



# Anxiety and Enhancement of Performance: A Quantitative Investigation on Women Hockey Players

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**Abstract:** The present paper is an investigation to quantify the level of anxiety among the national level female hockey players of India. For that, a survey was conducted among 113 female hockey players in India. Sufficient attention was given to consider the position-wise distribution of them. The Competitive State Anxiety Test - II was used to collect the data on players' cognitive and somatic anxieties and self-confidence. Mean, standard deviation and analysis of variance were calculated in order to compare and describe results. The paper proves that the players were high in their cognitive anxiety, somatic anxiety and self-confidence as per the norms and no significant difference exist among the players according to their position.

**Key words:** cognitive anxiety, somatic anxiety, self confidence, CSAI – II, Women's Hockey.

## **Introduction:**

In hockey, where energetic dominance exhibits, the thrust of entire athletic preparation was usually centred around sharpening physical and other strategic skills where psychological skills are either ignored or given the least priority. As anxiety influences and determines players' performance in any given sport, it is vital to address them by imparting needed elite psychological skills. Even though any competitive sport has the potential of anxiety (Parnabasa & Mahamood, 2013), in those sports where players are continuously and consistently exposed to extreme on-sport competition, like hockey, anxiety usually brings down players' performance. Anxiety is the typical reaction to a condition where an athlete's abilities are being assessed (Smith & Smoll, 1990), or it is a lousy sensation created when the individual view the hectic on-the-spot circumstances as 'threatening' (Lundqvist, 2006). Hence, it is possible to believe that anxiety is the collective construction of both adverse thoughts (cognitive) and related physical instigation (somatic). Sports psychologists studied anxiety in different contexts like during training, during pre-competition, or during competition, but the ambiguity about the relationship between anxiety and performance is still not resolved. Addressing such an issue and understanding more about players' anxiety will help improve their performance later.

## Background of the Study:

Even though the reaction towards anxiety among players varies according to individuals (Raglin & Hanin, 2000), there were theoretical investigations based on general quantitative data to connect anxiety and sports performance. The earlier attempts to study anxiety developed inventories along with like Manifest Anxiety Scale (Taylor, 1953), Personality and Ability Testing Anxiety Scale (Cattell, 1957), State Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, 1970), but they were the general tools used in sports research. Hence sport-specific anxiety scales were developed since the seventies. Sport Competition Anxiety Test (Martens, 1971), Competitive State Anxiety Inventory - I (Martens, Burton, Rivkin, & Simon, 1980), Competitive State Anxiety Inventory-II (Martens, Burton, Vealey, L.Bump, & Smith, 1990), Mental Readiness Scale (Krane, 1994), and Anxiety Rating Scale (Cox & Russell, 1998) were some among them. Multidimensional Theory of Anxiety was developed from Competitive State Anxiety Inventory-II as it distinguished cognitive anxiety from somatic anxiety.

Based on researches in clinical psychology, anxiety is divided into cognitive and somatic anxieties (Davidson & Schwartz, 1976; Liebert & Morris, 1967). Somatic anxiety is about the individuals' perceptions of physiological and affective elements like tension, nervousness etc. (Morris, Davis, & Hutchings, 1981), whereas cognitive anxiety is about the "conscious awareness of unpleasant feelings about oneself" (Davidson & Schwartz, 1976). As unfavourable thoughts and concerns mount up, anxiety adversely affects concentration and results in poor performance (Ampofo-Boateng, 2009). Cognitive anxiety is assumed to be inversely as well as linearly related to performance. In contrast, increases in somatic anxiety increase performance but only up to an optimum level and any further addition in the first variable will have a casualty on the latter. Such investigations helped to develop tools for addressing anxiety among players, and in a competitive world where sports is treated as a status symbol for nations, equipped players performed better than others.

## Statement of the Problem:

Any position in hockey demands players to be vigilant as it is a game of unending movements; hence both mind and body should perform together smoothly. Neither cognitive nor somatic anxieties get a chance to affect the player because they are mutually related. Variations in one, in either direction, will positively affect the other and vice versa. So that, as the performance of the player is determined by anxiety to a great extent, understanding more about anxiety and self-confidence of a player is an important step needed for improving their athletic skills. With the help of Competitive State Anxiety Test-II, the researcher attempted to calculate the levels of anxiety and self-confidence among India's female hockey players in the present paper.

## Objective, Research Questions and Hypothesis:

This paper aims to find out the differences, if any, on the multidimensional components of CSAI-II for the three groups of hockey players, namely the forwards, the mid-fielders and the defenders. The research questions are,

1. To determine the differences in the levels of cognitive and somatic anxieties among three categories of hockey players?
2. To find out the level of self-confidence among three categories of hockey players?

The present study hypothesized that (i) there will be differences in the cognitive worry and somatic anxiety of the players on a positional basis (ii) irrespective of the positions, self-confidence will remain the same.

