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Effect of Different Pre-Competition Anxiety and Self-Confidence on the Performance in Bouldering Climbers

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Abstract

This study was planned to evaluate the effect of different pre-competition anxiety types and self-confidence on performance in bouldering climbers. Forty-one bouldering climber (18 women, 23 men) at ages 18-31 years were included in the study. After receiving the demographic information of the athletes, the pre-competition anxiety scores was assessed by the Competitive State Anxiety Scale (CSAI) and State Trait Anxiety Scale (STAI). CSAI's three sub-parameters were cognitive anxiety, somatic anxiety and self-confidence. Two different parameters were evaluated with STAI, state anxiety and trait anxiety. Performance scores of the athletes after the competition were recorded. When the relationship between different pre-competition anxiety types and performance was examined, there was negative moderate correlation between state anxiety and performance (p: 0.000, r: -590). While there was no significant difference between male and female athletes in terms of pre-competition anxiety levels ($p>0.05$), there was a significant difference between them in terms of performance scores ($p<0.05$). It was determined that the STAI and CSAI scales each had correlation within own parameters. The level of state anxiety before the competition in bouldering climbers could related negatively sportive performance. Although the male and female athletes have similar level of pre- competition anxiety, the performance of female athletes was found to be lower.

Keywords: Anxiety, Bouldering, Performance, Sports

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Introduction

Bouldering is a sport related to rock climbing that is performed on small rock formations or artificial rock walls without the use of ropes and harnesses. Bouldering climbers focus completely on the ladder to move over the most difficult section of rock possible (Josephsen et al., 2007)

Anxiety is one of the most important areas that sports psychology focuses on. The effect of pre-competition anxiety level on performance is frequently investigated in sports psychology (Sedarati, 2007). In sports performance, not only the physical and physiological characteristics but also the psychological capacity is an important factor (Canan and Ataoğlu, 2010).

If the athlete does not cope properly with anxiety, it can lead to poor performance, failure and even injuries (Radochoński et al., 2011). Pre-competition anxiety lead to impaired motor function and concentration by affecting athletes'

emotions, which can affect performance and success negatively (Zamani and Moradi, 2009).

The researchers explained the relationship between pre-competition anxiety and sport performance with Individual Zones of Optimal Functioning Model. This widely used view argue that there are individual differences that gave different reactions to that level of anxiety and at the same time it argue that some athletes have high performance at low anxiety level, others have better performance at high anxiety level. For this reason, it is stated that each individual should choose the optimum level of anxiety that will give the best performance (Hagtvet and Hanin, 2007).

Self-confidence is conceptualized as a belief in the challenge of the task to be fulfilled. In the multidimensional anxiety theory (Martens et al., 1990), it is hypothesized that it has a positive linear relationship with performance. Though self-confidence is hypothesized to effect performance, the relationship with performance has been unclear in sport sciences. Self-confidence has been thought to be related to sport performance at a meaningful level but it can not be determined from correlational designs (Feltz, 2007).

The effects of various sport branches on the pre-competition performance have been examined, but there have been no studies that examined the effect of different pre-competition anxiety types and self-confidence on bouldering climbers. The aim of this study is to evaluate the effect of different pre-competition anxiety and self-confidence on the performance in bouldering climbers.

Methods

Forty-one boulderers (18 female, 23 male) at ages 18-31 years were included in the study at 25-26 March 2017 in the Sport Climbing Bouldering Turkey Championship in Malatya. The athletes who refused to participate in the survey, who did not fill the questionnaires 1 hour before the competition, was exclude in the study.

Population and Sample

The universe of the study formed boulderers competing in the Sports Bouldering Turkey Championship matches in Malatya. Athletes participating voluntarily in the study were selected by random sampling method in the relevant universe.

Data Collection Tools

After receiving the demographic data of the boulderers such as age, gender, height and weight the pre-competition anxiety status of boulderers was evaluated by the Competitive State Anxiety Inventory - 2 (CSAI-2) and State Trait Anxiety Scale (STAI).

Competitive State Anxiety Inventory - 2 (CSAI-2) helps identify different factors such as anxiety, somatic anxiety and self-esteem associated with anxiety. These factors have significantly contributed that these factors have contributed significantly to the evaluation and understanding of the pre-competition anxiety (Craft et el., 2003). CSAI-2 questionnaire developed by Martens et al. to assess different types of anxiety before the competition. The questionnaire consisting of 27 questions evaluates 3 subparameters as cognitive anxiety, somatic anxiety and self-confidence. In the questionnaire which is evaluated with Likert type scale 1: Never, 2: Sometimes, 3: Frequently, 4: Always 4 points are scored. Each sub-parameter ranges from 9 to 36 points and an increase in score indicates an increase in anxiety level (Martens et al.,1990). The reliability and validity of the Turkish version of the scale was performed by Koruç et al. The results factor analysis of it were found to be 0.31 for cognitive anxiety, 0.22 for somatic anxiety and 0.24 for self confidence (Koruç, 1998).

