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## Study on sport competition anxiety: A statistical analysis

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### Abstract

Many researches and theories have shown a very strong relation between performance and anxiety level. Even experienced persons possess problems and their carriers affected. Every individual must have knowledge about his or her anxiety levels, especially sports persons. In this paper, the sport competition anxiety level of sport persons under different components have been studied, using non-probabilistic sampling technique wherein three hundred and fifty three sports persons from different games have been selected as sample from Coimbatore, Tamil Nadu, India. Comparative analysis was carried out using univariate statistical techniques and the results revealed significant difference exists among age, experience in sports, type of sports and area of livelihood of the players with regards to anxiety levels and further sports persons belongs to track events, rural background, lower aged and inexperience are much affected by competition anxiety.

**Keywords:** T-test, anova, games, anxiety, sports

### 1. Introduction

Performance or achievement of a sports person is influenced by various factors and broadly can be divided into physiological and psychological (Schilling and Hyashi, 2001; Grange and kerr, 2010) <sup>[11, 4]</sup> and anyone of the factor is affected will certainly affect his or her performance which will automatically decline. Anxiety is one of the important in born characteristics of living beings. Spielberger (1989) <sup>[12]</sup> introduced the concept of state-trait anxiety in the year 1960 which quotes “both high and low level of anxiety will interface the performance” Basically, anxiety is classified as somatic and cognitive anxiety (Martens *et al.*, 1990; Jarvis, 2002) <sup>[9, 6]</sup>. The basic difference among these two is the first one somatic physical symptoms (sweating, heavy breathing, butterfly symptom’s in stomach, etc.) whereas second cognitive mental symptoms (worries, negative thoughts, fear etc.) (Jones, 2000) <sup>[7]</sup>. Usually, anxiety level may show an increasing or decreasing trend during competitions (Weinberg 1989; O’Neil *et al.*, 1992; Cashmore, 2002; O’Neil and Abedi 2007; Weinberg and Gould, 2011) <sup>[13, 10, 3, 14]</sup> due to the components of somatic and cognitive changing over situation and time (Caruso *et al.*, 1990) <sup>[2]</sup>. Hann (2000) <sup>[5]</sup> state as winning a competition is fully dependent on how players handle the anxiety. Many studies have proved strong relation between performance and anxiety. It is a negative symptom which affects the perceptions in the competitions and declines the performance. Therefore, studying the anxiety of sports person becomes one of the main areas for research. Many researches have looked into this topic with various aspects. Bamaniya (2016) <sup>[1]</sup> studied the competitive anxiety between male and female badminton players and concluded no statistical evidence exists so as to prove gender difference among anxiety level. Kumar *et al.*, (2017) from their study concluded, contact sport persons have significantly higher anxiety level than non-contact sports persons. In this paper, we have studied the sport competition anxiety by comparing different demographic variables of sports persons. Rest of the paper is organized as follows: Section 2 describes how samples have been selected and tools used to reach the objective of this study. Result and discussion are presented in section 3 and the results are concluded in section 4.

### 2. Materials and Methods

The main objective of this study was to compare the sport competitive level through different

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demographic information's of the sport persons. To reach the above objective, the following six hypotheses have been framed:

- To analyse the difference between gender of sport person with regards to sport competitive level.
- To analyse the difference between age of sport person with regards to sport competitive level.
- To analyse the difference between experience of sport person with regards to sport competitive level.
- To analyse the difference between level of sports of sport person with regards to sport competitive level.
- To analyse the difference between sport modality of sport person with regards to sport competitive level and
- To analyse the difference between area of livelihood of sport person with regards to sport competitive level.

**2.1 Sample selection**

For the present study, using non-probabilistic purposive sampling technique three hundred and fifty three sport persons of both the gender (246 male and 107 female) from different sports (track 238 and field 115) were selected from Coimbatore city, Tamil Nadu. Sample age group ranges from 14 to 25 years old with mean (21.73) and Standard Deviation (S.D) (5.40) respectively.

**2.2 Instruments**

The selected sport persons were instructed to provide their demographic information viz., gender, age, sport modality, experience, level of sports and region, etc.

To assess the competition anxiety level of selected sport persons, Sport Competition Anxiety Test (SCAT) scale developed by Martens *et al.* (1990) [9] was administrated. It is a self-reporting instrument composed of fifteen questions designed to measure the trait anxiety. The answer were given according to a likert scale of three points (1- rarely, 2 - sometime and 3-often). Out of these fifteen questions two questions (6 and 11) were negative, should be scored in reversed order and another five questions (1, 4, 7, 10 and 13) are spurious statement which is used to reduce the bias of the respondents, therefore zero should be scored regardless of the response. The ranges of the scores lie between 10 and 30. These scores were then grouped into three categories via low (<17), average (17 – 24) and high (>24) level anxiety.

