The Relationship Between Anxiety, Confidence, and Athletic Performance: A Literature Review

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ABSTRACT

Athletes strive to perform at their best, especially under pressure. Psychological factors such as anxiety and confidence are believed to influence outcomes and have long been studied in sport psychology. A narrative literature review was conducted using Google Scholar to identify peer-reviewed, open-access, English-language studies published between 1988 and 2022. A total of 12 studies met inclusion criteria and were included in this review. The sample sizes of each study varied, from fewer than 15 participants to more than 400. A total sample size of 1403 participants were included in this review. Across studies, higher anxiety was generally negatively correlated with performance, although effects varied due to factors including but not limited to anxiety type, athletes' interpretation of symptoms, and mediating variables. Findings indicate that higher confidence was positively correlated with performance outcomes. Managing anxiety and building confidence both appear important for optimizing sport performance. Future work should test practical interventions (e.g., mindfulness and coping-skills training) that target these factors.

Keywords: Anxiety; Confidence; Sport Performance; Interventions; Uncertainty

INTRODUCTION

Sport performance is shaped by a wide range of factors, including physical aspects such as deliberate training, genetics, environmental conditions, and natural ability, as well as psychological factors such as personality, learning, intelligence, motivation, attention, social cohesion, and emotional states (1-3). While physical preparation is critical, athletes and researchers increasingly recognize that psychological variables also play a decisive role in success in competitive contexts (4).

In recent decades, sport psychology has given growing attention to the cognitive and emotional states that optimise performance, with sustained research focusing on anxiety and confidence, specifically. Anxiety is commonly classified as either *state anxiety* (temporary arousal, worry, or tension in response to a situation) or *trait anxiety* (general tendency to experience anxiety). State anxiety is further divided into *somatic anxiety* (physical symptoms such as muscle tension, shortness of breath, and rapid heartbeat) and *cognitive anxiety* (worry and emotional distress about upcoming events) (5).

Grounded in frameworks such as the Multidimensional Anxiety Theory (6), many studies suggest that higher anxiety tends to undermine athletic performance, while higher confidence enhances it. Yet, despite these broad patterns, findings are not always consistent. Some research highlights the facilitative

potential of certain forms of anxiety, while others report little or no direct effect. Likewise, confidence has been conceptualized in multiple ways, including self-confidence and self-efficacy, which complicates direct comparison across studies (7, 8).

Given these conceptual and methodological variations, the current evidence base is fragmented. Individual empirical studies provide valuable insights but also produce mixed and sometimes contradictory conclusions, partly due to differences in how anxiety and confidence are defined and measured, and partly due to variation in sport type, competitive level, and study design. The present literature review allows these findings to be synthesized across studies, providing a more comprehensive and representative understanding of how anxiety and confidence relate to athletes' performance in competitive sport. This narrative review therefore examines peer-reviewed studies published between 1988 and 2022 that investigate the relationship between anxiety, confidence, and sport performance. By comparing evidence across diverse contexts and clustering studies by shared patterns, the review seeks to clarify the strength and consistency of these relationships and highlight areas where further research is needed.

METHODS AND MATERIALS

Search strategy

A targeted search of Google Scholar was conducted to identify open-access, English-language, peer-reviewed studies published between 1988 and 2022. The search terms were: (confidence OR anxiety) AND ("sport performance"). Reference lists of eligible papers were also screened to locate additional studies not captured by the database search.

Inclusion and exclusion criteria

Studies were included if they reported empirical evidence on the relationship between either confidence or anxiety and sport performance. This encompassed both correlational designs and studies in which confidence or anxiety was experimentally manipulated before subsequent performance was measured. No exclusions were made based on participant eligibility such as age, skill level, or health status, and studies of varying sample sizes were included. For this review, the construct of confidence was defined broadly to include self-confidence, self-efficacy, and state sport-confidence. The construct of anxiety was defined to include state anxiety, trait anxiety, somatic anxiety, and cognitive anxiety. Any measure of an athlete's ability to execute their sport-specific skills constitutes sports performance, whether in competition, training, or simulated tasks. Articles that relied on theory or belief alone were excluded from this review. Studies were also excluded if they did not report direct measures of either confidence or anxiety alongside a measure of sport performance.

