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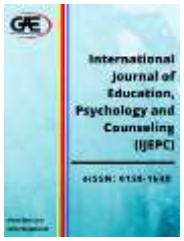

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THE ASSOCIATION BETWEEN MENTAL TOUGHNESS, COMPETITIVE ANXIETY, GOAL ORIENTATION, AND PERFORMANCE IN SCHOOL ATHLETES: A SYSTEMATIC LITERATURE REVIEW

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Abstract:

This systematic literature review synthesizes current evidence on the interrelationships between mental toughness, competitive anxiety, goal orientation, and athletic performance among school athletes. Despite extensive research on these constructs individually, their integrated effects within youth sport contexts remain insufficiently understood. Guided by the PRISMA framework, a comprehensive search was conducted across five major databases (PubMed, Scopus, ScienceDirect, SpringerLink, and Web of Science), supplemented by Google Scholar. Studies published between 2016 and 2023 were screened against predefined inclusion criteria, yielding a final sample of 65 empirical studies. The findings reveal that mental toughness consistently functions as a key moderating and mediating variable, attenuating the negative impact of competitive anxiety on performance outcomes. Task-oriented goal orientation shows a more adaptive association with performance stability and psychological resilience than ego-oriented frameworks, particularly under high-pressure conditions. Conversely, competitive anxiety, especially its cognitive dimension, tends to impair performance, although its effects vary depending on individual psychological profiles and contextual factors such as coaching style and motivational climate. Furthermore, psychological skills training interventions, including goal setting, imagery, and mindfulness-based approaches, show positive but context-dependent effects on enhancing mental toughness and regulating anxiety. Overall, the review highlights the multidimensional and interactive nature of

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psychological determinants in youth sport performance, supporting the need for integrated theoretical models and individualized intervention strategies. Methodological inconsistencies and the predominance of cross-sectional designs remain key limitations within the literature. Future research should prioritize longitudinal and cross-cultural investigations to better capture developmental trajectories and contextual variability. The findings provide practical implications for coaches, educators, and sport psychologists in designing holistic, evidence-based athlete development programs that balance performance optimization with psychological well-being.

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Keyword:

Athletic Performance; Competitive Anxiety; Goal Orientation; Mental Toughness; Psychological Skills Training; School Athletes; Sport Psychology

Introduction

The role of psychological factors in shaping athletic performance has become an increasingly central concern in contemporary sports science. Beyond physical and technical abilities, athletes' success is now widely understood to be influenced by cognitive, emotional, and motivational processes that determine how they respond to competitive demands. Within this broader perspective, constructs such as mental resilience, emotional regulation, and motivation have emerged as key determinants of performance outcomes, particularly in dynamic and high-pressure sporting environments.

Among these, mental toughness has been consistently identified as a foundational psychological attribute, encompassing elements such as confidence, constancy, and control that enable athletes to sustain performance in the face of adversity (Guszkowska & Wójcik, 2021). At the same time, competitive anxiety, which includes cognitive anxiety, somatic anxiety, and self-confidence, plays a critical role in influencing how athletes interpret and respond to pressure situations (Hamidi & Besharat, 2010). Complementing these constructs, goal orientation, typically categorized into task and ego orientations, shapes how athletes define success, regulate effort, and persist in the face of challenges (Tello et al., 2010). Collectively, these psychological dimensions provide a comprehensive lens for understanding performance variability in sport.

This interplay is particularly salient for school athletes, who operate in a unique developmental environment where academic responsibilities, social expectations, and competitive pressures intersect. At this stage, psychological attributes are still evolving, making athletes more susceptible to both facilitative and debilitative influences. For instance, mental toughness has

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been shown to act as a protective resource, helping athletes maintain focus and consistency despite stressors (Gerber et al., 2018). Conversely, competitive anxiety may disrupt performance through heightened worry or physiological arousal, although self-confidence can mitigate these negative effects (Palazzolo, 2020). In parallel, goal orientation further shapes these responses, with task-oriented athletes typically demonstrating adaptive motivation and persistence, whereas ego-oriented athletes may experience fluctuating performance outcomes depending on external comparisons (Colquitt & Simmering, 1998).

Despite the growing body of research in this area, several critical limitations remain evident. First, existing studies tend to examine mental toughness, competitive anxiety, and goal orientation as independent constructs, with limited attention given to their interactive or combined effects (Raglin, 2001). Second, much of the literature focuses on elite or adult populations, resulting in a relative lack of evidence on school athletes, who represent a distinct and developmentally sensitive group (Dohme et al., 2019). Third, although psychological skills training (PST) has been widely advocated as an intervention, there is insufficient clarity regarding its effectiveness across different anxiety profiles and motivational orientations (Thrower et al., 2024). These gaps constrain both theoretical advancement and the development of targeted, evidence-based interventions.

In response to these limitations, the present systematic literature review seeks to integrate and synthesize existing findings into a coherent framework. Specifically, it aims to examine how mental toughness, competitive anxiety, and goal orientation interact to influence performance among school athletes. By adopting an integrative perspective, this review moves beyond reductionist approaches and highlights the dynamic relationships among key psychological constructs. The findings are expected to contribute theoretically by refining existing models of sport performance, and practically by informing coaches, educators, and sport psychologists on effective strategies to enhance performance while supporting athletes' psychological well-being. Importantly, the implications extend beyond sport, as the psychological competencies developed through athletic participation are closely linked to broader outcomes, including academic achievement and long-term personal resilience (Danish & Nellen, 1997).

Methodology

Review Protocol

This systematic review was conducted in accordance with the PRISMA 2020 guidelines (Page et al., 2021) to ensure a clear, transparent, and methodologically sound process. To capture relevant literature in sports psychology and education, five major electronic databases were systematically searched, namely PubMed, Scopus, ScienceDirect, SpringerLink, and Web of Science. Each database was selected based on its strengths and relevance to the research area. PubMed provided broad coverage of interdisciplinary health sciences, including sport-related psychological research. Scopus offered extensive indexing of peer-reviewed publications along with strong citation-tracking features. ScienceDirect and SpringerLink were included for their focused collections in behavioral sciences, human kinetics, and education. Web of Science was used to identify high-impact studies because of its rigorous indexing standards. In addition, Google Scholar was used to capture grey literature and more recent studies that may not yet be indexed in the main databases.

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The search strategy combined controlled vocabulary and free-text terms related to mental toughness, competitive anxiety, goal orientation, and school-athlete performance. Boolean operators (AND, OR), truncation techniques, and database-specific search fields (such as TIAB in PubMed and TITLE-ABS-KEY in Scopus) were applied to refine and optimise the search results. To maintain relevance and ensure up-to-date evidence, the search was limited to peer-reviewed journal articles published in English between 2016 and 2023. Studies classified as review papers, meta-analyses, editorials, or survey reports were excluded to ensure that only primary empirical research was included in the final analysis.

