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## NF92-72 Nutrition and the Athlete: Fluid Replacements

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## Nutrition and the Athlete *Fluid Replacements*

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*Of all nutritional concerns for athletes the most critical is proper fluid hydration. One of the key functions of fluid for the athlete is for body temperature control. Lack of this element above all others can hinder performance and lead to more serious complications.*

A fluid loss of as little as 2-3 percent of body weight impairs performance. Fluid losses of 7-10 percent of body weight will lead to heat stroke and death. For a 150-pound person, a 2-3 percent fluid loss equates to 3 to 4 1/2 pounds of body weight.

Research shows that endurance athletes who are involved in physical activity for more than an hour and a half can produce up to three quarts of sweat per hour. That equals a loss of 6 pounds of body weight.

Fluid replacement is a special concern for children involved in sports activities. Children have lower sweating capacity and they tolerate temperature extremes less efficiently than adults. Young children also produce more heat during exercise. They typically take two to three days longer to get used to exercise during warm weather. Keep the water bottle handy during all sports activities for children. Even better, don't let your children leave home without it.

### **Five Basic Rules for Fluid Replacement**

1. *Cool fluids are best (40 - 50° F).*
2. *Plain water, or sports drinks and diluted juices that have 4-8 percent carbohydrate concentration, adequately replace fluid for most athletes. On sports drink labels look for carbohydrate contents of less than 20 grams per 1 cup (8 oz). Dilute fruit juice by mixing one part juice with one part water. Extremely concentrated beverages such as carbonated sodas, undiluted fruit drinks and juices, and high carbohydrate supplements will slow absorption rates. They are not useful for immediate fluid replacement.*

3. *Don't depend on thirst.* By the time you feel thirsty, your body already has started to dehydrate.
4. *Weigh before and after an athletic event. Replace 2 cups fluid for every 1 pound lost.*
5. *Sip water or dilute fluids (<20 grams of carbohydrate per cup) during competition or training.* Athletes involved in steady competition or training for longer than one hour may benefit by using cool, pleasantly flavored, lightly sweetened beverages such as diluted fruit juices or sports drinks. These beverages provide both a fluid replacement and carbohydrates.

The suggested protocol for fluid replacement is:

Drink 2 cups cool water about 2 hours before competition or training. Follow this by drinking 1 to 2 cups fluid 15 minutes before the event.

Drink 4 to 6 oz (1/2 to 3/4 cup) of cool water, diluted fruit juice or sport drink every 10 to 15 minutes during competition or workout.

After competition or workout, weigh and replace every pound of lost weight with 2 cups plain water or sweet-tasting beverage. Avoid caffeine-containing beverages and alcohol.

**Table I. Composition of selected commercial sport drinks.**

<i>Product (8 oz)</i>	<i>Carbohydrate concentration</i>	<i>Energy</i>	<i>Sodium</i>	<i>Potassium</i>
	%	kcal	mg	mg
Bodyfuel 450® <sup>a</sup>	4.2	40	80	20
Exceed Fluid Replacement® <sup>b</sup>	7.2	70	50	45
Gatorade® <sup>c</sup>	6.0	50	110	25
Sqwincher® <sup>d</sup>	6.8	60	60	36

<sup>a</sup>Vitex Foods, Los Angeles, CA.

<sup>b</sup>Ross Laboratories, Columbus, OH.

<sup>c</sup>Quaker Oats Co, Chicago IL.

<sup>d</sup>Universal Marketing Corp, Columbus, MO.

## Resources

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