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A Qualitative Analysis of the Role of Sleep Disorders in Sports Injuries Among Competitive Athletes in Canada

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A B S T R A C T

Objective: This study aimed to explore how competitive athletes in Canada understand, experience, and cope with sleep-related challenges in relation to their injury histories.

Methods: Using a qualitative approach, we conducted semi-structured interviews with 31 athletes aged 19 to 34, representing both individual and team sports. All participants had experienced at least one sports injury and reported issues with sleep. The interviews were analyzed in three stages—open, axial, and selective coding—allowing us to move from detailed personal accounts to broader thematic insights.

Results: The analysis identified four interrelated themes. Disrupted Sleep Patterns captured athletes' difficulties with initiating and maintaining sleep, commonly linked to stress, physical tension, and pre-sleep screen use. Emotional Burden of Sleep Loss highlighted the psychological toll of sleep disturbances, including heightened anxiety, irritability, and feelings of shame—particularly when performance declined. Heightened Injury Susceptibility reflected athletes' perceptions that inadequate sleep contributed to greater injury risk and prolonged recovery. Finally, Systemic Barriers and Ineffective Coping pointed to a lack of institutional sleep education, cultural stigma surrounding rest, and reliance on unhelpful self-management strategies, which often compounded the problem.

Conclusion: Sleep issues in elite athletes are not just about feeling exhausted—they reach into deeper layers of well-being. Poor sleep affects not only how athletes perform, but also how they feel, recover, and even how they define themselves. Hearing these experiences directly from athletes themselves reveals an urgent need for more compassionate and informed support systems—ones that include meaningful sleep education, accessible mental health care, and a cultural shift in sports that values rest and recovery just as much as effort and endurance.

Keywords: *Sleep disturbance, injury risk, athlete well-being, qualitative research, emotional resilience, recovery, sport culture*

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1. Introduction

Sleep plays a fundamental role in the physical, cognitive, and emotional well-being of competitive athletes. As high-performance sports continue to demand more rigorous training schedules and intensive competition calendars, athletes are increasingly vulnerable to sleep disturbances, which may compromise recovery and elevate the risk of sports injuries. Recent evidence highlights that elite athletes not only exhibit poorer sleep hygiene than the general population but also experience a higher prevalence of sleep-related disorders, including insomnia, fragmented sleep, and circadian rhythm disruptions (1, 2). These sleep challenges are not merely byproducts of lifestyle or travel demands—they are central to understanding injury susceptibility, impaired performance, and prolonged recovery in athletic populations (3, 4).

Athletic injuries are multifactorial in origin, encompassing biomechanical, environmental, and psychosocial variables. Among these, sleep disturbances have garnered attention as a potentially modifiable risk factor (5, 6). Sleep deprivation has been shown to impair cognitive function, delay reaction times, reduce coordination, and exacerbate fatigue—all of which may contribute to an athlete's vulnerability during training or competition (7, 8). Furthermore, emotional disturbances such as anxiety, mood instability, and diminished motivation, often exacerbated by chronic sleep deficits, may impair an athlete's psychological readiness and decision-making under pressure (9, 10). These factors collectively raise the likelihood of both acute and overuse injuries, as the athlete's physiological and emotional resilience becomes increasingly compromised (11, 12).

The intricate link between sleep quality and sports injury risk has also been explored through the lens of neurological and psychological functioning. For instance, studies demonstrate that insomnia and excessive daytime sleepiness are associated with increased concussion risk and slower post-injury recovery (3, 13). Sleep disturbances may impair an athlete's ability to process pain, regulate mood, and maintain focus—factors crucial for safe performance in dynamic, high-risk environments (14, 15). Moreover, hormonal regulation of growth and tissue repair—which occurs predominantly during deep sleep—is disrupted by fragmented sleep architecture, potentially impairing injury healing and increasing recurrence rates (16, 17). As such, sleep is not only essential for athletic performance, but also critical for maintaining musculoskeletal integrity and reducing long-term injury risk.

Emerging findings also emphasize the psychosocial context in which sleep disturbances occur among athletes. High levels of performance pressure, travel-related jet lag, academic stress, and interpersonal challenges all contribute to disturbed sleep patterns, particularly in competitive youth and collegiate athletes (18, 19). For some, maladaptive coping strategies—such as excessive caffeine intake, late-night screen use, or neglect of sleep hygiene—further aggravate the situation (1, 20). In many cases, athletes normalize their poor sleep as a necessary sacrifice for success, which may delay help-seeking and prevent timely interventions (21, 22). Compounding the issue, athletes often lack access to adequate sleep education, or perceive stigma around addressing mental health and sleep-related concerns with coaching staff or medical professionals (23, 24).

