

# LESSON 5 : SCORE WITH YOUR POUR



## OVERVIEW

In this lesson, students focus on the importance of hydration and explore how sufficient hydration can improve sleep quality, cognition, and mood. They will then evaluate their daily routines to optimize their hydration practices.

## TIME

Two to four 45-minute classes

## OBJECTIVES

*In this lesson, students will:*

- Explore the relationship between heat and hydration.
- Describe the effects of dehydration during physical activity.
- Consider the ways in which dehydration affects the body's systems.
- Self-evaluate their own hydration practices.
- Develop a hydration plan.
- Consider the best fluids to consume for optimal hydration.

## STANDARDS

### NGSS

MS-LS1-3: In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.

### NHES

#### National Health Education Standards

- 3.8.1 Analyze the validity of health information, products, and services.
- 6.8.1 Assess personal health practices.
- 6.8.2 Develop a goal to adopt, maintain, or improve a personal health practice.
- 6.8.3 Apply strategies and skills needed to attain a personal health goal.

### CASEL

#### SELF-MANAGEMENT:

- Setting personal and collective goals
- Using planning and organizational skills

## MATERIALS

In addition to common classroom materials and an internet connection, you/the educator will need:

- Stalks of celery
- Several glasses of water
- Microscope and any materials needed to prepare slides (optional)
- Activity Sheet 1: Physical Activity Planning Sheet
- Activity Sheet 2: Body System Diagram
- Activity Sheet 3: Score With Your Pour Checklist
- Activity Sheet 4: Fueled, Not Fooled
- Hydration Resources

## PREPARATION

1. Print or provide access to student materials.
2. Arrange students into groups of 3-4.
3. Prior to starting the activity, allow several stalks of celery to wilt for a few days.

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## INTRODUCTION

Ask students if they have ever felt the effects of dehydration. How do they know when they are dehydrated? Do they associate it with any particular activities or situations? Have there been other times they have felt dehydrated? Ask them to share how they think dehydration impacts their bodies. Explain that being properly hydrated not only impacts physical performance but can also impact their sleep quality, cognition, and mood. Ask them if there are foods and drinks that they think are better for rehydration and encourage them to share some examples. Explain that they'll learn more about how to evaluate their hydration practices and create their own hydration plan.

### PART 1: INTO THE DANGER ZONE

#### Step 1

Tell students: *“During any physical activity, the core body temperature rises. In response, the body sweats to dissipate excess heat so it doesn't overheat. Staying hydrated replaces the fluids lost through sweating and is essential for thermoregulation, helping to prevent cramps, heat exhaustion and heat stroke.”*

#### Step 2

Show students the video [The Most Incredible Final Lap in Olympic Marathon History](#). In this video, Olympian Gabriela Andersen-Schiess became dehydrated when competing in the 1984 Summer Olympics marathon event.

#### Step 3

Ask students to compare Gabriela Andersen-Schiess' performance with gold medal winner Joan Benoit's run. Explain that because Benoit was well hydrated, she was able to out-perform Andersen-Schiess who missed the final hydration station. Ask students to identify evidence of dehydration in each athlete.

#### Step 4

Show students the first 2:30 of this video: [Why Do We Get Dehydrated?](#)

#### Step 5

Then, have students read through this [Hydration Fact Sheet](#) created by the United States Olympic Committee.

#### Step 6

Then, arrange students into groups of 3-4 and ask them to assume the role of trainers in the Olympics. Have them select a physical activity such as a school sport, a game in PE class, or an afterschool leisure activity. Then select one friend or classmate for whom they would like to create a

physical activity plan. Remind them to reference the [Hydration Fact Sheet](#) when developing a plan for their chosen classmate or friend.

#### Step 7

Have groups complete the **Physical Activity Planning Sheet** (Activity Sheet 1) to develop their plans.

