Sports Nutrition for Children

What should my child eat and drink to gain a competitive edge?

This is a question pondered by many parents of child athletes involved in various activities. Often, parents, who have been bombarded with conflicting messages about nutrition with regard to weight management, in particular, are misinformed about what foods their children require for good health and/or the demands of regular physical activity and athletic competition.

Energy – calories in vs. calories out

According to the 2002 Dietary Reference Intakes, active pre-teen females (ages 6 to 12) require anywhere from 1600 to 2200 calories per day, while males of the same age range need 1800 to 2400 calories per day. More time spent in physical activity means more calories and other nutrients needed to support the demands of physical activity as well as normal growth and development. Luckily, most young athletes will naturally increase their food intake to accommodate the day-to-day nutrient needs of their sports participation.

Carbohydrates – the competitive edge

While many adults shun carbohydrates in the battle of the bulge, carbohydrates are the main source of fuel for muscles during exercise. Children should be offered carbohydrate-rich foods at each meal and snack…think pasta, rice, whole-grain cereals, breads, tortillas, bagels, low fat muffins, granola bars, crackers, pretzels, yogurt, milk, fruits, and 100% fruit juices. Be sure to include some whole grain varieties in your child's repertoire (like brown rice, whole wheat breads, whole grain cereals, etc.) to help promote good overall health.

Protein – the building block

While protein is important for building muscle, proper immune function, and hormone production, excess protein that replaces much-needed carbohydrate can actually impair athletic performance. Young athletes get all the protein they need when eating a carbohydrate-rich, well-balanced and varied diet. Good sources of protein include chicken, turkey, eggs, cheese, milk, yogurt, dried beans and legumes, and lean meats.

Fat – not too much, but not too little

Some fat in the diet is necessary for good health and is also used as a source of energy during exercise and recovery. Healthy fats can be found in nuts and seeds, peanut butter, olive oil, canola oil (including trans-free margarine) and fatty

fish, like salmon. Unhealthy fats are found in animal-based foods such as high fat dairy products and fatty meats; the tropical oils - coconut oil, palm or palm kernel oil; and trans fats, which are found in many commercially-prepared foods - anything with "partially hydrogenated" listed on the ingredient label.

Hydrate – morning, noon and night

Child athletes have special fluid needs due, in part, to the fact that children respond differently to exercise than adults do. For example, children have a lower sweat rate and a greater relative body surface area, so they produce more heat than adults, but are not as efficient at transferring this heat from the working muscles to the skin. In addition, children take longer to acclimatize, making them more susceptible to extreme environmental conditions. Non-carbonated sports drinks containing carbohydrate (sugar) and electrolytes (sodium and potassium) are recommended to help active children stay hydrated, particularly for endurance exercise and high-intensity exercise, and especially while exercising in the heat. Young athletes should be encouraged to drink 4 to 8 ounces every 15-20 minutes. Children should also be weighed before and after exercise, and should drink at least 16-24 ounces of fluid for every pound lost.

Vitamins and Minerals – micro-nutrients are a big deal

Physically active children typically come closer to meeting their requirements for vitamins and minerals than their non-athlete counterparts. The exceptions to this may be iron and calcium. This is especially true for endurance athletes and female endurance runners in particular. If exercise performance has declined, then blood levels should be checked for serum ferritin and hemoglobin, since non-anemic iron deficiency is prevalent in young athletes. Iron-rich foods include fortified breads, cereals and grains; lean meats and poultry; and dark green vegetables; and beans, nuts and legumes. Calcium-rich foods include low fat milk, yogurt, cheese, fortified soy milk, and dark green leafy vegetables.

Eat often – pre-exercise, during exercise, post-exercise

Active children need to eat often to fuel their smaller bodies for physical activity – a small meal or snack every 3 to 4 hours is a good rule of thumb. Pay particular attention to pre-exercise snacks to help provide fuel for physical activity, as well as the post-exercise snack and/or meal to help speed recovery. The pre-exercise snack should be high in carbohydrate and lower in protein, fat and fiber so that it's easily digestible and well tolerated. Suggestions include granola bars, cereal snack mix, or a raisin bagel. The post-exercise snack or meal should give a moderate dose of protein in addition to carbohydrates to help maximize glycogen stores and repair muscle damage. Some ideas include fruit yogurt and banana, a turkey and cheese sandwich, or spaghetti with lean meat sauce. To find out what your young athlete tolerates best, experiment during training, not competition.

