


كلية الطب البشري
Faculty of Medicine

Neurophysiology I Module Physiology Lab 2



الجامعة السعيدة
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Neurological Examination B-Motor Examination

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Motor Examination

- 1-Bulk ,tone and power of the muscle***
- 2-Examination of superficial and deep reflexes***
- 3-Coordination of movement***
- 4-Gait***
- 5-Involuntry movement***

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1-Bulk ,tone and power of the muscle

- **a-Bulk of muscle:**

Inspect, palpate the muscle ,by measuring tape
compare both biceps

- **Results:**

Normal

Muscle atrophy

Muscle hypertrophy

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- **b-Tone of muscle:**

- **Def./**muscle tone is a state of partial incomplete continuous subtetanic contractions found in healthy muscle

- **Examined by** passive movement of the joints and noting the resistance it offers

- **Results:**

- Normal

- Hypertonia

- Hypotonia

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Testing Muscle Tone



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- **b-Power of muscle:**
- Tested against resistance

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Movement	Segmental Innervation
Abduction of shoulder	C5
Flexion of elbow	C5-C6
Extension of elbow	C7
Grasp the fist	C8
Abduction of the fingers	C8-T1
Hip flexion	L2
Knee extension	L3-L4
Ankle dorsiflexion	L4-L5
Ankle planter flexion	S1

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2-Examination of superficial and deep reflexes

A)Superficial reflexes

- Corneal
- Palatal
- Abdominal
- Planter and Babinski reflex

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A- Superficial Reflexes:**1-Corneal Reflex:**

- 1- Ask the subject to look at the far wall.
- 2- Twist a small piece of cotton to a fine hair.
- 3- Approaching from the side touch the lateral aspect of the cornea.
- 4- Bilateral blinking is the response, Compare both sides.
- 5- It indicates that the ophthalmic division of the trigeminal nerve as well as in the motor fiber of the facial nerve (which closes the eye), are intact.

**Fig, (4): Corneal reflex**

2-Palatal Reflexes: Touch the mucous membrane covering soft palate on either side of the mid-line with a tongue depressor. Retraction of the palate indicates normal reflex response by the 9th (afferent) and 10th (efferent) cranial nerves.

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3-Abdominal Reflexes: Strip off the subject to the waist, who lies on a bed in supine posture. Elicit by stroking the relaxed abdomen briskly with an instrument which is slightly sharp (pin of the percussion hammer works satisfactorily). This should be performed in all quadrants of the abdomen watching the umbilicus which is pulled towards the quadrant stimulated. Consistent inequality of response on both sides of the abdomen is significant, if there is no operative scar on the least active side.

4-The Plantar reflex:

It is a polysynaptic spinal reflex.

Stimulus: Firm scratch of the lateral aspect of the sole with a key starting from the heel towards the little toe, then along the bases of the toes medially.