### PART 2: ALL SYSTEMS GO

#### Step 1

Show students the celery you previously allowed to wilt. Explain that plants can demonstrate some of the effects of dehydration. If possible, slice off a sample of the celery and prepare a microscope slide. Have students make observations about the shape of the celery cells on the slide and draw what the magnified sample looks like. Then, stand the celery stalks in glasses of water. Allow 30 minutes for the stalks to rehydrate. Have students prepare another microscope slide with a sample of the rehydrated celery stalk and draw an image of the new sample. Finally, have them compare and contrast the two samples.

#### Step 2

Explain that cells in the human body also can become dehydrated and that dehydration can affect the body in many ways. These include reduced cognitive function, reduced energy, and headaches. Show students the video [Root4Her Score With Your Pour](#).

#### Step 3

Tell students they will take a closer look at the effects of dehydration on several of the body's systems. Arrange students again into groups of 3-4 students. Assign each group one of these systems of the human body: respiratory, circulatory, nervous, muscular, and digestive. Tell students to use a search engine to find additional information, preferably from primary

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sources, about how dehydration can impact their assigned system. Students should take notes as they conduct their research.

## Step 4

Have students complete the **Body System Diagram Activity Sheet** (Activity Sheet 2). In this activity sheet, they will draw each part (organ) of the system, label it, and describe the ways in which each organ (or the system as a whole) can be affected by dehydration.

## PART 3: OPTIMIZING YOUR HYDRATION ROUTINE

### Step 1

Explain to students that now that they have an understanding of how dehydration can affect their bodies, they will assess their own hydration routines.

### Step 2

Provide access to or give a copy of the **Score With Your Pour Checklist** (Activity Sheet 3). Ask students to complete the checklist and tally their results in the table.

### Step 3

Reconvene as a class and review each question asking students to identify areas that they could improve. Then, ask students to share ideas of how they can optimize their hydration in that area. For example, if a student says that they do not consume fluids during activity, ask other students to share their ideas for how to drink plenty of fluids during, for example, a long run. Continue this whole class discussion with probing questions while soliciting student suggestions for optimizing hydration.

### Step 4

Ask students to share which beverages they think would be best for hydration. Write their answers on the board. Explain that researchers believe that beverages that are more effective at rehydrating have electrolytes (sodium, potassium, calcium and magnesium) to replenish what is lost in sweat, along with protein and carbohydrates that cause the beverage to take longer to pass through the stomach. That combination helps the body hold on to the fluids better which makes it more effective at rehydrating. Ask students to identify some of the benefits of rehydrating with milk.

## Step 5

Have students explore these websites to learn more about the optimal fluids to drink when rehydrating: [Hydrates Better Than Water](#) | [GonnaNeedMilk](#)

## Step 6

Lastly, explain to students that certain foods can also help to rehydrate you. Foods with higher fluid contents such as vegetables and yogurt can add to your hydration throughout the day.

## REFLECTION

### Fueled, Not Fooled

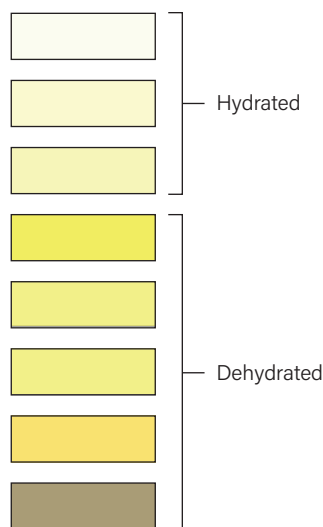
Have students create a hydration plan. In small groups, have students discuss and then independently reflect on the questions on the **Fueled, Not Fooled** (Activity Sheet 4).

## ASSESSMENT

Review the Fueled, Not Fooled Activity Sheets to determine understanding of the content of this lesson.

## EXTENSION

- Urine check! Did you know that the color of your urine can help you to determine if you're sufficiently hydrated? The next time you take a bathroom break, compare the color of your urine to this chart. The lighter the color, the more hydrated you are!





