OPEN ACCESS JOURNALS
Indiana Journal of Multidisciplinary Research
Abbriviate Tittle- Ind J Multi Res
ISSN *(Online)*- 2583-3820
Journal Homepage Link- https://indianapublications.com/Journals/IJMR
DOI: https://doi.org/10.5281/zenodo.15030305

INDIANA PUBLICATIONS
PRODUCTIVE AND QUALITY RESEARCH

Research Article

Volume-05|Issue-02|2025

Analysing the Sleeping Behaviour and Psychometric Profile of Olympian Saikhom Mirabai Chanu: A Case Study

Praloy Kanti Sarkar[1], Dr. Laiphrakpam Kumar Singh[2], Dr. Shyam Sundar Rath[3], Dr. Wahengbam Johnson Luwang[4]

[1]Research Scholar, Department of Physical Education, Bir Tikendrajit University, Canchipur, Manipur, India,
[2]Professor, Department of Physical Education, Bir Tikendrajit University, Canchipur, Manipur, India.
[3]Associate Professor, Department of Sports Coaching, National Sports University, Imphal, Manipur, India.
[4]Coordinator, Directorate of Research and Extension, Bir Tikendrajit University, Canchipur, Manipur, India.

Article History
Received: 10.02.2025
Accepted: 28.02.2025
Published: 03.03.2025

Citation
Sarkar, P. K., Singh, L. K., Rath, S. S., & Luwang, W. J. (2025). Analysing the Sleeping Behaviour and Psychometric Profile of Olympian Saikhom Mirabai Chanu: A Case Study. *Indiana Journal of Multidisciplinary Research*, *5*(2), 1-6.

Abstract: The quantification of quality sleep among athletes plays a significant role in training and performance. Scaling the psychometric behaviour also contributes to administering various training practices and their effect on the athlete. The study attempts to measure the sleeping and psychometric behaviour of the Olympian Saikhom Mirabai Chanu during training (T) and competition (C) of the Paris Olympics 2024 through questionnaires like Athlete Sleep Behaviour Questionnaire (ASBQ) (ICC = 0.88; 95% CI: 0.87 to 0.89), Depression Anxiety Stress Scale (DASS 21) (Cronbach's alpha = 0.73 (95% CI: 0.63 to 0.80), and Eating Attitude Test (EAT-26) (ICC = 0.77 to 0.92; Cronbach's alpha: 0.77 to 0.91). The global score for the ASBQ (T = 51, C = 54) is characterised as poor sleep behaviour, which was similar during the training and competition in the athlete. DASS 21 computed to normal range (Depression: T = 8, C = 2; Anxiety: T = 6, C = 0; Stress: T = 6, C = 10). EAT-26 (Dieting Scale: T = 14, C= 16; Bulimia and Food Preoccupation: T= 3, C = 6; Oral Control: T = 3, C = 3) showed no eating disorder risk for the Olympian Saikhom Mirabai Chanu. Overall, it can be concluded that the Olympian exhibit is of the utmost professional quality recommended by the findings.
Keywords: ASBQ, DASS-21, EAT-26

INTRODUCTION

Recent years have seen a heightened focus on the significance of sleep and its critical role in athletic performance, cognition, health, and mental well-being. Numerous studies investigate "elite athletes" (e.g., Olympians, pros, and/or individuals selected for national and varsity teams), while others concentrate on athletes more broadly. The importance of sleep and its essential function in athletic performance has gathered more attention in recent years. Athletes often obtain less sleep than non-athletes (Leeder *et al.*, 2012). Athletes have worse sleep quality than non-athletes (Bleyer *et al.*, 2015; Bonnet & Arand, 2010; Tsunoda *et al.*, 2015). Furthermore, research suggests that certain athletes are more susceptible to sleep disorders like sleep apnea. The International Olympic Committee (IOC) has, for the first time, acknowledged sleep as a crucial element in sports performance (Reardon *et al.*, 2019; Reilly & Waterhouse, 2005).