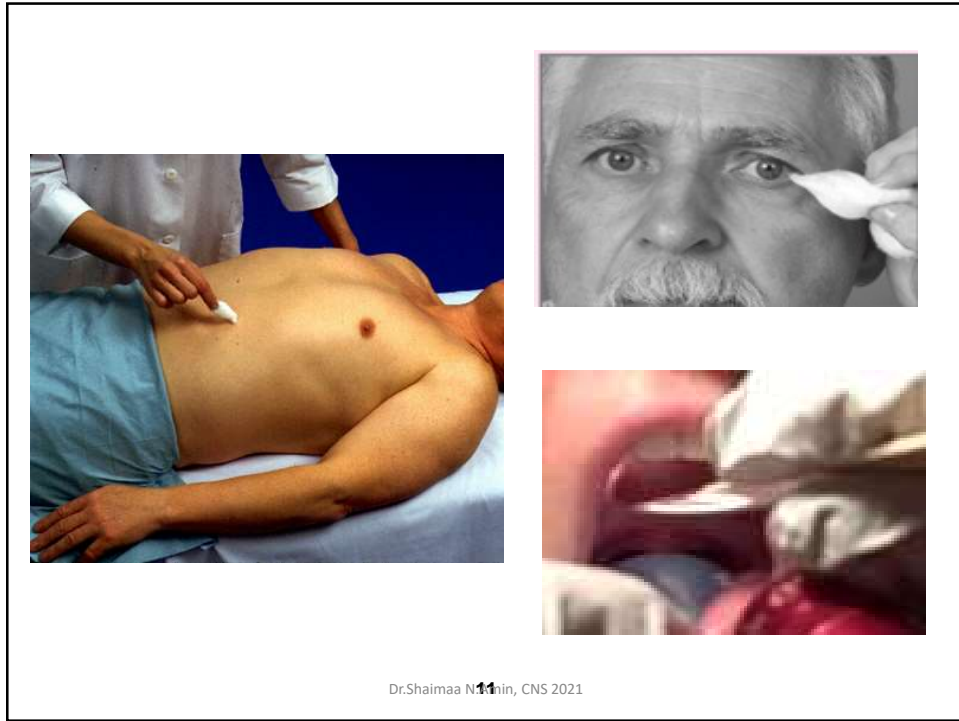
Normal response: Is the flexion (i.e., downward movement) of the great toe while the other toes flex and come together

Abnormal response:

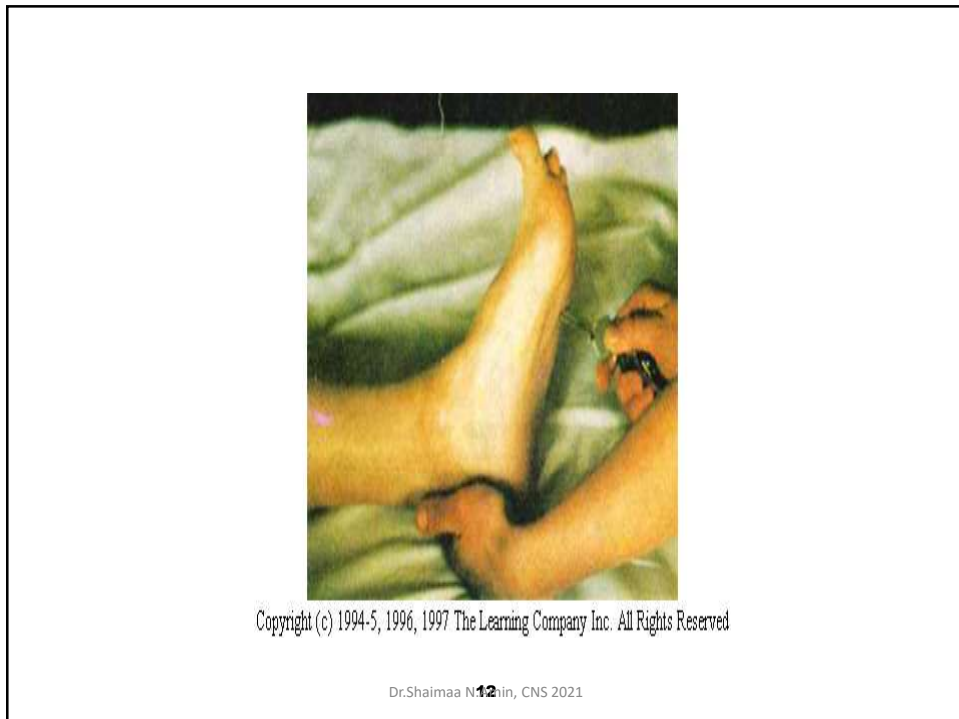
Damage to the pyramidal motor tracts produces **Babinski reflex or sign**, in which there is dorsiflexion of the great toe and fanning of the other toes (i.e., big toe up).

