

FLUIDS

SOLUTIONS FOR COMPETITION

Your body, like your car, can't operate without water. You can't live more than a few days without it, and you definitely can't perform at your best without it. While other fluids can and should be part of your training program, there is no substitute for water.

Water, Water, Everywhere ...and not a drop to drink! If that sounds like you, your body is probably not performing at its best.

Water is everywhere in your body. More than half your weight is water. Muscles are almost three-quarters water. Water is part of every system your body uses to perform.

Radiator: Water is the coolant. Heat from deep in your muscles is carried by water to your skin surface. As the water evaporates, heat is released so you don't overheat your engine.

Fuel system: Water in your blood carries essential nutrients to keep your engine running.

Exhaust: The same water in your blood carries waste products away from your muscles and all the other cells in your body. This lets your muscles keep working throughout long events.

Shock Absorbers: Water absorbs some of the shock that might injure your organs, joints, and other tissues. That's helpful when you really push your body to perform.

Lubrication: Your joints also use water as a lubricant. To stay flexible you need water. Your body uses many systems to be a winning athlete. These systems all use water to run at max.

Just Add Water

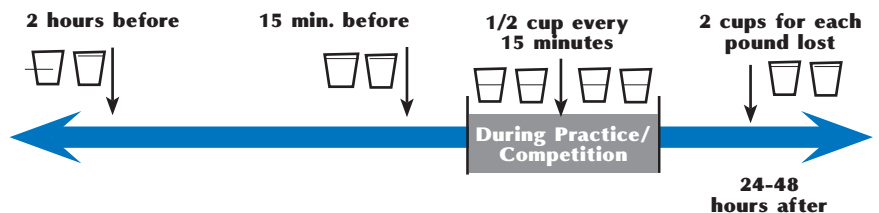
You need to drink more than you think! Thirst is not a good indicator of when your body needs a fill up. You may be dehydrated and your athletic performance could decrease before you feel thirsty. To avoid dehydration, drink plenty of fluids throughout the day.

To make sure you are fully hydrated, use the plan below from the American College of Sports Medicine and American Dietetics Association:

Fluid Intake Recommendations

Everyone needs to drink at least 8 to 10 cups of plain water and other non-caffeinated, non-alcoholic beverages each day. In addition, athletes need to drink:

- at least 2 cups two hours before practice/competition
- another 2 cups 15 minutes before practice/competition
- at least 1/2 cup every 15-20 minutes during practice/competition
- 2 cups for every pound lost during practice/competition.



Begin immediately after exercise for quickest recovery. Morning is a good time to start your fluid intake. Enjoy juice or lower-fat milk with breakfast. Drink water when you brush your teeth. Eat a juicy piece of fresh fruit for a snack. Throughout the day, take a long drink every time you pass

the water fountain at school and drink at least one glass of water at each meal. Drink fluids whenever you think about it—carry a water bottle with you as a reminder. If tap water doesn't taste good, try a water filter or bottled water. For flavor, add lemon or lime slices.

Keep Your Cool

Cool water is the best choice before and during physical activities. Water will stay colder in a small cooler or wrapped in a towel. When working out in hot weather, drink from a water bottle that has been stored in the freezer. Water will thaw in the heat at about the same rate you want to drink it during exercise.

are a swimmer, you still have to replenish fluids. The physical activity of meets and practices will drop the water level in your radiator even if you don't feel the sweat. Hot, humid surroundings increase your fluid losses. In cold weather sports like skiing, you can still become dehydrated from moisture loss

When Your Radiator Springs a Leak

Your body normally loses 10 cups of water a day. As you exercise, your body can lose twice as much from increased perspiration. Its as if your radiator has sprung a small leak. Unless you replenish with water from foods and fluids, your body may have to shift water from your fuel and exhaust systems into cooling. If your radiator fluid gets too low, your performance starts to suffer. "Too low" is when you lose about 3 % of your body weight. For a 150-pound athlete that is only 4 1/2 pounds or a little more than the fluid in a two liter bottle. Many athletes lose that in just 1 1/2 hours of practice.

Percent of Body Weight Lost	Impact of Dehydration on Performance
3%	<ul style="list-style-type: none"> • Decreased muscle endurance
4-6%	<ul style="list-style-type: none"> • Dramatic decreases in muscle endurance • Decreased muscle strength • Heat cramps • Muscle spasms usually after activity
over 6%	<ul style="list-style-type: none"> • Severe heat cramps • Heat exhaustion • Heat stroke

Dehydration is one of the most common problems which hurts your performance. You know you're getting dehydrated if you don't urinate as often as usual or the color of your urine is darker than freshly squeezed lemon juice.

