

La Fortaleza Mental Puede Tener Un Impacto En El Rendimiento Del Atleta: Revisión Sistemática

Mental Toughness May Have an Impact on Athlete's Performance: Systematic Review

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Abstract. Psychological health spans several domains, including mental health and quality of life. Mental Toughness is the most widely used but its understanding is limited when applied in sports psychology. Mental Toughness can affect athlete's performance, Mental Toughness plays an important role in maintaining overall athlete performance during intense matches. The total number of articles obtained at the beginning of the search matched the keywords that has been set is 33 articles. Furthermore, of the remaining 12 articles were identified after an extensive search of the literature in accordance to the PRISMA guidelines, there were four articles included in the exclusion criteria with details, two articles included in the qualitative articles, one article was a duplicate article, and one article was a case study article after a critical appraisal was carried out. The results of a systematic review on twelve articles, the authors found an effect of mental toughness on improving athlete performance. Each of the results found resulted in three major themes, namely: (1) the relationship between mental toughness, mindfulness, and psychological skills in athletes. (2) factors impact athletes' performance, well-being, and ability to handle challenges in sports. (3) the influence of various demographic and educational factors on mental toughness in athletes. The study emphasizes Mental Toughness's impact on both physical performance and mental health in athletes, highlighting its role in managing stress and pressure during sports challenges. Additionally, it underlines the importance of implementing Mental Toughness and mindfulness training programs, along with providing robust psychological support, to enhance athletes' mental strength and overall well-being in sports..

Keywords: Adolescent, Child, Mindfulness, Quality of Life, Athletic Performance, Athletes, Anxiety

Resumen. La salud psicológica abarca varios ámbitos, incluida la salud mental y la calidad de vida. La Dureza Mental es la más utilizada pero su comprensión es limitada cuando se aplica en psicología deportiva. La dureza mental puede afectar el rendimiento del atleta; la dureza mental juega un papel importante en el mantenimiento del rendimiento general del atleta durante partidos intensos. El número total de artículos obtenidos al inicio de la búsqueda coincidieron con las palabras clave establecidas es de 33 artículos. Además, de los 12 artículos restantes se identificaron después de una búsqueda exhaustiva de la literatura de acuerdo con las pautas PRISMA, cuatro artículos se incluyeron en los criterios de exclusión con detalles, dos artículos se incluyeron en los artículos cualitativos, un artículo fue un artículo duplicado, y un artículo fue un artículo de estudio de caso después de que se llevó a cabo una evaluación crítica. En los resultados de una revisión sistemática de doce artículos, los autores encontraron un efecto de la fortaleza mental en la mejora del rendimiento de los atletas. Cada uno de los resultados encontrados dio lugar a tres temas principales, a saber: (1) la relación entre la fortaleza mental, la atención plena y las habilidades psicológicas en los atletas. (2) los factores afectan el rendimiento, el bienestar y la capacidad de los atletas para afrontar los desafíos deportivos. (3) la influencia de diversos factores demográficos y educativos sobre la fortaleza mental de los atletas. El estudio enfatiza el impacto de Mental Toughness tanto en el rendimiento físico como en la salud mental de los atletas, destacando su papel en el manejo del estrés y la presión durante los desafíos deportivos. Además, subraya la importancia de implementar programas de entrenamiento de fortaleza mental y atención plena, además de brindar un sólido apoyo psicológico, para mejorar la fuerza mental de los atletas y el bienestar general en los deportes.

Palabras clave: Adolescente, Niño, Mindfulness, Calidad de Vida, Rendimiento Atlético, Atletas, Ansiedad

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Introduction

Victory is an essential objective for athletes. It describes who he is and his capabilities. All athletes have trained themselves to become better and powerful. However, it is not only physical strength that produces an elite athlete, but also psychological abilities that enable him to concentrate, focus, and have a positive attitude toward an objective (De La Cerna & Diego, 2022). One such factor is fatigue, in which sportsmen and athletes experience physical, mental, and social exhaustion from the game in general. As a result, we can see the devaluation of sport along with a reduction, if not failure, of athletic achievement (Iqbal & Shaikh, 2022). Athletes must combine their physical, tactical,

mental, and talent abilities due to the nature of high-level sports in order to perform at the highest level possible. Physical principles, abilities, and planning and arrangements have largely merged in recent years, so it is necessary to give some psychological elements more consideration (Sallam et al., 2022).

