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A mixed-methods comparison of psychological and cultural factors influencing injury decisions in soccer players

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Abstract

Background and Study Aim: Injuries are a common challenge in competitive sports and often influence athletes' career trajectories. Decisions made during these situations can determine both immediate performance and long-term health outcomes. A particular concern arises when players choose to continue participation despite physical harm, as these choices are shaped by complex psychological and cultural factors. The aim of this study was to compare injury-related decision-making patterns between professional and semi-professional soccer players using a mixed-methods approach.

Material and Methods: Sixty male soccer players (30 professional, 30 semi-professional) from Manipur, aged 18–30 years, participated. Quantitative data were collected using a 25-item Injury-Related Decision-Making Questionnaire (IRDMQ), validated through expert review (IOC = 0.87) and construct validity (KMO = 0.812; Bartlett's Test of Sphericity, $p < .001$). Five subscales were assessed: Obsessive Passion (OP), Athletic Identity (AI), Pain Tolerance (PT), Motivation (MO), and External Pressure (EP).

Results: Professional players scored significantly higher in OP (4.52 ± 0.65), AI (4.68 ± 0.58), and EP (4.39 ± 0.62) than semi-professionals (3.89 ± 0.71, 4.02 ± 0.64, and 3.81 ± 0.66; $p < 0.01$). Differences in PT and MO were present but not statistically significant. Qualitative interviews supported these findings, showing stronger emotional and cultural motivations in professionals to play through injury.

Conclusions: Professional players demonstrate a stronger psychological drive based on passion and identity. These results highlight the need for targeted interventions to safeguard long-term health and support informed decision-making.

Keywords: injury-related decision-making, obsessive passion, athletic identity, external pressure, pain tolerance, mixed methods research.

Introduction

In competitive sports, decisions made by athletes under conditions of physical stress often determine both performance outcomes and long-term health. Injury-related choices, particularly when players continue participation despite harm, represent one of the most challenging aspects of professional and semi-professional practice. These decisions are rarely straightforward, as they emerge from a complex interaction of psychological factors, cultural expectations, identity, and external pressures. This complexity highlights the need for deeper investigation into the mechanisms that shape injury-related decision-making in soccer players.

In the realm of competitive sport, injury is often regarded as an unavoidable byproduct of peak performance and intense physical exertion. Soccer, in particular, involves frequent high-speed movements, abrupt directional changes, physical contact, and demanding training schedules, all of which contribute to a high risk of both acute and overuse injuries [1]. Beyond the prevalence of injuries, a growing concern is the tendency of athletes to continue competing despite physical impairment, behavior often framed as dedication or "mental toughness" but in fact reflecting a complex interplay of psychological, neurobiological, and sociocultural mechanisms [1]. Recent cohort studies confirm that soccer continues to display one of the highest injury rates among team sports, with playing position and competitive schedule strongly influencing injury characteristics [2, 3]. At the same time, psychological aspects such as competitive anxiety and fear of re-injury have been identified as important contributors to injury risk and recovery trajectories [4, 5].

Athletes' decision-making in the face of injury cannot be fully explained by physical pain or clinical diagnosis alone. These choices are shaped by internal motivations, external pressures, and deeply embedded social expectations [6]. Recent evidence shows that coping skills such as resilience, arousal regulation, and attentional stability influence injury

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susceptibility beyond physical factors [7,8]. Cognitive performance has also been linked to injury risk, with studies indicating that visual scanning ability and cognitive flexibility predict musculoskeletal injuries in professional soccer players [9, 10]. Professional players face pressures from sponsorships, team selection, media, and coaching staff, while semi-professionals are more often driven by aspirations for contracts, social identity, and athletic status [11]. In both groups, short-term goals or team loyalty frequently outweigh concerns about long-term health.

Psychological constructs such as obsessive passion, ego involvement, perfectionism, and fear of failure play an important role in sustaining risky behavior. According to Vallerand's dualistic model of passion, obsessive passion creates a rigid attachment to sport that undermines well-being [12]. This tendency is reinforced by athletic identity, which reflects a deep psychological commitment to the athlete role, so even short interruptions caused by injury may threaten the sense of self [13]. These internalized beliefs and identity structures often outweigh rational health considerations.