Elite sports demand intense training and competition, requiring a balance of physiological, neuromuscular, and psychological stresses (Fullagar *et al.*, 2015). Sleep is crucial for recovery, but many professional athletes struggle with poor sleep quality, leading to injuries, impaired muscle recovery, and cellular disruptions (Doherty *et al.*, 2019; Fullagar *et al.*, 2015). Factors like training schedules, travel, and nighttime competitions further disrupt sleep, with nearly 50% of elite athletes experiencing sleep problems (Lastella, 2015; Roberts *et al.*, 2019). Additionally, the high-pressure environment of elite sports contributes to significant mental health challenges, including anxiety, depression, and eating disorders, especially among young athletes (Gulliver *et al.*, 2015; Rice *et al.*, 2016). The stress of intense training, academic pressures, and selection uncertainties increases vulnerability, making mental health support essential to prevent burnout and dropout (Isoard-Gautheur *et al.*, 2016; Wylleman *et al.*, 2004). Addressing both sleep and mental health is critical for sustaining athletic performance and well-being.

Eating disorders disrupt eating behaviors, impacting physical and mental health (American Psychiatric Association, 2014). Individual sport athletes, especially women, are more prone to Dysfunctional Eating Attitude and Behavior (DEAB) due to the emphasis on weight in performance sports like weightlifting, judo, gymnastics, and endurance events (Uriegas *et al.*, 2023; Currie, 2010). To meet social and competitive expectations, athletes often restrict diets to alter weight and enhance performance, with eating habits varying by sport and season (Borowiec *et al.*, 2023). Before competitions, athletes in weight-class sports frequently engage in strict dieting and excessive exercise to make weight, then rapidly regain it post-weigh-in

***Corresponding Author:** Praloy Kanti Sarkar

(Pettersson *et al.*, 2012). These patterns indicate that dietary control is performance-driven, yet highly competitive athletes face a greater risk of disordered eating, which can negatively impact their health and performance (Lee *et al.*, 2020; Ramona *et al.*, 2021; Werner *et al.*, 2013).

OBJECTIVES OF THE STUDY

The study aims to provide a concise summary of facts underlying the weightlifting sports sleeping and psychometric behavior of the Olympian Saikhom Mirabai Chanu.

- Understanding Saikhom Mirabai Chanu's sleeping and psychometric behavior before and during the Paris Olympic Games 2024.
- Discussion on the effect of Sleeping and psychometric behaviour on her performance.

METHODOLOGY

A case study was conducted to evaluate the sleep behaviour and psychometric assessment of Padma Shri Saikhom Mirabai Chanu, a notable athlete in the field of weightlifting. The investigator utilized survey methods and conducted in-person interviews. The survey includes validated questionnaires (ABSQ; DASS-21; EAT) along with supplementary questions aimed at exploring areas like napping, eating habits, fatigue, training schedules, and competition schedules, among others.

Collection of data/ information

Saikhom Mirabai Chanu was provided with three versions of questionnaires, including both soft and hard copies, as well as face-to-face formats of ABSQ, DASS, and EAT. The initial set of data was collected via electronic media in St. Louis, USA, on Monday, July 15, 2024. During that period, Saikhom Mirabai Chanu was engaged in her usual training sessions with physical therapist Dr. Aaron Horschig, alongside chief coach Vijay Sharma. The subsequent phase of data collection occurred following the Paris Olympic 2024 games, specifically at her residence on Tuesday, August 20, 2024. All three questions were completed in a single session, taking an average of 8.5 minutes to finish. The average time taken to complete the ASBQ was 1.5 minutes. The participant was requested to respond to her circumstances throughout the extensive training period and after the competition.

RESULT

Athlete Sleep Behaviour Questionnaire

The ASBQ is an 18-item survey that includes questions on sleeping behavior and habits thought to be common areas of concern for elite athletes and was designed as a practical tool to identify areas where improvements in sleep behavior could be made, rather than a clinical screening tool. The survey asks participants how frequently they engage in specific behaviours (never, rarely, sometimes, frequently, always). Each response's weights (1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = always) were summed to provide an ASBQ global score. A higher global score is indicative of poor sleep behaviours.

Table 1: ASBQ-18 Global score responses by the respondent.