Mental health is an essential aspect of personal and athletic development. The search results provide evidence that mental health is multifaceted and can be influenced by various factors, including biology, resilience, sleep, environment, diet, stress, and physical activity (Lundqvist et al., 2023). Participation in organized sports has the potential to protect mental health, but it is not a guarantee, as research shows a weak negative relationship between

young athletes' sports involvement and mental health problems. Mental health is crucial for personal and athletic development, as it can protect against mental health problems, enhance coping abilities, and support overall well-being. Investing in mental health education, support, and development programs can have a significant impact on athletes' personal and athletic growth (Purcell et al., 2019).

For the best and most efficient sports performance, people can utilize their physical and energy abilities with the aid of psychological skills. When athletes must deal with unexpectedly challenging circumstances, psychological skills can be thought of as a set of psychological traits that can be learned. These traits are necessary abilities that help athletes better their performance (Chang et al., 2020). These psychological abilities, which include coping mechanisms, motivation, and awareness or self-confidence and stress management, can also support top athletes' effective talent growth and optimum performance. Additionally, numerous studies have revealed that effective athletes display higher levels of drive, self-confidence, and focus than amateur or sub-elite athletes (Wu et al., 2021).

Participation in sports has a positive effect on psychological health, encompassing aspects such as mental health (e.g., anxiety and depression) and overall quality of life. Athletes often report experiencing enhanced mental health and an improved quality of life, which can be attributed to various factors such as regular physical activity, social support within sports teams, opportunities for personal growth and achievement, and the positive impact of goal setting and discipline inherent in athletic pursuits. These benefits contribute to a holistic sense of well-being among athletes, highlighting the multifaceted advantages of engaging in sports activities beyond just physical fitness (Miller & Dolendo, 2022). It has been suggested that these advantages result from improved social and community interactions and increased physical activity (Wu et al., 2021). The search results provide evidence that mental toughness can have a significant impact on an athlete's performance. Mental toughness is defined as the ability to handle pressure, adversity, and stress by overcoming failures and persisting without quitting (Hsieh et al., 2023). It is a psychological resource that helps athletes achieve challenging goals when faced with stressors that make success more difficult (Soundara Pandian et al., 2023).

The search results indicate that mental toughness is correlated with better performance, goal progress, stress management, coping, optimism, self-reflection, confidence, constancy, control, positive cognition, visualization, and challenges (Hsieh et al., 2023). Mental toughness interventions have been found to be effective, including psychological skills training, coping and optimism training, mindfulness, yoga, general relaxation, imagery, and a combination of these strategies (Soundara Pandian et al., 2023).

However, not all athletes enjoy enhanced psychological health; some have low quality of life and psychological

health. Ongoing injuries, competitive tension, squad selection, and performance pressure can all have a detrimental effect on the psychological health of athletes. 5 to 20 years after injury, athletes with anterior cruciate ligament injuries have a lower quality of life compared to the general population, according to systematic reviews and meta-analyses (Kraemer et al., 2019). The prevalence of melancholy among retired professional cricketers is 9%, which is higher than the prevalence of depression among the general population (3%). Participation, culture, and lifestyle can have an effect on psychological health, particularly the number of games played, travel itineraries, and substance abuse. However, the effect of participation on psychological health is poorly understood (Bullock et al., 2020).

Athletes must balance their physical and mental abilities in order to achieve peak performance. Mental toughness is one of the mental factors that can determine an athlete's ability to attain optimal performance and success (Romdhani, Ammar, et al., 2022). Mental fortitude is a collection of values, attitudes, behaviors, and emotions that enable a person to endure and overcome a variety of obstacles, pressures, or difficulties. (Grobler et al., 2022). Mental Toughness is defined as a unidimensional concept that plays a significant role in the achievement, development, and advancement of objectives regardless of stress. Mental Toughness is the most common term, but its application in sports psychology is limited (De La Cerna & Diego, 2022). Mental Toughness is regarded as a crucial psychological factor for exceptional performance. Mental Toughness is a measure of the cognitive and affective abilities that athletes must possess to perform well in athletics. In general, Mental Toughness has been characterized as a quality required to outperform others in a competition or to perform well in a competition (Jain et al., 2020). Mental Toughness contributes to sports performance and has been identified as a prerequisite in competitive sports as well as a crucial success factor on a global scale. Mental Toughness can impact athlete performance, and it plays a crucial role in sustaining overall athlete performance during strenuous competitions (Latif et al., 2022).

