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The independent effects of menstrual cycle phase, match location, match result and the quality of opposition on self-reported wellbeing in professional female soccer players: a squad case study

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INTRODUCTION:
Poor subjective wellbeing is associated with injury, illness, and decreased performance in team-sport players. Previous studies show that in male soccer players, situational match variables (such as match location, opposition quality, and match result) influence self-reported wellbeing, independent of training load. These situational match factors have not been investigated in female soccer players; in addition, no study has examined the effects of menstrual cycle phase on wellbeing. Therefore, the aim of this study was to assess the effects of match location, opposition quality, match result, and menstrual cycle phase, on self-reported wellbeing before and after professional female soccer matches across a season.
METHODS:
Twenty-two professional female soccer players (25±5 years) from a squad in the Women's Super League in England self-reported their muscle soreness, sleep, stress, mood, and fatigue on a 1 (positive) to 5 (negative) Likert scale on the morning of match day (MD), and the subsequent three days (referred to as MD+1, MD+2, MD+3, respectively). Twenty-six matches in total were used for the analyses. Internal and external load (assessed by 1-10 rating of perceived exertion [RPE], and total distance covered via GPS), match location, match result, opposition quality (determined by final league-table position) and menstrual cycle phase were recorded for each match. Linear mixed models were used to examine for match-day x variable interactions (statistical significance was $P<0.05$; effect sizes were Hedge's g).
RESULTS:
Situational match factors and menstrual cycle phase had no influence on the distance covered during matches or RPE ($P>0.05$). After away matches, sleep was rated ~60% worse on MD+1 ($P<0.001$; g=1.59) and ~29% worse on MD+2 ($P=0.005$; g=0.98). Stress and mood were >28% worse after playing against top vs. middle and bottom table opposition at MD+1 ($P\leq0.047$; g=0.8-0.94); likely because they lost most of these matches, which worsened stress and mood compared to winning and drawing at MD+1 ($P\leq0.001$; g=0.20-2.95) and MD+2 ($P\leq0.017$; g=1.42-1.77). Soreness, sleep and fatigue were most affected at MD+1 during menstruation (2.6-3.2); stress and mood were most affected during ovulation (~2.8); however, menstrual cycle phase (menstruation, follicular, ovulation, luteal) had no significant influence on post-match wellbeing ($P<0.05$).
CONCLUSION:
In professional female soccer players, menstrual cycle phase did not influence wellbeing, but subjective sleep quality was impaired after away matches and losing matches negatively affected stress and mood. Coaches and sports science practitioners should be aware of, and take into consideration, the potentially negative effects of playing away from home and losing matches on self-reported wellbeing and consider strategies to mitigate the impact of these variables.

Topic: Training and Testing

Presentation Poster

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