

SNACKS EXPLORATORIUM SNACKS

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Proprioception

Wiggle where you're at

Even with our eyes closed, we have a sense of body position - where our arms and legs are, for example, and that we are moving them. Muscles, tendons, joints and the inner ear contain proprioceptors, also known as stretch receptors, which relay positional information to our brains. Our brains then analyze this information and provide us with a sense of body orientation and movement.

materials

- Paper with lines
- Pencil

assembly

No assembly needed.

to do and notice

Activity one: Finding Fingertips

Close your eyes and raise both hands above your head. Keep the fingers of your left hand totally still (no wiggling!). With your right hand, quickly touch your index fingertip to your nose, then quickly touch the tip of your thumb of your left hand with the tip of your right index finger. Quickly repeat the entire process while attempting to touch each fingertip (always return to your nose in between fingertip attempts).

Switch hands and try again.

How successfully do you find each fingertip? Do you improve with time? Is there a difference when the different hands are used?

Activity Two: "X" marks the spot

Mark an "X" on a piece of paper. Pencil in hand, raise your hand above your head, close your eyes and make a dot as near as possible to the X. Open your eyes and check your success. Raise your hand above



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your head, close your eyes, and attempt to make a dot closer to the X. Do this several times. Repeat with your eyes open.

Handwriting analysis

On a lined sheet of paper, write the word "proprioception" or some other vocabulary word of the day. Place your pencil on the same line next to the written word, close your eyes, and write "proprioception" again. Is there a difference in the appearance of the two written words?

what's going on? _____

You are using proprioceptors in your muscles, tendons and joints to judge your body positions in all of these activities. Since most of us are highly dependent on visual cues for judging distance, position, etc. proprioception alone is not enough to give us the fine detail of position, such as needed to complete these activities accurately. Wiggling your fingers in the first activity provides additional information to your brain which helps us correctly locate our fingers in space.

You may notice that with repeated trials one can learn to complete the activities more successfully, and visual cues, such as looking at the position of the X between trials, help us to adjust our movements to complete the task. Most people find that vision is not an important cue in reproducing written words, because we are used to the "feel" of writing provided by proprioceptors in our hands and fingers.

etcetera _____

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