CARBOHYDRATE AND FAT DEMANDS OF BUNDESliga SOCCER PLAYERS
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Purpose:
Soccer players’ energy and macronutrient balance may directly affect their performance. However, only a few first league teams in Europe have professionally analysed their players’ nutrition status and given them detailed and individual advice on optimal nutrition. This study measured the macronutrient provision of energy in professional German soccer players to compare carbohydrate (CHO) and Fat (FAT) intake and utilisation during competition, training and rest.

Methods:
In sixteen male professional soccer players (age: 24.6 ± 4.7 years, stature: 183.4 ± 2.0 cm, mass: 80 ± 2.3 kg) of one Bundesliga club, individual heart rate (HR)-VO2 linear regressions were obtained via indirect calorimetry (oxygen mobile, Viasys Healthcare, Würzburg, Germany) during a standardised treadmill test. Subsequently, HR was recorded in 15-sec intervals (Polar 610i, Polar, Kempele, Finland) during waking hours on match day, training day and rest day, and carbohydrate expenditure (CHOE) and fat expenditure (FATE) were calculated using the individual regression coefficients. Carbohydrate intake (CHOI) and fat intake (FATI) were assessed using food diaries. For within subjects comparisons, t-tests and Wilcoxon tests were performed.

Results:
CHOE was significantly higher than CHOI on match day (p = 0.001), training day (p = 0.044) but not on rest day (p = 0.185). FATE was significantly higher than FATI on training day (p = 0.023) and higher on match day (p = 0.056) and rest day (p = 0.065). There was no significant difference of CHOE and FATE between the training session and the match.

CHOE was on:
Match Day 663 ± 338 gday⁻¹
Training Day 444 ± 218 gday⁻¹
Rest Day 340 ± 166 gday⁻¹

CHOI was on:
Match Day 318 ± 132 gday⁻¹
Training Day 327 ± 168 gday⁻¹
Rest Day 265 ± 105 gday⁻¹

FATE was on:
Match Day 207 ± 111 gday⁻¹
Training Day 165 gday⁻¹
Rest Day 141 ± 84 gday⁻¹

FATI was on:
Match Day 120 ± 66 gday⁻¹
Training Day 117 ± 40 gday⁻¹

Conclusion:
CHOE was higher than CHOI on match and training day but not on rest day. FATE was higher than FATI on training, match and rest days. FATI was above the recommended intake at the expense of CHOI. It would appear that carbohydrate and fat intake is suboptimal to meet the demands of German professional soccer players. In future studies, objective assessment of food consumption by weighing would improve macronutrient intake estimates, as combined HR-accelerometry methods would improve the precision of EE measurements.

Keywords: Soccer, Fat Metabolism, Carbohydrate Metabolism

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