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## A comprehensive study on establishing reliability of anxiety (CSAI-2D) on Indian athletes

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### Abstract

The aim of the present study was to establish the reliability of Anxiety (CSAI-2D) during competition with the help of the thirty eight (38) athletes'. The competitive state anxiety examined on International and National Level Indian Athletes from National Athletics Coaching camp at the gap of one week. The relationship between  $3 \times 2$  variables at intensity and directional interpretation of anxiety proves that the anxiety can be facilitative and debilitating the performance of athletes. The responses on Competitive state anxiety questionnaire in bilingual (Hindi and English) responded by athletes, which assess subscales (Cognitive Anxiety, Somatic Anxiety and Self-confidence). The statistical analysis defines the Reliability of Competitive State Anxiety Inventory-2D (modified version) on Indian population. The Pearson's Product Moment Correlation method was used to measure the significant relationship between variables of anxiety during competition which reflects low and high anxiety at intensity interpretation of athletes and the Perception of these anxiety symptoms reflects facilitative and debilitating responses of anxiety on the performance of athletes. These competitive state anxiety measures with Cognitive state anxiety, Somatic state anxiety and Self-confidence.

**Keywords:** Modified CSAI -2 scale, athletics, Indian athletes, national and international level

### Introduction

Anxiety is a psychological and physiological state characterized by somatic, emotional, cognitive, and behavioral components. It is the displeasing feeling of fear and concern. The root meaning of the word anxiety is 'to vex or trouble'; in either presence or absence of psychological stress, anxiety can create feelings of fear, worry, uneasiness, and dread. Anxiety is considered to be a normal reaction to a stressor. It may help an individual to deal with a demanding situation by prompting them to cope with it. When anxiety becomes excessive, it may fall under the classification of an anxiety disorder.

### Definitions

1. Anxiety define as an emotional reaction evoked by stimulus that is perceived as threatening (Spilberg, 1972)
2. A negative emotional state with feelings of nervousness, worry and apprehension associated with activation or arousal of the body. (Weinberg & Gould)
3. According to one dictionary definition, anxiety can be defined as a strong and unpleasant feeling of nervousness or distress in response to a feared situation, often accompanied by physiological effects such as nausea, trembling, breathlessness, sweating, and rapid heartbeat.

### Effect of Anxiety

The physical effects of anxiety may include heart palpitations, muscle weakness and tension, fatigue, nausea, chest pain, shortness of breath, stomach aches, or headaches. As the body prepares to deal with a threat, blood pressure, heart rate, perspiration, blood flow to the major muscle groups are increased, while immune and digestive functions are inhibited (the fight or flight response). External signs of anxiety may include, sweating, trembling, and pupillary dilation. Someone who has anxiety might also experience it subjectively as a sense of dread or panic.

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The emotional effects of anxiety may include "feelings of apprehension or dread, trouble concentrating, feeling tense or jumpy, anticipating the worst, irritability, restlessness, watching (and waiting) for signs (and occurrences) of danger, and, feeling like mind's gone blank" as well as "nightmares/bad dreams, obsessions about sensations".

The cognitive effects of anxiety may include thoughts about suspected dangers, such as fear of dying. "One may fear that the chest pains are a deadly heart attack. The behavioral effects of anxiety may include withdrawal from situations which have provoked anxiety in the past. Anxiety can also be experienced in ways which include changes in sleeping patterns, nervous habits, and increased motor tension like foot tapping.

Anxiety can be defined as an unpleasant state of mental uneasiness or concern that causes physical and psychological discomfort. Extreme anxiety disrupts and unsettles behaviour by lowering the individual's concentration and affecting their muscular control. Any sporting game or contest can give rise to anxiety when one's perceived ability does not measure up to the demands of the task.

### Trait Anxiety

Trait anxiety refers to a general level of stress that is characteristic of an individual, that is, a trait related to personality. Trait anxiety varies according to how individuals have conditioned themselves to respond to and manage the stress. What may cause anxiety and stress in one person may not generate any emotion in another. People with high levels of trait anxiety are often quite easily stressed and anxious.

### State Anxiety

State anxiety is characterised by a state of heightened emotions that develop in response to a fear or danger of a particular situation. State anxiety can contribute to a degree of physical and mental paralysis, preventing performance of a task or where performance is severely affected, such as forgetting movements during a dance or gymnastic routine, to breaking in sprint or swim starts or missing relatively easy shots at goal i.e. pressure situations.

