

Cranial Nerve IX - Glossopharyngeal

The patient is positioned in sitting. The therapist touches the pharynx with a tongue depressor. A positive test may be indicated by lack of gagging or an inability to feel the tongue depressor touch the back of the throat. The sensory component is tested by assessing the patient's ability to distinguish objects by taste after they are placed on the posterior portion of the tongue. A positive test for the sensory component may be identified by an inability to accurately identify tasted substances, especially sour and bitter substances, placed on the posterior third of the tongue.

Cranial Nerve X - Vagus

The patient is positioned in sitting. The therapist touches the pharynx with a tongue depressor. A positive test may be indicated by a lack of gagging or an inability to feel the tongue depressor touch the back of the throat. (Same

description for Cranial Nerve IX - Glossopharyngeal). If the gag reflex is absent the therapist should carefully assess the movement of the soft palate and uvula.

Cranial Nerve XI - Accessory

The patient is positioned in sitting with the arms at the side. The therapist asks the patient to shrug their shoulders and maintain the position while the therapist applies resistance through the shoulders in the direction of shoulder depression. A positive test may be indicated by an inability to maintain the test position against resistance.

Cranial Nerve XII - Hypoglossal

The patient is positioned in sitting. The therapist asks the patient to protrude the tongue. A positive test may be indicated by an inability to fully protrude the tongue or the tongue deviating to one side during protrusion.

Deep Tendon Reflexes (DTR)

A reflex is a motor response to a sensory stimulation that is used in an assessment to observe the integrity of the nervous system. Deep tendon reflexes (DTR) elicit a muscle contraction when the muscle's tendon is stimulated.

Procedure Guidelines

- ✓ The patient should be relaxed.
- ✓ The muscle should be placed on a slight stretch.
- ✓ A reflex hammer taps the tendon with an anticipated immediate response.
- ✓ Both sides of the body should be assessed.
- ✓ Reflexes can be graded as normal, exaggerated (hyper) or depressed (hypo) or on a scale of 0-4.

Grading

- 0 = no response
- 1+ = diminished/depressed response
- 2+ = active normal response
- 3+ = brisk/exaggerated response
- 4+ = very brisk/hyperactive; abnormal response

Common DTR Sites

Biceps tendon	C5-C6 spinal level
Brachioradialis tendon	C5-C6 spinal level
Triceps tendon	C7-C8 spinal level
Patellar tendon	L3-L4 spinal level
Tibialis posterior tendon	L4-L5 spinal level
Achilles tendon	S1-S2 spinal level

DTR Normal Response

Biceps tendon	Contraction of the biceps muscle
Brachioradialis tendon	Elbow flexion and/or forearm pronation
Triceps tendon	Elbow extension or contraction of the triceps muscle
Patellar tendon	Knee Extension
Tibialis posterior tendon	Plantar flexion/inversion of the foot
Achilles tendon	Plantar flexion of the foot

Peripheral Nerves

The peripheral nervous system is the nervous system that lies outside of the brain and spinal cord. The peripheral nervous system (PNS) consists of motor, sensory, and autonomic neurons. These neurons are located in cranial, spinal, and peripheral nerves. The PNS consists of 12 pairs of cranial nerves, 31 pairs of spinal nerves, and all associated ganglia and sensory receptors. Most peripheral nerves contain motor (efferent) and sensory (afferent) components.

A Fibers

- Large fibers
- Myelinated
- High conduction rate
- Contained in the alpha and gamma motor systems
- Sensory components include:
 - Muscle spindle (primary afferent ending): primary for low-threshold stretch
 - Muscle spindle (secondary afferent endings): receptors that respond to change in length
 - Golgi tendon organ: responds to tension/stretch of a tendon
 - Bare nerve endings: joint receptors, mechanoreceptors of soft tissues, exteroceptors

