

Reaction Time and Practice

A Carolina Essentials™ Activity

Student Worksheet



Overview

A **reaction** involves the brain. Think about waiting at a crosswalk. The light turns green, telling you that it is safe to cross the road. First, your eyes must see the green light. The message that the light is green must then be sent by the optic nerve to the brain. The thalamus within the diencephalon of your brain then processes the information and sends a message back to your leg muscles, telling them to move. Your muscles then contract and relax, and you walk across the street. You could easily resist reacting to the stimulus of the green light. If you were to cross at the same intersection every day, your reaction time to the light changing would probably improve, and you would react more quickly.

SAFETY REQUIREMENTS

No PPE required

MATERIALS

1 deck of cards

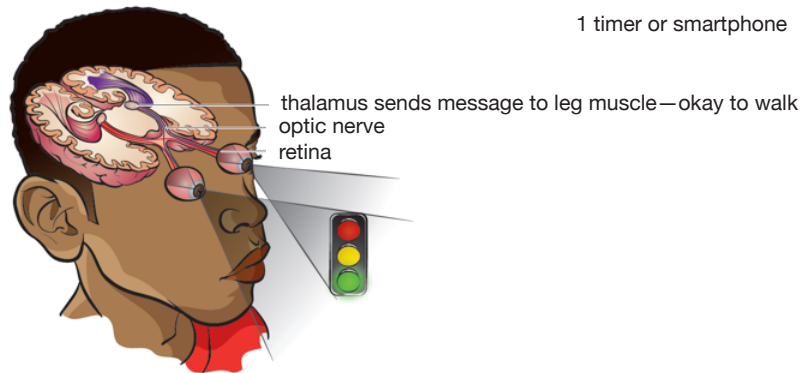
1 timer or smartphone

Essential Question

What factors affect reaction time?

Activity Objectives

1. Identify reaction times for 2 card sorting activities.
2. Determine if practice and complexity of task influence reaction time.



Activity Procedures

Sort 1/Student 1—Color

1. The subject holds a deck of shuffled playing cards face down.
2. The observer starts the timer and tells the subject to begin.
3. The subject turns over the playing cards, one at a time, and places them in either a red pile or a black pile, depending on the color of the card.
4. After all the cards have been classified, the observer stops the timer and records the trial time on the data table.
5. The subject shuffles the cards and repeats the procedure twice.

Sort 2/Student 2—Suit

1. The second subject holds the deck of cards face down.
2. The observer starts the timer and tells the subject to begin.
3. The subject turns over the playing cards, **one at a time**, and separates them into **4 piles according to suit: hearts, diamonds, clubs, and spades**.
4. After all the cards have been classified, the observer stops the timer and records the trial time on the data table.
5. The subject shuffles the cards and repeats twice.

Data

| Sort | Time 1 (s) | Time 2 (s) | Time 3 (s) |
|-------|------------|------------|------------|
| Color | | | |
| Suit | | | |

Continued on next page.

Analysis and Discussion

1. Describe, step-by-step, the reaction process necessary to sort the deck of cards by color.
2. Describe, step-by-step, the reaction process necessary to sort the deck of cards by suit.
3. Based on the steps listed above, which reaction was more complex? Does the time data support your answer? Explain why or why not.
4. Is there a trend for time within each sort? How can you explain the trend?
5. Imagine you're training a 100-meter sprinter and devise a plan to help improve how quickly the sprinter leaves the starting block. Be descriptive and specific.