

## **A Comparative and Methodical Study of Anxiety and Performance among Inter University Players**

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### **Abstract**

*Sporting field at present acknowledges and appreciates sportspersons who can consistently display superior performance, who is focused to be at his/her best and come out successful. Today, there is very little difference in the players' physique, talent, and ability. But all these aspects should be directed towards the best performance, for which one should possess a great deal of mental strength. When the heat of competition is turned up high, the individual performer or team that falls apart most often does so because of mental factors. As many of the psychological skills are inherent and controlling them under pressure and during extreme circumstances of uncertainty needs proper guidance and training. A variety of thoughts of sport psychology are how athletes desire to learn, manage the states of relaxation and concentration, visualize a doing well performance, understand to trounce their beliefs and build up high levels of self-awareness. The purpose of the study was to compare and analyse the psychological variable anxiety to the performance of intervarsity basketball and volleyball players. The subjects selected for the study were 384 university players in basketball and volleyball who participated in the All India intervarsity tournaments. Competitive State Anxiety Inventory-2 (CSAI - 2) constructed by Rainer Martens et al. was administered to assess anxiety. The performances of the players were evaluated through subjective rating by experts during the match as well as using video analysis. Statistical techniques such as Descriptive Statistics, Pearson's Product Moment Correlation, t-ratio, One-Way ANOVA and Scheffe's post-hoc test were employed. Cognitive anxiety and somatic anxiety showed negative relationship while self-confidence showed positive relationship to the performance in basketball and volleyball players of both genders. Comparative analysis revealed that anxiety is higher in basketball players than volleyball players whereas cognitive and somatic anxiety levels are high for female than male players.*

**Key words:** - Cognitive Anxiety, Somatic Anxiety, Self Confidence, Performance

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### **I. Introduction**

Sporting arena at present acknowledges and appreciates sportspersons who can consistently exhibit superior performance. Today, there is very little difference in the players' physique, talent, and ability. But all these aspects should be directed towards the best performance, for which one should possess a great deal of mental strength. 'Play to win and not to lose' should be the slogan of today's sportsperson. Playing to win comes out of inspiration, whereas playing not to lose comes out of desperation. Most performance problems of athletes occur not only due to the results of poor conditioning, inadequate coaching, and lack of physical skills or technical ability but also of mental factors like nervousness, intimidation, poor concentration, lack of confidence, etc.

Sport and Exercise Psychology is an academic discipline concerned with the psychological determinants or mental components of behaviour in sports and exercise as well as the psychological effects. Psychological factors are frequently the crucial conditions or causes, which transform strength into weakness and vice versa. The practical sports psychology programme is a holistic approach for peak performance. It includes deep relaxation and visualization, techniques for concentration, positive attitude, nutrition, stress management and meditation.

Psychological training should help the athletes to summarize and adopt a set of working formulas for self-encouraging, self-consoling, self-assessing, self-restricting, self-motivating and self-mobilizing. Apart from these, one must have a clear picture of prevailing circumstances as well as an image underlying potentialities for the future. Not only must one know oneself under the general existing situation, but must also see the changes as a result of the impact of outside forces. Although, usually it is the stronger and the better team that wins, occasions are not rare when a weaker team beats a stronger one. Winning or leading can be regarded as temporary, but to win consistently needs the maintenance of cool, clear and a stable frame of mind. Studies on

anxiety are very crucial for the performance of today's athletes and the present paper seeks an analysis and comparison of this psychological component with performance.

Anxiety is one of the most prevalent topics in sports and exercise psychology. It is considered as a psychological manifestation involving all dimensions of athlete such as psychological behaviour and psychological process of sports performance. The person's worries about events, their occurrences and consequences in general are the sources of anxiety. In order to facilitate peak performances by athletes, sports psychologists have considered the three different aspects of anxiety such as cognitive anxiety, somatic anxiety and self-confidence. All these components influence performance in different ways. Somatic anxiety refers to involuntary psychological arousal. It is particularly prevalent at the beginning of a game and has an "Inverted U" relationship with performance. That is players who are too physically relaxed or aroused will not perform best. It increases as the game situations approach to its climax, especially if the score is close, and will negatively affect performance. Cognitive anxiety pertains to the individual's negative concerns about performance regardless of the individual's skill level (Krane, Joyce and Rafeld, 1994). Gould, Petlichkoff and Weinberg (1984) have reported that the strongest predictor of cognitive anxiety was years of experience. Advanced players reported more facilitative interpretations of their anxiety than novices (Perry and Williams, 1998). But self-confidence accounts for a greater proportion of variance in performance than cognitive or somatic anxiety which is highly possessed by the elite performers (Hardy, 1996).

