

# Psychological Characteristics and Performance of National Level Gymnasts

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## **Abstract**

*To achieve the purpose of the present study, eighty (N=45) national level male artistic gymnast from four different zones of India namely who have participated in gymnastics national championships were selected as subjects. The age was considered according to International Gymnastics Federation (FIG), and fixed as 16&above. The mental toughness was measured using Mental Toughness Questionnaire (MTQ) developed by Loehr et.al, (1992) and the Sports Competitive Anxiety was assessed using SCAT questionnaire developed by Martens (1977). The gymnastics performance was assessed through subjective rating by the experts adopting the FIG norms for all the six events namely floor exercise (10), Table Vault (10), Pommel horse (10), Horizontal bar (10), Parallel Bar (10) and Roman Ring (10). The sum of all the six artistic gymnastics events was considered as the performance score. To determine the relationship of mental toughness and competitive anxiety with gymnastics performance the Pearson's correlation coefficient was used variables and the level of significance was tested at 0.05 level and the calculations were performed using SPSS version 20. It was concluded that the the mental toughness and gymnastics performance has strong positive correlation. While the competitive anxiety and gymnastics performances were negatively correlated.*

**Keywords: Mental Toughness, Competitive Anxiety and Gymnasts.**

## **Introduction**

Gymnastics and other sports are about much more than physical skills and talent. Gymnasts require focus, concentration, endurance, patience, and the ability to bounce back from setbacks. Those are all mental toughness skills and to become a champion the gymnasts need to consistently work on their mental side abilities.

The concept of mental toughness has recently attracted much attention from sport psychology researchers attempting to understand on individual psychological factors and their influence on performance in sport. The emerging knowledge base, to attain victorious sport performance mental toughness is considered to be multidimensional (comprising cognitive, affective, and behavioural components) and an important psychological construct. The psychological factors involved in athletic performance have long been of interest to athletes,

coaches, sport psychologists, sports scientists and all other concerned with sports, they have to indentify and determine psychological attributes which affects the performance. Each psychological variable has its unique contribution towards sports performance but some of the variables are preferably and specifically suitable for few games. As a sports person mental toughness along with flow state is very important pre-requisite for achieving success in any sport. Gucciardi et al. (2008)<sup>[8]</sup> found evidence that mental toughness can explain how physically talented athletes become great athletes. Bull et al. (2005)<sup>[2]</sup> observed on the basis of research that there is also the potential for difference in mental toughness for every individual, sport and situation, from one sports to the other. It is further illustrated that mental aspects affect the athlete's performance in competition. It is only when the mind gets tense then the body gets tense. In competition, some athletes cannot seem to control their emotions, as demonstrated by increased emotionality and for that increased heart rate and respiration rate (physiological arousal). Physiological arousal often negatively impacts on performance (Loehr et al., 1992).<sup>[11]</sup> The mind then is the source of our success or failure. A review of literature pointed to mental toughness as being one of the more important determinants of peak athletic performance. According to Clough et al. (2002)<sup>[3]</sup> mentally tough individual has a high sense of self-belief and an unshakeable faith that they control their own destiny.

The mentally tough individuals are competitive in many situations and have lower anxiety levels than others. Furthermore, they remain relatively unaffected by competition or adversity. Elite athletes and coaches have argued that successful athletes are not always the most physically talented, but rather the most mentally tough. It is widely acknowledged that the importance of mental toughness for achieving performance excellence in sport settings. However, mentally tough athletes approach competition with a positive attitude and controlled emotions. More recent investigations have also adopted a context specific approach in which mental toughness is examined within an individual sport to provide a context-rich understanding of this phenomenon. Recent reviews of the literature have attempted to assess the current state of knowledge and issues surrounding mental toughness to encourage the pursuit of quality research. Perhaps the most common finding from the available empirical literature is that mental toughness appears multifaceted and made up of multiple key components broadly the intensity of perceived emotion, attitudes, and behaviours. This present study was conducted to determine the significant difference between open and closed skill athletes with regards to Mental Toughness.