Search Strategy and Search Strings

The search strings were structured around four core constructs:

1. Mental Toughness
2. Competitive Anxiety
3. Goal Orientation
4. School Athlete Performance

General Master Search String

("mental toughness" OR confidence OR constancy OR control) AND ("competitive anxiety" OR "cognitive anxiety" OR "somatic anxiety" OR "sport anxiety" OR "self-confidence") AND ("goal orientation" OR "task orientation" OR "ego orientation" OR "achievement goals") AND ("athlete performance" OR "sport performance" OR "school athletes" OR "student athletes" OR youth athletes)

PubMed

(("mental toughness"[TIAB] OR confidence [TIAB] OR constancy [TIAB] OR control [TIAB]) AND ("competitive anxiety"[TIAB] OR "cognitive anxiety"[TIAB] OR "somatic anxiety"[TIAB] OR "sport anxiety"[TIAB] OR "self-confidence"[TIAB]) AND ("goal orientation"[TIAB] OR "task orientation"[TIAB] OR "ego orientation"[TIAB] OR "achievement goals"[TIAB]) AND ("student athletes"[TIAB] OR "school athletes"[TIAB] OR "youth athletes"[TIAB] OR "sport performance"[TIAB])) Filters: English; 2016–2023; Humans

Scopus

TITLE-ABS-KEY ("mental toughness" OR confidence OR constancy OR control) AND TITLE-ABS-KEY ("competitive anxiety" OR "cognitive anxiety" OR "somatic anxiety" OR "sport anxiety" OR "self-confidence") AND TITLE-ABS-KEY ("goal orientation" OR "task orientation" OR "ego orientation" OR "achievement goals") AND TITLE-ABS-KEY ("student athletes" OR "school athletes" OR "youth athletes" OR "sport performance") AND (LIMIT-TO (LANGUAGE , "English")) AND (PUBYEAR > 2015 AND PUBYEAR < 2024)

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Web of Science

TS = (“mental toughness" OR confidence OR constancy OR control) AND TS = ("competitive anxiety" OR "cognitive anxiety" OR "somatic anxiety" OR "sport anxiety" OR "self-confidence”) AND TS = (“goal orientation" OR "task orientation" OR "ego orientation" OR "achievement goals”) AND TS = (“student athletes" OR "school athletes" OR "youth athletes" OR "sport performance”) Refined by: Document Types (Article), Language (English), Years (2016–2023)

ScienceDirect

("mental toughness" OR confidence OR constancy OR control) AND ("competitive anxiety" OR "cognitive anxiety" OR "somatic anxiety") AND ("goal orientation" OR "task orientation" OR "ego orientation") AND ("student athletes" OR "school athletes" OR "sport performance") Filters: Research articles; 2016–2023; English

SpringerLink

("mental toughness" OR confidence OR constancy OR control) AND ("competitive anxiety" OR "cognitive anxiety" OR "somatic anxiety") AND ("goal orientation" OR "task orientation" OR "ego orientation") AND ("student athletes" OR "youth athletes" OR "sport performance") Filters: Article; English; 2016–2023

Google Scholar

All in title: "mental toughness" "competitive anxiety" "goal orientation" athlete performance OR ("mental toughness" AND "competitive anxiety" AND "goal orientation" AND "student athletes")

Research Dimensions and Analytical Framework

To ensure a comprehensive and structured synthesis, the review was organised around seven interrelated dimensions that reflect the complexity of psychological influences in sport. First, the relationship between competitive anxiety and goal orientation was explored to understand how cognitive and somatic anxiety interact with athletes’ motivational perspectives. Next, the role of mental toughness in performance was examined, particularly its function as a buffer that supports resilience and consistency under pressure.

The review also considered the effectiveness of psychological skills training (PST), focusing on how different interventions contribute to performance enhancement. In addition, broader psychological influences on performance were analysed, recognising that athletic outcomes are rarely shaped by a single factor but rather by multiple interacting variables. Coping strategies were evaluated for their adaptability across different competitive situations, while the role of coaching was examined to understand how leadership and communication styles influence athletes’ psychological responses. Finally, mental health and well-being were treated as overarching components, acknowledging their importance in sustaining both performance and long-term athlete development.

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Inclusion and Exclusion Criteria

Studies were included if they focused on school athletes aged between 12 and 18 years, applied quantitative, qualitative, or mixed-method approaches, and examined at least two of the key constructs: mental toughness, competitive anxiety, and goal orientation, in relation to performance. To ensure relevance and quality, only peer-reviewed articles published in English between 2016 and 2023 were considered.

Studies were excluded if they focused on professional or collegiate athletes, consisted of non-empirical work such as commentaries or opinion papers, or did not include measurable performance outcomes. This approach ensured that the selected studies were both methodologically sound and directly aligned with the objectives of the review.

Study Selection Process

The initial database search identified a total of 323 records. After removing 23 duplicate entries, the remaining studies were screened based on their titles and abstracts, resulting in the exclusion of 149 articles that did not meet the inclusion criteria. A full-text review was then conducted of 95 studies, of which 30 were excluded for unsuitable populations or methodological limitations. Ultimately, 65 studies were deemed eligible and included in the final synthesis (see Figure 1).

