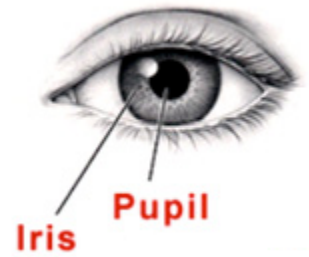


Human Reflexes and Reaction Time Lab

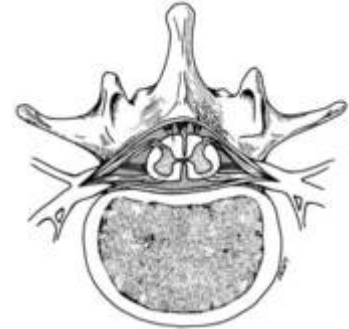


INTRODUCTION

The fast and automatic response to a **stimulus** is known as a **reflex**. All reflexes are **involuntary** and many prevent injury to the body. Reflexes control **automatic** activities in the body such as heartbeat, sneezing, gagging, and peristalsis. In a **reflex arc**, an impulse follows a definite **pathway** – we talked about this in class. **Reaction time** is a measure of how quickly a person can perceive a stimulus and react to it. Reaction time is important in athletics as well as in the operation of vehicles and other machinery. Reaction time may be affected by fatigue, drugs, and distraction. In this lab we will demonstrate some reflex behaviors and measure reaction time.

MATERIALS

◇ Reflex hammer, meter stick, calculator



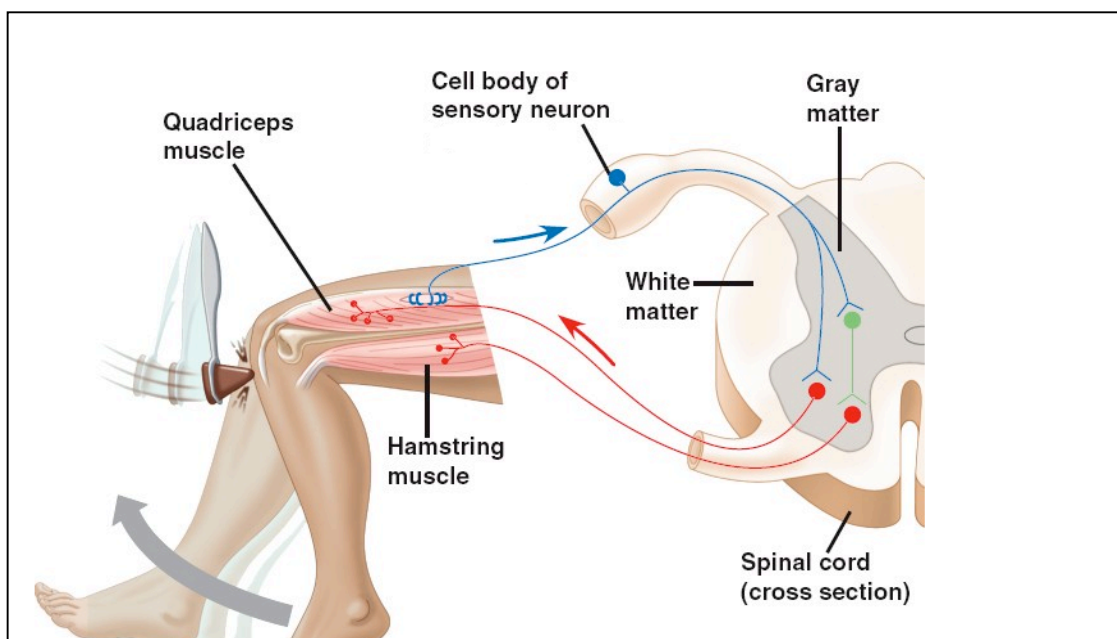
PROCEDURE

Part A

1. Have your partner sit on the edge of the lab table. Make sure that the legs are able to swing freely. Using the **reflex hammer**, tap your partner's **patellar ligament** (located just below the kneecap). Do not tap too hard. It may take several taps before you hit the correct site. **Describe the response of the leg.** Switch roles.
2. Repeat Step 1, but this time have your partner hold their leg out straight (fully extended).

Describe the response of the leg. _____

Label Afferent and Efferent channels



Part B

1. Have your partner close AND cover their eyes for one minute. At the end of the minute, watch your partner's pupils as they open their eyes. Be sure to watch closely & carefully. **Describe the response of the pupils.** Switch roles.

Part C

1. Have your partner rest their **RIGHT** elbow on the lab table with their arm extending over the side. Using two hands, hold a meter stick in the air with the **0 cm** line between your partner's index finger and thumb. Drop the meter stick straight down. Have your partner catch the meter stick (between the index finger and thumb) as quickly as possible. Record the distance (in **cm**) that the meter stick fell. Repeat this step **4 more times** for a total of **5 trials**. Switch roles.

Trail Time	1	2	3	4	5	Average
Right						
Left						

2. Repeat Step 1 using the **LEFT** hand.
3. Determine the **average distance** the meter stick fell **FOR EACH HAND**. (Add up the 5 measurements and divide by 5). Record the averages.
4. Calculate & record the reaction time **for each hand** using the following formula:

$t = \sqrt{(2d / a)}$	<p>t = reaction time (s) d = average distance the meter stick fell (cm) a = acceleration due to gravity = 980 cm/s²</p> <p>NOTE: You should end up with 2 reaction times (t)... One for EACH hand</p>
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Reaction Time	
Right	
Left	

Name: _____

HUMAN REFLEXES & REACTION TIME

Purpose:

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Hypothesis:

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DISCUSSION

1. Explain the **reflex arc** that occurs during the knee-jerk reflex.

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2. How is the iris-pupil response to light a **protective** reflex?

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3. Was there any difference between the reaction times using the right and left hand?
Explain why or why not.

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4. Explain how distraction can slow down reaction time (i.e., make you react more slowly).
Be specific in your answer.

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5. Explain why one person's response time may be quicker than another person's?

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Write a brief conclusion:

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