



FROM CONCEPT TO INTERVENTION: A Multidimensional Framework for Burnout in Youth Sports

DO CONCEITO À INTERVENÇÃO: um enquadramento multidimensional para o burnout no esporte juvenil

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Abstract

This article addresses the growing challenge of burnout in young athletes, characterized by physical and emotional exhaustion, depersonalization, and a reduced sense of accomplishment. Its central objective is to present a critical and integrative synthesis of the main theoretical models on burnout in youth sports, articulating their contributions into a multidimensional framework to guide research and practice. Methodologically, the study is based on the integration of five widely recognized theoretical models: the cognitive-affective stress model (Smith, 1986), the negative response to physical training model (Silva, 1990), the sociological model of identity and external control (Coakley, 1992), the integrated model of athlete burnout (Gustafsson *et al.*, 2011), and Self-Determination Theory (Deci; Ryan, 2000). This approach seeks to overcome the fragmentation of existing analyses by recognizing the dynamic interaction among physiological, psychological, and sociocultural variables. The analysis results reveal that burnout is a multifaceted process, influenced by situational demands, negative cognitive appraisals, physiological and behavioral responses, as well as personality and motivational factors. The integration of these models allows for the identification of not only risk factors but also mediating and moderating variables, such as social support and the satisfaction of basic psychological needs, which explain athletes' distinct responses. Finally, the article proposes a multidimensional preventive model structured on five pillars: training load management, psychological skills development, autonomy promotion, identity diversification, and an autonomy-supportive motivational climate. This model offers a practical roadmap for coaches, psychologists, administrators, and families, aiming to create training environments that reconcile performance, well-being, and human development, thereby contributing to more sustainable sports careers and lasting positive experiences.

Keywords: Athlete Burnout; Youth Athletes; Prevention; Theoretical Models; Sport Psychology.

Resumo

O presente artigo aborda o crescente desafio do burnout em jovens atletas, caracterizado por exaustão física e emocional, despersonalização e redução da percepção de competência. O objetivo central é apresentar uma síntese crítica e integrativa dos principais modelos teóricos sobre burnout no esporte juvenil, articulando suas contribuições em um enquadramento multidimensional para orientar pesquisa e prática. Metodologicamente, o estudo baseia-se na integração de cinco modelos teóricos amplamente reconhecidos: o afetivo-cognitivo de estresse (Smith, 1986), a resposta negativa ao treino físico (Silva, 1990), o sociológico de identidade e

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controle externo (Coakley, 1992), o integrado de burnout no esporte (Gustafsson et al., 2011) e a Teoria da Autodeterminação (Deci; Ryan, 2000). Essa abordagem busca superar a fragmentação das análises existentes, reconhecendo a interação dinâmica entre variáveis fisiológicas, psicológicas e socioculturais. Os resultados da análise revelam que o burnout é um processo multifacetado, influenciado por demandas situacionais, avaliações cognitivas negativas, respostas fisiológicas e comportamentais, além de fatores de personalidade e motivacionais. A integração dos modelos permite identificar não apenas fatores de risco, mas também variáveis mediadoras e moderadoras, como suporte social e satisfação das necessidades psicológicas básicas, que explicam as distintas respostas dos atletas. Por fim, o artigo propõe um modelo preventivo multidimensional estruturado em cinco pilares: gestão da carga de treino, desenvolvimento de competências psicológicas, promoção da autonomia, diversificação identitária e clima motivacional de suporte à autonomia. Este modelo oferece um roteiro prático para treinadores, psicólogos, dirigentes e famílias, visando criar ambientes de treino que conciliem desempenho, bem-estar e desenvolvimento humano, contribuindo para carreiras esportivas mais sustentáveis e experiências positivas duradouras.

Palavras-chave: Burnout Esportivo; Atletas Juvenis; Prevenção; Modelos Teóricos; Psicologia do Esporte.

1 INTRODUCTION

Burnout in young athletes, especially in the context of high-performance youth sports, has emerged as a growing challenge for coaches, managers, psychologists, and families. Characterized by physical and emotional exhaustion, depersonalization, and a reduced sense of competence, the phenomenon not only compromises athletic performance but also affects the mental health and socio-emotional development of athletes (Raedeke; Smith, 2001; Gustafsson; DeFreese; Madigan, 2017). The increasing incidence of documented cases and the intensity of training programs in talent development indicate that burnout must be treated as a central issue in managing sustainable sports careers.