Data Extraction

From each eligible study, the following information was extracted: country, sample characteristics, study design, psychological measures, performance outcomes, type of analyses, and key findings. One source (9) contributed two separate studies, both of which were extracted. A full summary of study characteristics is provided in Table 1.

Table 1. Characteristics of Eligible Studies (country, sample, design, psychological factors examined, psychological factor measures, performance outcome measures, analytic methods, and key relevant findings for the eligible studies discussed in this review) (N=12)

Study Reference	Sample	Psych Factors	Measures	Main Finding
15	N=110 athletes	Sport anxiety	SCAT	Anxiety negatively correlates with performance
16	N=14 world-class athletes	Sport confidence	Semi-structured interview	Confidence positively correlates with performance
9	N=189 athletes	Trait/state anxiety	CSAI-2, CSAI-2-D, CTAI-2-D, SAS	Directional anxiety predicts performance more than intensity alone

Continued Table 1. Characteristics of Eligible Studies (country, sample, design, psychological factors examined, psychological factor measures, performance outcome measures, analytic methods, and key relevant findings for the eligible studies discussed in this review) (N=12)

Study Reference	Sample	Psych Factors	Measures	Main Finding
9	N=60 bowlers	Trait/state anxiety	CTAI-2, CTAI-2-D, MRF-L	REBT improves anxiety & performance
8	N=246 pro athletes	Self-confidence, self-efficacy, anxiety	MCAQ, SSES	Confidence & self-efficacy positively correlates with performance; confidence is negatively correlated with anxiety and reduces its effects on performance
17	N=102 judo athletes	Psych capital, anxiety	PsyCap scale, SAS	Psych capital mediates anxiety's negative correlation with performance
13	N=31 basketball athletes	Competition anxiety	SCAT	MAC reduces anxiety & improves performance
18	N=414 athletes	Sport confidence	SSCI, CICS, CES	Confidence is moderately linked to performance; mental imagery increases confidence and subsequent performance
7	N=28+70 swimmers	Anxiety, confidence	CSAI-2	Somatic anxiety has inverted-U relationship; cognitive anxiety negatively correlates; self confidence positively correlates with performance
11	N=12+12 pro athletes	Cognitive/somatic anxiety, confidence	CSAI-2, direction scale	No significant relationship for somatic anxiety; cognitive anxiety has a moderate positive relationship with performance
12	N=73 runners	Confidence, anxiety	TSCI, SSCI, CSAI-2	Confidence & self-efficacy positively correlate with performance; no relationship for cognitive anxiety
10	N=14 football players	State anxiety	MRF-3	Anxiety harms performance in high threat situations
19	N=28 rope skippers	Self-confidence	SSCI	Slight self-doubt decreases confidence but increases effort & performance

Note: SCAT, Sport Competition Anxiety Test; CSAI-2, Competitive State Anxiety Inventory-2; CSAI-2-D , Competitive State Anxiety Inventory-2, Directional Scale; CTAI-2, Competitive Trait Anxiety Inventory-2; CTAI-2-D – Competitive Trait Anxiety Inventory-2, Directional Scale; SAS, Sport Anxiety Scale; MRF, Mental Readiness Form; MRF-3, Mental Readiness Form-3; MCAQ, Multidimensional Competitive Anxiety Questionnaire; SSES, Sport Self-Efficacy Scale; PsyCap scale, Sports Psychological Capital Scale; SSCI, State Sport-Confidence Inventory; TSCI, Trait Sport-Confidence Inventory; CICS, Coping Inventory for Competitive Sport; CES, Coping Effectiveness Scale; REBT, Rational Emotive Behavior Therapy; MAC, Mindfulness-Acceptance-Commitment intervention.

