Influences of mindset and lifestyle on sports performance: a systematic review

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Abstract

Introduction: In the scenario of the mindset and performance of athletes, the athlete's lifestyle becomes an integral part of this development. e need to focus on the mindset of athletes, exploring the perspectives of elite athletes through a qualitative approach, in order to understand the lifestyle and other factors to which they attribute their success. Objective: It was to carry out a systematic review to present the main studies on the influence of mindset (mindset) on the performance of athletes, as well as the entire lifestyle scenario for this development. Methods: The systematic review rules of the PRISMA Platform were followed. The research was carried out from January to March 2023 in Scopus, PubMed, Science Direct, Scielo, and Google Scholar databases. The quality of the studies was based on the GRADE instrument and the risk of bias was analyzed according to the Cochrane instrument. Results and Conclusion: A total of 118 articles were found, and 32 articles were evaluated in full and 29 were included and developed in this systematic review study. Considering the Cochrane tool for risk of bias, the overall assessment resulted in 52 studies with a high risk of bias and 14 studies that did not meet GRADE. It was concluded that mindsets such as believing in yourself after failure (called the constructive mental code) are very beneficial for athletes’ perseverance, motivation, and performance improvement. Still, a positive mindset can positively influence the performance of athletes, showing that mental skills training can lead to better performance in competition. Thus, champion athletes attribute their good mindset as the main predictor of competitive success. However, it is necessary to inform and encourage these practices in coaches and support staff in the area of the psychological skills of athletes. Mindfulness can benefit athletes' mindsets and performance. Cognitive variables, such as coping with stress, are significantly correlated with performance. High performance strategies include using honed mental rehearsal skills and practicing recovery.

Keywords: Sports performance. Mindset. Lifestyle. Mindfulness.

Introduction

In the mindset and performance scenario of athletes, the athlete's lifestyle becomes an integral part of this development [1-3]. One has to balance various factors such as the demands of competition, stressors, negative chance events, and interactions with family,
peers, coaching, and support staff [3]. In this sense, lifestyle practices and daily routines such as sleep, relaxation, diet, hydration, water immersion therapy, entertainment, and social networks are therefore essential to achieve and maintain elite performance [4-7]. Therefore, the quest to improve the performance of world-class athletes involves understanding the attributes, skills, strategies, support, environment, and lifestyles of elite performers [8-12].

In this context, international sports agencies such as the International Olympic Committee suggest that support for an athlete should be holistic, integrated, and evidence-based [13]. In this sense, it is necessary to focus on the mindset of athletes, exploring the perspectives of elite athletes through a qualitative approach, to understand the lifestyle and other factors to which they attribute their success [14]. Furthermore, training load monitoring has many potential applications and cannot simply be reduced to a metric and/or calculation. It is important to emphasize that it is also necessary to manage the training load with a performance and training progression mindset [15]. For example, feeling confident has been shown to improve cognition and performance, while a lack of confidence (e.g., feeling helpless, or anxious) is stifling for cognition and performance [16,17]. Furthermore, it has been shown that certain mindsets, such as believing in yourself after failure, called the constructive mental code, are very beneficial for the perseverance, motivation, and performance improvement of athletes. In addition, feedback from teachers and coaches has been shown to have an internal impact on athletes, including influencing motivation, mindset, learning potential, and resilience to challenges [18-20].

Based on this context, the present study aimed to carry out a systematic review to present the main studies on the influence of mindset on the performance of athletes, as well as the entire lifestyle scenario for this development.

Methods
Study Design
The systematic review rules of the PRISMA Platform were followed. Available at: www.prisma-statement.org/). Accessed: 04/18/2023.

Data Sources and Research Strategy
The search strategies for this systematic review were based on the keywords (MeSH Terms): Sports performance. Mindset. Lifestyle. Mindfulness. The research was carried out from January to March 2023 in Scopus, PubMed, Science Direct, Scielo, and Google Scholar databases. In addition, a combination of keywords with the Booleans “OR”, “AND” and the operator “NOT” were used to target scientific articles of interest.

Quality of Studies and Risk of Bias
The quality of the studies was based on the GRADE instrument and the risk of bias was analyzed according to the Cochrane instrument.

