Calculating Fluid Needs

Fluid intake is the most important nutrition consideration for any athlete. A loss of body weight of just 1% (1.5 pounds in a 150-pound athlete) can adversely affect the body's ability to cope with the stress of exercise (1). A loss of more than 1% of body weight can impair athletic performance. Individuals exercising in warm, humid environments must pay special attention to fluid intake. Sports dietitians should help athletes develop a fluid plan to drink before, during, and after exercise.

Key Points About Fluids

- An athlete must drink to stay hydrated. Pouring fluids over the head does not prevent dehydration.
- Encourage athletes to practice drinking fluids during training sessions to "train" the body to tolerate fluids during competition.
- Athletes should plan a schedule in which they drink before they get thirsty. Athletes should not wait until they feel thirsty to drink fluids.
- Encourage athletes to drink at least 2 cups (16 oz) of fluids 2 hours before they exercise. Measure the amount of fluid in an athlete's sport bottle and mark it in 1-cup intervals for easy reference.
- Consider taping the sport bottle to the top of the beverage cooler during practice as a visual reminder to drink fluids.
- Encourage athletes to drink during exercise; recommend 5 to 10 oz fluid every 15 to 20 minutes.
- Tell athletes to take advantage of time-outs, half time, or other breaks to stay hydrated. Every large gulp or swallow equals about 1 ounce of fluid.
- Have athletes weigh themselves before and after practice to find out how much water weight is lost during exercise. Tell them to drink about 3 cups (24 oz) of fluid for every pound of body weight lost during activity.
- Remind athletes engaged in endurance sports or stop-and-go sports to use sport drinks. Sport drinks help replace fluid, carbohydrate, and electrolytes lost in sweat.
- Help athletes find a sport drink flavor that they like to drink during exercise.
- Increased dietary sodium is warranted in athletes who exercise in hot, humid environments (2). The athletes who are most susceptible to heat cramps are those who sweat profusely, lose significant sodium and chloride in their sweat, and often have a relatively low dietary salt intake (3). Advise these athletes to increase their sodium intake by adding salt to their sport drink (½ teaspoon salt added to 32 oz of sport drink provides an additional 1,180 mg

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sodium). Consider recommending an "endurance" formula sport drink with 200 mg sodium per 8 oz, and remind athletes to choose foods high in sodium (eg, salted pretzels, tomato juice, chicken noodle soup, cheddar cheese) (2).

- Teach athletes how to monitor the volume and color of their urine to determine their hydration level. A small volume of urine that is dark in color indicates dehydration.
- Remind athletes to drink plenty of fluids with meals.
- Tell endurance athletes to be careful not to drink too much water before or during a distance event—hyponatremia (low blood sodium) can be the result of too much fluid. Endurance athletes should follow a fluid plan, and choose sport drinks instead of water.

Fluids Recommendations

Situation	Recommendation	Tips
2-3 hours before exercise	16-24 oz (2-3 cups)	Drinking 2-3 hours before exercise allows enough time for fluid to be lost through urine before exercise begins.
30 minutes before exercise	5-10 oz (~ ½-1 cup)	Remind athletes there is no benefit to taking in more fluid than this.
During exercise	5-10 oz (~ ½-1 cup) every 15 minutes	One gulp equals about 1 oz. When counseling an athlete, measure a cup of water and ask them to drink it, counting how many gulps it takes to drink the fluid. This can give the athlete a guide for fluid consumption based on his or her swallowing rate.
After exercise	At least 20 oz (2½ cups) for every pound lost during exercise	Encourage athletes to weigh themselves before and after exercise for an estimate of water loss.

Source: Data are from reference 1.

Choosing Beverages

The following are tips to share with athletes:

- Water is a good choice for light activity in moderate conditions, but sport drinks are better for moderate to heavy exercise, especially in warm, humid weather. Sport drinks replace the electrolytes lost in sweat; water does not.
- Choose sport drinks that provide 6% to 8% carbohydrate (14 to 19 g carbohydrate per 8 oz). Higher levels of carbohydrate slow absorption.
- Do not dilute sport drinks—they are formulated to deliver the proper mix of carbohydrates and electrolytes.

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- Stick to commercial sport drinks. Do not try homemade ones.
- Choose a sport drink with a blend of carbohydrates. A mixture of sucrose, glucose, and fructose is a good blend. A drink that contains mostly fructose and or high-fructose corn sweetener can cause gastrointestinal upset.
- Stay away from carbonated sport drinks. It is hard to drink enough of a carbonated beverage for proper hydration.
- Try different flavors. People often prefer a different flavor of sport drinks during exercise than they do at other times.

Sport Drinks With 6% to 8% Carbohydrate

- Accelerade
- Allsport body quencher
- Endura
- Gatorade
- Powerade

References

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