



Healthy Living:

Understanding the Effects of Dehydration

Supplies:

- 1 potato (small to medium size)
- 2 dishes or saucers (deep enough to hold about a half-inch of water)
- Cutting board
- Knife
- Salt (about 2 tablespoons)
- Water
- Piece of paper
- Pen, pencil, or marker
- Adult supervision, for younger youth or those not knowledgeable about knife safety

Time:

Approximately 1 to 1 ½ hours

What to Do:

1. Take your paper and label it with the word “salted” and place it on a table or other flat surface.
2. Place one dish on the paper and the other dish next to it.
3. Fill each dish with an equal amount of water (the water level should be high enough to fill the dish, but not so high as it overflows).
4. Stir 2 tablespoons of salt into the dish marked “salted”.
5. Using your knife and cutting board, carefully cut the potato in half to make two equal size pieces.
6. Place one-half of the potato, flat side down, into the dish with plain water. Place the other half of the potato, cut side down, in the dish marked “salted”.
7. Let the potatoes sit in the dishes undisturbed for about an hour. Once the hour is up, observe the results.

Reflect:

1. What happened to the potato in the plain water?
2. What happened to the potato in the salted water?
3. Why is it important to drink enough water, especially when it’s hot and humid outside?
4. What are 5 signs and symptoms of dehydration?
5. When is it appropriate to consume a sports drink instead of water?
6. Create your own hydration plan to stay safe and healthy this summer!

Apply:

With temperatures climbing higher around the country and kids enjoying the outdoor joys of summer, ensuring adequate hydration is a high priority. This is especially critical for youth engaging in strenuous outdoor physical activity on hot and humid days when the risk of heat-related illness is most severe.

Here are five tips to help you stay well-hydrated when it is hot outside.

1. **Pre-hydrate.** How hydrated your child is before heading outdoors is just as important as how well-hydrated he is during exercise. In fact, kids who start activity mildly dehydrated are at increased risk of heat-related illness. Help to avoid problems by encouraging your child to drink 6 to 8 ounces of water before heading out the door.
2. **Bring water.** Any time you are headed out to work or play, you should bring water with you. Typically, about 3 to 8 ounces of water for every 20 minutes of physical activity for nine- to 12-year olds should be appropriate. Younger kids may need a little bit less. Older kids need about 11 to 16 ounces every 20 minutes. Although water is usually sufficient to maintain adequate hydration, alternating water intake with a sodium-containing sports drink may be warranted for exercise lasting longer than one hour, multiple workouts in one day, sport participation, or other intense physical activity. (Other than the above listed situations, sports drinks are generally unnecessary and provide nothing more than excess calories.)
3. **How can you tell if you're dehydrated?** Being thirsty is the first sign. Dehydration can also cause dizziness, lightheadedness, fatigue, rapid heartbeat and dry lips and mouth.
4. **Recognize signs** of heat-related illness. If you develop any of the following signs of heat illness during activity, you should take a break from the activity or event and seek attention from an adult: bright-red flushing of the cheeks and face, dizziness, headache, vomiting, feeling very cold or very hot, change in mentation, heat cramps, an acute worsening of performance, or any other alarming changes in mental or physical status.
5. **Rehydrate.** Drinking adequate fluids after exercise/activity helps to replace fluids lost from sweat and correct any remaining fluid deficits. How much fluid you need depends on many factors, including your age, duration and intensity of exercise/activity, amount of sweat lost, and heat and humidity levels. You could use several strategies to assess the amount needed and adequacy of rehydration. To be scientific, weigh yourself before and after exercise and use the difference in weight to determine how much fluid is needed. (For example, a 1 pound weight loss = 16-ounce fluid deficit; a one-half pound weight loss = 8-ounce fluid deficit.) You could also use feelings of thirst to guide intake. A rough indicator of good hydration status is when urine color is faint-yellow to clear.

Background:

Your body is about 60-70% water, and it needs a certain amount of water to function properly. But when it's hot and you're working or playing hard, you perspire (or sweat), which helps to regulate your body temperature by cooling you down. If you don't hydrate, or replace the water that you lose through perspiration, you'll become dehydrated. Dehydration can make you feel sick or, in worst cases, cost you a trip to the hospital.

Important note: Heat-related illness is dangerous and can potentially lead to severe complications including organ damage or even death. The good news is that heat-related illness is highly preventable with appropriate attention to hydration and immediate action in response to signs or symptoms of heat stress. Educating yourself and others on the importance of hydration before, during, and after exercise—especially in hot and humid conditions—helps to ensure safe and enjoyable summer fun.

Source:

<https://www.acefitness.org/education-and-resources/lifestyle/blog/3378/how-can-i-teach-my-child-about-healthy-hydration-especially-in-the-warm-summer-months/>

<https://www.extendednotes.com/after-school-activities/stem-experiment-understanding-the-effects-of-dehydration>



Healthy Living:

Homemade Sports Drink

Yield:

- 1 quart or 4 cups
- Prep time: 2 minutes
- Cost per batch: ~\$0.20
- Cost per cup: ~\$0.05

Ingredients:

1/4 cup granulated sugar

¼ teaspoon salt

¼ cup hot water

¼ cup 100% orange juice (not concentrate) plus 2 teaspoons lemon juice

3 ½ cups cold water

Directions:

1. In the bottom of a pitcher, dissolve the sugar and salt in the hot water.
2. Add the juices and cold water; chill.
 - a. If it's extremely hot out, freeze some of the sports drink in ice cube trays, yogurt containers, or other available container. Before serving, or taking it on the go, add the "sports drink ice cube" to the pitcher.
3. Quench your thirst!

*Remember, although water is usually sufficient to maintain adequate hydration, alternating water intake with a sodium-containing sports drink may be warranted for exercise lasting longer than one hour, multiple workouts in one day, sport participation, or other intense physical activity. (Other than the above listed situations, sports drinks are generally unnecessary and provide nothing more than excess calories.)

Nutrition information:

200 total calories; 50 calories per 8 ounce serving; 12 g carbohydrate; 110 mg sodium