For some athletes sports anxiety can be a valuable motivator, e.g., contact sports such as rugby, whereas other sports require a very low level of anxiety for successful performances, e.g. archery, pistol shooting.

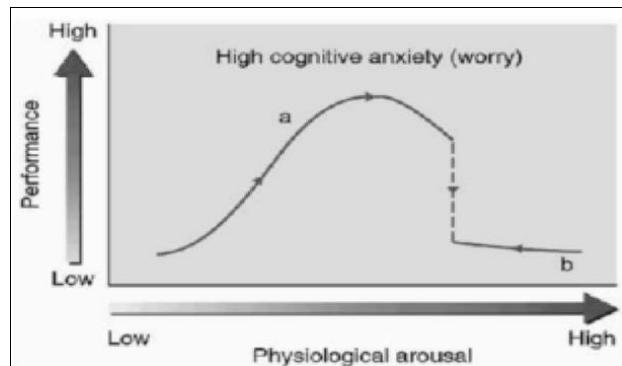
Athletes can learn to manage anxiety using techniques such as relaxation, hypnotherapy, cognitive behaviour therapy and positive thinking. For state anxiety, therapies focus on the specific situations causing stress to the athlete whereas Trait anxiety requires a broader approach.

Sports and performance anxiety often go hand-in-hand. Have you ever "choked" during an important sporting event or felt your nerves get in the way of your athletic performance? While many athletes become "pumped up" during competition, when the rush of adrenaline is interpreted as anxiety, and negative thoughts begin to swirl, it can have devastating effects on your ability to perform. Before you learn how to manage the symptoms of anxiety during competitions, it is important to understand the relationship between anxiety and athletic performance.

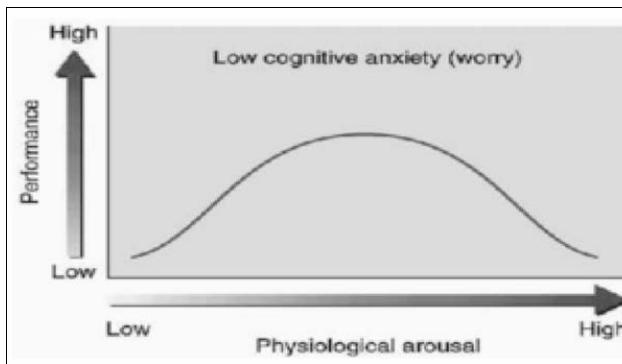
Sport competition has become important in today's society and extremely high expectations are placed on competing athletes regardless of competitor's capacities, reasons for participation and skill levels. An inherent aspect of competitive athletics is the need for players to meet the demands of competition and to perform well under pressure.

(Craft, L.L., et. al.; 2003) [1].

Anxiety is not directed or construed correctly, athletes lose control and performance levels when increase in performance has been the foundation need of athletes in their respective sports. Anxiety or arousal increases from drowsiness to alertness, there is a progressive increase in performance levels. When anxiety is not managed or explained correctly, athletes lose control and their performance level decreases (Weinberg, et. al.; 2010 - Raglin, J.S., et. al.; 2000) [6, 4]. Athletes train hard to help their skills and faculty's regardless of the time they take to fulfil their expectations (Parnabas, V.A., et. al.; 2009) [3]. Anxiety has a negative influence on balance parameters and these parameters can be measured with catastrophe theory of Hardy. Catastrophe theory (Hardy, 1990) [2], significantly influence the level of cognitive anxiety and interfere with the performance outcome. This theory states that performance is influenced by physiological arousal and cognitive anxiety. In a state of low cognitive anxiety, the relationship between physiological arousal and performance will be an inverted U. In a state of high cognitive anxiety, on the other hand, the relationship will be a catastrophe. This means that after reaching the optimal level of physiological arousal, performance will decrease dramatically (catastrophe). As a consequence, it is cognitive anxiety that prescribes the influence of physiological arousal on athletic performance. In other words it stated that physiological arousal should only be negatively related to performance when the level of cognitive anxiety is high. In this theory, it is clear that the relationship between anxiety and performance is dynamic and may change within a few seconds. To capture these temporal dynamics of competitive anxiety, continuous measurement of anxiety during performance is necessary.



