

## **Fueling Systems 3::4 Nutrition for Optimum Performance During Exercise** **By Sarah Seeds (BA) Kinesiology, BCRPA, CPAFLA**

Correct fueling technique during exhausting endurance activities is critical to your performance. Endurance athletes exercising longer than 90 minutes often run short of glucose by the end of competitive events and will benefit from consuming not only enough fluid to match sweat losses, but also enough carbohydrate to provide energy for muscle contraction and to maintain blood sugar levels. During the last stages of an endurance competition, when glycogen (stored in muscles and liver) is running low, glucose consumed during the event can slowly make its way from the digestive tract to the muscles and push back the time to exhaustion.

### **DURING EXERCISE:**

- 1. During a short workout.** Drink only water during events that last less than 60 minutes. You have enough stored glycogen to support your shorter training/racing events.
- 2. For high intensity events over 60 minutes and moderate intensity events lasting greater than 90 minutes** a carbohydrate and electrolyte source is needed to maintain energy to the working muscles and to the nervous system. There are many different choices when it comes to pre-packaged fuel-replacement systems and athletes all have their own preferences. One thing is for certain-you need to practice eating during training so that you can find out what works best for you. NEVER try a new system on race day!
  - Aim for 30-60g of easy to digest carbohydrate/hour.
  - **Sports Drinks.** Most combine a blend of sugars; glucose, sucrose, fructose and some contain electrolytes as well (vitamins and minerals). Look for drinks that contain 13-19g of carbs per 8oz (4-8%). A higher concentration is slow to digest and can cause cramping, bloating, diarrhea and nausea during your workout.
  - **Gels.** Same as sports drinks but without the water, gels are easy to pack in small pockets. Most contain 25g carbohydrate. Aim for 1-3 of these per hour depending on your size and effort level-PLUS be sure to consume 1-3 cups of water with your gels or your mouth will be glued shut with gu!
  - **Bars.** Contain carbohydrates as well as a small amount of protein and fats. Bars are easy to pack, durable and add variety and substance to longer workout nutrition plans. Look for those made up of mostly carbohydrates (sugars and grains) with less protein to avoid stomach upset. Look for 25g carbohydrate and less than 15g protein per bar as protein is not a significant source of energy during your workouts. Also be sure to have water on hand to help digest bars.
  - **Fruit.** Dried fruit is natural, contains vitamins and minerals and packs in carbohydrates. Aim for 1-2 'servings' per hour- that's ¼ cup of dried fruit. Plus water.

- Ensure that your nutrition system includes adequate levels of electrolytes-minerals such as sodium, calcium and potassium that are critical to muscle contraction and help to maintain a safe fluid balance. Failure to replace sodium losses is more likely to result in 'hyponatremia' during endurance events lasting longer than 2-4 hours than shorter events as higher volumes of water are consumed. Choosing a sports drink in place of water will decrease this risk by replacing sodium lost through sweat.

**3. Longer Distance Events.** Endurance events lasting longer than 4 hours poses additional nutrient demands on an athlete. Protein, fat and sodium are required to keep the body in balance and provide adequate nutrition for the long haul. The largest nutrition challenge facing an ultradistance athlete is consuming adequate calories to sustain the competitive intensity. Athletes can easily burn 600-800 calories per hour in these demanding events and it is not possible to replace this deficit due to absorption limitations, loss of appetite, logistics and GI distress. Some common whole foods include banana-peanutbutter wraps, boiled/salted potato's, bagel sandwiches, pretzels, fig newtons, and graham crackers. Experimenting with a variety of foods during those long training sessions is the best way to learn what works for you and your body needs.

#### REFERENCES

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