Your Body in Your Mind’s Eye
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Overview
This activity is about how you form mental images of your body's position in space, independent of vision. Can you take a sip of water from a cup with your eyes closed?

Can you take a sip of water from a cup with your eyes closed? Will you spill the water all over yourself? Of course not! For most of us, this is a routine task that we don't even have to think about. But how can you do this? Without vision, you can't see the cup, or your hand propelling the water to your mouth, yet you don't usually pour the water down your shirt or in your ears. Try this simple experiment to learn more about how you form mental images of your body's position in space, independent of vision.
To Do and Notice

During this exploration, it's very important for you to keep your eyes closed the entire time, work quickly, and carefully observe how your body responds. So for the best experience, either read all of the instructions before beginning or have a friend read them to you while you do the activity.

1. Close your eyes and raise both hands above your head. Keep the fingers of your left hand totally still (no wiggling!).
2. Touch the tip of your right index finger to the tip of your nose, then quickly use the same finger to try to touch the tip of your left thumb. Keep your left hand still. Even if you "miss," go on quickly to the next step.
3. Again touch your right index finger to the tip of your nose and immediately use the same finger to try to touch the tip of your left index finger.
4. Repeat the process three more times, each time trying to touch a different finger on your left hand. Keep track of how many times you succeed in touching the tip of the correct finger. How successful were you at finding each fingertip? Did your performance improve with time?
5. Now repeat the activity, but this time gently wiggle the fingers of the hand you hold in the air. Are you more successful in touching the designated fingertip?

Most people are surprised to find out that they have a difficult time touching their fingertips precisely—they come close but don't make contact. Success usually improves when the fingers of the target hand are wiggled slightly.
What's Going On?

Even with your eyes closed, you have a sense of body position—where your arms and legs are, what direction you turn your head. This sense of body position comes primarily from information sent to your brain by proprioceptors, tiny sensors in your muscles, tendons, joints, and inner ear. Proprioceptors detect stretching, elongation, and other changes; this information is used by your brain to create an unconscious picture of your body and its parts in three-dimensional space. Since most of us are highly dependent on visual cues for judging distances and positions, proprioception alone is not enough to give our brains the finely detailed information needed to touch a distant body part with great accuracy. Wiggling the fingers of the target hand increases the success rate of finding the fingers because it causes elongations, contractions, and tension changes that are detected by the proprioceptors there. With this additional information, the brain is better able to picture the location of the target hand in space.