

5.2 How Do Human Organ Systems Work Together?

Story Extension for This Lesson:

Explorers like John Rae faced very difficult physical conditions, and often pushed their bodies to the limits. In this activity, students will participate in physical activity and evaluate the effects on respiration, heart rate, and body temperature.

Grade: 5

Strand: Human Organ Systems

Big Ideas:

- Organ systems are components of a larger system (the body) and, as such, work together and affect one another. (Overall expectations 2 and 3)
- Organ structures are linked to their functions. (Overall expectations 2 and 3)
- Systems in the human body work together to meet our basic needs. (Overall expectations 2 and 3)

Overall Expectations:

2. investigate the structure and function of the major organs of various human body systems
3. demonstrate an understanding of the structure and function of human body systems and interactions within and between systems

Inquiry Skills:

Inferring, Predicting, Evaluating

Specific Expectations:

- 2.1 follow established safety procedures for physical activities
- 2.2 use scientific inquiry/experimentation skills (see page 12) to investigate changes in body systems
- 2.4 use appropriate science and technology vocabulary, including circulation, respiration, digestion, organs, and nutrients, in oral and written communication
- 3.1 identify major systems in the human body (e.g., musculoskeletal system, digestive system, nervous system, circulatory system) and describe their roles and interrelationships
- 3.2 describe the basic structure and function of major organs in the respiratory, circulatory, and digestive systems
- 3.3 identify interrelationships between body systems

Other 21st Century Skills

Physical Education

Instructions:

Part 1:

Show the class the photo of the exhausted runners. Ask what body systems have been overworked, and use words to describe how the athletes are feeling. Give prompts such as "How are their legs feeling?" and "How do their lungs feel?"

Part 2:

Take the class outside or into the gym, and engage in a moderate to vigorous activity, such as running or a game of tag. After several minutes of the game, call the class together, and have them focus on their breathing, heart rate (can show them how to feel pulse on their carotid artery), and how they feel (e.g., hot, out of breath, leg muscles burning). Discuss why each of these things happen, and how it is an essential step in keeping our bodies in a healthy state.

- <http://www.medicalnewstoday.com/articles/258118.php>

Part 3:

Have students describe in their science journals some of the short-term changes that occur when we exercise, and why they occur.

Materials List:

- stopwatch (optional)

Connections:

Mathematics:

Students can keep an ongoing journal entry to monitor how much daily physical activity they get, as well as how much screen time they have. This can be an excellent data management activity (indicators of central tendency such as mean, median, and mode).

Health:

Compare the class data for amount of daily physical activity with daily recommended amounts. What percentage of students are reaching their goal?

- <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/basics-base/activit-eng.php>

Subject Area:

Math, Physical Education, Health

Assessment Strategy:

The journal entry at the end of the activity serves an assessment opportunity. As an extension, students could research the short and long term benefits of exercise, including both physical and mental/emotional benefits.

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