



Curiosity Guide #404

Central Nervous System

Accompanies Curious Crew, Season 4, Episode 4 (#404)

How Fast Can You React?

Investigation #6

Description

Try this investigation to find out how quick your reflexes are!

Materials

- A centimeter ruler
- A friend
- Table
- Chair
- Blindfold

Procedure

1. Seat your friend at the corner of a table so that his or her elbow is on the table but his hand hangs over the edge of the table.
2. Hold the ruler on its edge at the 30-centimeter mark and face your friend.
3. Place the bottom 0 mark of the ruler in the space between your friend's thumb and index finger. The friend's thumb and finger should be about an inch apart.
4. Ask your friend to try to pinch the ruler when your friend sees the ruler begin to fall.
5. What mark on the ruler did your friend get?
6. Try the action a second and third time to figure out the average reaction time. (Add the reaction times together and divide by the number of trials--, in this case, 3.)

7. Try the experiment again, but this time blindfold your friend.
8. Tell your friend to try to pinch the ruler when you say "Now" and let it go.
9. Was your friend faster? Slower?
10. Try the experiment with blindfold two more times and figure the average.
11. Finally, keep your friend blindfolded, but each time you release the ruler, touch your friend's shoulder or other arm.
12. How did the investigations compare?

My Results

Explanation

This experiment tests how quickly your friend can react to stimuli he or she sees, hears, or feels. On average, most people can react to things they see in .25 seconds. People are even faster with things they hear, at .17 seconds, and when they react to touch, at .15 seconds.

When our body senses stimuli of seeing, hearing, or touching, neuron cells send an electrical and chemical wave, or nerve impulse, to the next neuron, which continues into the cerebrum. There, a decision is made to catch the ruler, so new signals are sent to the spinal cord and back to the fingers to catch the ruler.

Think about this: When you see a baseball outfielder catch a fly ball, his Central Nervous System is acting very quickly! As the outfielder sees the ball approaching, his eyes send impulses to the visual lobe at the back of his cerebrum. That information is then sent to the frontal lobe, where a decision to catch the ball is made. The frontal lobe sends impulses to the motor cortex at the top of the head, then down the spinal cord to the player's hands and feet. Great catch and great reaction time!

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