

## Reflexes Assessment

Deep tendon reflexes are part of a comprehensive neurologic assessment and should be used in addition to other clinical findings. It takes dedicated practice to become proficient in assessing DTRs, and certain aspects like grading is highly subjective to the examining clinician and can vary from patient to patient. Other than a normal DTR response (2+), reflex grading can be hyperactive (3 to 4+) or hypoactive (1+ to 0). The typical deep tendons assessed are the biceps, triceps, brachioradialis, patellar or quadriceps and Achilles tendons bilaterally. Also, cutaneous or superficial reflexes can be assessed and include the plantar reflex, also known as the Babinski sign. Unexpected findings in any of the tests can indicate a present or worsening upper or lower motor neuron pathology or disease, requiring further assessment and critical thought.



PLAY PICMONIC

### Grading

#### Hyperactive

##### Hiker-active-gear

Subjective grading of a hyperactive deep tendon reflex depends on the neurologic examination skill of the nurse or clinician. Any grading of DTRs must be performed in the context of comprehensive neurologic examination. Hyperactive DTRs are either 3+ (brisker than average and possibly indicative of disease) or 4+ (very brisk, likely clonus present and indicative of a disease).

#### Hypoactive

##### Hippo-active-gear

Subjective grading of a hypoactive deep tendon reflex depends on the neurologic examination skill of the nurse or clinician. Hypoactive DTRs are below 2+ (normal findings), and are graded as 1+ (diminished, low normal or occurring only with reinforcement) or 0 (no response).

### Deep Tendon Reflexes (DTRs)

#### Biceps

##### Bicycle-biceps

The clinician uses their forearm to cradle a relaxed patient's forearm in a partially flexed position, preferably while the patient is seated. Next, the clinician places their thumb directly over the biceps tendon, slightly above the antecubital fossa, and strikes their thumb with a reflex hammer. Expected findings include a sharp contraction of the biceps muscle with flexion of the forearm, much like a tiny, quick dumbbell curl. Repeat on the other side.

#### Triceps

##### Tricycle-triceps

The clinician holds the patient's arm at the bicep, allowing the forearm and hand to swing in a relaxed and free manner. Next, the clinician strikes the triceps tendon directly and just above the elbow and observes for extension of the forearm, the expected finding. Repeat on the other side.

#### Brachioradialis

##### Breakdancer-radio

The clinician holds the patient's thumb to suspend the relaxed forearm in a partially flexed position. Next, the clinician strikes the forearm directly, approximately 2-3 inches above the radial styloid process (superior to the base of the thumb) and observes for flexion and supination of the forearm,

the expected finding. Repeat on the other side.

### **Patellar (Quadriceps)**

#### **Potato**

The patellar or quadriceps reflex begins with the patient seated comfortably and safely on the edge of a table or chair with their legs dangling over the edge and their knees flexed and relaxed. The clinician identifies the quadriceps tendon just below the patella or kneecap, and strikes this directly while observing for the expected finding of quadriceps contraction in a “kicking motion.” Repeat on the other side.

### **Achilles Tendon**

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In a seated position similar to the patellar tendon reflex test, the patient is seated with the knee flexed, relaxed and the hip partially externally rotated. The clinician grasps the foot in dorsiflexion (ankle flexed) and strikes the Achilles tendon directly (found just above and behind the medial malleolus of the tibia). Expected findings include plantar flexion (“foot to the gas pedal”) of the foot against the clinician’s hand.

## **Cutaneous (Superficial) Reflexes**

### **Plantar Reflex (Babinski Sign)**

#### **Baby-ski**

With the patient’s leg and foot supine on a flat and stable surface, the clinician uses the metal tip of the reflex hammer to draw an “upside-down J” on the sole of the patient’s foot. The clinician starts inside the heel on the sole of the foot, slowly dragging the tip toward the pinky toe, then rounds to the base (or ball) of the foot. Expected findings include plantar flexion of the foot with inversion and flexion of the forefoot (the metatarsals and tarsals).