

Civil Air Patrol's ACE Program

Dizzy Izzy Grade 3 Physical Fitness Lesson #5

Topic: Dizziness

Length of Lesson: 30 minutes

Objective:

- Students will practice teamwork and coordination skills.
- Students will simulate astronaut disorientation.



National Standard Alignment:

National Standards for Physical Education:

- Standards 1, 2, 5, 6

National Science Standards:

- Content Standard A: Science as Inquiry
- Content Standard B: Physical Science - Position and motion of objects
- Content Standard C: Life Science - Characteristics of organisms
- Content Standard F: Science in Personal and Social Perspectives - Personal health

Background Information: (from http://science.nasa.gov/headlines/y2002/25mar_dizzy.htm)
March 25, 2002

Landing a spaceship is a terrible time to feel dizzy, yet that's what happens to some astronauts. Their legs become heavy and their heads light even as the planet below expands to fill the windshield. It's an unwelcome side-effect of returning home.

Researchers have learned that the sensation is caused, in part, by orthostatic hypotension -- "in other words, a temporary drop in blood pressure," explains NASA Chief Medical Officer Rich Williams. On Earth you can feel it by standing or sitting up too fast. Gravity has much the same effect on astronauts returning from a long spell in space: Blood rushes down and the space travelers become, literally, lightheaded.

Susceptibility is highly individual. Some astronauts are hardly affected while others feel very dizzy: About 20% of short-duration and 83% of long-duration space travelers experience the symptoms during re-entry or after they land.

Astronauts don't feel orthostatic hypotension while they're traveling through space, but they do begin to feel it during re-entry (when g-forces mimic gravity) and after landing. Blood returns to the lower body and blood pressure to the head is suddenly reduced, hence the dizziness. (The sensation can continue for a while after landing, too.)

For many years astronauts have tried to counteract orthostatic hypotension by drinking lots of salt water, which increases the volume of bodily fluids (There is a general loss of body fluids during space missions.) Astronauts also wear "G-suits" -- rubberized full-body suits that can be inflated with air. This action squeezes the extremities and raises blood pressure.

An anti-dizzy pill would be helpful, but until recently there was no such thing. Enter *Midodrine: Midodrine is the first drug approved by the United States Food and Drug Administration to treat orthostatic hypotension. It constricts blood vessels and so increases blood pressure. "By increasing blood pressure when patients need it, Midodrine can help people lead a more normal life," writes Low.

An important advantage to Midodrine, says Cohen, is that it can be administered just before re-entry or even after landing. The benefits are immediate. Astronauts wouldn't have to take it throughout their mission when it might interfere with their body's own (and welcome) adaptations to zero-g.

* Midodrine has been shown to successfully reduce orthostatic hypotension in patients on Earth, as orthostatic hypotension affects people other than astronauts. To date, this investigation has been performed on some space shuttle crewmembers and on an Expedition 5 crewmember. Further Expeditions will involve testing on more subjects before conclusive results can be determined. (http://www.nasa.gov/mission_pages/station/science/experiments/Midodrine.html)

Materials:

- one bat per team
- cones, lines, or other items to mark starting point and spinning point

Lesson Presentation:

1. Begin with warm up exercises such as neck rolls, lunges, and jogging in place.
2. Ask students how an astronaut who has been in space for 6 days or 6 months may feel after returning home to Earth. If no one says "dizzy," tell students that many astronauts have said they experienced dizziness after returning to Earth. Some shuttle astronauts said the dizziness lasted for just a few minutes, while other astronauts have said the feeling of dizziness lasted several days. Tell students that they will play a game today called "Dizzy Izzy" to simulate the dizzy feeling an astronaut might feel upon returning to Earth.
3. Divide students into teams of about 10-11 members per team.
4. Explain to students that each member of the team will take a turn to run to the bat in the designated "spin" area across from each of their teams. When they get to the bat, they are to pick it up, bend over, place their forehead on the end of the bat, and start spinning around. (State an appropriate number of times for all of the students to spin around the bat, such as 7. Adjust if necessary.) After spinning

the appropriate number of times, the team member will run back to his or her team so the next person can go. The first team finished and seated wins.

5. Select one member from each team to go to the bat spinning area to count the number of spins for each player. Explain that this person has a very important job. This person must be someone who is honest and dependable! (Explain that a complete spin means the person has gone all the way around one time) Tell the teams that the individual who is counting the number of spins must count aloud. After the last spin is completed, the counter will say, "go" to indicate that they can go back to their team.
6. Ask if there are any questions. Once any questions are answered, give the signal to begin!

Summarization:

After completing the activity, ask students to explain why dizzy astronauts returning to Earth could be a problem. (Besides making one feel badly or sick, it could pose a problem if someone is trying to land the orbiter and he/she is dizzy! Could it be possible to hit the wrong switch or button if you are too dizzy? Usually, one's reaction time is slower also.)

Ask students what problems they encountered while running back to their team after spinning around the bat. Ask what other problems they might experience during the day if they remained dizzy.

Remind students that feeling dizzy and sick can occur for a number of reasons, but one reason it shouldn't occur is because of taking any inappropriate drugs or drinking alcohol. Drugs and alcohol are bad and can do even more damage than just making a person dizzy. Tell the students that the people who care for them don't want them to spin out of control. Encourage students to keep their path straight by saying no to drugs and alcohol.

Assessment:

- teacher observation
- student responses to summary discussion questions

Additional activity ideas to enrich and extend the primary lesson:

- Place another task for students to complete in the spin area. For example, use the washers and bolts from lesson 5's spacesuit relay. After students have spun around the bat, have them put a washer over a bolt, and then run back to their team.

- Provide a writing experience for students by giving the following scenario.

"You have just been taken hostage by aliens. After a seven day space trip, you land gently on their planet, which does have gravity like Earth. It is only now that you really understand what it must have been like for some Earth astronauts who returned to Earth and were dizzy! You remember playing Dizzy Izzy in PE, but now, this is the real thing! The aliens, who can speak some English, tell you to follow them. You, however, are very dizzy and are having difficulty following them. The aliens notice that you do not seem well, and when you tell them that you are dizzy, they do not understand the word dizzy. Help the aliens understand what "dizzy" is by writing a descriptive paragraph that describes being dizzy. Draw a picture to illustrate."

* If paragraph writing is not suitable for your students individually, you may write the paragraph as a class. Another option is to instruct the students to complete sentences such as, "Being dizzy causes things to look _____. Being dizzy feels like _____. Things sound _____ when you are dizzy. Things smell _____ when you are dizzy."

Associated Websites:

- Watch a group of young adults play Dizzy Izzy.
<http://www.youtube.com/watch?v=Ctf2voqw6Zk>
- Read more about midodrine.
http://www.nasa.gov/mission_pages/station/science/experiments/Midodrine.html#top