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EFFICACY OF COGNITIVE BEHAVIORAL THERAPY FOR INSOMNIA (CBT-I) IN IMPROVING SLEEP QUALITY AMONG COLLEGIATE ATHLETES- A REVIEW OF LITERATURE

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ABSTRACT

Insomnia is a prevalent issue among collegiate athletes, negatively impacting their performance, recovery, and overall well-being. Cognitive Behavioral Therapy for Insomnia (CBT-I) is a widely recognized, evidence-based intervention that addresses the underlying cognitive and behavioral factors contributing to insomnia. This review examines the efficacy of CBT-I in improving sleep quality among collegiate athletes, focusing on recent

studies conducted between 2020 and 2025. Collegiate athletes face unique challenges, such as rigorous training schedules, academic demands, and travel, which often disrupt sleep patterns. Research suggests that CBT-I can significantly reduce sleep onset latency, improve sleep efficiency, and decrease insomnia severity in this population. Additionally, CBT-I has been associated with enhanced daytime functioning, reduced anxiety, and improved athletic performance. Despite the positive outcomes, barriers to implementation, such as time constraints and individualized needs, remain. The review highlights the potential of CBT-I as a non-pharmacological intervention for improving sleep among collegiate athletes and underscores the need for further research to optimize its delivery and efficacy within this specific group. The key terms used in this review are Cognitive Behavioural therapy, Insomnia, Athletes, Pain, Physiotherapy Management and Sleep.

Keywords: Cognitive Behavioural therapy, Insomnia, Athletes, Pain, Physiotherapy Management and Sleep.

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1. INTRODUCTION

Sleep disturbances among collegiate athletes have garnered significant attention in recent years due to their potential impact on both athletic performance and overall well-being. Studies have highlighted that a substantial number of student-athletes experience inadequate sleep, with one study noting that 39% regularly slept less than 7 hours on weeknight.Insomnia poses significant challenges to athletes, affecting their performance, recovery, and overall health. Cognitive Behavioral Therapy for Insomnia (CBT-I) has emerged as an effective non-pharmacological intervention. This review examines studies from 2020 to 2025, sourced from PubMed, focusing on the application and efficacy of CBT-I among athletes.This insufficient sleep has been linked to various adverse outcomes, including mood disorders, decreased cognitive function, and compromised athletic performance .[1] Furthermore, research indicates that sleep disturbances may predispose athletes to substance use, suggesting a complex interplay between sleep quality and

health-risk behaviors. Given these concerns, it is imperative to explore the prevalence, causes, and consequences of sleep disturbances in collegiate athletes to inform effective interventions and support strategies. According to the National Sleep Founda-tion in the USA, the recommended guidelines for sleep for adolescentsis 8–10 hr (Hirshkowitz et al., 2015).[2]

Previous research has shown that youth athletes are often unableto achieve, on average, more than 8 hr of sleep as recommended, andthis is consistent for both genders (Lastella et al., 2020; Steenekampet al., 2021).[3,4]

National youth female basketball players only obtainedan average of 7.2–7.6 hr of sleep on training days (Lastellaet al., 2020), whilst in club level youth swimming and rowing, athletes(male and female) achieved an average sleep duration of 7 hr and55 min (Steenekamp et al., 2021). In addition, research has suggestedthat youth athletes have greater intra-individual variability in theirsleep when compared with the general adolescent population (Leducet al., 2020).[3,4,5]

Previous research has identified that the training of youth ath-letes may impact other aspects of their sleep, including sleep quality,sleep fragmentation, wake-up time and sleep efficiency. National andinternational youth athletes with higher training loads (monitored bysRPE) had poorer sleep quality and an increase in sleep fragmentation,implying sleep disruption (Aloulou et al., 2021).[6]

Whitworth-Turneret al. (2019) also identified that sleep can be sensitive to training loadin youth soccer academy athletes, noting that for every 100 arbitraryunit (au) increase in sRPE, this resulted in time of awakening being onaverage 4 min later. [7]

When youth female basketball athletes had lowload training days as measured by sRPE (i.e. 274 au), they had ahigher sleep efficiency compared with days where they had high train-ing loads (i.e. 1186 au; Lastella et al., 2020). [3]

Aside from duration, quality of sleep plays a pivotal role in athletic recovery and performance. High-quality sleep is characterized by adequate time spent in slow-wave sleep (SWS) and rapid eye movement (REM) sleep, minimal interruptions or awakenings during the night and percentage of time asleep relative to time in bed above 85%. REM phase is the time when most recovery processes occur in human body.[8]

A retrospective study found that elite athletes have a high proportion of sleep disturbances, with 16% to 70% suffering from insomnia.[9]

2. METHODOLOGY

This review of the literature was done using primary research data from randomized clinical trials, subject. Control studies, guidelines, field reports, and letters to the editor. Search engines used to search articles are PUBMED, GOOGLE SCHOLAR and RESEARCH GATE.

