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Examination of Anxiety Levels of Sportsmen with Physical Disabilities

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Abstract: The aim of this study is to determine state and trait anxiety levels of sportsmen with physical disabilities according to their sports branch and disability categories; and to determine whether they differ according to socio-demographic variables. The research included 120 sportsmen with physical disabilities, whose average ages were 30 ± 1.23 years. A socio-demographic data form and State Trait Anxiety Inventory (STAI) were used. Data were analyzed using SPSS (version 15.0). Both anxiety levels varied significantly ($P<0.05$) according to age and income level of the sample group and significant differences ($p<0.05$) were observed in educational level, income level and self-description in social life. No significant difference was observed in between either of the anxiety levels and participants' marital status, sports branch or disability category ($p>0.05$). In conclusion, while state anxiety levels of sportsmen with physical disabilities differ according to their age and income levels, their trait anxiety levels differ according to their income levels, personal characteristics like nervousness or irritability. It should be remembered that this state varies between individuals. Consequently, a high level of anxiety affects sportsmen negatively. Therefore, trainers and managers should demonstrate distinctive approaches to each sportsman, considering individual differences in their anxiety levels.

Key words: Physical Disability · Anxiety · State Anxiety · Trait Anxiety

INTRODUCTION

Persons with disabilities, such as organ deficiency or dysfunction resulting in varying functional losses, require support and assistance in everyday life. An individual may have more than one disability, which may limit their actions and ability to participate in physical activities [1].

Approximately 8-8.5 million people with disabilities are recognized in Turkey and there is a child or adult with disabilities in every 7-8 families. A sport is a means of promoting better social integration of these people with disabilities to society. Recently, sports participation has increased among people with disabilities [2].

Irrespective of the type or level of disability, exercising, participating in sport activities entertain individuals, which results in improving living motivation of individuals [1]. Sports activities have begun to be used by many countries in order to promote better social integration of the people with disabilities [3].

Arkonaç defines anxiety, generally occurring as a result of stimulation conflict, as a state of concern and nervousness, an uncertain fear and a dominant negative feeling [4]. Weinberg and Gould define anxiety as a sensory state of nervousness, concerns and angst [5]. Generally, people perceive anxiety as a feeling of something bad occurring in their future [6]. Spielberger first defined sub-categories of anxiety as state and trait anxiety [7]. Some people are constantly anxious and unhappy; this anxiety type, which is not directly dependent on dangers from the environment, originates internally. Individual feels anxiety when they think that their self-values are threatened or when they consider their state as stressful. This is called "Trait Anxiety". Trait anxiety is stable and usually defined as a personal character trait. State anxiety is a subjective concern felt by an individual as a result of pressured conditions. State anxiety is a state of nervousness, sensitiveness, fear or unhappiness occurring in certain conditions, not in

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"normal" conditions when the individual himself or his benefits are threatened and which ceases when this threatening condition is removed [8]. The nature of state anxiety varies and is temporary. It is generally defined by A-State and observed as the anxiety level of a person at a certain moment [9]. Anxiety is an important determinant of sporting performance should always be kept under control.

In addition to physical and physiological capacities in sport environment, elite sportsmen have perfect skills in psychological capacities as motivation, managing anxieties, concentration and determining objectives [10]; the psychological dimension becomes a central consideration that should not be ignored in improving sportive performance [11]. A rise is observed in the state anxiety levels of sportsmen as the time for competition approaches [12]; this state is affected by various factors such as age, gender performance limits, difficulty level of perceived competition and sporting branch [13-16].

Previous studies of adult athletes have examined topics related to anxiety levels, but research on people with disabilities is very limited. Therefore, the aim of this study is to determine the relation between trait anxiety levels and state anxiety levels of sportsmen with disabilities according to their sports branch and disability category; and to determine whether this varies according to socio-demographic variables.