Despite significant advances in understanding the factors contributing to burnout, the literature still presents important limitations. Many approaches remain fragmented, analyzing the phenomenon in isolation as a physical, psychological, or social problem, without considering the dynamic interaction between these dimensions (Isoard-Gauthier; Trouilloud; Gustafsson; Guillet-Descas, 2016). This fragmentation hinders the formulation of comprehensive preventive strategies capable of addressing the complexity of the problem. This article assumes that effective prevention requires an integrative perspective that combines different theoretical models and translates their implications into practical interventions adaptable to the youth sports context.

The present proposal relies on the integration of five theoretical models widely recognized in the literature - the cognitive-affective stress model (Smith, 1986), the negative training response model (Silva, 1990), the sociological model of identity and external control (Coakley, 1992), the integrated model of burnout in sports (Gustafsson; Kenttä; Hassmén, 2011), and the Self-Determination Theory (Deci; Ryan, 2000). By bringing together these perspectives, the study seeks to offer a more comprehensive and multifactorial understanding of burnout, recognizing that physiological, psychological, and sociocultural variables do not act in isolation but influence each other mutually.

This integrative approach allows for the identification not only of well-documented risk factors but also of mediating and moderating variables - such as social support, satisfaction of basic psychological needs, and identity diversity - that help explain why athletes exposed to similar conditions exhibit such distinct responses over time (Lonsdale; Hodge; Rose, 2009; Bartholomew *et al.*, 2011). By connecting theory and practice, the present study proposes a multidimensional preventive model designed to guide specific interventions adaptable to different sports, age groups, and cultural contexts.

Thus, the central objective of this article is to present a critical and integrative synthesis of the main theoretical models on burnout in young athletes, articulating their contributions into a multidimensional framework that can guide both research and practice. In doing so, it seeks to broaden the understanding of the phenomenon and offer a practical roadmap for prevention that simultaneously considers aspects of physical load, psychological resources, motivational climate, and sociocultural variables.

From a scientific perspective, this work contributes to advancing the field by proposing a model that connects scattered evidence across different lines of investigation, providing a conceptual framework capable of guiding longitudinal studies and controlled interventions. From a practical perspective, it provides support for coaches, sports psychologists, managers, and families in creating training environments that reconcile performance, well-being, and human development. The structure of the article follows a progressive logic: after this introduction, the relevant theoretical models are presented and discussed; next, the integration proposal is detailed; and finally, the practical implications and future directions for research and intervention are presented.

2 THEORETICAL MODELS OF BURNOUT IN ATHLETES

The understanding of burnout in the sports context has been guided by different theoretical models that, although emphasizing distinct aspects, converge on the notion that the phenomenon results from a dynamic interaction between personal, contextual, and organizational factors. Initially, three classic models were proposed specifically for sports: the cognitive-affective stress model (Smith, 1986), the negative training response model (Silva, 1990), and the sociological model of identity and external control (Coakley, 1992). Subsequent studies reinforced the relevance of these frameworks and suggested that their integration can offer a more comprehensive explanation of the phenomenon (Gould; Tuffey; Udry; Loehr, 1997; Gustafsson, DeFreese; Madigan, 2017).

2.1 Cognitive-Affective Stress Model

Smith (1986) conceptualizes burnout as a cognitive-affective response to chronic stressors arising from the training and competition environment. The model describes four interdependent stages: (1) situational demands, representing competitive and training pressures; (2) cognitive appraisal, where the athlete interprets these demands in light of their resources and expectations; (3) physiological responses, such as fatigue, muscle tension, and irritability; and (4) behavioral responses, including performance decline and sports disengagement. Evidence indicates that the intensity and frequency of situational demands, combined with negative cognitive appraisals, substantially increase the risk of burnout (Raedeke; Smith, 2001).

Recent research suggests that the relationship between these stages is not linear but dynamic, with mediating variables (e.g., social support, coping strategies, intrinsic motivation levels) and moderating variables (e.g., age, stage of athletic development, psychological resilience) influencing the progression of the process (Gustafsson; DeFreese; Madigan, 2017). For instance, athletes who use problem-focused coping strategies and receive constructive feedback from coaches tend to cognitively reassess demands more adaptively, reducing the likelihood of progression to the physiological and behavioral stages of burnout.

