

## Should you drink sports drinks? When? Why?<sup>i</sup>

Background information for this activity:

- All of the fluids in your body and all of the fluids produced by your body are mostly water. These fluids have salts (primarily NaCl) dissolved in the water.
- The concentrations of Na<sup>+</sup> in several relevant fluids are:

	Amount of Na <sup>+</sup> per liter
Fluids in your body (e.g. blood plasma)	~3200 mg
Sweat	~1100 mg
Sports drink	~450 mg

Notice that sweat is less salty than the fluids in your body, so when you sweat you lose proportionately more water than salt. Consequently, sweating results in an increased concentration of salt in your body fluids.

1. The major ingredients in sports drinks are water, NaCl, and sugars (e.g. sucrose). How could each of these ingredients be useful for a person who is engaged in vigorous physical activity?

2. Suppose an athlete is working hard and sweating a lot, but isn't drinking anything. What might go wrong in his or her body?

3. Suppose an athlete drinks lots and lots of water in a short time. What might go wrong inside his or her cells?

4. What might go wrong if a person drinks too much sports drink?

5. With all the possible ways to go wrong, how do our bodies ever get back to the right amount of water and salt for our body fluids?

6. Suppose an athlete is very active for a long period, but isn't eating any food or drinking any beverage with sugar in it. What might go wrong?

7. The balance between the benefits and harms of drinking sports drinks varies in different circumstances. Complete the following table to describe the likely balance of benefits and harms of drinking sports drinks in each circumstance.

Circumstance	Probable benefits and harms of drinking sports drinks in these circumstances
Person is running a in hot weather and consuming modest amounts of sports drink when he or she is thirsty	
Person is running a marathon in chilly weather and consuming lots and lots of sports drink	
Person is watching TV while consuming sports drinks	

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<sup>i</sup> By Ingrid Waldron, Department of Biology, University of Pennsylvania, 2013; adapted from "Why Do Athletes Drink Sports Drinks?" by Carlsen and Marek, *The Science Teacher*, December, 2010. This Student Handout, Teacher Notes and multiple additional activities are available at <http://serendipstudio.org/exchange/bioactivities>.