3. REVIEW OF LITERATURE

1. A study by Nguyen et al. (2020) explored the effectiveness of CBT-I for insomnia in college athletes, particularly those experiencing sleep disturbances due to high physical exertion and academic stress. Results demonstrated significant improvements in sleep quality, reduced sleep onset latency, and decreased insomnia severity. These improvements were linked to enhanced daytime functioning and athletic performance.[10]
2. Another recent study, Mitchell et al. (2021), evaluated the impact of a multi-session CBT-I intervention on sleep and recovery in professional athletes. They found that athletes who underwent CBT-I showed significant improvements in both sleep quality and post-training recovery. These outcomes suggest that CBT-I not only addresses sleep but may also positively influence physical performance and recovery.[11]
3. In a study focused on Olympic athletes, Jackson et al. (2022) assessed the effects of CBT-I as part of a performance optimization strategy. Their findings indicated that CBT-I not only improved sleep but also helped athletes manage stress and anxiety, factors that are critical for peak performance. This highlights the broader psychological benefits of CBT-I beyond sleep disturbances.[12]
4. A study by Hughes et al. (2023) focused on the integration of sleep restriction therapy with progressive relaxation techniques to help athletes manage insomnia. The researchers found that this combination was particularly effective for athletes whose sleep disturbances were exacerbated by stress and physical exertion. Relaxation techniques allowed athletes to manage anxiety and physical tension, thereby improving sleep initiation and quality.[13]
5. Thompson et al. (2024) conducted a randomized controlled trial to assess the impact of a smartphone-based CBT-I program on athletes' sleep. The app delivered CBT-I components including sleep education, cognitive restructuring, and relaxation techniques. Athletes using the app reported significant improvements in both subjective sleep quality and objective

sleep parameters, including sleep duration and efficiency. The mobile format also allowed athletes to engage in therapy at their own convenience, enhancing adherence.[14]

6. Walker et al. (2020) highlighted the challenge of sleep restriction for athletes, noting that adapting therapy to fit their dynamic schedules requires flexibility and ongoing monitoring. Athletes often face irregular sleep schedules due to travel, competitions, and training camps. This makes the application of sleep restriction therapy more difficult, as consistency is a key component. [15]
7. Zhang et al. (2022) found that while CBT-I improved sleep outcomes, the level of physical and mental fatigue often required additional interventions such as mindfulness practices to support cognitive restructuring and stress management.[16]
8. Walsh NP et al. (2020) A meta-analysis examined changes in dysfunctional beliefs about sleep following CBT-I. The results indicated that CBT-I significantly reduced dysfunctional beliefs about sleep, with moderate to large effect sizes at post-treatment and follow-up assessments.[17]
9. Swinbourne et al. (2016) A preliminary randomized controlled trial investigated the effects of CBT-I in individuals with concussion. The study found that CBT-I reduced insomnia severity and improved sleep outcomes. Additionally, improvements in sleep were associated with reductions in post-concussion symptoms and mood disturbances. These effects were maintained 6 to 12 weeks following the intervention. [18]
10. Nguyen et al. (2020) A pilot study investigated the efficacy of CBT-I delivered through a mobile application synchronized with wearable devices. The intervention showed promise in improving sleep quality, with participants demonstrating high adherence and satisfaction. This approach may offer a convenient and accessible option for athletes seeking to manage insomnia.[19]
11. Mitchell et al. (2021) A network meta-analysis compared the long-term effectiveness of exercise, CBT-I, and pharmacotherapy in improving sleep among adults with chronic insomnia. Both exercise and CBT-I demonstrated superior long-term effectiveness compared to controls, supporting their use for sustainable management of chronic insomnia.[20]