Results and Discussion
Summary of Findings
A total of 118 articles were found. Initially, duplication of articles was excluded. After this process, the abstracts were evaluated and a new exclusion was performed, removing the articles that did not include the theme of this article, resulting in 84 articles. A total of 32 articles were evaluated in full and 29 were included and developed in this systematic review study (Figure 1). Considering the Cochrane tool for risk of bias, the overall assessment resulted in 52 studies with a high risk of bias and 14 studies that did not meet GRADE.
Major Clinical Findings – Mindset, Lifestyle, and Sports Performance

Based on the main findings, elite athletes form an important social group, and it is notorious to analyze their lifestyles. In this scenario, a study developed knowledge about the lifestyle of elite athletes. Participants in the first phase included 19 sports experts, such as sports sociologists, sports psychologists, and sports coaches, who were selected by purposeful sampling and snowball methods to conduct unstructured in-depth interviews. According to the results, the lifestyle of elite Iranian athletes includes indicators such as professional mindset, skills, outlook on life, financial education, responsibility, consumption, leisure, personal issues, and religious behavior. The subjects of the second phase were 44 national-level athletes who voluntarily participated in the study. Five dominant lifestyles were identified among elite athletes: consumerist, relaxed, socially useful, profit-oriented, and professional [21].

In this context, mindfulness can benefit athletes’ mindset and performance. These benefits can be enhanced by sport-specific mindfulness interventions. One study aimed to develop a specific mindfulness intervention for rowing and, second, to investigate its effects on mindfulness, flow, reinvestment, and rowing performance. Rowers were randomly assigned to a 6-week rowing-specific mindfulness intervention (n=23), which included generic and rowing-specific practices, or a control group (n=21). Rowers completed pretest and posttest measures of performance, mindfulness, flow, and rowingspecific reinvestment. The results showed that the intervention group increased flow, mindfulness, and improved performance, in addition, conscious motor processing decreased from the pre-test to the post-test. However, the intervention did not preferentially change mindfulness or reinvestment compared to the control. Participants provided favorable feedback and evaluated the intervention positively. The 6-week rowing-specific mindfulness intervention promoted flow, encouraged mindfulness, and aided performance. Therefore, a sport-specific mindfulness intervention may benefit athletes [22].

In addition, a study examined how stress coping skills, such as a stress mindset, affect performance and awareness in the context of a soccer match. A total of twenty elite women's soccer players participated in the study. The final sample size consisted of 15 players for the Stress Mindset Measure (SMM) analysis and 8 players for the multilevel model analyses. Two types of intervention were used to manipulate stress mindset and control heart rate variability (HRV); a serious game called "Stressjam" and a reflection tool called "Brainjam". The "Stressjam" intervention resulted in significant differences in stress mindset across the intervention (p=0.008). The multilevel analysis showed a positive, strong, and significant correlation between the stress mindset, manipulated through "Stressjam" and SA (p=0.014). A correlation of practical interest, given confidence intervals, was found between stress mindset, manipulated through "Stressjam", and performance. Therefore, cognitive variables, such as coping with stress, are significantly correlated with awareness in soccer. A correlation of practical interest was found between coping with stress and performance [23].

In this regard, a person's beliefs about the nature of stress (stress mindset) play an important role in the extent to which someone experiences the harmful or beneficial results of stress. Stress mindset has been explored in college students, but there is limited research on stress mindsets in student-athletes. Sports can serve as a buffer to the negative impacts of stress for some student-athletes; however, the pressures associated with sport participation increase stress in other student-athletes. In this regard, a study analyzed potential differences in stress mindset and perceived stress between non-athletes and collegiate athletes. A total of 272 students (n = 87 student-athletes; n = 185 non-athletes) completed a demographic questionnaire, the Perceived Stress Scale, and the Stress Mindset Measure via an online survey. No significant differences were observed between the stress mindset scores of student-athletes and non-athletes; however, significant differences were observed between perceived stress by
student-athletes and non-athletes. Thus, student-athletes and non-athletes shared a similar view of stress, but student-athletes reported a lower level of perceived stress than non-athletes [24].

In light of this, the popularity of sport psychology and mindset, both as an academic discipline and as an applied practice, has grown substantially over the past two decades. Few in the field of competitive athletics would argue the importance of being mentally prepared before an athletic competition, as well as the need to maintain that particular mindset during competitive competition. There is still a lack of understanding about the process and mechanisms by which these mental abilities affect performance. Thus, a study described how mental skills training resulted in better performance in competition [25].

In this context, champion athletes attribute their good mindset (psychological) as the main predictor of competitive success [1,2]. Still, championship performance requires a particular way of life that integrates mindset, performance factors, lifestyle, and relationships. High-performance strategies include the use of honed mental rehearsal skills and practice recovery [5].