MATERIALS AND METHODS

This study included sportsmen from Kara Kuvvetleri Gücü; Sports Teams of People with Disabilities of Antalya, İstanbul, Samsun and Malatya; Büyük Başkent Youth Club, Konya Engelliler Gücü, Samsun Engelli Gücü; Kayseri Youth and Sport Club of Physically Disabled People; Ayyıldız Amputee, Gaziantep Şahinbey Municipality Youth and Sport Club; Disability Basketball of Kütahya; Karagücü Basketball; Archery Club of Karagücü. All of the study group participated in competitions during the 2009-2010 season. The study included 120 sportsmen of Amputee football, Wheelchair basketball, Archery, Power lifting, Shooting, who voluntarily participated in the study. The study was limited to sportsmen from the clubs participating in the research. Participants who experienced difficult in comprehending issueswere provided with assistance by pollsters. No time limit was set for completion of the survey forms. The state anxiety inventory was applied to sportsmen 2-3 hours before competition in sports field and the trait anxiety inventory was applied 2-3 hours before competitions in a resting state.

Survey format which defines or obtains information about the characteristics, backgrounds and present behaviors of persons was used as study method.

Data Acquisition Tool: The study used a questionnaire survey methodology and the following data acquisition tool and scales were used:

Socio-Demographic Data Acquisition Form: This form included 7 personal questions (age, marital status, educational level, income level, self-description, disability category and his/her sport branch).

STAI - State-Trait Anxiety Inventory: This scale was originally developed by Spielberger *et al.* [17] to separately determine state and trait anxiety levels. It was adapted to Turkish by Öner and Le Compte, who also conducted reliability and validity studies [18]. The scale, which involves self-description, consisted of two sub-scales of 40 items. Potential scores obtained from the two sub-scales ranged between 20 and 80. Higher scores indicated high anxiety and lower scores indicated low anxiety levels. Average scores obtained from applications ranged between 36 and 41.

Data Analysis:

- SPSS (version 15.0) was used to determine the frequency and percentage distribution of the sample according to socio-demographic variables.
- Validity and reliability analysis was made to State-Trait Anxiety scale. Data was tested using KMO [Kaiser-Meyer-Olkin] and Bartlett's (Bartlett's test of sphericity) test. The KMO measure was found to be 0.75 and Bartlett was $x^2 = 2094.773$ ($p<0.05$). In analyzing the reliability of the scale; internal consistency coefficient [Cronbach's-Alpha] was 0.85 for state anxiety, 0.72 for trait anxiety and 0.88 for the general scale, which demonstrated that data acquired from answers of survey was compatible for evaluation.
- The distribution of data was tested by Kolmogorov-Smirnov and Shapiro-Wilk tests and the results revealed a normal distribution. The t-test for comparison between two independent group averages and single direction variance analysis (ANOVA) for analysis of more than two groups were used to examine the data. When the result was statistically significant, Scheffe test was used to find the source of variation. The Pearson correlation coefficient was used to determine the relation level between sub-scales. The level of statistical error was accepted as $p<0.05$.

RESULTS

According to participants' responses, 12.5% of the sample were within the 16-20 age group; 25% were aged 21-25; 14.2% were aged 26-30 and 48.3% were aged 30 and above. In terms of marital status, 51.7% of the sample groups were single, 46.7% were married and 1.7% were widowed. In terms of educational background, 23.3% of the group had a primary school level education, 18.4% elementary school, 43.3% high school or equivalent and 15.0% were university- college graduates. 27.5% of the group had an income of 600 TL and below, 42.5% had an income of 601-1500 TL, 18.3% of them earned 1501-2500 TL and 11.7% had an income of 2501-3500 TL and above. In self-evaluation of personality types 30.1% of the sample described themselves as silent and calm, 45.8% as social and outgoing, 13.3% of them as hyperactive and vigorous, 10.1% as aggressive.

Of the participants with an amputation disability, 44.2% had a below knee amputation, 25.8% above knee amputation, 5.0% upper arm amputation and 10.0% below knee amputation. Of the participants with a cerebral palsy type disability, 13.3% of them were classified as having a form of paraplegia and 1.7% with hemiplegia.

In terms of sports branch, 75.8% of the sample group participated in football, 12.5% in wheelchair basketball, 6.7% in archery, 1.7% in power lifting and 3.3% in shooting.

A shown in Table 1, while state anxiety levels differed significantly according to age ($F_{(3,116)}$ =3.004, P<0.05), there was no significant difference in trait anxiety levels ($F_{(3,116)}$ =1.951, P>0.05). The difference in state anxiety levels were found to increase from sportsmen aged 16-20 to those aged 30 and above.