## ACTIVITY SHEET 1

### Physical Activity Planning Sheet

Name: \_\_\_\_\_ Activity: \_\_\_\_\_

Duration of each physical activity session:

- Less than one hour
- One to two hours
- Two to four hours
- More than four hours

Intensity of each physical activity session:

- Most Intense
- Very Intense
- Moderately Intense
- Less Intense
- Not Intense

Frequency of training sessions:

Once every \_\_\_\_\_ days.

What is the humidity where the physical activity is happening?

- Near 100%
- 80-95%
- 60-80%
- 40-60%
- Below 40%

What is the temperature where the physical activity is happening?

- Above 90 degrees
- 80-90 degrees
- 70-80 degrees
- 60-70 degrees
- Below 60 degrees

What is the altitude where the physical activity is happening?

- Very high altitude (mountains)
- Moderate altitude (inland)
- Low altitude (sea level)

Amount of fluid the person should drink:

Before the activity: \_\_\_\_\_ ounces of fluid

During the activity: \_\_\_\_\_ ounces of fluid

After the activity: \_\_\_\_\_ ounces of fluid



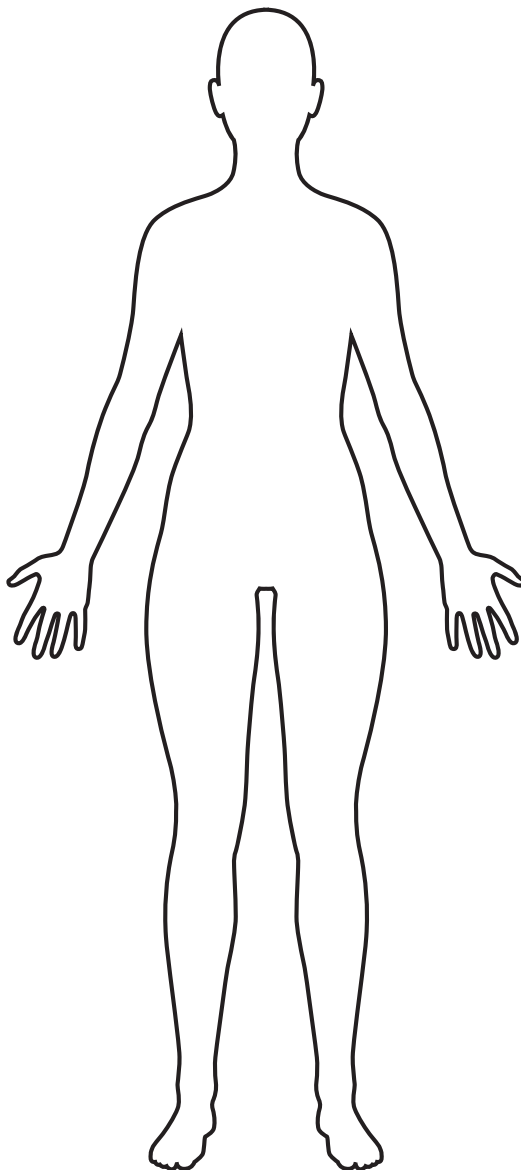
## ACTIVITY SHEET 2

### Body System Diagram

Illustrate and label each organ or part of your system. Then, under each label, describe how dehydration might affect that part of the system or the system as a whole.

My System:

- Respiratory
- Circulatory
- Nervous
- Muscular
- Digestive





## ACTIVITY SHEET 3

### Score With Your Pour Checklist

Optimizing your hydration routine can help you make the most of every practice, workout and competition. Use this scorecard to help determine how and when you should be hydrating.

Will you lead your team with the highest score?

