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## **Burnout Syndrome in Athletes: Mechanisms, Risk Factors and Prevention - A Narrative Review**

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## **Abstract**

**Background.** Athlete burnout is an increasingly recognized problem in modern sport, associated with high training demands, psychological stress, and environmental pressures. It may significantly affect athletes' performance, mental health, and long-term engagement in sport.

**Aim.** The objective of this review was to provide an overview of current evidence on athlete burnout, focusing on its underlying mechanisms, key determinants, associated outcomes, and approaches to prevention.

**Materials and methods.** A narrative literature review was conducted using the PubMed and Scopus databases. Publications from January 2016 to March 2026 were included, encompassing original studies, systematic reviews, and meta-analyses addressing burnout in athletes.

**Results.** The reviewed literature demonstrates that athlete burnout develops through complex interactions between physiological strain, psychological processes, and contextual factors within the sporting environment. Major contributors include excessive training demands, insufficient recovery, ineffective coping strategies, and unsupportive coaching conditions. Burnout is linked to declines in athletic performance, deterioration in mental well-being, and increased risk of sport discontinuation. Interventions targeting training regulation, psychological skills, and the social environment appear to play a key role in mitigating burnout symptoms.

**Conclusions.** Athlete burnout represents a complex and multidimensional condition with significant implications for both performance and health. A comprehensive and individualized approach, integrating physical, psychological, and environmental strategies, is essential for effective prevention and management.

**Keywords:** athlete burnout, sport burnout, overtraining, mental health, performance, prevention, recovery, coaching.

## **1. Introduction**

Burnout syndrome is a multidimensional psychological construct that has been extensively studied in occupational settings and, more recently, in the context of sport. It is generally defined as a state of chronic physical and emotional exhaustion accompanied by reduced sense of personal accomplishment and sport devaluation resulting from prolonged exposure to stressors (Li et al., 2019). In athletes, burnout represents a complex interplay between physiological load, psychological strain, and environmental pressures, making it a significant concern for both performance and overall well-being (Dišlere et al., 2025).

The increasing professionalization and competitiveness of sport, as well as growing expectations placed on athletes at all levels, have contributed to a rising prevalence of burnout symptoms. Both elite and recreational athletes are exposed to various stressors, including intensive training regimens, performance pressure, risk of injury, and challenges in maintaining a balance between sport and personal life (Gustafsson et al., 2017). Importantly, chronic exposure to such stressors without adequate recovery may lead not only to decreased performance but also to withdrawal from sport and long-term mental health consequences (Yang et al., 2023).

From a physiological perspective, burnout has been associated with dysregulation of the stress-response system, particularly the hypothalamic–pituitary–adrenal (HPA) axis, as well as increased levels of perceived fatigue and reduced motivation (Li et al., 2019). Psychologically, factors such as perfectionism, low autonomy, and maladaptive coping strategies have been identified as key contributors to its development (Yang et al., 2023). These mechanisms highlight the multifactorial nature of burnout and the need for a comprehensive approach to its understanding.

Given the potential negative consequences of burnout on athletes' health and performance, there is a growing need to better understand its underlying mechanisms, identify key risk factors, and develop effective prevention strategies. Therefore, the aim of this study is to summarize current knowledge on burnout syndrome in athletes, with particular emphasis on its mechanisms, risk factors, and prevention strategies.

## **2. Research materials and methods**

A narrative literature review was conducted using the PubMed and Scopus databases to identify relevant publications on athlete burnout, with particular emphasis on its mechanisms, risk factors, consequences, and prevention strategies. The search included studies published from January 2016 to March 2026. The following keywords and their combinations were used:

*“athlete burnout,” “sport burnout,” “burnout in athletes,” “overtraining,” “training load,” “mental fatigue,” “stress,” “recovery,” “risk factors,” “performance,” “mental health,” “prevention,” “intervention,” and “coaching.”*

The inclusion criteria comprised original research articles, systematic reviews, narrative reviews, and meta-analyses published in English that addressed the mechanisms, determinants, consequences, or prevention of burnout in athletes. Both experimental studies and observational studies were considered. Articles not written in English, conference abstracts, opinion pieces, and studies lacking full-text availability or sufficient methodological quality were excluded from the analysis.

