

An Analysis of Competitive State Anxiety at Three Pre-Event Times

Introduction

Competitive state anxiety (CSA) is an established concept in sport psychology and is widely recognised as a key determinant of athletic performance. Athletes often experience a range of cognitive and physiological responses prior to competition, which typically involve both cognitive and somatic anxiety alongside perceived self-confidence (Hanton et al., 2004).

In sport, CSA is particularly important due to its direct influence on performance outcomes. Athletes are frequently exposed to demanding situations in which psychological factors, including anxiety and confidence, may determine success or failure. Psychological states fluctuate over time, which is an important consideration when designing effective interventions. Assessing anxiety at multiple time points enables both practitioners and athletes to better identify performance challenges and prepare more effectively.

Competitive environments place athletes under significant psychological pressure. Factors such as anxiety and confidence may be triggered in these contexts and influence performance outcomes. Understanding the intensity of anxiety in the stages leading up to competition is essential for identifying potential performance barriers and informing support strategies. These constructs are commonly assessed using the Competitive State Anxiety Inventory-2 (CSAI-2; Martens et al., 1990). Cognitive anxiety refers to negative thoughts and concerns about performance, somatic anxiety reflects physiological symptoms such as increased heart rate and muscle tension, and self-confidence represents an athlete's belief in their ability to perform successfully (Hanton et al., 2008).

Although anxiety has traditionally been viewed as detrimental to performance, recent research has focused on how athletes interpret anxiety symptoms. Directional Perception Theory suggests that anxiety can either facilitate or debilitate performance depending on the meaning an athlete assigns to it (Jones and Hanton, 2001). However, this perspective has been criticised for failing to account for individual and situational differences, which may influence how anxiety is experienced and interpreted. Over time, more experienced athletes are often more likely to interpret anxiety symptoms positively, which may contribute to enhanced performance outcomes (Mellalieu et al., 2004).

One of the most frequently studied areas in sport psychology is the temporal patterning of anxiety within competitive settings. Research consistently shows that cognitive and somatic anxiety increase as competition approaches, while self-confidence typically declines (Thomas et al., 2004; Hanton et al., 2004). However, this relationship may vary depending on factors such as athlete experience and

coping strategies. Anxious thoughts may also intensify closer to competition, further increasing psychological pressure (Hanton et al., 2002).

Recent research has also emphasised the importance of psychological regulation strategies (Li et al., 2023). Mindfulness has been associated with reduced anxiety, increased confidence, and lower levels of distress, particularly among injured athletes returning to sport. Similarly, proactive coping strategies have been linked with reduced anxiety and improved wellbeing among student-athletes (Chauhan, Kumari and Kumari, 2024).

This study aims to examine the relationship between cognitive anxiety, somatic anxiety, and self-confidence at three pre-event time points using CSAI-2 scores, to better understand temporal changes in competitive anxiety.

Participants

The study involved a sample of student-athletes ($n \geq 10$). Participants completed the CSAI-2 questionnaire at three key time points: one week before competition, 24 hours before competition, and on the day of competition. The CSAI-2 consists of 27 items designed to measure cognitive anxiety, somatic anxiety, and self-confidence (Pumpuang, Chusakul and Popa, 2023). Each participant was assigned a unique identification number to ensure anonymity while allowing responses to be matched across all three time points.

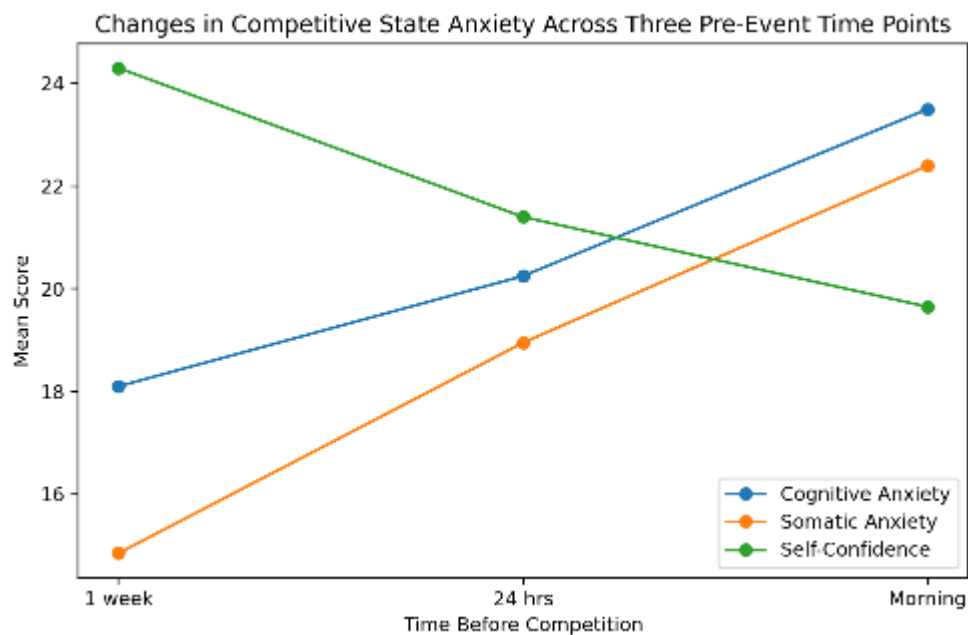
To assess changes in anxiety over time, a repeated-measures design was employed, allowing for the evaluation of within-participant changes across multiple time points. Means and standard deviations were calculated for each CSAI-2 subscale at each time point. A quantitative approach was adopted to identify patterns and trends in the data.

