | (*n*=5) | (*n*=4) | (*n*=4) | (*n*=5) | (*n*=6) | (*n*=38) | |
| | M[IQR] | M[IQR] | M[IQR] | M[IQR] | M[IQR] | M[IQR] | M[IQR] | M[IQR] | |
| Somatic Anxiety | 17[15-24] | 19[18-20] | 20[17-20] | 19.5[16-22.5] | 18.5[16.5-20.5] | 17[15-20] | 18.5[16-19] | 19[14-24] | 0.986 |
| Cognitive Anxiety | 24[23-26] | 17[13.5-18] | 23[19-23] | 25.5[23.5-26] | 21[18-23.5] | 13[12-17] | 17.5[17-20] | 19.5[16-24] | 0.041 |
| | (BC) | (A) | (ABC) | (B) | (ABC) | (A) | (A) | (AC) | |
| Self Confidence | 19[19-23] | 24[20-27.5] | 21[21-22] | 22[21.5-24] | 25.5[25-26] | 23[18-24] | 24[19-26] | 24[22-26] | 0.200 |
| Somatic Anxiety2 | -5[-7-1] | -4[-6-0] | 6[3-7] | -8.5[-11-(-5.5)] | -8.5[-12.5-(-5)] | 4[2-10] | 4.5[3-9] | 2[-5-6] | 0.011 |
| | (AB) | (AB) | (A) | (B) | (B) | (A) | (A) | (A) | |
| Cognitive Anxiety2 | -6[-8-(-5)] | -5.5[-13.5-3] | -5[-10-(-3)] | -10[-11.5-(-4.5)] | -5.5[-14-5.5] | -5[-8-(-2)] | -2[-6-3] | -1.5[-7-4] | 0.745 |
| Self Confidence2 | -4[-5-0] | 4.5[1-12] | 14[3-15] | -9.5[-10-(-2)] | 14.5[10.5-19] | 6[2-9] | 7[4-18] | 4[-1-12] | 0.020 |
| | (AC) | (AC) | (BC) | (AC) | (B) | (AC) | (BC) | (C) | |

Different uppercase letters (A, B, C, D, E) in the same row (Kruskal Wallis) indicate a statistical significant difference.
M[IQR]: Median and interquartile range.

The sub-dimensions given in the table above were examined and significant difference was found between cognitive anxiety levels of judokas from French and Austria, Germany and Sweden (p-value <0.05). At the same time, significant

difference was found between Austria and Ukraine, Germany and Sweden (p-value <0.05). In addition, there is a significant difference between Ukraine and Germany and Sweden and Turkey (p-value <0.05). However, considering somatic anxiety and self-confidence sub-dimensions in Section I, no significant difference was found. In Section II, significant difference was found between Ukraine and England and Poland, Ukraine and Germany, Sweden and Turkey, Poland and Germany, Sweden and Turkey in terms of somatic anxiety (p-value <0.05). Likewise, considering self-confidence sub-dimension, significant difference was found between Poland and other countries (p-value <0.05). However, no significant difference was found between countries in terms of cognitive anxiety sub-dimension in Section II.

**Table 5.** Distributions of quantitative variables according to Group Country

| CSAI-2 Sections | Sub-Dimensions | Group Country | | p* |
|---|---|---|---|---|
| | | Foreign*(n=31)* M±SD | Turkish*(n=38)* M±SD | |
| Section 1 | Somatic Anxiety | 18.45±3.00 | 19.11±5.17 | 0.514 |
| | Cognitive Anxiety | 19.65±4.72 | 19.45±4.93 | 0.866 |
| | Self Confidence | 22.55±3.28 | 23.73±4.59 | 0.235 |
| Section 2 | Somatic Anxiety2 | 0.00±7.56 | 0.11±10.14 | 0.962 |
| | Cognitive Anxiety2 | -4.74±7.24 | -2.08±8.50 | 0.171 |
| | Self Confidence2 | 5.71±9.11 | 5.16±8.15 | 0.791 |

*: Independent Samples t test was used.