Heavy clothing and equipment like that worn in football and ice hockey increase the problem. If you

through sweating and breathing. Deliberate dehydration to cut weight for sports like gymnastics and wrestling not only decreases your strength and endurance, but is very dangerous.

During your season you may have a practice or event most days of the week. Some athletes don't lose much fluid at one practice, but they forget to replenish between practices. Over time, you become dehydrated. Keeping well hydrated is a full time job for athletes, just like practice or conditioning. You can't let it slip, even a little, or you'll find your engine stalling out from overheating. Don't forget to drink... water that is!



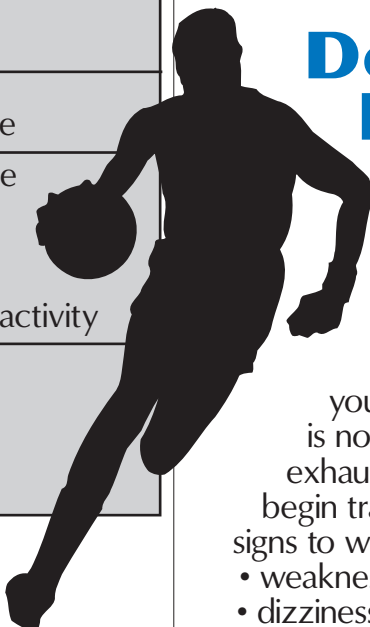
Don't Let Your Engine Overheat

Your body puts a very high priority on keeping cool. It will shift water away from fueling your muscles and clearing wastes to avoid overheating.

When your radiator starts to run dry, you see definite signs your cooling system is not working right. This phase is heat exhaustion. It is more common when you begin training at the start of the season. Some signs to watch for are listed below.

- weakness
- dizziness as you stand up
- rapid but weak pulse
- low to normal temperature or cool clammy skin
- normal or slightly reduced sweating

With a dry radiator your engine shuts down quickly. This is called heat stroke. You become weak



and confused. Your body stops sweating and you become very hot. You may feel headaches, numbness or tingling. If you continue without fluids and medical attention, heat stroke can lead to convulsions, a coma...even death.

Athletes may not realize how dry their radiator is. Confusion and general weakness can cloud their judgment. However, heat stroke and heat exhaustion demand immediate medical attention. This is where your coaches, your teammates, and you can all contribute. It is important to notice when others show dramatic behavior changes at events and practices. You or a teammate may be getting severely dehydrated!



an hour have no need for sports drinks to replace electrolytes. If you will drink more fluid because you like the taste of sports drinks, drinking a limited amount may fit into your training plan. Keep in mind, many sports drinks contain much less sodium and potassium than foods.

You need to eat within 30 minutes to 2 hours after practice or competition to replace your stored energy (glycogen). The same foods will replenish your electrolytes. (See *Training Meals* handout for post-competition meal information.)

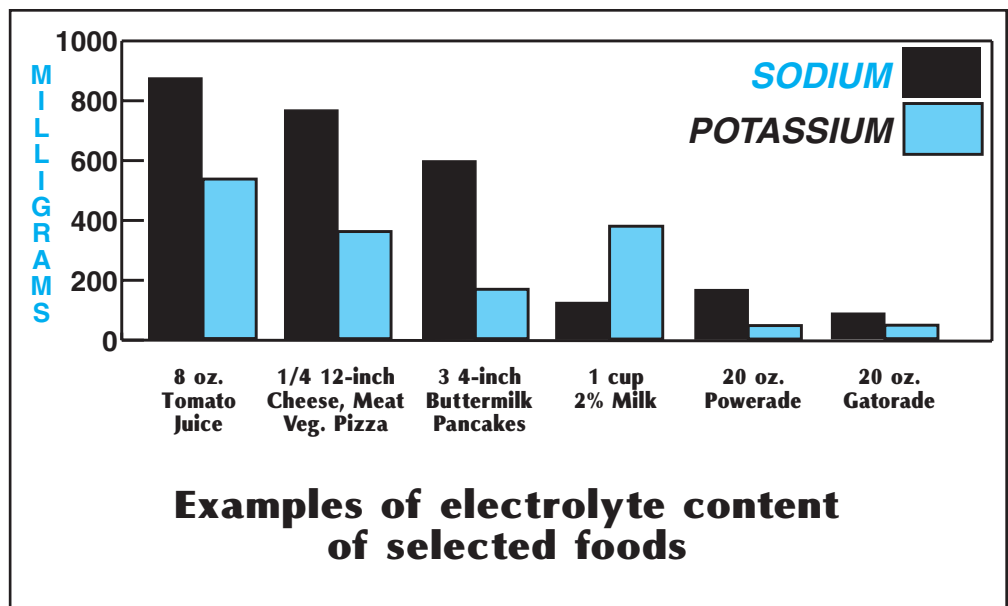
Electrolytes

Why Do You Need 'Em?

