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Personality and Competitive Anxiety in Athletes: A Systematic Literature Review

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Abstract

Introduction: Competitive anxiety is a frequent psychological response among athletes facing performance demands, often impairing concentration, strategy, and physical execution. Personality traits are critical in determining individual responses to such stressors. The Big Five Personality Traits model provides a structured framework to analyze these relationships. This systematic review examined how Big Five personality dimensions influence competitive anxiety in athletes.

Methods: Following PRISMA guidelines, a systematic search was conducted in PubMed and Google Scholar for articles published between 2016 and 2025, using the PICOS framework. Of 17,500 records retrieved, seven studies met the inclusion criteria, requiring participants to be athletes, use of standardized personality and anxiety assessments, and a quantitative design.

Results: All seven studies reported a consistent positive correlation between neuroticism and both cognitive and somatic anxiety. Extraversion showed a negative correlation with anxiety and a positive association with self-confidence. Conscientiousness and openness demonstrated weak negative associations, while agreeableness produced inconsistent findings. Moderating variables such as gender, age, sport type, and emotion regulation strategies further influenced these associations.

Conclusion: Personality significantly shapes competitive anxiety levels in athletes. Tailored psychological interventions that consider personality profiles may help reduce anxiety and enhance performance. Limitations of the included studies were the absence of risk-of-bias assessment and lack of protocol registration.

Keywords

Athletes, Personality, Anxiety, Neuroticism, Extraversion, Conscientiousness

Introduction

Anxiety is an emotional response to perceived threats—whether real or imagined—and in the context of sports, it frequently arises in competitive situations. Within athletic environments, competition is often perceived as a threat to self-image due to outcome uncertainty, public expectations, and external evaluation. These factors contribute to the development of competitive anxiety, a specific form of anxiety experienced by athletes during high-stakes events. According to the Multidimensional Anxiety Theory, competitive anxiety comprises two primary components: cognitive anxiety (e.g., negative thoughts, self-doubt, and worry) and somatic anxiety (e.g., increased heart rate and muscle tension).[2 3] Additionally, self-confidence plays a crucial role in determining how effectively an athlete copes with anxiety.[2 3] Prior studies have demonstrated that elevated anxiety levels are associated with a greater risk of both physical and mental performance deterioration during competition.[1]

Personality is one of the key internal psychological factors that significantly influences an individual's response to competitive pressure. The Big Five Personality Traits model classifies personality into five major dimensions: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. These traits have been shown to correlate with emotional regulation, motivational orientation, and athletic performance across various sporting disciplines.[4]

Curelaru and Diac identified neuroticism as a strong positive predictor of cognitive anxiety under evaluative conditions, indicating that individuals with low emotional stability tend to experience heightened stress and worry under pressure.[5] In contrast, extraversion, conscientiousness, and openness were negatively correlated with cognitive anxiety, suggesting that individuals who are socially outgoing, organized, and open to new experiences are more likely to respond adaptively to stress. However, findings related to agreeableness have been inconsistent across studies.[5]

Although a growing body of literature has examined the relationship between personality traits and anxiety in sports contexts, to date, no systematic review has focused specifically on the association between the Big Five

personality dimensions and competitive anxiety among athletes. Therefore, this review seeks to address this research gap by offering a comprehensive synthesis of the available empirical evidence.

This systematic literature review synthesizes findings from studies investigating the influence of Big Five personality traits on competitive anxiety in athletes and explores potential moderating variables such as gender, age, and sport type. It includes quantitative studies employing observational, correlational, cross-sectional, or comparative designs, published between 2016 and 2025. The review focuses on athlete populations from a wide range of sports, with personality assessed using instruments based on the Big Five framework. Specifically, the review investigates the role of each personality dimension in relation to cognitive anxiety**,** somatic anxiety, and self-confidence, and how these psychological constructs influence athletic performance.

Methods

This study employed a Systematic Literature Review (SLR) approach to synthesize scientific evidence in a structured, transparent, and replicable manner. The main objective of this method was to reduce potential bias and enhance transparency throughout all stages of the review process, including article selection, quality appraisal, and data synthesis.[6] The review followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which provide a standardized framework for reporting, including a checklist and flow diagram outlining the steps of identification, screening, eligibility, and inclusion.[7] No formal protocol was registered for this review.

The review was guided by the PICOS framework, which defined the inclusion parameters as follows: the Population consisted of athletes, either professional or amateur, participating in individual or team sports. The Intervention/Exposure referred to personality traits based on the Big Five model. The Comparison element was not applicable, as the review did not compare different intervention groups. The Outcomes focused on competitive anxiety, including both cognitive and somatic components, as well as self-confidence. The Study Design included quantitative studies employing observational, correlational, cross-sectional, or comparative methodologies.