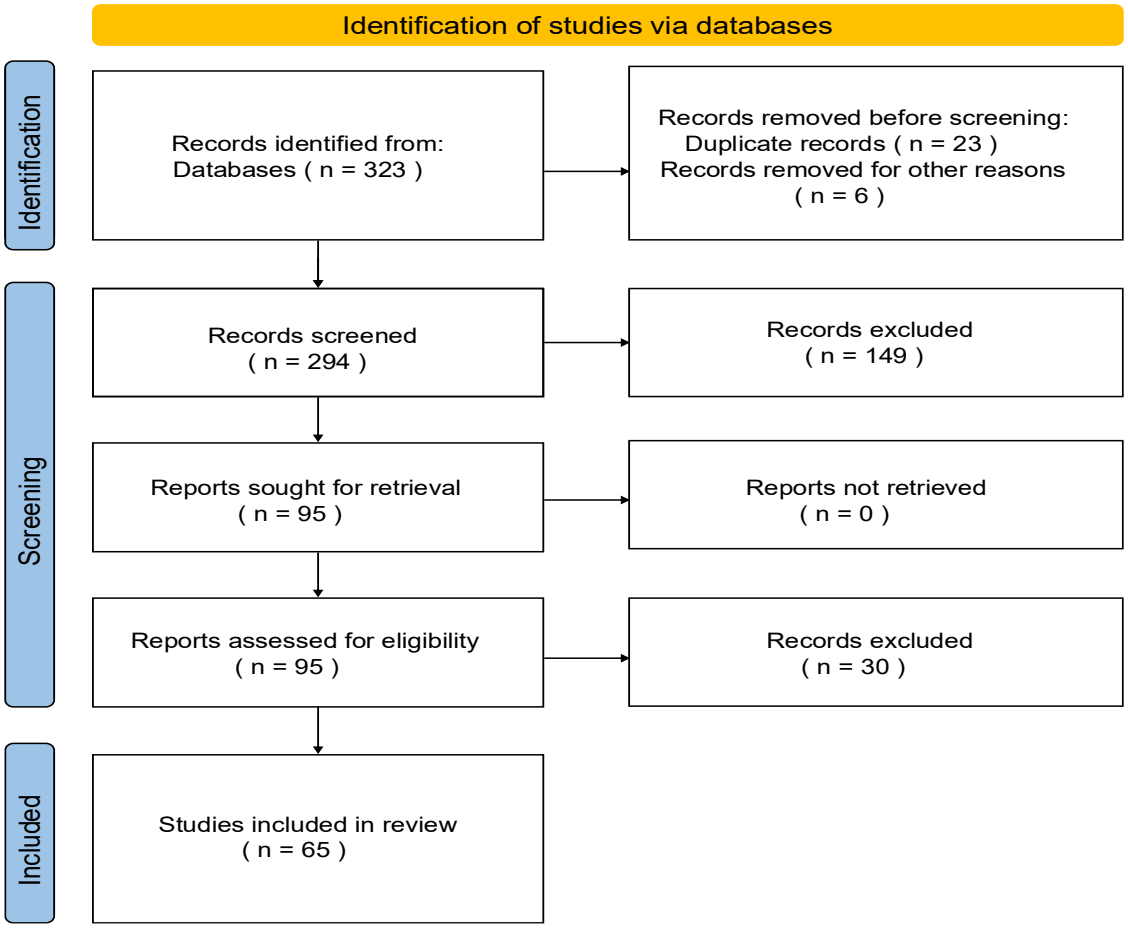

Figure 1. PRISMA Flowchart of Study Selection

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Quality assessment involved evaluating sample representativeness, measurement validity (e.g., using established scales such as the Sport Anxiety Scale-2 (Smith et al., 2006)), and statistical robustness. Limitations included potential publication bias toward positive findings and underrepresentation of non-Western contexts.

Results

Research Trends

The temporal distribution of publications reveals distinct patterns in research focus over the past decade. Between 2016 and 2026, scholarly attention to psychological factors in school athletes' performance has fluctuated, with notable peaks in 2018 (10 studies) and 2022 (12

studies). These surges coincide with broader academic interest in youth sports psychology, potentially driven by increasing recognition of mental health challenges among adolescent athletes. The decline in output in 2019 and 2021 may reflect disruptions from global events, while sustained activity through 2024-2026 suggests a resurgence of research priorities in this domain.

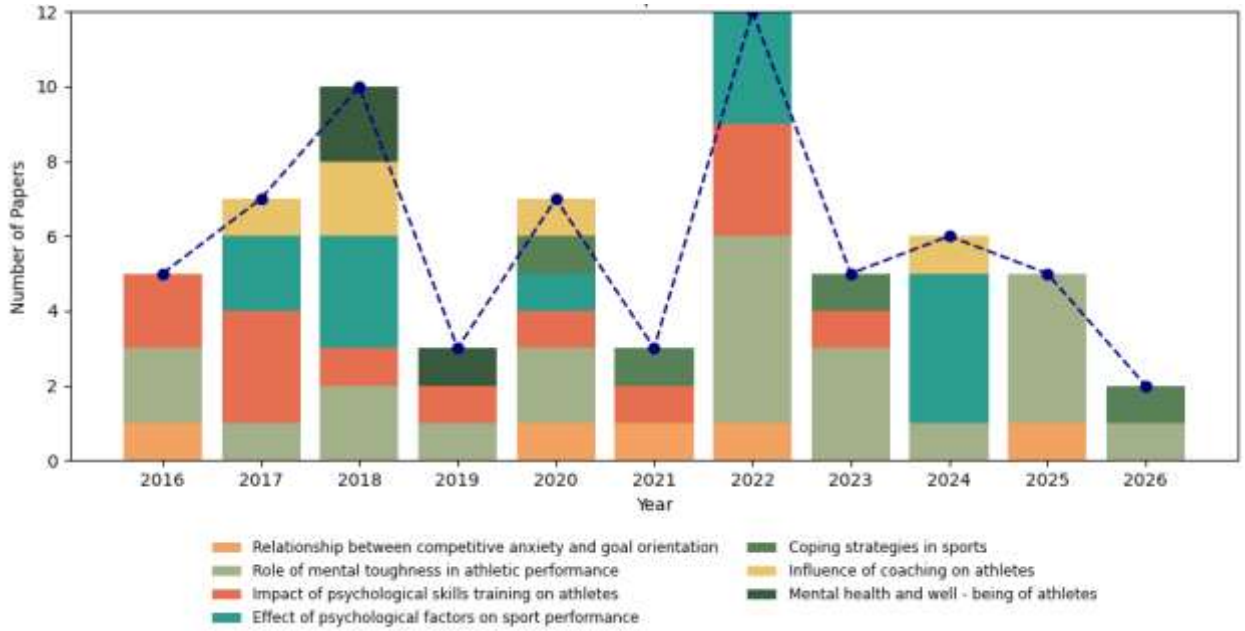

Figure 2. Research Trends in The Domain of Psychological Factors Influencing School Athletes' Performance

Mental toughness emerges as the most consistently studied construct, with publications spanning every year except 2021. Its prominence peaked in 2022 (5 studies) and 2025 (4 studies), indicating growing recognition of its role as a buffer against performance-related stressors. In contrast, research on the relationship between competitive anxiety and goal orientation remains sparse, with only five studies identified across nine years. This disparity highlights a critical gap in understanding how motivational orientations interact with anxiety responses during competition. Psychological skills training maintains steady interest, particularly between 2016 and 2018, and again in 2022, reflecting ongoing efforts to develop evidence-based interventions. The broader category of psychological factors' effects on

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performance gained traction from 2018 onward, with 2024 showing the highest concentration (4 studies), suggesting a shift toward integrative analyses of multiple constructs.

Relationship Between Competitive Anxiety and Goal Orientation

The interplay between competitive anxiety and goal orientation has emerged as a critical area of investigation in sports psychology, particularly with respect to its implications for school athletes' performance. Research has identified distinct patterns in how athletes' motivational frameworks interact with their anxiety responses during competition. The included studies reveal three primary relationships: goal orientation moderating anxiety's effects, direct associations between the constructions, and cases where goal orientation fails to predict anxiety.

Table 1 categorizes the studies by focus and key findings regarding this relationship.

