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THE PSYCHOLOGICAL ARCHITECTURE OF ELITE SPORTS PERFORMANCE: EVIDENCE, INTERVENTIONS, AND RESEARCH PRIORITIES

A ARQUITECTURA PSICOLÓGICA DO DESEMPENHO DESPORTIVO DE ELITE: EVIDÊNCIAS, INTERVENÇÕES E PRIORIDADES DE PESQUISA

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ABSTRACT

This systematic review synthesizes contemporary research on the psychological profile of elite athletes, with a focus on self-confidence, anxiety/negativity, attentional control, motivation, imagery, positivity, and competitive attitude. Drawing on 48 empirical studies across diverse sports and global contexts, the review evaluates the dynamic relationships among these constructs, benchmarks psychological training interventions, and critically examines the unique roles of positivity and competitive attitude in elite performance. Findings show that self-confidence inversely correlates with anxiety/negativity, while attentional control and motivation are pivotal for sustaining resilience and competitive drive. Psychological skills training, encompassing imagery, relaxation, and cognitive restructuring, effectively enhance self-confidence and reduce anxiety/negativity, although intervention heterogeneity limits definitive conclusions. Persistent challenges include a lack of standardized measurement tools, a predominance of cross-sectional studies, and insufficient longitudinal and culturally adapted research. The review underscores the need for rigorous, longitudinal investigations and tailored interventions to advance theoretical models and optimize psychological preparation in elite sport.

Keywords: elite athletes, psychological skills training, self-confidence, anxiety/negativity, motivation, attentional control, imagery, positivity, competitive attitude, emotion regulation, sport psychology

RESUMO

Esta revisão sistemática sintetiza a investigação contemporânea sobre o perfil psicológico de atletas de elite, com especial enfoque na autoconfiança, ansiedade/negatividade, controlo atencional, motivação, imagética, positividade e atitude competitiva. Com base em 48 estudos empíricos realizados em contextos desportivos e geográficos diversos, a revisão avalia as relações dinâmicas entre estes constructos, analisa intervenções de treino psicológico e examina criticamente os papéis únicos da positividade e da atitude competitiva no desempenho de elite. Os resultados indicam que a autoconfiança se correlaciona inversamente com a ansiedade/negatividade, enquanto o controlo atencional e a motivação são fundamentais para sustentar a resiliência e a atitude competitiva. O treino de competências psicológicas, incluindo imagética, relaxamento e reestruturação cognitiva, revela-se eficaz na promoção da autoconfiança e na redução da ansiedade/negatividade, embora a heterogeneidade das intervenções limite conclusões definitivas. Persistem desafios como a ausência de instrumentos de avaliação padronizados, a predominância de estudos transversais e a escassez de investigação longitudinal e culturalmente adaptada. A revisão destaca a necessidade de investigações rigorosas, longitudinais e de intervenções ajustadas, de modo a consolidar modelos teóricos e optimizar a preparação psicológica no desporto de elite.

Palavras-chave: atletas de elite, treino de competências psicológicas, autoconfiança, ansiedade/negatividade, motivação, controlo atencional, imagética, positividade, atitude competitiva, regulação emocional, psicologia do desporto

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The study of self-confidence, negativity, attention, motivation, visualization/imagery, positivity, and competitive attitude in athletes is a essential area of inquiry because of its significant impact on sports performance and psychological health. Nevertheless, practitioners have questioned some of the previous claims. In recent years, the development of psychological skills training in elite sports has moved from basic original ideas of building self-confidence and reducing anxiety/negativity to more complex models that include motives, imagery, and attentional control (Hardy et al., 1996; Netto et al., 2024). This is consistent with an increasing awareness that mental facets are just as important as physical preparation in the pursuit of high performance (Gandrapu & Rakesh, 2024; MacNamara et al., 2010).

Indeed, empirical evidence has shown that psychological variables, such as self-confidence and anxiety/negativity, are strong predictors of competitive outcomes, with performance variability attributed to anxiety/negativity in up to 70% of athletes (Aliberti et al., 2024; Lourido et al., 2019). Therefore, it is of great relevance to comprehend these concepts for optimizing training and competition strategies (Lopes, 2024; Mullai et al., 2020).

Although extensive research has been undertaken, challenges persist in defining the mechanisms through which psychological factors influence elite athletes. There is a need to understand how negative thoughts and anxiety are navigated via attentional and motivational channels (Sofyan et al., 2024; Vasconcelos-Raposo et al., 2024). The literature reveals a fragmented understanding of anxiety and negativity, with studies presenting conflicting results. Some researchers highlight the beneficial impact of self-confidence in mitigating anxiety (Hernández et al., 2024; Sofyan et al., 2024), while others have identified that negativism and cognitive disruption can exacerbate feelings of anxiety (Dishman et al., 2024; Netto et al., 2024; Vasconcelos-Raposo et al., 2024).

Debates also exist surrounding the effectiveness of imagery and visualization exercises, with inconsistent research findings regarding their role in the management of self-confidence and anxiety/negativity (Hammond et al., 2015; Strachan & Munroe-Chandler, 2006). This paucity of evidence undermines the development of integrated psychological interventions for elite athletes' specific needs, with possible implications for performance and mental health (Gill & Singh, 2024; Mullai et al., 2020).

Within the conceptual framework of this review, self-confidence is defined as the athlete's belief in their ability to perform under pressure; negativity refers to the presence of maladaptive cognitions and symptoms of anxiety; and attention is understood as the capacity to maintain focus and control over distractions (Hardy et al., 1996; Wang et al., 2022). Motivation and imagery/visualization are considered fundamental to the development of effort and cognitive rehearsal strategies, which in turn foster positivity and a competitive attitude, leading to greater resilience and optimal performance (Birrer & Morgan, 2010; Gandrapu & Rakesh, 2024; Quinn & Cavanaugh, 2017). These related constructs provide a framework for the examination of psychological skill usage and its relation to competitive anxiety/negativity and confidence (Wadey & Hanton, 2008).

This review aims to examine the recent empirical studies on the relationships between self-confidence, negative thoughts, attention, motivation, imagery, positivity, and competitive attitude in elite athletes. By filling the gaps, this review seeks to provide more insight into the working mechanisms of these psychological factors on performance and to guide the development of more holistic mental skills training programs. It is hoped that this paper will be useful to develop both theory and prac-

tical applications in sports psychology (Netto et al., 2024; MacNamara et al., 2010; Mullai et al., 2020).

This review uses a comprehensive approach with a wide range of peer-reviewed papers focused on elite athletes of different sports modalities. The studies must have focused on empirical research into the psychological constructs of anxiety/negativity, confidence, and mental skills using quantitative and qualitative analysis. Moreover, they must have been published in a journal or as a thesis/ dissertation. Results are presented thematically to emphasise associations between key variables and successful interventions (Mullai et al., 2020; Wang et al., 2022; Yao et al., 2024).

This review is important because mental factors such as self-confidence, anxiety/negativity management, attentional control, motivation, and imagery have been identified as critical determinants of success in high-level sports. By consolidating findings across diverse studies, the report aims to clarify the mechanisms through which these variables affect competitive outcomes and to identify effective psychological strategies that enhance performance and well-being in elite athletes. Ultimately, this synthesis will provide a foundation for future research and practical applications in sports psychology.

The specific objectives are: (a) to evaluate current knowledge on the relationships between self-confidence, negative thoughts, anxiety/negativity, and competitive performance in elite athletes; (b) to benchmark existing psychological training programs focusing on motivation, attentional control, and imagery techniques in high-performance sports; (c)to identify and synthesize the empirical evidence regarding the role of positivity and competitive attitude in managing stress and enhancing performance; (d) to compare the effectiveness of various psychological skills interventions on reducing anxiety/negativity and improving self-confidence among elite athletes, and (e) to deconstruct the interplay between cognitive and emotional regulation strategies and their impact on visualization practices and motivation in sport contexts.

METHODS

Our original literature search was based on the following keywords: "self-confidence, negativity (negative thoughts/anxiety/negativity), attention, motivation, visualization/ imagery, positivity, and competitive attitude in elite athletes." These concepts were expanded into multiple, more specific search statements. By systematically expanding a broad research question into several targeted queries, we ensure that our literature search was both comprehensive (not missing niche or jargon--specific studies) and manageable (each query returns a set of papers tightly aligned with a particular facet of your topic).

Below were the transformed queries we formed from the original query: 1- Self-confidence, negativity (negative thoughts/anxiety/ negativity), attention, motivation, visualization/imagery, positivity, and competitive attitude in elite athletes; 2- Impact of mental training strategies on self-confidence, anxiety/ negativity, and performance in elite athletes, including emotional regulation and coping mechanisms; 3- Interplay of psychological factors such as self-confidence, anxiety/negativity, attention, and visualization techniques in enhancing performance and emotional regulation among elite athletes; 4- Relationship between emotional regulation, self-confidence, and performance enhancement techniques in elite athletes; 5- The role of emotional and self-regulation strategies in enhancing self-confidence and performance outcomes in elite athletes: Implications for mental training techniques. During this process, we found 251 papers.

