

Motion Sickness: It's All In Your Head

The Effects of Spinning

Lesson 2 of 2

Grade Level: K-4

Subjects: Life Science

Prep Time: < 10 minutes

Activity Duration: One class period

Materials Category: Special requirements

| National Education Standards | | | | |
|------------------------------|-------------|------------|------|-----------|
| Science | Mathematics | Technology | | Geography |
| | | ISTA | ITEA | |
| 2a, 4c, 5c | | | | |

Objective

To demonstrate the effect of spinning the body around rapidly.

Materials:

- Swivel chair
- Helper

Related Links:

Office of Human Spaceflight – ISS information

<http://spaceflight.nasa.gov/station/index.html>

Space Motion Sickness

http://ccf.arc.nasa.gov/dx/archives/ames_history/sms.html



The Effects of Spinning

Teacher Sheet

Objective

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Background

The inner ear plays a major role in keeping your body balanced, but messages from other body parts, such as eyes and muscles, are also sent to your brain. By analyzing all these body signals, the brain can determine the position of the body and make the proper adjustments to keep you balanced. Gravity pulls everything down towards the Earth's center. Sensors in your inner ear use gravity to send the message to your brain to interpret whether you are upside down or right side up. With very little gravity in space, astronauts aren't receiving as many messages to determine their sense of balance. This is one cause of motion sickness.

Guidelines

1. Discuss the article "Motion Sickness" from NASAexplores.
2. Ask the students: *Have you ever felt dizzy? If so, how does it feel?* Answers will vary.
3. Tell the students they are going to do an experiment on how it feels to be dizzy.
4. Position a chair in the center of the floor or an open area.
5. Have a student sit in the chair and place their hands in their laps with their feet extended outward.
6. The helper stands behind the chair with his or her hands on the sitting student's shoulders.
7. The helper starts spinning the chair around and immediately steps out of the way.
8. Note how you feel when the chair stops spinning.

Discussion/Wrap-Up

- The student should feel dizzy for a short time.



- When you spin around, the liquid in the inner ear moves. At first, the fluid resists movement, but as spinning continues the fluid begins to flow in the direction of the spin. When you stop spinning, the fluid resists the stopping motion and sends signals to the brain that you are still spinning.

Extensions

- Fill a jar half full and tighten with a lid. Tell the students to observe how the water sloshes from side to side for a short time. Explain this simulates the movement of the fluid in the inner ear.
- Instead of using the swivel chair, the students could spin around outside in an open area.
- The students can write a descriptive paragraph describing the experiment and its effects.



The Effects of Spinning
Student Sheet

No student sheet necessary

