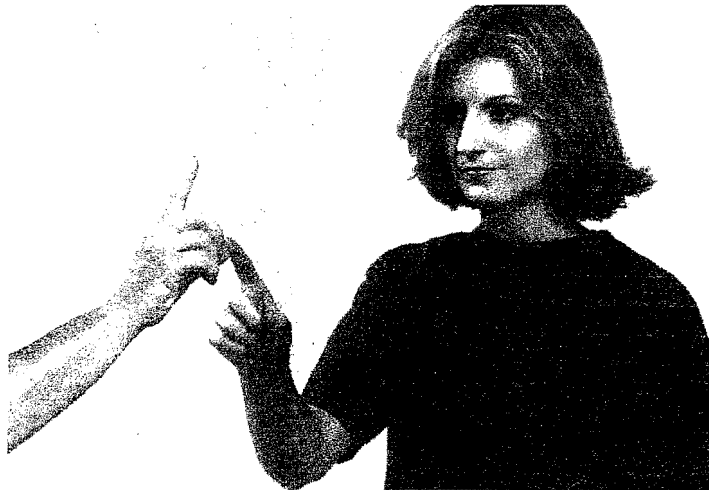


Testing: Limb Coordination

FINGER-NOSE TEST (Fig. 9-3)

Fig. 9-3. Finger-nose test.



Materials needed:	No materials are needed.
Patient position:	Seated with the arms at the sides.
Procedure:	The examiner holds an index finger vertically slightly more than arm's length away from the patient. The patient is asked to touch, with his or her own index finger, first his or her nose and then the examiner's index finger. The patient is asked to repeat this movement several times as rapidly as possible.
Normal response:	Arm movement should be smooth and precise. The patient should be able to alternately touch his nose and the examiner's finger with ease and accuracy.

Lesions:

Movements of the upper extremity will be inaccurate. The patient may go past or fail to touch precisely the nose or the examiner's finger (dysmetria). There may be tremorlike movements present, especially as the patient's finger approaches the target (intention tremor). The movement may appear disjointed and will lack the smoothness of normal movement.

HEEL-SHIN TEST (Fig. 9-4)

Fig. 9-4. Heel-shin test (arrow shows direction of movement).

**Materials needed:**

No materials are needed.

Patient position:

Seated or supine on an examining table with the shoes removed and the eyes open.

Procedure:

The examiner asks the patient to slide the heel of one foot from the knee down toward the great toe of the opposite leg. The test is repeated for the other side.

Normal response:

The patient slides the heel smoothly along the shin of the opposite leg, maintaining contact between the heel and the leg.

Lesions:

Contact between the heel and shin cannot be maintained, and the movement is jerky and unsteady.

DIADOCHOKINESIA (Figs. 9-5 to 9-8)

Fig. 9-5. Test for diadochokinesia: rapid hand movement, palm up.



Fig. 9-6. Test for diadochokinesia: rapid hand movement, palm down.



Fig. 9-7. Test for diadochokinesia: rapid finger movement.



Fig. 9-8. Test for diadochokinesia: rapid toe tapping (arrow shows direction of movement).



- Materials needed:** No materials are needed.
- Patient position:** Seated with the hands in the lap.
- Procedure:** The examiner asks the patient to turn the hands palm up and then palm down as rapidly as possible while resting the hands in the lap. Alternatively, the patient may be asked to tap each of the fingers alternately against the thumb as rapidly as possible. Diadochokinesia should be examined in the lower extremity as well by asking the patient to tap the toes as rapidly as possible.
- Normal response:** Movements should be rapid and rhythmic bilaterally.
- Lesions:** The inability to perform rapidly alternating movements of the extremities is termed *dysdiadochokinesia*. Patients who exhibit this problem will perform alternating movements without rhythm or speed.



REBOUND (Fig. 9-9)

Fig. 9-9. Rebound test
(arrow shows direction of
resistance by examiner).



- Materials needed:** No materials are needed.
- Patient position:** Seated or standing in a comfortable position with the arms held straight out in front.
- Procedure:** The examiner asks the patient to try as hard as possible to keep the arms level. The examiner then pushes downward on each of the patient's arms with a firm, quick motion to try to displace the arms toward the floor.
- Normal response:** The patient's arm will move downward toward the floor slightly and then back to a level position without going past the horizontal.
- Lesions:** Patients with cerebellar pathology will demonstrate *rebounding*, which involves the inability to stop motion quickly. Thus, when the examiner pushes downward on the patient's arm, the arm will move down toward the floor and then back up past the horizontal and downward once again before stopping in the original position. The oscillatory movement may occur more than once prior to the attainment of the original position.

Testing: Stance and Gait

The Romberg, Tandem Romberg, and Tandem Gait tests are used to assess stance and gait. For patients in whom disorders of balance are detected, a more comprehensive assessment is needed. A variety of assessment tools and techniques are available. The reader is referred to Horak,² Horak and Nashner,³ Nashner,⁵ Nashner and Peters,⁶ and Shumway-Cook and Woollacott⁷ for further information.

NARROW-BASED STANCE (Fig. 9-10)

Fig. 9-10. Narrow-based stance.



- Materials needed:** No materials are needed.
- Patient position:** Standing with the feet as close together as possible.
- Procedure:** The examiner stands just behind and to the side of the patient and asks the patient to maintain balance while standing with the feet positioned as close together as possible.
- Normal response:** The patient should be able to maintain balance in this position.
- Lesions:** Patients who are unable to perform this test should be investigated further for cerebellar pathology.

CLINICAL COMMENT: ROMBERG TEST

The Narrow-Based Stance Test is identical to the Romberg Test-eyes open (see Chapter 8). The Romberg Test is properly a test for dorsal column functioning, although inability to perform the Romberg test with eyes open is indicative of cerebellar pathology. Failure on the Romberg test-eyes closed points to a disorder of proprioception typical of dorsal column disease.