**Fig 1:** High cognitive anxiety (worry)



**Fig 2:** Low cognitive anxiety (worry)

Competitive State Anxiety has been one of the most important in sports. Athletes deal with anxiety which are goal-setting, breath control, imagery, positive self-talk, focus on the present, progressive relaxation, biofeedback, etc. with the

help of coping strategies. These are the environmental demands which are causing of imbalanced situations of arousal or stress and these abilities are required to fulfil the expectations of competition demands. Competitive State Anxiety Inventory-2D scale of John & Swain which is modified in 1995, assessed firstly, the anxiety of athletes during competition with intensity level of scale and secondly assessed the perception of these anxieties of athlete with directional level of scale. The influence of competitive anxiety upon performance has received considerable attention. It is often assumed that anxiety during competition that is, a negative emotional state characterized by feelings of nervousness, worry, apprehension and bodily arousal – has beneficial or detrimental effects upon sport performance (Weinberg & Gould, 1995) [5].

### Objective

To establish the Reliability of the CSAI-2D (Modified version) subscales on Indian Population.

### Hypothesis

A high reliability of CSAI-2D (Modified version) was found on Hindi language which translated with  $3 \times 2$  variables. It was further concluded that significant correlation was found among the selected 3 subscales of Competitive state Anxiety with Intensity level and directional level interpretation with the help of English and Hindi language on the Indian athletes.

### Procedure and Methods

#### Participants

The Indian elite level athletes ( $N=38$ ) of age from 17 years to 26 years were selected for the present study. At the time of collection of the data the subjects were attending Junior National Athletics coaching camp at Sports Authority of India North Centre Sonipat, Haryana, India and coaching camp of the Indian Athletics Team. The data was collected with the help of Athletics Coach of the Indian team.

#### Instrument

A standardized questionnaire CSAI-2D (Modified version of CSAI-2) developed by John and Swain in 1995 was used to evaluate the extent of selected state anxiety of athletes. The CSAI-2D was translated in Hindi language with help of the expert and again rechecked by the other two experts. The questionnaire examined competitive state anxiety in 6 subscales ( $3 \times 2$  sub-scales): Cognitive State Anxiety, Somatic State Anxiety and Self-Confidence at both intensity and directional level.

#### Statistical Method

As per the objective of the study selected statistical techniques use in this study were descriptive statistics, and Pearson's Product Moment Correlation to measured relationship between competitive anxiety variables to assessed the effect of anxiety on sports performance of Indian athletes and establish the Reliability of the CSAI-2D (modified version) on Indian athletes.

### Results

Pearson's Product Moment Correlation and descriptive statistical analysis was used to measure the results which shows most of the athletes used mental skills strategies to cope with anxiety symptoms during competition. There was found the significant relationship between competitive state anxiety sub-scales with the help of test-retest.

**Table 1:** Descriptive Results in Relation to Competitive State Anxiety ( $3 \times 2$  Variables)

S. No.	Variable	N	Test		Re-test	
			Mean	SD	Mean	SD
1.	Cognitive State Anxiety_ Intensity	38	18.26	5.44	19.71	5.73
2.	Somatic State Anxiety_ Intensity	38	14.92	3.99	16.84	4.78
3.	Self-Confidence_ Intensity	38	28.05	3.78	27.26	4.90
4.	Cognitive State Anxiety_ Direction	38	-.63	11.12	1.58	11.65
5.	Somatic State Anxiety_ Direction	38	-5.45	9.57	-2.92	8.93
6.	Self-Confidence_ Direction	38	14.29	5.48	14.53	5.69

As depicted and evident in the Table 1, the descriptive result of competitive state anxiety of athletes performance, The descriptive values ( $\text{Mean} \pm \text{SD}$ ) of anxiety were measured on intensity and directional level interpretation on Cognitive State Anxiety, Somatic State Anxiety and Self-Confidence of athletes. Mean and SD of athletes at Intensity level were  $18.26 \pm 5.44$  (test) &  $19.71 \pm 5.73$  (Retest) of cognitive state anxiety,  $14.92 \pm 3.99$  (test) &  $16.84 \pm 4.78$  (Retest) of somatic state anxiety,  $28.05 \pm 3.78$  (test) &  $27.26 \pm 4.90$  (Retest) of self-confidence, and at Directional level Mean and SD value are  $-.63 \pm 11.12$  (test) &  $1.58 \pm 11.65$  (Retest) of cognitive state anxiety,  $-5.45 \pm 9.57$  (test) &  $-2.92 \pm 8.93$  (Retest) of somatic state anxiety,  $14.29 \pm 5.48$  (test) &  $14.53 \pm 5.69$  (Retest) of self-confidence.