Despite a growing body of literature connecting sleep disturbances with injury outcomes in athletes, the subjective experience of this relationship remains underexplored. Most existing research relies on quantitative or physiological measures—such as actigraphy, sleep diaries, or performance metrics—while overlooking the nuanced psychological and emotional dimensions of sleep and injury as lived phenomena (2, 25). There is a critical need to understand how athletes themselves interpret and respond to their sleep difficulties, how these experiences intersect with injury events, and what coping strategies they develop to manage both. Qualitative methodologies, which emphasize participant voice and meaning-making, are uniquely suited to uncover these layers of complexity and provide a more holistic view of sleep disorders in high-performance settings (10, 26).

Furthermore, gender, sport type, and injury history may intersect to shape how athletes perceive and manage sleep-related challenges. For instance, research suggests that female athletes may experience higher rates of sleep-related symptoms and emotional dysregulation, particularly in relation to overtraining and hormonal fluctuations (5, 25). In contrast, male athletes may be more likely to externalize distress or downplay symptoms, especially in competitive team environments where toughness is valorized (12, 27). These variations underscore the need for targeted support and individualized assessment that accounts for both biological and cultural influences on sleep and injury risk.

Technology has added a new dimension to the athlete-sleep relationship. The rise of sleep tracking devices and

performance wearables has led many athletes to monitor their rest with increasing precision, often resulting in heightened anxiety over sleep metrics and perceived performance deficits (2, 28). While such tools can aid awareness and recovery planning, they may also create a feedback loop of stress and sleep disruption, particularly if athletes feel unable to meet their sleep goals. The psychological burden of monitoring, combined with performance anxiety and fear of re-injury, may exacerbate sleep disorders rather than alleviate them (9, 19). These dynamics further highlight the importance of understanding the subjective and emotional impact of sleep surveillance on athletes' well-being.

Neurological and vestibular aspects of sports-related trauma are also intertwined with sleep disruption. Athletes recovering from concussions or traumatic brain injuries frequently report persistent sleep issues, including insomnia, hypersomnia, and fragmented sleep cycles (15, 29). Such disturbances may linger long after physical symptoms subside, influencing return-to-play decisions and increasing the risk of re-injury. Sleep recovery protocols in post-injury rehabilitation remain inconsistent, and qualitative insights into how athletes experience sleep during recovery are sparse. Understanding the emotional, behavioral, and psychological challenges associated with post-injury sleep disruption is essential for designing more supportive rehabilitation frameworks (14, 24).

The sociocultural norms surrounding sleep in competitive sports also merit examination. Athletes often perceive rest as secondary to effort, and "pushing through" fatigue is frequently glorified in coaching rhetoric (4, 20). This cultural script reinforces the idea that sleep is expendable, which may discourage proactive sleep management and contribute to the normalization of sleep deprivation in elite environments (17, 30). Consequently, sleep problems may go unnoticed or untreated until an injury forces a pause. Moreover, athletes may experience shame or frustration when sleep disturbances affect performance, further compounding stress levels and perpetuating a cycle of poor recovery (5, 21). Addressing these norms through education, coaching strategies, and psychological support could be critical in shifting perceptions and encouraging healthier habits.

This study seeks to contribute to the evolving understanding of the role of sleep disturbances in athletic injury by adopting a qualitative lens. Specifically, it explores how competitive athletes in Canada experience, interpret, and respond to sleep-related challenges in relation to their injury histories. By using semi-structured interviews and thematic analysis, the study aims to capture athletes' lived experiences and give voice to the emotional and contextual dimensions often overlooked in sleep-injury research.

2. Methods and Materials

2.1 Study Design and Participants

This study employed a qualitative research design to explore how sleep disorders contribute to sports injuries among competitive athletes. The research was grounded in an interpretive paradigm aimed at understanding participants' subjective experiences and perceptions. A total of 31 participants were recruited through purposive sampling from the client base of York Rehab Clinic in Toronto, Canada. All participants were competitive athletes who had experienced at least one sports-related injury within the past year and had reported sleep disturbances as part of their health history. The selection process continued until theoretical saturation was achieved, meaning that no new themes or patterns emerged from the data.

2.2 Data Collection

Data collection was carried out using semi-structured interviews, allowing for both guided inquiry and the flexibility to explore emergent topics in depth. Interviews were conducted in person at the clinic or via secure video conferencing, depending on participant availability and preference. Each interview lasted between 45 and 60 minutes and was audio-recorded with the participants' consent. The interview guide included open-ended questions focused on sleep quality, sleep patterns, perceived causes of sleep disturbances, and their perceived relationship to athletic performance and injury experiences.