However, other study focuses on the positive relationship between self-awareness, particularly self-knowledge, and Mental Toughness in competitive tennis players. However, self-awareness or self-understanding alone is insufficient. Athletes must be guided to increase their awareness in order to take action against mental overload (Wu et al., 2021). Examining the relationship between these psychological characteristics is essential for developing talent identification and improving athlete performance. Mindfulness is defined as paying attention to the experiences of the present moment with open awareness and without judgment. Additionally, it has been defined as the ability to attain awareness, concentration, and absorption of the present moment. Mindfulness can also be conceptualized as a dispositional trait i.e.,

dispositional mindfulness and as a personality trait that can be developed through training. Multiple studies have shown that dispositional mindfulness influences mindfulness scores, psychological well-being, and mental toughness (Ajilchi et al., 2022). Once this prevalence and association is determined,

On the basis of this phenomenon, The purpose of the systematic review study is to obtain the results of mental or psychological defense training by means of dispositional mindfulness and restrain the emergence of aggressive impulses and comorbidities with accompanying syndromes, related to specific topics for which research questions are identified through systematic searching and analysis of relevant literature. The method utilized in the systematic is a streamlined, systematic approach to data analysis. Research design articles employing Randomized Controlled Trials (RCT) by tracing experimental research outcomes in English. There are abstracts, introductions, and the results of actual observations or experiments in the used articles, which are primarily international research articles.

As noted above, although there have been reviews of mental health for athlete performance improvement in the last five years, none of the reviews have systematically investigated the evidence on mental health for athlete performance improvement. In this systematic review, we address this gap by reviewing the evidence in the extant literature. It is hoped that this review will provide evidence of the possibility of additional interventions in mental health and enrich our knowledge base on improving athlete performance.

Materials and methods

The PRISMA guidelines for systematic reviews were employed for the conduct of the literature search following a systematic and structured approach (Liberati et al., 2009). The Population - intervention-comparison-outcome (PICO) strategy was used to identify the key words used (Table 1) The article search strategy utilizes databases accessible through the National Library of Indonesia's electronic resources, such as SportDiscus, Scopus, Web of Science, EBSCO, Google Scholar, PubMed, Research Gate, and Springer Link. Athlete Performance and Mental Toughness, Mental Toughness and Mindfulness are search terms for articles. "AND" is used as a Boolean operator by researchers. The purpose of using "AND" as a boolean operator is to combine various concepts and aspects as search keywords in order to narrow down the searchable documents.

Inclusion Criteria:

- 1) Scientific articles published between 2020 and 2023
- 2) The study should be a systematic review that involves a thorough analysis of relevant literature.
- 3) include studies with high methodological quality, as determined by established criteria such as randomized controlled trials, quasi-experimental studies, and pre-post

testing.

4) The study should involve athletes, leaders, coaches, officials, or members of a professional or amateur sporting club or organization.

5) focus on mental health interventions that aim to improve mental toughness or mental health awareness, including interventions tailored to specific mental health issues like depression, anxiety, and substance misuse.

6) The studies should be published in the English language.

Exclusion Criteria:

1) Scientific articles published before 2020

2) Study design: The study should not be a systematic review or meta-analysis.

3) Quality of studies: The systematic review should exclude studies with low methodological quality, such as those with a high risk of bias or insufficient sample sizes.

4) Participants: The study should not include participants who are not athletes, leaders, coaches, officials, or members of a professional or amateur sporting club or organization.

5) Interventions: The systematic review should exclude studies that do not focus on mental health interventions or those that do not address mental toughness or mental health awareness.

6) Language: The studies should not be published in languages other than English.

To preserve the quality of the systematic review, the authors mention ethical considerations, such as avoiding duplicate publications, avoiding plagiarism, maintaining transparency, and ensuring accuracy. The search for articles utilized multiple databases and e-resources of the National Library of Indonesia, specifically EBSCO (3), Google Scholar (11), PubMed 6, Research Gate 8, and Springer Link 5. 33 articles were retrieved at the outset of the search that matched the specified keywords. Non-full-text articles that discussed topics other than the use of mental fortitude in performance athletes, respondents in the study who were less than three years old or older than eighteen years old, and English-language articles. 33 articles. Consequently, 33 articles met the exclusion criteria. In addition, of the remaining 12 articles, four were included in the exclusion criteria with specifics, two were included in the qualitative articles, one was a duplicate article, and one was a case study article after a critical evaluation was conducted. The data analysis employed in this systematic review is a streamlined method. Data analysis is simplified by compiling each obtained article and simplifying each finding.