Sl. No.	Rating Scale	Training	Competition
1.	Never	5	6
2.	Rarely	4	2
3.	Sometimes	15	12
4.	Frequently	12	4
5.	Always	15	30
Total Score		**51**	**54**

It was observed from table 1 that the range of scores for sleep disorders was calculated by adding these numbers, and scores less than or equal to 36 considered good sleep behavior, scores above 42 characterized poor sleep behavior, and scores between 37 and 42 characterized moderate sleep behavior. So here it shows during training and competition phases 51 and 54 respectively mean moderate sleep behaviour to poor sleep behaviour.

Figure 1: The graphical representation of athlete sleep behaviour quality during training and competition.

***Corresponding Author:** Praloy Kanti Sarkar

Depression Anxiety Stress Scale - 21

The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/ involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic nonspecific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/ agitated, irritable/ over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items.

Table 2: DASS-21questionnaires responses by the respondent

Sl. No.	Subscale	Training	Competition
1.	Depression (3,5,10,13,16,17,21)	8	2
2.	Anxiety (2,4,7,9,15,19,20)	6	0
3.	Stress (1,6,8,11,12,14,18)	6	10

From table no 2 can be said that the level of depression scores 8 during training which is indicated moderate (7-10), but during competition 2; it indicated a normal range (0-4). A level of anxiety score of 6 during training indicated moderate (6-7), but during competition 0; which directed a normal range (0-3). Considering stress level during training 6 indicated a normal range (0-7), but during competition 10 means moderated range (10-12).

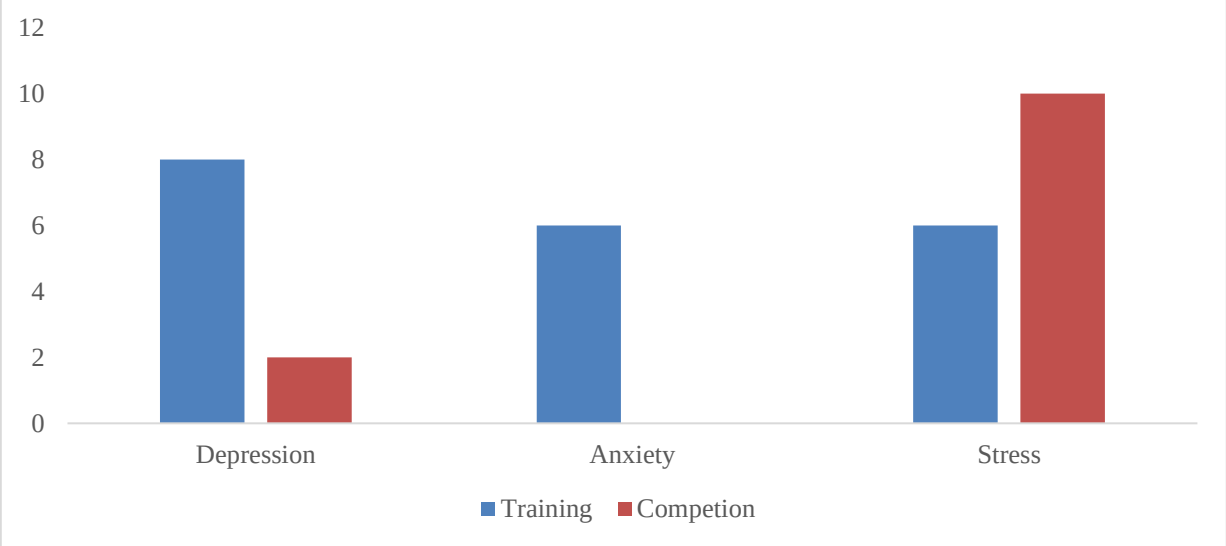

Figure 2: The graphical representation of depression, anxiety, and stress scale during training and competition.

Eat Attitude Test

The EAT is a self-assessment test that measures attitudes and eating behaviors. It was first published by Garner *et al.* (1982) and was translated into French and validated by Leichner *et al.* (1994). The test consists of 26 items and includes three subscales: (1) thoughts and behaviors related to dieting; (2) concerns about food and impulses for bingeing and purging; and (3) attempts to control food intake. Responses are evaluated on a 4-point Likert scale (0 = "never" to 3 = "always"). A clinical cutoff score of 20 indicates the presence of an eating disorder (Garner *et al.*, 1982).

