

Examination of the Motor System

Muscle Bulk

- ✦ Inspect and palpate, measure and compare the two sides
- ✦ **Muscle atrophy** (wasting) indicates a a denervated muscle, a primary muscle disease or disuse atrophy
- ✦ **Hypertrophy**: occupational, regular training



Muscle Tone

- ✦ Is a state of tension or of partial contraction found in healthy muscles
- ✦ Is tested by assessment of **resistance to passive motion** of a relaxed limb
- ✦ Flex and extend the following joints (wrist, knee, neck, elbow) and note the resistance offered
- ✦ **you should feel a slight resistance**

◆ **Hypotonia**: ↓in muscle tone:
flaccidity

◆ Cause: LMNL, cerebellar disease.

◆ **Hypertonia**: ↑in muscle tone.
spasticity : rigidity

◆ Cause: UMNL or extrapyramidal lesion

● **clasp-Knife rigidity:**

↑ resistance to passive mvt then suddenly the resistance disappears. (UMNL)

● **Lead-Pipe (plastic) rigidity:** continuous similar resistance at all angles of motion (Parkinson'sD).

● **Cogwheel rigidity**

When combined with tremor, the smooth plasticity of the ↑ tone is broken up into a jerky resistance to passive mvt (Parkinson's D)

Ankle clonus:

Occurrence of regular rhythmic contraction of muscle when subjected to sudden, maintained stretch (UMNL)



Muscle Power

Tested against resistance

Power is graded from 0 to 5

Shoulder Girdle and upper extremity:

- ✦ Abduction of shoulder joint (C5)
- ✦ Flexion of elbow joint (C5-C6)
- ✦ Extension of elbow joint (C7)
- ✦ Grasp at the fist or flexion of finger (C8)
- ✦ Abduction of the fingers (C8+T1)