Considering correlation between sub-dimensions of Turkey and other countries, no significant difference was found (p-value <0.05).

**Table 6.** Correlations of sub-dimensions in all groups (n=69)

| Sub-Dimensions | | Cognitive Anxiety | Self Confidence | Somatic Anxiety2 | Cognitive Anxiety2 | Self Confidence2 |
|---|---|---|---|---|---|---|
| Somatic Anxiety | r | 0.716 | -0.051 | 0.232 | 0.151 | -0.187 |
| | p | **<0.001** | 0.680 | 0.055 | 0.215 | 0.124 |
| Cognitive Anxiety | r | 1 | -0.131 | 0.032 | -0.025 | -0.239 |
| | p | | 0.288 | 0.797 | 0.838 | **0.048** |
| Self Confidence | r | | 1 | -0.104 | 0.004 | 0.124 |
| | p | | | 0.398 | 0.977 | 0.315 |
| Somatic Anxiety2 | r | | | 1 | 0.679 | -0.061 |
| | p | | | | **<0.001** | 0.621 |
| Cognitive Anxiety2 | r | | | | 1 | -0.104 |
| | p | | | | | 0.394 |

In Section I, significant difference was found between somatic anxiety and cognitive anxiety (p-value <0.05). However, we can suggest that there is a "strong relationship" between these values (r=0.716). On the other hand, there is a weak relationship between somatic anxiety and self-confidence (r=-0.051). At the same time, there is a weak relationship between cognitive anxiety and self-confidence (r= -0.131).

**Table 7.** Correlations of sub-dimensions according to gender

| Gender | | | Cognitive Anxiety | Self Confidence | Somatic Anxiety2 | Cognitive Anxiety2 | Self Confidence2 |
|---|---|---|---|---|---|---|---|
| Male *(n=26)* | Somatic Anxiety | r | 0.565 | 0.203 | 0.124 | 0.150 | -0.113 |
| | | p | 0.003 | 0.320 | 0.546 | 0.465 | 0.581 |
| | Cognitive Anxiety | r | 1 | 0.227 | -0.294 | -0.270 | -0.236 |
| | | p | | 0.264 | 0.145 | 0.182 | 0.245 |
| | Self Confidence | r | | 1 | -0.172 | -0.049 | 0.232 |
| | | p | | | 0.401 | 0.813 | 0.255 |
| | Somatic Anxiety2 | r | | | 1 | 0.658 | -0.158 |
| | | p | | | | <0.001 | 0.442 |
| | Cognitive Anxiety2 | r | | | | 1 | -0.071 |
| | | p | | | | | 0.730 |
| Female *(n=43)* | Somatic Anxiety | r | 0.822 | -0.206 | 0.287 | 0.145 | -0.263 |
| | | p | <0.001 | 0.190 | 0.062 | 0.352 | 0.088 |
| | Cognitive Anxiety | r | 1 | -0.320 | 0.242 | 0.129 | -0.245 |
| | | p | | 0.039 | 0.119 | 0.410 | 0.114 |
| | Self Confidence | r | | 1 | -0.068 | 0.036 | 0.043 |
| | | p | | | 0.671 | 0.819 | 0.785 |
| | Somatic Anxiety2 | r | | | 1 | 0.694 | 0.017 |
| | | p | | | | <0.001 | 0.915 |
| | Cognitive Anxiety2 | r | | | | 1 | -0.137 |
| | | p | | | | | 0.380 |

Considering Section I according to gender of the participants, there is a significant difference between somatic anxiety and cognitive anxiety levels of male participants. Similarly, significant difference was found between same sub-dimensions (p-value <0.05).

