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Anxiety among inter-university athletes

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Abstract
The psychological factors significantly impact the athletic performance of sportspersons, with anxiety emerging as a crucial variable influencing the level of achievement. Anxiety plays a pivotal role in determining an athlete's performance potential. The current study aimed to explore this relationship among national-level track and field athletes. The research was conducted with a sample of 286 athletes who participated in the 63rd Inter-University Athletic Championship held at Gulbarga University, Gulbarga, from January 16th to 21st, 2003. The participants included 88 male sprinters, 32 jumpers, and 30 throwers, alongside 82 female sprinters, 24 jumpers, and 30 throwers. The subjects ranged in age from 18 to 25 years. To gather data, "Sinha's Comprehensive Anxiety Test (1995) [5]" was employed to measure State and Trait anxiety, while "Marten's Inventory (1977)" was utilized to assess sports competition anxiety. The findings revealed notable differences among the groups. Among male athletes, throwers exhibited significantly higher levels of State and Trait Anxiety compared to sprinters. Conversely, sprinters displayed higher levels of sports competition anxiety than jumpers. Male throwers also demonstrated elevated sports competition anxiety when compared to jumpers. In the female category, no substantial differences were observed in State and Trait Anxiety across the groups. However, sprinters in the female group exhibited higher levels of sports competition anxiety than throwers, who showed the lowest anxiety levels among the three subgroups. These results underscore the varying psychological demands of different track and field events. Sprinters, requiring explosive energy and short bursts of maximum effort, tend to experience heightened sports competition anxiety due to the intense focus on immediate performance outcomes. On the other hand, throwers, who rely on technique and strength, may experience greater state and trait anxiety stemming from the need to execute precision movements under pressure. The absence of significant differences in state and trait anxiety among female athletes suggests that gender-specific coping mechanisms or event-specific pressures might influence the psychological responses. However, the higher sports competition anxiety observed among female sprinters highlights the universal pressure associated with high-stakes, time-sensitive events. This study emphasizes the need for psychological interventions tailored to the specific needs of athletes based on their event and gender. Incorporating mental conditioning strategies, anxiety management techniques, and resilience-building programs can potentially enhance the performance and well-being of athletes across all disciplines.

Keywords: Sports performance, anxiety, psychological factors, track and field, state anxiety, trait anxiety, competition anxiety

Introduction
It is a common observation that individual and team athletes occasionally fail to perform to their full potential during competitions, even when they possess the requisite technical and tactical skills and are in excellent physical condition. This underperformance highlights the fallacy of attributing sports success solely to physical attributes and fitness. In reality, sports performance is a complex psychomotor activity that relies significantly on an athlete's psychological framework. As a result, there is an increasing emphasis on identifying and harnessing psychological factors that are particularly crucial in athletic environments, especially those directly impacting performance. Researchers are extensively examining various interpersonal and psychological variables to enhance athletes' overall performance levels.

Among these psychological variables, anxiety stands out as a critical factor influencing athletic performance. Its profound impact has been a subject of considerable exploration within the domain of sports psychology. Anxiety can either hinder or facilitate the learning and execution of athletic skills, depending on its intensity and

the individual's psychological preparedness. Sigmund Freud (1936) was a pioneer in defining anxiety within a psychological framework, describing it as "an unpleasant effect or state characterized by nervous apprehension, anxious expectation, and a variety of physiological responses." This conceptualization underscores anxiety's dual nature-it can act as a motivator or a deterrent, affecting both the mental state and physical execution of athletes.

Understanding the intricate relationship between anxiety and athletic performance has paved the way for targeted interventions aimed at managing anxiety levels in athletes. These efforts not only help in optimizing performance but also contribute to an athlete's mental well-being, fostering a more holistic approach to sports training and competition.

The significance of anxiety in sports performance becomes more evident as the importance of a competition increases. The more crucial the event, the higher the likelihood of athletes experiencing anxiety symptoms. Spielberger (1966) [3] introduced two distinct types of anxiety: state anxiety and trait anxiety. State anxiety refers to a temporary emotional condition characterized by feelings of apprehension and tension in response to a specific situation. On the other hand, trait anxiety is a more enduring predisposition, where individuals perceive certain situations as inherently threatening, leading to varying levels of state anxiety in response. Both state and trait anxiety are further categorized into cognitive anxiety (characterized by worry and negative thoughts) and somatic anxiety (physical manifestations like increased heart rate and muscle tension). According to Spielberger, anxiety in sports is often driven by the fear of failure in athletic competition. This fear stems not only from the possibility of losing or underperforming in terms of scores but also from falling short of one's own expectations.

Bugelski (1962) [1] emphasized the teacher's role in fostering an optimal level of anxiety that motivates rather than hinders performance. Similarly, Tutko (1977) [6] proposed that athletes who can maintain a moderate level of anxiety are likely to achieve peak efficiency in their performance. This balance allows athletes to harness the motivating aspects of anxiety without succumbing to its detrimental effects. The present study was designed with the objective of understanding anxiety levels among inter-university athletes. By identifying these levels, the findings can guide coaches and trainers in adapting training programs to help athletes achieve optimal performance. Proper management and modulation of anxiety in sports can enhance both mental resilience and competitive efficiency, ultimately contributing to improved outcomes in high-stakes competitions.

