



## **Meeting Energy Requirements Difficult** **for some Athletes**

One of the most important diet related issues for athletes is ensuring they consume adequate energy to support the demands of their training programs. There is a growing body of research showing that some athletes are not meeting their energy requirements. Athletes especially at risk include those with extremely high energy requirements due to their sport, female athletes, and young athletes. This lack of energy is generally accompanied by marginal intakes of macro and micronutrients.

The result of suboptimal nutrient intakes is a decrease in performance as well as negative effects on health. Nutrients most commonly reported as inadequate include carbohydrate, vitamin B6, calcium, folic acid, iron and zinc (Thompson, 1998).

### **Nutrient Function as it relates to sport**

***Inadequate carbohydrate*** - *inadequate glycogen stores and premature fatigue*  
- *increases use of body protein stores for energy*

***Inadequate vitamin B6*** - *limits amino acid synthesis and red blood cell production*

***Low iron intake*** - *impairs oxygen carrying capacity*

***Low folic acid and zinc*** - *inhibits cell growth and repair*

***Low calcium intake*** - *critical to maintain and accrue bone mass*

Many athletes do not understand or appreciate the amount of energy (Calories) that is burned during training and competitive events. This is especially evident in endurance sports such as long distance running, triathlon, and cross-country skiing where energy requirements may reach 4000 - 5000 calories per day. Analyses of the diets of track and field competitors and marathon runners reveal a macronutrient composition similar to that of weight-matched, inactive individuals (Hawley, et al., 1995). A recent study of triathletes revealed an energy requirement of 4000 calories per day and an energy

intake of 2300 calories per day. The triathletes carbohydrate intake of 4 g/kg body weight/day was well below the recommended carbohydrate intake for endurance athletes of 9-10 g/kg body weight/day (Frentsos & Baer, 1997).

Young athletes have been identified as being at a higher risk for suboptimal nutrient intake. Studies in young athletes have shown consistent patterns of inadequate intakes of energy and nutrients (Thompson, 1998). The fact that young athletes have to eat enough food for their training as well as for growth and development is a significant factor contributing to their high energy requirements. Other factors that contribute to their lack of adequate nutrient intake include: young athletes are generally less educated about sport nutrition; are susceptible to peer influence; depend on others for food selection (i.e. parents); and are vulnerable to misinformation from a variety of sources.

Female athletes are also at risk for suboptimal intake of energy and nutrients. Studies measuring energy intake of female athletes frequently report caloric intakes well below theoretical need, or what would be predicted by energy expenditure (Beals & Manore, 1994). Of particular concern are those female athletes involved in aesthetic sports such as gymnastics and figure skating and those participating in endurance sports such as long distance running. Driven to meet the demands of her chosen sport, the female athlete may be at risk for developing disordered eating, amenorrhea and bone loss. Collectively, these potential clinical disorders are referred to as the "female athlete triad". Researchers feel the female athlete triad is a condition of energy deficiency. It is generally recognized that optimal performance cannot be maintained in an athlete who is training while in an energy or nutrient deficient state.

On a practical note, my personal experiences with athletes verify that certain athletes have difficulty meeting both their energy and nutrient intakes as a result of their training schedules and demands placed on them due to the nature of their sport. It is important to work with the athletes to help them maintain an energy and nutrient intake to meet both their performance goals and their goals for maintaining healthy eating habits and practices.

## **References**

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