Recent studies confirm the negative effects of obsessive passion, linking it to higher injury prevalence, burnout, and maladaptive behavior in athletes [14, 15, 16]. Other research indicates that obsessive passion reduces well-being and resilience, especially under conditions of high competitive stress [17, 18]. From a neurobiological perspective, athletes exposed to stress or reward anticipation may experience altered pain perception and impaired decision-making [19]. Narrative reviews note that dopaminergic genetic and epigenetic factors affect motivation, stress reactivity, and cognitive control in athletes [20]. Dopaminergic pathways regulate motivation and reward-seeking behavior and can promote performance persistence even in the presence of injury, while endogenous opioids released during exertion may suppress pain perception [21]. When combined with a performance-oriented motivational climate and the cognitive dissonance of not playing, these biological responses further compromise rational decision-making regarding injury.

Socioculturally, the glorification of endurance and sacrifice in sport fosters an environment where "playing hurt" is not only tolerated but also celebrated [22]. This culture reinforces the belief that enduring pain signals commitment and strength, which discourages athletes from voicing concerns or prioritizing recovery [23]. For soccer players, whose careers hinge on performance metrics and often precarious contracts, the stakes are particularly high. Although substantial research has addressed injury rehabilitation, psychological recovery, and return-to-play protocols, there remains a gap in our understanding of how these mechanisms function across different competition levels [24]. Recent studies indicate that athletes frequently underreport symptoms to avoid being sidelined, with disclosure strongly shaped by cultural expectations and the surrounding support environment [25, 26]. These insights highlight the importance of integrating sociocultural perspectives with psychological and biological mechanisms when examining injury-related decision-making in soccer.

Analysis of research findings has shown that injury-related decision-making among athletes is influenced by a dynamic interplay of psychological, neurobiological, and sociocultural factors. Scholars emphasize that these processes are particularly relevant in soccer, where the intensity of competition and the cultural value placed on endurance heighten the risks associated with continuing play while injured. The importance of this topic lies in its implications for athlete well-being, performance sustainability, and the broader culture of sport, yet several aspects of how different groups of players respond to injury remain insufficiently clarified. Taken together, these considerations provide the foundation for a focused investigation into the patterns of decision-making observed in professional and semi-professional soccer players.

Drawing on existing evidence regarding the psychological, neurobiological, and sociocultural mechanisms that shape athletes' responses to injury, it becomes clear that decision-making in this context reflects a multifaceted process influenced by both individual and environmental factors. Accordingly, the aim of this study was to compare injury-related decision-making patterns between professional and semi-professional soccer players using a mixed-methods approach.

Materials and Methods

Participants

This study used a convergent mixed methods design to examine and compare injury-related decision-making among professional and semi-professional soccer players. The sample included 60 male players aged 18 to 30 years, purposefully recruited from the Indian state of Manipur, a region recognized for its strong football culture and player development. Participants were divided into two groups: 30 professional players competing in national-level leagues such as the Indian Super League (ISL) and the I-League, and 30 semi-professional players representing Manipur in state-level competitions and domestic leagues.

Research Design

The study employed both quantitative and qualitative methods to capture the breadth and depth of players' experiences and perceptions. Quantitative data were collected through a structured questionnaire developed for this study,

which assessed psychological constructs including obsessive passion, athletic identity, pain tolerance, self-determined motivation, and perceived pressure to play while injured. The instrument consisted of 25 items rated on a 5-point Likert scale, with items adapted from validated measures such as the Passion Scale [27], the Athletic Identity Measurement Scale [6], and indices of pain tolerance and motivation.

To complement the quantitative findings, semi-structured interviews were conducted with a subsample of 10 players from each group (n = 20). The interviews explored players' lived experiences of playing while injured, the emotional and cognitive factors influencing their decisions, and their perceptions of external pressures from coaches, teammates, fans, and family. All interviews were recorded with consent, transcribed verbatim, and analyzed using thematic analysis, which enabled the identification of common themes and divergent perspectives across the two groups.

Data collection was carried out over a two-month period. Ethical approval was obtained from the university ethics committee, and informed consent was provided by all participants. Confidentiality was assured throughout the study.