Table 3: EAT-26 questionnaire responses by the respondent

Sl. No.	Subscale	Training	Competition
1.	Dieting (1,6,7,10,11,12,14,16,17,22,23,24,26)	14	16
2.	Bulimia and food preoccupation (3,4,9,18,21,25)	3	6
3.	Oral control (2,5,8,13,15,19,20)	3	3

***Corresponding Author:** Praloy Kanti Sarkar

From table no. 3 can be said that a score greater than 20 indicates a need for further investigation and low scores (below 20) can still be consistent with serious eating problems. So, the above data shows Saikhom Mirabai Chanu have an eating disorder problem considering her BMI (22.5 kg/m^2) is a normal weight.

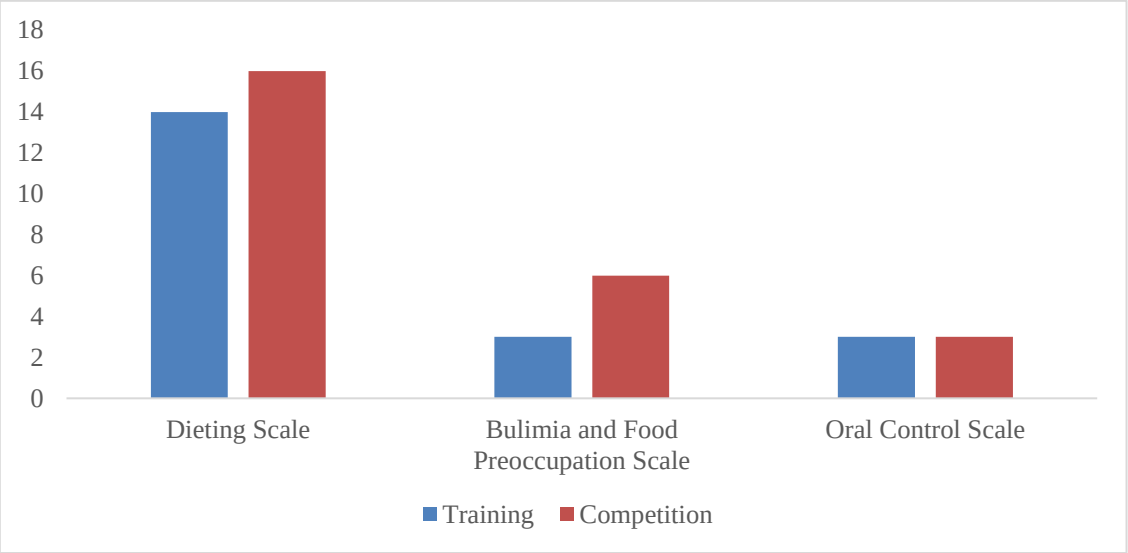

Figure 3: The graphical representation of eating attitude test 26 during training and competition.

DISCUSSION

The previous study has shown that the pride of Indian weightlifter, Saikhom Mirabai Chanu, has constantly excelled internationally. Her silver medal in the Tokyo 2020 Olympics and many Commonwealth Games gold medals demonstrate her physical strength, technical skill, and mental perseverance. Her success is due to her strong psychological qualities, healthy sleeping habits, and capacity to manage stress, worry, and depression, as well as her intense training and strict lifestyle (Sarkar *et al.*, 2024). Mirabai's success depends on mental tenacity. She has remained calm despite the pressure of competing at the top level, especially after her 2016 Rio Olympics setback. She turned failure into motivation to work harder and improve her techniques. Her psychological resilience enabled her to recover and win a historic silver at Tokyo 2020.