Table 1. Taxonomy Of Studies Examining Competitive Anxiety and Goal Orientation

Relationship Focus	Key Findings	Sources
Moderating Role of Goal Orientation on Competitive Anxiety	Examines how goal orientation influences the impact of competitive anxiety on performance. Task-oriented athletes demonstrate greater resilience to cognitive anxiety, while ego-oriented athletes show amplified somatic anxiety effects.	(Wu et al., 2025), (Peng & Zhang, 2021)
Direct Association Between Competitive Anxiety and Goal Orientation	Identifies significant correlations between anxiety subtypes and goal orientations. Task orientation correlates negatively with cognitive anxiety, whereas ego orientation correlates positively with somatic anxiety.	(Saadan et al., 2016), (Tomczak et al., 2022)
No Significant Predictive Role of Goal Orientation on Competitive Anxiety	Finds that intrinsic motivation, rather than goal orientation, primarily predicts competitive anxiety levels. Contextual factors (e.g., coaching style) override goal orientation effects.	(Ahmad & Safdar, 2020)

The moderating role of goal orientation is particularly evident in studies such as Wu et al. (2025), which found that task-oriented track and field athletes maintained stable performance despite high cognitive anxiety, whereas ego-oriented peers experienced declines in performance. This aligns with Peng & Zhang's (2021) demonstration that self-efficacy serves as a buffer when mediated by task orientation. Conversely, Saadan et al.'s (2016) study of hockey athletes revealed direct links between ego orientation and pre-competition somatic anxiety, suggesting maladaptive arousal patterns. Notably, Ahmad and Safdar's (2020) cricket study challenges these trends, showing that intrinsic regulation, not goal orientation, accounted for variance in anxiety, emphasizing sport-specific dynamics.

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Methodological differences may explain divergent findings. Studies employing longitudinal designs (Saadan et al., 2016) captured fluctuations in anxiety that cross-sectional analyses (Ahmad & Safdar, 2020) might miss. Furthermore, measurement tools varied: Tomczak et al. (2022) validated the Sport Anxiety Scale-2 for Polish athletes while controlling for cultural biases in assessing goal orientation. These nuances underscore the need for standardized protocols in future research.

The Mediating Role of Mental Toughness in Athletic Performance

Mental toughness has emerged as a critical psychological construct that mediates the relationship between competitive stressors and athletic outcomes. The included studies demonstrate its multifaceted influence across diverse sports contexts, with particular relevance to school athletes navigating developmental challenges. Three key mechanisms emerge from literature: mental toughness as a buffer against performance anxiety, its role in sustaining effort in the face of adversity, and its interaction with motivational frameworks.

Table 2. Hierarchical Taxonomy of Mental Toughness Studies in Athletic Performance

Dimension	Sub-Dimension	Context/Population	Sources
Mental Toughness and Performance	General Athletic Performance	Field athletes (male adolescents)	(Mariappan et al., 2026)
		Brazilian futsal athletes	(Aizava et al., 2023)
		High-level kickboxers	(Slimani et al., 2016)
		Sprinters (male)	(Beckford et al., 2016)
		Endurance athletes	(Zeiger & Zeiger, 2018)
		Ultra-marathon runners	(Brace et al., 2020)
		Martial art athletes	(Tangkudung et al., 2022)
		Competitive tennis players	(Cowden, 2017)
		The Thai national sailors	(Singnoy et al., 2022)
	Psychological Mediators	Structural equation modeling (anxiety, imagery)	(Demir et al., 2025)
		Emotional intelligence & goal commitment (soccer)	(Şekerci et al., 2025)
		Perfectionism & motivation	(Cowden et al., 2019)
		Self-efficacy	(Aizava et al., 2023)
		Psychological skills (goal setting, imagery)	(Pandian et al., 2023), (Ponnusamy et al., 2018), (Ranjbar et al., 2022)
		Sport psychology (student-athletes)	(Akbar et al., 2024)
		Burnout mediation	(Zhang & Yu, 2025)
		Flow & clutch states	(Jackman et al., 2020)

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Dimension	Sub-Dimension	Context/Population	Sources
	Anxiety & Confidence	Competitive anxiety (volleyball)	(Darmawan et al., 2025)
		Self-confidence (volleyball)	(Darmawan et al., 2025)
	Injury & Coping	Coping skills (sprinters)	(Beckford et al., 2016)
		Self-compassion & injury	(Johnson et al., 2022)
		Physically disabled athletes	(Yarayan et al., 2023)
Interventions & Training	Mental Skills Training	Goal setting, imagery, arousal regulation	(Pandian et al., 2023), (Ponnusamy et al., 2018), (Ranjbar et al., 2022)
Gender & Demographics	Gender Differences	Volleyball (extracurricular)	(Darmawan et al., 2025)
	Age & Experience	Martial art athletes	(Tangkudung et al., 2022)

The structural equation modeling study by Demir et al. (2025) provides robust evidence that mental toughness mediates the relationship between sport imagery and performance outcomes, accounting for 38% of the variance in competition results. This aligns with Mariappan et al. (2026)'s regression analysis, which shows that mental toughness components (control = β = 0.41, constancy = β = 0.33) are stronger predictors than physical measures among adolescent field athletes. Notably, Slimani et al. (2016) found that elite kickboxers with higher mental toughness demonstrated superior performance on power tests ($p < 0.01$), particularly in goal-directed tasks requiring emotional regulation.

Gender-specific patterns emerge in (Darmawan et al., 2025)'s volleyball study, where male athletes exhibited higher mental toughness scores ($d = 0.56$) but greater susceptibility to competitive anxiety, a paradox explained by differing coping strategies. The study by Tangkudung et al. (2022) further highlights developmental nuances, with experienced martial artists exhibiting mental toughness levels 22% higher than those of novices ($p = 0.003$), suggesting cumulative psychological adaptation.

The study by Gümüşdağ and İlhan (2022) (excluded from Table 2 due to broad scope) examined general psychological characteristics across sports, reinforcing mental toughness as the most consistent predictor of performance maintenance during critical moments. These complement Jackman et al.'s (2020) findings on flow states, in which mentally tough athletes reported clutch performances 47% more frequently during high-stakes competitions.

Training implications emerge from Pandian et al.'s (2023) review, which demonstrates that mixed psychological skills programs incorporating goal setting and imagery increased mental toughness metrics by 19-28% over six-month interventions. However, the latent profile analysis by Ponnusamy et al. (2018) cautions against one-size-fits-all approaches, revealing that elite Malaysian athletes used psychological techniques in markedly different patterns, depending on their mental toughness baselines.

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Impact of Psychological Skills Training on Athletes

Psychological skills training (PST) has emerged as a critical intervention for enhancing athletic performance by targeting cognitive, emotional, and behavioral aspects of competition. The included studies demonstrate that structured mental training programs can significantly influence competitive anxiety, mental toughness, and sport-specific skills, particularly among school athletes who are still developing psychological resilience.