A comprehensive literature search was conducted in two major databases—PubMed and Google Scholar—covering publications from 2016 to 2025. The final search was completed on May 30, 2025. Boolean logic was applied to tailor search strategies for each database. For PubMed, the search query used was: ("personality traits"[MeSH Terms] OR "personality"[All Fields]) AND ("competitive anxiety"[All Fields] OR "sports anxiety"[All Fields]) AND ("athletes"[MeSH Terms] OR "athlete"[All Fields]). For Google Scholar, a bilingual strategy incorporating both English and Indonesian terms was employed: ("personality traits" OR "sifat kepribadian") AND ("competitive anxiety" OR "kecemasan kompetisi") AND ("athlete" OR "atlet").

Articles were included if they met the following criteria: (1) involved athletes from any sport discipline, whether professional or amateur; (2) assessed or discussed personality traits using the Big Five model; (3) measured competitive anxiety in a sports context; (4) used a quantitative research design (observational, correlational, cross-sectional, or comparative); (5) were original research articles; (6) were published between 2016 and 2025; (7) were written in English or Indonesian; and (8) were available in full text. Exclusion criteria included reviews, opinion papers, meta-analyses, and editorials; qualitative or descriptive studies that did not statistically analyze variable relationships; articles without full-text access; and studies that did not explicitly examine both personality traits and anxiety.

The article selection process adhered to the PRISMA flow structure, consisting of four phases: identification, screening, eligibility, and final inclusion. A total of 17,500 articles were initially retrieved from Google Scholar and 41 from PubMed. After title screening, 211 articles from Google Scholar and 4 from PubMed were retained. Abstract screening narrowed these to 15 potentially eligible studies. Following full-text review and application of the inclusion criteria, 7 articles were deemed suitable and included in the final synthesis. The detailed selection process is illustrated in Figure 1.

Data extraction was conducted independently by two reviewers. Any discrepancies were resolved through discussion or, if needed, consultation with a third reviewer. The extracted data included the authors' names, year of publication, study setting, type of sport, sample characteristics and size, personality assessment tools (e.g., NEO-FFI, BFI), anxiety measures (e.g., CSAI-2), research design, and key findings concerning the relationship between Big Five traits and competitive anxiety.

The risk of bias in individual studies was assessed using the JBI Critical Appraisal Tool for quantitative observational studies. Of the seven studies reviewed, five were rated as moderate quality and two as high quality. The primary outcome was the direction and strength of the associations between Big Five traits and competitive anxiety, typically reported through correlation coefficients (r).

Data synthesis was conducted using a narrative and thematic approach. Findings were categorized by each Big Five personality dimension and analyzed in terms of its relationship with cognitive anxiety, somatic anxiety, and self-confidence. A meta-analysis was not conducted due to substantial heterogeneity in measurement tools and study populations. While potential biases—such as publication and selection bias—were not formally assessed, they are acknowledged as limitations of this review. Additional analyses, such as subgroup analysis and meta-regression, were not performed due to the small number of included studies and methodological diversity.

Results

A total of seven articles were included in this systematic literature review. From the 15 full-text articles assessed, eight were excluded for the following reasons: three did not measure personality variables, two employed non-validated instruments, and three were not quantitative studies. A summary of the included studies is presented in Table 1**,** while the article selection flowchart is shown in Figure 1**.**

Table 1. Summary of Studies Included in the Systematic Literature Review

Author	Participants	Instruments	Key Findings
Sunje & Vardo	67 athletes and esports players	BFI-44, CSAI-2	Athletes were more extraverted and confident; esports players were more neurotic.
Amaro & Brandao	101 Portuguese athletes	TIPI, CSAI-2, ERQ	Extraversion associated with increased confidence and reduced somatic anxiety; emotion regulation influenced anxiety.
Kemarat et al.	237 Thai athletes	NEO-FFI, SCAT	Neuroticism associated with higher anxiety; extraversion, conscientiousness, and agreeableness associated with lower anxiety.
Bhadra & Saha	80 football players (18–21 years)	EPQ-SS, SCAT	Extraversion and neuroticism were significantly related to pre-competition anxiety.
Gonzalez et al.	328 adolescent football athletes	IPED, CSAI-2R, FSS	Older athletes exhibited greater self-confidence and lower anxiety; flow state increased.
Ozturk	82 national kickboxing athletes	STAI TX-I, Quick Big Five	Emotional balance increased anxiety; extraversion increased anxiety; responsibility reduced anxiety.
Zubic	117 athletes from various sports	HEXACO-60, CSAI-2	Extraversion increased self-confidence and reduced anxiety; honesty and emotionality influenced anxiety.