Backward Citation Chaining was applied for each of the core papers. We examined their reference lists to find earlier studies they drew

upon. By tracing back through references, we ensure foundational work was not overlooked. With the process of Forward Citation Chaining, we also identify newer papers that have cited each core paper, tracking how the field has built on those results. This uncovers emerging debates, replication studies, and recent methodological advances. A total of ninety (90) additional papers were found during this process. In this process, a pool of 341 potential papers (251 from search queries and 90 from citation chaining) and applied a relevance ranking to prioritize the most pertinent studies in our final papers table. We identified 334 papers, out of which 50 were highly relevant.

RESULTS

This section maps the research landscape of the literature on self-confidence, negativity (including negative thoughts/anxiety/negativity), attention, motivation, visualization/imagery, positivity, and competitive attitude in elite athletes, revealing a broad investigation into the psychological constructs that influence elite athletic performance (see Table 1). The studies encompass diverse methodologies, including quantitative surveys, intervention programs, and qualitative analyses, with samples drawn from various sports and geographic regions, emphasizing both individual and team contexts. This comparative synthesis addresses key research questions by evaluating psychological skills, emotional regulation, and cognitive strategies, thereby informing practical mental training approaches and highlighting gaps for future research.

Psychological Constructs Assessed: Forty-eight studies included core factors (self-confidence, anxiety/negativity - cognitive and somatic-, motivation, imagery, and mental toughness) that were explored for their unique role in elite sport performance (Dorling & Bahr, 2024; Netto et al., 2024; Vasconcelos-Raposo et al., 2024). Several studies stressed the role of emotional regulation by considering cognitive factors such as athletes' negative thoughts and attentional control (Robazza et al., 2023; Lourido et al., 2019). Some studies have also examined developmental/experience-related differences in psychological constructs, finding differences in imagery use and anxiety/negativity by age group/experience level (Strachan & Munroe-Chandler, 2006; Vasconcelos-Raposo et al., 2024).

Intervention Techniques Evaluated: Twenty-five studies accessed psychological skills training methods, relaxation, goal setting, imagery, self-talk, mindfulness, and cognitive restructuring, with these frequently contained within an established or bespoke programme (Gardner & Moore, 2015; Gill & Singh, 2024; Netto et al., 2024). Interventions included psychoeducational short-term programs, comprehensive mental training manuals, and biofeedback-assisted preparatory routines (Olmedilla & Dominguez-Igual, 2016; Orbach & Blumenstein, 2022; Suinn, 1986). Mindfulness and acceptance-based interventions were particularly emerging in the literature on psychological skills training for performance enhancement (Birrer & Morgan, 2010; Gardner & Moore, 2015).

Performance Outcomes Measured: Measures of performance included anxiety/negativity scores, self-confidence scales, physiological responses (heart rate, cortisol), and competing score outcomes (Aliberti et al., 2024; Cumming et al., 2007; Netto et al., 2024). The qualitative results included perceived performance with flow states and psychobiosocial experiences connected to emotional and cognitive states (Robazza et al., 2023; Montero-Carretero et al., 2013). Several psychological constructs were also associated with competitive success, Olympic qualification, or sports performance itself (Magnúsdóttir, 2017; Wang et al., 2022).

Emotional and Cognitive Regulation Strategies: Emotion regulation strategies, such as cognitive reappraisal, expressive suppres-

Table 1: *Summary of Literature on Construct, Interventions, Performance Outcomes, Emotional and Cognitive Strategies, and Athletes' Experience.*

Study	Psychological Constructs Assessed	Intervention Techniques Evaluated	Performance Outcomes Measured	Emotional and Cognitive Regulation Strategies	Athlete Experience and Context
(Netto et al., 2024)	Self-confidence, anxiety/ negativity, imagery, negative thoughts, and goal setting	Frequency of psychological skills use, including relaxation, imagery, and self-talk.	Cognitive and somatic anxiety/ negativity, self-confidence levels	Emotional control, negative thought management	Elite athletes from various sports, mean age 25.7 years
(Lopes, 2024)	Emotional control, resilience, self-confidence, motivation	Structured psychological training programs, personalized interventions	Consistent performance improvements	Stress coping techniques, emotional regulation	Broad athlete populations, emphasis on mental health
(Patil, 2024)	Motivation, self-confidence, anxiety/ negativity, and concentration	Review of psychological factors impacting training	Training outcomes and performance optimization	Cognitive and emotional regulation in training	Elite athletes focus on training routines
(Gandrapu & Rakesh, 2024)	Self-confidence, motivation, concentration, perseverance	Mental skills training for cognitive enhancement	Athletic performance improvement	Integration of mental, emotional, and physical aspects	Elite athletes across sports disciplines
(Gill & Singh, 2024)	Motivation, grit, emotions, and well-being	Four-week psychological capacity-building program	Emotional well-being, motivation, and anxiety/ negativity reduction	Psychoeducation, mental skills application	Indian shooters and archers, experimental and control groups
(Dorling & Bahr, 2024)	Mental toughness, resilience, composure, leadership	Assessment of mental toughness constructs	Performance under pressure	Emotional and interpersonal regulation	Rugby and MMA athletes, individual vs. team sports
(Pandian et al., 2022)	Mental toughness, confidence, optimism, visualization	Psychological skills training, mindfulness, relaxation, imagery	Performance enhancement, stress coping	Cognitive restructuring, optimism training	Various athletes, focus on mental toughness development
(Robazza et al., 2023)	Emotion regulation, basic psychological needs, pleasant/ unpleasant emotions	Cognitive reappraisal and expressive suppression strategies	Psychobiosocial experiences linked to performance	Adaptive emotion regulation styles	424 competitive athletes, individual and team sports
(Bossio et al., 2012)	Self-confidence, attention control, negative energy, visualization	Psychological training program for volleyball players	Changes in confidence, attention, energy levels	Attention control, energy regulation	High-performance volleyball players, ages 13-16

(Baro et al., 2016)	Psychological profile, anxiety/ negativity, self-confidence, motivation	Profiling and anxiety/ negativity assessment	Anxiety/ negativity and confidence predictors	Coping control, motivational factors	Beach handball players, sub-19 and senior levels
(Jain et al., 2015)	Mental skills, competitive anxiety/ negativity, self-confidence	Mental skills training correlated with anxiety/ negativity reduction	Performance facilitation, anxiety/ negativity level management	Mental skills application during training	Indian international and national athletes
(Magnúsdóttir, 2017)	Mental skills, stress factors, goal setting	OMSAT-3 mental skills assessment	Olympic qualification prediction	Stress management, mental skills development	Olympic hopeful athletes, multiple sports
(Matos et al., 2011)	Motivation, self-confidence, coping, goal setting, visualization	Literature synthesis on psychological architecture	Elite performance determinants	Adaptive coping and self-regulation	Elite athletes, multidimensional psychological factors
(Montero-Carretero et al., 2013)	Motivation, self-confidence, flow state	Structural equation modeling of motivation and confidence	Competition flow state	Directionality of self-confidence	Spanish elite judo athletes
(Wadey & Hanton, 2008)	Goal-setting, imagery, self-talk, relaxation, anxiety/ negativity	Psychological skills usage interviews	Anxiety/ negativity intensity and direction	Facilitative anxiety/negativity interpretation	Elite athletes from various sports
(Neil et al., 2006)	Anxiety/ negativity symptoms, psychological skills, self-confidence	Comparative analysis by skill level	Anxiety/ negativity intensity, confidence, skill usage	Cognitive restructuring, imagery, self-talk	Rugby union players, elite and nonelite
(Gardner & Moore, 2015)	Psychological skills, mindfulness, emotion regulation	Psychological skills training and mindfulness approaches	Optimal performance states	Arousal control, attentional focus	Broad athlete populations
(Kim & Jeong, 2015)	Psychological skills, sport confidence, perceived performance	Correlational study of psychological skills	Perceived performance outcomes	Will-power, concentration, goal setting	Track & field athletes
(Mahoney et al., 1987)	Concentration, anxiety/ negativity management, self-confidence, motivation	Questionnaire assessing psychological skills	Skill-level differentiation	Anxiety/negativity management, mental preparation	National sample of athletes