Spielberger (1971) introduced the terms state anxiety and trait anxiety. He defined state anxiety as an immediate emotional state that is characterized by apprehension, fear and tension accompanied by physiological arousal. State anxiety is a temporary, ever changing emotional state. But trait anxiety, a feature of personality and an acquired behavioural outlook, is a predisposition to perceive certain environmental situations as threatening and to respond to these situations. Within the context of sports, those individuals who are low trait anxious and experience high state anxiety would find it facilitate to a peak performance, but those individuals who are high trait anxious and experience low state anxiety will find it difficult to perform well. (Hardy et al.1996).

Whenever one is more anxious the body shows a number of warnings which may result in mental, tactical and execution errors. Some of the immediate physical or somatic symptoms are palpitations of the heart, muscle tension, sense of fatigue, increased heart rate, blood pressure, changes in respiratory rate, etc. Some of the cognitive cues or warnings are sense of confusion, forgetting details, inability to concentrate, resorting to old habits and inability to make decisions. The coach should be sensitive to swings of anxiety among the members of his team. The ability to deal effectively with anxiety among the sportsmen is one of the prime considerations and the elimination of anxiety as a whole is not desirable. The anxiety levels of the athlete, particularly around the time of stressful competition, frequently change. Each athlete is different and should be treated as an individual. To understand anxiety, we must consider the person, the situation and the ongoing interactive process.

The anxiety-performance relationship is a prominent research issue and a practical concern for sports participants. Typical pre-game rituals and pep-talks are aimed to increase arousal or get players 'psyched-up' for competitions. It has been established that generally performance is best at an optimal level of physiological arousal. However, the optimal level varies with the individual, activity and situation. Probing of the anxiety-performance relationship reveals that the ability to control anxiety is the key in separating better and poorer performers. Anxiety can be correlated with the release of adrenalin in the body and is something which can either detract or enhance the performance level. The effects of anxiety on athletic performance vary not only based on individual but also on the type of sport, gender and level of experience.

The present study was undertaken with the objective of comparing the anxiety to the performance of intervarsity basketball and volleyball players.

## **II. Hypothesis**

- There will be significant relationship between the anxiety variables, such as cognitive anxiety, somatic anxiety, and self-confidence, to performance among intervarsity basketball players and volleyball players of both sexes.
- There will be significant differences between anxiety variables of basketball players and volleyball players.
- There will be significant differences between anxiety variables of male (basketball players and volleyball players) and female (basketball players and volleyball players).
- There will be significant difference in anxiety variables among the four subgroups namely men basketball players, women basketball players, men volleyball players and women volleyball players.

### III. Significance of the Study

By knowing the relationship of anxiety variables to performance and sport wise (basketball and volleyball) and gender wise differences would help coaches to deal with individual sportspersons and with sports groups in helpful and insightful ways. Also the findings of the study would assist coaches to communicate more readily with clinical and experimental psychologists in availing psychological services in the testing of athletes, remedial aspects, psychological preparation, and short term clinical counseling, of emotional problems faced by athletes.

### IV. Methodology

#### 1. Selection of subjects

- 384 University level players of 37 universities from all over India (192 basketball Players (96 Male and 96 Female) and 192 Volleyball Players (96 Male and 96 Female)
- Age group: 18 – 25 years

#### 2. Selection of Variable & Tool Employed

- Cognitive Anxiety, Somatic Anxiety and Self-confidence
- Competitive State Anxiety Inventory-2 (CSAI-2) invented by Rainer Martens et al.

#### 3. Collection of Data

Data were collected from the participants of All India Inter University Basketball (Men & Women) and Volleyball (Men & Women) tournaments.

