



## The effect of cognitive anxiety on sport performance among track and field athletes

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### Abstract

Sports psychologists have long believed that high levels of cognitive anxiety during competition are harmful, worsening performance and even leading to dropout. The instrument used for the study comprised of a 27-item Competitive State Anxiety Inventory-2 and The Psychological Performance Inventory. The sample consisted of 113 Track and Field players, including the national athletes (N=37), state athletes (N=38), district athletes (N=25) and university athletes (N= 13). The results showed that elite or national Track and Field athletes exhibited lower levels of cognitive anxiety,  $F(3, 113) = 15.001, p < .01$ . The result also showed that the exists of negative correlation between cognitive anxiety and sport performance among Track and Field players, ( $r = -0.67; p < 0.05$ ). Sport psychologists, sport counselors and coaches should use the present findings to recommend coping strategies to university and district level athletes that are appropriate for dealing with their athletes' cognitive anxiety.

**Keywords:** cognitive, sport performance, skill of players

### Introduction

Anxiety, as a negative emotional, affect perceptions in sport competitions, where a large majority of athletes consider anxiety to be debilitating towards performance, which may result in decreases in performance (Weinberg & Gould, 2011; Raglin & Hanin, 2000) [8]. Many researches showed that winning in a competition depend on how an athlete can control their anxiety level (Humara, 2001) [3]. Anxiety consists of two subcomponents: cognitive and somatic anxiety, which influence performance (Jarvis, 2002; Martens, Vealey & Burton, 1990) [4, 7]. The cognitive is the mental component, which characterized by negative expectations about success or self-evaluation, negative self-talk, worries about performance, images of failure, inability to concentrate, and disrupted attention--(Jarvis 2002; Martens, Vealey & Burton, 1990) [4, 7]. Contradictory, the somatic is the physiological element, which related to autonomic arousals, negative symptoms such as feelings of nervous, high blood pressure, dry throat, muscular tension, rapid heart rate, sweaty palms and butterflies in your stomach (Jarvis, 2002; Jones, 2000; Martens, Vealey & Burton, 1990) [4, 7, 5, 7]. Researchers have reported that over 50 of consultations among athletes at an Olympic festival were related to stress or anxiety problems (Murphy, 1988) [7]. According to Hann (2000) high levels of anxiety during competition are harmful, worsening performance and even leading to dropout. Therefore, it's very important to know the level of anxiety especially the cognitive anxiety in order to take all necessary preparation to reduce it. Catastrophe Model well described the relationship between cognitive anxiety and sport performance (Cox, 2012; Weinberg & Gould, 2011; Ampofo-Boateng, 2009) [1, 8, 1]. According to this theory, an achievement of best sport performance results can obtain only when there is low level of cognitive anxiety. Once an athlete experience high level of cognitive anxiety as in a situation where an athlete is worrying and it combines with increase of arousal beyond and optimal level, there will be a quick or catastrophic decrease in

performance. However, since there is lack research, there has been very poor research support for the catastrophe model (Ampofo-Boateng, 2009) [1]. Recent investigation found that male and female athletes suffering stresses resulted pressure to win, excessive anxiety, frustration conflict, irritation and fear, which significantly affected their mental or emotional health (Humphrey, Yow & Bow 2000) [3]. Heavy playing schedules, competition for team places, the media and fans as well as the pressure to win trophies all play a part in players developing high stress and anxiety levels (Heather, 2010) [2], especially the level of cognitive anxiety. However, since lack of research on cognitive anxiety and its effect on performances, sport psychologists still failed to determine the relationship among those variables. Moreover, most of the previous research, focused on elite athletes, while ignoring less successful athletes. This was confirmed by Krane (1995) [6] that research on competitive anxiety mainly focused on elite athletes. The extant literature also shows that there is a limited research comparing on cognitive anxiety among Track and Field athletes of state, district and university level.

The main purpose of this study was to examine the levels of cognitive anxiety among Track and Field players of different skill. The present study aim to determine the level of cognitive anxiety and its effect on performances between Track and Field players of national, state, district and university level. In other words, this research sought to correlate the relationship between somatic anxiety and performance.