### **3. Research Results**

#### **3.1 Definition and Conceptual Models of Burnout**

The concept of athlete burnout has been widely studied in sports science and psychology since the 1980s, when the first reports on burnout in sport settings began to emerge. Early theoretical approaches, such as the cognitive-affective model proposed by Smith, conceptualized burnout as a response to chronic stress leading to physical, emotional, and psychological exhaustion, ultimately resulting in withdrawal from sport participation (Wilczyńska et al., 2022). Subsequent models, including the sport commitment model, further emphasized the role of imbalances between perceived costs and benefits in the development of burnout (Wilczyńska et al., 2022). Despite the existence of multiple theoretical perspectives, a consensus has largely been achieved with the multidimensional model proposed by Raedeke and Smith, which remains the most widely adopted framework in contemporary research (Grugan et al., 2024; Olsson et al., 2025). According to this model, athlete burnout is defined as a psychological syndrome comprising three core dimensions: emotional and physical exhaustion, reduced sense of accomplishment, and sport devaluation. Emotional and physical exhaustion refers to the depletion of an athlete’s physical and emotional resources due to training and competition demands. Reduced sense of accomplishment reflects feelings of inefficacy and dissatisfaction with one’s performance, while sport devaluation represents the development of a detached or cynical attitude toward sport participation (Grugan et al., 2024; Olsson et al., 2025).

This conceptualization has been operationalized through the Athlete Burnout Questionnaire (ABQ), which is currently considered the gold standard for measuring burnout in athletes (Grugan et al., 2024). The ABQ consists of three subscales corresponding to the

core dimensions of burnout and has demonstrated strong psychometric properties, including reliability and validity across different athlete populations (Grugan et al., 2024). Its widespread use is largely attributed to its strong theoretical grounding and robust methodological validation.

Athlete burnout is now recognized as a significant mental health concern, associated with a range of negative psychological, cognitive, and behavioral outcomes, including decreased performance, emotional distress, and increased likelihood of sport withdrawal (Wilczyńska et al., 2022). Moreover, recent evidence suggests that burnout symptoms have increased over time. A cross-temporal meta-analysis indicated that levels of reduced sense of accomplishment and sport devaluation among athletes have significantly risen between 1997 and 2019, highlighting the growing relevance of this issue in modern sport (Madigan et al., 2022).

Overall, athlete burnout is best understood as a complex and multifactorial syndrome resulting from chronic exposure to sport-related stressors. Its multidimensional nature and significant impact on athletes' well-being and performance underline the importance of further research into its mechanisms, risk factors, and prevention strategies.

### **3.2 Physiological and Psychological Mechanisms**

Athlete burnout is a complex phenomenon resulting from the interaction of physiological and psychological processes triggered by prolonged exposure to stress. From a physiological perspective, chronic stress associated with intensive training and competition may lead to dysregulation of the stress-response system, particularly the hypothalamic–pituitary–adrenal (HPA) axis, and alterations in biological markers related to fatigue and recovery (Glandorf et al., 2025). Emerging evidence suggests that burnout may be reflected in measurable physiological changes, highlighting its potential biological underpinnings (Glandorf et al., 2025; Traunmüller et al., 2019).

In addition to physiological dysregulation, burnout is closely linked to cumulative physical fatigue and inadequate recovery. Excessive training loads without sufficient rest may result in overtraining syndrome, which shares several overlapping features with burnout, including persistent fatigue, decreased performance, and mood disturbances (Brenner et al., 2024). Overuse injuries and prolonged physical strain further exacerbate this process, contributing to both physical exhaustion and psychological distress (Brenner et al., 2024).