2.3 Data Analysis

The data were transcribed verbatim and analyzed using NVivo software to facilitate systematic coding and theme development. A thematic analysis approach was applied, involving an initial round of open coding followed by axial coding to identify relationships among categories. The coding process was iterative and collaborative, with regular discussions among the research team to refine emerging themes. Trustworthiness was ensured through member checking, where select participants reviewed summaries of their interviews for accuracy, and through peer debriefing among the research team. Ethical approval for this study was

obtained from the relevant institutional review board, and all participants provided informed consent before participation.

3. Results

The study involved 31 competitive athletes recruited from York Rehab Clinic in Toronto, Canada. Of the participants, 18 identified as male and 13 as female. The age range of participants was between 19 and 34 years, with a mean age of 26.4 years. In terms of sport type, 12 participants were involved in individual sports such as track and field, swimming, or gymnastics, while 19 were engaged in team sports including soccer, basketball, and hockey. Regarding competition level, 21 participants reported competing at the national level, and 10 at the provincial level. The majority (n = 26) reported experiencing sleep disturbances for longer than six months, while 5 participants had more recent onset of sleep issues within the past three months. Additionally, 24 participants had experienced at least one sports-related injury in the past year, with 7 reporting multiple injuries during the same period. All participants reported an awareness of a link—either perceived or confirmed by a professional—between their sleep issues and athletic performance or injury history.

In the open coding phase, the interview transcripts were carefully reviewed line-by-line to extract meaningful units of data. Initial codes were developed to capture repeated patterns, concrete descriptions, and significant expressions related to athletes' experiences with sleep disorders and sports injuries. This inductive process aimed to stay close to the participants' own words while identifying as many unique concepts as possible. NVivo software facilitated the organization and labeling of codes across the dataset. As theoretical saturation had been achieved with 31 participants, the open coding stage yielded a rich set of 78 recurring codes. These codes reflect various dimensions of sleep-related experiences, such as physiological disruptions, emotional struggles, performance concerns, and perceived injury risks. Each code is associated with interview identifiers (e.g., P3, P12) to indicate which participants contributed to each idea (Table 1).

Table 1. Open Codes and Corresponding Interview Participants

Open Code	Participant References
Trouble falling asleep	P1, P4, P9, P12, P15, P22, P27
Frequent night waking	P3, P6, P8, P14, P17, P19, P25
Daytime fatigue	P2, P7, P11, P16, P21, P29, P30
Use of sleep aids	P4, P10, P13, P20, P23
Pre-game anxiety	P5, P8, P12, P18, P24, P26
Muscle tension during sleep	P1, P6, P13, P17
Sleepwalking incidents	P9, P14, P19
Racing thoughts at night	P3, P10, P12, P22, P28
Overtraining and sleep	P2, P7, P11, P16, P27
Injury recurrence after poor sleep	P5, P10, P20, P25
Reduced pain threshold	P6, P13, P17, P21, P29
Disrupted circadian rhythm	P4, P9, P14, P23, P30
Caffeine dependency	P3, P8, P11, P24, P26
Irritability before matches	P7, P10, P15, P20
Sleep schedule inconsistency	P2, P6, P13, P18, P22
Use of meditation	P1, P5, P19, P21, P30
Dreams of injury	P9, P12, P16, P28
Sleep paralysis	P6, P13, P25
Sleep hygiene neglect	P4, P8, P10, P17, P22
Delayed sleep onset	P3, P5, P7, P23, P26
Weekend sleep compensation	P2, P6, P11, P18, P24
Emotional numbing	P12, P14, P21, P30
Anxiety over performance	P1, P5, P10, P13, P20
Cognitive fog during training	P3, P8, P15, P17, P29
Poor dream recall	P6, P11, P16, P25
Headaches after poor sleep	P4, P9, P19, P23, P27
Napping before training	P2, P7, P12, P18
Irregular bedtime routines	P5, P10, P14, P20, P26
Self-blame for sleep issues	P1, P9, P17, P22, P28
Overthinking injuries	P3, P8, P12, P24
Increased injury sensitivity	P6, P13, P15, P25