(Hardy et al., 1996)	Self-confidence, motivation, anxiety/ negativity, attention control	Theoretical model of psychological preparation	Peak performance facilitation	Coping with adversity, attentional control	Elite performers
(Mahoney & Avener, 1977)	Cognitive strategies, anxiety/ negativity patterns, mental imagery	Questionnaire and interviews	Gymnastics performance correlation	Anxiety/negativity coping methods	Male gymnasts, Olympic trials
(Wadey & Hanton, n.d.)	Goal-setting, imagery, self-talk, anxiety/ negativity	Psychological skills usage interviews	Anxiety/ negativity intensity and direction	Effort, motivation, attentional focus	Elite athletes from various sports
(Orbach & Blumenstein, 2022)	Emotional regulation, preparatory routines	Psychological techniques with biofeedback	Performance enhancement	Blocking distractions, emotion regulation	Self-paced motor skill athletes
(Suinn, 1986)	Relaxation, stress management, positive thought control	Mental training manual exercises	Psychological skill development	Concentration, energy control	Olympic and national team athletes
(Eklund & Tenenbaum, 2014)	Psychological skills, motivation, anxiety/ negativity, concentration	Encyclopedia covering theory and application	Performance enhancement strategies	Mental training techniques	Broad sport and exercise psychology
(MacNamara et al., 2010)	Psychological behaviors, motivation, coping	Qualitative interviews on talent development	Elite performance facilitation	Psychological behavior advancement	Elite athletes and parents
(Birrer & Morgan, 2010)	Psychological skills, motivation, arousal regulation	Psychological skills training review	Performance enhancement in high-intensity sports	Mindfulness, volitional strategies	Elite high-intensity sport athletes
(Bačanac et al., 2014)	Self-confidence, anxiety/ negativity, psychological resilience	Comparative study of athletes with/without disabilities	Psychological health and performance	Anxiety/negativity optimization, resilience	Athletes with and without disabilities
(Hammond et al., 2015)	Self-focused attention, affect, motivation	Experimental imagery conditions	Affect and jump performance	Self-evaluation, affect regulation	NCAA athletes, swimming and athletics
(Cumming et al., 2007)	Motivational imagery, anxiety/ negativity, self-confidence	Imagery script exposure and heart rate monitoring	Psychological and physiological responses	Coping imagery, anxiety/negativity regulation	Competitive athletes
(Mullai et al., 2020)	Anxiety/ negativity, psychological training, mindfulness	Review of psychological skill training interventions	Anxiety/ negativity reduction, performance improvement	Alpha/theta neurofeedback, relaxation	Elite athletes

(Aliberti et al., 2024)	Anxiety/ negativity, self-confidence, preparedness	Anxiety/ negativity inventory and performance classification	Performance outcomes prediction	Emotional state optimization	Competitive dancesport athletes
(Hernández et al., 2024)	Self-confidence, perfectionism, anxiety/ negativity	Correlational study on young athletes	Anxiety/ negativity mediation by self-confidence	Protective psychological factors	Young Spanish athletes
(Vasconcelos-Raposo et al., 2024)	Negative thoughts, self-confidence, experience	Meta-analysis on experience effects	Anxiety/ negativity and confidence levels	Coping strategy effectiveness	High-performance athletes
(Lourido et al., 2019)	Anxiety/ negativity, self-confidence, attentional control	Large sample correlational study	Attentional control predictors	Anxiety/negativity interference with attention	Spanish athletes, experience-based groups
(Gonzalez et al., 2024.)	Motivational climate, anxiety/ negativity, self-confidence	Structural equation modeling	Coping and attentional control	Mediation by confidence and anxiety/negativity	Male adolescent football players
(Wang et al., 2022)	Sport-confidence, attention, cognitive reappraisal	Structural equation modeling	Archery performance prediction	Emotion regulation strategies	Chinese elite archers
(Strachan & Munroe-Chandler, 2006)	Imagery, self-confidence, anxiety/ negativity	Developmental imagery use study	Anxiety/ negativity and confidence predictors	Imagery functions by age cohort	Young elite baton twirlers
(Sepasi et al., 2012)	Imagery, self-confidence, body mass index	Regression analysis	Sporting success prediction	Imagery and confidence interaction	Elite futsal athletes
(Olmedilla & Dominguez-Igual, 2016)	Self-confidence, attention, and cognitive restructuring	Psychological intervention case study	Concentration and confidence improvement	Cognitive-behavioral techniques	Professional soccer player
(Sofyan et al., 2024)	Self-confidence, competitive anxiety/ negativity	Correlational study	Anxiety/ negativity reduction linked to confidence	Anxiety/negativity management in training	Diving athletes

sion, and coping imagery, have been examined extensively in relation to the ability to manage anxiety/negativity and to increase confidence (Cumming et al., 2007; Robazza et al., 2023; Wang et al., 2022). Attentional control and negativity control were found to be central to reducing performance-impairing anxiety/ negativity and maintaining attentional focus during WMC (working memory capacity) tasks (Gonzalez et al., 2024; Lourido et al., 2019). Consequently, self-focused attention and the evaluative impact of self-focused attention have also been shown to have different effects on affective states and performance depending upon the level of athlete success (Hammond et al., 2015).

Athlete Experience and Context: Participants were elite athletes from both individual and team sports across an extensive age range and levels of competition and included studies that

focused on youth and developmental stages (Patil, 2024; Strachan & Munroe-Chandler, 2006). Experience was repeatedly associated with stronger strategies for coping and greater confidence levels and attentional control, but also non-significant differences on some cognitive anxiety/negativity dimensions were found (Vasconcelos-Raposo et al., 2024; Lourido et al., 2019). Cultural and geographical diversity was apparent, with samples from Brazil, India, Spain, China, and other countries, and accordingly various sports and contexts (Netto et al., 2024; Gill & Singh, 2024; Wang et al., 2022).

CRITICAL ANALYSIS AND SYNTHESIS

The literature on elite sports people, reviewed in terms of self-confidence, negativity, attention, motivation, visualization, positivity, and competitive attitude, is rich, albeit diverse. Strengths of these concepts are based on the blending of psychological constructs and performance outcomes and the use of a wide variety of methods, from quantitative survey studies to an intervention study. Nevertheless, there are some limitations, such as cross-sectional predominance, small sample size, and differences in measurements, which limit the operational capacities and generalizability of the findings. In addition, despite common emphasis on the role of psychological skills training and emotion regulation techniques, the lack of standardization in the definitions of constructs and implementation protocols poses difficulties in synthesizing results. Overall, the specialized literature underscores the complexity of cognitive and affective factors in elite sport, but emphasizes the need for more methodologically robust, longitudinal, and experimental design studies to clarify these relationships and to refine intervention efforts. The published literature on psychological factors in elite athletes offers a rich variety of perspectives but remains characterized by methodological and conceptual challenges of key significance, namely concerning the ranking that athletes who make up the samples have.

Methodological Approaches: The acquired knowledge, so far accumulated, benefits from a variety of research designs, including cross-sectional surveys, experimental interventions, and qualitative analyses, which together offer multifaceted insights into the psychological landscape of elite athletes. For instance, robust correlational data from studies on psychological skills and anxiety/negativity have successfully linked the frequency of mental skills usage with levels of anxiety/negativity and self-confidence (Netto et al., 2024; Neil et al., 2006). Furthermore, intervention studies provide practical demonstrations of how psychological training programs can enhance motivation, emotional well-being, and grit (Gill & Singh, 2024; Olmedilla & Dominguez-Igual, 2016).

The field is constrained by several limitations. A major weakness is the heavy reliance on cross-sectional designs, which curtails the ability to make causal inferences or understand the temporal dynamics of psychological constructs. A reasonable number of studies, particularly those involving interventions or qualitative analysis, are hampered by small sample sizes that limit their statistical power and the generalizability of their findings (Strachan & Munroe-Chandler, 2006; Sofyan et al., 2024). The accuracy of self-report measures, which are commonly used, can be compromised by social desirability and other response biases (Strachan & Munroe-Chandler, 2006). Compounding these issues is the heterogeneity of measurement instruments, which complicates efforts to compare and synthesize results across different studies (Mullai et al., 2020).

Integration of Psychological Constructs. Research has effectively illuminated the interconnected nature of constructs such as self-confidence, anxiety/negativity, attentional control, motivation, and imagery in shaping elite athletic performance (Lopes, 2024; Matos et al., 2011; Wang et al., 2022). The

role of adaptive emotion regulation strategies, such as cognitive reappraisal, in enhancing performance and psychological resilience is well-supported by both theoretical models and empirical findings (Robazza et al., 2023; Wang et al., 2022). The conceptualization of mental toughness as a multidimensional construct, encompassing resilience, motivation, and imagery, has further enriched the understanding of athletic psychology (Dorling & Bahr, 2024; Pandian et al., 2022; Quinn & Cavanaugh, 2017).

