

Strength Assessment

For the strength assessment, the first step is to assess the patient's appearance for abnormalities. The next step is to observe the range of motion (ROM) of the upper and lower extremities. Then move onto assessing motor power, starting with hand grips, then assessing dorsiflexion and plantar flexion. Following that, an assessment will be done of the hip and knee flexion against resistance. With these tests, the manual muscle test (MMT) grading system is used.



PLAY PICMONIC

Inspection

Assess Patient Appearance for Abnormalities

[Assess-man Assessing Appearance for Abnormalities](#)

The assessment starts with a general inspection; observing the patient in the standing position for postural abnormalities. Observe their stance and take note of any abnormal curvature of the spine, like lordosis, kyphosis, or scoliosis. Observe the patient walking away from you, turning, and walking back toward you, watching their gait and balance.

Observe ROM of Upper and Lower Extremities

[ROM of Upper and Lower Extremities](#)

Observe how the patient moves their upper and lower extremities and take note if there are any limitations in active range of motion (ROM) or pain with movement. Active range of motion is the degree of movement the patient can voluntarily achieve in a joint without assistance. Limitations in ROM may indicate articular disease or injury. Passive range of motion is the degree of range of motion shown in a joint when the practitioner is assisting with the movement. As the joint moves, there should not be any reported pain or tenderness.

Assess Motor Power

Hand Grips

[Hand Grip](#)

To assess upper extremity strength, start by assessing bilateral handgrip strength. The practitioner will extend their index and second fingers on each hand toward the patient and ask the patient to squeeze them as tightly as possible. Next, the practitioner will ask the patient to extend their arms with their palms up. As the practitioner provides resistance on their forearms, the patient is asked to pull their arms towards them. Lastly, the patient is asked to place their palms against the practitioner's and press while the practitioner provides resistance.

Dorsiflexion and Plantarflexion

[Dorsal-fin-flexing Foot and Plants-flexing down Foot](#)

General lower extremity strength assessment can begin with observing the patient's ability to perform bilateral dorsiflexion and plantar flexion movement of the foot and ankle. A practitioner assesses dorsiflexion by applying pressure to the anterior plantar surface of the foot and instructing the patient to bring their "toes to the nose." A practitioner assesses plantar flexion by applying pressure to the sole of the foot and instructing the patient to "push on the gas pedal."

Hip and Knee Flexion Against Resistance

Hip and Knee Flexion Against Resistance

Assisting the patient into a supine position on a stable, flat surface (e.g. exam table, gurney) is preferential for assessing hip flexion. The patient can be supine or seated on an exam table's edge with legs dangling to assess knee flexion. Begin assessing hip flexion by instructing the patient to perform a unilateral straight leg raise while keeping the contralateral side flat and stable against the exam table. The practitioner applies resistance against this movement. This test can be performed with a flexed knee as well, with practitioner resistance applied to the anterior thigh. Begin assessing knee flexion by instructing the patient to resist practitioner pressure with a knee flexed to approximately 90 degrees while seated or supine. Either hip or knee flexion is assessed one leg at a time, repeating the assessment with the opposite leg.

Manual Muscle Test (MMT) Grading System

Muscle Test

A practitioner applying pressure and feeling patient resistance in a muscle group with full ROM indicates at least 75% or "good" muscular strength according to the MMT. When a patient cannot resist a practitioner's application of pressure, this is approximately 50% or less ("Fair, Poor, Trace and Zero") on the MMT. With these findings, gravity and its elimination by the practitioner (application of passive motion) can further delineate the assessment of strength. It is important to compare each extremity bilaterally, along with baseline observations on any abnormalities or findings with general muscular development.