The steps of the Simplified approach analysis include summarizing each critical appraisal/critical review conducted concurrently to determine the strengths and weaknesses of the literature and to determine the relationship between one piece of literature and another, identifying themes from the results of each research in the literature, with the resulting themes being reflective of the research questions posed in the systematic review. Theme

development by combining all the same themes and discussing the strengths of the findings by considering research results with stronger evidence or weaker evidence by conducting critical appraisal at the outset, naming each theme taking into consideration the naming right on each theme by understanding the literature so that the names on the themes are closer to the results of the research on the literature, comparing and reviewing each theme (Table 3)

Table 1. Population, intervention, comparison, outcome (PICO) strategy and algorithms used for the systematic review

Population	Athletes
Intervention	Mental toughness training or development
comparison	Athletes without specific mental toughness training or development
outcome	Impact on athlete performance

Results

The results of a systematic review on twelve articles, the authors found an effect of mental toughness on improving athlete performance. Each of the results found resulted in three major themes, namely: (1) the relationship between mental toughness, mindfulness, and psychological skills in athletes. (2) factors impact athletes' performance, well-

being, and ability to handle challenges in sports. (3) the influence of various demographic and educational factors on mental toughness in athletes. (Table 2 and 3).

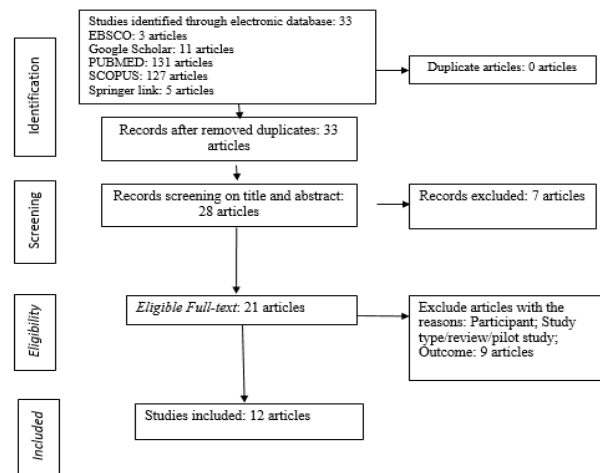


Figure 1. Flow Chart for Study based on PRISMA 2015 Guidelines checking two things, namely: Critical appraisal employs the JBI Critical Appraisal for Experimental Studies instrument to conduct an evaluation and analysis of the reviewed articles, focusing on their results, validity, and relevance to the randomized controlled trial (RCT) research design and other experimental research.

Table 2. Data analysis matrix table for articles used in the Systematic Review

Author, Title, Journal	Method Design	Variable being investigated	Sample size	Population	Results
(Ajilchi et al., 2022) Effect of a mindfulness programme training on mental toughness and psychological well-being of female athletes (Australasian Psychiatry)	parallel-group, pre- and post-test, randomised controlled pilot trial	Mindfulness PWB	45	Female Athlete	Mindfulness training increased mindfulness in the experimental group (p < 0.01). In turn, the increased attention led to an increase in MT and PWB at 2-month follow-up (p < 0.05).
(De La Cerna & Diego, 2022) Exploring mental toughness among selected private university elite athletes in Manila: A qualitative study (International Journal of Psychology and Counselling)	A qualitative research	phenomenological investigation exploring	-	Athlete	Findings showed that four categories represent the mental toughness of the elite athletes, namely: Living the dream, malleability of time, the path to elitism, and forward looking
(Grobler et al., 2022) The prevalence of common mental disorders and its relationship with mental toughness in professional South African rugby players (South African Journal of Psychology)	A cross-sectional survey design and preliminary and bivariate analyses	MT (Mental toughness) Common mental disorders (CMDs) Anxietas	940	Athlete Rugbyby	Mental toughness may be associated with fewer mental complaints, including insomnia. The current study shows a negative relationship between MT and Common mental disorders (higher MT coincides with lower rates of CMD-related problems), although this relationship should be interpreted with extreme caution, as it does not necessarily indicate causality
(Guszkowska & Wójcik, 2021) Effect of mental toughness on sporting performance	Analysis covered	Anxiety	-	Basketball Athlete	This study confirms the positive relationship between mental toughness and exercise outcomes. Athletes with high mental toughness can also affect psychosocial factors, namely experiencing anxiety, stress, and the pressure of sports competition, they handle situations like that better, usually approach them as a

