



Classroom Teacher Preparation

Anatomy/Physiology 16: Hearth Health

Please use the following to prepare for the next SfS lesson.

Description:

This station-based lesson allows students gain an understanding of the cardiovascular system and an appreciation for the importance of physical activity for heart health. Students will get a chance to act as both 'patient' and 'physician' to measure their pulse, heart rate, and blood pressure in different ways, and learn what those different measurements represent.

Lesson Objectives – SWBAT (“Students Will Be Able To...”):

4th-8th

- Be able to identify the general components of the cardiovascular system
- Identify why the cardiovascular system is important
- Identify certain risk factors that impact the cardiovascular system negatively
- Give physiological explanations of vital measurements (e.g., what are BP/HR actually measuring?)

Disciplinary Core Idea (DCI)

LS1 From Molecules to Organisms: Structures and Processes – LS1.A Structure and Function

- (3rd-5th) Organisms have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction.
- (6th-8th) All living things are made up of cells. In organisms, cells work together to form tissues and organs that are specialized for particular body functions.

Science & Engineering Practice (SEP)

Asking Questions and Defining Problems

Preparation:

This lesson is a general introduction to the cardiovascular system and the heart. Although helpful, students do not need background knowledge of the subject matter to complete the lesson.

It is recommended that this lesson be paired with AP15: Heart Dissection.

Room Set Up for Activities:

The activity will be structured as stations with students working in groups of no more than six. There are a total of 5 stations.

Four of these stations can be performed inside the classroom while one of the station activities can be performed in a hallway or near a staircase, where students will be monitored by an adult and advised to perform the activity quietly. If it is not possible to find a space directly outside the classroom, this activity can be done in an area inside the classroom.



Safety:

Students will be using blood pressure cuffs during the lesson. Manual blood pressure cuffs will only be used and inflated by instructors during part of the lesson to avoid overinflating of the cuff. There are no harmful chemicals used during this lesson.

Related Modules:

This lesson may be taught as part of a sequence or group of related modules on either **Public Health** or **Function & Dissection Pairings**. Other modules in these sequences include:

Chemistry 7: Nutrient Identification - Students learn that organic compounds, such as sugars, starches, and proteins, can be identified with the use of chemical indicators. Using these chemical indicators, students test a variety of food samples for the presence of proteins, and simple and complex carbohydrates

Anatomy/Physiology 10: Frog Dissection - After reviewing lab safety and introducing the dissection procedure, students dissect a preserved frog in order to observe the external and internal structures of frog anatomy.

Life Science 18: A Vitamin C Experiment - Students learn about the relationship between nutrition and fresh/processed foods, then verify this information by measuring the concentration of vitamin C in different forms of orange juice.

For other module sequences and groups, look here: www.sciencefromscientists.org/sequences

Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state:

<http://www.sciencefromscientists.org/standards/>

Lessons are matched to both national NGSS and local state standards.

After Our Visit:

Extend this lesson by calculating students' resting, active, and recovery heart rates and comparing those rates with others.

Access this Extension activity by visiting the Classroom Post found on our website at sciencefromscientists.org/cohorts. Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at sciencefromscientists.org/open-response-questions. They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

Additional Resources:

- How to Measure Blood Pressure: <https://www.youtube.com/watch?v=Gmic13mvsgo>
- Taking Vital Signs: https://www.youtube.com/watch?v=H_UJoS4tMuc
- Heart and Cardiovascular Diseases: <http://www.webmd.com/heart-disease/guide/diseases-cardiovascular>
- What is Cardiovascular Disease?:
http://www.heart.org/HEARTORG/Caregiver/Resources/WhatisCardiovascularDisease/What-is-Cardiovascular-Disease_UCM_301852_Article.jsp#
- High Blood Pressure Fact Sheet: http://www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_bloodpressure.htm
- Blood Pressure Table: <http://www.nhlbi.nih.gov/health-pro/guidelines/current/hypertension-pediatric-jnc-4/blood-pressure-tables>