**Table 8.** Correlations of sub-dimensions according to Group Country

| Group Country | | | Cognitive Anxiety | Self Confidence | Somatic Anxiety2 | Cognitive Anxiety2 | Self Confidence2 |
|---|---|---|---|---|---|---|---|
| Foreign *(n=31)* | Somatic Anxiety | r | 0.530 | 0.109 | 0.032 | -0.155 | -0.145 |
| | | p | 0.002 | 0.558 | 0.863 | 0.407 | 0.436 |
| | Cognitive Anxiety | r | 1 | -0.075 | -0.327 | -0.217 | -0.248 |
| | | p | | 0.688 | 0.073 | 0.242 | 0.178 |
| | Self Confidence | r | | 1 | -0.238 | 0.163 | 0.065 |
| | | p | | | 0.198 | 0.380 | 0.730 |
| | Somatic Anxiety2 | r | | | 1 | 0.375 | 0.117 |
| | | p | | | | 0.038 | 0.530 |
| | Cognitive Anxiety2 | r | | | | 1 | 0.047 |
| | | p | | | | | 0.801 |
| Turkish *(n=38)* | Somatic Anxiety | r | 0.833 | -0.119 | 0.304 | 0.262 | -0.220 |
| | | p | <0.001 | 0.481 | 0.064 | 0.111 | 0.184 |
| | Cognitive Anxiety | r | 1 | -0.159 | 0.240 | 0.107 | -0.234 |
| | | p | | 0.348 | 0.147 | 0.524 | 0.157 |
| | Self Confidence | r | | 1 | -0.043 | -0.113 | 0.178 |
| | | p | | | 0.800 | 0.505 | 0.293 |
| | Somatic Anxiety2 | r | | | 1 | 0.851 | -0.183 |
| | | p | | | | <0.001 | 0.273 |
| | Cognitive Anxiety2 | r | | | | 1 | -0.216 |
| | | p | | | | | 0.193 |

Considering the correlation between sub-dimensions of countries, there is a significant difference between them (p-value <0.05).

## Discussion

Pre-competition studies on the emotional state are important and valuable. Because the information obtained in these studies can be used to establish the relationship between the judokas and the competition and evaluate their situation during the competition.

The aim of this study was to extend the research based knowledge concerning competitive anxiety, somatic anxiety and self-confidence of judo athletes. The present study sought to investigate the influence of achievement goals and perceived ability on the temporal patterning of anxiety in judo athletes prior to the Grand Prix competitions. This study includes the information obtained before CSAI-2 statements competition.

In this study, athletes participating from 8 different countries were included. As a result of the competition, the rankings were as follows; 1. Netherlands, 2. Azerbaijan, 3. Uzbekistan, 4. France, 5. Germany, 6. Tunisia, 7. Israel, 8. Kosovo, 9. Argentina, 9. China, 11. Brazil.

According to the responses of the athletes in the questionnaire, somatic anxiety was found to have the lowest value in Section I. Accordingly, reflection of anxiety in judokas was in lower levels physiologically. In contrast, self-confidence levels were found at the highest rates. Their self-confidence levels were found to be very high (Table 3).

Significant difference was found between genders in terms of quantitative values in somatic anxiety, cognitive anxiety and self-confidence subscales. The values of male and female judokas were found to be very close to each other. This may be due to the impact of experience and result of Grand Prix tournaments, which is an international competition requiring high performance, on the competitors.

Their place in competition by country rankings were given above. According to these results, the rankings between countries are not an indication of cognitive anxiety in Section I. There are significant differences between countries entered rankings and couldn't enter the rankings and vice versa.

However, there is no significant difference between all countries in terms of somatic anxiety and self-confidence in Section I (Table 4). Although there is no significant difference in terms of cognitive anxiety in Section II, these is a significant difference between somatic anxiety and self-confidence. This shows that even though there is a significant difference in terms of somatic anxiety in Section I, this difference is eliminated in Section II. On the other hand, although there is no significant difference in terms of somatic anxiety and self-confidence in Section I, this result is different in Section II (Table 4).

Considering total rankings of all countries in terms of somatic anxiety and cognitive anxiety, there is a significant relationship between these two concepts. In contrast, there is a weak relationship between somatic anxiety and self-confidence. This shows that the relationship between cognitive anxiety and somatic anxiety is very strong.