(Baltic Journal of Health and Physical Activity)						challenge. Mental toughness is characterized by an optimistic attitude and commitment during competition.
(Iqbal & Shaikh, 2022)						
Relation Between Burnout And Aggression In Amateur Athletes ' Performances Among Male And Female University	Design cross-sectional	Burnout	169	Amateur Athlete		Burnout is strongly correlated with mental health. Influences from a comorbidity include the aggressive behavior of amateur athletes that is disorganized and unmonitored.
(Pakistan Journal of Social Research)						
(Jain et al., 2020)						
Mental Toughness in Indian Elite Athletes: Psychometric Validation of the Psychological Performance Inventory	Purposive sampling	Inventory of psychological performance	76	Athlete Elite India		Balancing affective and cognitive skills is a way to increase mental toughness above 0.85, indicating good reliability All subscales also have an average variance extract (AVE) value greater than 59, indicating good convergent validity
(Indian Journal of Public Health Research & Development)						
(Latif et al., 2022)						
Relationship Between Cardiovascular Endurance and Mental Toughness among Academy Mokhtar Dahari (AMD) Football Players	Correlational design	Cardiovascular endurance parameters	20	Football athlete aged 13-17 years		The results of the study indicate that training duration, experience, and efforts to improve physiological and psychological skills are needed to increase the mental toughness of sports players.
(Asian Journal of University Education)						
(Miller & Dolendo, 2022)						
Mental Toughness and Character Building through Sports	research design	Character Building Mental Toughness	10	College		There is a significant impact on the mental toughness and the results of forming the character of the respondents. There is a fairly moderate relationship between the level of the respondent's mental toughness application and the athlete's character
(Journal of Positive School Psychology)						
(Vikas Singh et al., 2022)						
Comparing mental toughness: An investigation on elite Indian standing and seated para-thrower athletes	simpel random sampling	motivation, self-confidence, ability to control negative energy, attention, visualisation, ability to control positive energy, and attitude control factors	9	elite para-throwers		significance level was performed for the research's findings, there are no statistical significant difference between the two groups' levels of motivation, self-confidence, ability to control negative energy, attention, visualisation, ability to control positive energy, and attitude control factors of MT. Elite Indian para-thrower athletes' mental toughness is similar in both groups, with no discernible differences
(J Public Health Afr)						
(Sallam et al., 2022)						
Effect of mental toughness training on performance strategies and performance level of complex skills for youth epee fencers	experimental group	Strategic Performance	10	Young Epee Fencer		The Mental toughness performance training strategy intervention with eight weeks of toughness training contributed to the improvement of performance strategy and the level of performance of complex skills for young Epee fencers. By paying attention to several psychological aspects (anxiety, fatigue).
(Science, Movement and Health)						
(Wu et al., 2021)						
Relationship between mindfulness, psychological skills and mental toughness in college athletes	Study cross-sectional	Dispositional mindfulness Psychological Skills Mental toughness	101	College Athlete		These findings suggest a positive relationship between mindfulness and the two psychological characteristics studied in relation to exercise performance. Other approaches to raise awareness may be considered in the future. that successful athletes show more motivation, and greater self-confidence.
(International Journal of Environmental Research and Public Health)						
(Yasar & Turgut, 2020)						
Mental toughness of elite judo athletes	quantitative research methods	Differences in educational level, age and gender	117	Elite Judo Athlete		Based on the results of the analysis, the average score of the male participants was higher than that of the female participants. Also, the mean score of the university educated participants was

(Acta Medica Mediterranea)

found to be higher than that of the secondary educated participants. In addition, the average score of university-educated Judo athletes was found to be higher than that of high school-educated Judo athletes.