From a psychological perspective, burnout develops as a consequence of prolonged exposure to stressors that exceed an athlete's coping capacity. Stressful situations in sport

require continuous adaptation, and when adaptive mechanisms such as resilience are insufficient, athletes may experience emotional exhaustion and decreased motivation (Cai et al., 2025; Mei et al., 2025). This imbalance between stress and coping resources plays a central role in the development of burnout.

Mental fatigue represents another important mechanism linking physiological and psychological processes. It is associated with impaired cognitive function, reduced concentration, and decreased decision-making ability, which may negatively affect both performance and recovery (Huang et al., 2025). Factors such as poor sleep quality, emotional dysregulation, and accumulated fatigue further contribute to this process, creating a cycle that reinforces burnout symptoms (Huang et al., 2025).

In summary, burnout in athletes appears to result from the interaction between chronic physiological load and psychological stress, particularly when recovery and coping mechanisms are insufficient to counterbalance ongoing demands.

### **3.3 Determinants and Risk Factors of Burnout in Athletes**

Athlete burnout is widely recognized as a multifactorial phenomenon influenced by a combination of training-related, psychological, and environmental factors. These determinants often interact, increasing the likelihood of burnout when multiple risk factors are present simultaneously (Yu et al., 2025).

From a training perspective, excessive training load and insufficient recovery are among the most significant contributors to burnout. The International Olympic Committee highlights that a mismatch between training demands and recovery capacity may lead not only to overtraining but also to increased risk of injury, illness, and psychological exhaustion (Schwellnus et al., 2016). High training volume, particularly in young athletes, has also been associated with negative psychosocial outcomes, including increased stress and reduced well-being, which may further predispose athletes to burnout (Little et al., 2023). Additionally, overuse injuries and chronic physical strain may exacerbate both physical fatigue and emotional exhaustion, further increasing vulnerability to burnout (Rice et al., 2016; Schwellnus et al., 2016).

Psychological factors also play a critical role in the development of burnout. Individual characteristics such as high levels of stress, depressive symptoms, and maladaptive coping strategies have been identified as significant predictors of burnout in athletes (Nixdorf et al., 2020). Furthermore, the ability to adapt to adversity appears to be a key protective factor, as insufficient resilience may lead to emotional exhaustion and decreased motivation under

prolonged stress exposure (Cai et al., 2025). These findings highlight the importance of psychological resources in maintaining balance between demands and coping capacity.

Environmental and social factors represent another important domain influencing burnout risk. Coaching behavior, in particular, has been shown to significantly affect athletes' psychological well-being. A lack of autonomy-supportive coaching, poor communication, and weak coach–athlete relationships have been associated with higher levels of burnout (Choi et al., 2020; Kim & Choi, 2024). Conversely, supportive environments that promote autonomy, competence, and positive interpersonal relationships may reduce the likelihood of burnout development.

Overall, the risk of burnout in athletes increases when high training demands are combined with psychological vulnerability and unfavorable environmental conditions. These interacting factors emphasize the need for a comprehensive and individualized approach to identifying athletes at risk of burnout.

### **3.4 Consequences of Burnout in Athletes**

Burnout has been linked to impaired sport performance and a reduced ability to train and compete at a high level (Dišlere et al., 2025; Hilpisch et al., 2024). Evidence from longitudinal and review studies indicates that athletes experiencing burnout may demonstrate decreased performance outcomes and diminished overall functioning (Dišlere et al., 2025). Although the causal relationship remains complex, burnout is widely considered a factor that may negatively influence athletic performance (Olsson et al., 2025).

From a psychological perspective, burnout has been linked to a variety of adverse mental health outcomes. Studies indicate that athletes experiencing burnout are more likely to report symptoms of depression, anxiety, and emotional distress, as well as reduced overall well-being (Rice et al., 2016). Additionally, burnout may contribute to decreased motivation and increased likelihood of withdrawal from sport participation, further exacerbating its negative impact on athletes' mental health.