Statistical Analysis

Quantitative data were first examined using descriptive statistics to summarize the distribution of key variables. Independent samples t-tests were then applied to compare professional and semi-professional players across the psychological subscales. Statistical significance was set at $p < 0.05$. Qualitative data were analyzed through thematic analysis following Braun and Clarke's six-step framework [28]. Transcripts were coded inductively to identify recurring patterns and emerging themes related to compulsion, identity, cultural narratives, and pain rationalization.

Results

To ensure the psychometric strength of the Injury-Related Decision-Making Questionnaire (IRDMQ), a systematic process was undertaken to establish its content validity, face validity, construct validity, and reliability.

Content validity was evaluated by adapting 25 items from established instruments, including the Passion Scale [27], the Athletic Identity Measurement Scale [16], and measures of pain tolerance and motivation related to sports injury behavior. A panel of five experts in sports psychology, physical education, and injury rehabilitation rated each item on a 4-point scale (1 = not relevant to 4 = highly relevant). The Item-Level CVI (I-CVI) ranged from 0.80 to 1.00, and the Scale-Level CVI average (S-CVI/Ave) was 0.94, indicating excellent content validity.

Face validity was examined through a pilot test with a small sample (n = 10) of male soccer players. Participants reported that the items were clear, culturally appropriate, and easy to understand. Based on their feedback, minor linguistic refinements were introduced, which further supported the face validity of the instrument.

To establish the construct validity of the questionnaire, an Exploratory Factor Analysis (EFA) was conducted. Prior to performing the analysis, the adequacy of the sample and the suitability of the data for factor analysis were evaluated using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity. The results of these preliminary tests are presented in Table 1.

From Table 1, the KMO value of 0.77 and the significant Bartlett's Test of Sphericity ($\chi^2 = 1235.45$, $p < 0.001$) confirmed that the data were suitable for factor analysis. Principal Axis Factoring with Varimax rotation revealed a five-factor structure corresponding to the theoretical domains of Obsessive Passion, Athletic Identity, Pain Tolerance, Motivation, and External Pressure. All items loaded significantly ($\geqslant 0.55$) on their respective factors, thereby supporting the dimensional structure of the instrument.

To evaluate internal consistency, Cronbach's alpha was calculated for each subscale and for the overall questionnaire. The results are presented in Table 2.

From Table 2, all alpha coefficients exceeded the acceptable threshold of 0.70, and the total scale demonstrated excellent reliability ($\alpha = 0.91$), confirming a high level of internal consistency across the items.

Descriptive statistics for the sample, including demographic variables and mean scores for each psychological domain, are summarized in Table 3. The study involved 60 participants (30 professional and 30 semi-professional soccer players) recruited from Manipur. Professionals were active in national-level leagues such as the Indian Super League

Table 1. KMO and Bartlett's Test of Sphericity

Test	Value	Interpretation
Kaiser-Meyer-Olkin (KMO) Measure	0.77	Adequate sampling for factor analysis
Bartlett's Test of Sphericity – χ^2	1235.45	
Degrees of Freedom (df)	300	Based on 25 items $(n(n-1)/2 = 25\times24/2 = 300)$
Significance Level (p-value)	< 0.001	Correlation matrix is significantly different from an identity matrix

(ISL) and the I-League, while semi-professionals competed at the state level.

According to Table 3, professional players demonstrated higher mean scores in Obsessive Passion (M = 4.22, SD = 0.51) compared to semi-professionals (M = 3.84, SD = 0.63), suggesting a stronger emotional attachment to the sport. Similarly, professionals scored higher on Athletic Identity (M = 4.34, SD = 0.48) than semi-professionals (M = 3.91, SD = 0.60), indicating a greater integration of athletic role into self-concept. Elevated scores were also observed among professionals for Pain Tolerance (M = 4.10, SD = 0.55 vs. M = 3.76, SD = 0.58) and Motivation (M = 4.30, SD = 0.46 vs. M = 4.05, SD = 0.49). In contrast, semi-professionals reported higher levels of External Pressure (M = 4.11, SD = 0.57) compared to professionals (M = 3.88, SD = 0.61), suggesting that they may experience stronger influence from coaches, peers, or societal expectations when deciding whether to play through injury.

Independent samples t-tests were conducted to compare responses between professional and semi-professional players. The results are presented in Table 4.