Table 3.
Theme and sub-theme

No	Theme	Sub Theme
1	The Relationship Between Mental Toughness, Mindfulness, and Psychological Skills in Athletes	the application of mental toughness training strategies has been shown to contribute to the improvement of performance strategies and complex skills in athletes. It has also been suggested that balancing affective and cognitive skills can increase mental toughness, and that training duration, experience, and efforts to improve physiological and psychological skills are needed to enhance the mental toughness of sports players.
2	Factors Impact Athletes' Performance, Well-Being, And Ability to Handle Challenges in Sports.	These factors include mental toughness, mindfulness, psychological skills, cardiovascular endurance parameters, character building, and educational level. High mental toughness is positively related to exercise outcomes and can help athletes handle psychosocial factors such as anxiety, stress, and the pressure of sports competition. Additionally, mindfulness training has been shown to increase mindfulness, which in turn leads to an increase in mental toughness and psychological well-being. Furthermore, balancing affective and cognitive skills, as well as improving physiological and psychological skills, can increase the mental toughness of sports players. The level of education also plays a role, as university-educated athletes tend to have higher mental toughness scores.
3	The Influence of Various Demographic and Educational Factors on Mental Toughness in Athletes	Various demographic and educational factors can influence mental toughness in athletes. This suggests that gender and educational level can play a role in shaping mental toughness in athletes.

Discussion

Several international studies demonstrate that athletes frequently experience anxiety, melancholy, and distress (Grobler et al., 2022). Here Mental fortitude contributes to performance in a sport; however, its contribution depends on specific circumstances, such as stressful situations that typically cause high levels of anxiety, such as being behind in the score, unable to stop the opponent's attack, and unable to score a goal. In such situations, psychological factors, specifically mental fortitude, are crucial in determining an athlete's level of success (Yasar & Turgut, 2020). High mental fortitude enables athletes to surmount tension and depression during competition, so it can be recognized as one of the predictors of the best performance by athletes. Athletes perceive stress as a threat when they experience unmanageable stress that hinders their athletic performance or even decreases their enthusiasm and causes them to burn out (Wu et al., 2021). According to research (Tran, 2021), mental fortitude has a unidirectional relationship with athletic performance; that is, the higher an athlete's mental toughness, the higher their performance level. Gender is also a factor in the development of mental health disorders (De La Cerna & Diego, 2022). The results indicate that female athletes are more susceptible to stress than male athletes. Because women continue to have more difficulty than males expressing their sentiments to others. Additionally, hormonal and biological differences. can have an impact. Another factor is dissatisfaction with achievement, which occurs when predetermined goals are not met (Bullock et al., 2020).

Grobler et al. (2022) indicates difficulties with aspects commonly associated with common mental disorders (CMD), including symptoms of depression, depression/anxiety, sleep disturbances, smoking, and alcohol use issues. As a result, these issues must be addressed because they can have an effect on player

performance and match outcomes (Jain et al., 2020). There are global discoveries (Razeeni et al., 2021). This is a significant study because it is the first of its kind conducted by a South African professional athlete and provides an early indication of the prevalence of common mental disorders (CMD) and their association with mental fortitude. This information can contribute to the establishment of a Mental Health support program tailored to the distinct challenges faced by these players. In addition to monitoring common mental disorders (CMD), the results suggest that team management and clinicians should also pay close attention to symptoms and behaviors associated with CMD, such as alcohol consumption among athletes and its influence on performance and general mental health. The causal relationship between alcohol consumption and common mental disorders (CMD) in this study suggests that long-term, excessive alcohol consumption can have a negative impact on the mental health of participants.

Despite the fact that the anxiety/depression rate appears to be relatively low in comparison to the general population, it is essential to address these issues and the existence of pressures among participants. (Guszkowska & Wójcik, 2021) Confirms the existence of a link between mental fortitude and athletic performance (Aditya et al., 2022). Athletes with superior mental toughness perform better on motor and cognitive tasks and achieve superior exercise results. Being difficult enables athletes to utilize motor skills effectively under pressure (Yunitasari et al., 2023)(Sáez Olmos & Caravaca Llamas, 2021). No single mechanism influencing mental fortitude has been identified as of yet. Unquestionably, one of the most crucial factors is the athlete's perception of his or her own exertion and fatigue (Velandia Zambrano et al., 2022). This interpretation can be crucial for comprehending the connection between mental fortitude and pain, distress, or difficulty. Refers to the model of pain sensation. He viewed the perception of effort as an active process related to experiential learning and information transfer to the

cerebral cortex (Alimbekova et al., 2020).