Considering the correlation between the values of somatic anxiety, cognitive anxiety, self-confidence subscales, there is a significant difference between

somatic anxiety and cognitive anxiety for male participants. There is a significant difference between somatic anxiety and cognitive anxiety of female competitors in the same subscales.

According to a study conducted, individual sports athletes are observed to have higher tendency of generating anxiety compared to athletes of team sports as do subjectively scored and non-contact sports (Martens et al., 1990). Hanin and his colleagues claim that those who show positive and negative emotions can have both an optimal and dysfunctional impact upon performance (Mellalieau et al., 2003).

This study CSAI-2 includes the information obtained from the pre-event statements apply. The aim of this study was to extend the research based knowledge Concerning competitive anxiety, somatic anxiety and self-confidence of judo athletes. The present study sought to investigate the influence of achievement goals and Perceived ability in judo athletes on the temporal patterning of anxiety prior to the Grand Prix competitions.

Another study pointed out that a significant and negative relationship was found between age and cognitive anxiety, and this may have been the result of the older athletes having had more experience than their younger counterparts. (Modroño and Guillen, 2011). In another study, therefore, the results are in agreement with the multidimensional anxiety theory, since cognitive and somatic anxiety scores were not related to performance while self-confidence exhibited a statistically significant positive relation to performance (Tsopani et al., 2011). Athletes' perceived ability and goal orientations would be significant predictors of pre-competitive anxiety. It was predicted that a task orientation would be negatively related to cognitive anxiety, positively related to confidence and unrelated to somatic anxiety (Howard and Alistair, 1997). Another study claims that athletes who have a higher self-confidence entering competition are more likely to be successful. One possible explanation is that confident athletes believe in their ability to perform well and win (Covassin and Pero, 2004). Carver and Scheier's (1986, 1988) control-process model of anxiety and performance, in which they propose that anxiety is facilitative as long as the individual's expectancies of being able to cope and of goal attainment are favourable. As it is analyzed, bivariate relationships show that only self-confidence predicts performance well, and even its relationship with performance is not strong. Also, the bivariate relations among cognitive anxiety, somatic anxiety, and self-confidence show that these three scales are quite intercorrelated on average. None of the subscales is an independent or separate measure of that component of anxiety. All mean intercorrelations among these subscales are stronger than the mean correlation of any subscale with performance. This underscores the importance of controlling for each subscale via the regression modelling approach. This finding supports those of other researchers who have argued that cognitive and somatic anxiety may not be independent of one another (Craft et al., 2003).

Self-confidence, in the multidimensional anxiety theory of Martens, et al. (1990), is hypothesized to have a positive linear relation with athletic performance (Tsopani et al., 2011).

To extend the research based knowledge concerning the relationship between competitive state anxiety, self-confidence, and gymnastics performance of female rhythmic gymnasts. According to the findings, there were no differences between high and low scoring groups on mean cognitive and somatic anxiety scores, which agrees with previous results of Bejek and Hagtvet (1996) for female gymnasts. Further, the two groups differed on mean self-confidence as the high performance

group (finalists) displayed higher self-confidence than the nonfinalists (Tsopani et al., 2011). Significant relationship was found, in another study, between performance ranking and pre-competition somatic anxiety. In this case, athletes who received better performance rankings in their events had lower pre-competitive somatic anxiety than those with poorer rankings (Modroño and Guillen, 2011).

Athletes report a greater amount of cognitive and somatic anxiety and less self-confidence in critical situations where they perceive a strong possibility of negative evaluation and threat; they also report this anxiety and lack of confidence as debilitating stress. In contrast, they report less cognitive and somatic anxiety and more confidence in challenging situations, and this anxiety is labeled as facilitative (Hale and Whitehousei, 1998). Although the facilitative influence of anxiety upon performance did not emerge directly through the interpretation scale of the modified CSAI-2, indirect evidence of facilitative effects was provided by the anxiety intensity correlations with performance. The findings from the two-factor ANOVA revealed an interaction between the anxiety intensity subcomponents, which suggested that cognitive anxiety may sometimes enhance performance and sometimes impair it (Edwards and Hardy, 1996).