Methodology: The study aimed to investigate the differences in anxiety levels among sprinters, jumpers, and throwers across both male and female athlete groups. The research was conducted on a sample of 286 track and field athletes (150 male and 136 female) who participated in the 63rd All India Inter-University Championship held at Gulbarga University, Karnataka, from 16th to 21st January 2003. In the male category, the participants comprised 88 sprinters, 32 jumpers, and 30 throwers, while the female category included 82 sprinters, 24 jumpers, and 30 throwers. The athletes belonged to the age group of 18 to 25 years, ensuring that the sample was representative of young, competitive athletes at the inter-university level. This structured approach provided a comprehensive platform to analyze anxiety variations across different track and field disciplines and gender groups, contributing to a better understanding of psychological factors influencing sports performance.

Test Used

To collect data from all the participants, validated psychological tools were utilized to ensure accurate and reliable measurement of anxiety. To evaluate State and Trait Anxiety, Sinha's Comprehensive Anxiety Test (SCAT), developed by Sinha and Sinha in 1995 [5], was employed. This test provided insights into the immediate emotional state (state anxiety) and the predispositional tendency to perceive situations as threatening (trait anxiety).

Additionally, to measure Sports Competition Anxiety, Marten's Inventory (1977) was utilized. This inventory assessed the specific anxiety levels athletes experienced in competitive sports settings. The combined use of these tools allowed for a detailed analysis of different dimensions of anxiety, thereby offering a comprehensive understanding of its impact on athletic performance across various disciplines and gender groups.

Statistical Design

The collected data underwent statistical analysis to ensure accurate interpretation of the findings. Descriptive statistics, including the calculation of Mean and Standard Deviation (SD), were used to summarize the anxiety levels within each group. Additionally, t-tests were conducted to determine the significance of differences between the anxiety levels among the groups of sprinters, jumpers, and throwers in the male category, as well as among the corresponding groups in the female category. This statistical approach allowed for a comprehensive comparison, highlighting whether significant variations existed in the anxiety levels based on the athletes' event specializations and gender. The analysis provided a robust framework to understand the nuanced psychological differences among these groups, aiding in targeted interventions and training adjustments.

Results

Table 1: Mean, SD and t-Ratio Matrix Regarding Male Sprinters, Jumpers and Throwers on the variable State & Trait Anxiety

Sr. No.	Group	Mean	SD	t-ratio matrix	
				2	3
1.	Sprinters	70.75	13.93		- 2.63**
2.	Jumpers	42.72	12.65	- 0.73	
3.	Throwers	47.90	12.48		- 1.62

**$p<0.01$

From the statistical figures depicted in the Table No. 1 it can be seen that the male sprinters had the mean scores of 40.75, the jumpers had the means score of 42.72 and the throwers had the mean value 47.90.

The three groups of track and field athletes had SD 13.93, 12.65 and 12.48 respectively. The sprinters differed significantly from throwers (t=2.63, $p<0.01$). No other significant inter-group were observed.

Table 2: Mean, SD and t-Ratio Matrix Regarding Male Sprinters, Jumpers and Throwers on the variable Sports Competition Anxiety

Sr. No.	Group	Mean	SD	t-ratio matrix	
				2	3
1.	Sprinters	19.76	3.19		- 0.65
2.	Jumpers	18.53	2.71	2.09*	
3.	Throwers	20.13	2.53		- 2.41*

*$p<0.05$

The results presented in Table No. 2 indicate that the three groups of athletes i.e. sprinters, jumpers and throwers had the mean values of 19.76, 18.53 and 20.13 respectively whereas the SD for these groups were 3.19, 2.71 and 2.53 respectively. The sprinters, differed significantly from the jumpers ($p<0.05$). The throwers also exhibited differences from jumpers ($p<0.05$).

Table-3: Mean, SD and t-Ratio Matrix Regarding Female Sprinters, Jumpers and Throwers on the variable State & Trait Anxiety

Sr. No.	Group	Mean	SD	t-ratio matrix	
				2	3
1.	Sprinters	46.13	11.83	- 0.30	0.46
2.	Jumpers	46.79	8.82		0.65
3.	Throwers	45.00	11.44		

From the statistical figures depicted in the Table No. 3, it can be seen that the female sprinters had the mean scores of 46.13, the jumpers had the mean scores of 46.79 and the throwers had the mean value 45.00. The three groups of track and field athletes had the SD=11.83, 8.82 and 11.44 respectively. The calculated t-values regarding these three groups i.e. sprinters, jumpers and throwers did not demonstrate significant differences.

