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Sleep during a training camp in elite adult female soccer players

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INTRODUCTION:
In recent years, the growing interest in understanding how athletes sleep has boosted the number of scientific studies on the topic.1 Elite athletes, including female soccer players, often spend nights in unfamiliar hotel environments, before home and away matches, and during training camps that may affect sleep habits.2 In this scenario, optimizing recovery through sleep is required to reduce the risk of transitioning into a state of excessive fatigue as well as to reduce the risk of injuries.1 Thus, this study aimed to describe sleep characteristics in elite adult female soccer players during a training camp for a National team.
METHODS:
Twenty-five elite adult female soccer players (aged 25.4 ± 2.3 years; mean ± SD) participated in the study. Sleep variables were measured using wrist actigraphy and sleep diaries during eight consecutive days (i.e., 6-days with training sessions, and 2-days with matches). Salivary melatonin and cortisol were also measured to access objective sleepiness and alertness on the second and third days of the training camp. Training and match loads were characterized using a global positioning system.
RESULTS:
During the eight nights, 8 to 25 players slept less than <8 h, and 10 to 25 players had a sleep efficiency of < 80% in two or more days of the training camp. No significant differences ($p<0.05$) were found between days with training sessions vs. matches for sleep duration (mean [minimum; maximum], 7.9 [5.3;9.2] vs. 7.9 [4.9;10.1] hours, respectively) and sleep efficiency (87 [60;98] vs. 88 [71;98] %, respectively). Self-rate sleep quality (0 “bad” to 10 “excellent”) was 7 (1;10) arbitrary units (median [minimum; maximum]). Mid-point of unrestricted sleep was 4.1 (2.3;5.3) hours (i.e., 1 player has characterized as slightly early; 18 players as intermediate, and 6 players as slightly late chronotype). Salivary melatonin measured before sleep was 15 (1.1;332.9) pg/mL, and cortisol measured upon awakening was 15 (6.1;24.9) ng/mL, throughout the second and third days of the training camp. Salivary melatonin and cortisol amplitude were 58.2 (8.3;486.1) pg/mL and 15 (4.7;23.4) ng/mL, respectively, throughout the second and third days of the training camp. Individually, exposure time, total distance covered, and high-speed running (15.6–23km.h-1) during training sessions were 64 (55;76) min, 3749 (1141;6358) m, and 81 (11;151) m, respectively. During matches, exposure time, total distance, and high-speed running were 59 (20;98) min, 5948 (2008;9887) m, and 512 (72;953) m, respectively.
CONCLUSION:
Overall, this study highlights the individual variability of sleep associated parameters, indicating the importance to monitor sleep in elite adult female soccer players during a training camp. Considering this scenario, individualized recovery and monitoring strategies may be required to ensure that all players are in peak condition for training and competition.
1 Walsh, et al., Br J Sports Med, (2020)
2 Costa JA, et al., J Athl Train,58(1):79-83, (2023)

Topic: Training and Testing

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