Coaches ignoring sleep complaints	P4, P7, P19, P27
Lack of sleep education	P2, P11, P16, P20, P30
Tension headaches	P5, P8, P14, P23
Use of screens before bed	P3, P9, P10, P18, P26
Reduced motivation	P6, P12, P21, P24, P29
Emotional reactivity	P1, P7, P13, P20, P28
Feeling “wired but tired”	P4, P11, P15, P22
Repeated injuries in same area	P3, P6, P19, P25
Lack of institutional support	P2, P10, P16, P21, P30
Disrupted REM cycles	P5, P9, P13, P23, P27
Physical exhaustion not helping sleep	P1, P4, P8, P20, P26
Nightmares post-injury	P3, P7, P14, P17, P28
Short sleep duration	P2, P5, P12, P19, P24
Oversleeping after competitions	P6, P10, P15, P21
Avoidance of medical help	P9, P11, P13, P23, P30
Use of compression gear for sleep	P1, P4, P8, P18
Late-night eating habits	P3, P7, P12, P16, P25
Fear of re-injury during sleep	P5, P10, P14, P20, P26
Frustration with recovery process	P6, P9, P13, P17, P22
Comparing sleep to teammates	P2, P8, P11, P15, P27
Use of sleep tracking devices	P4, P10, P18, P24
Misconceptions about sleep needs	P1, P6, P12, P19, P30
Social isolation due to sleep issues	P3, P9, P13, P20
Belief that poor sleep is “normal” in sports	P2, P5, P11, P16, P28
Loss of focus during games	P4, P7, P10, P14, P22
Friction with teammates over fatigue	P6, P12, P17, P25
Rituals before bed	P1, P3, P8, P13, P24
Emotional detachment from team	P5, P10, P19, P21, P27
Overcompensating with training	P2, P6, P11, P16, P30
Sleep as a taboo topic in sports	P4, P9, P14, P23, P28
Distrust of mental health services	P3, P7, P12, P18, P26
Injuries dismissed as “bad luck”	P5, P10, P15, P22, P29
Linking pain and poor sleep	P6, P13, P17, P25
Anger over delayed diagnosis	P2, P4, P9, P19, P30
Support from family	P1, P8, P12, P14, P20
Support from physiotherapist	P3, P6, P11, P16, P27
Shame over sleep complaints	P5, P10, P13, P22
Worry over future performance	P2, P7, P15, P18, P26
Changes in identity post-injury	P4, P9, P12, P17, P23
Hypervigilance after concussion	P3, P6, P14, P19, P25
Fear of career impact	P1, P8, P11, P20, P29
Sleep issues as part of burnout	P5, P10, P13, P21, P30
Misdiagnosed conditions	P2, P4, P7, P16, P28
Overlapping stressors (academic/sport)	P3, P6, P9, P15, P24

In the axial coding phase, the previously identified open codes were systematically grouped into broader categories based on conceptual similarities, causal relationships, and contextual connections. This step involved reassembling the data that had been fragmented during open coding by examining the conditions, interactions, and consequences underlying athletes’ narratives. Through constant comparison and discussion within the research team, axial codes were formed to reflect higher-level patterns that illustrate the interplay between sleep disturbances and sports injuries. This stage allowed for the emergence of themes that captured the structural dimensions of the problem, such as physiological effects, emotional responses, behavioral adaptations, and systemic barriers. A total of 20 axial codes were developed, each integrating a cluster of relevant open codes that offered deeper insights into the experiences of competitive athletes (Table 2).

Table 2. Axial Codes and Corresponding Open Codes

Axial Code	Corresponding Open Codes

Sleep onset difficulties	Trouble falling asleep, Racing thoughts at night, Delayed sleep onset, Late-night eating habits, Rituals before bed
Sleep maintenance problems	Frequent night waking, Disrupted REM cycles, Sleepwalking incidents, Sleep paralysis
Emotional consequences of poor sleep	Irritability before matches, Emotional numbing, Emotional reactivity, Shame over sleep complaints
Cognitive and physical impairments	Cognitive fog during training, Headaches after poor sleep, Reduced pain threshold, Loss of focus during games
Injury vulnerability after poor sleep	Injury recurrence after poor sleep, Repeated injuries in same area, Linking pain and poor sleep, Increased injury sensitivity
Anxiety-related sleep disruptions	Pre-game anxiety, Anxiety over performance, Nightmares post-injury, Overthinking injuries, Fear of re-injury during sleep
Behavioral compensations	Use of sleep aids, Napping before training, Use of compression gear for sleep, Use of screens before bed
Sleep recovery strategies	Weekend sleep compensation, Use of meditation, Support from physiotherapist, Support from family
Burnout and overtraining	Overtraining and sleep, Sleep as a taboo topic in sports, Sleep issues as part of burnout, Overcompensating with training
Inconsistent routines	Irregular bedtime routines, Sleep schedule inconsistency, Oversleeping after competitions
Performance pressure	Worry over future performance, Fear of career impact, Comparing sleep to teammates
Identity disruption	Changes in identity post-injury, Emotional detachment from team, Social isolation due to sleep issues
Inadequate institutional support	Coaches ignoring sleep complaints, Lack of sleep education, Lack of institutional support
Misinformation and myths	Misconceptions about sleep needs, Belief that poor sleep is “normal” in sports, Injuries dismissed as “bad luck”
Stress spillover from external domains	Overlapping stressors (academic/sport), Emotional reactivity, Frustration with recovery process
Avoidance and distrust	Avoidance of medical help, Distrust of mental health services, Shame over sleep complaints
Physiological manifestations	Muscle tension during sleep, Tension headaches, Hypervigilance after concussion
Technological influences	Use of screens before bed, Use of sleep tracking devices, Caffeine dependency
Pain-sleep cycle	Reduced pain threshold, Linking pain and poor sleep, Physical exhaustion not helping sleep
Misdiagnosis and unmet needs	Misdiagnosed conditions, Anger over delayed diagnosis, Distrust of mental health services