Sodium, potassium, and chlorine are the nutrients known as electrolytes. Electrolytes control the flow of fluid between your body's cells and their surroundings. This flow helps you perform better because it provides nutrients to produce energy and removes waste products which would eventually slow you down. Electrolytes also send nerve impulses to the muscles and help the muscles contract and relax—all of which affect your sports performance.

Where Can You Get 'Em?

Many athletes worry about replacing electrolyte losses. Any losses from sweat are easily replaced by your next meal. You might think you need "sports drinks" to replace lost electrolytes. However, sports drinks are designed for endurance events which last for more than 60-90 minutes. Athletes who work out for less than



How Much Do You Need?

Weigh yourself before and after practice to see how much you've lost. One pound of sweat contains about 80-100 milligrams of potassium and 400-700 milligrams of sodium. As you become better conditioned, your electrolyte loss through sweat is smaller. Use these charts as guidelines, then look at food labels to see how easily you can replace electrolytes at your next meal or snack.

Weight Loss	Potassium & Sodium Replacement Foods
2 pounds	1/2 banana and 2 bagels with 4 Tbsp. peanut butter, or 2 c. macaroni & cheese plus 1 raw carrot
4 pounds	1 Taco Bell chicken fajita & 1 serving pintos 'n cheese with red sauce, or 2 c. corn flakes, 1 c. milk, & 1 c. vegetable juice cocktail
6 pounds	2 c. spaghetti & meatballs with tomato sauce

Caffeine

Why would you?

Some athletes believe caffeine gives them an energy boost. However, many athletes have negative reactions to its use. Caffeine leads to water loss through urination. It may cause stomach upset and diarrhea. You may become increasingly nervous, irritable, and end up with a headache. Not exactly the shape you want to be in for your best athletic efforts!

Maybe you never thought about caffeine's effect on your athletic performance. With soft drinks being common, you need to be particularly aware of their caffeine content. Also, recognize there is caffeine in other products such as over-the-counter medications (check labels). You may be getting more than you realize.

Caffeine Sources	
Item	Average Milligrams of Caffeine
Coffee (10 oz. cup)	
<i>brewed</i>	230
<i>decaffeinated</i>	5
Iced Tea (12 oz. glass)	70
Soft Drinks (12. oz. can)	
<i>Surge</i>	55
<i>Mountain Dew</i>	55
<i>Coca Cola</i>	45
<i>Pepsi Cola</i>	40
<i>Root Beer</i>	0
<i>Sprite</i>	0
Cocoa products	
<i>Chocolate Milk (8 oz.)</i>	5
<i>Hot Cocoa (8 oz.)</i>	5
<i>Chocolate candy (1 oz.)</i>	1-35

Beverages of Choice

For overall health, to avoid over-heating, and to perform at your best, you need plenty of fluids before, during, and after physical activities.

Before and During The Event

Cool water is the best choice before and during practices and events. It's easily absorbed, caffeine-free, and essential for your body to function. Fluids such as juices and regular soft drinks contain enough

sugar to slow absorption. They should either be diluted for use as pre-exercise hydration or saved for later.

After the Event

For fluid and electrolyte replacement after exercise, beverages like milk and juice are good choices. Sports drinks can also replace lost fluids

and provide a few electrolytes.

Compare the pros and cons of your favorite beverages in the chart on the left.

beverages	best before and during events	fluid source after the events	good source of vitamins/minerals	caffeine-free	sugar content low enough for digestibility	refrigeration not essential	comments
water	X	X		X	X	X	essential nutrient, free or low cost, readily available
fruit juices		X	X	X		X	choose 100% juice over 10% juice "drinks"
sports drinks		X		X	X (if below 8%)	X	supplies only small amounts of electrolytes
milk		X	X	X	X		nutrient-rich; does not cause "cotton mouth"
soft drinks		X (if caffeine free)		X (if caffeine free)		X	better for after the game



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