Physical consequences of burnout are also significant and often closely related to cumulative fatigue and inadequate recovery. Athletes experiencing burnout frequently report increased levels of fatigue, sleep disturbances, and reduced physical recovery capacity (Stockbower et al., 2022). These factors may not only impair performance but also increase the risk of injury and prolong recovery time, creating additional strain on the athlete.

In addition to performance and health-related outcomes, burnout may also lead to maladaptive behavioral patterns. Evidence suggests that individuals experiencing burnout may

be more prone to unhealthy coping strategies, including substance use and disengagement from structured training environments (Oglesby et al., 2020). Such behaviors may further reinforce the negative cycle associated with burnout and hinder recovery.

Taken together, athlete burnout is associated with a wide range of negative outcomes affecting performance, mental health, and overall functioning. These consequences may significantly impair an athlete's ability to maintain both high-level performance and long-term engagement in sport, highlighting the importance of early identification and appropriate intervention strategies (Dişlere et al., 2025).

### **3.5 Prevention and Intervention Strategies**

From a training perspective, appropriate load management and adequate recovery are essential in preventing burnout. Ensuring a balance between training demands and recovery capacity may reduce the risk of chronic fatigue and overtraining, which are closely linked to burnout development (Gustafsson et al., 2017; Huang et al., 2025). In particular, sufficient sleep and recovery strategies play a crucial role in maintaining physical and psychological well-being, as poor sleep quality and accumulated fatigue have been associated with increased burnout risk (Huang et al., 2025).

Psychological interventions represent another key component in burnout prevention. Cognitive Behavioral Therapy (CBT) has been shown to be effective in reducing burnout symptoms, particularly by targeting maladaptive thought patterns and stress responses (Gustafsson et al., 2017). More recent approaches emphasize the role of mindfulness-based interventions, which have demonstrated effectiveness in reducing emotional exhaustion and improving overall well-being in athletes (Li et al., 2019). Additionally, the development of emotional intelligence and resilience may enhance athletes' ability to cope with stress and adapt to challenging situations, thereby reducing vulnerability to burnout (Cai et al., 2025; Huang et al., 2025).

Environmental and organizational factors also play a significant role in burnout prevention. Supportive coaching behaviors, particularly those promoting autonomy, effective communication, and positive coach–athlete relationships, have been associated with lower levels of burnout (Choi et al., 2020; Fan et al., 2022). Creating a positive training environment that satisfies basic psychological needs, such as autonomy, competence, and relatedness, may further reduce burnout risk and promote long-term athlete engagement (Fan et al., 2022).

Overall, the prevention of athlete burnout requires an integrated approach combining appropriate training management, psychological support, and a supportive social environment.

Such strategies not only reduce the risk of burnout but also contribute to improved performance, well-being, and long-term athlete development (Gustafsson et al., 2017; Li et al., 2019).

#### **4. Discussion**

The present review aimed to synthesize current knowledge on athlete burnout, with particular emphasis on its underlying mechanisms, risk factors, consequences, and prevention strategies. The findings indicate that burnout is a multifactorial and dynamic phenomenon that arises from the interaction between physiological stress, psychological processes, and environmental influences (Gustafsson et al., 2017; Yu et al., 2025).

One of the key insights emerging from this review is that athlete burnout appears to develop as a result of an imbalance between training demands and an athlete's capacity for recovery and coping. Chronic exposure to high training loads, when not adequately matched with recovery strategies, may lead to cumulative fatigue and physiological dysregulation (Brenner et al., 2024; Glandorf et al., 2025; Schweltnus et al., 2016). At the same time, psychological factors such as stress perception, motivation, and coping strategies play a crucial role in determining how athletes respond to these demands (Nixdorf et al., 2020; Yu et al., 2025). This highlights that burnout is not solely a consequence of physical overload, but rather the result of a complex interaction between physical and psychological stressors.