Despite this conceptual integration, the field struggles with inconsistent operational definitions for key constructs, such as anxiety (Vasconcelos-Raposo et al., 2024) positivity, competitive attitude, and motivation, leading to contradictory findings that are difficult to synthesize (Montero-Carretero et al., 2013; Birrer & Morgan, 2010). Some of the studies analyzed present a narrow focus on specific sports or age groups, which limits the broad applicability of their conclusions to the wider population of elite athletes (Strachan & Munroe-Chandler, 2006). While the complex interplay among cognitive and emotional factors is often acknowledged, it is frequently not modeled or tested with sufficient empirical rigor (Matos et al., 2011; Wang et al., 2022).

Psychological Skills Training and Interventions: There is substantial empirical evidence to support the effectiveness of Psychological Skills Training (PST) programs. These programs, which often incorporate goal setting, relaxation, imagery, and self-talk, have been shown to reduce competitive anxiety/negativity and boost self-confidence (Netto et al., 2024; Jain et al., 2015; Mullai et al., 2020). Longitudinal and case study designs have also demonstrated that tailored cognitive-behavioral interventions can lead to improvements in concentration and confidence (Olmedilla & Dominguez-Igual, 2016). Additionally, mindfulness and acceptance-based approaches are gaining recognition as valuable complements to traditional PST (Gardner & Moore, 2015; Birrer & Morgan, 2010).

Intervention research faces multiple challenges. Studies are weakened by small sample sizes and the absence of control groups, which reduces the validity of their causal claims (Gill & Singh, 2024; Magnúsdóttir, 2017). The wide variety in the components and durations of these interventions makes it difficult to pinpoint the most effective elements and establish optimal protocols (Mullai et al., 2020). There is also a notable lack of long-term follow--up data to determine the durability of the effects of psychological training (Gill & Singh, 2024). Furthermore, the adaptation of these interventions for different cultural contexts and specific sports remains an underexplored area (Gill & Singh, 2024; Jain et al., 2015).

Role of Experience and Developmental Factors: Research indicates a correlation between greater sports experience and higher self-confidence, reduced negativity, and better anxiety/negativity management, suggesting a developmental progression of psychological skills (Vasconcelos-Raposo et al., 2024; Lourido et al., 2019). Studies focusing on young elite athletes have identified developmental differences in areas like imagery use and anxiety/negativity regulation, highlighting the necessity for age-appropriate psychological training (Strachan & Munroe-Chandler, 2006).

Our understanding of how psychological skills evolve with experience is limited by the prevalence of cross-sectional designs (Lourido et al., 2019). Some developmental research focuses on niche sports with unique demands, which limits the generalizability of the findings (Strachan & Munroe-Chandler, 2006). Moreover, the influence of maturation and external factors, such as the coaching climate, on psychological development is not sufficiently addressed (Gonzalez et al., 2024.).

Emotion Regulation and Mental Toughness: The literature provides robust support for

the critical role of emotion regulation strategies, such as cognitive reappraisal and preparatory routines, in optimizing performance under pressure (Robazza et al., 2023; Orbach & Blumenstein, 2022; Fawver et al., 2019). Mental toughness is recognized as a key multifaceted construct for resilience and competitive success, with evidence linking it to motivation, imagery, and self-confidence (Dorling & Bahr, 2024; Pandian et al., 2022; Quinn & Cavanaugh, 2017.).

Despite these theoretical advances, empirical research is often hampered by a lack of standardized measures for mental toughness and emotion regulation, which hinders the comparability of studies (Dorling & Bahr, 2024; Quinn & Cavanaugh, 2017). The potential cognitive costs of certain emotion regulation strategies, like cognitive reappraisal, are not fully understood, with some evidence suggesting possible performance trade-offs (Wang et al., 2022). Research on integrating emotion regulation into broader psychological skills training programs also remains limited (Gardner & Moore, 2015).

Attention and Concentration Control: Studies have shown that attentional control is positively associated with self-confidence and negatively related to somatic anxiety/negativity, underscoring its importance in sustaining competitive performance (Lourido et al., 2019; Gonzalez et al., 2024.; Olmedilla & Dominguez-Igual, 2016). Interventions designed to enhance concentration have shown promise in improving athletes' focus during competition (Olmedilla & Dominguez-Igual, 2016).

However, findings regarding the impact of experience on attentional control are inconsistent, with studies reporting no significant differences despite theoretical expectations. The measurement of attentional control frequently relies on self-report questionnaires rather than objective cognitive assessments, which can limit its validity. The dynamic interplay between attentional control, anxiety/negativity, and motivation requires more rigorous experimental investigation (Lourido et al., 2019).

Positivity and Competitive Attitude: Positive psychological constructs, including optimism, grit, and a constructive competitive attitude, are acknowledged as important facilitators of stress management and performance enhancement (Gill & Singh, 2024; Pandian et al., 2022; Matos et al., 2011). Interventions designed to foster positivity have been shown to contribute to improved emotional well-being and motivation (Gill & Singh, 2024). On the other hand, the empirical evidence for positivity and competitive attitude is less extensive and is often embedded within broader psychological constructs, which leads to conceptual ambiguity (Matos et al., 2011). The specific mechanisms through which positivity affects performance outcomes are not clearly defined, and few studies have isolated these variables for targeted analysis (Matos et al., 2011; Hernández et al., 2024).

ADVANTAGES AND DISADVANTAGES

An analysis of the literature on psychological factors in elite athletes reveals a field with considerable strengths in its breadth and application yet also marked by significant methodological and conceptual weaknesses that temper the certainty of its conclusions. In terms of methodological approaches, the research landscape is characterized by a commendable diversity of designs. This variety enables a multifaceted understanding of the psychological factors influencing elite athletes. For instance, studies examining the use of psychological skills provide strong correlational data that connect the frequency of mental skill application to levels of anxiety/negativity and self-confidence (Netto et al., 2024; Neil et al., 2006). Intervention studies offer practical evidence for the effectiveness of psychological training programs in enhancing motivation, emotional well-being, and grit (Gill & Singh, 2024; Olmedilla & Dominguez-Igual, 2016).

The field's research progress is hampered by a heavy reliance on cross-sectional designs, which inherently limit the ability to draw causal conclusions or understand the development of psychological constructs over time (Lourido et al., 2019). A further limitation is the prevalence of small sample sizes, particularly in intervention and qualitative research, which restricts statistical power and the generalizability of findings (Strachan & Munroe-Chandler, 2006; Sofyan et al., 2024). Yet, another aspect to consider is the dependence on self-report measures, which introduces potential biases, such as social desirability (Strachan & Munroe--Chandler, 2006), while the wide array of measurement instruments used makes it difficult to compare results across studies (Mullai et al., 2020).

Regarding the integration of psychological constructs, the research effectively demonstrates the interconnectedness of self-confidence, anxiety/negativity, attentional control, motivation, and imagery in shaping elite athletic performance (Lopes, 2024; Matos et al., 2011; Wang et al., 2022). Theoretical models and empirical data also support the critical role of adaptive emotion regulation strategies, such as cognitive reappraisal, in enhancing performance and psychological resilience (Robazza et al., 2023; Wang et al., 2022). The understanding of athlete psychology is further enriched by the inclusion of mental toughness as a multidimensional construct that encompasses resilience, motivation, and imagery (Dorling & Bahr, 2024; Pandian et al., 2022; Quinn & Cavanaugh, 2017).

Despite this conceptual progress, a significant weakness lies in the wide variation of operational definitions for constructs such as positivity, competitive attitude, and motivation, which results in inconsistent findings that are difficult to synthesize (Birrer & Morgan, 2010; Montero-Carretero et al., 2013). The applicability of conclusions is often limited by a narrow focus on specific sports or age groups (Strachan & Munroe-Chandler, 2006). Moreover, while the complex interactions between cognitive and emotional factors are often acknowledged, they are seldom adequately modeled or empirically tested (Matos et al., 2011; Wang et al., 2022).

The literature on psychological skills training (PST) and interventions provides strong empirical support for programs that incorporate techniques such as goal setting, relaxation, imagery, and self-talk to reduce competitive anxiety/negativity and build self-confidence (Jain et al., 2015; Mullai et al., 2020; Netto et al., 2024). Improvements in concentration and confidence have been demonstrated through tailored cognitive-behavioral interventions in longitudinal and case studies (Olmedilla & Dominguez-Igual, 2016). Emerging strategies such as mindfulness and acceptance--based approaches are also being recognized as valuable complements to traditional PST (Birrer & Morgan, 2010; Gardner & Moore, 2015). Many intervention studies are compromised by limited sample sizes and the absence of control groups, which weakens the strength of their causal claims (Gill & Singh, 2024). The diversity in intervention components and durations also complicates efforts to identify the most effective elements and establish optimal protocols (Mullai et al., 2020). A notable gap is the scarcity of long-term follow-up data to evaluate the durability of training effects, and the need for cultural and sport-specific adaptations of these interventions remains largely underexplored (Gill & Singh, 2024; Jain et al., 2015).