As shown in Table 2, no statistically significant difference was observed in state and trait anxiety levels according to marital status (state ($F_{(2,117)}$=.796, P>0.05), trait ($F_{(2,117)}$=.719, P>0.05). The lowest scores were observed in the widowed group both for state ($\bar{x}$ =41.50) and trait anxiety ($\bar{x}$ = 40.50), however it should be considered that the widowed group may reveal weakness as n score has small size.

As shown in Table 3, no statistically significant difference was observed in state anxiety levels according to educational level ($F_{(3,116)}$=1.957, P>0.05); however, the difference between trait anxiety levels was statistically significant ($F_{(3,116)}$=2.694, P<0.05). The anxiety levels of university graduates were found to be lower than other groups.

Table 1: Group comparisons according to age

Anxiety	Age	N	Mean	SD ±	F	p	Difference (Scheffe)
State-Anxiety	16-20	15	50.6667	10.1042	3.004	.033*	1-4
	21-25	30	45.9667	6.75933			
	26-30	17	45.4118	5.81011			
	Above 30	58	45.0000	6.00292			
Trait- Anxiety	16-20	15	49.0667	7.64822	1.951	.125	
	21-25	30	45.5333	6.94676			
	26-30	17	47.7059	7.25228			
	Above 30	58	45.0000	5.91460			

*p<0.05

Table 2: Group comparisons according to marital status

Anxiety	Marital Status	N	Mean	SD ±	F	p
State- Anxiety	Single	62	46.3871	7.88307	.796	.454
	Married	56	45.2143	5.87046		
	Widowed	2	41.5000	.70711		
Trait- Anxiety	Single	62	45.9839	6.94591	.719	.489
	Married	56	46.2679	6.46808		
	Widowed	2	40.5000	.70711		

Table 3: Group comparisons according to educational level

Anxiety	Educational level	N	Mean	SD ±	F	p	Difference (Scheffe)
State- anxiety	Primary School	28	47.5714	7.17727	1.957	.124	
	Elementary School	22	47.4091	7.57602			
	High School or equal	52	44.8077	5.84116			
	University- Collage	18	43.6667	8.22478			
Trait- anxiety	Primary School	28	48.4286	6.56832	2.694	.049*	1-4
	Elementary School	22	46.7727	7.30252			
	High School or equal	52	45.4231	5.72352			
	University- Collage	18	43.1111	7.69942			

*p<0.05

Table 4: Group comparisons according to income level

Anxiety	Income level (monthly)	N	Mean	SD ±	F	p	Difference (Scheffe)
State-anxiety	600 TL and below	33	47.3333	7.69605	3.129	.028*	1-4
	601-1500 TL	51	45.3922	5.79682			
	1501-2500 TL	22	47.1818	8.00379			
	2501-3500 TL and above	14	41.1429	5.62764			
Trait- anxiety	600 TL and below	33	46.8182	6.61180	3.258	.024*	1-4
	601-1500 TL	51	46.6078	5.16170			2-4
	1501-2500 TL	22	46.7273	9.11400			
	2501-3500 TL and above	14	40.9286	5.69027			

*p<0.05

Table 5: Group comparisons according to self-description

Anxiety	Self- description	N	Mean	SD ±	F	p	Difference (Scheffe)
State- anxiety	Silent and calm	37	44.7838	6.20992	1.955	.125	
	Social and outgoing	55	45.0727	6.00880			
	Hyperactive and vigorous	16	47.6250	9.50701			
	Aggressive	12	49.4167	8.49019			
Trait- anxiety	Silent and calm	37	44.4865	5.66971	5.724	.001*	1-4
	Social and outgoing	55	45.2545	5.85383			2-4
	Hyperactive and vigorous	16	47.1875	5.38168			
	Aggressive	12	52.7500	10.3671			

*p<0.05

Table 6: Group comparisons according to disability type

Anxiety	Disability type		N	Mean	SD ±	F / t	p
State- anxiety	Amputation	Below knee amputation	53	46.6038	6.73207	.928	.430
		Above knee amputation	31	46.3226	6.54923		
		Upper arm amputation	6	41.5000	5.71839		
		Lower arm amputation	12	45.7500	10.6269		
	Cerebral palsy	Paraplegia	16	44.4375	4.56024	1.696	.109
		Hemiplegia	2	38.0000	9.89949		
Trait- anxiety	Amputation	Below knee amputation	53	45.8302	6.75601	1.882	.138
		Above knee amputation	31	48.5161	6.42843		
		Upper arm amputation	6	45.1667	6.04704		
		Lower arm amputation	12	43.6667	7.52370		
	Cerebral palsy	Paraplegia	16	44.6875	5.61805	1.093	.291
		Hemiplegia	2	40.0000	7.07107		

