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Journal of Nutritional Health & Food Engineering

Conceptual Paper
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# The importance of nutrition to football

Volume 4 Issue 6 - 2016

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**Received:** August 11, 2016 | **Published:** September 22, 2016

## Introduction

Football is the most popular sport all over the word. Like all sports, diet has the biggest impact on training. Whenever highly talented, motivated and well trained players are meeting in competition, the margin between victory and defeat is small. Diet affects performance and the foods are chosen by players in training and competition will affect how well will play and are trained. Every player needs to be aware of his personal nutrition. Every player is different, and there is no single diet that meets the needs of all players at all times. Individual needs also change across the season and players must be flexible to accommodate this.

A good diet can help support consistent intensive training while limiting the risks of illness or injury. Good food choices can also promote adaptations to the training stimulus – this can lead to more improvement for the same training load. The right diet is also important in preparing for games and in hastening recovery afterwards. Getting the right amount of energy to stay healthy and to perform well is key. Too much and body fat increases: too little and performance falls, injuries increase, and illness results.

### The benefits of eating well

Football is structured so that the two opposing teams are closely matched: a one-sided game is no fun for players or for spectators. Every player and every team therefore has to strive to achieve the advantage that is necessary to win. Hard work in training and sound tactics are vital, but a well-chosen diet can offer many benefits:[1]

i. Optimum gains from the training program
ii. Enhanced recovery within and between workouts and events
iii. Achievement and maintenance of an ideal body weight and physique
iv. A reduced risk of injury and illness
v. Confidence in being well-prepared for match play
vi. Consistency in achieving high level performances in matches
vii. Enjoyment of food and social eating occasions

### Energy requirements

Meeting energy needs is a nutrition priority for athletes. Optimum athletic performance is promoted by adequate energy intake. This section will provide information necessary to determine energy balance for an individual. Energy balance occurs when energy intake (the sum of energy from foods, fluids, and supplement products) equals energy expenditure or the sum of energy expended as basal metabolic rate (BMR), the thermic effect of food, the thermic effect of activity (TEA), which is the energy expended in planned physical activity, and nonexercise activity thermogenesis. Spontaneous physical activity is also included in the TEA. Estimation of energy needs of athletes and active individuals can be done using a variety of methods. The Dietary Reference Intakes (DRI) and the Dietary Guidelines 2005 (http://www.health.gov/dietaryguidelines/dga2005/report/HTML/D3_Disccalories.htm) provide energy recommendations for men and women who are slightly to very active, which are based on predictive equations developed using the doubly labeled water technique that can also be used to estimate energy needs of athletes.[2]

### Energy needs

An appropriate energy intake is the cornerstone of the athlete's diet since it supports optimal body function, determines the capacity for intake of macronutrient and micronutrients, and assists in manipulating body composition. An athlete's energy intake from food, fluids and supplements can be derived from weighed/measured food records (typically 3–7day), a multi-pass 24hour recall or from food frequency questionnaires. [1] There are inherent limitations with all of these methods, with a bias to the under-reporting of intakes. Extensive education regarding the purpose and protocols of documenting intakes may assist with compliance and enhance the accuracy and validity of self-reported information.

Meanwhile an athlete's energy requirements depend on the periodized training and competition cycle, and will vary from day to day throughout the yearly training plan relative to changes in training volume and intensity. Factors that increase energy needs above normal baseline levels include exposure to cold or heat, fear, stress, high altitude exposure, some physical injuries, specific drugs or medications (eg, caffeine, nicotine), increases in fat-free mass and, possibly, the luteal phase of the menstrual cycle. Aside from reductions in training, energy requirements are lowered by aging, decreases in fat free mass (FFM), and, possibly, the follicular phase of the menstrual cycle.[2]

### Energy for match play

Football is a game of intermittent work. Players generally perform low intensity activities for more than 70% of the game, but heart rate and body temperature measurements suggest that the total energy demand is high. The high energy demand may be partly explained

by the repeated high intensity efforts that players are called upon to perform. A top class player performs about 150-250 brief intense actions during a game. These efforts place high demands on the anaerobic energy systems, and are a major factor in the fatigue that occurs at all stages of the game.

Carbohydrate is stored in the muscles and in the liver as glycogen. This is probably the most important fuel for energy production and fatigue towards the end of a game may be related to depletion of glycogen in some of the individual muscle fibres. If even a few of these are unable to contract, then sprinting ability is reduced and skill may also be impaired.

Free fatty acid (FFA) levels in blood increase progressively during a game and partially compensate for the progressive lowering of muscle glycogen, but this is a less effective fuel source. The physical demands during a game vary greatly between players and are related to physical capacity and tactical role in the team. These differences should be taken into account in the training and nutritional strategies of all serious players. The total distance run by a player during a game depends on many different factors, including the level of competition, the player's position, the playing style, and fitness level of the individual. At the elite level, male outfield players typically cover about 10-13km, making football an endurance sport.

The physical demands are increased by the fact that more than 600m are covered at sprinting speed and about 2.4km at high intensity. Over the whole duration of the game, heart rate is about 85% of the maximum rate and the oxygen demand is about 70% of the maximum oxygen uptake ($VO_2$max). These values suggest that the total energy cost of a game for a typical player weighing about 75kg would be about 1800kcal (about 5.5MJ). The value for players at lower levels of the game is somewhat less than this; because the $VO_2$max is also lower, the total energy expended will be less. Of course, heavier players need more energy for a given distance run, and energy needs also vary greatly between individuals.[1]

### Energy demands of training

The energy demands of training will vary depending on the intensity, frequency, and duration of the training sessions, but they will also change over the course of the season. Most players will follow a weekly cycle that involves a reduced training load to allow recovery from the previous game, days of harder training, and a reduction in training load in preparation for the next game. In pre-season, the training load is usually at its greatest as players strive to reach full fitness for the opening games of the season. Energy demands in a training session focused on fitness may exceed those of a hard game. In sessions where the emphasis is on recovery and regeneration or on skill, the energy cost will be much less.[1]

## Acknowledgements

None.

## Conflict of interest

Author declares that there is no conflict of interest.

## References

1. http://www.fifa.com/mm/document/footballdevelopment/medical/51/55/15/nutritionbooklet_neue2010.pdf
2. Medicine & Science in Sports & Exercise. *Official Journal of the American College of Sports Medicine*. 2016;48(3):543–568.