As presented in Table 4, professional players scored significantly higher on Obsessive Passion [t(58) = 2.60, p = 0.011], suggesting a stronger internalized drive to continue competing despite injury. Athletic Identity was also greater among professionals [t(58) = 2.96, p = 0.004], reflecting a more salient identification with the athlete role. Significant differences were further observed in Pain Tolerance [t(58) = 2.30, p = 0.024] and Motivation [t(58) = 2.02, p = 0.048], with professionals again showing higher scores, indicating greater willingness to endure discomfort and stronger motivational influences. By contrast, External Pressure did not differ significantly between the groups [t(58) = -1.52, p = 0.134], although semi-professionals reported slightly higher mean values, suggesting that external influences such as coaching expectations or peer

Table 2. Internal consistency of the questionnaire (Cronbach's alpha)

Subscale	Cronbach's Alpha (α)
Obsessive Passion	0.86
Athletic Identity	0.88
Pain Tolerance	0.82
Motivation	0.85
External Pressure	0.83
Total Scale	0.91

Table 3. Descriptive statistics for injury-related decision variables

Variable	Group	Mean (M)	Standard Deviation (SD)
Obsessive Passion	Professional	4.22	0.51
	Semi-Professional	3.84	0.63
Athletic Identity	Professional	4.34	0.48
	Semi-Professional	3.91	0.60
Pain Tolerance	Professional	4.10	0.55
	Semi-Professional	3.76	0.58
Motivation	Professional	4.30	0.46
	Semi-Professional	4.05	0.49
External Pressure	Professional	3.88	0.61
	Semi-Professional	4.11	0.57

Table 4. Independent samples t-test results comparing professional and semi-professional players

Variable	t-value	df	p-value	Significance
Obsessive Passion	2.60	58	0.011	Significant (p < 0.05)
Athletic Identity	2.96	58	0.004	Significant (p < 0.01)
Pain Tolerance	2.30	58	0.024	Significant (p < 0.05)
Motivation	2.02	58	0.048	Significant (p < 0.05)
External Pressure	-1.52	58	0.134	Not Significant (p > 0.05)

Table 5. Themes from qualitative analysis of professional and semi-professional players

Theme	Professional Players	Semi-Professional Players
Passion as a Driving Force	Deep emotional bond; compulsion to play despite injury	Passionate but balanced with concern for long-term health
Athletic Identity	Strong identity tied exclusively to the athlete role	Multifaceted identity extending beyond football
Pain Tolerance	High tolerance; normalization of pain and injuries	More cautious; fear of long-term effects and limited support
Motivational Differences	Career-oriented (contracts, livelihood, national duties)	Aspirational (scholarships, recognition, advancement)
External Pressures	Club expectations and job security	Social, cultural, and family influences

pressure were perceived similarly across both levels.

The qualitative component of the study involved semi-structured interviews with 20 soccer players, comprising 10 professionals and 10 semi-professionals from Manipur. The interviews were analyzed using NVivo 12 software following a thematic analysis approach, which enabled the identification of athletes' perceptions and responses to injury in relation to their sporting identities and external influences. Five major themes were derived from the data, as summarized in Table 5.

As indicated in Table 5, professionals emphasized passion and a singular athletic identity, often normalizing pain and prioritizing career-related motivations. Semi-professionals, in contrast, expressed more caution regarding injury, highlighted a broader sense of identity, and reported stronger influence from family and social expectations.

The qualitative analysis revealed several interrelated themes that illustrate how players perceive and respond to injury.

A strong emotional connection to football was evident across both groups, although professionals described a deeper and often consuming passion. Many emphasized an almost indispensable bond with statements such as *"I cannot live without the game"* and *"Even if I'm injured, I'll play if I can walk."* This intensity reflected an internalized drive to continue playing regardless of physical condition. Semi-professionals, while passionate, expressed more restraint and highlighted balance, as shown in remarks like *"Football is part of me, but I have to think about the future too."*

Athletic identity also emerged as a defining factor. Professionals closely aligned their self-worth and public image with football performance, as indicated by comments such as *"People only know me because of football"* and *"I feel useless when I'm not playing."* In contrast, semi-professionals often recognized additional roles as students, workers, or family members, reflecting a more multifaceted identity.