Table 7: Group comparisons according to sports branch

Anxiety	Sports branch	N	Mean	SD ±	F	P
State- anxiety	Amputee football	91	46.3297	7.32584	1.031	.394
	Wheelchair basketball	15	44.7333	5.52225		
	Archery	8	44.1250	4.01559		
	Power lifting	2	45.5000	3.53553		
	Shooting	4	40.0000	7.78888		
Trait- anxiety	Amputee football	91	46.4945	6.99583	.881	.478
	Wheelchair basketball	15	45.6667	5.20531		
	Archery	8	44.2500	3.49489		
	Power lifting	2	39.5000	.70711		
	Shooting	4	43.5000	9.67815		

Table 8: Correlation between state and trait anxiety levels of sample group

Scale	Definitive	State anxiety
State anxiety	r	1
	p	
	N	120
Trait anxiety	r	.589(**)
	p	.000
	N	120

**p<0.01

As can be seen in Table 4, both state anxiety levels ($F_{(3,116)}$=3.129, p<0.05) and trait anxiety levels ($F_{(3,116)}$=3.258, p<0.05) of the sample group showed significant differences according to income level on behalf of the group having an income level as 2501- 3500 TL and above.

In Table 5, no statistically significant difference was observed in state anxiety levels according to the self-description variable ($F_{(3,116)}$=1.955, p>0.05). A statistically significant difference was observed in trait anxiety levels, which resulted from the group describing themselves as aggressive ($\bar{x}$=52.75) ($F_{(3,116)}$=5.724, p<0.05).

In Table 6, no statistically significant difference was observed in either state anxiety levels (amputation ($F_{(3,98)}$=.928, p>0.05) and cerebral palsy (t=1.695, p>0.05)) or trait anxiety levels (amputation ($F_{(3,98)}$= 1.882, p>0.05) and cerebral palsy (t=1.093, p>0.05)) according to disability type.

In Table 7, no statistically significant difference was detected in state anxiety levels ($F_{(4,115)}$=1.031, p>0.05) or trait anxiety levels ($F_{(4,115)}$=.881, p>0.05) according to sports branch. The lowest state anxiety level was observed among sportsmen participating in shooting ($\bar{x}$=40.00) and the lowest trait anxiety level among those who did power lifting ($\bar{x}$=39.50).

According to Table 8, a significant and non-random relationship was observed at the p<0.01 significance level between sub-scales. A positive and medium level linear relationship (r = .589) was observed between state anxiety and trait anxiety levels (p<0.01). This result indicated that increased state anxiety level would result in an increase in trait anxiety level.

DISCUSSION

The state and trait anxiety levels of sportsmen with physical disabilities were determined in relation to demographic variables used in this study. The findings suggest a relationship between state anxiety and age, in which state anxiety decreases with increasing; there is no effective factor in trait anxiety levels (Table 1). Failure in sports activities generally results in higher level of state anxiety. Considering the relative inexperience of younger sportsmen in competitions, their efforts to prove themselves and make themselves accepted despite their physical disabilities is thought to play a role in increased anxiety levels.

While Yanlıç *et al.* [19] stated that age was not a factor affecting state and trait anxiety levels among sportsman with physical disabilities playing sitting volleyball. Koç reported that as the ages of professional footballers increased, they became influenced by factors affecting state anxiety levels and better controlled their feelings [10]. Sportsman may experience conditions of increased anxiety. Many young sportsmen (ages 13-24) state that competition/contest conditions are no more stressful or pressing than school or daily life activities [20]. Başaran *et al.* [14] determined that the trait anxiety levels of younger sportsmen were significantly higher (P<0.05) than those of older competitors.

Arseven and Güven analyzed anxiety levels among sportsman who were divided into two groups according to their age (above 20 and below 20) and who participated in different types of sports (basketball, handball, volleyball and athletics) within a competition environment and found no significant relationship in results [21].

Öğüt found no significant relationship between trait anxiety and the year of experience in sport [22]. Yücel studied sportsmen doing taekwondo and concluded that high or low level of state and trait anxiety did not depend on age [23]. These differing results indicate the necessity for further studies on different age groups.