Open skilled sports are sports which include execution of skills which are determined by the constant change of the environment. Skills are adapted to the instability of the environment which are predominantly perceptual and paced externally (Knapp, 2002).<sup>[9]</sup>

Anxiety is an emotion that arises because of the interpretation and assessment of the situation at hand (Cox, 2007).<sup>[5]</sup> In the context of sports, anxiety or negative emotions usually arise in response to competitive pressures. The game can indeed cause excessive emotional pressure so that the concentration of athletes to face the opponent will be reduced. This means that the performance of the athlete decreases, accuracy will also decrease, thus affect the performance of the athlete. Anxiety associated with a competition or competitive situation is commonly referred to as competitive anxiety (Mellalieu, Hanton, & Fletcher, 2006).<sup>[13]</sup>

Competitive anxiety consists of cognitive and somatic subcomponents. The cognitive component of anxiety arises due to fear of negative evaluations of the social environment, fear of failure, and lack of self-esteem (Martens, Vealey, & Burton, 1990).<sup>[12]</sup> The somatic component of anxiety is a physiological response from these perceptions such as increased heart rate, respiration, and muscle tension. Physical symptoms arise due to the influence of psychological symptoms, which then cause anxiety in the athletes before competing in a game and thus prevent him to show his best performance (Lavallee, Kremer, Moran, & Williams, 2004).<sup>[10]</sup>

Sports Competitive anxiety is something that nearly every gymnasts faces some time in his or her career. When the demands of training or competition exceed an gymnasts perceived ability, their stress level elevates. Anxiety is the inevitable outcome.

The investigator felt that no research was found to be conducted with regard to mental toughness and sports competition anxiety among Indian gymnasts performance, therefore the investigator made an attempt to study about the relationship of mental toughness and competitive anxiety with gymnastics performance.

### **Statement of the Problem:**

The purpose of the study was to find out the relationship of psychological characteristics and gymnastics performance of national level gymnasts.

**Methods:**

To achieve the purpose of the present study, eighty (N=45) national level male artistic gymnast from four different zones of India namely who have participated in gymnastics national championships were selected as subjects. The age was considered according to International Gymnastics Federation (FIG), and fixed as 16&above. The mental toughness was measured using Mental Toughness Questionnaire (MTQ) developed by Loehr et.al, (1992) <sup>[11]</sup> and the Sports Competitive Anxiety was assessed using SCAT questionnaire developed by Martens (1977). The gymnastics performance was assessed through subjective rating by the experts adopting the FIG norms for all the six events namely floor exercise (10), Table Vault (10), Pommel horse (10), Horizontal bar (10), Parallel Bar (10) and Roman Ring (10). The sum of all the six artistic gymnastics events was considered as the performance score.

**Analysis of Data:**

The data collected from the gymnasts on selected Criterion variables were statistically examined by using Pearson's correlation coefficient to determine the association of mental toughness and Competitive Anxiety with gymnastics performance of national level gymnasts. The level of significance was tested at 0.05 level and the calculations were performed using SPSS version 20.

**Table I**

**Showing the Descriptive Statistics of Psychological Characteristics and Performance of National Level Gymnasts**

	Mean	Std. Deviation	N
<b>Mental Toughness</b>	41.00	5.510	45
<b>Competitive Anxiety</b>	19.80	3.138	45
<b>Performance</b>	46.900	5.4111	45

Table I shows that the mean and standard deviation scores of mental toughness, competitive anxiety and performance of national level gymnasts are  $41.00 \pm 5.51$ ,  $19.80 \pm 3.13$ , and  $46.90 \pm 5.41$  respectively.