Anxiety has the potential to exert either a positive or negative effect upon performance, depending upon the attentional (working memory) demands of the task and the perceived probability of success.

## Conclusion

They will have the control of perception with anxiety management techniques and manage the treat-anxiety issues. They will learn how to reduce mental anxiety of athletes by developing some techniques and relaxing strategies and develop tailor-made measures with evaluation and interpretation of this study. Using the information given in this study, sports psychologists and practitioners will be able to intervene and diagnose the anxiety situations and thus increase the success of overcoming anxious situations. In addition, they will be successful in recognizing taekwondo athletes and understanding their reactions and eliminating negative elements that may occur. They will be able to develop the appropriate anxiety management techniques in each case. Athletes who experience sport related anxiety should be managed in consultation with clinical psychologist or other similarly qualified clinicians, depending on the local community resources and available expertise (Patel et al., 2010). With this knowledge, the coach can make informed decisions about which performance strategies and game plans may be the most appropriate in a particular game and what to focus on in training (Parfitt and Pates, 1999). Coaches are expert in identifying and managing young and talented athletes about whom anybody can assume that most of them might not have the necessary skills and/or abilities to use psychological skills in their practices and games. (Gábor et al., 2008).

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Notes on contributors

**Yavuz Selim Ağaoğlu** holds a PhD in physical education and now is an associate professor at School of Physical Education and Sport, Gaziosmanpaşa University, Tokat, Turkey.

## References


Alexander D (2009). *Psychophysiological Effects of Precompetition Anxiety on Basketball Performance.* Unpublished Master Dissertation Submitted to California State University.

Amtmann J and Cotton A (2005). Strength and Conditioning for Judo. *National Strength and Conditioning Association, 27*(2), 26–31.,.

Artioli GG Scagliusi F Kashiwagura D Franchini E Gualano B Junior AL (2010). *Scand J Med Sci Sports, (20):* e177–e187, 178.

Burton D (1988). Do Anxious Swimmers Swim Slower? Re-Examining the Elusive Anxiety-Performance Relationship. *Journal of Sport and Exercise Psychology, 10*, 45–61.

Cerin E (2003). Anxiety Versus Fundamental Emotions as Predictors of Perceived Functionality of Pre-Competitive Emotional States, Threat, and Challenge in Individual Sports. *Journal of Applied Sport Psychology, 15*, 223–238.

Chishaki T Umeda T Takahashi I Matsuzaka M İwane K Matsumoto H İshibashi G.Ueno Y Kashiwa N and Nakaji S (2013). Effects Of Dehydration on İmmune Functions after a Judo Practice Session. *Luminescence;* 114–120

Clément JP (2001). 'Les Arts Martiaux Et La Société Française: Sociologie Historique De L'implantation Du Jûdô Et De L'aikidô', Daruma 8/9: 175–99

Corman AM (2003). *Dictionary of Psychology*. Oxford, UK: Oxford University Press.

Covassin T & Pero S (2004). The Relationship Between Self-Confidence, Mood State, And Anxiety Among Collegiate Tennis Players. *Journal of sport behavior, 27,* 230- 242.

Craft LL Magyar TM Becker BJ Feltz DL (2003). The Relationship Between The Competitive State Anxiety İnventory-2 And Sport Performance: A Meta-Analysis. *Journal of Sport & Exercise Psychology,* pp 44-65

Drid P Bala G Obadov S (2010). Archıves Of Bud. *Science Of Martıal Arts, 6*(2), 95.

Edwards T and Hardy L (1996). The İnteractive Effects of Intensity and Direction of Cognitive and Somatic Anxiety and Selfconfidence upon Performance. *Journal of Sport & Exercise Psychology, 18,* 296–312.

Gant DW Cox RH (2004). The Sport Grid-Revised as A Measure of Felt Arousal and Cognitive Anxiety. *Journal of Sport Behaviour, 27*, 93–113.

Gil K (1978). Judo, Nedernhausen, 19- 20.