No difference was found in anxiety levels according to marital status (Table 2). No statistical difference was observed in state anxiety levels; however, in trait anxiety levels, the difference was in favor of university and college graduates (Table 3) according to educational level variable of sample group. The low level of anxiety among individuals with higher income (Table 4) indicates that economic conditions are better and employment opportunities are higher for sportsmen with disabilities or the confidence of having fewer financial problems; and that the cognitive acquisitions of sportsmen with a higher educational level may have a positive effect in terms of reducing anxiety level. In an economic context, considering the employment difficulties experienced even by healthy individuals with a high educational level, people with disabilities inevitably suffer from difficult living conditions and anxiety, in parallel to their increased employment and economic concerns.

While no significant difference was observed in state anxiety levels according to self-description categories selected by the participants, higher trait anxiety levels were observed in the group describing themselves as aggressive than among those describing themselves as silent and calm (Table 5). Trait anxiety generally develops according to personal characteristics. The closeness of personality characteristics to anxiety affects trait anxiety level. Trait anxiety level affects perceiving, understanding and comprehending the environment, which can be threatening, dangerous or can increase state anxiety level according to personality characteristics [6]. Those sportsmen describing themselves as aggressive may be more prone to feelings of anxiety due to their physical disabilities.

The sample group was found to have no significant difference in anxiety levels according to disability category (Table 6). Irrespective of their disability type, sportsmen have the self-confidence assert themselves within society due to their identity as sportsmen and do not define themselves by their disabilities. Establishing an identity within society is an important issue, especially for people with disabilities. This self-confidence that is common to sportsmen may dominate anxiety levels by having a positive effect on life motivation.

No statistically significant difference was found in either state or trait anxiety levels according to sports branch (Table 7). Civan *et al.* [11] found no statistically significant difference between average state anxiety scores of those involved in individual sports (judo and wrestling) and racket sports (table tennis and badminton), however; the average state anxiety scores of team sports group was found significantly lower than the ones of individual and racket sports. Aktop and Erman compared trait anxiety levels of team and individual sportsmen and reported that high scores for state anxiety among sportsmen in individual and racket sports might result from their bearing the responsibility of competitions alone, as all of the training undertaken during the year would be regarded as being wasted in case of failure, thereby affecting levels of state anxiety among competitors in individual sports branches [24].

There is well-established evidence of physical anxieties among people with disabilities. However, the sense of confidence among these sportsmen is observed to be higher than able-bodied sportsmen [25]. To that end, it appears possible to promote self-confidence by emphasizing the sporting identity of individuals with disabilities. At the same time, some researchers found differences in anxiety levels according to the types of sports undertaken. Öğüt examined the relationship between trait anxiety and sports branches and reported differentiations between trait anxiety and sports branches and also differentiations between sportsmen were found to be important, especially in swimming and basketball [22]. Engür studied 217 team sportsmen and 62 individual sportsmen and determined that the average scores of "state anxiety" of those in team sports were significantly higher than those engaged in individual sports [26].

In the present study, a positive, medium and linear relation was observed between state anxiety and trait anxiety levels. This result indicates that the increase in state anxiety level will result in increased trait anxiety level (Table 8). This finding also suggests that competition sports are not entirely stressful experiences and that high expectation level will increase state anxiety [26].

Consequently, while differentiations may be observed in state anxiety levels of sportsmen with physical disabilities according to their age and income levels, in trait anxiety levels, sportsmen may differentiate according to their educational level and aggressive characteristics. Trainers should develop programs that address not only the improvement of physical skills but also psychological skills. An optimal anxiety level is known to be required for sportsmen to reach the required performance level. It should be taken into consideration that this state may vary between sportsmen. In conclusion, high anxiety levels have a negative effect on the performance of sportsmen. Thus, trainers and managers should consider the individual differences in anxiety levels of sportsmen. Policies should be developed that address the economic anxieties of sportsmen, their educational level should be increased and, therefore, each individual should be personally supported by improving their economic and employment opportunities.

Disability sports teams should involve trainers and psychologists with an understanding of disability psychology and sportsmen should be supported to improve their skills to cope with anxiety. Given that the successes and failures of sportsmen after competitions and their disabilities affect trait anxiety scores, a trait anxiety inventory should be prepared, which is more developed and involves factors such as failure and disabilities.

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