#### 4. Statistical Techniques

- Descriptive Statistics
- Pearson’s Product Moment Correlation
- t-ratio
- One-Way Analysis of Variance and Scheffe’s post-hoc test

*The statistical analyses were done on the collected data and the results obtained are depicted in the following tables (Table 1 to 12).*

**Table 1  
Descriptive Analysis of Anxiety of Male and Female Basketball Players**

Variables	Minimum Score		Maximum Score		Range		Mean		S D	
	M	F	M	F	M	F	M	F	M	F
Cognitive anxiety	10	10	24	25	15	16	18.38	18.64	3.33	2.84
Somatic anxiety	11	11	25	23	15	13	18.01	18.13	3.07	2.77
Self confidence	16	16	31	30	16	15	22.76	21.96	4.04	3.27

N = 96 for each category

**Table 2  
Descriptive Analysis of Anxiety of Male and Female Volleyball Players**

Variables	Minimum Score		Maximum Score		Range		Mean		S D	
	M	F	M	F	M	F	M	F	M	F
Cognitive anxiety	10	10	22	24	13	15	17.28	18.49	2.85	2.89
Somatic anxiety	09	10	21	22	13	13	16.80	18.13	2.57	2.58
Self confidence	16	16	31	28	16	13	22.72	20.39	3.91	2.41

N = 96 for each category

**Table 3**  
**Relationship of Anxiety Variables to Performance of Male and Female Basketball and Volleyball Players**

Variables Correlated with Performance	Basketball		Volleyball	
	Male	Female	Male	Female
Cognitive anxiety	-0.61*	-0.60*	-0.75*	-0.46*
Somatic anxiety	-0.62*	-0.50*	-0.69*	-0.46*
Self confidence	0.95*	0.89*	0.97*	0.91*

\* N= 96 for each category, Significant at 0.05 level, tab  $r^{(94)} = 0.25$

**Table 4**  
**t-ratio done on Anxiety Variables between Basketball and Volleyball Players**

Variables	Groups Means		DM	$\sigma$ DM	t-ratio
	Basketball	Volleyball			
Cognitive anxiety	18.51	17.89	0.620	0.307	2.02*
Somatic anxiety	18.07	17.46	0.604	0.285	2.12*
Self confidence	22.36	21.55	0.807	0.364	2.22*

\*Significant at 0.05 level  $t_{0.05}(382) = 1.97$

**Table 5**  
**t-ratio done on Anxiety Variables between Male and Female Players**

Variables	Groups Means		DM	$\sigma$ DM	t-ratio
	Male	Female			
Cognitive anxiety	17.77	18.60	0.831	0.306	2.72*
Somatic anxiety	17.35	18.16	0.812	0.283	2.87*
Self confidence	22.78	21.17	1.608	0.357	4.51*

\*Significant at 0.05 level  $t_{0.05}(382) = 1.97$

**Table 6**  
**Analysis of Variance done on Cognitive Anxiety of Male and Female Basketball and Volleyball Players**

Source of Variance	Sum of Squares (SS)	df	Mean Squares (MS)	F-ratio
Between Groups	110.22	3	36.74	4.13*
Within Groups	3382.14	380	8.90	

\*Significant at 0.05 level  $F_{0.05}(3, 380) = 2.63$

**Table 7**  
**Post- Hoc Analysis done on Cognitive Anxiety of Different Groups**

Groups Means				Mean Difference	Critical Difference
Basketball Men	Basketball Women	Volleyball Men	Volleyball Women		
18.38	18.64			0.26	0.43
18.38		17.28		1.10*	0.43
18.38			18.49	0.11	0.43
	18.64	17.28		1.36*	0.43
	18.64		18.49	0.17	0.43
		17.28	18.49	1.21*	0.43

\* Significant at 0.05 level

**Table 8**  
**Analysis of Variances done on Somatic Anxiety of Male and Female**  
**Basketball and Volleyball Players**

Source of Variance	Sum of Squares (SS)	df	Mean Squares (MS)	F-ratio
Between Groups	119.68	3	39.89	
				5.26*
Within Groups	2883.23	380	7.59	

\*Significant at 0.05 level  $F_{0.05}(3, 380) = 2.63$

**Table 9**  
**Post- Hoc Analysis done on Somatic Anxiety of Different Groups**

Groups Means				Mean Difference	Critical Difference
BB Male	BB Female	VB Male	VB Female		
18.01	18.13			0.12	0.40
18.01		16.80		1.21*	0.40
18.01			18.13	0.12	0.40
	18.13	16.80		1.33*	0.40
	18.13		18.13	0.00	0.40
		16.80	18.13	1.33*	0.40

\* Significant at 0.05 level

**Table 10**  
**Analysis of Variance done on Self Confidence of Men and Women**  
**Basketball and Volleyball Players**

Source of Variance	Sum of Squares (SS)	df	Mean Squares (MS)	F-ratio
Between Groups	354.78	3	118.26	
				9.84*
Within Groups	4565.47	380	12.01	

