

REPEATED JUMP ABILITY IS IMPAIRED AFTER COMPETITIVE SOCCER GAMES IN HOT ENVIRONMENTAL SETTINGS

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Introduction

Fatigue accumulates during a soccer game, which deteriorates exercise performance at the end of a game (Mohr et al., 2005). Recently, it was demonstrated in a trial friendly-game played in hot environmental conditions that the decline in high intensity exercise towards the end of the game appeared to be greater compared to games at normal temperatures (Mohr et al., 2010). However, it is unknown to what extent heat stress affects the ability to perform high intensity exercise after high standard competitive games.

Method

Male elite soccer players (n=19) from two Scandinavian teams took part in the study (age; 26.7±1.0 yrs, height; 181.7±1.1 cm, body mass; 75.8±1.0 kg). The players had a submaximal Yo-Yo IR1 performance of 83.7±1.1% of the maximal heart rate and a Yo-Yo IR2 performance of 1032±42 m. Thirteen of the participants were A National team players and all nineteen had played in European club team tournaments prior to the study. The players took part in the Champions League Qualification (CL) 2006 and 2009. In the two respective CL tournaments the two teams played six games (three home and three away) in total. The home games were played at an average temperature of 11.1±0.5 °C (normal temperature; NOT) and the away games in hot conditions (30.3±1.3 °C; HOT). The players performed a repeated countermovement jump test (CMJ) consisting of five jumps separated by 10 s of recovery in resting condition (control, CON) and immediately after the NOT and HOT games. The game-induced decline in body mass was also assessed.

Results & Discussion

Peak and mean CMJ performance in CON was 42.0±1.1 and 40.3±1.1 cm, respectively. After NOT peak and mean CMJ height was unchanged (41.7±1.2 and 39.8±1.2 cm, respectively), but after the HOT game mean CMJ performance was lower (P<0.05) than in CON (38.0±1.1 cm), while peak CMJ was not different (41.1±1.1 cm). No statistical difference was between mean CMJ performances between NOT and HOT, however thirteen out of the nineteen players had a lower performance after the HOT game. The net-loss of body mass was 3.9±0.5% in HOT, which was higher (P<0.05) than in NOT (1.8±0.3%). Mean CMJ height declined by 5.4±0.8% from CON to HOT and correlated (r=0.54; P<0.05) to relative net-loss in body-mass during the HOT game.

Conclusion: The present study demonstrates that repeated countermovement jump performance is deteriorated after a soccer game played in hot environmental settings, which is partly associated with dehydration.

References:

1. Mohr, M. et al. (2005). *J Sports Sci*, 23(6): 593-599.
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