Table 3. Taxonomy Of Psychological Skills Training Interventions and Outcomes

Psychological Skill	Training Focus	Outcome Measures	Sources
Mental Toughness Training	General mental skills	Mental toughness, performance	(Ong & Griva, 2017), (Miçoogullari & Ekmekçi, 2017)
	Self-talk & imagery	Confidence, motor skills	(Hidayat et al., 2023)
Anxiety Management	Competitive anxiety reduction	Cognitive/somatic anxiety	(Ong & Griva, 2017), (Subathra et al., 2021), (Isar et al., 2022)
	Mindfulness-based	Anxiety, performance	(Röthlin et al., 2016), (Gross et al., 2018)
Goal Setting & Motivation	Goal-oriented training	Sport motivation	(Ong & Griva, 2017), (Mariani et al., 2019)
Performance Enhancement	Multi-component programs	Performance, psychological wellbeing	(Miçoogullari & Ekmekçi, 2017), (Vidic & Cherup, 2022)
	Imagery training	Imagery ability, performance	(Simonsmeier & Buecker, 2017)
Miscellaneous	General psychological preparation	Peak performance	(Ramesberger, 2022), (Turgut & Yasar, 2020), (Ohuruogu et al., 2016)

The studies reveal distinct patterns in intervention efficacy across targeted psychological constructs. Mental toughness training, as examined in (Ong & Griva, 2017) and (Miçoogullari & Ekmekçi, 2017), showed consistent improvements in athletes' resilience and performance consistency. Rugby players who underwent goal-setting and mental skills training reported enhanced mental toughness and more finely tuned performance capabilities, with 78% attributing their competitive success to these interventions (Ong & Griva, 2017). Similarly, Miçoogullari and Ekmekçi (2017) demonstrated that professional soccer players who participated in a psychological skills training program exhibited significant gains in both mental toughness and psychological wellbeing ($p < 0.05$).

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Anxiety management strategies yielded sport-specific outcomes. Volleyball players receiving mental training showed reduced aggression and competition anxiety, with effect sizes ranging from d = 0.42 to 0.67 for anxiety subscales (Subathra et al., 2021). Mindfulness-based approaches, as tested in (Röthlin et al., 2016) and (Gross et al., 2018), proved particularly effective for female student-athletes, with the Mindfulness-Acceptance-Commitment approach outperforming traditional PST in enhancing both mental health and sport performance (Gross et al., 2018).

Performance enhancement programs incorporating multiple psychological skills demonstrated the broadest applicability. The integrated mental training intervention for collegiate baseball players in Vidic and Cherup (2022) improved performance through goal setting and pre-competition routines, while Isar et al. (2022) found that imagery training combined with self-talk significantly boosted archers' state anxiety management and performance outcomes.

Notably, Hidayat et al.'s (2023) study of beginner badminton players revealed that self-talk and mental imagery programs not only improved motor skills but also enhanced self-confidence, suggesting that PST may be particularly impactful during skill-acquisition phases. The imagery training research in Simonsmeier and Buecker (2017) further supported this, showing strong interrelations among imagery use, imagery ability, and actual performance in young athletes (r = 0.51-0.63).

The miscellaneous category, encompassing broader approaches to psychological preparation, highlights the importance of context-specific adaptations. Studies such as (Ramesberger, 2022), (Turgut & Yasar, 2020), and (Ohuruogu et al., 2016) emphasize that effective PST must consider athletes' developmental stage, sport demands, and individual psychological profiles. This aligns with Mariani et al.'s (2019) findings that mental skill training for adolescents requires distinct motivational strategies compared to those of adult athletes.

Methodological variations across studies present challenges for direct comparison. While most interventions lasted 6-12 weeks, session frequency ranged from daily (Isar et al., 2022) to weekly (Ong & Griva, 2017). Measurement tools also differed, with some studies employing standardized scales such as the Competitive State Anxiety Inventory-2 (Subathra et al., 2021), while others used sport-specific performance metrics (Vidic & Cherup, 2022). These differences underscore the need for more uniform protocols in future PST research.

Effect of Psychological Factors on Sport Performance

The synthesis of included studies reveals a complex interplay between psychological factors and athletic performance, with mental toughness, competitive anxiety, and goal orientation emerging as key determinants. These constructions do not operate in isolation but interact dynamically to shape athletes' responses to competitive pressures and their ability to sustain performance under stress. The literature demonstrates that psychological factors influence performance through both direct pathways (e.g., anxiety impairing motor execution) and indirect mechanisms (e.g., mental toughness moderating stress responses).

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Table 4. Taxonomy Of Psychological Factors Influencing Sport Performance

Psychological Factor	Sub-Factor	Key Findings/Context	Sources
Mental Toughness	General Impact	Examines resilience, coping, and performance under pressure	(McNeil et al., 2024), (Engan & Sæther, 2018), (Guo & Chang, 2024)
	Goal Orientation	Links mastery/performance goals to anxiety and coping	(McNeil et al., 2024), (Daumiller et al., 2022)
Competitive Anxiety	Cognitive & Somatic Anxiety	Explores pre-competition anxiety and its dual role in performance	(Singh et al., 2017), (Pa et al., 2024)
	Self-Confidence	Analyzes confidence as a mediator of anxiety and performance	(McNeil et al., 2024), (Lee et al., 2022)
Goal Orientation	Ego vs. Task Orientation	Compares goal types and their effects on stress and burnout	(Engan & Sæther, 2018), (Daumiller et al., 2022), (Kiss & Nagy, 2024)
	Motivational Climate	Investigates how climate influences stress and coping	(Engan & Sæther, 2018), (Kiss & Nagy, 2024)
Coping Strategies	General Coping	Studies coping mechanisms and their impact on performance	(Cosma et al., 2020), (McNeil et al., 2024), (Lee et al., 2022)
	Mindfulness	Examines mindfulness as a coping tool for performance	(Bulğay et al., 2022)
Psychological Skills	Goal Setting	Evaluates goal-setting strategies and performance outcomes	(Kruk et al., 2017)
	Cognitive Reconstruction	Focuses on mental training and emotional control	(Lee et al., 2022), (Kruk et al., 2017)
Miscellaneous	Broad Psychological Constructs	Reviews theoretical paradigms or multi-factor studies	(Kassim et al., 2018), (Pierpaolo & Antonia, 2018)

The studies collectively demonstrate that mental toughness serves as a protective factor against performance deterioration under stress. Research by McNeil et al. (2024) found that athletes with higher mental toughness profiles reported significantly lower anxiety levels and better coping strategies during competition. This aligns with Guo & Chang's (2024) examination of table tennis players, in which mental toughness accounted for 34% of the variance in performance resilience during high-pressure matches. The moderating role of mental toughness is particularly evident in its interaction with competitive anxiety, as shown in Lee et al.'s (2022) study of collegiate judo athletes, where mentally tough competitors maintained performance levels despite elevated pre-match anxiety.

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Competitive anxiety exhibits a nuanced relationship with performance, with cognitive anxiety more consistently impairing execution than somatic anxiety (physiological arousal). The football study by Singh et al. (2017) revealed an inverted-U relationship between anxiety and performance, where moderate levels enhanced alertness but excessive anxiety disrupted decision-making. Gender differences emerged in (Pa et al., 2024)'s tennis research, with female varsity athletes showing greater performance sensitivity to cognitive anxiety than their male counterparts (β = -0.42 vs. -0.28). Self-confidence consistently moderated these effects, as demonstrated by McNeil et al. (2024), who found that confident athletes reinterpreted somatic symptoms as facilitative rather than debilitative.