Legend:
CSAI-2 = Competitive State Anxiety Inventory-2; CSAI-2R = Revised CSAI-2; TIPI = Ten-Item Personality Inventory; ERQ = Emotion Regulation Questionnaire; SCAT = Sports Competition Anxiety Test; EPQ-SS = Eysenck Personality Questionnaire Short Scale; STAI = State-Trait Anxiety Inventory; FSS = Flow State Scale; IPED = Inventario Psicológico de Ejecución Deportiva.

Most of the studies employed a cross-sectional and correlational design, focusing on the relationship between personality traits and competitive anxiety. The studies originated from Thailand, Turkey, Portugal, India, Serbia, and Spain, with samples including adolescent athletes, young adults, professionals, and esports players.

Risk of bias was assessed using the JBI critical appraisal tool for quantitative observational studies. Among the seven studies reviewed, five were rated as having a low risk of bias and two as having a moderate risk. Overall, neuroticism consistently demonstrated a positive association with both cognitive and somatic anxiety. Extraversion was generally negatively associated with anxiety and positively associated with self-confidence. Other personality dimensions—agreeableness, conscientiousness, and openness—showed more variable associations depending on the population context and measurement instruments used.

Table 2. Patterns of Association Between Personality Dimensions and Competitive Anxiety

Personality Dimension	Cognitive Anxiety	Somatic Anxiety	Self-confidence
Neuroticism	↑ (strong)	↑ (strong)	↓
Extraversion	↓	↓	↑
Openness	– / ↓ (weak)	–	–
Conscientiousness	↓ / inconsistent	–	↑ (weak)
Agreeableness	Inconsistent	Inconsistent	–

Due to heterogeneity in study design, measurement tools, and outcomes, a meta-analysis was not conducted. Instead, a narrative synthesis was performed based on the observed patterns linking personality traits and anxiety. Formal assessment of publication bias (e.g., funnel plot analysis) was not conducted and is acknowledged as a limitation. It is also recognized that studies with significant results are more likely to be published. No additional analyses—such as subgroup, sensitivity, or meta-regression analyses—were performed due to the limited number of studies and high heterogeneity.

Discussion

In line with the objective of this study—to examine the relationship between personality traits and competitive anxiety—this discussion focuses on three core aspects: cognitive anxiety, somatic anxiety, and self-confidence. Competitive anxiety is a prevalent issue in sports that can significantly impact athletic performance, injury risk, rehabilitation outcomes, and return-to-sport processes. It is defined as a psychological condition characterized by worry, nervousness, and uncertainty regarding performance under pressure. This anxiety manifests both as a trait—a stable predisposition—and a state—an acute response to specific stressors. Psychological strategies such as goal setting, imagery, relaxation techniques, self-talk, and social support are essential for anxiety management.[15]

Earlier investigations viewed anxiety as a unidimensional construct; however, more recent research has identified it as a multidimensional phenomenon consisting of mental (cognitive) and physiological (somatic) components. Morris, Davis, and Hutchings defined cognitive anxiety as mental apprehension, including fear of negative outcomes and self-doubt about performance. In contrast, somatic anxiety refers to the individual's perception of physiological-affective symptoms such as muscle tension and physiological disturbances.[16]

In competitive sports, anxiety and self-confidence are two key factors influencing athlete performance. Self-confidence can be both a relatively stable personality trait and a dynamic psychological state depending on situational factors.[3] Confident athletes tend to manage pressure more adaptively and interpret competition as a challenge rather than a threat, activating dopaminergic pathways that enhance motivation and concentration.[21] Conversely, low self-confidence may intensify perceived anxiety symptoms, especially following failure or in unfamiliar settings.[3]

Cognitive anxiety is marked by negative thoughts, self-doubt, and fear of failure. Athletes with high levels of cognitive anxiety often struggle with decision-making and self-assurance.[17] Several studies—by Bhadra and Saha[4], Kemarat et al.[3], and Zubic[7]—indicated a positive correlation between neuroticism and cognitive anxiety. The activation of the hypothalamic-pituitary-adrenal (HPA) axis and amygdala hyperactivity in neurotic individuals enhances threat perception and disrupts executive brain function. Conversely, traits such as extraversion, openness, and conscientiousness appear to reduce anxiety levels, possibly through better emotion regulation and physiological stability, such as improved heart rate variability (HRV).[18]

Somatic anxiety is characterized by physiological symptoms such as increased heart rate and muscle tension.[14] Athletes with high trait anxiety are more vulnerable to somatic anxiety. This was demonstrated in a study involving Asian Games swimmers, where high training loads correlated with elevated trait anxiety and reduced self-confidence.[20] The physiological response also involves sympathetic nervous system activation and HPA axis engagement.[19]