Quality appraisal

Methodological quality of the included studies was appraised qualitatively and rated as high, moderate, or low. Appraisal criteria included: (1) strength of study design (e.g., experimental, longitudinal, cross-sectional), (2) sample size and representativeness, (3) use and validity of psychological measures, (4) type of performance outcomes (objective, subjective, or self-report), and (5) clarity of analysis and reporting. Overall ratings are presented in Table 2 (A Methodological Quality Appraisal of Included Studies) alongside justifications for each judgement.

Table 2. Methodological Quality Appraisal of Included Studies (design & causality, sample size & representativeness, measurement validity, performance outcome type, analysis & reporting, and overall quality for the eligible studies discussed in this review)

Study reference	Design & Causality	Sample Size & Representativeness	Measurement Validity	Performance Outcome Type	Analysis & Reporting	Overall Quality
15	Cross-sectional (Moderate)	N=110, student athletes, convenience (Moderate)	SCAT (validated) (High)	Subjective self-rated scale (Moderate)	Correlation & regression (Moderate)	Moderate
16	Cross-sectional (Moderate)	N=14, world-class athletes, convenience (Low)	Open-ended, semi-structured interview (moderate)	Open-ended, semi-structured interview (moderate)	Content analysis (Low)	Low-moderate
9	Study 1: Cross-sectional survey (Moderate) Study 2: Experimental (High)	Study 1: N=189, competitive, unclear sampling (High) Study 2: N=60, competitive athletes, unspecified sampling (Moderate)	Study 1: CSAI-2, CSAI-2-D, Sports Anxiety Scale (SAS) (validated) (High) Study 2: CTAI-2, CTAI-2-D, MRF-L (validated) (High)	Study 1: subjective self-rated scale (Moderate) Study 2: game scores (High)	Study 1: Correlation & regression (Moderate) Study 2: MANOVA, ANOVA (Moderate)	Moderate-High
8	Cross-sectional (Moderate)	N=246, professional athletes, unspecified sampling (High)	MCAQ, SSES (Moderate)	Sports Achievement Scale (SAS) (Moderate)	Correlation & regression, Sobel test (High)	Moderate-high
17	Cross-sectional (Moderate)	N=102, collegiate athletes, convenience (High)	Sports psychological capital scale, Sport anxiety scale (SAS) (validated) (High)	Sport performance scale (Moderate)	Confirmatory Factor Analysis, Structural Equation Modelling (High)	High
13	Experimental (High)	N=31, university athletes, convenience (Moderate)	SCAT (validated) (High)	Charbonneau Sports performance Questionnaire (SPQ) (Moderate)	MANCOVA (moderate)	Moderate-high
18	Cross-sectional (Moderate)	N=414, club and university athletes, unspecified sampling (High)	SSCI (validated) (High)	subjective self-rated scale (Moderate)	Correlation & mediation (Moderate)	Moderate–high
7	Longitudinal (High)	Sample 1: N=28, collegiate athletes, unspecified sampling (Low) Sample 2: N=70, competitive athletes, unspecified sampling (Moderate)	CSAI-2 (validated) (High)	Competition results (High)	Correlation & multiple regression, polynomial trend (High)	High

Continued Table 2. Methodological Quality Appraisal of Included Studies (design & causality, sample size & representativeness, measurement validity, performance outcome type, analysis & reporting, and overall quality for the eligible studies discussed in this review)

Study reference	Design & Causality	Sample Size & Representativeness	Measurement Validity	Performance Outcome Type	Analysis & Reporting	Overall Quality
11	Longitudinal (High)	Sample 1: N=12, professional athletes, unspecified sampling (Low) Sample 2: N=12, professional athletes, unspecified sampling (Low)	CSAI-2 (validated) (High)	Coach ratings (High)	Correlation (moderate)	Moderate
12	Cross-sectional (Moderate)	N=73, high school athletes, unspecified sampling (Moderate)	TSCI, SSCI, CSAI-2, Self-efficacy questionnaire (validated) (High)	Race time (High)	Pearson correlation (Moderate)	Moderate-high
10	Repeated measures (High)	N=14, university athletes, convenience (Low)	MRF-3 (validated) (Moderate)	Target accuracy (High)	Fully repeated measures 2×2 ANOVA, Bonferroni-corrected post hoc t tests (High)	Moderate
19	Experimental (High)	N=28, expert athletes, convenience (Low)	SSCI (validated) (High)	Skips per minute (High)	2x2 mixed-model ANOVA (Moderate)	Moderate

The overall rating was determined by roughly averaging the ratings across all methodological domains. Each criterion was given equal consideration, and the final rating reflected the general level of quality across them.

