

NUTRITION AND HYDRATION

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Football challenges physical fitness by requiring a variety of skills at different intensities. Running, sprinting, jumping and kicking are important performance components, requiring maximal strength and anaerobic power of the neuromuscular system. These activities lead to a post-match fatigue that is linked to a combination of factors, including dehydration, glycogen depletion, muscle damage and mental fatigue. The magnitude of football match-induced fatigue is dependent on intrinsic and extrinsic factors.

Extrinsic factors include the match result, quality of the opponent, match location and playing surface, whereas intrinsic factors include training status, age, gender and muscle fiber type. Both intrinsic and extrinsic factors have the potential to influence the time course of recovery, making it a complex issue.

Strategies for activities involving hydration, diet, sleep and cold water immersion have been reported to be effective, with regard to their ability to counteract the mechanisms associated with muscular fatigue.

The energy cost of football is approximately 1,300-1,500 kcal for a 90-minute game, depending upon playing position, tactics and body composition of the player. The daily intake of carbohydrate should be proportionate to estimated fuel cost of the training session or match. The ingestion of 2.5 g of carbohydrate/kg body mass in the pre-match meal three hours prior to exercise will top up stores of glycogen in the muscle and liver. Ingestion of 60 g of carbohydrate/h, prior to and during (including half-time) exercise is associated with the maintenance of high-intensity running and skill execution. The preservation of both these factors, especially in the final stages of a game, has been identified as key performance attributes of top level football players and teams.

Dehydration of >2% body mass deficit has been shown to impair football-specific performance, including intermittent high-intensity sprinting and dribbling skills. Dehydration is prevalent in football players, especially when training or match play takes place in a hot environment. Consuming a beverage with sodium or sodium-containing snacks/foods helps replace sweat sodium losses, stimulate thirst and retain the ingested fluids.

In our experience, the amount of energy required should be adjusted to reflect the lean body mass in kg of the individual player.

An insufficient energy intake does not cover energy required for match performance, training and daily living activities. It has been reported that energy intakes below 30-35 kcal/kg lean body mass (excluding exercise) accentuate fatigue, immune-suppression and the predisposition to injury. Furthermore, low-energy diets in which calories are not consumed via a variety of foods typically have low nutritional quality. Insufficient energy intakes combined with poor dietary choices increase the risk of players being deficient in nutrients such as vitamins B or C; minerals like iron, calcium, magnesium, zinc and selenium.

Recommendations and guidelines for player hydration must be customized as far as possible by adjusting quantity and composition depending on changes in body mass. Analysis of sweat and electrolyte losses allows us to further individualize player recommendations. In general, we recommend that body mass losses be no greater than 2% of pre-exercise values.