

Gender Differences in Competitive Anxiety among Indian Ice Hockey Players and High-Altitude Marathon Runners

Sonam Gytso¹, Jigmat Dachen²

¹Corresponding author: gytso95@uol.ac.in

²Assistant Professor, Department of Physical Education, University of Ladakh

Abstract:

Competitive anxiety is an important psychological factor that affects athletic performance and may differ by gender and type of sport. The present study investigated gender differences in competitive anxiety among elite Indian ice hockey players and high altitude marathon runners. A cross sectional comparative quantitative research design was adopted. The sample consisted of 160 elite athletes (80 males and 80 females) out of which 80 were ice hockey players and 80 were high altitude marathon runners, selected by purposive sampling. Competitive anxiety was assessed by the Sport Competition Anxiety Test (SCAT). The data were analyzed using descriptive statistics and independent samples t-test using SPSS Statistics. Results indicated that male athletes ($M = 31.29$, $SD = 4.39$) reported significantly higher competitive anxiety than female athletes ($M = 29.55$, $SD = 5.08$) ($t = 2.314$, $p = .022$). Findings indicate that gender plays a significant role in competitive anxiety of elite athletes, the male athletes are suffering more competitive stress than their female counterparts. The study emphasizes the significance of integrating gender-tailored psychological interventions, including mental skills training and anxiety reduction strategies, to improve athletic performance and psychological health. Future research should examine other psychological and environmental factors that may influence competitive anxiety across various sports and levels of competition.

Keywords: Competitive anxiety, gender, elite athletes, ice hockey, high-altitude marathon, sport psychology.

INTRODUCTION

Competitive anxiety is a key psychological factor in sport, referring to the cognitive and physiological responses athletes experience before or during competition. According to Martens et al. (1990), it is a multidimensional construct consisting of **cognitive anxiety** (worry, negative expectations, and self-doubt) and **somatic anxiety** (physiological responses such as increased heart rate, muscle tension, and sweating). These two dimensions independently influence athletic performance.

Anxiety in sport is also classified as **state anxiety** and **trait anxiety** (Spielberger et al., 1983). State anxiety is a temporary emotional response triggered by competitive situations, whereas trait anxiety is a stable personality characteristic that predisposes individuals to experience anxiety across different situations. Understanding both forms is important because state anxiety can be managed through psychological interventions, while trait anxiety influences long-term psychological functioning.

Several theoretical models explain the relationship between anxiety and performance. The Yerkes–Dodson Law (1908) proposes that moderate levels of arousal produce optimal performance, whereas very low or very high arousal impairs performance. Expanding on this, Hanin's Individual Zones of Optimal Functioning (IZOF) model suggests that each athlete has a unique optimal anxiety zone in which performance is maximized (Hanin, 2000). Similarly, Multidimensional Anxiety Theory states that cognitive anxiety negatively affects performance, while somatic anxiety follows an inverted-U relationship (Martens et al., 1990). The Catastrophe Model further proposes that excessive physiological arousal combined with high cognitive anxiety may lead to a sudden decline in performance (Fazey & Hardy, 1988).

Recent research indicates that competitive anxiety influences both athletic performance and psychological well-being. Moderate anxiety may enhance focus and motivation, whereas excessive anxiety can impair concentration, decision-making, and motor performance. Evidence also suggests that psychological interventions such as cognitive-behavioral techniques, mindfulness, relaxation training, and psychological skills training effectively reduce competitive anxiety and improve performance (Rice et al., 2023). These theoretical and empirical findings provide a strong foundation for examining competitive anxiety among athletes from different sports and competitive environments.

Gender is one of the major variables that influences competitive anxiety in sport. Research has repeatedly shown that male and female athletes experience and express competitive anxiety differently, owing to biological, psychological and social factors. Women athletes typically report higher levels of cognitive anxiety, characterized by increased worry, self-doubt, and fear of failure, whereas men athletes tend to have lower cognitive anxiety but may experience greater pressure regarding performance expectations and social roles (Martens et al., 1990; Woodman & Hardy, 2003).

Ice hockey is a rapid, high contact, team sport that places athletes under significant physical strain, tactical decision-making, aggressive play and continued appraisal by teammates and coaches. These factors may enhance competitive anxiety in both sexes. Female ice hockey players report increased cognitive anxiety levels more often due to fear of performance evaluation. Male players may feel more pressure to perform well as a result of competitive success and physical dominance.

In contrast, high-altitude marathon running is an endurance-based individual sport that requires sustained physical and psychological effort. Marathon runners experience anxiety more in terms of pacing strategies, fatigue, environmental conditions and individual performance, rather than in direct interaction with opponents. Women marathon runners report higher pre-race anxiety and tend to worry about endurance and performance results more. Men runners tend to be more confident but may be susceptible to anxiety related to personal performance goals and competition standards.

Some studies which have examined gender differences in different sports have found that the type of sport also affects anxiety. Team sports (e.g. ice hockey) involve interpersonal pressure, communication demands and collective responsibility, whereas individual endurance sports (e.g. marathon running) place greater emphasis on self-regulation and personal accountability. Therefore, gender differences in competitive anxiety may depend on the psychological demands of the sport.