12. Jackson et al. (2022) A systematic review and meta-analysis evaluated CBT-I's effectiveness in patients with comorbid insomnia and mental disorders, including depression, post-traumatic stress disorder, and alcohol dependency. The study found medium to large effect sizes in reducing insomnia severity post-treatment, suggesting CBT-I's potential in managing insomnia across various conditions.[21]
13. Huges et al. (2023) A pilot randomized controlled trial evaluated CBT-I in adolescents experiencing persistent post-concussion symptoms. The results indicated that six weeks of CBT-I significantly improved sleep quality, reduced insomnia severity, and had a modest effect on reducing post-concussion symptoms. Although not conducted exclusively with athletes, the findings are relevant due to the high incidence of concussions in sports. [22]
14. Thompson et al. (2024) A pilot randomized trial investigated the effects of combining CBT-I with exercise training in individuals with chronic insomnia and obstructive sleep apnea. The study found that this combination led to significant improvements in sleep quality, including increased sleep efficiency and reduced sleep onset latency. These findings suggest that integrating CBT-I with physical training may address both physiological and psychological factors affecting sleep in athletic populations.[23]
15. Walker et al.(2020) they summarized that Concurrent with improvements in sleep disturbance and fatigue, the Sleep Disturbance and Fatigue (CBT-SF**)**treatment resulted in significant improvements in self-efficacy, mental health-related quality of life, and time spent in productive activity.[24]
16. Zhang et al. (2022), they concluded that Cognitive behavioural therapy for insomnia (CBTi) is the most effective treatment for insomnia, and has been shown to reduce the frequency of sleep–wake transitions and N1 sleep, and increase N3 sleep. Furthermore, CBTi is effective in the presence of comorbid OSA .As N1 sleep is associated with a higher AHI and N3 sleep is associated with lower AHI in OSA patients [4], we postulated that CBTi would reduce the overall.[25]

4. DISCUSSION

According to the above study findings that we looked at in the current systemic review, Cognitive Behavioural therapy seems to be a factor that can help Atheletes with Insomnia. Our

results showed that when Cognitive Behavioural therapy used with other modalities, it shows more impact in treating Insomnia.Insomnia poses significant challenges to collegiate athletes, affecting their performance, recovery, and overall well-being. Cognitive Behavioral Therapy for Insomnia (CBT-I) has emerged as an effective non-pharmacological intervention for treating insomnia across various populations. This discussion explores the efficacy of CBT-I in enhancing sleep quality among collegiate athletes, drawing upon existing research and highlighting considerations specific to this demographic.

Efficacy of CBT-I in Collegiate Populations.

While direct studies on collegiate athletes are limited, research on college students provides valuable insights. A pilot randomized controlled trial demonstrated that CBT-I significantly improved sleep efficiency, reduced sleep onset latency, and decreased insomnia severity among college students. These improvements were sustained at a 3-month follow-up, underscoring the long-term benefits of CBT-I.[26]

Further supporting these findings, a meta-analysis of randomized controlled trials assessed Psychological interventions, including CBT-I, to improve sleep in college students. The analysis indicated that CBT-I effectively enhances sleep quality, highlighting its potential as a first-line treatment for sleep disturbances in this group .[27]

Implementing CBT-I in a group setting can foster peer support and motivation. Group interventions have shown promise in improving sleep quality among university students, suggesting potential benefits for athletic teams.[28]

Continuous monitoring of sleep patterns and providing ongoing support can help in addressing any challenges faced during the CBT-I process. Utilizing wearable sleep trackers and regular check-ins with sleep specialists can facilitate this monitoring.

Integration with Athletic Schedules: Athletes often face demanding training and competition schedules, making it challenging to adhere to a standardized CBT-I program. Tailoring CBT-I interventions to fit within the athletes' routines, possibly through brief, focused sessions, can enhance feasibility and adherence.

Developing CBT-I protocols that consider the unique schedules and stressors of collegiate athletes will enhance treatment adherence and effectiveness

5. CONCLUSION

After reviewing the above context, it is concluded that CBT-I has shown significant promise as an effective treatment for insomnia in athletes, with improvements in both sleep quality and performance. While challenges remain in adapting CBT-I to the unique demands of athletes, the growing body of research underscores its potential as a valuable tool in optimizing athletic recovery and performance. Continued research is essential to refine these interventions and establish best practices for this unique demographic. to enhancing its application in athletic populations.

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