**Table 2:** Correlation Between Test & Retest of Competitive State Anxiety ( $3 \times 2$  Variables)

S. No.	Variables	'r'	p-value
1.	Cognitive State Anxiety_ Intensity	.635**	.000
2.	Somatic State Anxiety_ Intensity	.607**	.000
3.	Self-Confidence_ Intensity	.553**	.000
4.	Cognitive State Anxiety_ Direction	.458**	.004
5.	Somatic State Anxiety_ Direction	.584**	.000
6.	Self-Confidence_ Direction	.337*	.038

\*\* Correlation significant at 0.01 levels (2-tailed)

\* Correlation significant at 0.05 levels (2-tailed)

Table 2 states the results of test-retest of all variables of competitive anxiety are significantly correlated at 0.01 levels and 0.05 levels. Self-Confidence at directional interpretation of athletes' anxiety is significantly correlated at 0.05 levels and in case of Cognitive State Anxiety, Somatic State Anxiety & Self-Confidence at intensity interpretation of anxiety and Somatic State Anxiety and Self-Confidence at directional interpretation of anxiety are significantly correlated at 0.01 level.

### Discussion and Conclusion

The purpose of the present study was to establishing reliability of  $3 \times 2$  variables of competitive state anxiety at Intensity and directional Interpretation on Indian Population developed by John & Swain, 1995. Through this study, we found that the significant relationship between the Competitive State Anxiety variables on Indian Population, which are helpful in developing facilitative approaches of anxiety on athletes' performance during competition. With the help of Pearson's Product Moment Correlation researcher found that CSAI-2D (Modified version) scale is Reliable on Indian Population in relation to their performance.

CSAI-2D scale assessed the intensity of cognitive anxiety, somatic anxiety and self-confidence which represents the affect of state anxiety on performance and in other hand directional interpretation represents the affects of these anxiety symptoms which perceived as being facilitative or

debilitative to performance.

As per the previous researches on CSAI-2D the result of competitive anxiety scales is significantly effective to find the effects of anxiety on competition and training performance that means anxiety facilitative and debilitating the athlete performance through cognitive and somatic state anxiety and self-confidence.

Competitive state anxiety inventory 2D scale is helpful to find out the influence of anxiety on athletes performance and shows the positive score responses which facilitates the performance and negative score responses debilitating the performance of athlete. Further, researcher found with study materials that anxiety affects on the performance of individual. Facilitative and debilitating response of anxiety reflects individual or team performance, but in some cases Intensity interpretation of anxiety reflects high anxiety which means decreasing in the performance but the directional interpretation shows that the performance of athletes is facilitative. It means the anxiety uncertainty regarding goal attainment and coping with the situation with experienced by the athlete's during competition performance.

To measure the parameters of anxiety we uses catastrophe theory model which reflect the influence of anxiety on athletes performance. This theory states that performance is influenced by physiological arousal and cognitive anxiety. In a state of low cognitive anxiety, the relationship between physiological arousal and performance will be an inverted U. In the other hand state of high cognitive anxiety, the relationship will be a catastrophe. This means after reaching the optimal level of physiological arousal, performance will decrease dramatically (catastrophe) and in other hand physiological arousal should only be negatively related to performance when the level of cognitive anxiety is high and dynamic changes occurs within a few seconds.

### Suggestions

Anxiety experiences develop directly from “autonomic arousal” these are such a problematic for athlete performance which increases the physiological arousal may accompany other emotions, such as excitement or anger. These problematic physiological arousals in athlete performance can be controlled and cope with anxiety, and achieve their desired goals with the help of mental skills training. Mental Skills Training program plays an important role to facilitative performance of athletes which are requirement for best performance during sports competition. According to this study it was found that an athlete's without any mental skills training in their training session use to face many physiological and psychological arousal which creates negative expectancies, self-doubt, increases in heart rate and muscular tension. Changes in physiological and psychological arousal of athletes performance can be controlled with the uses of mental skills training (MST) program in their training session as it had a high correlation in terms of performance in competition.

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