

Lab 5 Sensory Physiology 2

Name _____

Section _____

PID _____

Description

Reflex testing incorporates an assessment of the function and interplay of both sensory and motor pathways. It is simple yet informative and can give important insights into the integrity of the nervous system at different levels.

Objectives

- To test reflexes of the biceps, triceps, brachioradialis, knee
- To test the Babinski reflex for spinal cord injuries
- To test the function of the cerebellum.

The vigor of contraction is graded on the following scale:

Grade	Observation
0	No evidence of contraction
+1	Decreased, but still present
+2	Normal
+3	Super-normal (hyper-reflexia)
+4	Clonus: repetitive shortening of the muscle after a single stimulus

1. Reflex Testing

Achilles (S1, S2 – Sciatic Nerve):

1. This is most easily done with your partner being seated with feet dangling.
2. Identify the Achilles tendon, located above your heel
3. Strike the tendon directly with the flat portion of your reflex hammer. Be sure that the calf is exposed so that you can see the muscle contract.
4. Write your observation in the chart provided

Questions

1. How does your foot reaction to this test? (plantar flex or dorsi flex)
_____ (0.4 POINTS)
2. Were able to elicit a reflex (Y/N)? _____ (0.2 POINTS)

Patellar (L3, L4 – Femoral Nerve):

1. This is most easily done with your partner being seated, feet dangling over the edge a chair or table.
2. Identify the patellar tendon and strike the tendon directly with your reflex hammer. If you are having trouble identifying the exact location of the tendon

place your index finger firmly on top of it. Strike your finger, which should then transmit the impulse.

3. Write your observation in the chart provided

Biceps (C5, C6 – Musculocutaneous Nerve):

1. To locate the biceps tendon, have your partner flex their elbow at a right angle to expose the tendon.
2. Place your thumb on the tendon, and make sure that the biceps muscle is completely relaxed.
3. Strike your thumb swiftly with the hammer
4. Write your observation in the chart provided

A normal response will cause the biceps to contract, drawing the lower arm upwards.

Brachioradialis (C5, C6 – Radial Nerve):

1. The lower arm should be resting loosely on the table.
2. The tendon of the brachioradialis muscle crosses the radius (thumb side of the lower arm) approximately 10 cm proximal to the wrist.
3. Strike this area with your reflex hammer.
4. Write your observation in the chart provided

Question

1. How does your lower arm react (flex or extend the elbow)?
_____ (0.4 POINTS)
2. How does your hand react (supinate or pronate)?
_____ (0.4 POINTS)

Triceps (C7, C8 – Radial Nerve):

1. Have your partner place their hand on their hips to expose the tendon.
2. It is a must that the triceps are completely relaxed.
3. If you are certain as to the precise location of the tendon, strike this area directly with your hammer. If the target is not clearly apparent, use the same technique as for the biceps reflex
4. Write your response in the chart provided
5. The normal reflex will cause the triceps to contract and the arm to extend at the elbow.

Babinski Reflex

1. Have your partner remove his/her shoes and Use the handle end of your reflex hammer, which is solid and comes to a point.

2. Applying constant pressure, drag the handle along the lateral aspect of the foot from the heel to the ball of the foot and across towards the big toe..
3. Write your observation in the chart provided

In the normal patient, the first movement of the great toe should be downwards (i.e. plantar flex). This is a negative test. If there is an upper motor neuron injury (e.g. spinal cord injury, stroke), then the great toe will dorsiflex and the remainder of the other toes will fan out. This is a positive test.

(0.4 POINTS each)

Reflex Tested	Grade	Observations
Achilles Reflex		
Patellar Reflex		
Biceps Reflex		
Brachioradialis Reflex		
Triceps Reflex		
Babinski Reflex		

2. Cerebellar Testing

The cerebellum fine tunes motor activity and assists with balance. Dysfunction results in a loss of coordination and problems with gait. The left cerebellar hemisphere controls the left side of the body and vice versa.

Finger to nose testing:

1. With the patient seated, position your index finger at a point in space in front of the patient.
2. Instruct the patient to move their index finger between your finger and their nose.
3. Reposition your finger after each touch.
4. Then test the other hand.

The patient should be able to do this at a reasonable rate of speed, trace a straight path, and hit the end points accurately. Missing the mark, known as dysmetria, may be indicative of disease.

Rapid Alternating Finger Movements

1. Ask the patient to touch the tips of each finger to the thumb of the same hand.
2. Test both hands.

The movement should be fluid and accurate. Inability to do this, known as dysdiadochokinesia, may be indicative of cerebellar disease.

Rapid Alternating Hand Movements:

1. Direct the patient to touch first the palm and then the dorsal side of one hand repeatedly against their thigh.
2. Then test the other hand.

The movement should be performed with speed and accuracy. Inability to do this, known as dysdiadochokinesia, may be indicative of cerebellar disease.

3. Two Point Threshold Test

The density of touch receptors is measured by the two-point threshold test.

1. Starting with the calipers wide apart and the subject's eyes closed, determine the two-point threshold for various regions of the body.
2. Write the minimum distance in which two distinct points are felt (in mm).
(0.2 POINTS for completing table)

Location	Minimum distance (mm)
Back of hand	
Fingertip	
Back of Neck	
Forearm	

Questions

1) How do your results correspond to the table from your lab slides (which were close and which were different)? **(0.5 POINTS)**

2) True or False:

The greater the distance of the two-point-threshold, the greater the density of touch receptors. **(0.5 POINTS)**