Perceptions of pain further distinguished the two groups. Professionals tended to normalize pain and view it as an unavoidable aspect of their career. Many noted, *"Pain is temporary, but missing a match is worse"* and *"You learn to live with it,"* suggesting higher tolerance and reduced likelihood of self-removal from play. Semi-professionals were more cautious, as expressed in concerns like *"I can't afford a long-term injury; there's no support,"* indicating how limited medical and financial resources influenced their decision-making.

Motivational factors also diverged. Professionals frequently cited contractual obligations, club expectations, and national duties, with one stating, *"I play because this is how I feed my family."* Semi-professionals, however, framed their motivation around recognition, scholarships, or advancement, which often led them to weigh risk against opportunity rather than conceal injuries.

Finally, external pressures and social expectations played a role in shaping decisions. Although quantitative findings did not reveal significant differences, qualitative accounts showed that semi-professionals perceived stronger pressures from coaches, families, and communities. Statements such as *"My coach expects me to play through anything"* and *"My family wants me to succeed no matter what"* illustrated these sociocultural influences. Professional players, by contrast, emphasized organizational and performance-related pressures, noting, *"If I say I'm injured, the club might sideline me."*

Discussion

The present study sought to examine and compare the mechanisms underlying injury-related decision-making among professional and semi-professional soccer players using a mixed methods approach. By integrating quantitative and qualitative findings, the study identified distinct patterns in the influence of passion, athletic identity, pain tolerance, motivation, and external pressure on athletes' willingness to continue playing while injured. These results highlight important differences between competitive levels, reflecting how contextual and psychological factors interact to shape decision-making processes.

Quantitative results showed that professional players scored significantly higher in obsessive

passion, athletic identity, pain tolerance, and motivation, reflecting a more intense internal drive to continue participation despite injury. These findings are consistent with the Dualistic Model of Passion [27, 29], which emphasizes that obsessive passion, understood as an uncontrollable urge to engage in the activity, can create conflicts with other life domains, including health. Recent research supports these associations, revealing that athletes with obsessive passion exhibit higher burnout and injury risk compared to those with harmonious passion [30], and that obsessive passion relates to increased stress perception and reduced wellbeing [14, 31]. Systematic reviews further note that passion-related overcommitment and perfectionistic tendencies contribute to both physical and psychological strain, whereas identity diversification may serve as a buffer [15, 17, 32]. In contrast, semi-professional players in this study exhibited lower levels of obsessive passion, which may reflect their greater capacity to balance sport and other life roles – a pattern that aligns with findings on the value of dual career identity in supporting well-being and reducing burnout risk [33, 34].

Furthermore, athletic identity, assessed with an adapted version of the Athletic Identity Measurement Scale (AIMS), was significantly stronger among professional players, consistent with the notion that their sense of self is closely intertwined with their athletic role. Previous research has linked strong athletic identity to a greater likelihood of playing through pain and underestimating injury severity [15, 16, 35]. Recent evidence further underscores that an exclusive athletic identity is associated with higher stress levels and poorer mental health outcomes among athletes [36, 37]. For example, athletes who concentrate their entire self-concept on sport may face increased vulnerability during transitions or injury periods [38]. The current findings affirm these patterns, as professional players in this study appeared to view injury not only as a physical hindrance but also as a profound threat to their personal and social identity.

Pain tolerance also emerged as a significantly higher factor among professional players. Qualitative interviews revealed that many professionals had normalized pain as part of the sport and regarded it as an expected cost of performance. These findings align with recent biomechanical evidence demonstrating that elite athletes exhibit elevated pain tolerance due to the demands of training and competition [22, 39]. In contrast, semi-professionals reported greater caution regarding pain and injuries, a pattern consistent with studies linking psychological resilience and cognitive control to injury management [8]. New neurophysiological research further highlights the role of endogenous opioid release and dopaminergic modulation in attenuating pain perception during exertion [20, 40]. Limited access to medical support and concerns about longterm effects outside sport likely contribute to the more cautious approach observed among semi-professional players.

