Puffy Face Syndrome

Demonstration/Activity
Mission 5

Objectives
Observe an effect of microgravity on the human body

Initial Questions
What are some of the effects of gravity on the human body here on Earth?

How might the human body be different in space, a microgravity environment?

This experiment simulates one effect that astronauts experience in space. On Earth, our heart pumps blood up towards our head, but gravity helps to pull the blood down into our extremities. In space, there is no significant gravity present to pull the blood into the extremities. What effect do you think this will cause at the head of the human body? In the legs of the human body? Let’s see if our predictions can be modeled on Earth.

Materials
Tape measure (or, string and a meter stick), student volunteer(s), chair, chalkboard or whiteboard for recording results

Procedure
1. Have one student volunteer to be an “astronaut” and select another student to perform the experiment on the astronaut.
2. The experimenter should measure the circumference of the astronaut’s head using a tape measure. Record the circumference in cm in the Before column.
3. Have the astronaut to lie down on the floor with his or her feet propped up into a chair. The astronaut should lie in this position for at least 5 minutes.
4. When this time period is over and while the astronaut is still lying down, the experimenter should measure the circumference of the astronaut’s head a second time. Record this result in the After column.
5. Calculate the difference.

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<tr>
<th>Astronaut Name</th>
<th>Before (cm)</th>
<th>After (cm)</th>
<th>Difference (cm)</th>
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Questions
What change, if any, did you observe in the circumference of the astronaut’s head?

Based on the information you were given before starting the experiment, what did you hypothesize would happen?
Was your hypothesis proven by the data? If it did not, record your thoughts on how the experiment could be changed and attempted again.

If your hypothesis was not proven in this experiment, did that mean your hypothesis was wrong? Please explain your answer.