\*Significant at 0.05 level  $F_{0.05}(3, 380) = 2.63$

**Table 11**  
**Post Hoc Analysis done on Self Confidence of Different Groups**

Groups Means				Mean Difference	Critical Difference
BB Male	BB Female	VB Male	VB Female		
22.76	21.96			0.80*	0.50
22.76		22.72		0.04	0.50
22.76			20.39	2.37*	0.50
	21.96	22.72		0.76*	0.50
	21.96		20.39	1.57*	0.50
		22.72	20.39	2.33*	0.50

\* Significant at 0.05 level

**Table 12**  
**Relationship of Selected Psychological Variables to Performance of Basketball and Volleyball Players of Both Sexes**

Variables Correlated with Performance	Coefficient of Correlation			
	BB Male	BB Female	VB Male	VB Female
Groups				
Cognitive anxiety	-0.61*	-0.60*	-0.75*	-0.46*
Somatic anxiety	-0.62*	-0.50*	-0.69*	-0.46*
Self confidence	0.95*	0.89*	0.97*	0.91*

\* N= 96, Significant at 0.05 level, tab  $r^{(94)} = 0.25$

The multi dimensional anxiety theory (Martens et al., 1982), predicts that cognitive A-state and state self-confidence would be stronger predictors of performance than would somatic-A state, because somatic anxiety manifestations are hypothesized to dissipate at the onset of competition. Various studies have established negative linear relationship between cognitive-A state anxiety and performance (Rodrigo et al.1990; Cox, 1986 Bird and Horn, 1990), and a positive linear relationship between state self-confidence and performance (Hardy, 1996). Contrary to expectations, and previously observed results, somatic anxiety displayed a negative linear relationship to performance, not the curvilinear relationship as found in previous

studies. Similar findings have been observed in the studies by Kirby and Liu (1999) and Martin and Hall (1997). The relationship of Somatic A-state to performance has been inconsistent (Krane, 1991), and somatic anxiety has been hypothesised to be influenced by task complexity and task duration. Moreover, Krane (1991) relates the catastrophe theory predictions as indirect support for such findings for somatic anxiety relationship to performance.

The basketball players were found to have more cognitive anxiety and somatic anxiety as well as self-confidence than volleyball players. This might have been because basketball provides greater chances for body contact, aggressive movements with opponents on the court. Besides that, the opponents can obstruct any scoring moves by committing fouls. This might be a significant factor which do counts much in basketball players to be more anxious than volleyball players. Another significant finding was that the basketball players are more self-confident than volleyball players. This might have been due to the fact that the former group was found to be more cohesive than the latter group, which invariably might have improved their self-confidence as the team members could significantly contribute for better performance through teamwork. Men players showed less cognitive anxiety and somatic anxiety than women players. Self-confidence was found to be more in men players than women players.

In the case of comparisons among the different sub groups men volleyball players were found to have less cognitive anxiety and somatic anxiety differing significantly from that of basketball men, basketball women and volleyball women. While in the case of self-confidence volleyball women was found to be less confident than basketball men, basketball women and volleyball men. The second less confident were the basketball women as they differed significantly than that of basketball men and volleyball men. At the same time, no significant difference was found between men basketball players and men volleyball players.

The hypothesis that there would be significant relationships between the anxiety variables, such as cognitive anxiety, somatic anxiety and self confidence, to performance among intervarsity basketball players and volleyball players of both sexes is accepted. The hypothesis that there would be significant differences in anxiety variables, aggression and group cohesion variables among the four sub groups, namely men basketball players, women basketball players, men volleyball players and women volleyball players, is accepted in the case among some sub groups and rejected in all other cases.

## **V. Results:**

### **1. Relationship of Anxiety to Performance**

- i) Cognitive anxiety and somatic anxiety showed significant negative correlations to performance in basketball and volleyball players of both sexes.
- ii) Self-confidence showed significant positive relationship to performance in basketball and volleyball players of both sexes.

### **2. Comparison of Anxiety among Basketball and Volleyball Players**

- i) Basketball players had significantly higher anxiety (cognitive anxiety, somatic anxiety and self-confidence) than volleyball players.

### **3. Comparison of Anxiety among Men and Women Players**

- i) Women players had significantly higher cognitive anxiety and somatic anxiety than men players.