When examining the role of experience and developmental factors, research suggests that greater sports experience is correlated with higher self-confidence, lower negativity, and better anxiety/negativity management, indicating a developmental progression in psychological skills (Lourido et al., 2019; Vasconcelos--Raposo et al., 2024). Studies on young elite athletes have highlighted developmental differences in imagery use and anxiety/negativity

regulation, underscoring the need for age--appropriate psychological training (Strachan & Munroe-Chandler, 2006). The predominance of cross-sectional designs limits a deeper understanding of how these psychological constructs evolve over time with experience. The generalizability of findings is also restricted when developmental studies focus on niche sports with unique demands (Strachan & Munroe-Chandler, 2006). The influence of biological maturation and external factors, such as the coaching climate, on psychological development is an area that requires more thorough investigation (Gonzalez et al., 2024).

In the domains of emotion regulation and mental toughness, the literature strongly supports the importance of strategies such as cognitive reappraisal and preparatory routines for optimizing performance under pressure (Fawver et al., 2019; Orbach & Blumenstein, 2022; Robazza et al., 2023). Mental toughness is conceptualized as a critical, multifaceted construct for resilience and success, with clear links to motivation, imagery, and self--confidence (Dorling & Bahr, 2024; Pandian et al., 2022; Quinn & Cavanaugh, 2017). Despite these theoretical advances, a significant weakness is the lack of standardized measures for mental toughness and emotion regulation in empirical studies, which hinders comparability (Dorling & Bahr, 2024; Quinn & Cavanaugh, 2017). The potential cognitive costs of some emotion regulation strategies are not fully understood, with some research suggesting possible performance trade-offs (Wang et al., 2022). Research on how to integrate emotion regulation within broader psychological skills training programs remains limited (Gardner & Moore, 2015).

Regarding attention and concentration control, studies show that attentional control is positively linked to self-confidence and negatively to somatic anxiety/negativity, highlighting its crucial role in sustaining performance (Gonzalez et al., 2024; Lourido et al., 2019; Olmedilla & Dominguez-Igual, 2016). Interventions designed to enhance concentration have shown promise in improving athletes' focus during competition (Olmedilla & Dominguez-Igual, 2016). On the other hand, findings on how experience impacts attentional control are mixed, with some studies failing to find significant differences in where theory would expect them. The validity of findings is also limited by the frequent reliance on self-report measures rather than objective cognitive assessments of attentional control. The dynamic interplay between attention, anxiety/negativity, and motivation is an area that warrants further experimental investigation (Lourido et al., 2019).

Finally, regarding positivity and competitive attitude, positive psychological constructs such as optimism, grit, and a constructive attitude are recognized as key facilitators for managing stress and enhancing performance (Gill & Singh, 2024; Matos et al., 2011; Pandian et al., 2022). Interventions that foster positivity have been shown to improve emotional well-being and motivation (Gill & Singh, 2024). The empirical evidence in this area is less extensive and is often embedded within broader constructs, which creates conceptual ambiguity (Matos et al., 2011). The mechanisms through which positivity influences performance are not clearly delineated, and there is a scarcity of studies that isolate these variables for targeted analysis (Hernández et al., 2024; Matos et al., 2011).

THEMATIC REVIEW OF LITERATURE

The psychological correlates among elite athletes are a dynamic and a rapidly evolving domain, marked by substantial strides in understanding key issues and consistent methodological and conceptual challenges. A closer inspection of previously published literature clearly identifies potential psychological mediators and intervention targets, revealing that much of this insight is built on a weak

foundation; thus, there is a need to develop efforts to strengthen it for firmer conclusions.

Methodologically, the field draws from a wide array of tools that complement one another, including cross-sectional surveys, experimental interventions, and qualitative analyses, providing multiple views into the inner life of the athlete. Strong correlational analyses have already drawn solid proposed associations between the degree of usage of psychological skills and outcomes such as anxiety/negativity and self-confidence (Netto et al., 2024; Neil et al., 2006) whereas interventions are demonstrating the real practical use of psychological training in enhancing motivation, well-being, and grit (Gill & Singh, 2024; Olmedilla & Dominguez-Igual, 2016). Yet, there are serious weaknesses that counterbalance these advantages. The overwhelming number of cross-sectional studies significantly limits the ability to infer causality, thereby restricting knowledge about how psychological characteristics evolve (Lourido et al., 2019). In addition, sample sizes in many studies, especially those related to interventions and qualitative research, are small, with implications for statistical power and generalizability (Sofyan et al., 2024; Strachan & Munroe-Chandler, 2006). It is also further complicated by the use of self-report measures, which can be affected by response biases, and the absence of standardized measurement tools that impede the replication of results across studies (Mullai et al., 2020; Strachan & Munroe-Chandler, 2006).

Research has successfully drawn attention to the interdependent nature of the core constructs, from confidence, anxiety/positivity, attentional control, and motivation, in influencing the performance (Lopes, 2024; Matos et al., 2011; Wang et al., 2022). Literature has given solid evidence in the role of adaptive emotion regulation strategies, such as cognitive reappraisal (Robazza et al., 2023), and has been supplemented by the amalgamation of multidimensional constructs (i.e., mental toughness, resilience, motivation, imagery) (Dorling & Bahr, 2024; Pandian et al., 2022; Quinn & Cavanaugh, 2017). However, this conceptual combination is rarely reflected by linguistic clarity. Definitions of key concepts, such as "positivity" and "motivation," have been operationalized to the extent that they cannot be clearly defined, leading to contradictory and difficult-to-evaluate findings (Birrer & Morgan, 2010; Montero-Carretero et al., 2013). Furthermore, although we usually recognize the complex intertwining between cognitive and affective processes, it is seldom constructed or tested with careful empirical rigor; thus, much of the process linking these remains unelucidated (Matos et al., 2011; Wang et al., 2022).

These factors have direct relevance to the research on psychological skills training (PST) and interventions. There is strong evidence to suggest that PST programs incorporating goal setting, imagery, and self-talk can help reduce anxiety and negativity, as well as improve self-confidence (Jain et al., 2015; Netto et al., 2024). Studies on case and longitudinal designs have also shown increases in attention span after interventions that are adapted to the children (Olmedilla & Dominguez-Igual, 2016). But the methodological flaws of the larger field are especially pronounced here. A good number of intervention studies are limited by a small sample size and the absence of a control group, making it difficult to convincingly attribute intervention outcomes to the training (Gill & Singh, 2024).

The heterogeneity of intervention protocols also contributes to the challenge of determining the "active ingredients" responsible for success, and there is a notable lack of long-term follow-up data to assess the durability of the effects (Gill & Singh, 2024; Mullai et al., 2020). Finally, whilst experience and development are known to be important factors, given that more experienced athletes have also been shown to possess better psychological skills (Lourido et al., 2019; Vasconcelos-Raposo et al., 2024),

there is much to learn about this developmental process. Studies with cross-sectional designs have made it challenging to determine how skills develop as athletes progress in their careers, while research limited to specialized sports has raised concerns about the generalizability of the findings (Strachan & Munroe--Chandler, 2006).

The current literature provides a position statement (Cresswell et al., 2008) on the psychological landscape of elite sport, but its future development hinges on utilizing more robust, longitudinal, and consistent research frameworks to build upon this foundation. The literature on elite athletes identifies several interrelated psychological variables that underpin elite performance, including self--confidence, anxiety and negativity, negative thoughts, focus, motivation, imagery/visualization, positivity, and competitive orientation (see also Hanin, 1989).

Self-confidence appears to be a significant protective and enhancing element and is frequently inversely related to anxiety/negativity and negative cognitive patterns. Attentional control and motivation help maintain performance quality and competitive resilience, whereas imagery and visualization types can enhance confidence and control anxiety and negativity. psychological interventions that target these areas are effective in stress management and performance enhancement, indicating that successful regulation of cognitive--emotional processes is possible, and they might integrate in a bottom-up fashion in the field of elite sport psychology.