The axial coding process revealed several overarching categories that structured the athletes' experiences of sleep disturbances and their perceived links to sports injuries. Notably, many participants described sleep onset and maintenance difficulties that were exacerbated by psychological stressors and inconsistent routines. The emotional toll of poor sleep, including irritability, emotional detachment, and shame, was frequently reported, suggesting that sleep disruptions are not only physiological but deeply tied to identity and performance pressures. Another critical insight emerged around injury vulnerability, as athletes identified a clear connection between inadequate sleep and slower recovery or recurring injuries. Moreover, institutional neglect and misinformation appeared to worsen the problem, with several participants expressing frustration over the normalization of poor sleep in high-performance sports. These axial categories serve as a bridge toward the development of more refined and integrative themes, which will be further detailed in the selective coding phase.

The final phase of data analysis, selective coding, involved identifying the core themes that represent the central phenomena explored in the study. These selective codes served to integrate and refine the axial categories into broader, theoretically saturated constructs that explain how sleep disorders shape the lived experiences and injury patterns of competitive athletes. In this phase, the research team reviewed all axial codes and their underlying open codes to identify recurring patterns of meaning and relationships. The goal was to conceptualize the overarching narratives that emerged from the data and to explain how multiple categories interact to produce a deeper understanding of the issue. Four selective codes were identified, each encompassing several related axial codes that together formed a coherent explanation of the role sleep disorders play in sports injuries (Table 3).

Table 3. Selective Codes and Corresponding Axial Codes

Selective Code (Main Category)	Corresponding Axial Codes
1. Disrupted Sleep Architecture in Athletes	Sleep onset difficulties, Sleep maintenance problems, Physiological manifestations, Technological influences
2. Emotional and Psychological Toll of Sleep Disturbance	Emotional consequences of poor sleep, Anxiety-related sleep disruptions, Performance pressure, Stress spillover from external domains
3. Heightened Injury Susceptibility Linked to Poor Sleep	Injury vulnerability after poor sleep, Pain-sleep cycle, Cognitive and physical impairments, Burnout and overtraining
4. Systemic Barriers and Maladaptive Responses	Inadequate institutional support, Misinformation and myths, Avoidance and distrust, Behavioral compensations, Misdiagnosis and unmet needs

The selective coding process synthesized the findings into four primary themes that capture the complex interplay between sleep disorders and sports injuries among competitive athletes. First, many participants described a disrupted sleep architecture, marked by difficulties in both initiating and maintaining sleep, often aggravated by physiological tension and nighttime use of technology. Second, the emotional and psychological toll of sleep disturbance emerged as a dominant theme, as athletes reported heightened anxiety, emotional reactivity, and pressure-driven worry that disrupted sleep continuity. Third, the data highlighted a strong perceived connection between poor sleep and heightened injury susceptibility, including slower recovery, impaired focus, and physical vulnerability. Finally, systemic barriers and maladaptive responses were evident, as participants cited lack of sleep education, stigma surrounding help-seeking, and normalization of exhaustion as structural factors that compounded the problem. These four core themes represent the central findings of the study and provide a holistic framework for understanding how sleep disorders affect injury risk and recovery in high-performance sports contexts.

4. Discussion and Conclusion

This study explored the lived experiences of competitive athletes in Canada who reported both sleep disturbances and sports-related injuries. Through a three-phase qualitative analysis—open, axial, and selective coding—four core themes emerged: disrupted sleep architecture, emotional and psychological toll of sleep disturbance, heightened injury susceptibility linked to poor sleep, and systemic barriers and maladaptive responses. These findings provide a nuanced understanding of how athletes perceive and experience the relationship between sleep and injury, underscoring the complexity of sleep disorders in high-performance sports settings.

The first major theme, disrupted sleep architecture, captured athletes' difficulties in initiating and maintaining sleep, often complicated by muscle tension, pre-sleep anxiety, use of technology, and inconsistent routines. These reports align with prior research showing that elite athletes commonly experience poor sleep hygiene and irregular circadian rhythms, particularly during periods of intense competition or travel (1, 2). Sleep disruptions were often attributed to racing thoughts, overtraining, caffeine use, and late-night screen exposure—factors already identified as sleep-disrupting in elite sport contexts (4, 7). The use of wearable technology to track sleep, while intended to promote self-awareness, in some cases exacerbated sleep-related anxiety, mirroring findings that constant monitoring can become counterproductive (2, 28).