Negative athletes will always make excuses, whereas positive athletes will always strive to improve their performance. A positive attitude can be followed by an athlete's sense of concentration and being in control (Martinez-Lorca et al., 2023). In response to a query about how he feels as he develops, the athlete stated, "I've never really had a negative thought all year; I've always known what I was going to do and how I was going to do it" (De La Cerna & Diego, 2022). The performance level of an athlete is one of the most important factors to consider when designing a psychological skill program. Athletes must be motivated, confident, and optimistic in order to be determined to achieve their goals, as performance levels vary according to player classification, experience, and number of years of training. Athletes can also emphasize the significance of convergence in performance levels to accomplish the required interactions by training their mental resiliency (Sallam et al., 2022). Even when the odds are low, affective skills help athletes maintain confidence in their ability to accomplish their objectives. This belief does not appear to diminish despite their subpar performance. These athletes maintain optimal levels of motivation, self-assurance, and command (Chang et al., 2020). The subscale corresponding to affective skills—motivation, visualization and image control, and self-confidence—contributed significantly to the development of mental fortitude among elite athletes in this study (García-Taibo et al., 2023). The cognitive abilities of controlling attitude, controlling positive energy, and controlling negative energy did not contribute significantly.

These results suggest that these athletes are continuously striving and motivated to achieve success through their affective skills, rather than their cognitive abilities (Latif et al., 2022). Mental fortitude's precise composition is debatable. However, mental fortitude has been defined as a psychological resource that enables athletes to exhibit and maintain goal-directed behavior in the face of adversity, due to the fact that its properties vary over time and across situations (Ramírez Muñoz & Prieto Andreu, 2021). Recent research has provided evidence supporting the notion that mental fortitude is positively correlated with enhanced high performance.

Athletes with a higher dispositional mindfulness tend to have better concentration to focus on task-related signals and avoid making errors during competition due to non-task-related distractions (for example, spectator noise or bad weather). In addition, dispositional mindfulness was found to be positively associated with self-confidence, a key objective of sports psychology and a crucial factor in an athlete's return to sport. Injury (Kraemer et al., 2019). Increasing self-confidence indicates that athletes with a stable self-confidence level are essential for overcoming obstacles. In addition, the study indicates that mindfulness-based interventions enhance the mindfulness and stress management of athletes by reducing their physiological stress response. There are excellent opportunities for a

comeback when an athlete is fatigued and despondent. Thus, ailing athletes who no longer compete can return to the same sport or partake in a different one in the future. Athletes and professional trainers observe a correlation between aggression and fatigue. This has a negative effect on positive relationships with athletes (Romdhani, Fullagar, et al., 2022). This study examines the connection between the onset of aggressive tendencies and their co-occurrence with male and female amateur athlete fatigue syndrome. In this regard, coaches should concentrate on enhancing communication skills in order to assist athletes in controlling their aggression. Whereas previous research has concentrated primarily on which variables can enhance sports performance in order to optimize team performance and victory, little attention has been paid to the factors that hinder team success. Therefore, it can be concluded that mental fortitude will continue to increase as a result of mental or psychological training (Iqbal & Shaikh, 2022).

These studies provide evidence that athletes with low dispositional awareness can increase their level of awareness through mindfulness-based interventions and then positively correlate this with psychological abilities. Using the Child and Adolescent Mindfulness Measure (CAMM) and the Sport Mental Toughness Questionnaire, we examined the relationship between focus and mental fortitude (SMTQ) (Ajilchi et al., 2022). We found a significant positive correlation between dispositional mindfulness and overall positive effort and anti-stress mental toughness (Wu et al., 2021). Mindfulness can also enhance mental fortitude and psychological well-being (PWB) in athletes, possibly by reducing discomfort or enhancing self-verbal, emotional, and control strategies. Mental Toughness helps cultivate an adaptive response to positive or negative pressures, situations, and events in the face of the psychological duress of elite-level athletic competition. In addition, mindfulness training can reduce maladaptive responses to stress, enhance psychological well-being, and foster a greater understanding of feeling unjudged. Mindfulness can also increase attention by focusing on a neutral stimulus and increasing the thickness of gray matter through learning (Stankovska et al., 2020). Therefore, mindfulness training can enhance an athlete's Mental Toughness by boosting their confidence in their ability to surmount obstacles and attain emotional control (Pengpid & Peltzer, 2020). Additionally, it can increase cognitive flexibility and tolerance for adversity, thereby decreasing emotion-driven avoidance behavior (Ajilchi et al., 2022). In addition, previous research indicates that mental fortitude development initiatives can be carried out with an attitude/mindset, and if an athlete develops mental toughness, peak performance will naturally follow. Consequently, mental fortitude and character development can be linked to success (Miller & Dolendo, 2022). Therefore, it can be hypothesized that mental fortitude can be influenced by a combination of athletes' biological and environmental factors (Miller & Dolendo, 2022).