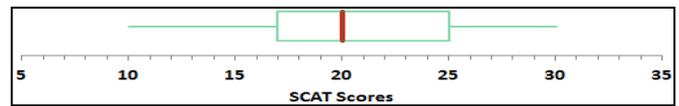
**2.3 Procedure**

Prior permission was obtained from the event organizer and physical director or staff in-charge of colleges and schools for the collection of data. Thereafter the objective of this investigation was clearly explained to the athletes and their signature was affixed in the terms and conditions sheets, in which secrecy and privacy of all data collected were guaranteed. Approximately, one hour before the start of the competitions, questionnaire was filled by the respondents.

**3. Statistical analysis and discussion**

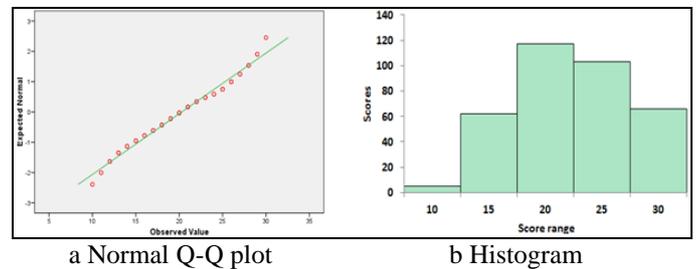
Analysis was started from the basic checking of data. First, the internal consistency of the SCAT items was calculated through Cronbach's alpha test and following result obtained (0.744) was above the normal criteria (0.70).

Second, outlier was deducted using box plot. From Figure 1, it was observed that all values lie within the limit. The first quartile, median and third quartile values was observed at 17, 20 and 25 respectively.



**Fig 1:** Box plot for the SCAT scores

Finally, normality of the score was checked using both diagrammatic and statistical test. Figure 2 (a, b) shows the Normal Q-Q plot and histogram of SCAT scores.



**Fig 1(a, b):** Q-Q pot and histogram of SCAT score

Two statistical tests viz., Kolmogorov-Smirnov and Shapiro-Wilk tests were used to test the normality of the scores shown in Table 1.

**Table 1:** Parametric test for normality of the scores

Test	Test Statistics	Degrees of freedom	P-vale
Kolmogorov–Smirnov test	0.930	353	0.000
Shapiro – Wilk test	0.975	353	0.000

From Figure 2(a,b) and Table 1 normality of the data was verified.

**Parametric test**

Data set satisfies the basic assumptions of two parametric methods, t test and Analysis of variance (ANOVA). By taking three demographic variables (gender, type of events and living place) as independent and test scores as dependent variables, t-test has been conducted and result are shown in Table 2.

**Table 2:** Results of t test

		N	Mean	S.D	t-test	p-value
Gender	Male	246	20.57	4.980	1.56	0.123
	Female	107	19.67	4.996		
Type of events	Track	238	24.38	5.003	7.50	0.000*
	Field	115	20.11	4.944		
Living place	Rural	126	24.83	4.810	9.70	0.000*
	Urban	227	19.44	5.099		

\* p< 0.01

From Table 2 it was observed as other than gender, the other two variables (type of events and living place) showed significant difference at 0.01 level. Track event and rural background sport persons were having a high level of anxiety then field and urban. This may be due to the following reasons; mostly track event sports persons were more directly competing than field events and rural back ground sports persons who had less facility than urban in all the conditions. ANOVA was conducted for independent demographic variables (age, experience and level of sports) and test scores as dependent variables and results are shown in Table 3.

**Table 3:** Results of ANOVA

		N	Mean	S.D	F	p-value
Age	< 15	51	25.62	5.880	2.33	0.042**
	15 - 18	118	22.45	4.995		
	18 - 21	103	20.16	4.747		
	>21	81	20.26	4.995		
Experience	< 4	62	21.68	5.436	3.55	0.007*
	4 - 7	142	22.57	4.805		
	7 - 10	97	21.74	4.776		
	10 - 13	25	18.25	5.144		
	> 13	27	18.65	5.154		
Level of sport	Inter School	80	21.21	5.767	0.676	0.609
	College level	104	20.41	4.683		
	District	76	20.43	5.101		
	State	56	20.54	5.348		
	National	37	19.54	4.691		

\*p < 0.01, \*\*p < 0.05

From Table 3, it was observed that other than level of sport, the other two variables (age and experience) showed a significant difference at 0.05 and 0.01 level. From Tukey's post hoc test, it was observed that aged and experience sports persons differed from other groups. Due to maturity, age increases and high experienced sports persons learned to keep their mind steady and constant. On the other hand lower aged and inexperienced sports persons were heavily affected by high level of anxiety.

#### 4. Conclusion

The findings of the research determined that sports persons belongs to track events, rural background, lower aged and inexperience are much affected by the sports competition anxiety. Coaches or sports counsellors should find the appropriate coping strategies to these sports persons to deal with the competition anxiety.

This study was not exceptional from the limitations, as it was a cross sectional study, which makes causal inference impossible; sample section was done on non-probabilistic basis and also belong only to Coimbatore city; and gender group size not equal. Therefore, in future studies widen the region of samples and balanced sample related to gender may be used to comparison. Influences of variables were studied individually, but there will be some relations exists with others, therefore interactions effects can be viewed in future.

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