From an applied perspective, this model provides a useful roadmap for preventive monitoring. Psychometric tools, such as the Athlete Burnout Questionnaire (Raedeke; Smith, 2001), can be periodically used to identify early signs in the different stages of the model. Associating these data with objective indicators (e.g., internal training load, sleep quality, injury frequency) enables early intervention, adjusting situational demands and providing specific psychological support. This integrated approach is particularly relevant in youth sports, where psychological plasticity and the formation of adaptive habits are greater, allowing for more effective and lasting interventions.

2.2 Negative Training Response Model

Silva (1990) proposes that burnout may predominantly emerge from negative responses to excessive physical stimuli, resulting from a chronic imbalance between training volume and intensity, combined with insufficient recovery periods. The model assumes that, although controlled physical stress is essential for performance improvement, persistent overload exceeds the organism's adaptive capacity, compromising performance and increasing the risk of physical and psychological exhaustion.

The foundation of this model aligns with principles of sports training, such as progressive overload, appropriate periodization, and proportionality between general and specific exercises (Weineck, 1999). Recent research shows that the absence of adequate recovery cycles can lead not only to burnout but also to the development of overtraining syndrome (Meeusen *et al.*, 2013), characterized by prolonged performance decline and physiological and immunological disturbances.

Contemporary studies add moderating factors that can accelerate or delay this process, such as sleep quality, nutrition, heart rate variability (HRV), and subjective fatigue indicators (Kellmann; Beckmann, 2018). These parameters allow coaches to identify early states of accumulated physiological stress before they develop into burnout.

In practical application, Silva's (1990) model reinforces the importance of systematically monitoring training load - both external (volume, intensity, density) and internal (physiological and perceptual responses) - using tools such as Rating of Perceived Exertion (RPE) sessions, submaximal performance tests, and well-being

questionnaires. Integrating these data into an individualized periodization program can prevent exhaustion and optimize performance, especially in youth sports, where physiological vulnerability and the demand for long-term development require greater caution in training prescription.

2.3 Sociological Model of Identity and External Control

Coakley (1992) interprets burnout as the result of a sociological process in which the highly competitive and hierarchical structure of high-performance sports limits the athlete's autonomy and fosters the development of a unidimensional identity centered exclusively on the athlete role. When crucial decisions about training, competitions, and career goals are predominantly made by coaches or parents, athletes tend to lose their sense of agency and the ability to build alternative identities, increasing their vulnerability to burnout, especially in the face of negative results or injuries.

Recent research confirms that the frustration of basic psychological needs - autonomy, competence, and relatedness - is strongly associated with emotional exhaustion and disengagement (Deci; Ryan, 2000; Lonsdale *et al.*, 2009). Furthermore, longitudinal studies show that athletes with narrow sports identities struggle more with career transitions and are more likely to experience early dropout (Lally, 2007).

As a moderating factor, autonomy support plays a central role in mitigating burnout risk in this model. Coaches and parents who encourage athletes' active participation in decision-making, offer training options, and stimulate critical thinking help reduce social pressure and diversify sources of self-image and satisfaction (Isoard-Gauthier *et al.*, 2016).

In practice, this model provides guidelines for sociopedagogical interventions that expand opportunities for identity construction. These may include: (a) involving athletes in extracurricular activities outside the sports environment; (b) encouraging academic development and other personal interests; and (c) promoting diverse social support networks. Such strategies not only protect against burnout but also contribute to a healthier transition between different phases of sports life and post-career.



2.4 Integrated Model of Athlete Burnout

The Integrated Model of Athlete Burnout (Gustafsson; Kenttä; Hassmén, 2011) seeks to unify previous explanations by considering burnout as the result of the dynamic interaction between chronic stressors, coping resources, and recovery factors, moderated by personal and contextual characteristics. In this model, exhaustion is not seen as an inevitable consequence of exposure to high demands but as a product of the relationship between demands, resources, and adaptation strategies over time.

Subsequent studies (Gustafsson; DeFreese; Madigan, 2017) reinforce that this process is nonlinear, with periods of increased and decreased symptomatology influenced by variables such as social support, type of motivation, psychological maturity, and previous experiences of success or failure. This means that two athletes exposed to similar demands may have completely different trajectories in the development of burnout.