Participants also described the emotional and psychological toll of their sleep difficulties, reporting irritability, emotional numbing, anxiety about performance, and fear of re-injury. These emotional disturbances were not only outcomes of poor sleep but also triggers for ongoing sleep problems, creating a cyclical pattern. This finding supports prior research linking insomnia to heightened levels of anxiety, social withdrawal, and emotional dysregulation in athletes (5, 10, 21). Sleep quality is increasingly recognized as a determinant of psychological readiness in sport, with chronic insomnia undermining confidence, emotional regulation, and self-compassion (30). Moreover, athletes described shame and self-blame for not being able to "push through" fatigue, revealing the internalization of harmful performance norms—an observation consistent with studies examining the cultural pressures of mental toughness in sport (9, 15).

A central insight of this study was the perceived link between poor sleep and injury vulnerability. Athletes frequently described how poor sleep preceded or exacerbated physical injuries, citing slower reaction times, impaired focus, delayed pain recognition, and increased muscle tension. These subjective reports align with evidence indicating that inadequate sleep is associated with delayed neuromuscular recovery, reduced coordination, and diminished cognitive control during high-stakes athletic tasks (3, 25). Several participants also referenced recurrence of injuries in the same anatomical area, attributing their setbacks to unresolved fatigue and disrupted rest cycles—concerns echoed by research on chronic under-recovery in elite sport (4, 8). Furthermore, participants who had experienced concussions or traumatic brain injuries frequently described persistent sleep issues, in line with findings that link post-concussive symptoms to prolonged insomnia and hypersomnia (13, 14, 29).

Another significant theme pertained to systemic barriers and maladaptive responses. Many athletes expressed frustration over the lack of institutional support or formal education regarding sleep, often noting that their coaches or physiotherapists dismissed their sleep concerns or lacked knowledge on sleep recovery protocols. This is consistent with studies indicating that sleep education is rarely integrated into training regimens despite its recognized role

in injury prevention (18, 20). Several athletes reported attempting to self-manage sleep issues through supplements, irregular naps, or reliance on screen-based entertainment, reflecting the normalization of inadequate sleep and the absence of guided strategies. These findings support prior claims that maladaptive coping behaviors—such as caffeine overuse or screen time before bed—may inadvertently worsen sleep quality in athletic populations (1, 23).

Importantly, athletes' narratives also highlighted how performance pressures and team dynamics contribute to sleep disturbances. Participants described heightened sleep anxiety before major competitions, fear of letting their teams down, and emotional suppression to maintain a façade of resilience. These findings align with research demonstrating that perceived performance expectations, combined with limited emotional outlets, can significantly disrupt athletes' ability to wind down and achieve restorative sleep (5, 10). Particularly in team-based sports, where collective success is emphasized, athletes reported difficulty voicing fatigue or emotional distress—an insight echoed in prior studies on injury stigma and emotional isolation in sports (12, 22). These dynamics further perpetuate the invisibility of sleep disorders in sport, positioning them as personal failings rather than systemic health concerns.

The findings also reinforce the importance of recognizing intersecting stressors—such as academic obligations, travel, injury rehabilitation, and identity disruption—as contributors to poor sleep. Athletes who were navigating dual careers or recovering from long-term injuries reported compounded stress and uncertainty, which made it more difficult to regulate sleep and return to training with confidence. This layered experience is supported by research on athlete burnout and the psychological demands of elite sport, where recovery is often overshadowed by performance pressure and limited mental health support (9, 25). The tendency for athletes to downplay their own needs until symptoms become severe suggests a pressing need for culturally responsive and psychologically informed approaches to athlete care.

Despite its contributions, this study has several limitations. First, the sample was limited to athletes attending a single rehabilitation clinic in Toronto, which may not fully capture the diversity of experiences among athletes across different regions, sports, or competition levels. The qualitative design also relies on self-reported data, which may be subject to recall bias or social desirability bias, particularly in relation to sensitive topics like emotional distress or performance anxieties. Furthermore, the absence of physiological sleep measurements (e.g., actigraphy, polysomnography) limits the ability to triangulate subjective narratives with objective data. Finally, while the sample included athletes from both individual and team sports, the relatively small sample size may limit the generalizability of differences across sport types, genders, or injury histories.