Importantly, the mechanisms underlying burnout are closely aligned with the identified risk factors. Excessive training load, inadequate recovery, and overtraining may contribute to physiological strain, while psychological vulnerability, including maladaptive coping and low resilience, may exacerbate the stress response (Brenner et al., 2024; Cai et al., 2025; Nixdorf et al., 2020). In addition, environmental factors such as coaching style and interpersonal relationships further influence this process (Choi et al., 2020; Fan et al., 2022; Kim & Choi, 2024). This interconnected framework suggests that burnout should be understood as a systemic issue rather than an isolated condition, requiring a multidimensional approach to both assessment and management.

The consequences of burnout extend beyond reduced athletic performance and include significant psychological, physical, and behavioral effects. The association between burnout and mental health disturbances, such as depression and anxiety, underscores the importance of recognizing burnout as a serious health concern rather than merely a performance-related issue (Rice et al., 2016). Furthermore, the link between burnout and sport withdrawal and impaired

performance highlights its potential long-term impact on athlete development and career sustainability (Dišlere et al., 2025; Olsson et al., 2025).

Despite the growing body of literature, several gaps remain in the current understanding of athlete burnout. First, there is a lack of longitudinal and causal studies that would allow for a clearer determination of the directionality of relationships between burnout, performance, and mental health outcomes (Dišlere et al., 2025). Second, variability in definitions and measurement tools across studies may limit the comparability of findings. Although the Athlete Burnout Questionnaire (ABQ) is widely used, further validation and standardization across different populations are still needed (Grugan et al., 2024). Additionally, relatively few studies have explored biological markers of burnout, indicating a need for more integrative research combining physiological and psychological approaches (Glandorf et al., 2025).

The findings of this review also have important practical implications. Effective prevention and management of burnout should involve a comprehensive strategy that integrates appropriate training load management, psychological support, and the creation of supportive sporting environments (Gustafsson et al., 2017; Schwellnus et al., 2016). Coaches and practitioners should focus on promoting recovery, fostering adaptive coping strategies, and supporting athletes' psychological needs, including autonomy and competence (Fan et al., 2022; Li et al., 2019). Early identification of at-risk athletes may be particularly important in preventing the progression of burnout and its associated consequences.

This review has several limitations that should be acknowledged. As a narrative review, it is inherently subject to selection bias and does not follow a systematic methodology for study inclusion. Additionally, the heterogeneity of the included studies, in terms of populations, sports disciplines, and measurement tools, may limit the generalizability of the conclusions.

Taken together, the available evidence suggests that athlete burnout is a complex and multifaceted condition with significant implications for both performance and health. A better understanding of its mechanisms and determinants is essential for the development of effective prevention and intervention strategies in sport. (Li et al. 2019; Dišlere et al. 2025)

## **5. Conclusions**

Athlete burnout is a complex and multifactorial phenomenon resulting from the interaction between physiological stress, psychological factors, and environmental influences. It is associated with a wide range of negative outcomes, including impaired performance, mental health disturbances, and reduced long-term engagement in sport. The findings of this review highlight the importance of maintaining a balance between training load and recovery,

as well as the role of psychological resources in coping with sport-related stress. Effective prevention strategies should integrate appropriate load management, psychological interventions, and supportive coaching environments. A comprehensive and individualized approach is essential for early identification and prevention of burnout, which may contribute to improved athlete well-being, performance, and career sustainability.

## **Disclosure**

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Not applicable.

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The authors deny any conflict of interest.

## **Declaration of the use of generative AI and AI-assisted technologies in the writing process**

In preparing this work, the author(s) used ChatGPT for language improvement and grammatical correction. After using this tool/service, the author(s) have reviewed and edited the content as needed and accept full responsibility for the substantive content of the publication.

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