

# TEACHER GUIDE

## EVALUATE LESSON 14



**Module Questions:** *Why do we get sweaty and thirsty after exercise? Why does the color of our urine change? How does milk help us recover from these effects?*

### What We Figure Out:

We know how the body works to maintain homeostasis and to regulate temperature and water loss in the bloodstream and cells so that bodily functions can still be performed when external factors change. We now understand how these internal responses impact the body during and after exercise. We have figured out that milk nutrients play a key role in assisting with exercise recovery to stabilize body systems. We develop a presentation to communicate scientific information that we have learned in the module to answer the Driving Question, *How can milk help athletes recover from physical exercise?*

### 3D Learning Objective:

Students **use multiple formats to communicate** how the internal conditions of the human body **change** in response to changes in external conditions (exercise, drinking milk).

### Time estimate:

100 minutes

### Materials:

Lesson 14 Student Guide  
Lesson 14 Teacher Resource Rubric  
Lesson 14 Student Handout Self-Evaluation  
Lesson 14 Student Handout Peer Feedback Form

### Targeted Elements

#### SEP:

#### INFO-H5:

**Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the**

#### DCI:

#### LS1.A-H1:

**Systems of specialized cells within organisms help them perform the essential functions of life.**

#### CCC:

#### SC-H3:

**Feedback (negative or positive) can stabilize or destabilize a system.**



design and performance of a proposed process or system) in multiple formats (including orally, graphically, textually, and mathematically).

**LS1.A-H4:**

Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and function even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (through negative feedback) what is going on inside the living system.

## Directions



### Part 1: Our Motivation

#### USE OF PHENOMENA

In this lesson, students will use what they have figured out about the Module Phenomenon to return to the Anchor Phenomenon and develop a presentation of this new scientific information to the selected audience.

Prompt students to consider where the class stands in explaining the Module Questions, *Why do we get sweaty and thirsty after exercise? Why does the color of our urine change? How does milk help us recover from these effects?* In student responses, listen for the following:

- We know how the body works to maintain homeostasis and to regulate temperature and water loss in the bloodstream and cells so that bodily functions can still be performed when external factors change.
- We now understand how these internal responses impact the body during and after exercise.
- We have figured out that milk nutrients play a key role in assisting with exercise recovery to stabilize body systems.

Direct students' attention to their Anchor Phenomenon presentations from Lessons 1 and 7. Ask students to consider how what they have figured out since they last updated the presentations will help them modify or add to their presentations. Students can respond to this question on their Lesson 14 Student Guide Part 1: Our Motivation.

- Listen for student responses that indicate students now have some new information about what happens to the body during exercise and how milk nutrients can help the body during exercise recovery.

Build off student responses to share that what we have figured out about feedback mechanisms and homeostasis will help us reassess the presentation and add new scientific information to the original explanations. You can also point to any remaining student questions on the Driving Question Board in the category "Exercise, Milk, and Hydration." Direct students' attention to their presentations and share that they will present the new evidence they have gathered in the module to their selected audience.



## Part 2: Communicating Scientific Ideas

Share that students will now have an opportunity to revise their presentations to share the new scientific information they gathered about how milk can help athletes recover from exercise. This presentation should include students' ideas about the new scientific mechanisms they have obtained evidence about in the module and how and why they think milk helps the body recover from exercise. Explain that they can build upon their presentations from Lessons 1 and/or 7, revise and/or add to them, or start a new presentation entirely.

Review the list of presentation format requirements and the presentation development steps with students. Remind students that the presentation should be designed for the same chosen audience and with the same format they selected in Lesson 1. Reinforce that across the unit, they will have additional opportunities to revise and improve their presentations based on new learning and feedback. Share that students can use any of the resources from the module to support them in the performance assessment task in this lesson.

To support students in developing their presentations, explain that in each module, they will develop one component of their final presentation for the unit. Clarify for students that each component is like a mini-presentation to share their understanding of the scientific ideas they learned in the module. Convey that at the end of the unit, they will combine their mini-presentations about each module's question into one final presentation that answers our Driving Question for the unit.

**STUDENT SUPPORT**

To share the value of revising presentations, share with students that scientists often gather new information through research and experiments that can add to or alter their original thinking. It is important for students to use a process of evaluating scientific information after they have obtained it and present it to others to share new ideas and receive feedback. You may ask:

- How will this new information change what you previously presented?
- How might you present this new scientific evidence?
- What new ideas or understanding might it bring up for the intended audience?

Encourage conversations between students before they begin revising their presentations.