From an applied perspective, the integrated model suggests that burnout prevention and management should include: (a) continuous monitoring of competitive and training demands; (b) strengthening coping strategies, especially those focused on problem-solving and social support; (c) balanced management of physical and mental recovery periods; and (d) development of psychological skills, such as emotional regulation and self-efficacy.

The main advantage of this model, especially for youth sports, is that it provides a conceptual map for personalized interventions. Preventive programs can be built by identifying the specific demands of each athlete, the resources available to deal with them, and recovery opportunities, allowing for continuous adjustments before exhaustion reaches critical levels.

2.5 Self-Determination Theory Perspective

The Self-Determination Theory (SDT), proposed by Deci and Ryan (2000), offers a robust motivational framework for understanding burnout, emphasizing that well-being and sustained engagement depend on the satisfaction of three basic psychological needs: autonomy (feeling in control of one's actions), competence (feeling effective in tasks), and relatedness (feeling socially connected). When these

needs are chronically frustrated in the sports context, there is a higher likelihood of decreased intrinsic motivation, increased amotivation, and, consequently, burnout development (Lonsdale; Hodge; Rose, 2009).

Research indicates that controlling training environments - characterized by strict rule imposition, lack of dialogue, and excessive focus on results - tend to frustrate these needs, especially in young athletes (Bartholomew; Ntoumanis; Ryan; Thøgersen-Ntoumani, 2011). Conversely, contexts that provide autonomy support - such as involving athletes in decision-making, offering constructive feedback, and encouraging creative solutions - promote the satisfaction of these needs, acting as a protective factor against burnout.

From a practical perspective, SDT guides coaches, parents, and managers to structure motivational climates that support autonomy, which include: (a) explaining the purpose of tasks and goals; (b) offering real choices within training; (c) acknowledging athletes' emotions and perspectives; and (d) encouraging continuous learning rather than solely valuing immediate results. In youth sports, these practices not only reduce burnout risk but also contribute to the development of socio-emotional skills transferable to other life domains.

3 MAIN FACTORS RELATED TO BURNOUT IN ATHLETES

Numerous studies have identified recurring factors associated with burnout development in athletes, encompassing situational, cognitive, physiological, behavioral, personality, and motivational dimensions (Gustafsson *et al.*, 2011; Weinberg; Gould, 2011). Although these factors interact in complex ways, their individual analysis is essential for understanding the phenomenon and designing preventive and intervention strategies.

3.1 Situational Demands

In high-performance youth sports, situational demands are one of the main triggers for burnout. These demands include the need to balance academic and sports commitments, frequent participation in competitions, and adherence to high-intensity training loads (Gould; Tuffey; Udry; Loehr, 1996a; Isoard-Gauthier *et al.*, 2016). For example, competitions extending into the school week can result in significant class

absences, leading to an accumulation of academic tasks and increased psychological pressure. When persistent, this scenario fosters chronic stress and frustration due to poor academic performance (Cresswell; Eklund, 2006).

Another critical aspect is the lack of autonomy in decision-making about one's sports career. Coaches often prioritize technical-tactical improvement, but as Freire (2008) argues, educational practice in sports should go beyond the mechanical reproduction of motor skills, promoting the development of decision-making, critical evaluation, and personal responsibility. Balancing technical authority and participatory freedom is essential for athletic and personal maturation, reducing the risk of exhaustion.

Additionally, excessively high expectations set by coaches, parents, or the athletes themselves can exacerbate pressure for immediate results, disregarding the formative value of the competitive process (Marques, 2004). When the sole focus is on winning, frustration tolerance decreases, and each defeat amplifies the risk of motivational decline and emotional exhaustion (Smith, 1986). In this sense, sports training programs that incorporate enjoyable activities, social integration, and realistic goals tend to protect young athletes from burnout (Vella; Oades; Crowe, 2011).

3.2 Cognitive Appraisal of the Situation

Cognitive appraisal refers to the athlete's interpretation of the demands and pressures present in the sports context, directly influencing their stress level and risk of burnout (Lazarus; Folkman, 1984; Smith, 1986). In youth sports, negative or distorted interpretations can intensify feelings of frustration, loss of meaning, and demotivation, especially when victories are prioritized over broader formative goals (Gustafsson *et al.*, 2017).