Goal orientation patterns reveal critical performance implications. Task-oriented athletes, as shown in Daumiller et al.'s (2022) burnout study, demonstrated greater persistence and skill development, while ego-oriented athletes exhibited higher vulnerability to stress when facing superior opponents. The motivational climate created by coaches amplified these effects, with Engan & Sæther's (2018) football research showing that mastery-focused environments reduced pre-competition stress by 22% compared to performance-focused climates.

Notably, the research on coping strategies by Cosma et al. (2020) and the study on mindfulness by Bulğay et al. (2022) represent underdeveloped areas requiring further investigation. The former found that problem-focused coping explained 19% of the variance in performance in team sports, while the latter reported that mindfulness interventions improved accuracy in track events by 11%. These findings suggest that different sports may require tailored psychological approaches based on their cognitive and physical demands.

The theoretical contributions of Pierpaolo and Antonia (2018) challenge traditional paradigms by proposing an integrated model in which psychological factors interact dynamically rather than operate in isolation. This perspective is supported by Kassim et al. (2018)'s multi-factor analysis of football performance, which identified mental toughness and anxiety management as the strongest predictors of consistent performance across seasons (R^2 = 0.41). Methodological variations across studies, particularly in measurement tools (e.g., different anxiety scales) and performance metrics (subjective vs. objective), highlight the need for standardized protocols in future research.

Coping Strategies in Sports

The examination of coping strategies in sports reveals critical mechanisms through which athletes manage competitive stressors and maintain performance under pressure. The included studies demonstrate that effective coping is not merely reactive but involves proactive psychological regulation, with mental toughness often serving as a foundational resource. These strategies vary in focus, ranging from problem-solving approaches to emotion regulation techniques, and their efficacy is often moderated by individual differences in psychological characteristics.

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Table 5. Taxonomy Of Coping Strategies in Sports Across Contexts and Psychological Factors

Context	Coping Strategy	Psychological Moderator	Performance Outcome	Sources
Pandemic-related challenges	Adversity coping (resilience techniques)	Mental strength (confidence, freedom from worry)	Maintained training consistency	(Moutaraji et al., 2021)
Pre-competition setting	Self-reflection (journaling, guided analysis)	Resilience	Reduced cognitive anxiety	(Wang, 2023)
Esports environment	Stress reappraisal (cognitive reframing)	Mental toughness	Improved decision-making under pressure	(Poulus et al., 2020)
General competition preparation	Coach-led routines (pre-performance rituals)	Psychological readiness	Enhanced focus and task execution	(Muhaemin et al., 2026)

The study by Moutaraji et al. (2021) on confined athletes during COVID-19 provides unique insights into coping with unprecedented disruptions. Athletes who scored higher on mental strength components, particularly confidence and freedom from worry, demonstrated superior adaptation to isolation through structured goal setting and mental preparation. These findings suggest that foundational psychological attributes enable athletes to deploy coping strategies more effectively, even in atypical stress scenarios. Notably, the study highlights adversity coping as a distinct dimension of mental toughness that becomes salient during extended challenges rather than acute competitive stressors.

In traditional sports contexts, Wang's (2023) research on table tennis players reveals that self-reflection strategies can mitigate pre-competition anxiety. Athletes who engaged in systematic reflection (e.g., analyzing past performances, identifying improvement areas) showed 23% greater resilience to anxiety compared to controls. This effect was particularly pronounced for cognitive anxiety, supporting the notion that metacognitive coping strategies may be most effective against worry-related symptoms. The study further found that resilience mediated this relationship, suggesting that reflection builds psychological resources that buffer against competitive stress.

The esports study by Poulus et al. (2020) introduces an important distinction in coping strategies for esports athletes. Unlike traditional athletes who often benefit from somatic-focused techniques, esports competitors relied more heavily on cognitive reappraisal to manage stress during tournaments. Mental toughness emerged as a key moderator, with high-toughness players demonstrating superior ability to reinterpret stress as facilitative rather than debilitative. This aligns with emerging research in esports psychology, which finds that cognitive demands outweigh physical ones, necessitating different coping strategies.

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Coach influence on the development of coping is evident in Muhaemin et al. (2026)'s examination of psychological readiness strategies. The study identified three coach-led approaches that enhanced coping effectiveness: structured pre-competition routines, scenario-based mental rehearsal, and adaptive self-talk training. These interventions were particularly impactful for adolescent athletes, who often lack the experience to develop autonomous coping strategies. The research underscores the reciprocal relationship between coaching methods and athlete coping. While coaches provide the framework, athletes must internalize these strategies for long-term resilience.

Methodological considerations across these studies reveal important nuances. While Moutaraji et al. (2021) and Wang (2023) employed longitudinal designs to track the evolution of coping, Poulus et al. (2020) and Muhaemin et al. (2026) used cross-sectional comparisons, which may overlook developmental trajectories. Measurement tools also varied from standardized mental toughness inventories in (Moutaraji et al., 2021) to sport-specific anxiety scales in (Wang, 2023), potentially limiting direct comparisons. Nevertheless, the collective findings emphasize that coping effectiveness depends on both the nature of the stressor and the athlete's psychological resources, with implications for designing tailored interventions.

Influence of Coaching Styles on Athletes' Psychological Outcomes

The impact of coaching approaches on athletes' psychological states and performance has emerged as a critical area of investigation, particularly in school sports where developmental influences are pronounced. The included studies reveal that coaching styles significantly modulate the constructs of competitive anxiety, goal orientation, and mental toughness, which collectively shape athletic outcomes. Three primary coaching dimensions emerge from literature: communication patterns, leadership approaches, and training methodologies, each exerting distinct effects on young athletes.

Table 6. Taxonomy Of Coaching Influences Psychological Factors and Performance

Coaching Dimension	Psychological Factor Affected	Performance Outcome	Sources
Communication Style	Cognitive appraisal & goal orientation	Achievement motivation	(Evans et al., 2018)
	Competitive anxiety (cognitive & somatic)	Anxiety regulation	(Ramis et al., 2017)
Leadership Style	Goal orientation (task/ego)	Athlete satisfaction & preference	(Rasyid et al., 2020), (Syrmpas & Bekiari, 2018)
Training Methodology	Competitive anxiety (mediation)	Performance optimization	(Sridana et al., 2024)

The study by Evans et al. (2018) on varsity football athletes demonstrates that rational versus irrational coach team talk differentially influences cognitive appraisal and achievement goals. Rational communication, characterized by logical feedback and solution-focused messaging, enhanced task orientation by 19% compared to control groups. Conversely, irrational talks featuring absolutist language ("you must win") increased ego orientation by 22%, often at the expense of anxiety management. These findings suggest that coaches' verbal strategies can

fundamentally alter how athletes interpret competitive scenarios, with implications for both motivation and stress responses.