Daily practice yoga sessions helped her with sound sleep, muscle healing, attention, and well-being. Mirabai rests to recover from intensive training and contests as an exceptional athlete (Sarkar *et al.*, 2024). Proper sleep helps her stay energized and perform well. Stress, anxiety, and depression management are crucial to her path. Weightlifting is a mental and physical challenge. Mirabai has freely discussed her emotional challenges, especially after injuries and defeats. She has good coping methods because to her coaches, psychologists, and determination. Meditation, strict rituals, and self-confidence help her focus under pressure. Athletes have been helped to control their emotions by a variety of techniques. The approaches cover hypnosis, biofeedback training, progressive relaxation, visuomotor behavior rehearsal, autogenic training, meditation, positive self-monitoring, thought-stopping, many self-talk techniques, induced emotion, and cognitive-behavioral treatments. Over her training and performance periods, Olympian Saikhom Mirabai Chanu shows amazing mastery over despair, stress, and anxiety.

Apart from increasing the perceived effort during physical exercise, a lack of enough sleep can influence metabolism, hormone function, athletic performance, and cognitive ability (Chase & al., 2017; Spiegel, Leproult & Van Cauter, 1999; Spiegel & al., 2004). Lastella, Roach, Halson & Sargent (2015) also noted that sportsmen usually get little sleep average of 6.8 hours. Athletes averaged 6.5 hours of sleep every night according to Sargent, Lastella, Halson & Roach (2014) actigraphy-based 14-night study. Routine and environmental influences such as naps, consistent bedtimes, and travel behavioral influences including medications, alcohol consumption, and late-night technology use and sports-related influences such as late-night training, pain, and concerns about performance were the main categories noted. The evaluation of sleep problems included accumulating particular values; scores of 36 or below indicated excellent sleep behavior, scores over 42 indicated bad sleep behavior, and scores ranging from 37 to 42 indicated intermediate sleep behavior. With ratings of 51 and 54 respectively, the results show a movement from moderate to poor sleep behavior over the training and competition phases.

Although Olympian Saikhom Mirabai Chanu has an eating disorder, table No. 3 reveals her BMI (22.5 kg/m^2) is within the normal weight range. She painstakingly controls her nutrition to satisfy her weight category in weightlifting criteria. Still, several studies have used the EAT-26 as an affordable first step in a two-phase assessment strategy. This strategy advises those

***Corresponding Author:** Praloy Kanti Sarkar

who score 20 or above on the test to have an interview with a qualified professional to evaluate whether they meet the diagnostic criteria for an eating disorder (Dotti & Lazzari, 1998; Patton, Johnson-Sabine, Wood, Mann, & Wakeling, 1990). A low EAT-26 (below 20) does not always indicate that you are free from major eating problems; so, it is advisable to get assistance independent of the outcome. Although they reflect concerns about body weight, body form, and eating behavior, elevated scores on self-report tests may not always point to an eating disorder. Still, if your score is high there is no reason for concern. It does not always mean that you have a major medical condition or that you have to aggressively seek a potentially painful therapy. A score of 20 or above denotes the need to see a skilled mental health professional knowledgeable in treating eating disorders.

CONCLUSION

Lack of sleep seriously affects athletic performance, which reduces the execution of sports-specific abilities and lowers endurance during extended activity sessions. Athletes' health depends critically on sleep; issues like low sleep quality, inadequate sleep length, daytime sleepiness, exhaustion, less-than-ideal sleep patterns, irregular sleep habits, and disorders connected to sleep and circadian rhythms all affect athletes. Physical performance, cognitive capacity, and mental health might all suffer as a result. Statements on the value of sleep health have been issued by the NCAA and IOC. Appropriately given dietary therapies can improve the quality and amount of sleep. Timed nutrition intake before, during, and after exercises help strength-power athletes maximize their resistance training performance, recovery, and body composition. Mirabai Chanu's story inspires physical and mental strength. She is one of India's most consistent and famous athletes due to her ability to manage stress, maintain psychological equilibrium, and prioritize sleep.

Peak performance requires a comprehensive strategy involving sleep, food, mental wellness, and stress management. Top athletes should aim for 7-9 hours of sleep daily, avoid screen exposure, and include power naps for rapid recovery. Maintaining energy through balanced meals, hydration, and micronutrients is crucial. Prioritize pre and post-workout nutrition, and avoid processed foods and strong coffee. Control anxiety, stress, and depression through mindfulness, meditation, mental conditioning, and a strong social support system. Recover from stress using active recuperation techniques, frequent mental health breaks, and managing training loads. A well-organized recovery plan can maximize performance while reducing the risk of burnout, injury, and psychological discomfort.

