

Human Reflex Physiology

(Ex 19 & 22 Marieb)

Ziser, 2002

Review: Read through the exercise on reflex physiology in your lab manual

Activities: Spinal Nerve Testing:

Work in pairs to test each others reflexes but each student should record THEIR OWN responses on their data sheet

Have your lab partner perform the following stretch reflexes (listed in table below) on you and record the results;

- receptor:** what kind of *receptor* receives the stimulus or where *specifically* is it located (receptors are transducers; skin, ligaments and tendons are NOT receptors)
- effector:** what muscle(s) respond
- level:** is the integration center in the *spinal cord(sc)* only, or are both the *spinal cord and the brain (scb)* involved?
- result:** + or -; then describe what happened

The procedures for numbers 1,2,5 & 6 are in your lab manual skip the corneal reflex, the gag reflex and the salivary reflex procedures for numbers 3 and 4 are below:

Biceps Reflex

- have your lab partner rest their arm on the countertop
- place your thumb on the biceps tendon (see fig)
- tap the first digit of your thumb with the reflex hammer
- note the extend of the response

Triceps Reflex

- have your lab partner flex one arm at the elbow
- hold the wrist of that arm (see fig)
- tap the triceps tendon above the elbow, using the pointed end of the reflex hammer
- note the response

Activities: Cranial Nerve Reflexes:

Perform the reflex tests listed and record your results in the table on your data sheet.

- Cranial Nerve: which cranial nerve is involved in the test
- Receptor: which receptor receives the original stimulus
- Effector: which specific muscle or gland responds
- Result: + or -; then describe what happened

(If the ciliospinal reflex is weak or is not demonstrated, repeat the test by touching a small piece of ice to the same area of the subject's neck)

You do not need to perform any reflex that is not listed in the table on data sheet

Now, use your lab manual and textbook to fill in the table by describing one major effect **due to the loss of either sensory or motor function** (as applicable) in each of the cranial nerves listed on your data sheet

Activity: Reaction Time For Acquired Reflexes:

Skip the Patellar reflex test, you will only test a learned response. Complete the table with information that you collect by following the procedures in your lab manual. Instead of timing the catch you will measure how far the ruler or meter stick falls. Record your data in **centimeters**:

Name: _____

Due Date: _____

Human Reflex Physiology
Data Sheet
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1. Make a single diagram to show the interrelationships between the: **Central Nervous System, Peripheral Nervous System, Sensory Neurons, Motor Neurons, Somatic and Autonomic Motor Branches.**

2. What is a **reflex** and what are its basic components?

3. Distinguish between **somatic** and **autonomic** reflexes.

4. Distinguish between **spinal** and **cranial** reflexes.

Activities: Spinal Nerve Testing:

	Reflex	Receptor	Effector	Level	Results
1	patellar reflex				
2	Achilles reflex				
3	biceps reflex				
4	triceps reflex				
5	crossed extensors				
6	plantar reflex				

Activities: Cranial Nerve Reflexes:

	Reflex	Cranial Nerve	Receptor	Effector	Results
1	Pupillary Reflex				
2	Ciliospinal Reflex				
3	Eye Convergence				

Number and Name of Cranial Nerves		Loss of Specific Sensory Function	Loss of Specific Motor Function
I	Olfactory		
II	Optic		
III	Oculomotor		
IV	Trochlear		
V	Trigeminal		
VI	Abducens		
VII	Facial		
VIII	Vestibulocochlear		
IX	Glossopharyngeal		
X	Vagus		
XI	Accessory		
XII	Hypoglossal		

Activity: Reaction Time For Acquired Reflexes:

Trial	Catch Only	Catch after Signal	Catch with word association
1			
2			
3			
4			
5			
Mean (cm)			

How did your actual results compare with the expected, normal, reflexes? Note any discrepancies or variations in your responses and offer explanations.

A. Spinal Nerve Reflexes

B. Cranial Nerve Reflexes

C. Reaction Times