Here are some suggestions for future research and

actions that sports institutions and associations could undertake to promote mental strength in the athletic community. Firstly, in terms of future research proposals, longitudinal studies could be conducted to track the development of mental strength in athletes over time, including exploring factors that contribute to resilience and coping mechanisms (Setyowati et al., 2020). Comparative studies across different sports could also be beneficial to understand how varying athletic environments impact mental well-being and strategies for improvement. Additionally, qualitative research could delve into the lived experiences of athletes regarding mental health challenges and effective interventions, while also examining cultural influences on mental strength and mental health perceptions among athletes from diverse backgrounds. Intervention-based research is also crucial to evaluate the effectiveness of specific mental strength training programs tailored for athletes (Suhron et al., 2019). Moving on to actions for sports institutions and associations, implementing mental health education programs for athletes, coaches, and support staff could increase awareness and reduce stigma surrounding mental health issues. Providing access to mental health professionals and resources such as counseling services, stress management workshops, and resilience training is essential for supporting athletes' mental well-being (Aditya et al., 2020). Developing mentorship programs that pair experienced athletes with newcomers can offer guidance on mental toughness and coping strategies, fostering a supportive team culture that prioritizes open communication, mutual respect, and empathy towards mental health challenges. Lastly, collaborating with healthcare providers and researchers to conduct regular mental health screenings and assessments for athletes can further contribute to promoting mental strength and overall well-being within the athletic community.

The journey to enhancing mental strength in athletes for superior sports performance involves a series of strategic steps. First, through longitudinal studies, we embark on a path to track the evolution of mental toughness over time, unraveling the intricate layers of resilience and coping mechanisms. Next, comparative studies across various sports unveil the unique mental demands each sport places, guiding the customization of mental toughness training. Delving into athletes' lived experiences and cultural nuances via qualitative research unveils a tapestry of insights, paving the way for culturally sensitive mental strength programs. Intervention-based research then enters the scene, scrutinizing tailored mental strength programs' effectiveness to provide evidence-based guidelines. Concurrently, mental health education programs are implemented, erasing stigma and enhancing awareness among athletes and their support systems. Mentorship programs flourish, pairing wisdom with ambition to nurture mental fortitude and coping skills. Lastly, a harmonious collaboration with healthcare providers ensures routine mental health assessments, completing the circle of

holistic mental well-being in the athletic realm. These concerted efforts sculpt a landscape where mental strength thrives, offering clearer pathways to peak athletic performance.

This systematic review encountered limitations, e.g. due to the small sample size and risk of bias in the included studies. In addition, due to the diversity of statistical tests used in correlation and differences in algorithms used in research. Additionally, The review did not provide a comprehensive assessment of mental toughness, which could limit the understanding of the complex nature of the construct and its relationship with athletic performance. The review did not focus on mental toughness in specific sports, which could limit the understanding of how mental toughness affects performance in different sports contexts. Additionally, the review did not focus on specific mental toughness interventions, which could limit the understanding of which interventions are most effective in enhancing athletic performance

Conclusion

The study shows that Mental Toughness significantly impacts not just physical performance but also mental health and overall well-being in athletes. It plays a crucial role in handling stress and pressure during sports challenges, with psychological factors being key determinants of an athlete's success. Demographic and educational factors like gender and education levels also influence Mental Toughness development. The research highlights the necessity of Mental Toughness and mindfulness training programs, backed by robust psychological support, for athletes. It recommends implementing mental health education, providing access to professionals, fostering mentorship, and collaborating for routine mental health assessments to enhance athletes' mental strength and well-being in sports. Ongoing research and action are essential in this domain to support athletes' mental health within the sports community.

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