References:

-Committee on Dietary Reference Intakes, Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington, D.C.: National Academies Press, 2002.
-Petrie HJ, Stover EA, Horswill CA. Nutritional concerns for the child and adolescent competitor. Nutrition

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Exercise: The Pre-Workout Meal

Everyone seems to have an opinion about what to eat before exercise. Information abounds. Personal trainers, magazines, news media, coaches, and every person in the gym has a philosophy about this topic.

Some say protein is essential to build muscle; others tout the importance of carbohydrate for immediate energy. Everyone agrees that water is important, but when and how to consume it varies, depending on whom you ask. Much research is performed with financial support from industry, with sometimes questionable credibility. The following guidelines are based on current nutrition research and strong empirical data.

For the majority of exercisers, those who perform cardiovascular or light strength training as physical activity for an average of 35-40 minutes, a few days a week, the most important thing is overall good nutrition. A strong foundation of a healthful diet is enough to provide sufficient energy, prevent fatigue, and aid in cardiovascular and muscle work.

A simple pre-exercise snack with plenty of water should fuel the body sufficiently. The best pre-workout meal is one that works best for the individual and is not digested too rapidly.

Try these ideas:

- A banana with 1 tablespoon of peanut butter
- Low-fat yogurt and a piece of fruit
- Oatmeal made with skim milk and fruit
- Trail mix with nuts and fruit
- Granola with low-fat milk and fruit
- A smoothie made with low-fat yogurt, fresh fruit, and wheat germ or flax meal

*Sip water throughout the activity and after exercise is completed.

Pre-workout meal tips

The following are some ideas that you may want to try:

- Choose high-carbohydrate, low-fat foods—whole-grain, high-fiber foods, consumed 1 hour prior to exercise, are ideal; some examples include:
  - Breads
  - Cereals
  - Muffins
  - Yogurt

– Oatmeal
– Beans
– Crackers
– Pasta

▪ Avoid high-fat protein sources, such as fried meats, cheese, and hamburgers, because they take longer to empty from the stomach and may contribute to a sluggish or nauseated feeling
▪ Take time to digest your pre-workout meal—the blood used to digest foods in the stomach is required in the muscles for exercise; so, food will remain in the digestive tract longer if improper time for digestion is allowed
▪ Eat familiar foods prior to competitions and intense practices
▪ Use energy bars and protein shakes as alternatives to whole foods, but realize that the needed calories come primarily from sugars

– The energy boost does not come from consuming the ingredients in these products, but from consuming the 200-300 calories needed in a pre-workout meal
– These products are not more digestible than whole foods
– Adequate water consumption is essential for complete digestion

Reference

Clark N. Sports Nutrition Guidebook. 3rd ed. Brookline, MA: Human Kinetics; 2003.

Exercise: The Post-Workout Meal

Recovering from exercise is an important part of the athlete's routine. Post-workout foods and drinks can affect recovery by affecting fatigue, repletion of glycogen stores, and preparation for future bouts of exercise.

For the recreational exerciser, one who exercises 3-4 days/week, overall good nutrition is most important for maintenance of glycogen stores, and so muscles will have enough time to rest and recover between workouts. For the more vigorous exerciser, one who exercises multiple times/day, performs competitively, or is in training for a sport, refueling muscle glycogen stores and assisting the body in recovery is of utmost importance. Repletion of nutrients lost through dietary intake is an essential component in maximizing the body's performance.

Repletion of fluid loss

Repletion of fluid loss is the most essential part of recovering after a hard bout of exercise. Replacement of water lost through sweating and promotion of water balance are best managed by drinking water throughout the workout, as well as after exercise is completed. Good choices include:

- Water
- Juices
- High-water-content fruit
– Watermelon, Grapes, Melon, Oranges
- High-carbohydrate sports drinks

Repletion of muscle

To best promote repletion of muscle glycogen stores, consume carbohydrate-rich foods within 15 minutes after the workout has ended. These carbohydrate calories can come from foods or fluids. The following are some ideas:

- Orange juice and half bagel or slice of bread
- Sports drink and a fruited low-fat yogurt
- Cereal with milk and a banana

Protein repletion after a serious workout is less of a key player in the recovery diet, but a little protein can enhance muscle repletion initially after exercise. The American diet is ubiquitous in protein, and added protein is not essential in the post-workout routine.

Repletion of sodium, potassium, and electrolytes

Repletion of sodium, potassium and electrolytes (sometimes lost through sweating) is easy to do through foods. Supplementation generally is not recommended. The following are common recovery foods, which are high in essential electrolytes:

- Potatoes
- Yogurt
- Orange juice
- Bananas
- Soup
- Cereals
- Cheese
- Breads

Reference

Clark N. Sports Nutrition Guidebook. 3rd ed. Brookline, MA: Human Kinetics; 2003.