
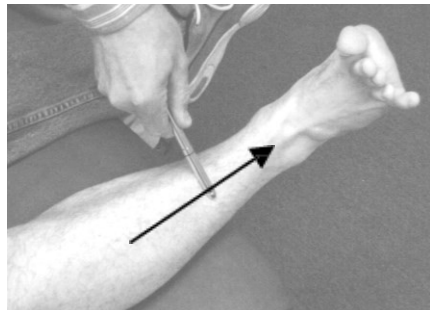


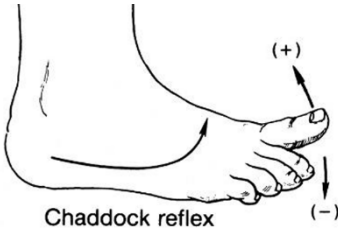


Special Tests to Screen for Upper Motor Neuron Lesions


Use a selection of the following tests/signs to evaluate for the presence or absence of suspected lesions to the central nervous system (upper motor neurons). Patient symptoms may include neck pain with lower extremity complaints after cervical injury, symptoms of stenosis, suspected myelopathy, insidious onset motor weakness (global; not isolated to a single nerve root), dysesthesia (non-dermatomal), or dysarthria. One or more of these tests are also commonly performed on any patient presenting with neurological symptoms to screen for more serious causes of these symptoms. Hyperreflexia with deep tendon reflexes, though not an individual test presented here, is also a reliable sign of upper motor neuron lesions.

Lower Extremity Tests


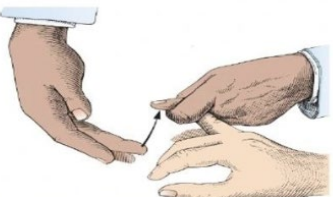
Test	Description	Interpretation	Reliability and Validity
<p>Babinski Test/Sign</p> 	<p>Clinician strokes bottom of foot from the heel up the lateral side of the foot and across the ball of the foot, in an "L" shape, using a firm blunt instrument (eg. bottom of a reflex hammer or tuning fork). It should be performed slowly with firm pressure, taking about 5 to 6 seconds to complete.</p>	<p>Extension of big toe and sometimes also fanning of other four toes is a pathological response known as Babinski's Sign. This sign may be present with upper motor neuron lesions. Both feet should be visualized during the test since the sign may also be present on the side not being tested.</p>	<p>A systematic review showed specificity of 93 to 100% for Degenerative Cervical Myelopathy but sensitivity was low. (Jiang 2024)</p> <p>Arujo 2015 showed Sensitivity was 59.7% and PPV 70.3% for pyramidal tract lesions</p>
<p>Oppenheim's Test</p> 	<p>Clinician uses a firm object (eg. handle of a tuning fork or reflex hammer) to stroke of crest of tibia in a superior to inferior direction with firm pressure. It should be performed slowly, taking about 5 to 6 seconds to complete.</p>	<p>Extension of big toe and sometimes also fanning of other four toes is a pathological response known as Babinski's Sign. This sign may be present with upper motor neuron lesions. Both feet should be visualized during the test since the sign may also be present on the side not being tested.</p>	<p>Arujo 2015 showed Sensitivity was 30% and PPV 61.3% for pyramidal tract lesions.</p>




Test	Description	Interpretation	Reliability and Validity
<p>Chaddock's Test</p>  <p>Chaddock reflex</p>	<p>Clinician strokes the dorsolateral aspect of the foot from the posterior part of the skin just inferior and anterior to the lateral malleolus and along the lateral edge of the foot.</p>	<p>Extension of big toe and sometimes also fanning of other four toes is a pathological response known as Babinski's Sign. This sign may be present with upper motor neuron lesions. Both feet should be visualized during the test since the sign may also be present on the side not being tested.</p>	<p>Arujo 2015 showed Sensitivity was 55.3% and PPV 66.5% for pyramidal tract lesions</p>
<p>Schaeffer's Test</p> 	<p>Clinician firmly squeezes of middle third of Achilles tendon</p>	<p>Extension of big toe and sometimes also fanning of other four toes is a pathological response known as Babinski's Sign. This sign may be present with upper motor neuron lesions. Both feet should be visualized during the test since the sign may also be present on the side not being tested.</p>	<p>Unknown, but generally considered similar to Babinski and other plantar reflex tests for pyramidal tract lesions.</p>
<p>Gordon's</p> 	<p>Clinician firmly squeezes the calf muscles.</p>	<p>Extension of big toe and sometimes also fanning of other four toes is a pathological response known as Babinski's Sign. This sign may be present with upper motor neuron lesions. Both feet should be visualized during the test since the sign may also be present on the side not being tested.</p>	<p>A double-blind study of the consistency of the Babinski reflex and its variants (the Chaddock, Gordon, and Oppenheim reflexes) gave the Gordon reflex a fair rating for inter-observer consistency with a kappa of 0.3515 (95% CI = 0.255-0.488) and the highest intra-observer consistency with a kappa of 0.6731</p>

Test	Description	Interpretation	Reliability and Validity
<p>Clonus</p> 	<p>While stabilizing the lower leg, the clinician briskly and firmly dorsiflexes the patient's ankle and holds the ankle in the dorsiflexed position for a few seconds.</p> <p>May also be perform at the wrist by stabilizing the forearm while briskly and firmly extending the patient's wrist.</p>	<p>The clinician observes and feels for clonus, which is rhythmic, rapid alternation of muscle contraction and relaxation caused by sudden, passive tendon stretching. Clonus may be present with upper motor neuron lesions. More than 2 contractions back into the clinician's hand is considered pathological</p>	<p>Galav 2022 showed ankle clonus to have 96% specificity and 15% sensitivity for the diagnosis of myelopathy</p>

Upper Extremity Tests

Test	Description	Interpretation	Reliability and Validity
<p>Hoffman's</p> 	<p>Clinician Flicks nail of third digit.</p> <p>For Dynamic Hoffman's, the patient actively flexes and extends the cervical spine while the clinician flicks the nail of the third digit.</p>	<p>Reflexive contraction of the thumb and index finger constitutes a pathological response.</p>	<p>While the solitary presence of Hoffmann's sign is inconclusive for the diagnosis of cervical myelopathy, a unilateral positive sign is more specific and a bilateral positive finding is highly sensitive for confirmation of the same. (Cook 2009)</p>
<p>Tromner's</p> 	<p>Clinician taps the underside of the distal phalanx of the middle finger.</p>	<p>Reflexive contraction of the thumb and index finger constitutes a pathological response.</p>	<p>A systematic review showed specificity of 79 to 100% and sensitivity of 93 to 94% for Degenerative Cervical Myelopathy. (Jiang 2024)</p>

Test	Description	Interpretation	Reliability and Validity
<p data-bbox="107 126 415 154">Inverted Supinator Sign</p> 	<p data-bbox="646 126 1052 289">Clinician slightly pronates the patient's forearm and then applies a series of quick strikes near the styloid process of the radius at the attachment of the brachioradialis tendon.</p>	<p data-bbox="1073 126 1600 180">A pathological response involves either finger flexion and/or elbow extension</p>	<p data-bbox="1621 126 1988 264">A systematic review showed specificity of 78 to 99% and sensitivity of 18 to 75% for Degenerative Cervical Myelopathy. (Jiang 2024)</p>

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