### Methods

The participants of this study were recruited from different universities of Haryana. The instrument used for the study comprised of a 27-item Competitive State Anxiety Inventory-2 (CSAI-2) and 42-item The Psychological Performance Inventory, which had been distributed during sport between universities. The Psychological Performance Inventory asses seven factor of performance: Self

Confident, Negative Energy, Attention Control, Visualization and Imagery, Motivation, Positive Energy Control and Attitude Control. The sample consisted of 113 Track and Field Athletes, including the national athletes (N=37), state athletes (N=38), district athletes (N=25) and university athletes (N= 13).

**Result**

**Respondents' Profile**

The respondents' profile described their ranking, ethnic and age. Table 1 shows the overall results of the respondents' profile for 113 Track and Field Athletes. The overall mean age for these respondents was 21.45 years old. The age of male respondents varied from 18 to 27 years, where the mean age was 22.31 years old. The age of female players ranged from the minimum of 18 to the maximum of 26 years old. The mean age for female respondents was 21.18 years old. The variable "rank which is gathered through this study is categorized into four levels namely, national, state, district and university. The result showed that 37 respondents had participated at national, whilst 38 respondents participate at state, 25 had participated at district and 13 respondents participated at the university level.

**Table 1:** Respondent's profile) N=113

Variables	Frequency	Percentage	mean	sd
Athletes according to rank				
National	37	32.74		
State	38	33.63		
District	25	22.12		
University	13	11.51		
Programme				
Diploma	25	22.12		
Degree	88	77.88		
Age				
Male			22.31	1.29
Female			21.18	1.70
Overall			21.45	1.55

**Cronbach Reliability Coefficients**

In this study, Cronbach alpha coefficients were found relatively high, ranging from .81 to .83 (Table 2).

**Table 2:** (Cronbach's reliability coefficient)

Questionnaire	Cronbach's Alpha(N=113)
Cognitive Anxiety	.8124
Sports Performance	.8331

**Level of Cognitive Anxiety**

Table 3 shows the mean scores for the cognitive anxiety among Track and Field athletes of different skills,  $F(3, 113) = 15.001, p < .01$ . Apparently, significant differences emerged for the athletes having different skills at competition. Overall, the mean score obtained for the national athletes was lower than those in other categories.

**Table 3:** Level of Cognitive Anxiety among Track and Field Players

Skill of Athletes	Mean	F-Value	P-Value
National	11.4713	15.001**	0.000
State	13.3321		
District	16.4329		
university	20.2101		

\*\* p=.01

Post-Hoc Tukey Test (Table 4) showed that the level of cognitive anxiety of university were higher than district ( $p=.05$ ), state ( $p=.05$ ) and national ( $p=.05$ ) level athletes. Furthermore, the level of cognitive anxiety of district were higher than state ( $p=.05$ ) and national ( $p=.05$ ), but lower than university level athletes ( $p=.05$ ). In addition, the level of cognitive anxiety of state were higher than national ( $p=0.05$ ), but lower than district ( $p=.05$ ) and university ( $p=.05$ ) level athletes. Lastly, the level of cognitive anxiety of national were lower than state ( $p=.05$ ), district ( $p=.05$ ) and university level athletes ( $p=.05$ ).

**Table 4:** Post Hoc Tukey Test: Level of Cognitive Anxiety among Track and Field Players.

Skill of Athletes	National	State	District	University	N
National		*(1.2237)	*(1.7103)	*(2.4762)	37
State					38
District					25
University					13

\*p=.05

**Level of Sport Performance**

Table 5 shows the mean scores for the sport performance among the Track and Field athletes of different skills,  $F(3, 113) = 17.491, p < .01$ . Apparently, significant differences emerged for the athletes having different skills at competition. Overall, the mean score obtained for the national athletes was higher than those in other categories.

**Table 5:** Level of Sport Performance among Track and Field Players.

Skill of athletes	Mean	F -Value	P-Value
National	24.7798	17.491**	0.000
State	21.3701		
District	18.4231		
University	16.9033		

\*\* p=.01

Post-Hoc Tukey Test (Table 6) showed that the level of sport performance of national were higher than district ( $p=.05$ ), state ( $p=.05$ ) and university ( $p=.05$ ) level athletes. Furthermore, the level of sport performance state Track and Field players were higher than district ( $p=.05$ ) and university ( $p=.05$ ), but lower than national level athletes ( $p=.05$ ). In addition, the level of sport performance of district were higher than university ( $p=0.05$ ), but lower than national ( $p=.05$ ) and state ( $p=.05$ ) level athletes. Lastly, the level of sport performance of university were lower than state ( $p=.05$ ), district ( $p=.05$ ) and national level athletes ( $p=.05$ ).