### **4. Comparison of anxiety among different sub samples**

- i) Volleyball men players showed lower cognitive anxiety and somatic anxiety than volleyball women and basketball men players. Volleyball women players had lower self-confidence than volleyball men and basketball women players

## **Recommendations**

1. While designing the training program the coaches should give more emphasis on psychological variables such as anxiety, aggression and group cohesion for improvement in performance.
2. The study may be replicated on subjects of higher level, using different tools on other sports disciplines and age groups.

## **References: -**

- [1]. Cox, Richard.H., (1994) Sport Psychology, Concepts and Applications (3<sup>rd</sup> ed) USA; WCB Brown of Benchmark Publishers.
- [2]. Cratty, Bryant J. (1989). Psychology in Contemporary Sport. 3<sup>rd</sup> Ed. Englewood Cliffs: N.J. Prentice Hall Inc.,
- [3]. Hardy,L. (1990). A Catastrophe Model of Performance in Sport. In J.G.Jones & L. Hardy (Eds), New York: John Wiley & Sons Ltd.
- [4]. Hardy, L., Jones, G., and Gould, D. (1996). Understanding Psychological Preparation for Sport: Theory and Practice to Elite Performers. Wiley, Chichester.
- [5]. Martens, R., (1987). Coaches Guide to Sport Psychology. Human Kinetics, Champaign, Illinois.
- [6]. Martens, R., Vealey, R.S., & Burton, D. (1990). Competitive Anxiety in Sport. Champaign, IL: Human Kinetics Books.

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- [7]. Martens, R., Burton, D., Vealey, R.S., Bump, L.A. and Smith, D.E. (1990). Development and validation of the Competitive State Anxiety Inventory-2. In *Competitive Anxiety in Sport* (edited by R. Martens, R.S. Vealey and D. Burton), pp. 117–190. Champaign, IL: Human Kinetics.
- [8]. Spielberger, C.D. (1966). *Theory and Research on Anxiety*. In C.D. Spielberger (Ed.), *Anxiety and Behaviour*, 3-22, New York:Academic.
- [9]. Widmeyer & Birch (1984). As cited by J.M. Silva and R.S. Weinberg, *Psychological Foundations of Sports*. Illinois: Human Kinetics
- [10]. Bird, A.M., & Horn, A. (1990). Cognitive Anxiety and Mental Errors in Sport. *Journal of Sport Exercise Psychology*
- [11]. Gould, D. "The Relationship Between Anxiety And Athletic performance", *Completed Research*, 1246, p.140.
- [12]. Gould, D., Petrchlikoff, L., & Weinberg, R.S. (1984). Antecedents of, Temporal Changes in, and Relationships Between the CSAI-2 Sub-Components. *Journal of Sports Psychology*, 6, 289-304.
- [13]. Hardy, L. (1996). A Test of Catastrophe Models of Anxiety and Sports Performance against Multidimensional Anxiety Theory Models using the
- [14]. Kirby, R.J., & Liu, J. (1999). Pre-Competition Anxiety in Chinese Athletes. *Perceptual and Motor skills*, 88, 297-303.
- [15]. Krane, V. J. (1991). The Relationship Between Anxiety and Athletic Performance : A Test of The Multidimensional Anxiety and Catastrophe Theories, *Completed Research in Health, Physical Education, Recreation and Dance*, 33, p.140.
- [16]. Krane, V., Joyce, D., and Rafeld, J (1994). Competitive Anxiety, Situation Criticality and Softball Performance. *Sport Psychologist*, 8, 58-72.
- [17]. Krane, V, & Williams, J. (1994). Cognitive Anxiety, Somatic Anxiety and confidence in Track and field Athletics: The impact of Gender, Competitive Level and Task Characteristics. *International Journal of Sport Psychology*, 25, 203-217.
- [18]. Martin, K.A., and Hall, C.R. (1997). Situational and Interpersonal Moderators of Sports Competition State Anxiety. *Journal of Sport Behaviour*, 20, 435-446.
- [19]. Perry, J.D.,and Williams, J.M.(1998). Relationship of Intensity and Direction of Competitive Trait Anxiety to Skill and Gender in Tennis. *Sport Psychologist*,12,169- 179.
- [20]. Rodrigo Gustavo et. al.(1990). The Relation Between Anxiety and Performance in Soccer Players. *International Journal of Sports Psychology*, 21, 112-120.
- [21]. Spielberger, C.D.(1971). Trait-State anxiety and Motor Behavior. *Journal of Motor Behaviour*, 3, 265-279.

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