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Energy Intake, Training and Match Load of Adolescent Female Soccer Players of International Standard

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INTRODUCTION:

Elite female adult soccer players of international (1) and club level standard (2) under-consume carbohydrate in relation to nutritional guidelines. In addition, we also qualitatively explored a culture of “under-fuelling” that was related to a fear of consuming carbohydrates in the belief that it would lead to gains in fat mass (3). In contrast to adult players, however, the habitual nutritional practices of elite adolescent players have not yet been objectively assessed. Therefore, the aim of the present study was to quantify the energy intake (EI) of elite adolescent female soccer players during a training and game schedule of international standard.

METHODS:

Elite adolescent players from the English national team ($n=23$, age: 16.6 ± 0.6 y, body mass: 61.6 ± 6.1 kg) took part in a 10-day international training camp comprising two match days, five training days and three rest days. All players self-reported their EI via the remote food photography method and pitch-based training and match load were measured using GPS technology. Comparisons in EI and physical loading indices between days were assessed using mixed linear models. Data are reported in proximity to the match with a minus symbol (-) indicative of the days before the match day (MD).

RESULTS:

Total distance covered was greater (all $p<0.001$) on MD-4 (6121 ± 1400 m) and both MDs (6582 ± 4133 m; 6753 ± 3352 m) when compared with all other training days: MD-5 (3004 ± 280 m), MD-2 (2963 ± 604 m) and both MD-1s (2822 ± 953 m; 3491 ± 413 m). Total daily EI was greater (all $p<0.05$) on both MD-1s (2413 ± 486 kcal-1; 2004 ± 521 kcal-1) and both MDs (2314 ± 484 kcal-1; 2165 ± 479 kcal-1) when compared with both MD+1s (1776 ± 471 kcal-1; 1697 ± 394 kcal-1), MD-5 (2164 ± 440 kcal-1), MD-4 (2059 ± 425 kcal-1) and MD-2 (2057 ± 313 kcal-1). Similarly, relative CHO intake was greater (all $p<0.05$) on both MD-1s (4.1 ± 0.8 g.kg-1; 4.3 ± 1.1 g.kg-1) and both MDs (4.8 ± 1.2 g.kg-1; 4.8 ± 1.4 g.kg-1) in comparison to both MD+1s (3.6 ± 1.1 g.kg-1; 3.1 ± 0.8 g.kg-1), MD-5 (3.7 ± 0.8 g.kg-1), MD-4 (4.1 ± 1.1 g.kg-1), MD-3 (3.6 ± 0.8 g.kg-1) and MD-2 (4.0 ± 1.0 g.kg-1). Furthermore, only 15% of players consumed greater than 6g/kg of CHO on MD-1, 17% on MD and 2% on MD+1.

CONCLUSION:

In summary, we report for the first time that adolescent female soccer players competing at international standard do not adjust daily CHO intake to levels (i.e. >6 g/kg body mass) that are recommended to prepare for and recover from soccer match play (4). In addition, players also under-fuel on training days, thus presenting a culture of “under-fuelling” that is comparable to adult female players. From a practical perspective, these data highlight the requirement for relevant education and behaviour change strategies that aim to promote increased CHO intake before, during and after exercise.

Topic: Training and Testing

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