The State-Trait Anxiety Inventory (STAI), which evaluated the state anxiety and trait anxiety levels of the athletes and tested the effects of these two different anxieties, is a preferred scale for different sport branche (Öner and LeCompte, 1985). STAI questionnaire developed by Spielberger and colleagues to assess the level of trait anxiety and state anxiety prior to the competition. Questionnaire consisting of 40 questions is evaluated as two different parameters: state anxiety and trait anxiety. In the questionnaire which is evaluated with Likert type scale, in the state anxiety scale 1: Never, 2: Somewhat, 3: Very and 4: Completely; in the Trait Anxiety Scale are scored as 1: Never, 2: Sometimes, 3: Much time and 4: Almost always 4 points are scored. There are two types of expressions in scales: direct and reversed. Direct expressions, negative emotions; whereas reversed expressions express positive feelings. These are 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20 items. In the continuous anxiety scale, the number of reversed expressions is seven, and these constitute items 21, 26, 27, 30, 33, 36 and 39 (Öner and LeCompte, 1985). Scoring of STAI is that direct and reversed expressions are prepared as two separate the key. The scores of direct and reversed expressions are calculated separately. Predetermined

and unchanging value of STAI is added. For the state anxiety scale this constant value is 50, and 35 for trait anxiety scale. Value is the anxiety score of the individual.

The trait anxiety questionnaire of STAI was given before one day from the competition and they were asked to mark the appropriate responses. CSAI and state anxiety questionnaire of STAI were given to boulderers before an hour from the competition and they were asked to mark the appropriate responses.

In bouldering the total score of the athletes is usually used as the best measure of individual performance. In individual performances an average score was calculated taking into account the number of top of each athlete, top count and bonus holdings. The average result was obtained multiplying 10 points for the top number, minus 1 point for the trial and 1 point for the bonus hold.

Data analysis

The study data were analyzed using SPSS for Windows (Version 22). The mean ± standard deviation value for the variables that were determined by the measurement was also calculated on this program. Since the data did not have a normal distribution, the analyses were conducted using non-parametric tests. Intergroup comparisons were made using the Independent Samples t test. When the significance of the difference between two means was determined, the Mann-Whitney U test was used for the data that did not meet the parametric conditions. Pearson Correlation Coefficient was performed to determine the relationship for the data. The significance level was $p < 0.05$ in the analyses.

Findings

A total of 41 boulderers (18 female and 23 male) participated in this study. Mean age of female boulderers was 24.8 ± 3.92 years, mean age of male boulderers was 23.6 ± 4.33, body mass index of female boulderers was 20.07 ± 1.08, and body mass index of male boulderers was 21.45 ± 1.32.

When the relationship between different types of anxiety and performance was examined before the competition, there was a negative moderate correlation between state anxiety and performance ($p=0.000$, $r=590$) (Table 1). While there was no significant difference between male and female boulderers in terms of anxiety levels ($p> 0.05$), there was a significant difference between them in terms of

performance scores (p<0.05) (Table 2). STAI and CSAI scales were found to have moderate or strong correlation within their own parameters (Table 3).

Table 1. Relationship between anxiety and performance

		Performance		
		Boulderers n=41	**Fermale n=18**	**Male n=23**
State Anxiety				
	r	-0.590	-0.640	-0.555
	p	**0.000***	**0.002***	**0.003***
Trait Anxiety				
	r	-0.235	-0.267	0.066
	p	0.069	0.142	0.382
Cognitive Anxiety				
	r	-0.020	-0.231	0.178
	p	0.450	0.179	0.209
Somatic Anxiety				
	r	-0.005	0.016	0.258
	p	0.489	0.474	0.117
Self-confidence				
	r	0.315	0.066	0.323
	p	0.022	0.397	0.066

Table 2. Comparisons anxiety and performance according to sex

	Female Mean±SD	**Male Mean±SD**	**t/z**	**p**
Performance	8.11±12.1	23±14.4	-3.58[a]	**0.001***
State Anxiety	42.8 ±7.9	39±4.41	1.12[a]	0.268
Trait Anxiety	40.6 ±7.6	38.4±7.16	-1.45[b]	0.147
Cognitive Anxiety	19.6±4.48	19.4±3.4	0.13[a]	0.891
Somatic Anxiety	18.7±4.54	16.6±3.57	1.62[a]	0.113
Self-confidence	22±5.97	25.3±4.28	-2.06[a]	0.057