Future research could build on these findings by incorporating mixed-methods approaches that combine qualitative interviews with objective sleep tracking and physiological markers of recovery. Longitudinal designs would also be valuable in examining how sleep disturbances evolve over the course of a competitive season or in response to specific injuries. Moreover, expanding the sample to include athletes from various geographic regions, sport disciplines, and age groups would enhance generalizability and offer comparative insights. There is also a need to examine the effectiveness of targeted interventions—such as sleep hygiene education, mindfulness-based recovery protocols, and integrated sleep coaching—in reducing injury recurrence and improving psychological resilience. Additionally, further exploration of the role of gender, cultural attitudes, and coach-athlete relationships in shaping sleep behaviors may illuminate important contextual factors influencing athlete well-being.

The findings of this study have direct implications for sports medicine professionals, coaches, and athletic organizations. Integrating sleep education into training programs and injury prevention protocols should be prioritized, especially in high-performance settings where sleep is often undervalued. Coaches and trainers should be trained to recognize the signs of sleep deprivation and refer athletes to appropriate resources when needed. Creating a team culture that normalizes conversations about sleep, stress, and recovery can reduce stigma and promote early intervention. Rehabilitation programs should include assessments of sleep patterns and support strategies that are responsive to the emotional and psychological challenges athletes face during recovery. Lastly, institutions should develop interdisciplinary support networks—combining the expertise of physiotherapists, psychologists, and sleep specialists—to address the multifaceted nature of sleep disturbances and promote long-term athlete health.

Authors' Contributions

All authors equally contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Ethical approval was obtained from the KMAN Research Institute Ethics Committee under the code KEC.2025.01A4.

References

1. Cameron A, Perera NKP, Fulcher M. Professional Athletes Have Poorer Sleep Quality and Sleep Hygiene Compared With an Age-Matched Cohort. Clinical Journal of Sport Medicine. 2020;31(6):488-93. [PMID: 33234816] [DOI]
2. Driller MW, Dunican IC, Omond SET, Boukhris O, Stevenson S, Lambing K, et al. Pyjamas, Polysomnography and Professional Athletes: The Role of Sleep Tracking Technology in Sport. Sports. 2023;11(1):14. [PMID: 36668718] [PMCID: PMC9861232] [DOI]
3. Raikes AC, Athey A, Alfonso-Miller P, Killgore WDS, Grandner MA. Insomnia and Daytime Sleepiness: Risk Factors for Sports-Related Concussion. Sleep Medicine. 2019;58:66-74. [PMID: 31132574] [PMCID: PMC7604222] [DOI]
4. Brandt R, Bevilacqua GG, Andrade A. Perceived sleep quality, mood states, and their relationship with performance among Brazilian elite athletes during a competitive period. The Journal of Strength & Conditioning Research. 2017;31(4):1033-9. [PMID: 28328717] [DOI]
5. Sani SHZ, Greco G, Fathirezaie Z, Bădicu G, Aghdasi MT, Abbaspour K, et al. Which Dark Personality Traits Could Predict Insomnia? The Mediated Effects of Perceived Stress and Ethical Judgments. Behavioral Sciences. 2023;13(2):122. [PMID: 36829351] [PMCID: PMC9952490] [DOI]
6. Kosińska A, Niedbał P, Poborowska D, Kahan W, Szafrańska W, Polańska K, et al. Is Physical Activity an Effective Remedy for Insomnia? - A Review. Quality in Sport. 2024;20:54131. [DOI]
7. Taheri M, Irandoust K. Morning exercise improves cognitive performance decrements induced by partial sleep deprivation in elite athletes. Biological Rhythm Research. 2020;51(4):644-53.
8. Zhang Y. Common Sports Injuries and Physical Treatments. Theoretical and Natural Science. 2023;20(1):115-21. [DOI]
9. Salles JI, Silva C, Wolff A, Orwert L, Ribeiro P, Velasques B, et al. Anxiety, Insomnia, and Depression During COVID-19 Lockdown in Elite Individual and Team Sport Athletes. Psicologia Reflexão E Crítica. 2022;35(1). [PMID: 36217066] [PMCID: PMC9550302] [DOI]
10. Solmaz S, İnan M, Şahin M. The Moderating Effects of Physical Activity on Social Anxiety and Sleep Disturbance: Managing Gaming Disorder in Young E-Sports Players. Frontiers in Public Health. 2025;13. [PMID: 39980917] [PMCID: PMC11841710] [DOI]
11. Mengxin S. Analysis on the Causes of Sports Injury in College Physical Education and Its Prevention Strategies. 2019. [DOI]
12. Stepančev B, Stankov S. Roles of Football Team Physician in the Prevention and Therapy of Sports Injuries. Medicinski Casopis. 2023;57(1):27-33. [DOI]
13. Abouhashem S. Neurosurgical Sports Injury (An Established Unit). Egyptian Journal of Neurosurgery. 2023;38(1). [DOI]
14. Verkaik F, Ford ME, Geurtsen GJ, Someren EJV. Are Sleep-related Beliefs and Behaviours Dysfunctional in People With Insomnia After Acquired Brain Injury? A Cross-sectional Study. Journal of Sleep Research. 2023;33(3). [PMID: 37443409] [DOI]
15. Ford ME, Verkaik F, Bouwmeester S, Geurtsen GJ. Do Changes in Beliefs and Behaviours Moderate Improvement in Insomnia After Acquired Brain Injury? Journal of Sleep Research. 2024;33(6). [PMID: 38736315] [PMCID: PMC11596986] [DOI]
16. Paryab N, Taheri M, Irandoust K, Mirmoezzi M. Effects of Melatonin on Neurological Function and Maintenance of Physical and Motor Fitness in Collegiate Student-Athletes Following Sleep Deprivation. International Journal of Sport Studies for Health. 2020;3(2):7-11. [DOI]
17. Thomas SJ, Sakhuja S, Colantonio LD, Li M, Muntner P, Reynolds K, et al. Insomnia Diagnosis, Prescribed Hypnotic Medication Use, and Risk for Serious Fall Injuries in the Reasons for Geographic and Racial Differences in Stroke (REGARDS) Study. Sleep. 2022;45(5). [PMID: 35554593] [PMCID: PMC9113010] [DOI]
18. Adegbesan OA, Matthews JR, Pindar MN, Adewunmi CM. The Sleep Behaviour of Students' Athletes in the Nights Prior to Competition. International Journal of Psychological Studies. 2020;12(1):24. [DOI]
19. Wang H, Sun H. The Mediating Role of Rumination in the Relationship Between Insomnia and Non-Suicidal Self-Injury of College Students. Frontiers in Psychology. 2024;15. [PMID: 39737227] [PMCID: PMC11682892] [DOI]
20. Sharma JP, Parveen. A Scenario of Sports Facilities &Amp; Their Role in Preventing Injuries in Sports. International Journal of Enhanced Research in Educational Development. 2022;04(02). [DOI]
21. Hou S, Twayigira M, Luo X, Song L, Cui X, Xie Q, et al. The Relationship Between Emotional Neglect and Non-Suicidal Self-Injury Among Middle School Students in China: The Mediating Role of Social Anxiety Symptoms and Insomnia. BMC Psychiatry. 2023;23(1). [PMID: 37055779] [PMCID: PMC10100180] [DOI]

