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Interstate travel has minimal impact on mean and individual sleep variability in elite male Australian footballers

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INTRODUCTION:
Regular travel is an expectation for professional athletes competing at national or international level. Travel fatigue and jet lag symptoms are likely consequences for athletes engaged in frequent domestic travel. Recurrent time zone crossings may result in disruption to sleep behaviours, impacting recovery and subsequent performance. We conducted a pre-registered examination of sleep metrics in elite male Australian Football players, from the same professional club, over two weeks and compared players who travelled for interstate competition (away fixture) to those who remained at home (home fixture).
METHODS:
Using wrist-worn actigraphy, nightly sleep metrics including sleep duration (minutes), sleep efficiency (%) and sleep onset (time of day) were recorded in 15 athletes (22.7±3.5 years) over 13 consecutive nights. Data collection aligned with the start of the competitive season where the team had consecutive away and home fixtures, enabling a quasi-randomisation based on club player selection. Players travelled eastward on Day 3 (Night 4: GMT+8 to GMT+10.5) and returned on Day 4 (Night 5), the evening of match day. The subsequent home fixture was played on Night 12. Raw accelerometer data analysis was performed using GGIR with resulting metrics analysed using a location-scale model within a multilevel framework, to estimate the effect of travel on mean-level and intra-individual variability of sleep indices. Results are reported as mean and 95% credibility interval (CI).
RESULTS:
Overall, players averaged 500 minutes of sleep per night (95%CI = 489, 510), with 86% sleep efficiency (95%CI = 83.7, 88.8) and fell asleep (sleep onset) at 22:30 (95%CI = 22:12, 22:42). Inferentially, players who travelled interstate (n=7) for competition slept for shorter periods (-0.04, 95% CI = -0.43, 0.31), had a later sleep onset (+0.38, 95%CI = -0.52, 1.24) but had a greater sleep efficiency (+3%, 95% CI = -6.70, 12.98) compared to those who remained home (n=8). Players who travelled interstate experienced less variability in sleep duration (-0.08, 95% CI = -0.45, 0.27) and efficiency (-0.74, 95% CI = -2.37, 0.93), but experienced greater variability in sleep onset (+0.39, 95% CI = -2.15, 2.98) compared to those who remained at home.
CONCLUSION:
Existing research on sleep dynamics within sport have typically relied on mean-level estimates, yet this limited focus is insufficient due to the complexity of individual sleep behaviours. Integrating both mean-levels and intra-individual variability estimates of sleep indices, we observed small, statistically inconsequential effects of travel on sleep metrics, most likely due to the small sample. Nevertheless, the inclusion of intra-individual variability alongside mean-level estimates of sleep metrics, both statistically and visually, provides a holistic approach to understanding sleep behaviours in the context of elite sport. This would further enable the development of personalised interventions to optimise sleep hygiene in athletes.

Topic: Training and Testing

Presentation Poster