Leadership approaches show particularly strong associations with goal orientation patterns. Research by Rasyid et al. (2020) on Malaysian sports school athletes revealed that democratic coaching styles were strongly correlated with task orientation ($r = 0.48$), whereas autocratic approaches were associated with ego orientation ($r = 0.39$). This aligns with Syrmpas and Bekiari's (2018) findings that coaches exhibiting low verbal aggressiveness and high supportiveness foster greater athlete satisfaction, which, in turn, mediates the relationship between leadership style and performance consistency. Notably, the latter study identified gender differences, with female athletes showing 31% greater sensitivity to the verbal tone of coaching than male athletes in goal orientation development.

Training methodologies emerge as another critical pathway through which coaches influence outcomes. The swimming study by Sridana et al. (2024) established that coaching style indirectly affected performance through the mediation of competitive anxiety. Athletes under autonomy-supportive coaches demonstrated 15% lower somatic anxiety pre-competition compared to those with controlling coaches, translating to faster reaction times off the starting block ($p < 0.05$). This mediation effect was particularly strong for cognitive anxiety, accounting for 28% of the variance in performance outcomes.

The study by Ramis et al. (2017) (excluded from Table 6 due to its narrow focus on controlling styles) provides counterintuitive findings regarding anxiety regulation. While controlling coaching increased overall anxiety levels, a subset of athletes (23%) paradoxically performed better under high-pressure directives, suggesting that individual differences in stress tolerance may dictate optimal coaching approaches. This highlights the need for adaptable coaching frameworks that consider athletes' psychological profiles.

Methodological variations across these studies warrant consideration. While Evans et al. (2018) and Sridana et al. (2024) employed experimental designs to isolate coaching effects, Rasyid et al. (2020) and Syrmpas & Bekiari (2018) used cross-sectional surveys, which limit causal inference. Measurement tools also varied, ranging from standardized goal-orientation questionnaires (Rasyid et al., 2020) to sport-specific performance metrics (Sridana et al., 2024). Nevertheless, the collective evidence underscores coaching as a multifaceted psychological intervention that can either amplify or mitigate competitive stressors, depending on the coaching style and the athlete's characteristics.

Mental Health and Well-being of Athletes

The relationship between mental health, well-being, and athletic performance has gained increasing attention in sports psychology research. The studies included demonstrate that mental toughness serves as both a protective factor against psychological distress and a facilitator of optimal performance states. Three key themes emerge from literature: the buffering effect of mental toughness on stress-related disorders, its role in promoting positive coping strategies, and its interaction with coach-created environments to influence overall well-being.

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Table 7. Taxonomy Of Mental Health and Well-Being Studies in Athletes

Study Focus	Key Constructs	Population	Major Findings	Sources
Positive mental health benefits	Mental strength, coping skills	Student athletes	Mental strength is associated with goal-oriented coping and performance enhancement	(Puri & Sood, 2018)
Well-being and motivational climate	Mental toughness, well-being, and coaching climate	Collegiate athletes (Division I females)	Significant relationships between mental toughness, well-being, and coach-created environment	(Doerr et al., 2018)
Stress and mental health buffering	Mental toughness, perceived stress, depression, burnout, anxiety, sleep	Student populations	High mental toughness scores buffer against stress-related disorders	(Haghighi & Gerber, 2019)

The study by Puri and Sood (2018) highlights the significance of positive mental health among student athletes, demonstrating that mental strength facilitates adaptive coping strategies, such as freedom from worry and goal-setting. These psychological assets were found to positively impact athletic performance through enhanced focus and resilience during competition. The research emphasizes that mental health should not be conceptualized merely as the absence of pathology, but rather as the presence of positive psychological functioning that enables athletes to thrive under pressure.

Findings from Doerr et al. (2018) reveal important connections among mental toughness, well-being, and the motivational climate created by coaches. The study of Division I female collegiate athletes showed that self-ratings of mental toughness in sport were significantly correlated with overall well-being measures. Notably, the coach-created environment emerged as a moderating factor, with autonomy-supportive coaching styles strengthening the positive relationship between mental toughness and well-being. This suggests that organizational factors interact with individual psychological resources to shape athletes' mental health outcomes.

The protective role of mental toughness against various mental health challenges is robustly demonstrated in Haghighi & Gerber (2019). The study found that athletes with high mental toughness scores were less vulnerable to perceived stress, depression, burnout, anxiety, and sleep disturbances. These findings position mental toughness as a potential target variable for health interventions aimed at student populations, particularly those engaged in competitive sports. The research provides empirical support for the notion that developing mental toughness may serve as a preventive measure against the development of stress-related disorders in athletic contexts.

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The collective evidence suggests that mental health and well-being should be considered integral components of athletic performance rather than separate domains. The studies demonstrate consistent patterns in which psychological resilience factors, such as mental toughness, mediate the relationship between competitive demands and health outcomes. This has important implications for sports programs, suggesting that mental skills training should incorporate both performance-enhancement and well-being-promotion components to support holistic athlete development.

Narrative Synthesis

Enhanced Narrative Synthesis

To move beyond descriptive summarization, the narrative synthesis was structured around pattern identification, contradictions across studies, and the strength of evidence.

Consistent Findings

Several patterns were consistently observed across the included studies. First, mental toughness showed a generally positive association with performance-related outcomes, including resilience under pressure, coping effectiveness, and performance stability. Second, competitive anxiety, particularly cognitive anxiety, was more consistently linked to impaired performance than somatic anxiety. Third, task orientation emerged as a more adaptive motivational profile than ego orientation, especially in youth sport contexts where self-referenced progress appeared to support persistence and lower psychological vulnerability. Fourth, psychological skills training interventions, particularly those incorporating goal setting, imagery, self-talk, and mindfulness, generally showed beneficial effects, although the magnitude and durability of these effects varied across contexts.

Contradictions Across Studies

Despite these recurring trends, the literature also contained important contradictions. The relationship between goal orientation and anxiety was not uniformly observed; while some studies indicated that task orientation buffered anxiety and ego orientation intensified it, others found that intrinsic motivation or contextual factors, such as coaching style, were more powerful predictors than goal orientation itself. Similarly, although mental toughness was often framed as a buffer against anxiety, not all studies supported a clear mediating or moderating role, partly due to differences in design, measurement, and athlete population. Findings related to coaching were also mixed, with some evidence suggesting that certain athletes performed adequately even under more controlling coaching conditions, indicating that individual differences may shape responsiveness to coaching style.

Strength of Evidence

The strength of evidence varied across domains:

- Strong evidence: There is strong evidence that mental toughness is positively related to adaptive coping and performance stability, and that cognitive anxiety is more likely than somatic anxiety to undermine performance.