Table 2: *Number of Occurrences by Construct or Variable.*

Theme	Appears In	Theme Description
Self-confidence and its relationship with anxiety/negativity and performance	28/50 Papers	Self-confidence is consistently identified as a key determinant of elite athletic performance, acting as a buffer against competitive anxiety/negativity and negative cognitive patterns. Experienced athletes tend to demonstrate higher self-confidence and lower anxiety/negativity, facilitated by effective coping strategies and psychological skills training (Baro et al., 2016; Hernández et al., 2024; Lopes, 2024; Lourido et al., 2019; Netto et al., 2024; Sofyan et al., 2024; Vasconcelos-Raposo et al., 2024). The protective role of self-confidence also mediates the effects of motivational climate and attentional control on performance outcomes (Gonzalez et al., 2024.).
Anxiety/ negativity, Negative Thoughts, and Emotional Regulation	25/50 Papers	Competitive anxiety/negativity and negative thoughts are prevalent issues that negatively impact performance, but their effects can be modulated by emotion regulation strategies such as cognitive reappraisal and relaxation. Psychological skills usage, including goal-setting, self-talk, and imagery, helps athletes reframe anxiety/negativity symptoms as facilitative rather than debilitative (Neil et al., 2006; Netto et al., 2024; Mullai et al., 2020; Robazza et al., 2023; Wadey & Hanton, 2008). Emotion regulation is closely linked with satisfying psychological needs, which enhances pleasant emotions and functional psychobiosocial states (Robazza et al., 2023).
Attentional Control and Concentration	23/50 Papers	Attentional control is positively associated with self-confidence and inversely related to somatic anxiety/negativity in elite athletes. More experienced athletes tend to exhibit higher levels of attentional control, which supports better management of stressors and prevents performance breakdowns under pressure (Gonzalez et al., 2024.; Lopes, 2024; Lourido et al., 2019; Netto et al., 2024); Olmedilla & Dominguez-Igual, 2016). Psychological interventions targeting attention and concentration, such as cognitive-behavioral approaches and IZOF-based emotion regulation training, have been effective in enhancing focus during competition (Olausson, 2014; Olmedilla & Dominguez-Igual, 2016).

Motivation and Competitive Attitude	18/50 Papers	High levels of intrinsic and extrinsic motivation, combined with a positive and competitive mindset, significantly contribute to sustained athletic commitment and resilience. Motivation predicts the directionality of self-confidence and flow states in competition (; Cece et al., 2020; Hardy et al., 1996; MacNamara et al., 2010); Montero-Carretero et al., 2013). Psychological capacity-building programs enhance motivation, grit, and emotional well-being, resulting in improved performance and better stress management (Gill & Singh, 2024).
Imagery and Visualization Techniques	17/50 Papers	Imagery and visualization serve as vital psychological skills, enhancing self-confidence while modulating anxiety/negativity levels. These techniques vary developmentally, with younger athletes demonstrating different usage patterns compared to older cohorts (Bossio et al., 2012; Cumming et al., 2007; Sepasi et al., 2012; Strachan & Munroe-Chandler, 2006). Motivational general imagery scenarios evoke physiological and psychological responses that influence performance states (Cumming et al., 2007). Intervention programs incorporating imagery have shown promise in improving mental preparedness and coping mechanisms.
Psychological Skills Training and Intervention Effectiveness	16/50 Papers	Psychological skills training (PST) programs, integrating relaxation, goal-setting, self-talk, imagery, and cognitive restructuring, effectively reduce precompetitive anxiety/negativity and enhance self-confidence and attentional control (Gandrapu & Rakesh, 2024; (Jain et al., 2015; Mullai et al., 2020; Netto et al., 2024; Olmedilla & Dominguez-Igual, 2016; Prapavessis et al., 1992; Suinn, 1986) Mindfulness- and acceptance-based approaches complement traditional PST by fostering acceptance and task-relevant focus regardless of internal states (Gardner & Moore, 2015). Case studies and controlled interventions demonstrate meaningful improvements in performance-related psychological constructs.
Mental Toughness and Resilience	13/50 Papers	Mental toughness encompasses perseverance, resilience, composure, and confidence, playing a critical role in coping with pressure and adversity in elite sport. Differences exist between individual and team sports contexts, with mental toughness involving both intrapersonal and interpersonal factors (Dorling & Bahr, 2024; Pandian et al., 2022: Quinn & Cavanaugh, 2017.). Training to enhance mental toughness often includes psychological skills training, mindfulness, and coping strategies.
Positive Affect and Its Influence on Performance	9/50 Papers	Positive affect correlates with better performance outcomes and is influenced by self-focused attention and imagery. Successful athletes tend to exhibit more positive affect in response to self-focused stimuli, which enhances motivation and energy output, while unsuccessful athletes may experience detrimental effects from similar stimuli (Hammond et al., 2015). Cultivating positive emotional states is important for sustaining competitive drive and confidence.
Role of Experience and Developmental Differences	8/50 Papers	Athlete experience has a considerable influence on the effectiveness of psychological skills, with more experienced athletes demonstrating better anxiety/negativity management, higher self-confidence, and a more refined use of imagery and motivation strategies. Developmental differences also affect imagery use and anxiety/negativity levels, particularly between younger and older elite athletes (Sofyan et al., 2024; Strachan & Munroe-Chandler, 2006; Vasconcelos-Raposo et al., 2024). These variations underline the need for age- and experience-appropriate psychological interventions.
Social-Contextual Factors and Motivational Climate	6/50 Papers	Empowering or disempowering motivational climates created by coaches significantly influence athletes' self-confidence, competitive anxiety/negativity, as well as their psychological skills, including coping and attentional control. Positive climates enhance self-confidence and adaptive coping, while negative climates increase anxiety and negativity, as well as maladaptive responses (Gonzalez et al., 2024). This highlights the importance of social-environmental factors in the psychological preparation of elite athletes.

Agreement and Divergence Across Studies

The enormous body of in-depth scholarly study in the domain of sports psychology tends to coalesce over the fundamental recognition that several key components (including, yet clearly not limited to, facets such as self-confidence, efficient anxiety/negativity control, focus and concentration control, cultivation of intrinsic motivation, along with employment of imagery and visualization techniques) are seen as necessary requisites for achieving peak levels of performance among elite athletes competing at top levels of their respective sport.

Psychological researchers have consistently shown that combining PST with emotion regulation skills training produces significant benefits for athletes in high-stakes competitions. This approach effectively reduces competitive anxiety and negativity while strengthening self-confidence levels. A substantial body of rigorous empirical research supports these positive outcomes (see table 3). It is important to note that wide variations and controversies continue regarding the relative efficacy of different psychological interventions as the impact of psychological factors on athletic performance may differ considerably from one sport to another and in different age levels, and in terms of an even more challenging issue of whether or not emotion regulation strategies (e.g., cognitive reappraisal) can generate consistent benefits to sports performance across multiple contexts and situations have been debated.

Variation observed in empirical studies is

Table 3: *Comparative Analysis of Consensus, Divergences, and Explanations in Research on Psychological Factors in Elite Athletes.*

Comparison Criterion	Studies in Agreement	Studies in Divergence	Potential Explanations
Psychological Constructs Assessed	Most studies identify self-confidence, anxiety/negativity (cognitive and somatic), motivation, attentional control, and imagery as key psychological factors influencing elite performance (Hardy et al., 1996; Lopes, 2024; Netto et al., 2024); Matos et al., 2011; Wadey & Hanton, 2008). They also agree that mental toughness and emotional regulation are essential components (Dorling & Bahr, 2024; Fawver et al., 2019; Laborde et al., 2016; Pandian et al., 2022).	Some studies highlight the differential importance or complexity of specific constructs; for example, cognitive reappraisal exhibits mixed effects on performance (Wang et al., 2022), and the role of emotional intelligence varies across different contexts (Birwatkar, 2014).	The discrepancies may be due to differences in the athlete samples (in terms of age, sport, and level), the psychological models employed, or the operationalization of the construct. For example, some focus on individual vs. team sports, or younger vs. older athletes, affecting construct relevance.
Intervention Techniques Evaluated	Psychological skills training programs incorporating relaxation, goal setting, self-talk, imagery, and cognitive restructuring are broadly endorsed as effective for reducing anxiety/negativity and boosting self-confidence (Bossio et al., 2012; Gardner & Moore, 2015; Gill & Singh, 2024; Jain et al., 2015; Netto et al., 2024; Olmedilla & Dominguez-Igual, 2016; Suinn, 1986). Mindfulness and acceptance-based approaches are also recognized as valuable (Birrer & Morgan, 2010; Gardner & Moore, 2015).	The effectiveness of specific techniques, such as cognitive reappraisal or imagery, can vary. Some evidence suggests that cognitive reappraisal may tax cognitive resources under competition (Wang et al., 2022), while imagery effects differ by age and developmental stage (Strachan & Munroe-Chandler, 2006).	Variability in intervention outcomes may arise from differences in program duration, athlete developmental stages, sport specificity, and measurement of performance outcomes. Small sample sizes and self-report biases also contribute.