Next, direct students' attention again to the tips to help create an effective presentation. Review each tip together as a class. For each tip, have the class share ideas about how they have used this tip so far or how they think they want to try using it if they have not yet already. Individual student groups can then draw from this brainstormed list when working on their presentations.

Direct students to the Look Fors on their Lesson 14 Student Guide Part 2: Communicating Scientific Ideas to serve as a checklist or outline to help draft their presentation. Read the Look Fors together, and share that students can use these Look Fors as a guide on how to achieve proficiency on the task. You can use the Lesson 14 Teacher Resource Rubric to assess students' performance on this task.

**TEACHER SUPPORT**

In this lesson, students are only evaluated on the new module content. This is reflected in the sample student responses in the Lesson 14 Rubric. Students may, however, choose to incorporate information from other modules into their presentation.

As students revise their presentations across the unit, remind them to collect each of their presentation drafts in a portfolio. This will allow students to see how their presentation has progressed over the course of the unit.

Ask students to use the space on their Lesson 14 Student Guide Part 2: Communicating Scientific Ideas to prepare their presentation script or written report so it is ready to deliver and record. Do a quick review of each group's script or outline prior to allowing time for students to develop their full presentation. As students work, circulate the room and ask pressing questions such as:

- How do you think this presentation will make sense to your chosen audience? What will be clear for them? What will be difficult?
- How are you showing feedback mechanisms that help the body return to its stable state?

- How can you clearly communicate the idea of homeostasis in your presentation?
- What do you now know about milk's role in exercise recovery?

### CCSS SUPPORT

**WHST 9-10.5** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Utilize the questions above to provide additional support. If needed, meet individually with students to offer specific feedback in regard to the writing process.

After you review and approve each group's script or outline, let students know they can continue to develop their full presentation. If doing a written presentation, direct students to create the formal writing product. If doing a video presentation, direct them to rehearse and record the video product.



## Part 3: Sharing Presentation Drafts and Receiving Feedback on Our Presentations

You can now use a peer feedback protocol to have students provide feedback on each other's presentations. Refer to the last page of the Lesson 14 Teacher Resource Rubric for guidance on how to discuss and norm on what features of high-quality student presentations look like and how to support students in using their Lesson 14 Student Handout Peer Feedback Form. Use either or both to have students reflect on and improve their work should you decide that additional steps are needed for your class to achieve proficiency. Alternatively or additionally, you can collect student presentations and provide feedback to each group using the provided Rubric and Look Fors.

### STUDENT SUPPORT

If needed, return to the class list of norms developed in Lesson 1 for how students engage in productive and respectful classroom discussions. Remind students of the class list with the norms the class generated and hold students accountable for participating in these norms throughout the feedback activity.

### TEACHER SUPPORT

In the peer feedback protocols, you might consider having students pair in the same partner groups across Lessons 7, 14, 24, and 31 for consistency. This may make the feedback students receive more meaningful as their peer groups will become more familiar with each other's presentations over time. Alternatively, you could have students rotate partner groups to make the process more challenging.

To conclude this portion of the performance task, remind students they will have time in the final performance task of the unit to revise their presentations based on the peer and teacher feedback they receive.



#### **Part 4: Navigation to the Next Module**

Ask students what they think they need to figure out next to help make additional progress on the unit Driving Question. Listen for responses such as:

- We don't know what happens to the amino acids, fatty acids, and sugars once they go into the bloodstream.
- We don't yet know how amino acids, fatty acids, and sugars help recovery from exercise.
- We don't yet know how you recover energy or recover your muscles after exercise.

Build off student responses that focus on energy for exercise. Direct the class back to the Driving Question Board and point out the "Exercise, Milk, and Energy" category of questions.

Point out several student questions that connect to what students identified they need to figure out more about. Example student questions to highlight:

- How or why does milk give our body energy after physical activity?
- Is energy involved in exercise? How? Why?
- Does drinking more milk give you more energy to exercise?
- Do you get energy from milk?
- What happens to the body after physical exercise?
- What body systems are being used in exercise?
- What makes a person strong enough to do these types of physical activities/exercises?

Share that in the next module, students will focus on how the body gets energy during exercise and how milk can help the body recover energy.

**STUDENT SUPPORT**

Give students the opportunity for self-assessment by having them complete Lesson 14 Student Handout Self-Assessment, which includes the SEP Engagement Self-Reflection and Presentation Self-Reflection. This is an **optional activity** to help students reflect on their learning in this module and their engagement with the communicating information SEP. This self-assessment can give insight into how students feel engaging with this SEP. It also offers insights into how the students improve on this practice throughout each module. After completing this form, students may share their responses with an elbow partner or submit them directly to the teacher.