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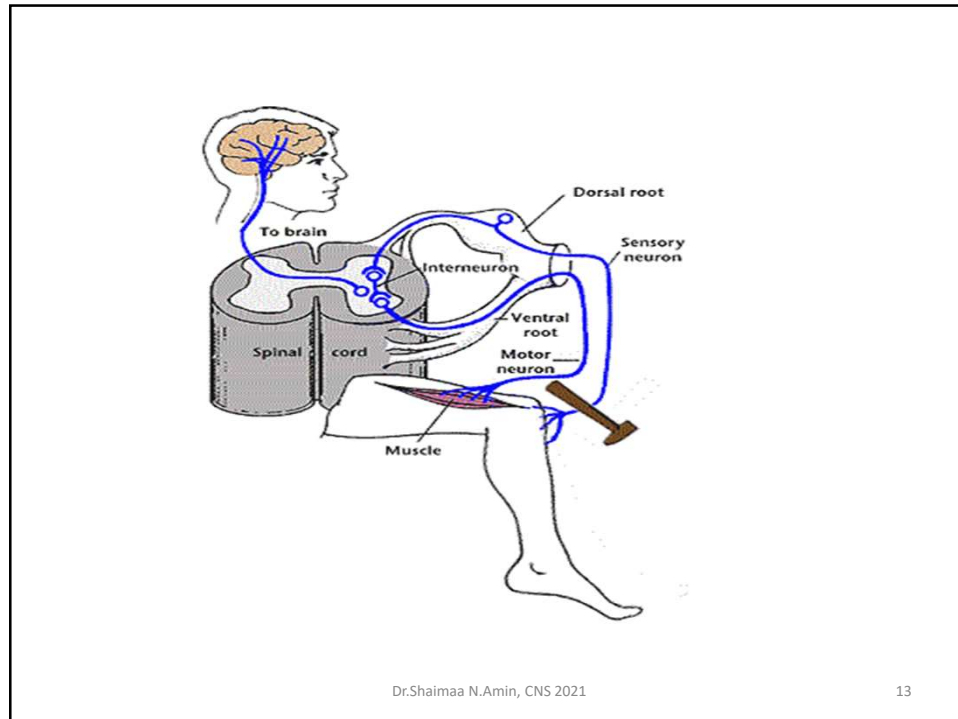
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Deep Tendon Reflexes

Technique

- Position limb so muscle is slightly stretched
- Reflex hammer should strike tendon briskly to stretch tendon
- Get patient to relax

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B- Deep Reflexes or Tendon jerks:

- 1- These are spinal, monosynaptic deep reflexes
- 2- These reflexes are obtained in a subject who is relaxed.
- 3- If by reflex cannot be obtained it can be enforced by the Jendrassik maneuver:
Ask the subject to clench fist for a fraction of a minute before striking the patellar tendon.
Let the subject grind his teeth during the elicitation of the reflex.
Ask the subject to clasp both his hands and pull
While the subject is doing the maneuver, proceed to elicit the reflex.
- 4- Stimulus: A sudden tap is applied to the muscle tendon using a hammer
- 5- Response: sudden contraction followed by sudden relaxation

knee jerk reflex

The subject is asked to relax his legs, and semiflex them (90° degree).
Strike the patellar tendon, midway between the patella and the insertion of the tendon on the tibial tuberosity, and observe the resulting contraction of the quadriceps muscles and extension of the leg. **Center: L3 - L4**

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Ankle jerk reflex

The subject kneels on a chair, with his or her back to the examiner and feet (shoes and socks off) projecting over the edge.
Put some tension on the gastrocnemius muscle of the subject by pressing on the great toe with the hand.
Strike the Achilles tendon at the level of the ankle, and observe the resulting extension of the foot. **Center: S1- S2**

Biceps jerk reflex

It is obtained by striking the thumb or forefinger placed directly over the biceps tendon when the forearm is flexed at ninety degrees. The biceps will contract and further flex the forearm. **Center: C5 –C6**

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Triceps jerk reflex

The subject lies on his or her back with the elbow bent so that the arm lies loosely across the abdomen.

Strike the triceps tendon about 2 inches above the elbow. If there is no response, repeat this procedure, striking to either side of the original point.

