**Baffling Body**

*Primary Audience: Grades K - 5*

**Description:** Learners will explore proprioception – the body’s sense of its place and position in space – as a “sixth sense.” Watch [this video](#) to learn more proprioception!

**Keywords:** sense, proprioception

**Materials:**
- None

**Instructions:**
Explain to your learner that you want to try a few experiments to test some unique functions of the body and brain. These illusions tend to work best if the subject doesn’t know “the point” of the experiment or what the outcome is supposed to be.

**EXPERIMENT 1:**
Have your learner close their eyes and stick one arm out to the side with fingers pointed straight out. Standing behind them, use two fingers to rhythmically tap them four times at the wrist, three times just above the elbow, and twice at the upper arm. Try to keep the at a constant rhythm. Ask them to explain what you did. It should feel to the learner that the taps were spaced equally across the whole arm rather than just in the individual areas!

**EXPERIMENT 2: THROUGH THE FLOOR**
Have your learner lie on the floor with arms straight out over their head and eyes closed. Carefully hold your learner’s wrists and lift them until their chest is off the floor. Hold them in this position for about a minute. Then, lower them very slowly. Ask the learner to describe what it felt like. It should feel to your learner that their arms are sinking through the floor.

**EXPERIMENT 3: CONFUSED FINGERS**
Have your learner stick their arms straight out in front of them, then twist their wrists so that their palms are facing outward, thumbs facing down. Next, have them cross their arms and interlace their fingers. Keeping their fingers laced, have them bring their hands downwards and pull them back up closer toward their body. Now, point to a finger and ask the learner to raise it. It’s likely that this tangled orientation confuses their brain and makes getting the correct hand a little tricky.
Possible Interactive Questions:
- How do our senses both help and hinder deciphering these situations?
- Would Experiment 3 work differently if your eyes were closed and instead the facilitator tapped on the finger you should move rather than pointing?
- How does proprioception affect us? What is its role?

What’s Going On?
You may not know your own body as well as you think you do! Illusions often work by challenging our brain’s existing patterns and processes by presenting sensory stimuli that don’t match what our brain expects.

Proprioception is sometimes called human’s “sixth” sense – our ability to know our body’s location, movements, and orientation in space even when it’s not using sight, smell, hearing, taste, or touch to do so. Like all sense, proprioception can be affected by illusions like these, which challenge our brain’s processing by introducing unusual stimuli.

Further Exploration:
- Everyone responds differently to these illusions. Some people won’t feel the effects of each activity. As you experiment, think about why they might work better on some people than on others.

Relevant Ohio Science Content Standards:
Scientific Inquiry, Practice, and Applications
- Observe and ask questions about the world that can be answered through scientific investigations.
- Develop and communicate descriptions, models, explanations and predictions.
- Think critically and ask questions about the observations and explanations of others.
- Communicate scientific procedures and explanations.
- Apply knowledge of science content to real-world challenges.