Still, the best championship performance occurs at the intersection of a strong psychological profile, interpersonal support, and performance and lifestyle strategies. In that regard, it's up to the athlete's ability to shift focus within these domains through a slope that can lean in many directions. This ability is adaptive through self-regulation. Thus, specific guidelines for athlete education ensure that performance and lifestyle strategies are used effectively. Furthermore, it is necessary to facilitate greater education for coaches and support staff in the area of the psychological skills of athletes [6].

Still in this scenario, the COVID-19 pandemic stands out, which directly impacts the training course of athletes, affecting mindset and psychology. The organizational consequences of isolation are the absence of organized training and competition, lack of communication between athletes and coaches, inability to move freely, lack of adequate sun exposure, and inadequate training conditions. In this way, athletes need to redefine their mindset to understand isolation as an opportunity for development, organizing appropriate guidelines, educating and encouraging athletes to apply appropriate preventive behavior and hygiene measures to promote immunity and ensure good isolation conditions for life. Mental fatigue must be anticipated and controlled mentally. Daily monitoring should be established [26].

Added to this, the change in lifestyle for an athlete is comprehensive and includes a change in mindset, training, work, entertainment, and includes identity, self-image, and values. While elite athletic performance emphasizes the importance of social development, physical abilities, sport-specific skills, and psychological factors, championship performance also requires a particular way of life that integrates mindset, performance, relationships, and lifestyle factors. The findings confirm the critical importance of an athlete's psychological profile, in particular their strong self-regulatory skills, in coordinating and maximizing their learning and performance. Also, authors have shown that a multidimensional psychological profile together with a social perception allows elite athletes to negotiate and manage stressors in high-performance sports [3,4,7].

In this sense, social support is seen as a stress buffer and an integral part of building resilience. It is critical to facilitate and value the relationships they form among peers, teammates, coaches, family, and support staff throughout the elite athlete's journey. Thus, personalized education forms part of recognized performance and lifestyle strategies to ensure they are used effectively. At a high-performance level, athlete voice and empowered decision-making can be effective for athletic preparation and performance [27].

In this sense, international sports bodies advocate a holistic approach to athletic profile and environmental factors for world-class sporting performance. Thus, one study explored the contribution, impact of lifestyle, and psychological factors among a sample of world-class champion athletes. Four dominant and overlapping themes emerged psychological attributes, interpersonal relationships, performance strategies, and lifestyle practices. All athletes attributed their success to psychological rather than physical factors, and the vast majority relied on mental rehearsal skills and recovery practices. Therefore, the athletic profile and support needed to achieve and maintain podium-level performance are multidimensional, integrated, and individualized, and psychological factors are key. In this regard, there is ample evidence that mindset and emotion affect performance in athletes. Military and sports organizations have focused on optimizing the internal states of their military personnel and athletes, respectively, to improve performance and well-being [14].

Added to this, a study analyzed the complex interdependencies and temporal dynamics in these processes, their interrelationships with the observed stimulation behavior, performance, and biochemical variables, as well as their level of performance and
dependent variances of competition results. Twenty-three cyclists from different performance level categories engaged in individual and head-to-head competition time trials against an equally performing opponent. Perceived physical and mental exertion was primarily associated with observed stimulation behavior as needed to align the planned behavior with the current physiological state. The change in mindset associated with an action crisis was mostly associated with a non-adaptive psycho-neuroendocrinological distress response [28].

Also, peak performance videos accompanied by music can help athletes optimize their pre-competition mindset. Preparation techniques can be incorporated into these videos to influence the motivational state of athletes. In this regard, one study examined the psychological and psychophysiological effects of video and music when used as a pre-performance intervention for an anaerobic endurance task. Fifteen men (age = 26.3 ± 2.8 years) were exposed to four conditions before performing the Anaerobic Wingate Test: music only, video and music, video with music, and a no video/no music control. Results showed that the combined video and music conditions were the most effective in terms of influencing participants' pre-task effect and subsequent anaerobic performance, followed by the music-only condition [29].

**Conclusion**

It was concluded that mindsets such as believing in yourself after failure are very beneficial for athletes' perseverance, motivation, and performance improvement. Still, a positive mindset can positively influence the performance of athletes, showing that mental skills training can lead to better performance in competition. Thus, champion athletes attribute their good mindset as the main predictor of competitive success. However, it is necessary to inform and encourage these practices in coaches and support staff in the area of the psychological skills of athletes. Mindfulness can benefit athletes' mindsets and performance. Cognitive variables, such as coping with stress, are significantly correlated with performance. High-performance strategies include using honed mental rehearsal skills and practicing recovery.

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Not applicable.

**Ethical Approval**

Not applicable.

