

Neurologic Exam Techniques: Beyond the Cranial Nerves

○ 1. Jendrassik Maneuver

The maneuver: Improves elicitation of deep tendon reflexes. From Jendrassik's original description: "Put the individual, who has no knee jerk with the normal method on the edge of a table with the legs as relaxed as possible, and while I tap his patellar tendons I ask him to hook the flexed fingers of the right and left hand in each other, and pull them as hard as possible with the arms extended forward".

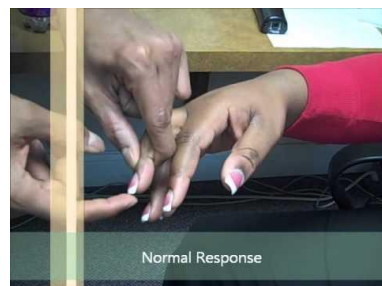
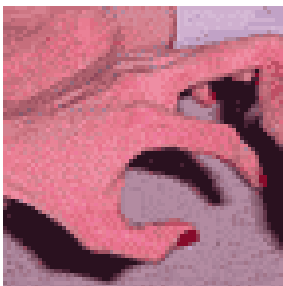
Relevance to Neuro-Ophthalmology: To avoid a false negative finding of diminished reflexes (for example in the diagnosis of Adie's Syndrome).

Background: The maneuver is not merely a way to divert attention from the patient, but it actually increases gain of muscle spindles, improving ability to elicit the reflex.

Eponym: Ernst Jendrassik, born 1858, was a friend of Marie and Charcot.



○ 2. Hoffman, Tromner, and Mayer reflexes



The maneuvers: Hoffman: hold the slightly bent fingers of the patient between thumb and index finger and snap the nail. A quick flexion of this or all fingers will occur. Tromner: The patient's hand is placed a relaxed position with fingers slightly bent. The middle finger is held by the examiner at the middle phalanx. The examiner flicks the distal phalanx of this middle finger. A brief flexor motion of the middle or other fingers

occurs. Mayer: with the patient's hand bent at the wrist, the proximal phalanx of the middle finger is pushed down, slowly but forcefully by the examiners thumb. The patient's thumb then opposes and flexes.

Relevance to Neuro-Ophthalmology: When looking for subtle evidence of unilateral UMN motor disease, as in determining if a CN3 palsy is a Weber's syndrome.

Background: Unlike some believe, these are not the upper extremity version of the Babinski reflex. These signs are simply normal finger flexer reflexes. However, when asymmetric, they may be a sign of UMN disease.

Eponyms: Johann Hoffmann, born 1857. First to describe myotonic dystrophy. Ernst Tromner (born 1868) also designed the Tromner reflex hammer (pictured). Carl Mayer (born 1862), published 11 papers on his reflex.



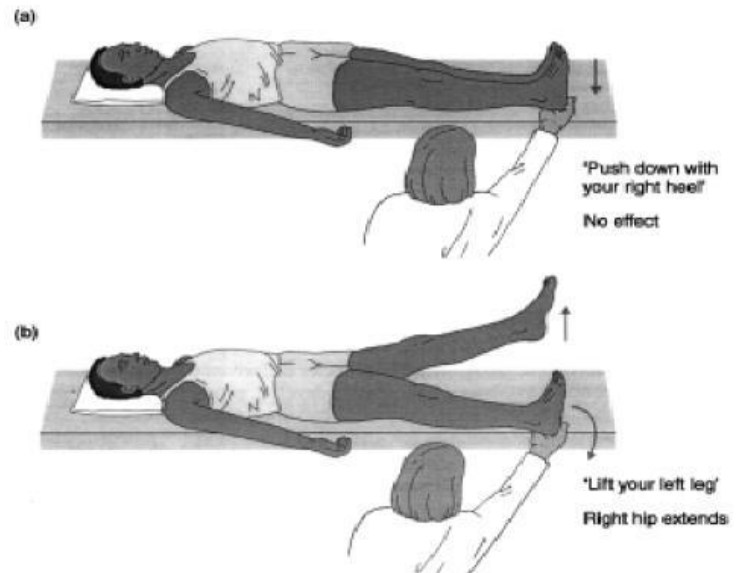
○ 3. Hoover's Sign

The maneuver: The examiner puts a hand under the normal heel and asks the patient to flex his weak leg. If you feel nothing, it suggests functional weakness.

Relevance to Neuro-Ophthalmology: Conversion disorders. Patient's with hysterical blindness are more likely to have other non-organic deficits like non-epileptic seizures, or hemiparesis.

Background: A healthy or UMN hemiparetic person flexing the right hip will extend the left hip. A functional patient will have no effort of the 'normal' hip when attempting to lift the 'paretic' leg.

The Man: Charles Hoover, born 1865, published his sign in JAMA in 1908.



○ 4. Fukuda step test

The maneuver: Stand with eyes closed and arms outstretched in a quiet room. Step briskly about 50 times attempting to remain in place.

Relevance to Neuro-Ophthalmology: In addition to the *Head Impulse test*, the Fukuda step test can help localize vestibular dysfunction (but is not very sensitive nor specific).

Background: The test measures asymmetrical vestibulospinal reflex tone and suggests unilateral impaired vestibular function. A rotation at an angle 30 degrees or more indicates pathology on the side the body is turning towards.

The Man: Tadashi Fukuda was a Japanese otolaryngologist who quantified the results of Siegfried Unterberger, an Austrian otolaryngologist who originally described the test.

○ 5. Romberg sign

The maneuver: Romberg's original description was to have the patient close his eyes while standing. Only later the addition of the feet being placed together was added. There is no particular note of what Romberg said to do with the arms.

Relevance to Neuro-Ophthalmology: Evidence of sensory ataxia in the setting of bilateral optic neuropathy might prompt investigation of B12 deficiency. More importantly, understanding that this sign represents dorsal column disease, and not cerebellar disease as often believed, prevents misdiagnosis.

Background: Originally described as part of the syndrome of tabes dorsalis from syphilis due to atrophy of the posterior spinal columns.

The Man: Moritz Romberg, born 1795. Romberg called proprioception 'the sixth sense'.

○ 6. Babinski, Gordon, and Schaeffer signs

The maneuvers: Babinski: irritation of the sole. Gordon: squeeze the calf muscle. Schaeffer: squeeze the achilles tendon. Pathologic response is always extension of the toes.

Relevance to Neuro-Ophthalmology: Patients with optic neuritis who also have a Babinski sign are more likely to have MS. It should be tested on any new optic neuritis patient.

Background: Babinski studied hemiplegia and found his sign by being interested in discovering signs distinguishing hysteria from organic disease.

Eponyms: Joseph Babinski (born 1857). Alfred Gordon (born 1874). Max Schaeffer (born 1852).

References:

Koehler et al, eds. Neurological eponyms. Oxford, 2000.

Stone et al. Hoover's sign. Practical neurology, 2001