One indicator of this negative appraisal is the perception of few meaningful achievements, particularly when athletic performance becomes the sole criterion for personal value. In such cases, athletes tend to neglect other forms of development - such as the enhancement of physical, cognitive, social, and ethical skills - that sports can provide (Marques, 2004). The absence of significant victories, when interpreted as absolute failure, amplifies the risk of emotional exhaustion and early career abandonment.

The loss of enjoyment in sports practice is another critical aspect identified in the literature (Ryan; Deci, 2000; Vallerand, 2001). Intrinsically motivated athletes tend to participate in activities willingly, experiencing satisfaction in both simple tasks and complex challenges. However, when the goals set are overly ambitious or disconnected from reality, the chances of failure increase, reducing enjoyment and intrinsic motivation. Setting intermediate and achievable goals helps maintain engagement and reduce psychological strain (Schunk *et al.*, 2014).

The "identity crisis" is also linked to negative cognitive appraisals, particularly in contexts of high sports specialization from an early age. A unidimensional identity - centered exclusively on the athlete role - limits the construction of alternative identities, which, according to Coakley (1992), increases vulnerability to burnout. Athletes who cannot dissociate their personal worth from sports results tend to experience greater stress and difficulty adapting to defeats or injuries. Support strategies that encourage the development of multiple social roles and interests can mitigate this risk (Lally, 2007).

3.3 Physiological and Psychological Responses

Burnout in athletes is often associated with a set of physiological and psychological responses that reflect exhaustion resulting from excessive demands and insufficient recovery (Kellmann; Beckmann, 2018; Silva, 1990). Among the most common physiological symptoms are persistent muscle pain, chronic fatigue, increased susceptibility to injuries and infections, and a decline in overall physical capacity (Meeusen *et al.*, 2013). These symptoms may result from training overloads that exceed the body's adaptive capacity, compromising both performance and health.

Psychological responses to burnout include irritability, impatience, depressed mood, reduced concentration, and decreased self-confidence (Raedeke; Smith, 2001). In competitive contexts, difficulty maintaining focus is especially critical, as it affects both training quality and competition effectiveness. Self-confidence, in turn, can be undermined by rumination over past mistakes, leading to intense emotional reactions such as frustration, anger, and impulsive behaviors, which may result in penalties or disqualifications (Gould *et al.*, 1996a).

The literature also highlights that early specialization and the application of adult training models to young athletes increase the likelihood of physical and mental

exhaustion (Bergeron *et al.*, 2015). To mitigate this risk, it is recommended that training programs respect principles of load progression, adaptation to biological and cognitive age, and balance between training volume and intensity (Weineck, 1999). Additionally, strategies for rest periodization and psychological well-being monitoring are essential to prevent both overtraining and burnout (Kellmann; Beckmann, 2018).

3.4 Behavioral Responses

Behavioral responses associated with burnout often manifest as abrupt performance declines, reduced engagement, and behaviors suggesting disinterest or partial withdrawal from competitive activities (Raedeke, 1997; Smith, 1986). Although, in many cases, this apparent decrease in effort is not intentional, it reflects the athlete's inability to maintain the same level of response to competitive and training stimuli due to physical and emotional exhaustion.

Behavioral changes may also be related to a loss of control over significant aspects of personal and sports life. Athletes whose routines are excessively controlled by coaches or family members, with little or no room for autonomy, are more likely to develop negative reactions, including passive resistance, oppositional attitudes, and social withdrawal (Coakley, 1992; Isoard-Gautheur *et al.*, 2016). The absence of social interactions outside the sports context exacerbates this situation, fostering isolation and reduced subjective well-being (Fraser-Thomas; Côté; Deakin, 2008).

Social support, when balanced and non-intrusive, plays a protective role by encouraging critical dialogue about training and competition processes (Rees; Hardy, 2000). In this sense, stimulating the athlete's active participation in planning and goal-setting can reduce negative stress and promote a greater sense of responsibility and belonging. Additionally, maintaining extracurricular activities and diverse social connections contributes to balancing sports and personal life, mitigating the behavioral impacts of burnout.