REFERENCES

1. Bleyer, F., Barbosa, D., Andrade, R., *et al.* (2015). Sleep and musculoskeletal complaints among elite athletes of Santa Catarina. *Revista Dor São Paulo, 16*(2), 102-108.
2. Bonnet, M. H., & Arand, D. L. (2010). Hyperarousal and insomnia: State of the science. *Sleep Medicine Reviews, 14*(1), 9-15.
3. Chase, J. D., Roberson, P. A., Saunders, M. J., Hargens, T. A., Womack, C. J., & Luden, N. D. (2017). One night of sleep restriction following heavy exercise impairs 3-km cycling time-trial performance in the morning. *Applied Physiology, Nutrition, and Metabolism, 42*(9), 909–915.
4. Doherty, R., Madigan, S., Warrington, G., & Ellis, J. (2019). Sleep and nutrition interactions: Implications for athletes. *Nutrients, 11*(822). https://doi.org/10.3390/nu11040822
5. Fowler, P. M., Knez, W., Crowcroft, S., Mendham, A. E., Miller, J., Sargent, C., Halson, S., & Duffield, R. (2017). Greater effect of East versus West travel on jet lag, sleep, and team sport performance. *Medicine & Science in Sports & Exercise, 49*(12), 2548–2561.
6. Fullagar, H. H., Duffield, R., Skorski, S., Coutts, A. J., Julian, R., & Meyer, T. (2015). Sleep and recovery in team sport: Current sleep-related issues facing professional team-sport athletes. *International Journal of Sports Physiology and Performance, 10*(7), 950–957.
7. Fullagar, H. H. K., Skorski, S., Duffield, R., Julian, R., Bartlett, J., & Meyer, T. (2016). Impaired sleep and recovery after night matches in elite football players. *Journal of Sports Science, 34*(13), 1333–1339.
8. Gulliver, A., Griffith, K. M., Mackinnon, A., *et al.* (2015). The mental health of Australian elite athletes. *Journal of Science and Medicine in Sport, 18*(3), 255-261.
9. Halson, S. L. (2014). Sleep in elite athletes and nutritional interventions to enhance sleep. *Sports Medicine, 44*(1), 13–23.
10. Heaton, L. E., Davis, J. K., Rawson, E. S., Nuccio, R. P., Witard, O. C., Stein, K. W., Baar, K., Carter, J. M., Baker, L. B. (2017). Selected in-season nutritional strategies to enhance recovery for team sport athletes: A practical overview. *Sports Medicine, 47*(11), 2201–2218.
11. Isoard-Gautheur, S., Guillet-Descas, E., & Gustafsson, H. (2016). Athlete burnout and the risk of dropout among young elite handball players. *The Sport Psychologist, 30*(2), 123-130.
12. Knufinke, M., Nieuwenhuys, A., Geurts, S. A., Møst, E. I., Maase, K., Moen, M. H., Coenen, A. M., Kompier, M. A. (2018). Train hard, sleep well? Perceived training load, sleep quantity, and sleep stage distribution in elite level athletes. *Journal of Science and Medicine in Sport, 21*(5), 427–432.
13. Lastella, M., Roach, G. D., Halson, S. L., Martin, D. T., West, N. P., & Sargent, C. (2015). Sleep/wake behaviour of endurance cyclists before and during competition. *Journal of Sports Sciences, 33*(3), 293–299.

