

# Sports Drinks Are Neither Safe Nor Effective

Sanitation is touted as the most significant medical advance in human history. But the second greatest advance, the discovery that sugar and salt are absorbed together in the small intestine, is the most impactful and important one. It opened the way to oral rehydration treatment for severe diarrhea, the main cause of infant death in the developing world. This diarrhea is a result primarily of poor sanitation in the first place. Simple packets of sugar and salt in the right ratio could be added to water and save the lives of children who were losing electrolytes through severe diarrhea from diseases like cholera. In a hospital or doctor's office, we'd just hook up to an IV and give intravenous rehydration therapy, but that isn't a possibility for many around the world. Cheap, easy, oral rehydration has saved millions of children's lives every year.

If only manufacturers could figure out a way to sell salty sugar water for two bucks a bottle... Enter the sports drink. The original "sports" drink, Gatorade, originated at the University of Florida, whose mascot is the Gator. In 1965, after someone observed that football players got less dehydrated when they drank pickle juice, research was done at the university and the basic formula for Gatorade was developed.

Sports drinks today are a multibillion-dollar industry fueled by Coke, owners of Powerade and Vitamin Water, and PepsiCo, makers of Gatorade and Propel, but even drug companies are getting in on the action now. Researchers went online to see what kind of hydration advice people were getting. The following true or false questions were posed:

1. Fluid consumption during exercise should be based upon thirst.
2. Electrolyte intake is not generally necessary during exercise.
3. Dehydration is not generally a cause of exercise-associated muscle cramping.
4. Exercise-associated muscle cramping is not generally related to electrolyte loss.

The answer is each is TRUE. If you said "false" to any of them, you're wrong, but in good company. 93% of the top websites got the first question wrong, 90% got the second question wrong, 98% got the third one wrong, and 100% got the last one wrong. Many of these websites were legitimate and reputable medical websites whose incorrect advice was the same as the advice given on commercial sites, peddling these products.

Dehydration is a serious and very common problem, affecting many metabolic processes as well as cognitive function. However, contrary to popular belief, dehydration does not hurt athletic performance. Surprisingly, when researchers looked at triathletes, they didn't find any correlation between dehydration and marathon, the last event, finishing times. In fact, some athletes who lost the most water actually had among the fastest times.

Although our perception of thirst diminishes with age, our bodies are very intelligent and will tell you when you need to drink. There is now ample evidence that drinking in response to thirst, even during prolonged exercise under hot ambient conditions, will allow maintenance of proper hydration. And, we do not have to drink electrolytes. Exercise-associated hyponatremia (EAH), a condition where your sodium level is too low, can be caused by drinking too much of *anything*, whether it's water or sports drinks. In one high profile case, a high school athlete who died from EAH had drunk two gallons of Gatorade. These "don't wait until you feel thirsty" recommendations are doing more harm than good.

We've known this since the early 1990's, but it was ignored. Instead, the American College of Sports Medicine (ACSM) started telling athletes they should drink "as much as tolerable" during exercise. What followed was an epidemic of cases of EAH and its associated encephalopathy (brain swelling

and malfunction). What's more, commercial interests played a role in delaying the acknowledgement of these findings for decades.

The current ACSM statement no longer recommends drinking as much as tolerable. In fact, it emphasizes how dangerous drinking too much can be, but it still plugs sports beverages as sometimes preferable to water. Not surprisingly, funding support was granted by such companies and organizations as the Gatorade Sports Science Institute, the Gatorade Sports Science Institute's Science Advisory Board and Speakers Bureau, the Gatorade Science Institute's Science Advisory Board, the Gatorade Sports Science Institute's Sports Medicine Review Board and The Coca-Cola Company, which actually makes Powerade and Propel. PepsiCo owns and makes Gatorade and Vitamin Water.