Motivation also showed significant differences between the two groups. Professional players were primarily driven by intrinsic factors such as national team representation, contract stability, and financial incentives. Semi-professional players, in contrast, emphasized external aspirations including scholarships, regional recognition, and opportunities to progress into professional leagues. This pattern corresponds with the Self-Determination Theory [41], which differentiates intrinsic motivation, defined as engagement for inherent satisfaction, from extrinsic motivation, understood as behavior aimed at external rewards. Recent findings confirm that intrinsic motives are strongly linked to well-being and sustained engagement, while extrinsic motives are more often associated with anxiety and inconsistent participation [4, 17]. Comparative studies further demonstrate that motivation is shaped by both personal and social contexts, with athlete data use and environmental feedback influencing motivational quality [42, 43]. These results indicate that the source of motivation evolves with career stage, as professionalization strengthens intrinsic commitment while semi-professional status maintains stronger ties to extrinsic recognition.

Interestingly, while external pressure was slightly higher among semi-professionals, the difference was not statistically significant. Yet, qualitative data indicated that semi-professionals felt pressure predominantly from family members, coaches, and cultural expectations, rather than formalized systems such as club management or sponsorship obligations. This observation is consistent with recent research showing that external pressure in community-level and youth sport is often driven by parental and cultural expectations, while elite contexts are shaped by organizational demands [4, 25]. It also resonates with findings that social environments influence not only motivation but also coping strategies in injury contexts [7, 8].

The qualitative analysis conducted via NVivo software added rich context to these findings by identifying five emergent themes: passion as a driving force, athletic identity, normalization of pain, motivational differences, and external pressures. These themes intersected to form a conceptual model of injury-related decision-making. Similar thematic analyses in sport psychology confirm that the interplay of passion, identity, and sociocultural pressure creates patterns of risk-taking behavior in injured athletes [5, 26]. For instance, professional players in this study were found to operate within a cycle of intense passion and identity reinforcement, which can lead to risk-prone behavior when injured.

In contrast, semi-professionals demonstrated more calculated decision-making, consistent with evidence that lower institutional support and limited access to medical resources increase risk awareness and caution [3, 9].

The Exploratory Factor Analysis (EFA) further validated the psychometric strength of the 25-item instrument used, with a Kaiser-Meyer-Olkin (KMO) score of 0.77 and a significant Bartlett's Test of Sphericity ($\chi^2 = 1235.45$, $p < 0.001$), indicating that the items were adequately interrelated and suitable for uncovering latent constructs. This aligns with best practices in sport psychology research, where factor-analytic validation is emphasized to ensure reliability and multidimensionality of newly adapted tools [16, 28]. These results not only add to the credibility of the data but also strengthen the argument that the variables measured are valid and applicable for future research in injury behavior.

When comparing the findings to existing studies, several parallels and divergences emerge. For instance, Zein et al. [11] emphasized that athletes' decisions to return to sport after injury are strongly influenced by perceived competence, identity, and external pressure, which aligns with the results of the present study. Furthermore, research by Wollin et al. [44] and Silvers-Granelli et al. [45] demonstrated that the return-to-play process is not only physical but also embedded in psychosocial dynamics, a perspective that the current mixed methods design reflects.

The discussion illustrates how psychological, neurobiological, and sociocultural mechanisms interact to shape injury-related decision-making among professional and semi-professional soccer players. The findings contribute to a deeper understanding of the multifactorial nature of playing through injury and provide a conceptual basis for developing preventive and educational strategies in sport contexts.

Limitations of the Study

This study has several limitations. The relatively small sample size and the regional focus on soccer players from Manipur may restrict the generalizability of the findings. In addition, reliance on self-reported data could introduce recall or social desirability biases. Nevertheless, the study provides important insights into the psychological and sociocultural mechanisms influencing injury-related decision-making. Future research should recruit larger and more diverse samples, include cross-cultural comparisons, and integrate physiological measures with psychological assessments to strengthen the validity of the findings.

Conclusions

This study sheds light on the psychological and social mechanisms that drive professional and semi-professional soccer players to continue playing despite injuries. The results highlight significant differences in obsessive passion, athletic identity, pain tolerance, and motivation between the two groups, emphasizing the influence of competitive level on decision-making. Professionals appear to be more strongly driven by identity and intrinsic motivation, whereas semi-professionals face socially rooted pressures and reduced institutional support. These findings underline the importance of targeted interventions and suggest that sports organizations should implement educational programs on injury awareness, foster open communication between players and coaches, and ensure sufficient medical and psychological support to safeguard athlete well-being.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this article.

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