*p<0.05, a: t value, b: Z value

When the effects of different anxiety types on performance were examined according to sex, although there was no significant relationship between trait anxiety and cognitive anxiety, and performance, the direction of correlation was different. Negative correlations between trait anxiety and cognitive anxiety, and performance were observed in females respectively (p: 0.14, r: -267; p: 0.17, r: -231), while positive correlation was found in males (p:0.38, r: 066; p: 0.20, r:178).

Table 3. Relationship between STAI and CSAI subparameters

n=41			STAI		CSAI		
			(A)	(B)	(C)	(D)	(E)
STAI	(A) State Anxiety	r	1				
		p					
	(B) Trait Anxiety	r	0.580	1			
		p	**0.000***				
CSAI	(C) Cognitive Anxiety	r	-0.006	0.168	1		
		p	0.969	0.294			
	(D) Somatic Anxiety	r	-0.169	0.088	0.728	1	
		p	0.291	0.583	**0.000***		
	(E) Self-confidence	r	-0.105	-0.017	-0.560	-0.555	1
		p	0.512	0.914	**0.002**	**0.000***	

Result and Discussion

In this study investigating the effect of different anxiety types and self-confidence on performance of boulderers before the competition, it was determined that state anxiety is a negative relationship with the performance. Moreover, there was no significant difference between male and female boulderers in terms of anxiety, and female boulderers' performance was lower.

A study by Nassib et al. (2017) demonstrated that there was a negative relationship between pre-competition level of anxiety and performance of athletes. A study by Ferrand et al. (2006) on elite climbers indicated that pre-competition anxiety is a detrimental effect on successful performance. In another study on basketball players it was determined that a high level of anxiety affected performance negatively (Szabo et al., 2014) In this study pre-competition state anxiety level was found to be an effective parameter on performance. It was determined that the level of state anxiety before the competition in boulderers related the performance negatively.

In a study by Judge et al. found that the pre-competition level of anxiety varied between male and female athletes (Judge et al., 2016). In a study that examined the pre-competition anxiety level according to sex in two different types of competition, it was found that women's anxiety level and negative behavioral attitude were higher than male athletes, which might negatively affect performance (Aşçı et al., 2006). In this study, the pre-competition anxiety levels of male and female athletes were similar but the performances of female athletes were found to be lower than male athletes. In addition, it was determined that the trait and state anxiety levels of the women

were numerically higher than that of the males in this study, but it was not statistically significant. When we examined the relationship between anxiety level and performance by sex in this study, we found that the correlation was different between male and female athletes. While it was determined that performance decreased with increasing trait anxiety and cognitive anxiety in female athletes, it was determined that performance increased with increasing trait anxiety and cognitive anxiety in male athletes. However, the correlation was low and not significant.

In a meta-analysis that investigated the effects of self-confidence and cognitive anxiety on performance, it was determined that self-confidence affected significantly cognitive anxiety. Gender and competition conditions are also effective in relation to cognitive anxiety and self-confidence. In addition, self-confidence and cognitive anxiety in the study showed that male athletes were more affected than female athletes (Woodman & Hardy, 2003). It was determined that the performance score of female athletes was lower when it was determined that state anxiety was associated with performance in our study.

In a study conducted by Gould et al. CSAI was found to have strong correlation between subparameters, cognitive anxiety, somatic anxiety, and self-confidence (Gould et al.,1984). In another study, there was a positive correlation between cognitive anxiety and somatic anxiety, subparameters of CSAI (Coelho et al., 2007). In this study, it was determined that CSAI had a strong positive correlation between the parameters of cognitive anxiety and somatic anxiety, it was determined that there was a negative moderate correlation between these two parameters and self-confidence. STAI's state anxiety and trait anxiety levels were positively correlated with each other. In this study we evaluated the effect of different anxiety types on performance using two different questionnaires, it was determined that only state anxiety level is an effective parameter on performance.

The relative limitation of this study is that it is based only on self-reports and that factors such as coach attitudes are not evaluated. Because of the different effects of anxiety types on gender and it is not statistically significant, there is a need for further research that the number of samples is high. In addition, strategies to cope with high state anxiety should be taught to increase the performance level of athletes.

As a result; it was found that the level of state anxiety before the competition in boulderers could related negatively sportive performance.

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