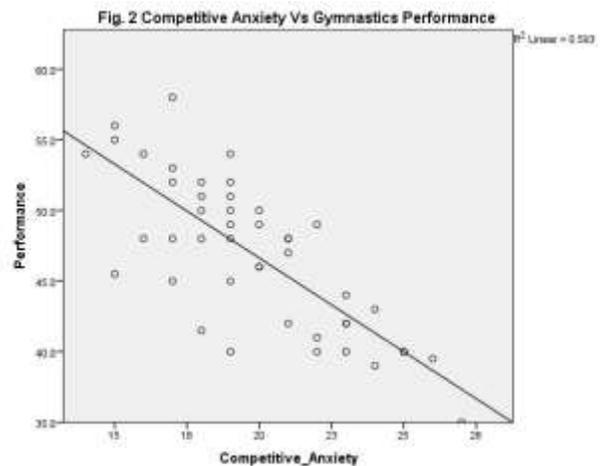
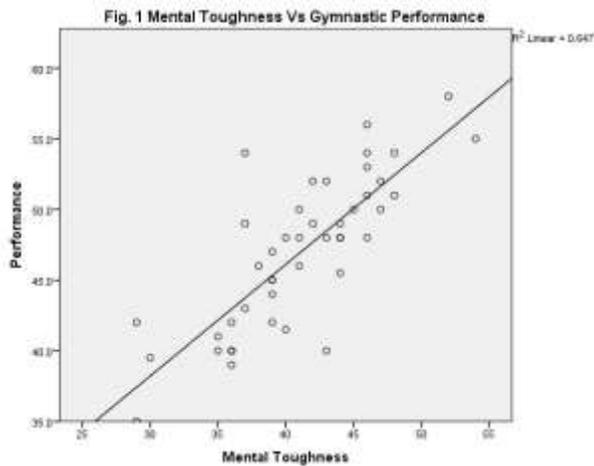
**Table II**

**Computation of Pearson’s Correlation between Psychological Characteristics and Performance of National Level Gymnasts**

		Mental Toughness	SCAT	Performance
Mental Toughness	Pearson Correlation	1	-.694**	.805**
	Sig. (2-tailed)		.000	.000
	N	45	45	45
Competitive Anxiety	Pearson Correlation	-.694**	1	-.770**
	Sig. (2-tailed)	.000		.000
	N	45	45	45
Performance	Pearson Correlation	.805**	-.770**	1
	Sig. (2-tailed)	.000	.000	
	N	45	45	45

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).



**Results:**

The results presented in table II showed that the Pearson’s correlation between the psychological characteristics and gymnastics performance of national level gymnasts such as mental toughness and performance is ( $r = .805, p < .05 < .01$ ), and competitive anxiety and performance is ( $r = -.770, p < .05 < .01$ ), thus the results revealed that the psychological characteristics such as mental

toughness was found to have positive correlation with gymnastics performance while competitive anxiety with gymnastics performance was found to be negatively correlated and the p-value was found to be lesser than .01 level of significance ( $p < .01$ ).

### **Discussion on findings:**

The aim of this study was to examine the relationship between psychological characteristics and gymnastics performance of national level gymnasts, gymnast from all the four regions were the participants of this study. No research was found, which could directly concern studying the relation between psychological characteristics and gymnastics performance, the present results is being studied with comparable and close researches. From the results of this research it is clear that psychological characteristics namely mental toughness and competitive anxiety have significant relationship with gymnastics performance to a greater extent. The obtained r value between mental toughness and performance is .805 and it reveals a strong correlation exists between the variables. The obtained r value between competitive anxiety and gymnastics performance was -.770 and indicates that a strong negative correlation was found between the variables. In line with the results of this study, that the relationship between mental toughness and performance has consistently shown that better performance of both cognitive and motor skills are associated with higher levels of mental toughness (Clough et al., 2002; Crust & Clough, 2005) <sup>[4]</sup> and those elite athletes have higher mental toughness than lower level performers (Golby et al., 2003; Thomas, Schlinker, & Over, 1996). <sup>[6,16]</sup> Further, few other previous studies have highlighted similar trends; Rathore, Singh, & Dubey, (2009); <sup>[15]</sup> wherein they found that the team game players were more mentally tough as compared to individual game players on the variable mental toughness. Mohammad, Omar, & Abu, (2009); <sup>[14]</sup> found that Malaysian professional football players are at excellent level in mental toughness. Gould, Hodge, Peterson, & Petlichkoff, (1987) <sup>[7]</sup> expressed that mental toughness determine the success of an athlete and seen as an important element help them to become a champion. According to the study conducted by Bertuol (2006) <sup>[1]</sup> indicate higher levels of Competitive Anxiety in athletes who practice individual sports compared to those who practice team sports.

**Conclusions:**

The primary objective of this study was to know the relationship between psychological characteristics and gymnastic performance of national level gymnasts. The results indicated that the mental toughness and gymnastics performance has strong positive correlation. While the competitive anxiety and gymnastics performances were negatively correlated. Therefore, it was concluded that the national level gymnasts of India are at excellent level of mental toughness and good at managing competitive anxiety.

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