## Literature Review:

Even though large-scale research has been conducted since the 1970s, anxiety was observed among players for a long time. Instead of the word 'anxiety', they used terms like 'ball shyness', 'crowd shyness', and 'fear responses' (Griffith, 1934). Earlier studies assessed anxiety to compare diverse athletes' personality profiles for identifying elite players, whereas intervention studies were rare (Lundqvist, 2006). There were studies about the formation, forms of activation, and impact of anxiety on the player (Alexander, 2009; Balague, 2005; Corman, 2003). The differences and distinguishing factors between cognitive and somatic anxieties were elaborated by many since Martens et al. explained it first in 1990 (Murphy, 2005; Craft, Magyar, Becker, & Feltz, 2003; Lane, Sewell, Terry, Bartram, & Nesti, 1999; Weinberg & Gould, 1998).

Studies show that anxiety generation is higher among players in individual sports rather than team sports (Martens, Burton, Vealey, Bump, & Smith, 1990). Between age and cognitive anxiety, an inverse relationship is existing (Modrono & Guillen, 2010). Female athletes show more anxiety than males (Yang, Peek-Asa, Corlette, Cheng, Foster, & Albright, 2007). The adverse impacts of anxiety among players were studied in length by experts. Similarly, the role of anxiety in performance was also studied (Raglin & Hanin, 2000). The impact of psychological skills on anxiety management was also studied in length (Neil, Mellalieu, & Hanton, 2004). Mentors and trainers' role in addressing players' anxiety is highly significant (Eys, Hardy, Carron, & Beauchamp, 2003; Baker, Cote, & Hawes, 2000). It is important to note that the esteemed position of CSAI-II was mentioned in the literature in a detailed manner (Raudsepp & Kais, 2008; Jones & Uphill, 2004; Mellalieu, Hanton, & Jones, 2003; Woodman & Hardy, 2003). It is suggested that at least 300 respondents are minimum required for CSAI-II analysis (Tabachnick & Fidell, 1996).

## Research Methodology:

The subjects for the present study were 113 female hockey players from All India interuniversity hockey tournaments who qualified to the quarter-finals, i.e. first eight teams. The age of players ranged from 18 to 24, with a mean age of 20 years. The players were divided into three categories according to their position in the game like forwards (N=52), which includes right in, left out, left in, left out and centre forward; mid-fielders (N=27), which includes left half, centre half and right half; and defenders (N=34) which includes left-full back, right-full back and goalkeeper.

The Competitive State Anxiety Inventory-II was used to collect data from the players one day before their competition. CSAI-2 has no total scores but three separate subscale totals of cognitive anxiety, somatic anxiety and self-confidence. The scores of each subscale range from a low of nine to a high of thirty-six. The higher the score, the greater the cognitive or somatic anxiety and self-confidence. No total score for the inventory is computed. As a commonly used inventory since the 1990s, this test's validity and reliability were proved already. The collected data were analyzed statistically, keeping the objectives. Mean, standard deviation and analysis of variance were calculated in order to compare and describe results.

## Analysis and Findings:

The researcher calculated the mean and standard deviation scores of CSAI-2 of 113 female hockey players of India to describe the levels of cognitive and somatic anxieties and self-confidence. It is presented in the following table.

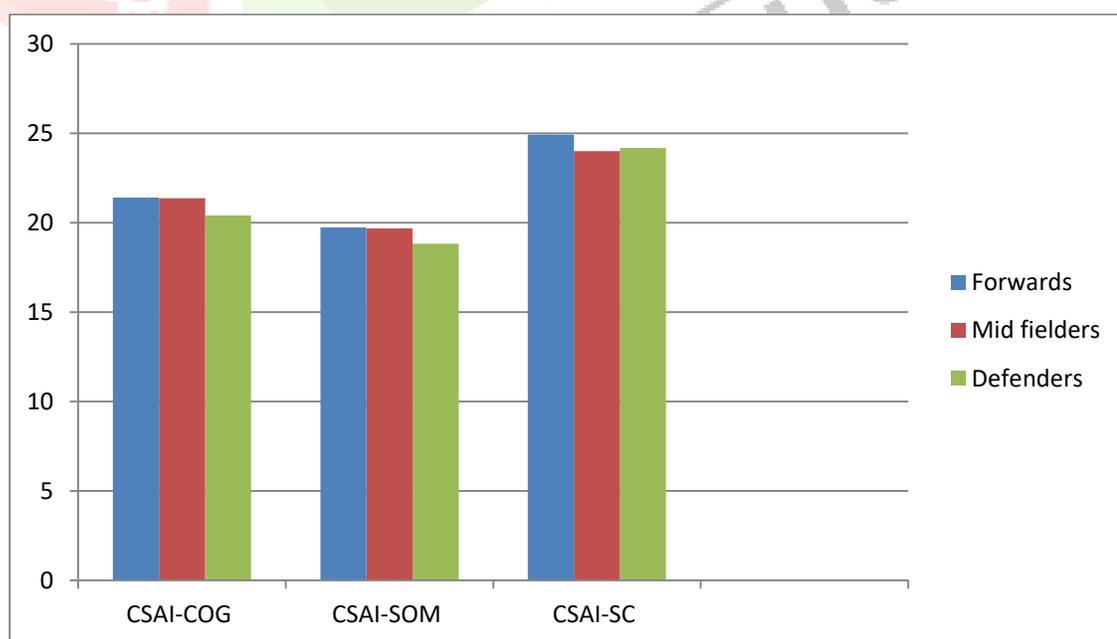
**Table 1: Position wise Mean and Standard Deviation of CSAI-2 of Female Hockey Players**