ACTION ITEM	GOAL	RESPONSE YES = 2 SOMETIMES = 1 NO = 0
Do you consume fluid with every meal and snack?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
Do you have fruit and/or vegetables with most meals/snacks?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
During the day, do you drink more water, milk, 100% juice and zero-calorie sports drinks over fruit punch, soda and sweetened coffee/tea?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
Do you carry a water bottle with you during the day and drink from it regularly?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
Do you consume fluid <b>BEFORE</b> activity?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
Is your urine a light color <b>BEFORE</b> physical activity?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
Do you consume fluid <b>DURING</b> activity?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
Do you swallow fluids consumed?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
Do you avoid spitting your fluid out during activity?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO
Do you share your water bottle?	Always	<input type="checkbox"/> YES <input type="checkbox"/> SOMETIMES <input type="checkbox"/> NO

SCORING YES = 2 SOMETIMES = 1 NO = 0		FINAL SCORE
<b>SCORE 22-26</b>	You have an exemplary hydration routine—keep up the good work.	
<b>SCORE 17-21</b>	You could get more out of your routine—work on actionable improvements.	
<b>SCORE 0-16</b>	You need to focus more on hydration—follow the action items to see progress.	



## ACTIVITY SHEET 4

### Fueled, Not Fooled

Discuss each of these questions with your group, and then take a few minutes to reflect on and record your own answer.

#### Journaling Prompts:

1. How does hydration affect your cognition? Growth? Energy? Performance? Body goals?

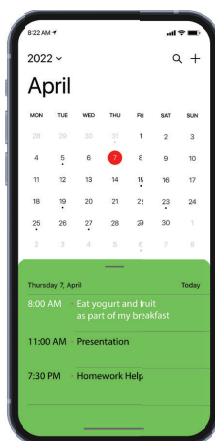
2. What gives you energy? What do you choose when you feel tired? Why do you choose them?

3. When you are stressed, sometimes your stomach feels upset. What makes you feel better? Does hydrating with fluids make you feel better?

4. What supports a healthy immune system?

Finally, create a daily planner to indicate at least five things you can do each day to increase your hydration. Be sure to include each meal and whenever you participate in physical activities. As you're developing your plan, be sure to:

- Focus on the positive
- Be consistent
- Nurture don't torture your body
- Treat your body right





## HYDRATION RESOURCES

### BUILD A PERFORMANCE-ENHANCING PLATE

Properly fueling can provide an edge over other athletes who don't focus on their nutrition.

► Calorie and nutrient needs vary depending upon intensity and phase of training.

► This plate represents a hard training day. On light training days, substitute 1/4 plate of whole grains with 1/4 plate of fruits and vegetables.

Carbohydrates fuel muscles and are the quickest source of **energy** for athletes.

#### HEALTHY FATS

Moderate amounts of healthy fats provide a concentrated **energy** source and **essential fatty acids**.

[nuts, seeds, oil and fatty fish]

#### FLUIDS

Stay **hydrated** by drinking fluids at mealtime and throughout the day.

[milk, water, 100% fruit juice]

Protein foods are essential for **building/repairing muscle** and helping to support immune function.

Many fruits and vegetables provide **nutrients** that have been linked to **reduced oxidative damage** from hard training.

*For advice on customizing a nutrition plan, consult a sports dietitian.*

## POWER PERFORMANCE WITH PROTEIN

Athletes require more protein than the average person. High-quality protein not only provides energy, it is an essential part of a training diet supporting:

- Strong muscles, bones, ligaments, and tendons
- Muscle recovery
- Moving oxygen to muscles
- Metabolism of other nutrients
- Healthy immune function

**Suggested Range: 0.5-0.8 grams of protein/pound body weight/day.**

**= 41g protein**  
**3.3g leucine**

**= 25g protein**  
**1.8g leucine**

**= 24g protein**  
**2.5g leucine**

**= 19g protein**  
**1.5g leucine**

**= 15g protein**  
**1.5g leucine**

**= 8g protein**  
**0.8g leucine**

*For advice on customizing a nutrition plan, consult a sports dietitian.*