Hale BD and Whitehousei A. (1998). The Effect Of Imagery Manipulated Appraisal On Intensity And Direction. *The Sport Psychologist, 12*, 40–51.

Hardy L Jones G Gould D (1996). Understanding Psychological Preparation for Sport: *Theory and Practice in Elite Athletes*, Chichester, UK, Wiley.

Hernández-García R Carmen GT-L Gutierrez V (2009). Physiological Requirements of Judo Combat. *İnternational Sport Med Journal, 10*(3), 145-151.

Hoff FF (1998). Uber Den Sinn Des Budo Und Bushido In Der Heutigen Zeit. Universität Lüneburg.

Imamura R & Johnson B (2003). Kinematic Analysis of a Judo Leg Sweep: Major Outer Leg Reap - Osoto-Gari. *Sports Biomechanics, 2*(2), 191-201.

Kalina RM (2000). *Teoria Sportów Walki*. Biblioteka Trenera. COS, Warszawa.

Kolayis H and Sarı İ (2011). Anxiety, Self-Esteem and Competition Ranking Of Judokas. *Archieves of Budo. 7,* 11-15. Jan 3.

Lane AM, Sewell DF Terry PC Bartram D Nesti MS (1999). Confirmatory Factor Analysis of the Competitive State Anxiety Inventory–2. *Journal of Sports Sciences, 17,* 505- 512.

Lynette L Craft T Michelle M Betsy JB and Deborah LF (2003). The Relationship Between the Competitive State Anxiety İnventory–2 and Sport Performance: A Meta-Analysis. *Journal of Sport & Exercise Psychology, 25,* 44–65.

Martens R Vealey RS and Burton D (1990). *Competitive Anxiety in Sport*. Champaign, II: Human Kinetics.

Matsumoto DR (1996). *An Introduction to Kodokan Judo*. Tokyo, Japan: Hon-No- Tomosha, pp. 43–69.

Maynard IW, Hemmings B, Warwick-Evans L (1995). The Effects of A Somatic İntervention Strategy on Competitive State Anxiety and Performance in Semi-Professional Soccer Athletes. *The Sport Psychologist, 9*, 51–64.

Mellalieau SD, Hanton S, Jones G (2003). Emotional Labeling and Competitive Anxiety in Preparation and Competition. *The Sport Psychologist,17,* 157–174.

Miarka B, Marques JB & Franchini E (2011). The International Journal of the History of Sport Reinterpreting the History of Women's Judo in Japan. *The İnternational Journal of the History of Sport, 28*(7), 1016–1029.

Modroño C and Guillen F (2010). Anxiety Characteristics of Competitive Windsurfers: Relationships with Age, Gender, and Performance Outcomes. *Journal of Sport Behavior, 34*(3):281-294.

Murphy S (2005). *The Sport Psych Handbook* (Ed.), Human Kinetics Publisher, İnc. Champaign.

Nishime RS (2007). Martial Arts Sports Medicine: Current İssues and Competition Event Coverage. *Curr Sports Med Rep 6*, 162–169.

Parfitt G. and Pates J. (1999). The Effects of Cognitive and Somatic Anxiety and Self-Confidence on Components of Performance During Competition. *Journal of Sports Science, 17,* 351–356.

Patel DR, Omar H, and Terry M (2010). Sport-Related Performance Anxiety in Young Female Athletes. *Journal of Pediatric and Adolescent Gynecology, 6 ,* 325-335.

Pocecco E Gatterer H, Ruedl G Burtscher M (2012). Specific Exercise Testing in Judo Athletes. *Archives Of Budo Science Of Martial Arts, 8*(3), 133.

Detanico D Pupo JD Franchini E Giovana dos Santos S (2012). Relationship of Aerobic and Neuromuscular Indexes with Specific Actions in Judo. *Science & Sports, 27,* 16-22.

Sato S. (2013). The Sportification of Judo: Global Convergence and Evolution. *Journal of Global History, 8*(2), 299-317

Spielberg, CD (1966). Theory and Research on Anxiety. in C.D.Spielberg (Ed.), Anxiety and Behaviour New York: Akademik Press, pp.3-20.