Sample	N	CSAI-COG		CSAI-SOM		CSAI-SC	
		Mean	SD	Mean	SD	Mean	SD
Forwards	52	21.40	6.29	19.73	3.61	24.92	5.35
Midfielders	27	21.37	5.96	19.67	4.07	24.00	6.18
Defenders	34	20.40	5.35	18.82	4.46	24.18	5.17

Source: calculated figures

The above table shows that the mean and standard deviation of cognitive anxiety for forwards are 21.40 and 6.29, for midfielders are 21.37 and 5.96 and for defenders are 20.4 and 5.25 respectively, For somatic anxiety, the mean and standard deviation for forwards are 19.73 and 3.61, for midfielders are 19.67 and 4.07 and for defenders are 18.82 and 4.46 respectively, and for self-confidence, the mean and standard deviation for forwards are 24.92 and 5.35, for midfielders are 24.0 and 6.18 and for defenders are 24.18 and 5.17 respectively. The scores on each scale range from 9 to 36, and the higher the score, the greater the cognitive, somatic anxiety and self-confidence. Marten et al. also set the norms for the college-level female athlete on CSAI-COG to be  $18.40 \pm 5.99$ ; CSAI-SOM is  $16.85 \pm 4.94$ , and CSAI-SC is  $24.67 \pm 5.90$ . The present study's data reveals that the players were high in their cognitive anxiety, somatic anxiety, and self-confidence as per the norms. The following diagram represents the above details.

**Diagram 1: Bar Diagram of position-wise Mean Scores of National Level Female Hockey Players**



Source: Calculated from collected data

Findings of cognitive worry, somatic tension and self-confidence for forwards, midfielders and defenders were subjected to analysis of variance and are given below.

**Table 2. Analysis of Variance among Female Forward, Midfielder and Defender Hockey Players on CSAI-2**

Variables	Groups	Variance	SS	Df	MS	'F'
Cognitive anxiety	Forwards	Within sets	3984.7999	110	36.22	0.27
	Midfielders					
	Defenders	Between sets	19.6007	2	9.85	
Somatic anxiety	Forwards	Within sets	1801.1727	110	16.37	0.38
	Midfielders					
	Defenders	Between sets	10.71	2	5.36	
Self confidence	Forwards	Within sets	3630.9128	110	35.75	0.27
	Midfielders					
	Defenders	Between sets	19.35	2	9.68	
'F' needed for significance is 3.09 at 0.05 level.						

Source: calculated figures

The analysis of variance shows that there is no significant difference exist among forwards, midfielders and defenders as the calculated value of 0.27, 0.38 and 0.27 are lesser than the tabulated value of 3.09 with (2.110) degree of freedom at 0.05 level. So the hypothesis stated here that there would be a significant difference exists in the three categories of hockey players on cognitive worry, somatic tension, and self-confidence is rejected. However, when we look back to the mean scores, defenders are less score than (20.4, 18.82) forwards (21.40, 19.73) and midfielders (21.37, 19.67) on cognitive worry and somatic tension, respectively.

### Discussion of Hypothesis:

Studies on player's pre-competition anxiety can establish the relationship between players and their performance during competition. In this paper, the researcher took the first eight teams which were qualified for the quarter-finals. The analysis shows that almost all the players showed average cognitive and somatic anxiety levels. This may be their optimum and may positively convert to their performance through physiological, behavioural, and cognitive responses. Such a relationship is supported by the Conceptual Model of Athletic Performance Anxiety (Smith & Smoll, 1990). Even though optimum is a subjective entity according to individuals, in team sports, collectivity may address individual differences in anxiety and other variables. As a team sport, in hockey, players' may resolve their individual limitations by transmitting concerns in a collective space where team members are together competing. The collective spirit may dilute their extreme anxiety levels in the field. Hence the hypothesis stated that there would be a difference in the cognitive worry and somatic anxiety of the players on positional base is rejected. Similarly, the hypothesis stated that irrespective of the positions, self-confidence will remain the same is also rejected. The limitation of the study is that the data is not analyzed with the level of performance of the players.

## Conclusion:

In any competitive sport, like hockey, the players are expected to perform under pressure. According to the degree of competition, the player's perception about the particular event and rival team, the player's preparedness and the geographic particularities of the location and others, the external pressure will affect or influence the player. This will get translated into anxiety, in varying degree, within the player. As anxiety will exist in every sport forever, it is crucial to continue research in diverse aspects of and related to anxiety. Developing a mechanism to accurately predict the level of and impact of anxiety in each player will create a dynamic result in the players' athletic performance.

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