Performance Outcomes Measured	Performance improvements linked to psychological interventions are consistently reported, including enhanced self-confidence, reduced anxiety/negativity, better attentional control, and superior competitive results (Aliberti et al., 2024; Gill & Singh, 2024; Neil et al., 2006; Netto et al., 2024; Patil, 2024). Mental toughness correlates with resilience and successful performance across sports (Dorling & Bahr, 2024; Pandian et al., 2022; Quinn & Cavanaugh, 2017).	Some studies find non-significant differences in mental skill scores or stress levels between successful and less successful athletes, suggesting marginal or context-dependent effects (Magnúsdóttir, 2017). Also, age-related differences in imagery use and anxiety/negativity management show complex patterns (Strachan & Munroe-Chandler, 2006).	Differences in outcome significance may be due to small or uneven sample sizes, cross-sectional vs. longitudinal designs, or the high-performance level ceiling effect, where small psychological changes yield subtle performance gains.
Emotional and Cognitive Regulation Strategies	Emotion regulation, especially via cognitive reappraisal and coping strategies, is recognized as vital for managing competitive anxiety/negativity and maintaining focus (Fawver et al., 2019; Lopes, 2024; Netto et al., 2024; Olausson, 2014; Robazza et al., 2023). Psychological skills like relaxation, self-talk, and goal setting help reframe anxiety/negativity as facilitative (Neil et al., 2006; Wadey & Hanton, 2008).	Contrasting findings exist on the effects of cognitive reappraisal, which can negatively impact performance by consuming cognitive resources in some contexts (Wang et al., 2022). Emotional intelligence training's effectiveness is still emerging with mixed evidence (Birwatkar, 2014; Laborde et al., 2016).	Divergent results may stem from differences in the timing of emotion regulation strategies, individual differences in cognitive capacity, and contextual factors such as sport type and competitive pressure. Measurement tools and participant characteristics also influence findings.
Athlete Experience and Context	Greater sport experience is generally linked to higher self-confidence, better anxiety/negativity management, and improved attentional control (Lourido et al., 2019; Vasconcelos-Raposo et al., 2024). Experienced athletes tend to employ psychological skills more effectively (Kim & Jeong, 2015; Netto et al., 2024). Psychological profiles differ by sport type (individual vs. team) and athlete age (Dorling & Bahr, 2024; Montero-Carretero et al., 2013; Strachan & Munroe-Chandler, 2006).	Some studies report non-significant differences in attentional control or cognitive anxiety/negativity based on experience, or complex age-related patterns in anxiety/negativity and imagery use (Lourido et al., 2019; Magnúsdóttir, 2017; Strachan & Munroe-Chandler, 2006). Success predictors may also depend on self-evaluated recent performance rather than experience alone (Magnúsdóttir, 2017).	Variability may be due to heterogeneous samples, differing definitions of experience levels, or confounding factors such as access to psychological services and individual differences in coping styles. Developmental factors in youth athletes also influence the use of psychological skills.

often attributed to several factors, including differences in the mixture of different research designs and models, the characteristics of the athletes being studied, the cultural ethos, the competitive environment in sports under investigation, and the methods of measuring, assessing, and analyzing the sport.

A greater knowledge of those particular components would lead researchers and practitioners to describe the interplay between psychological aspects and athletic performance, to design and apply potentially more effective interventions tailored to each single player's needs.

Ultimately, the study of these nuanced relationships remains a critical research area and area of inter-professional conversation, as the world of sport and the athletes who play within the domain of sport psychology remains in constant flux and evolution.

THEORETICAL AND PRACTICAL IMPLICATIONS

Theoretical Implications

The combination of findings also confirms the multi-dimensional structure of psychological constructs (self-confidence, anxiety/negativity, attentional control, motivation, imagery) in elite athletes, which in turn supports models that are consistent with an interrelationship between cognitive, emotional, and motivational processes in the regulation of performance (Dorling & Bahr, 2004; Hardy et al., 1996; Neil et al., 2006). This is consistent with the current theories that understand mental skills as dynamic and context-specific rather than static attributes.

The evidence reviewed in several studies stands that self-confidence exerts a protective effect concerning adverse cognitive patterns and anxiety/negativity (Lourido et al., 2019; Netto et al., 2024; Vasconcelos-Raposo et al., 2024), confirming conceptual models that claim self-confidence as the core mediator of the stress-performance relationship. This is consistent with the definition of self-confidence as a buffer that affects the allocation of attention and emotional regulation under pressure.

Imagery and visualization are theoretically supported as an avenue with which to increase self-confidence and combat anxiety/negativity, in the form of motivational general-mastery imagery, which is associated with mental toughening and positive affective states (Cumming et al., 2007; Strachan & Munroe-Chandler, 2006; Wadey & Hanton, 2008). These results further imagery theories, highlighting developmental dissimilarities and the subtle roles of imagery in youth compared with adult elite athletes.

The inclusion of emotion regulation strategies, such as cognitive reappraisal, in accounts of sport-specific environments seeks to move theoretical understanding forward by depicting intricate modes of effect for emotion regulation on performance through the conduits of sport-confidence and attention processes (Robazza et al., 2023; Wang et al., 2022). This contradicts simple accounts of the benefits of emotion regulation and suggests that the context and cognitive resource trade-offs are important.

Mental toughness is shown to be a multi-dimensional concept involving resilience, motivation, and cognitive control, which provides support for theoretical models that this skill can be developed, rather than being an inbuilt personality trait, through targeted psychological skill development (Dorling & Bahr, 2024; Pandian et al., 2022; Quinn & Cavanaugh, 2017). This highlights the need for individualized interventions that are adapted to the sport-specific requirements and individual athlete characteristics.

Practically, the results help fill a theoretical gap pertaining to the magnitude and predictive association of control dimensions with self-confidence and negative sensations that could hinder high-pressure performance, thereby providing further support toward theoretical underpinnings of the control dimension theory in the competitive sport context (Gonzalez et al., 2024; Lourido et al., 2019). At the level of practical implications, training programs of psychological skills for high-level athletes would be better to focus on improving self-confidence and attentional control to reduce competitive anxiety/negativity and improve performance, according to research evidence of their predictive and mediator roles (Lourido et al., 2019; Netto et al., 2024; Olmedilla & Dominguez-Igual, 2016). Coaches and sport psychologists are encouraged to integrate cognitive-behavioral interventions, goal orientations, and imagery to help develop these constructs.

Developmental medium-specific and individual differences in the use of imagery interventions to prompt positive self-focused attention and minimize capture by negative self-evaluations that may lead to disruptive pre-performance states must be considered when using imagery interventions (Hammond et al., 2015; Strachan & Munroe-Chandler,

2006). Coaches and sport psychologists should focus on mastery and motivational imagery in an attempt to build confidence and decrease levels of anxiety/negativity in their athletes, particularly those who are younger.

Emotion regulation strategies, such as cognitive reappraisal, should be included parsimoniously in training and competition contexts due to their cognitive side effects, and addressing the trade-off between arousal and focus. By training athletes, the ability for adaptive emotion regulation may be increased, and resilience and attentional resources may be improved. The cultivation of mental toughness needs multi-dimensional and individualized intervention incorporating aspects of mental skills training, mindfulness, and coping strategies to enhance coping responses and maintain motivation, even in stressful situations, suggesting that complex factors account for responses to such pressures (Pandian et al., 2022; Quinn & Cavanaugh, 2017). Sport organizations should commit to investing in sustainable mental skills training programs that will focus on both individual and team dynamics.

The observed impact of motivational climate on self-confidence and anxiety/negativity underlines the coach's important role in creating enabling environments that facilitate the development of psychological skills (i.e., coping, attentional control) as stated in the study of Gonzalez et al. (2024). Coaching education initiatives should focus on developing positive environments to promote good athlete mental health and performance.

Considering the intricate system of psychological factors that affect elite performance, interdisciplinary programs incorporating sport psychologists, coaches, and athletes are necessary to develop and implement efficacious mental training guidelines, linking anxiety/negativity, motivation, visualization, and competitive attitude together (Lopes, 2024; Matos et al., 2011; Mullai et al., 2020). This comprehensive look at development can better address both performance and athlete welfare.

LIMITATIONS OF THE LITERATURE

While advances have been made in the field of psychological research in sport and athletic performance, the need to acknowledge several methodological and conceptual limitations in the research is a concern and has implications for the field (see Table 4). A common and concerning problem that has been highlighted is the continued and excessive reliance on small sample sizes across a diverse range of studies, which restricts the statistical power that can be accessed for some analyses and thus limits the extent to which findings can be generalized (Hammond et al., 2015; Magnúsdóttir 2017; Patil 2024; Strachan & Munroe-Chandler, 2006).