It is important to understand gender differences in patterns of competitive anxiety in order to design effective psychological interventions. To improve performance and promote psychological well-being, coaches and sport psychologists need to employ customized strategies that address the specific psychological needs of male and female athletes in team and endurance sports.

METHODOLOGY

The study was conducted using quantitative, cross-sectional comparative research design to examine gender differences in competitive anxiety of elite Indian ice hockey players and high-altitude marathon runners. The study sample included (160) elite athletes (80 males & 80 females) comprising (80) ice hockey players and (80) marathon runners chosen by purposive sampling. Trait competitive anxiety was measured with the Sport Competition Anxiety Test (SCAT), developed by Martens (1977), a standardized and widely used instrument to assess trait competitive anxiety in athletes.

Statistics was used to analyse the data. Prior to data collection, informed consent was obtained. Competitive anxiety between male and female athletes was compared using descriptive statistics (mean and standard deviation) and an independent samples t-test. Statistical significance was established at $p < .05$. Ethical principles of voluntary participation, confidentiality, and informed consent were maintained throughout the study.

RESULTS AND DISCUSSION

Presentation and discussion of results. The objective of the present research was to study gender differences in competitive anxiety among elite Indian ice hockey players and high-altitude marathon runners. The comparison of competitive anxiety scores of male and female elite ice hockey and high-altitude marathon athletes is shown in Table 1 and Figure 1.

Table 1: Comparison of Competitive Anxiety Scores According to Gender

	Gender	N	Mean	Std. Deviation	t-value	p-value
Competitive Anxiety	Male	80	31.29	4.39	2.314	0.022*
	Female	80	29.55	5.08		

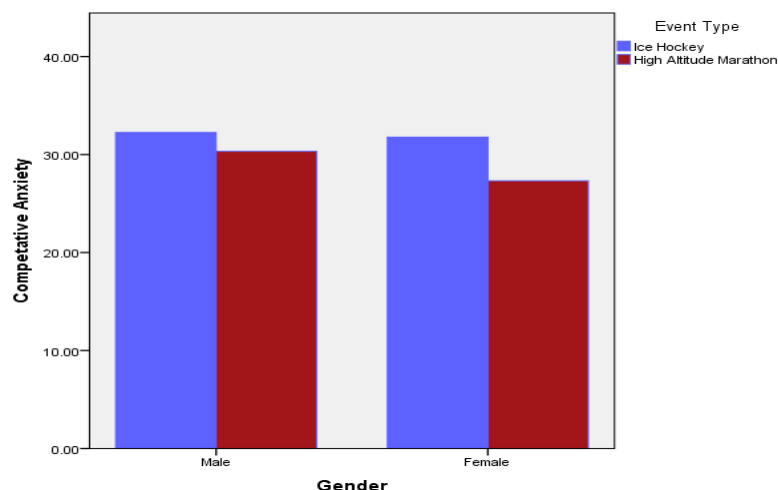


Figure 1: Comparison of Mean Competitive Anxiety Scores According to Gender

A t-test for independent samples was performed to assess gender differences in competitive anxiety in elite Indian ice hockey players and high-altitude marathon runners. The findings showed that male athletes ($M = 31.29$, $SD = 4.39$) had significantly higher competitive anxiety than female athletes ($M = 29.55$, $SD = 5.08$). The difference was statistically significant ($t = 2.314$, $p = .022$) indicating that gender has a

significant effect on competitive anxiety. The bar chart also shows that male athletes had consistently higher mean anxiety scores than female athletes for both sports, but the difference was greater in marathon runners. The results showed that competitive anxiety was significantly higher in male athletes than female athletes. This is in contrast to a number of previous studies that have reported greater levels of anxiety amongst female athletes, often attributing these differences to greater cognitive worry and emotional sensitivity (Martens et al., 1990; Woodman & Hardy, 2003). The present findings suggest that male competitors may feel more pressure to perform in the context of elite Indian ice hockey and high altitude marathon athletes due to expectations of success, team responsibility, and competitive achievement. The increased anxiety found in male athletes may also be related to the pressures of elite competition, where expectations of performance, selection pressures, and social roles create a higher level of psychological stress. These findings highlight that competitive anxiety is affected not only by gender but also by competitive setting and sport-specific requirements. Therefore, psychological skills training and anxiety management interventions need to be designed for both male and female athletes.

CONCLUSIONS

The study concludes that gender has a significant effect on competitive anxiety of elite Indian ice hockey players and high-altitude marathon runners. Competitive anxiety was significantly higher in male athletes than in female athletes ($p = .022$). These findings underscore the importance of incorporating gender-specific psychological support and mental skills training into athlete development programs to assist athletes in effectively managing competitive anxiety and optimizing performance. Future studies with larger and more heterogeneous samples are recommended to further understand the contributing factors to gender differences in competitive anxiety in different sports.

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