Results

Results showed clear temporal changes in anxiety and confidence. Cognitive anxiety increased from 18.10 (SD = 2.92) one week before competition to 20.25 (SD = 2.97) at 24 hours before competition, and then to 23.50 (SD = 3.41) on the morning of the competition. Somatic anxiety also rose, increasing from 14.85 (SD = 1.98) to 18.95 (SD = 2.87) and then to 22.40 (SD = 3.63).

In contrast, self-confidence decreased over the same period, moving from 24.30 (SD = 2.30) to 21.40 (SD = 2.56) and finally to 19.65 (SD = 2.74). Together, these findings suggest that both cognitive and somatic anxiety increased as the stress of competition became more immediate, while self-confidence declined, indicating a clear inverse relationship between anxiety and confidence across time.

Figure 1. Effects of cognitive anxiety, somatic anxiety and self-confidence at three points before the event.



There is a clear pattern of anxiety increasing as an event draws closer, alongside a decrease in self-confidence. There is a steady rise in cognitive and somatic anxiety; this suggests greater psychological and physiological activation immediately before competition. This may reflect increased pressure or self-doubt.

The trends identified highlight the nature and effects of competitive anxiety. This may indicate that psychological vulnerability peaks just before competition. It also reinforces the importance of examining psychological states across time rather than relying on a single pre-event assessment.

Discussion and Conclusion

The findings of this study show that competition-related state anxiety increases as competition approaches, while self-confidence decreases during the same period. This pattern is consistent with earlier research suggesting that anxiety follows a temporal pattern in the lead-up to competition (Hanton et al., 2004; Thomas et al., 2004), and it supports the view that anxiety develops progressively as the event nears.

This pattern may reflect the growing psychological demands associated with competition. In the days and hours leading up to an event, athletes may experience greater expectations, pressure, and uncertainty. Supporting this view, research on Ironman triathletes suggests that perceived pressure and level of preparation have a significant influence on pre-competition anxiety (Hudgins, 2025).

These findings also align with multidimensional anxiety theory (MAT), which proposes that cognitive anxiety has a negative relationship with performance, self-confidence has a positive relationship with performance, and somatic anxiety follows an inverted-U relationship (Martens et al., 1990). However, this theory has been criticised for oversimplifying the complex relationship between anxiety and performance, particularly in real-world competitive settings. As a result, the increase in cognitive anxiety and the decrease in self-confidence observed in this study may indicate a reduced capacity to perform effectively under pressure.

At the same time, the results may also point to differences in how athletes interpret the competitive context. Athletes who perceive competition as a challenge rather than a threat may be more likely to respond to anxiety in a productive way. This distinction is important, as events perceived as challenges are often associated with more favourable performance outcomes, whereas those viewed as threats are linked to poorer performance. Individual differences in coping style and perception may influence whether anxiety has a facilitative or debilitative effect.

In addition, the present findings support the view that pre-competition anxiety should not automatically be treated as wholly negative. While higher levels of anxiety were observed closer to the event, the meaning attached to those feelings may still differ between athletes. Some may interpret heightened arousal as evidence that they are mentally prepared and ready to perform, whereas others may see the same symptoms as a sign that they are losing control. This reinforces the need for interventions that are individually tailored rather than applied in the same way to every athlete.

This further supports the importance of psychological skills training, particularly where athletes are encouraged to reinterpret anxiety symptoms more positively. In addition, catastrophe theory offers a more complex account of the anxiety-performance relationship. According to this perspective, when cognitive anxiety and physiological arousal both become excessive, performance may not decline gradually but can instead deteriorate suddenly and sharply (Hardy, 1990).

This may help explain why rapid increases in anxiety close to competition can have such a noticeable negative effect on performance. It also underlines the need to address both the cognitive and physiological components of anxiety at the same time.

The decline in self-confidence is also especially important. Research suggests that confidence can mediate the relationship between anxiety and performance in competitive sport (Chun et al., 2023). In addition, athletes with higher levels of confidence are more likely to interpret feelings of pressure as helpful rather than harmful (Nickols, 2013).

Psychological skills provide useful ways of managing these responses. Mindfulness has been shown to reduce anxiety and enhance confidence (Li et al., 2023), while proactive coping has been associated

with lower anxiety and higher well-being (Chauhan et al., 2024). These findings add further support to the literature on psychological preparation in sport.

The role of the sport psychologist is central in this process. Practitioners can support athletes through interventions such as goal setting, imagery, relaxation techniques, and self-talk (Arvinen-Barrow and Walker, 2013), all of which may help athletes regulate anxiety and improve their ability to perform effectively (Hanton et al., 2008).

High levels of anxiety may also have implications beyond immediate performance. Anxiety has been linked with wider concerns such as burnout and injury risk, suggesting that its management is important for athletes over the longer term. However, several limitations should be noted. The small sample size and reliance on self-report measures may limit the generalisability of these findings. Future research should involve larger samples and more objective methods to strengthen validity.

These results support the value of formal psychological preparation programmes in sport. Coaches and sport psychologists should consider implementing interventions in the period leading up to competition to help athletes cope with rising anxiety. Pre-performance routines, breathing control, and cognitive restructuring may be useful in reducing mental and physical symptoms of anxiety.

Addressing both the cognitive and somatic dimensions of anxiety may help athletes maintain greater control under pressure, preserve self-confidence, and support performance. Competitive state anxiety appears to become more pronounced as competition approaches and self-confidence declines. Understanding these temporal changes is therefore important for improving performance and informing effective psychological interventions in sport.

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