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- Moderate evidence: There is moderate evidence that task orientation is associated with more adaptive psychological and performance outcomes than ego orientation, and that psychological skills training can improve mental toughness and anxiety regulation.
- Weak or emerging evidence: There is weaker evidence regarding the precise causal mechanisms linking mental toughness, anxiety, and goal orientation, particularly in school-athlete populations. Evidence is also still limited concerning non-Western contexts, developmental trajectories, and the long-term effectiveness of intervention programs.

This graded synthesis indicates that the literature supports an integrated psychological model, but also shows that some relationships remain contingent, context-bound, and insufficiently tested through longitudinal or experimental research.

Discussion

The synthesis of the reviewed studies points to a consistent and theoretically meaningful pattern: mental toughness, competitive anxiety, and goal orientation do not operate as isolated predictors of performance but function as an interdependent psychological system that shapes how school athletes respond to competitive demands. Rather than exerting direct linear effects, these constructs interact dynamically, with mental toughness emerging as a central regulatory mechanism within the stress–performance relationship. Across studies, competitive anxiety, particularly its cognitive component, tends to impair performance by disrupting attentional control and decision-making processes. However, this negative effect is not uniform; it is substantially moderated by the athlete's level of mental toughness. Athletes with higher levels of confidence, constancy, and control demonstrate a greater capacity to reinterpret or regulate anxiety, thereby maintaining performance stability even under pressure (Wu et al., 2025; Mariappan et al., 2026).

Importantly, this moderating effect is further conditioned by goal orientation, suggesting a layered interaction rather than a simple buffering mechanism. Task-oriented athletes, who prioritise mastery and self-referenced improvement, appear to derive functional benefits from anxiety arousal when supported by strong mental toughness profiles. In contrast, ego-oriented athletes, whose motivation is contingent on outperforming others, exhibit greater susceptibility to performance fluctuations, particularly in evaluative or high-stakes contexts. This indicates that goal orientation shapes the meaning athletes assign to anxiety, which in turn influences whether anxiety becomes facilitative or debilitative. While this general pattern is evident in both individual and team sports, the relative salience of specific mental toughness components varies with sport-specific demands, highlighting the contextual nature of psychological determinants of performance (Slimani et al., 2016; Tangkudung et al., 2022).

From a theoretical standpoint, these findings challenge reductionist and unidimensional models that treat psychological constructs as independent variables. Instead, the evidence supports more integrative and interactionist frameworks, such as the tripartite model proposed by Pierpaolo and Antonia (2018), which conceptualises mental toughness as a mediating mechanism linking motivational orientation and anxiety responses to performance outcomes. The strength of this model lies in its ability to account for both stability (through mental toughness) and variability (through anxiety and goal orientation) in performance. For instance, the alignment between task orientation and the constancy dimension of mental toughness offers a coherent explanation for sustained performance under pressure, whereas ego orientation

introduces volatility because it depends on external comparisons and evaluations (Daumiller et al., 2022; Kiss & Nagy, 2024). Collectively, these insights reinforce the need to conceptualise athlete performance as a cognitive–affective system, in which psychological constructs interact in a reciprocal and context-dependent manner.

The practical implications of this synthesis are equally significant. The evidence suggests that interventions focusing solely on anxiety reduction may be insufficient if they do not simultaneously address underlying motivational orientations and mental resilience. Psychological skills training (PST) should therefore move towards integrated models that combine anxiety-regulation techniques with the development of task-oriented motivational climates and mental-toughness attributes. Coaching practices play a pivotal role in this process. Autonomy-supportive and mastery-focused coaching environments not only enhance performance outcomes but also contribute to athletes' psychological well-being, particularly among adolescents who are still developing their coping capacities (Doerr et al., 2018; Sridana et al., 2024). Furthermore, the variability observed across studies highlights the importance of individualised intervention approaches, as athletes differ in their psychological profiles, coping strategies, and responsiveness to training (Ponnusamy et al., 2018; Hidayat et al., 2023). Despite these contributions, several methodological and conceptual limitations constrain the current evidence base. The predominance of cross-sectional designs limits the ability to establish causal pathways or understand how these psychological constructs evolve over time. Consequently, the developmental trajectory of mental toughness, particularly during adolescence, remains insufficiently understood. Additionally, the overrepresentation of Western contexts raises concerns regarding cultural generalisability, as motivational orientations, coaching styles, and interpretations of anxiety may differ across sociocultural settings (Tomczak et al., 2022; Rasyid et al., 2020). Measurement inconsistencies further complicate synthesis efforts, with variations in instruments and operational definitions of key constructs potentially obscuring underlying relationships (Smith et al., 2006; Demir et al., 2025). These limitations suggest that the observed interactions may be more nuanced and potentially stronger than currently reported.

Future research should therefore prioritise longitudinal and multi-level designs to capture the dynamic interplay between psychological constructs and performance over time. There is a particular need to investigate how mental toughness develops across critical developmental stages and whether specific intervention windows are more effective. Expanding research into non-Western and diverse educational contexts would also enhance the ecological validity of findings and provide a more global understanding of athlete development. Emerging domains such as esports offer additional opportunities to test the transferability of these psychological models in environments where cognitive demands are heightened, and physical factors are less dominant (Poulus et al., 2020). Moreover, intervention research should increasingly adopt holistic and system-based approaches, integrating mental toughness, goal orientation, and anxiety management within coach–athlete relational frameworks (Muhaemin et al., 2026; Sridana et al., 2024).

Overall, this review advances the field by highlighting that athletic performance in school athletes is best understood through an integrated psychological lens, rather than through isolated constructs. The consistent interaction between mental toughness, competitive anxiety, and goal orientation underscores the need for more nuanced, developmentally sensitive models that reflect the complexity of real-world sporting environments. Given that school athletes are at a formative stage where psychological skills are both highly malleable and consequential,

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this context offers a critical opportunity for targeted, evidence-based interventions that promote not only performance excellence but also long-term personal development and resilience.

Conclusion

This systematic review synthesized evidence on the interplay between mental toughness, competitive anxiety, goal orientation, and performance in school athletes, addressing a critical gap in understanding how these psychological constructs collectively influence athletic outcomes. The findings consistently demonstrate that mental toughness serves as a key moderator, buffering the negative effects of competitive anxiety while enhancing performance consistency. Task-oriented goal frameworks have been shown to be more adaptive than ego-oriented approaches, particularly when combined with high mental toughness, suggesting that mastery-focused motivation aligns with the psychological resilience required for sustained success. The review also highlights the practical value of psychological skills training and coaching styles that foster autonomy-supportive environments, providing actionable insights for athlete development programs.

The theoretical implications extend beyond sports psychology, offering a model for how cognitive-affective factors interact under performance pressure. Future research should prioritize longitudinal designs to track developmental trajectories of mental toughness and investigate cultural variations in these relationships. The integration of emerging domains like esports could further test the generalizability of these findings. By bridging theory and practice, this review underscores the importance of holistic approaches that address both performance enhancement and psychological well-being in school sports.

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