Consistently, neuroticism has emerged as the strongest predictor of increased competitive anxiety, as supported by three recent studies involving diverse athlete populations using cross-sectional designs.[3,4,7] In contrast, extraversion was negatively associated with anxiety and positively with self-confidence. Conscientiousness also showed a negative relationship with anxiety, likely due to mental preparedness in individuals with this trait. The association of agreeableness was inconsistent, possibly because it is more relevant in team contexts. Openness demonstrated a weak negative correlation with competitive anxiety, though supporting evidence remains limited.[21]

Notably, Amaro and Brandao[2] found that emotion regulation strategies mediate the relationship between personality and anxiety. Athletes with high conscientiousness were more likely to use adaptive strategies such as cognitive reappraisal, whereas those scoring low in extraversion and openness tended to use expressive suppression, which is generally less effective.[9]

Table 2 outlines the relationships between personality dimensions and competitive anxiety, providing clarity on the strength and consistency of these associations. Demographic factors also play a crucial role. Studies by Kemarat et al.[3] and Amaro and Brandao[2] indicated that female athletes generally exhibit higher anxiety and lower self-confidence compared to males.[22,23] This may be attributed to greater sensitivity to social pressure and external evaluation. Additionally, individual-sport athletes tend to experience higher anxiety levels than team-sport athletes, likely due to the undivided nature of performance responsibility.[25]

Emotional maturity and competition experience also influence the relationship between personality and anxiety. Gonzalez et al.[5] demonstrated that athletes aged 16–18 showed lower anxiety levels and greater emotional maturity compared to younger athletes.[24] This finding is supported by Trninić et al., who found that older athletes generally scored higher in agreeableness and conscientiousness—traits crucial for emotional regulation and teamwork. Sunje and Vardo[1], who compared physical athletes and esports players, found that personality differences did not always result in significant disparities in competitive anxiety, highlighting the influence of contextual adaptation and stress management habits.[8]

Most of the reviewed studies were correlational in nature. While they support an association between personality traits and anxiety, causal inference remains limited without longitudinal or experimental designs. At the individual study level, most research lacked control over confounding variables. At the outcome level, variability in anxiety assessment tools (e.g., CSAI-2, STAI) may affect result consistency. Overall, this review is limited by the small number of studies and potential selection bias in the article screening process. To strengthen the validity of these findings, future research should employ experimental or longitudinal designs with controls for mediating variables such as emotion regulation strategies or competition context.

These findings have important practical implications for the development of psychological training programs tailored to athletes' personality profiles. For example, athletes high in neuroticism may benefit from cognitive-behavioral interventions and emotion regulation training, while those high in conscientiousness could optimize their performance through goal-setting strategies and self-evaluation protocols.

Conclusion

Personality traits, particularly neuroticism and extraversion, play a significant role in shaping the level of competitive anxiety among athletes. These findings align with the Multidimensional Anxiety Theory, which distinguishes anxiety into cognitive and somatic components. Neuroticism consistently shows a positive correlation with increased cognitive and somatic anxiety, whereas extraversion is negatively correlated with both forms of anxiety and positively associated with self-confidence. However, the results concerning agreeableness, openness, and conscientiousness are inconsistent or demonstrate only weak correlations with competitive anxiety. Additional factors such as gender, age, type of sport, and emotion regulation strategies act as moderating variables that influence the strength and direction of the relationship between personality and competitive anxiety.

This review has several limitations. The number of articles included was relatively small, and there was considerable variation in the methods used to assess both personality and anxiety across studies, which may affect the consistency of findings and introduce potential bias. Therefore, coaches, sport psychologists, and support staff should take athletes' personality characteristics into account when designing stress management and performance enhancement strategies. Interventions may include emotion regulation training, self-confidence strengthening programs, or individualized counseling sessions.

Future research should employ longitudinal and interventional designs to investigate causal relationships and develop more personalized and evidence-based psychological approaches for managing competitive anxiety in athletes.

Author Contribution

Ni Nengah Vindia Herinasari: conceptualization, systematic review design, data extraction, manuscript drafting.
Ni Kadek Ira Maharani Putri: literature search, data analysis, critical revision of manuscript.
Bagus Made Puja Krisnayana: methodological guidance, data interpretation, manuscript editing.
Ana Nur Hasanah: validation of data, supervision, manuscript review.
Ni Made Swasti Wulanyani: psychological expertise, interpretation of findings, manuscript review.
All authors have read and approved the final manuscript.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to this study.

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Ethics Statement

This study is a systematic review of previously published research and did not involve direct participation of human subjects; therefore, ethical approval was not required. All included studies were conducted in accordance with their respective institutional ethical standards.

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