3.5 Personality and Motivational Factors

Personality, defined as the set of relatively stable psychological characteristics that influence patterns of thought, emotion, and behavior (Weinberg; Gould, 2011), plays a central role in susceptibility to burnout. Significant changes in dimensions such

as attitudes, values, interests, and motivations can signal a process of depersonalization, often observed in athletes who develop colder and more impersonal behaviors in the sports context (Raedeke; Smith, 2001). This shift, accompanied by feelings of emotional detachment and loneliness, tends to reduce energy and initiative to face adversities and seek solutions to remain in sports.

Motivation, particularly from the perspective of Self-Determination Theory, is one of the main determinants of sustainable sports engagement (Deci; Ryan, 2000; Lonsdale *et al.*, 2009). The loss of intrinsic motivation, or amotivation, compromises the willingness to explore new performance strategies and face challenges, favoring early dropout (Pelletier *et al.*, 1995). This amotivation may arise from the perception that efforts made do not yield significant results or that the goals set lack personal relevance.

Strategies to reduce the impact of these factors include strengthening the sense of autonomy, competence, and relatedness, as well as setting realistic and meaningful goals for the athlete (Vallerand, 2001). Development programs that value both sports performance and personal growth help maintain motivation and preserve well-being, acting as barriers against burnout.

4 FINAL CONSIDERATIONS

Burnout in young athletes is a phenomenon that, despite being widely recognized in the scientific literature, still lacks integrative models that combine solid theoretical explanations with practical guidelines adaptable to the context of high-performance youth sports. This article contributes to filling this gap by presenting a comprehensive and updated analysis that articulates classical models - cognitive-affective stress (Smith, 1986), negative training response (Silva, 1990), and sociological identity and external control (Coakley, 1992) - with contemporary integrative (Gustafsson; Kenttä; Hassmén, 2011) and motivational models (Deci; Ryan, 2000). This theoretical integration broadens the understanding of burnout as a multifaceted process in which physiological, psychological, and sociocultural variables interact in complex and nonlinear ways, influencing both the development and prevention of the phenomenon.

Unlike segmented approaches that treat burnout in isolation as a physical, psychological, or social problem, the perspective advocated here recognizes that

these domains are inseparable in the life of a young athlete. This systemic view allows for an understanding of how excessive training loads (Silva, 1990) can amplify negative effects when combined with unidimensional identities centered exclusively on the athlete role (Coakley, 1992) and the chronic frustration of basic psychological needs (Deci; Ryan, 2000). Thus, this work advances knowledge by proposing that burnout prevention be conceived as a multidimensional intervention capable of simultaneously addressing load factors, coping resources, and the quality of the motivational environment.

The most relevant practical contribution of this article lies in the formulation of a multidimensional preventive model that, by integrating evidence from different areas, provides an actionable roadmap for coaches, managers, sports psychologists, and families. This model is structured around five pillars - training load management, psychological skills development, autonomy promotion, identity diversification, and autonomy-supportive motivational climates - and offers concrete guidelines that can be adapted to different sports and competitive levels. At the same time, it provides criteria for continuous monitoring and adjustment, enabling more precise and effective preventive interventions.

From a scientific perspective, this study contributes by proposing an integrative theoretical-practical framework that not only describes risk factors but directly relates them to prevention mechanisms supported by empirical evidence. Furthermore, it highlights mediating and moderating variables, such as social support, coping strategies, sleep quality, and intrinsic motivation, which explain why athletes exposed to similar conditions may exhibit very different responses over time. This approach paves the way for longitudinal and experimental studies capable of systematically testing the impact of preventive programs designed based on this model.

In terms of a research agenda, it is suggested that future studies investigate the effectiveness of the multidimensional model in real training contexts, comparing it to traditional practices focused solely on physical performance. There is also room to examine how cultural and contextual variables influence the expression and prevention of burnout, especially in countries with different sports traditions and training structures.

Ultimately, this article reinforces the idea that preventing burnout is not just about avoiding early dropout from sports but about preserving the overall health and developmental potential of young athletes. By promoting training environments that

reconcile performance, enjoyment, and human development, a solid foundation is created for more sustainable sports careers and positive experiences that transcend the competitive realm. Thus, the greatest contribution of this work lies in offering a model that combines conceptual rigor, empirical grounding, and practical applicability, addressing an urgent demand in the field of sports psychology and the management of athletic development programs.

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