RESULTS

Overview of included studies

Twelve studies met the inclusion criteria, and a summary of such studies is presented in Table 1. Together they spanned a wide range of sports, including football, basketball, volleyball, swimming, tennis, golf, and track and field. Participants included both male and female athletes, with samples ranging from youth and collegiate players to national- and international-level competitors. Study designs varied: some were cross-sectional, measuring confidence or anxiety alongside performance at a single time point; others were experimental, manipulating confidence or anxiety before assessing subsequent performance; and a few were longitudinal, tracking athletes across multiple competitions. Sample sizes varied considerably, from fewer than 15 participants in some studies to more than 400 in others.

Variation in measures

The studies used diverse tools to assess psychological constructs. Anxiety was most frequently measured using the Competitive State Anxiety Inventory-2 (CSAI-2), which separates cognitive (thought-based) and somatic (physical symptom) anxiety. Other tools included the Sport Anxiety Scale (SAS) and the Sport Competition Anxiety Test (SCAT). Confidence was usually assessed through the State Sport Confidence Inventory (SSCI) or sport-specific self-efficacy scales. This diversity of measurement approaches is important, as it contributes to variability in results and quality ratings (Table 2).

Effects of anxiety on performance

Findings on anxiety were mixed. In over 55% of the studies, cognitive anxiety (worry, negative thoughts) was generally found to impair performance, whether through a direct negative relationship or an indirect correlation through an intermediary effect. For example, a study on experienced footballers showed that increased levels of anxiety led to reductions in shooting accuracy in high threat situations (10). However, somatic anxiety (nervous energy, tension) showed more variable effects. In some studies, it was linked to reduced performance, while in others moderate levels of somatic arousal appeared facilitative, especially when athletes interpreted their symptoms (e.g., racing heart, sweating) as signs of readiness rather than weakness (9, 11). Trait vs. state anxiety also mattered. Trait anxiety (general tendency to feel anxious) was usually a negative predictor of performance, while state anxiety (momentary nerves before competition) was more sensitive to interpretation and context. Some studies highlighted that whether anxiety was viewed as debilitative or facilitative strongly influenced its impact (9). Athletes who reappraised anxiety as helpful tended to perform better than those who saw it as harmful.

Effects of confidence on performance

In contrast to anxiety, the relationship between confidence and performance was far more consistent. Across the studies that examined confidence, over 70% reported a positive relationship between confidence and performance. Athletes with greater state sport-confidence typically achieved higher accuracy and performance scores. Studies using self-efficacy scales showed that athletes who believed strongly in their ability to succeed were more resilient under pressure, less susceptible to the negative effects of anxiety, and more likely to outperform less confident peers (8, 12). Intervention studies further confirmed this relationship. For example, athletes who received confidence-enhancing instructions (such as mental imagery or positive self-talk) performed significantly better than controls, which was evident in one study where athletes who utilized the Mindfulness-Acceptance-Commitment approach were associated with performance improvements of over 20% (13).

DISCUSSION

Summary of findings

This review sets out to examine how anxiety and confidence relate to sport performance across a range of competitive contexts. Twelve studies were included, covering a variety of sports, levels of competition, and study designs. Overall, the findings reveal a mixed picture for anxiety but a far clearer and more consistent positive link for confidence.

Anxiety was generally associated with poorer performance, especially in its cognitive form (worry, negative self-talk). However, the effects were not uniform. Somatic anxiety (bodily arousal) sometimes appeared helpful, particularly when athletes interpreted their symptoms as signs of readiness rather than weakness. This highlights the importance of interpretation and appraisal in shaping whether anxiety impedes or enhances performance.

