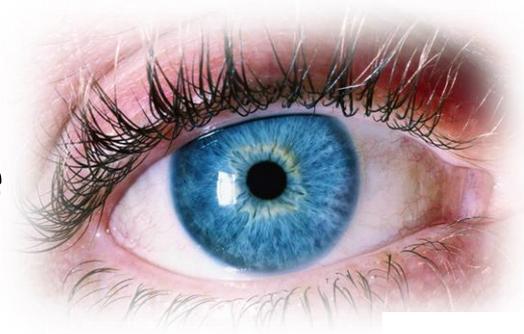


Pupillary Response & Testing Your Reaction Time



Exercise 1: Testing Pupillary Response

1. Perform this exercise with a partner.
2. Dim the room lights. After a few minutes, look at the eyes of your partner and note the **pupil sizes** (the black center spots in the middle of the eyes)
3. Turn on the room lights. Check the pupil sizes again. *The pupils should now be smaller*
4. This is the **pupillary reflex response**. This reflex "automatically" keeps out excessive light that may damage the eyes, and thus protects your eyes for you!

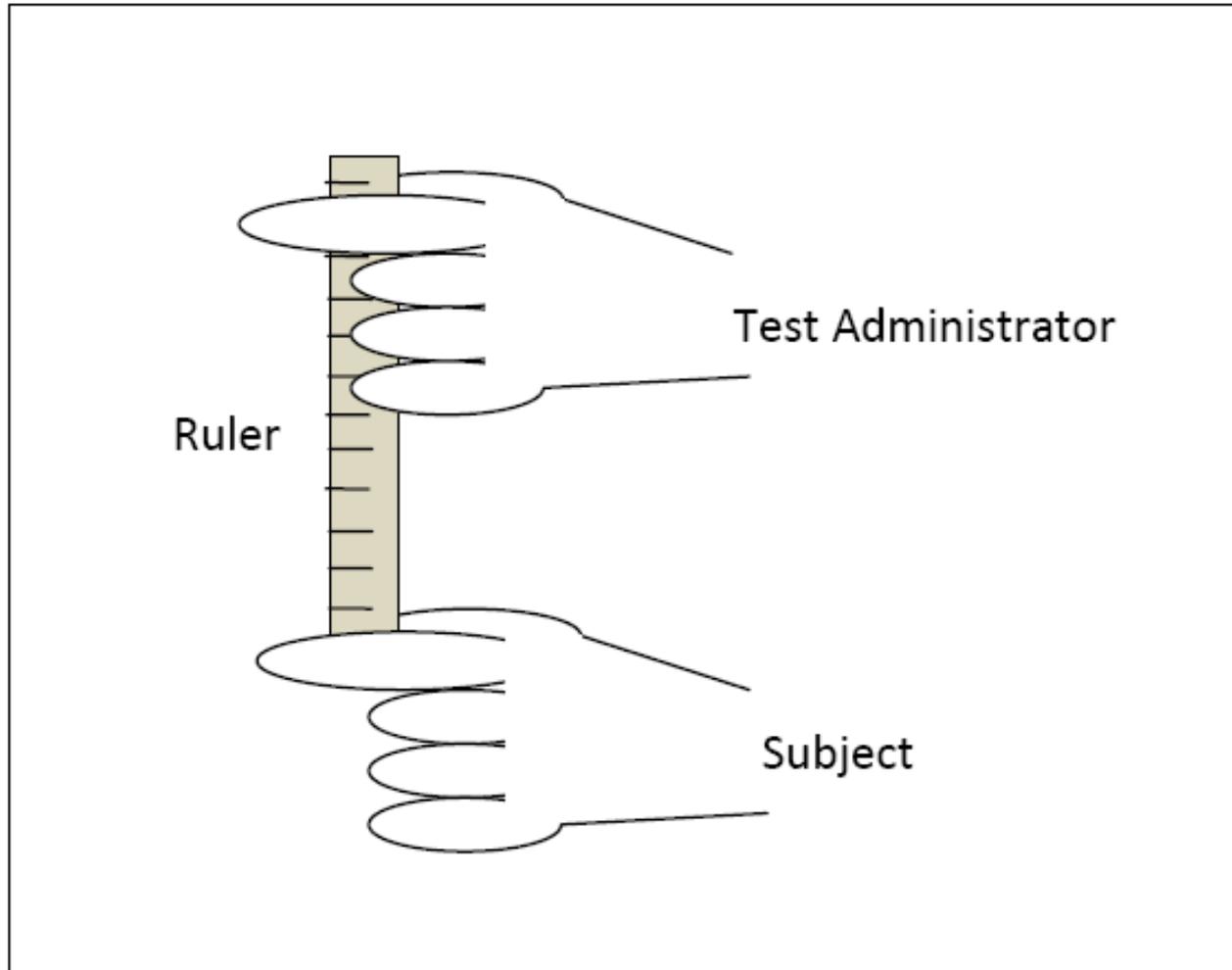


Exercise 2: Test Your Reaction Time

- Hold a meter-long ruler near the end with the highest number and let it hang down. Have your partner put his/her dominant hand at the bottom of the ruler, not touching it, and be ready to grab the ruler when it drops.
- Tell your partner that you will drop the ruler sometime in the next five seconds with no countdown warning and that s/he is to try to catch the ruler as fast as s/he can after you drop it. [see diagram on next slide →]
- Record in the data table the level on the ruler (centimeters or inches) at which your partner catches it.
- Repeat this test with the same subject for a total of three times. Vary the time of dropping within the five-second "drop-zone" so the subject cannot guess when you will drop the ruler.
- Now try a "countdown" case: Conduct the same test with the addition of a countdown warning. Tell your partner that you will drop the ruler at the count of three and say: 1... 2... 3 and drop it when you say 3.
- Record in the data table the point on the ruler where the partner caught this trial. Repeat this test with a countdown with the same subject for a of three times.

Exercise 2: Test Your Reaction Time

- How to hold the ruler:



Exercise 2: Test Your Reaction Time

- Conduct this exercise using your dominant hand—except for the last test:
 - Test A:** Eyes open and no countdown (dropped within a five-second “drop zone” period with no countdown)
 - Test B:** Eyes open and countdown (1... 2... 3 and drop at 3)
 - Test C:** Eyes closed and no countdown
 - Test D:** Eyes open and with non-dominant hand and countdown
- Your partner will note the values measured in the data table on the worksheet.
- Then, switch positions and test your partner’s reaction times and record in his/her worksheet.

Exercise 2: Test Your Reaction Time

Record your observations in the data table. The first three are with the dominant hand, and the last with the non-dominant hand.

Trial #	Eyes Open No Countdown	Eyes Open Countdown	Eyes Closed No Countdown	Eyes Open Non-Dominant Hand Countdown
1				
2				
3				

Results and Analysis Questions

1. What order did you follow for the experiments?
List the 4 methods from first to last, in the order you performed them.
2. Which method resulted in the fastest reaction time?
3. Which method resulted in the slowest reaction time?
4. Why do you think those were your fastest and slowest reaction times?
5. Does it matter in what order the experiments are done?
6. Did you get better with practice?

Wrap-Up Quiz

1. What are reflexes?
2. Provide two examples of human reflexes.
List the “stimulus-sensor-coordinator-effector-response” components of each reflex.
3. Describe how a robot with sensors can be used to mimic a reflex action.