If this procedure is correctly performed, the triceps muscle will twitch but will not usually contract strongly enough to produce arm movements. **Center: C6 –C7**

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4- Coordination of movement:

This term refers to the smooth interaction and cooperation of groups of muscles in order to perform a definite motor task. It depends on impulses coming from muscle and joint receptors, integrity of dorsal columns, cerebellum and state of muscle tone.

Testing muscular coordination in the upper limbs:

1- Finger-nose test: Ask the subject to touch the tip of his nose with each index finger from the distance of his extended arm, first with the eyes open and then with the eyes closed. Observe if all movements progress smoothly and report any tremors.

2- The subject is asked to draw a large circle in air with his forefinger.

3- The subject is asked to touch his each finger in turn with the tip of the thumb

4- Finger to finger test

Testing muscular coordination in the lower limbs:

1- Heel-knee test: Ask the subject to lift one leg high in the air and place the heel of this leg on the opposite knee and then to slide the heel down along the shaft of tibia towards the ankle. Observe if all movements progress smoothly.

2- The subject is asked to draw a large circle in air with his toe.

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3-Coordination of movement

- a)Finger to nose test



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- b) Heel-Knee test



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3. Romberg:

Stand upright, place feet together, then close eyes

- loss of balance means + Romberg test

Be prepared to protect patient from falling!



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4-Gait

- Note the pattern of walking
- Normal
- Spastic
- Shuffling
- Drunken(zigzag)

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Abnormalities of Gait:

Type

- a. Spastic (circumduction) gait.
- b. Scissor
- c. Waddling gait
- d. Shuffling gait.
- e. Drunken (staggering) gait.
- f. High steppage

Lesion

Unilateral UMNL
 Bilateral UMNL
 LMNL
 Parkinson's disease
 Archicerebellar lesion
 posterior column lesion

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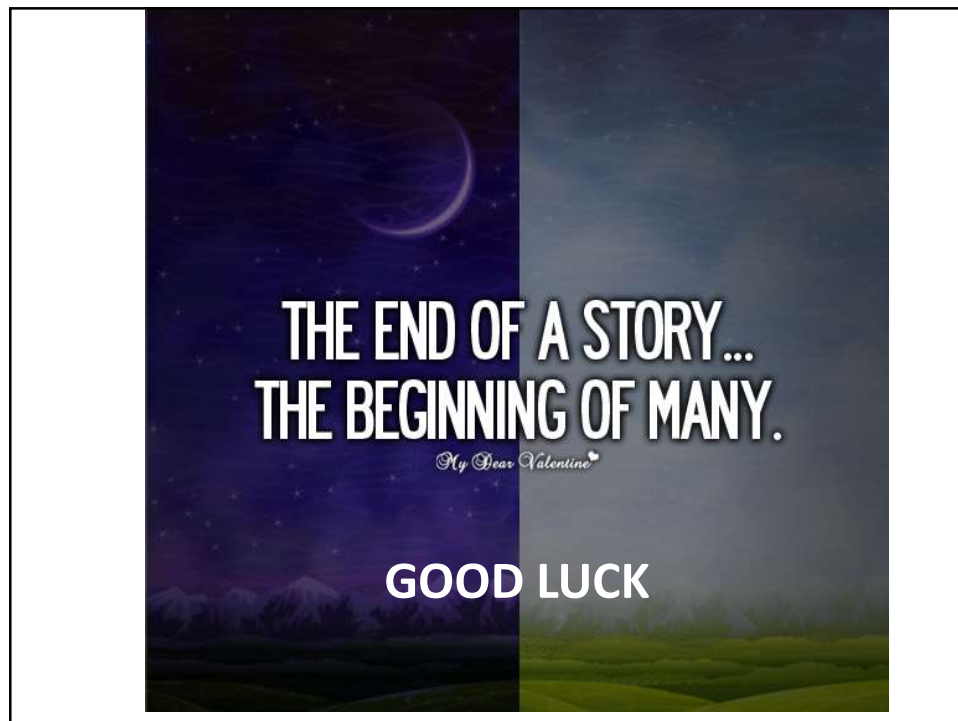
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5-Involuntary movement

- Like tremors, chorea

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