

## **Assignment Discovery Online Curriculum Body Systems: Surviving Extremes**

### **Curriculum Focus**

Health

### **Grade level**

9-12

### **Duration**

One or two class periods

### **Objectives**

Students will

- examine the potential health dangers of mountain climbing in high altitudes and deep-sea diving; and
- write a health and safety column for a fictional magazine about extreme outdoor sports that explains the risks involved in these activities.

### **Materials**

- Paper
- Pens, pencils
- Computer with Internet access

### **Procedures**

1. Begin the lesson by talking about some of the activities featured in the video, such as high-altitude climbing and deep-sea diving. What are some of the dangers of these activities? You may want to review specific risks, such as nitrogen narcosis, decompression sickness, and high-altitude pulmonary edema, or HAPE. Discuss with students the reasons they believe people participate in these activities, despite the dangers.
2. Next, tell students to imagine they write a "health and safety" column for a magazine about extreme outdoor sports. (Your class may want to name this fictional magazine.) Students can choose to focus on deep-sea diving or high-altitude climbing. Encourage them to think about their role as a health and safety writer for the magazine. They do not want to discourage readers from taking part in extreme adventures, but they have a responsibility to explain the risks involved.
3. Tell students that a teenage reader has written to the magazine, very excited about participating in an extreme adventure, but concerned about the physical risks. Each student should write a column in response to the reader's letter, focusing on either deep-sea diving or high-altitude climbing. The column should include the following information:

- reasons this would be an exciting adventure
- environmental conditions that may pose health risks
- potential health risks with a brief description of causes and physical symptoms for each
- suggestions for handling any of these symptoms
- suggestions for preventing injury—before, during, or after the adventure
- warnings about people who should NOT take part in this adventure

Encourage students to use the Web sites below in their research.

### **Deep-Sea Diving**

Scuba Diving: Training & Safety

<http://www.scubadiving.com/training/instruction/>

Discovery Health: Decompression Sickness

<http://health.discovery.com/diseasesandcond/encyclopedia/3220.html>

Diving to Great Depths

[http://www.oar.noaa.gov/spotlite/archive/spot\\_diving.html](http://www.oar.noaa.gov/spotlite/archive/spot_diving.html)

### **High-Altitude Climbing**

The Physiology of High-Altitude Climbing

<http://classic.mountainzone.com/everest/2000/altitude.html>

Outdoor Action Guide to High Altitude: Acclimatization and Illnesses

<http://www.princeton.edu/~oa/altitude.html>

Mountaineering Training

<http://www.bodyresults.com/S2mount.asp>

Going to Extremes: High Anxiety

[http://www.pbs.org/safarchive/4\\_class/45\\_pguides/pguide\\_704/4574\\_hianx.html](http://www.pbs.org/safarchive/4_class/45_pguides/pguide_704/4574_hianx.html)

4. Have students who wrote about high-altitude climbing share their columns with students who wrote about deep-sea diving. Then hold a class discussion comparing risks and safety suggestions for the two activities. What are the similarities among the activities? What lessons did the students learn about the human body?

### **Evaluation**

Use the following three-point rubric to evaluate students' work during this lesson.

**3 points:** Students were highly engaged in class discussions; they wrote persuasive columns, using many facts from the video and their research.

**2 points:** Students participated in class discussions; they wrote somewhat persuasive columns with some facts from the video and their research.

**1 point:** Students participated minimally in class discussions; they wrote simplistic columns with few or no facts from the video and their research.

## **Vocabulary**

### **decompression sickness**

**Definition:** A condition that occurs when sudden pressure changes in the environment cause gases dissolved in the blood and tissues to form bubbles that block the flow of blood and produce pain and other symptoms; also called the "bends"

**Context:** Scuba divers may suffer from decompression sickness if they rise to the surface too quickly after diving in deep water.

### **high-altitude climbing**

**Definition:** Scaling heights of 8,000 feet or higher

**Context:** In high-altitude climbing, some people are highly susceptible to altitude sickness.

### **High Altitude Pulmonary Edema (HAPE)**

**Definition:** A severe form of altitude sickness resulting from fluid buildup in the lungs, which prevents effective oxygen exchange; can lead to impaired cerebral function and death

**Context:** HAPE usually occurs when people go too high too quickly, or when people stay at high altitudes for extended periods of time.

### **nitrogen narcosis**

**Definition:** A dangerous condition of deep-sea diving in which a diver breathes nitrogen under pressure; symptoms usually occur at depths greater than a hundred feet.

**Context:** Symptoms of nitrogen narcosis may include feeling light-headed, difficulty concentrating, poor judgment, decreased coordination, hallucinations, and coma.

## **Academic Standards**

This lesson plan addresses the following national standards:

- Science in Personal and Social Perspectives: Personal and community health; Natural and human-induced hazards

## **Credit**

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