

Sports Nutrition for Children and Young Athletes

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Interestingly, children place a high level of enjoyment and appreciation in sports but are generally unaware that a link exists between the food they eat and the way they perform. As such, it is essential that children and adolescents are encouraged to adopt healthy dietary practices so that adequate nutritional requirements for growth, maturation, and performance are met. Unfortunately, the scientific literature addressing nutrient needs of young athletes remain limited. As a result, recommendations for our younger athletes are based on extrapolations from research using adult subjects. Clearly there are errors with this approach. Children tend to be less metabolically efficient, meaning that values extrapolated from adult research are likely to underestimate energy expenditure in children (MacDoughall et al. 1979, Girandola et al. 1981). So, what are the nutrient needs for children and younger athletes? In short, we may never truly know as long as there is an ethical concern. What we do know is that there are potential negative effects when combining intense training and suboptimal energy and nutrient intakes regardless of age.

Energy

An adequate energy (calories) intake during childhood and adolescence is crucial for normal growth and maturation. When participating in competitive athletics, especially during periods which require frequent intense training sessions, an extra caloric intake is needed to support normal body function, growth, maturation, and training. An extended period (weeks or months) of negative energy balance, where energy expenditure consistently exceeds energy intake, can result in short stature, delayed puberty, menstrual irregularities, poor bone health, increased incidence of injuries, and the risk of developing eating disorders.

Protein

Protein needs based on the RDA are higher for children and adolescents, particularly during growth spurts, compared to adults because of the extra protein required for development (0.85-0.95 g/kg body mass/day vs. 0.8 g/kg/day). Because protein requirements for adult athletes are slightly higher than the adult RDA (1.2-2 g/kg BM/day); in theory so are the requirements for young athletes. However, requiring young athletes to consume greater amounts of dietary protein may not be appropriate especially when the average individual already consumes protein well in excess of the RDA. In fact, nutrient composition may be compromised if increased protein consumption results in a decrease in other important macro and micronutrients (e.g. carbohydrates, fats, vitamins and minerals).

Carbohydrate

Carbohydrates supply the majority of energy in high-intensity activities lasting longer than 10-15 seconds. The benefits of high-carbohydrate (CHO) diets for enhancing athletic performance are well established in adults: increased glycogen repletion and CHO availability, reduced protein breakdown, etc. Research findings indicate that providing a CHO source between meals in young athletes may provide similar benefits. The current RDA for carbohydrate for children ages 9-13 yrs. and 14-18 yrs. is 130 g/day. While high-CHO diets may be productive for

performance, there are some concerns regarding dental health. CHO containing foods common in a child's diet and known to promote dental caries include citrus foods and juices, fruit juices, sodas, and candies.

Fat

The dietary guidelines for children and adolescents recommend 30% of total dietary energy intake from fat with no more than 10% coming from saturated fats (butter, cream cheese, whole milk, animal fat). Although children have a greater capacity than adults to utilize fats for fuel during exercise, it is essential that they recognize that high fat diets are not conducive for optimal training and recovery. In fact, similar to high protein diets, high fat diets usually result in inadequate intakes of carbohydrate, proteins, vitamins, and minerals. Therefore, there is no need for the young athlete to consume additional dietary fat to use as fuel.

Nutritional Solutions

The following tips are taken from the National Strength and Conditioning Association's (NSCA) Sports Nutrition Education Program lecture on Nutrition and the Young Athlete:

- ✓ Children should be encouraged to eat a variety of foods as well as a variety of foods within food groups.
- ✓ Children should be encouraged to eat when they are hungry but stop when they are full.
- ✓ Encourage intake of healthy snacks (fruits and veggies, trail mix, granola).
- ✓ Children should eat throughout the day.
- ✓ Encourage frequent intake of water.
- ✓ Minimize intake of trans fat (fried foods).
- ✓ Focus on fiber-rich foods (fruits, veggies, whole grains, oats)
- ✓ Eat at least one fruit or vegetable with every meal.
- ✓ Offer lean meats and low-fat dairy.
- ✓ Children should be included in:
 - Food preparation
 - Food selection

For additional information regarding this topic the reader is referred to the work of Burke and Deakin:

Burke, L., and V.Deakin. 2006. Clinical Sports Nutrition. 3rd Ed. pp.113-130, 599-625

About the Author:

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