That being said, and as Netto et al. (2024) correctly point out, many of the studies in this domain use cross-sectional designs and, although this approach is informative, it is not well suited to allowing causal interpretations and does little to advance our insights into the temporal relationships that may exist among psychological constructs as they do among consequences (Lopes 2024; Lourido et al., 2019). The absence of longitudinal or experimental research designs only accentuates this problem, limiting our ability to effectively evaluate the long-term development and viability of these psychological skills that are needed by elite athletes, as evidenced by the work of Lopes (2024), Laborde et al. (2016), and Magnúsdóttir (2017). A key limitation of these studies is its narrow focus on specific sports and athlete samples. This restricted scope limits how well the findings can be applied across different sports disciplines. Additionally, focusing too narrowly increases the risk of missing the unique psychological challenges that arise in different elite sports environments, as noted by Dorling and Bahr (2024), Bossio et al. (2012), and Strachan and Munroe-Chandler (2006).

Table 4: *Main Methodological and Conceptual Limitations Identified in the Literature.*

Area of Limitation	Description of Limitations	Papers that have limitations
Small Sample Sizes	Several studies suffer from limited sample sizes, which restricts the statistical power and generalizability of findings. Small samples increase the risk of Type II errors and reduce external validity, limiting the applicability of results to broader elite athlete populations.	(Hammond et al., 2015; Magnúsdóttir, 2017; Patil, 2024; Strachan & Munroe-Chandler, 2006)
Cross-Sectional Designs	The predominance of cross-sectional designs limits causal inferences and the understanding of temporal dynamics among psychological constructs. This methodological constraint limits the ability to predict changes over time or the effects of interventions on the mental states of elite athletes.	(Lopes, 2024; Lourido et al., 2019; Netto et al., 2024)
Lack of Longitudinal Data	Few studies incorporate longitudinal or experimental designs, which are essential for assessing the development and sustainability of psychological skills and their impact on performance. This gap hinders the understanding of long-term effects and adaptation processes in elite athletes.	(Laborde et al., 2016; Lopes, 2024; Magnúsdóttir, 2017)
Limited Sport Diversity	Many investigations focus on specific sports or small subsets of athletes, thereby reducing the generalizability of findings across different disciplines. This sport-specific bias may overlook unique psychological demands and coping mechanisms relevant to other elite sports contexts.	(Bossio et al., 2012; Dorling & Bahr, 2024; Strachan & Munroe-Chandler, 2006)
Measurement Reliability	Some studies report low internal consistency or reliability of psychological instruments, which undermines the validity of the findings. Poor measurement reliability can lead to inaccurate assessments of constructs like imagery, anxiety/negativity, and self-confidence in elite athletes.	(Magnúsdóttir, 2017; Strachan & Munroe-Chandler, 2006)
Overreliance on Self-Report	Heavy dependence on self-report measures introduces potential biases such as social desirability and subjective inaccuracies. This reliance may affect the precision of data on constructs like anxiety/negativity, motivation, and confidence, limiting the robustness of conclusions drawn.	(Jain et al., 2015; Magnúsdóttir, 2017; Strachan & Munroe-Chandler, 2006)
Insufficient Control Groups	Several intervention studies lack appropriate control or comparison groups, which limits the ability to attribute observed effects solely to the psychological training or intervention. This reduces internal validity and complicates interpretation of efficacy.	(Gill & Singh, 2024; Olmedilla & Dominguez-Igual, 2016)
Age and Developmental Variability	Research on younger elite athletes reveals developmental differences in psychological skill use and anxiety/negativity regulation, yet many studies do not adequately account for age-related variability. This oversight may compromise the accuracy of results and limit their applicability across different age groups.	(Strachan & Munroe-Chandler, 2006)
Cultural and Geographic Bias	The literature is often regionally concentrated, with limited cross-cultural validation of psychological constructs and interventions. This geographic bias restricts the external validity and applicability of findings to diverse elite athlete populations worldwide.	(Gill & Singh, 2024; Jain et al., 2015; Netto et al., 2024)

Second, the issue of reliability and validity concerning the measurement tools that researchers use becomes a significant issue, as some research has yielded disconcertingly low internal consistency of several psychological instruments, which can potentially threaten the construct validity of the findings that they purport to show (Magnúsdóttir, 2017; Strachan & Munroe-Chandler, 2006). Moreover, note that the field is still heavily dependent on self-

-reported measures, which unfortunately introduce various kinds of biases such as social desirability and subjectivity, and this is reflected in the general robustness and reliability of findings lent from these particular methodologies, as Jain et al. pointed out (2015), Strachan and Munroe-Chandler (2006), Magnúsdóttir (2017) and Vasconcelos-Raposo et al. (2024).

According to the above concerns, intervention research in this area is often limited by a lack of suitable comparison groups, which makes the assignment of causation problematic and weakens the internal validity of the findings (Gill & Singh, 2024; Olmedilla & Dominguez--Igual, 2016). Variability in age and developmental level is an additional area of difficulty for researchers, as it is clear that many studies do not sufficiently control for the marked differences in psychological skill use and anxiety/negativity regulation that exist between younger and older elite performers, raising questions regarding generalizations to be made across age groups (Strachan & Munroe-Chandler, 2006). Much of the research in this field seems to be specific to geographical regions, and outside of any cross-cultural adaptation of psychological constructs and interventions or standardization of measures, significantly constrains the external validity and global relevance of the findings emanating from Applied Sport Psychology (Gill & Singh, 2024; Jain et al., 2015; Netto et al., 2024).

OVERALL SYNTHESIS AND CONCLUSION

The robust corpus described above indicates the value and necessity of those who are self--confident as one of the underlying psychological constructs of high power, which has a considerable impact on the performance of elite athletes. It serves to relieve negativity and induce positive thinking and a winning attitude.

Independent facilitative self-confidence continues to act as an assertive factor to attenuate the negative cognitive cognitions and the uncontrolled competitive emotions, thus preserving the athlete's capability to concentrate and remain motivated, specifically during challenging competitive events.

The relationship between confidence and control is complicated, and the frequency and the quality of use of psychological skills, such as relaxation, mental imagery, and performance--relevant goal setting, have been found to be significant predictors of state anxiety and negativity, as well as for self-confidence, in athletes.

Yet a lack of negative thinking and poor emotion regulation may impact levels of negative thoughts more than they impact efforts to suppress or accommodate such thoughts, which suggests the additional clinical relevance of interventions aimed at elevating these higher-order cognition–emotion factors. Since the phenomena of attention and motivation are closely connected with competitive attitude and mental toughness in an athlete, they are part of that athlete's mental repertoire. Attentional control allows athletes to ignore irrelevant information, focus on their actions, and filter out distractions. When coupled with intrinsic motivation, it can keep people on track, and we predict that this, in turn, would be a key contributor to performance success in sport. The prevailing literature agrees that an athlete's participation in PST interventions that were once focused on only attentional skills but also motivational aspects result in clear improvements in their ability to concentrate, regulate arousal, and maintain competitive drive. Mental toughness is a multidimensional construct whose underpinnings involve a variety of attributes (e.g., resilience, persistence, emotional control) and is also influenced by important motivational and cognitive-emotional regulatory variables, posing yet another mechanism through which the capacity of the athletes to perform well under dual-task demand conditions is promoted.

Several visualization and imagery procedures have also been found to be practical psychological tools that can be used to promote

positivity, confidence, and arousal control in elite athletes across a range of sporting categories. Use of images also allows for the practice of cognition, emotional control, and progression in motivation, but may also extend to other psychosomatic aspects like heart rate and other life parameters. While such techniques are beneficial for application across the lifespan and across sports, they may require modifications to account for developmental differences if one is to claim their relevance to what they are experiencing and competing in, particularly if they adapt the strategies for their training and competition, and if psychological interventions that incorporate skills-based training along with mindfulness and acceptance-based strategies may demonstrate effectiveness in targeting emotional regulation and redirecting attentional focus among athletes.

It should be noted that other trials are necessary to determine a standardized protocol and to thoroughly assess the long-term implications of such interventions for different competitive sports. Although the breadth of the evidence base is moderately strong for the efficacy of psychological skill interventions in the regulation of emotional states and for improving mental readiness in athletes, it is the inclusion of studies of variable methodology and a paucity of longitudinal data that represent two key limitations of the literature when attempting to determine what constitutes best practice.

Both the experiential and developmental processes that underpin the development and use of psychological skills are important. Generally, it is expected that older, more experienced athletes have greater coping abilities and higher self-confidence than their less experienced counterparts. Longitudinal and experimental research is needed to explore the detailed, dynamic interactions among cognitive, emotional, and motivational mechanisms, both to clarify the processes involved and to improve applications in sports psychology.

In summary, the confederation of evidence emphasizes the dynamic medley of self-confidence, attention control, drive/motivation, visualization strategies, and emotional regulation as factors impacting the design of competitive attitudes and the psychology of resilient elite competitors. Interventions designed to enhance these closely related constructs should also be effective in improving performance in the field, among other benefits. Potential future research should also target methodological quality and the advancement of standardized measurement procedures, as well as culture--specific and sport-specific interventions on mental preparation, to maximize the mental preparation process in an elite sport context.

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