***Corresponding Author:** Praloy Kanti Sarkar

14. Leeder, J., Glaister, M., Pizzoferro, K., *et al.* (2012). Sleep duration and quality in elite athletes measured using wristwatch actigraphy. *Journal of Sports Sciences, 30*(6), 541-545.
15. Leonarda, G., Fedele, E., Vitale, D., Lucini, V., Mirela, I. A., & Mirela, L. (2018). Healthy athlete's nutrition. *Medical Sports Journal of Romania Sports Medicine Society, 14*, 2967–2985.
16. Lucidi, F., Lombardo, C., Russo, P. M., *et al.* (2007). Sleep complaints in Italian Olympic and recreational athletes. *Journal of Clinical Sport Psychology, 1*(2), 121-129.
17. Majde, J. A., & Krueger, J. M. (2005). Links between the innate immune system and sleep. *Journal of Allergy and Clinical Immunology, 116*(6), 1188–1198.
18. Mellalieu, S. D., Neil, R., Hanton, S., *et al.* (2009). Competition stress in sport performers: Stressors experienced in the competition environment. *Journal of Sports Sciences, 27*(7), 729-744.
19. Rae, D. E., Chin, T., Dikgomo, K., Hill, L., McKune, A. J., Kohn, T. A., Roden, L. C. (2017). One night of partial sleep deprivation impairs recovery from a single exercise training session. *European Journal of Applied Physiology, 117*(6), 699–712.
20. Reardon, C. L., Hainline, B., Aron, C. M., *et al.* (2019). Mental health in elite athletes: International Olympic Committee consensus statement. *British Journal of Sports Medicine, 53*(11), 667-699.
21. Rice, S. M., Purcell, R., De Silva, S., *et al.* (2016). The mental health of elite athletes: A narrative systematic review. *Sports Medicine, 46*(9), 1333-1353.
22. Roberts, S. S. H., Teo, W.-P., & Warmington, S. A. (2019). Effects of training and competition on the sleep of elite athletes: A systematic review and meta-analysis. *British Journal of Sports Medicine, 53*(9), 513–522.
23. Sabato, T. M., Walch, T. J., & Caine, D. J. (2016). The elite young athlete: Strategies to ensure physical and emotional health. *Open Access Journal of Sports Medicine, 7*, 99-113.
24. Samuels, C. (2008). Sleep, recovery, and performance: The new frontier in high-performance athletics. *Neurology Clinics, 26*(1), 169-180.
25. Sarkar, *et al.* (2024). A case study on lifestyle, professional career, and contribution to weightlifting: Olympian Saikhom Mirabai Chanu. *Indiana Journal of Humanities and Social Sciences, 5*(4), 1-8.
26. Skein, M., Duffield, R., Minett, G. M., Snape, A., & Murphy, A. (2013). The effect of overnight sleep deprivation after competitive rugby league matches on postmatch physiological and perceptual recovery. *International Journal of Sports Physiology and Performance, 8*(5), 556–564.
27. Spiegel, K., Leproult, R., & Van Cauter, E. (1999). Impact of sleep debt on metabolic and endocrine function. *The Lancet, 354*(9188), 1435–1439.
28. Spiegel, K., Leproult, R., L'Hermite-Balériaux, M., Copinschi, G., Penev, P. D., & Van Cauter, E. (2004). Leptin levels are dependent on sleep duration: Relationships with sympathovagal balance, carbohydrate regulation, cortisol, and thyrotropin. *The Journal of Clinical Endocrinology & Metabolism, 89*(11), 5762–5771.
29. Swinbourne, R. R. (2015). Sleep, recovery, and performance in collision sport athletes. (Ph.D. Thesis, Auckland University of Technology).
30. Swinbourne, R., Gill, N., Vaile, J., *et al.* (2016). Prevalence of poor sleep quality, sleepiness, and obstructive sleep apnea risk factors in athletes. *European Journal of Sport Science, 16*(7), 850-858.
31. Tuomilehto, H., Vuorinen, V.-P., Penttilä, E., Kivimäki, M., Vuorenmaa, M., Venojärvi, M., Airaksinen, O., Pihlajamäki, J. (2017). Sleep of professional athletes: Underexploited potential to improve health and performance. *Journal of Sports Science, 35*(7), 704–710.
32. Tsunoda, K., Hotta, K., Mutsuzaki, H., *et al.* (2015). Sleep status in male wheelchair basketball players on a Japanese national team. *Journal of Sleep Disorders and Therapy, 4*(4), 1-5.

***Corresponding Author:** Praloy Kanti Sarkar