



Cells and Body Systems

Objectives

You will be able to

- Diagram the human body as a system of multiple interacting subsystems.
- Explain why exercise affects body systems.
- Share your expertise about a body system with others.
- Summarize information from short readings.



How do body systems interact with each other to communicate and collaborate?

Evaluation and Feedback

To evaluate your work, you will

- Use the “Carrying Out Investigations” row, “Developing and Using Models” row, and “Engaging in Arguments from Evidence” row of the Science and Engineering Practices Rubric.
- Use other criteria determined by your teacher.

Task 3: The Body and Its Interacting Systems

As a group:

- Explore how exercise affects your breathing rate and heart rate.
- Scientifically explain the effects of exercise on the body.
- Become an expert on one body system and report out to your group.
- Make a poster to illustrate how all the body systems work together during physical activity.

Vocabulary

- artery
- body system
- circulatory system
- digestive system
- large intestine
- nervous system
- respiratory system
- small intestine
- vein

Connect to the Culminating Project

Plan and organize your Activity Brochure in your Individual Project Organizer:

- Diagram how all the body systems collaborate and communicate when a person is doing your activity.

LAB STATION 1

Heart Rate and Breathing Rate

Part I • Effects of Exercise on the Body

- Based on your own experience, make a prediction about the research question:
 - How** does exercise affect a person's heart rate and breathing rate?
 - Why** do you think exercise affects a person's heart rate and breathing rate?
- Resting data: Take your resting heart rate and breathing rate. Calculate the average rates for your group.

Resting Heart Rate for Each Group Member (<i>beats per minute</i>)	Resting Breathing Rate for Each Group Member (<i>breaths per minute</i>)
Average Group Resting Heart Rate	Average Group Resting Breathing Rate

- Exercise.
- "After-exercise" data: Take your heart rate and breathing rate immediately after exercising.

After-Exercise Heart Rate for Each Group Member (<i>beats per minute</i>)	After-Exercise Breathing Rate for Each Group Member (<i>breaths per minute</i>)
Average Group After-Exercise Heart Rate	Average Group After-Exercise Breathing Rate

- In your group, discuss these questions to analyze your data. Record your ideas in your science notebook.

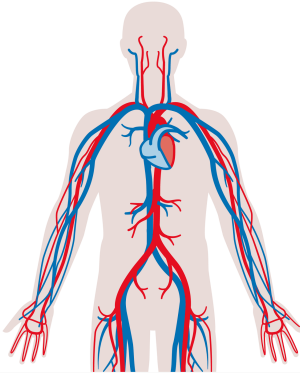
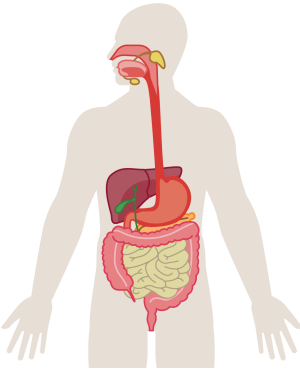


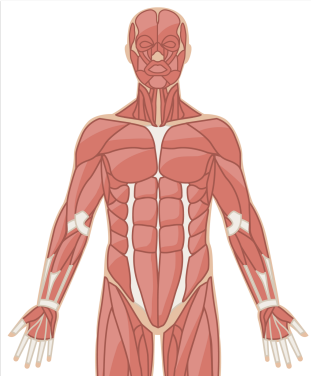
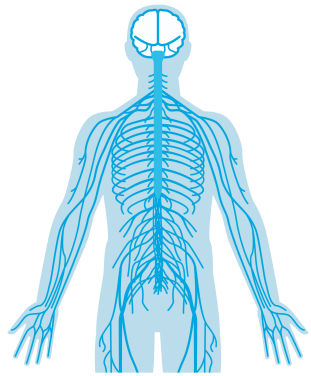
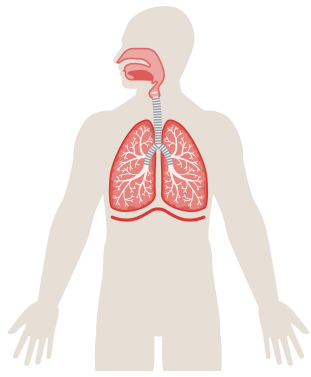
- How does exercise affect your heart rate and breathing rate?
- Why do you think exercise affects your heart rate and breathing rate?

Part II • Body Systems Parts and Functions

- As a class, read one of the Body Systems Resource Cards (chosen by your teacher). Your teacher will model how to use the card to gather and share the information. Fill in the provided information in the correct row of the Body Systems Data Table that follows.

Body Systems Data Table

Name of System	What is the <i>function</i> of the system?	Name the <i>major parts</i> of the body system and their <i>functions</i> .	Draw a picture that shows how the body system <i>interacts</i> with one other body system.
Circulatory System 			
Digestive System 			

Name of System	What is the <i>function</i> of the system?	Name the <i>major parts</i> of the body system and their <i>functions</i> .	Draw a picture that shows how the body system <i>interacts</i> with one other body system.
Muscular System 			
Nervous System 			
Respiratory System 			

2. As an individual, become an expert on one of the body systems.
 - ☐ Go to a station and gather information about the body systems using the Body Systems Resource Card placed at the station.
 - ☐ Bring back the information from the station.
 - ☐ Explain the information that you learned about the body systems to your group.
 - ☐ Fill out the appropriate row in the Body Systems Data Table.
3. Using evidence, create a scientific explanation about why exercise affects heart rate and breathing rate.
 - ☐ Include claim, evidence, and reasoning statements.
 - ☐ Use information from the resource cards and/or the exercise activity.
4. Choose one body system and describe why that body system can be called a “system.”



Part III • Collaboration of Body Systems Poster

1. Choose an activity. Create a poster that illustrates and describes how the body systems you have studied communicate and collaborate during the activity.
2. Use the checklist below to make sure you are producing quality work.
 - ☐ Create a visual of your activity.
 - ☐ Represent each body system that is used in the activity.
 - ☐ Next to each system, describe how that body system is used in the activity.
 - ☐ Show how the body systems collaborate to make the activity possible.
3. Also include the following on your poster.
 - ☐ Choose one body system and describe what might happen if that one body system was not working or was missing. Put a big star next to this description.
4. Share your poster with the class.

Part IV • Connect to the Culminating Project and Assessment

Complete the Individual Project Organizer for this task.