22. Lee J, Lee H-C, Jeong H-N, Ha MS, Oh Y-S. Mediation Effect of Skill Levels in Relationship Between Degree of Participation and Injury Experience on Leisure Sports Participants : Based on Ball Sports With the Highest Injury Rate. Korean Journal of Sport Science. 2024. [DOI]
23. Gowtham KNB, Mercy T. Mouthguards in Sports Dentistry: A Review. International Journal of Pedodontic Rehabilitation. 2023;8(2):18-25. [DOI]
24. Defi IR. Rehabilitation Role in Sport Injury. Orthopaedic Journal of Sports Medicine. 2023;11(2_suppl). [PMCID: PMC9999154] [DOI]
25. Taheri M, Irandoust K, Ahmadi S. The effect of arginine supplementation following sleep deprivation on carbohydrate and fat metabolism, balance and fatigue index in female athlete students. Sport Sciences and Health Research. 2021;13(1):75-83. [DOI]
26. Kaneda K, Maeda N, Nagao T, Ishida A, Tashiro T, Komiya M, et al. Exploring the Impact of Sports Participation on Social Capital and Health-Related Factors in Individuals With Spinal Cord Injury: A Cross-Sectional Study. Physical Therapy Research. 2024;27(3):128-35. [PMID: 39866394] [PMCID: PMC11756564] [DOI]
27. Yu A, Green J, Walker K. Sporting Injuries Amongst Children in Australia: A Review of the Literature. Australian Journal of Advanced Nursing. 2018;35(3). [DOI]
28. Fu B, Fu X. Distributed Simulation System for Athletes' Mental Health in the Internet of Things Environment. Computational Intelligence and Neuroscience. 2022;2022:1-9. [PMID: 35371209] [PMCID: PMC8975696] [DOI]
29. Corazza MCA, Corazza LA, Corazza JA. Otoneurological Evaluation and Rehabilitative Considerations After Head Trauma. 2023. [DOI]
30. Röthlin P, Horvath S, Morgan GJ, Birrer D. Associations Between Sleep Disorder Symptoms, Self-Compassion, and Basic Psychological Needs in Swiss Elite Athletes. Current Issues in Sport Science (Ciss). 2023;8(2):056. [DOI]