Spielberger C, Hackfort D (1989). *Anxiety in Sports: An International Perspective* New York: Hemisphere, 55–74.

Triki M Rebai H Abroug T Masmoudi K Fellmanndn N Zouari N Tabka Z (2012). Comparative Study of Body Composition and Anaerobic Performance Between Football and Judo Groups. *Science & Sports, 27*, 293—299.

Tsopani D, Dallas G, and Skordilis E. K (2011). Competitive State Anxiety and Performance in Young Female Rhythmic Gymnasts. *Perceptual and Motor Skills,112*(2), 549-560.

Vadocz EA, Hall CR, and Moritz SE (1997). The Relationship Between Competitive Anxiety and İmagery Use. *Journal of Applied Sport Psychology, 9*, 24 1–253.

Weinberg RS Gould D (1998). *Foundations of Sport and Exercise Psychology* (3nd Ed.). Champaign, IL, Human Kinetics.

Woodman T Hardy T (2003.) The Relative Impact of Cognitive Anxiety and Self-Confidence upon Sport Performance: A Meta-Analysis. *Journal of Sport Sciences, 21*, 443–457.

## Appendix

Competitive State Anxiety–2 (CSAI–2)

Directions: A number of statements that athletes have used to describe their feelings before competition are given below. The questionnaire is divided into two sections. İn section 1 please read each statement and then circle the appropriate number to the right of the statement to indicate *how you feel right now.* There are no right or wrong answers. Do not spend too much time on any one statement, but choose the answer which describes your feelings *right now.*

In addition in section 2 please indicate whether you regard this thought/feeling as negative (debilitative) or positive (facilitative) in relation to performance in your sport. N.B. if you have scored '1' (Not at all) on the fourth item then you respond on this scale as if you had *no* self-doubts. İf you respond '4' (very much so) to item 4 then you respond on this scale as if you had *a great deal* of self-doubt.

| Section 1: Please read each statement and then circle the appropriate number to the right of the statement to indicate *how feel right now*. | | | | | Section 2: Please indicate whether you regard this thought/feeling as negative (debilitative) or positive (facilitative) in relation to performance in your sport | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Not at all | Somewhat | Moderately so | Very Much so | Very debilitative | | | Neutral | | | Very Facilitative |
| 1) I am concerned about this competition | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 2) I feel nervous | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 3) I feel at ease | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 4) I have self-doubts | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 5) I feel jittery | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 6) I feel comfortable | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 7) I am concerned that İ may not do as well in this competition as İ could | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 8) My body feels tense | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 9) I feel self-confident | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 10) I am concerned about losing | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 11) I feel tense in my stomach | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 12) I feel secure | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 13) I am concerned about choking under pressure | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 14) My body feels relaxed | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 15) I'm confident İ can meet the challenge | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |

| Section 1: Please read each statement and then circle the appropriate number to the right of the statement to indicate *how feel right now*. | | | | | Section 2: Please indicate whether you regard this thought/feeling as negative (debilitative) or positive (facilitative) in relation to performance in your sport | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Not at all | Somewhat | Moderately so | Very Much so | Very debilitative | | | Neutral | | | Very Facilitative |
| 16) I'm concerned about performing poorly | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 17) My heart is racing | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 18) I'm confident about performing well | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 19) I'm concerned about reaching my goal | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 20) I feel my stomach sinking | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 21) I feel mentally relaxed | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 22) I'm concerned that others will be disappointed with my performance | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 23) My hands are clammy | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 24) I'm confident because İ mentally picture myself reaching my goal | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 25) I'm concerned İ won't be able to concentrate | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 26) My body feels tight | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |
| 27) I'm confident of coming through under pressure | 1 | 2 | 3 | 4 | -3 | -2 | -1 | 0 | +1 | +2 | +3 |

Somatic Anxiety: 5,8,11,17,20,23,26,2,14

Cognitive Anxiety: 7,10,13,16, 22,1,4,19,25

Self-Confidence: 9,15,18,24,27,3,6,12,21