**Table 6:** Post Hoc Tukey Test: Level of Sport Performance among Track and Field Players

Skill of athletes	National	State	District	University	N
National		*(1.3700)	*(1.7821)	*(1.9091)	37
State					38
District					25
University					13

\*p=.05

**Correlation of Cognitive Anxiety and Sport Performance**  
The correlation coefficient of -0.67 was noted between the level of cognitive anxiety and sport performance in the evaluation of 113 Track and Field players, which is

significant ( $P < .05$ ). In other words, the negative relationship existing between these variables is statistically significant (Table 7). Negative correlation indicates that either variables increase or decrease contradictory.

**Table 7:** The Relationship between the Level of Cognitive Anxiety and Sport Performance

Subject	Sports Performance
The level of Cognitive Anxiety	-0.67**(0.000)

**Discussion**

**Level of cognitive anxiety**

The result showed that Track and Field players of university level exhibited higher cognitive anxiety level than those in state and district categories, whereas national athletes showed the lowest level of cognitive anxiety. In Malaysia, no research involving the four categories of skills has been conducted so far, therefore this research has failed to compare these with the findings of previous research. However, according to Drive theory, the present of audience for low skilled athletes, during the sport competition could increase their cognitive anxiety. Cognitive anxiety is the extent to which an athlete worries or had negative thoughts, and the negative thoughts may include fear of failure, loss of self-esteem and self-confidence. It could lead to the poor performance of an athlete in competition. It may start before a competition in the form of pre-competitive anxiety that might affect performance throughout the competition. Elite athletes like national and state level, who have learned anxiety management skills, often respond to a greater degree to cognitive anxiety but return to their resting rate sooner than those athletes, who are not trained in anxiety management like district and university level. At the interview session with the football athletes it was found that most of the national athletes using coping strategies like positive self-talk, thought stopping, relaxation techniques and imagery to reduce their cognitive anxiety level. In the other hand, most of the low skill athletes like district and university level unaware and not practicing of these techniques. Therefore, the level of cognitive anxiety of district and university level athletes was very high.

**Level of Sport Performance**

The result showed that national Track and Field athletes obtain the highest sport performance compared state, district and university skill athletes. The main reason national athletes perform better than other skill athletes because most of them use coping strategies to reduce their cognitive anxiety. High level of cognitive anxiety is the barrier for high performances in sport. The result showed that district and university skill Track and Field athletes experienced highest level of cognitive anxiety, therefore their sport performances has been drop. Many research proved that high level of cognitive anxiety has been the barrier to deteriorate performance in sport.

**Level of Cognitive Anxiety and Sport Performance**

The result revealed there exists of negative correlation between cognitive anxiety and sport performance. It means the higher the level of cognitive anxiety experience by Track and Field athletes, the lower sport performance level. The relationship between cognitive anxiety and performance was explained best in Multidimensional Anxiety Theory. This theory explains that cognitive anxiety effect

performance. The relationship between cognitive anxiety, where an athlete experiences worries, negative thoughts and fear of failure, will affect the performance (Ampofo-Boateng, 2009)<sup>[1]</sup>.

**Conclusion**

The findings of the research determined that there are differences in the level of cognitive anxiety, showed by different categories of Track and Field athletes. These differences were related to their level of skill. The results showed that elite or national Track and Field athletes exhibited lower levels of cognitive anxiety than non-elite athletes. Low cognitive anxiety levels are very important in high sport performance. This study also showed that exist of negative correlation between cognitive anxiety and performance. Sport psychologists, sport counselors and coaches should use the present findings to recommend coping strategies to university and district level athletes that are appropriate for dealing with their athletes’ cognitive anxiety. Future research should identify the most prevalent sources of cognitive anxiety among different skill of Track and Field athletes. Initial evidence suggest among the sources of anxiety are fear of injury, presence of audience, past unpleasant experiences, fear of lose, negative evaluation, knowledge of the opposition team, uncertainty, playing at the opposition’s place, high hope, and perceived sport events as very important. Seeking sources of cognitive anxiety should be a great value to reduce the level of anxiety. Furthermore, types of coping strategies can be used to reduce the level of cognitive anxiety among athletes much depend on the sources of anxiety.

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