Confidence, on the other hand, showed a consistent positive association with sport performance. Both sport-confidence and broader measures of self-efficacy reliably predicted better outcomes. Intervention studies further demonstrated that raising athletes' confidence through strategies such as positive self-talk or goal-setting directly improved performance.

Interpretation in context

The mixed findings for anxiety are consistent with long-standing theories such as the Multidimensional Anxiety Theory and the Catastrophe Model, both of which argue that anxiety can either hinder or enhance performance depending on the type of anxiety and the athlete's appraisal of it (6). This review adds further evidence that cognitive anxiety is particularly detrimental, while somatic anxiety may be neutral or even beneficial if interpreted positively.

Confidence findings align with Bandura's self-efficacy theory, which suggests that athletes' beliefs about their own competence can strongly influence how they perform under pressure (8). Across the studies included, this pattern was robust, regardless of sport type or level of competition. Gender as a potential moderating factor was also not discussed in most studies.

In general, findings were consistent regardless of the different methodologies utilized, and differences in both consistent and divergent outcomes across studies were not significantly related to the differing design types, sport types, sample size validity, measurement methods, or analysis methods. A full breakdown of the methodologies is shown in Table 2 (A Methodological Quality Appraisal of Included Studies). This suggests that the results were not likely affected by methodological bias, and differences in findings can be attributed to other factors, such as environmental variables and

individual differences. Recent meta-analysis findings on the "considerable heterogeneity" between results also suggest that the differences in study findings on the relationship between psychological factors and performance could not be easily explained by moderators like sport type, gender, or methodology (14).

Practical implications

For athletes and coaches, the results point to several practical takeaways. First, managing anxiety appraisals may be just as important as reducing anxiety itself. Helping athletes reframe physical symptoms (such as a racing heart) as signs of energy and readiness could reduce the negative effects of anxiety on performance. For example, it could be beneficial to encourage athletes to view a racing heart as a signal of readiness rather than stress or panic. Second, structured approaches to building confidence appear especially effective. Techniques such as goal-setting, mental rehearsal, and positive self-talk not only increase confidence but also translate into measurable performance gains. Coaches and sport psychologists may therefore wish to prioritise confidence-enhancing interventions alongside anxiety management strategies.

Limitations

Several limitations should be noted. The review included only twelve studies, many with small sample sizes and cross-sectional designs. This restricts the ability to draw firm conclusions about causality. Measures of anxiety and confidence also varied widely across studies, making direct comparisons difficult. While most studies used validated scales, reliance on self-report introduces potential bias. In addition, performance outcomes ranged from objective metrics (e.g., shooting accuracy) to subjective assessments, which further complicates synthesis. Finally, the review was limited to open-access articles available on Google Scholar, which may have excluded relevant studies published elsewhere.

Directions for future research

Future research would benefit from larger, longitudinal, and experimental studies that can more clearly establish cause-and-effect relationships between psychological states and sport performance. It would also be valuable to examine how individual differences (such as personality, competitive experience, or gender) moderate the effects of anxiety and confidence. Another promising area lies in

intervention research: testing specific programmes aimed at reframing anxiety or systematically building confidence and evaluating their effectiveness across different sports and competition levels.

CONCLUSION

In conclusion, this review highlights a complex relationship between anxiety, confidence, and athletic performance. Anxiety does not always hinder performance — its effects depend on type and interpretation — but cognitive anxiety, in particular, appears harmful. Confidence, in contrast, is a consistently positive predictor of success. Coaches and sport psychologists can support athletes by using interventions that reduce anxiety and increase confidence such as the Mindfulness-Acceptance-Commitment approach, which was associated with performance improvements of over 20% (13). The message is clear: while anxiety cannot be eliminated, its impact can be managed, and confidence can be cultivated as a powerful tool for enhancing performance.

CONFLICT OF INTEREST

The author declares that there are no conflicts of interest related to this work.

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