Table 4: Mean, SD and t-Ratio Matrix Regarding Female Sprinters, Jumpers and Throwers on the variable Sports Competition Anxiety

Sr. No.	Group	Mean	SD	t-ratio matrix	
				2	3
1.	Sprinters	21.00	4.79	0.69	2.07*
2.	Jumpers	20.42	3.23		1.31
3.	Throwers	19.13	3.99		

* $p<0.05$

The results presented in Table No.4 indicate that the three groups of female athletes i.e. sprinters, jumpers and throwers had the mean values of 21.00, 20.42 and 19.13 respectively whereas the SD for these groups were 4.79, 3.23 and 3.99 respectively. The sprinters, differed significantly from throwers (t=2.07, $p<0.05$). No other significant inter-difference were observed.

Discussion

Discussion Regarding Differences among Male Sprinters, Jumpers and Throwers

The results in Table 1 on the variable State and Trait Anxiety revealed significant differences between the sprinters and the throwers ($p<0.01$). The throwers having higher mean scores (47.90) exhibited much higher level of state and trait anxiety. All the three groups of athletes, however, demonstrated "extremely high anxiety" as per the manual instructions.

With regard to Sports Competition Anxiety, the results in Table 2 revealed significant differences between jumpers and throwers, the later being more anxious. The sprinters also differ significantly from jumpers, the sprinters having higher level of sports competition Anxiety. As per the test manual, the sprinters and the jumpers fell in "optimum level" of anxiety whereas the throwers were found to be on starting border of "above average anxiety level".

Discussion Regarding Differences among Female Sprinters, Jumpers and Throwers

The result in Table 3 regarding the variable State and Trait Anxiety indicated that though the jumpers were having a little higher means scores and, therefore, a little higher state-trait anxiety, these differences were, however, not found to be significant. As per the classification in the manual, all the three groups fell in "extremely high anxiety" category.

On the variable Sports Competition Anxiety, the results in Table 4 revealed that sprinters were having the highest level of sports competition anxiety and they also differed significantly from the throwers, who had the comparatively lowest level of this type of anxiety. According to the instructions in the test manual the sprinters fell in "above average anxiety" level whereas the jumpers and throwers were found to be in "optimum anxiety" level.

Conclusion

Regarding Difference between Male Sprinters Jumpers and Throwers

The analysis regarding the differences among male sprinters, jumpers, and throwers revealed noteworthy insights into their anxiety levels:

State-Trait Anxiety

Male throwers exhibited a significantly higher level of state-trait anxiety compared to male sprinters, suggesting that the throwers experienced greater emotional apprehension and predisposition toward anxiety in competitive situations. However, jumpers did not display any statistically significant differences in state-trait anxiety when compared to either sprinters or throwers.

Sports Competition Anxiety

On the variable of sports competition anxiety, male throwers demonstrated a significantly higher level compared to male jumpers. Additionally, male sprinters also exhibited a higher level of sports competition anxiety compared to male jumpers. These findings indicate that both sprinters and throwers tend to experience elevated anxiety related to sports competition, while jumpers appear to experience relatively lower levels.

This pattern underscores the psychological variations influenced by the nature of each athletic event. The throwers' heightened anxiety could be attributed to the event's emphasis on precision and explosive performance, whereas sprinters' anxiety might stem from the intense pressure of timed competition. The comparatively lower anxiety levels among jumpers may reflect the combination of technical skill and repetitive trial opportunities in their events, potentially reducing performance-related stress.

Regarding Differences between Female Sprinters, Jumpers and Throwers

The findings regarding female athletes revealed interesting distinctions in anxiety levels across the groups:

State-Trait Anxiety

Unlike their male counterparts, the female sprinters, jumpers, and throwers did not exhibit any significant differences in state-trait anxiety. This suggests a more uniform emotional and dispositional response to competitive stress among the female athletes in these categories.

Sports Competition Anxiety

On the variable of sports competition anxiety, significant differences emerged. Female sprinters were found to experience a higher level of sports competition anxiety compared to the female throwers, who displayed the lowest anxiety levels among the three groups. This indicates that the

intense pressure of timed performance in sprinting events could be a contributing factor to the elevated anxiety experienced by sprinters.

Observations

- The study highlights a stark contrast between the anxiety levels of male and female athletes. Male throwers exhibited the highest anxiety, whereas among females, sprinters demonstrated a higher level of competition-related anxiety.
- The findings emphasize that different athletic events place unique psychological demands on athletes based on their gender, nature of the activity, and performance expectations.

Implications for Coaches and Sports Psychologists

To optimize performance, coaches and sports psychologists must implement tailored strategies to manage, regulate, and reduce anxiety levels among athletes. Effective interventions might include:

- Relaxation techniques like deep breathing, progressive muscle relaxation, or guided imagery to help athletes stay calm under pressure.
- Cognitive restructuring to address negative thought patterns and enhance self-confidence.
- Event-specific training that incorporates simulated competitive scenarios to familiarize athletes with high-pressure conditions.
- Gender-sensitive approaches recognizing the varying psychological needs of male and female athletes in managing performance anxiety.

By adopting such psycho-regulatory techniques, practitioners can bring anxiety to desirable levels, enhancing both individual performance and team success. This holistic approach can help athletes navigate the psychological challenges inherent in competitive sports while maximizing their potential.

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