Examination of deltoid muscle

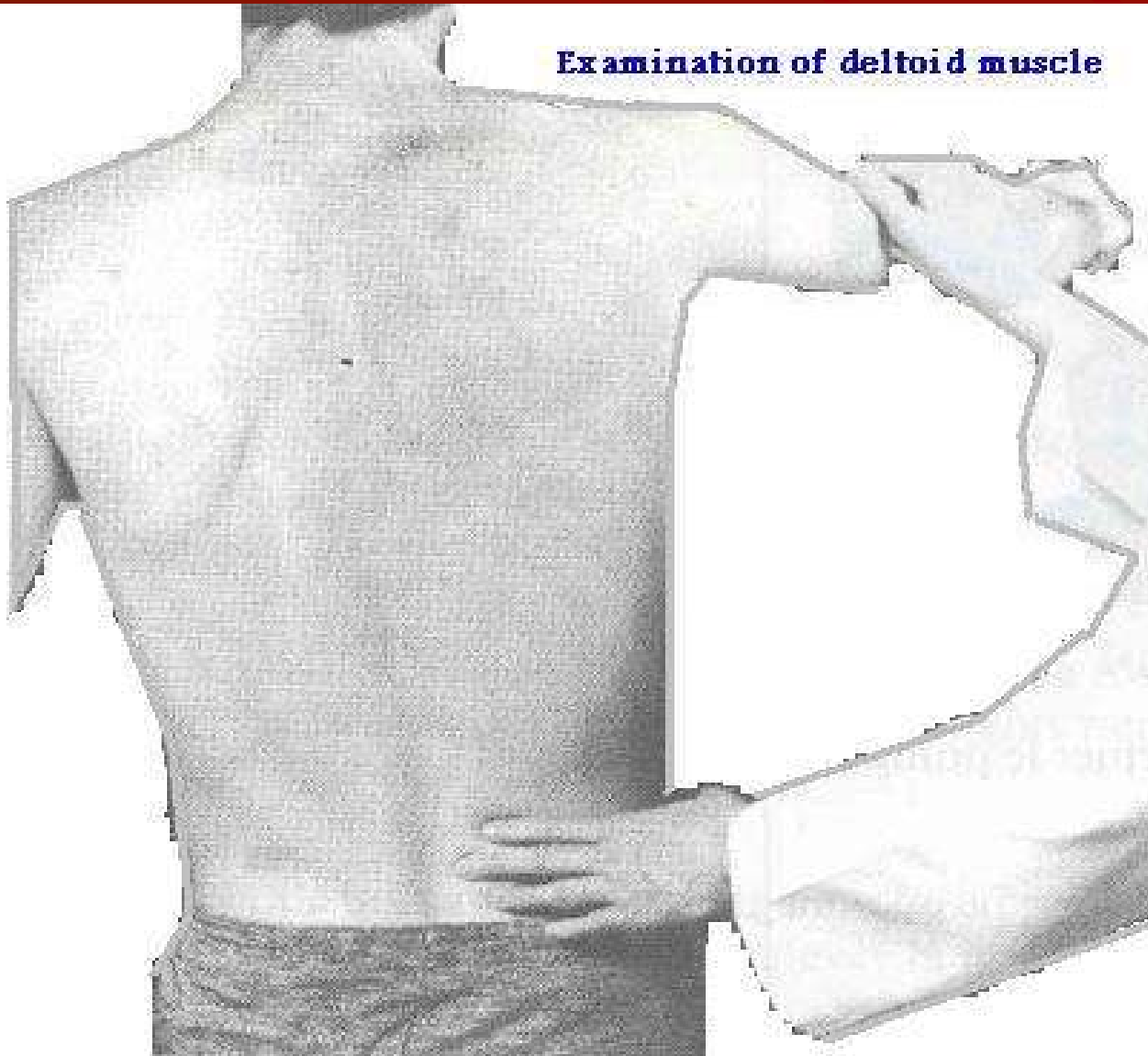




Figure 10.25 Testing power—
shoulder abduction



Figure 10.26 Testing
power—elbow flexion



Figure 10.27 Testing
power—elbow extension

Figure 10.28 Testing power—finger flexion

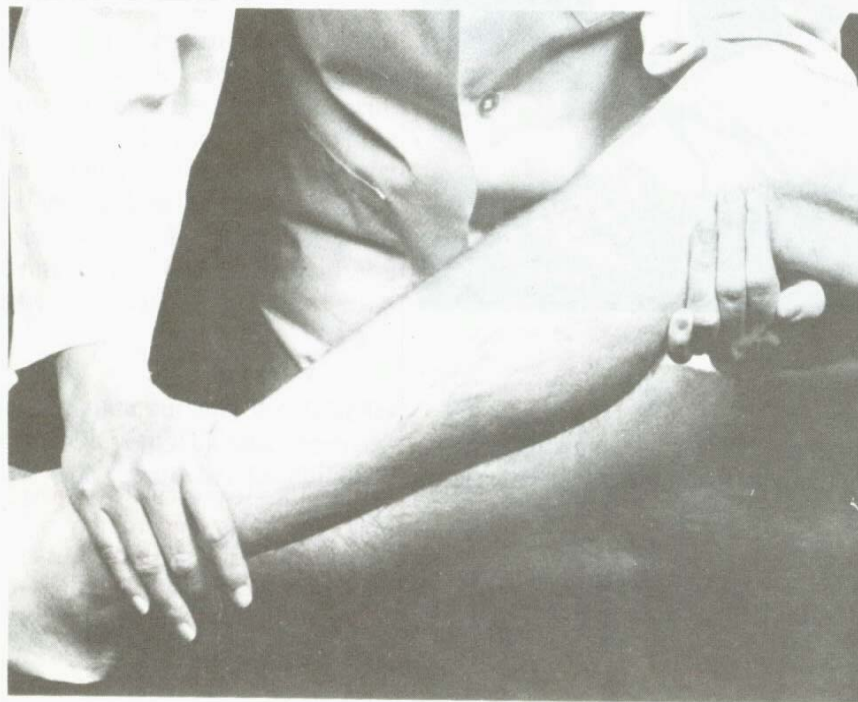


Figure 10.29 Testing power—finger abduction



Pelvic Girdle and lower extremity:

- ◆ Hip flexion: L2
- ◆ Knee extension: L3-L4
- ◆ Foot dorsi flexion L4-L5
- ◆ Foot plantar flexion S1



EXTENSION (OU FLEXION PLANTAIRE)

REFLEXES

Superficial reflexes:

Corneal reflex:

Draw a small tapered piece of cotton wool over the lateral aspect of the cornea. → closure of the eyelid

→ Sensory pathway in ophthalmic division of the trigeminal nerve as well as motor fibres in the facial nerve are intact

Palatal reflex

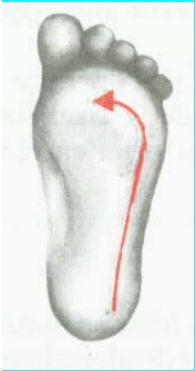
Touch the Soft palate on either side of the mid-line with a tongue depressor

→ Retraction of the palate: → NI reflex response by the IXth & Xth cranial nerve

Abdominal reflexes:

- Stroke the relaxed abdomen diagonally toward the umbilicus in each of the 4 quadrants
- Reflex contraction of abd muscles & pulling of the umbilicus to the stimulated quadrant

Plantar and Babinski reflex (S1)



NI response in adult : plantar flexion of the great toe & flexion and coming together of the other toes

Damage to the pyramidal tract (UMNL) :
Babinski's sign: dorsiflexion of the great toe and fanning of the other toes.

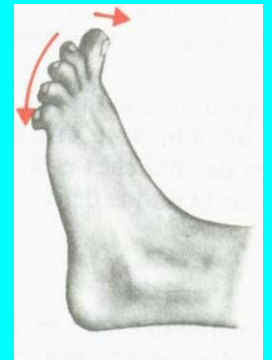




Figure 10.43 The ankle jerk (second method) examination

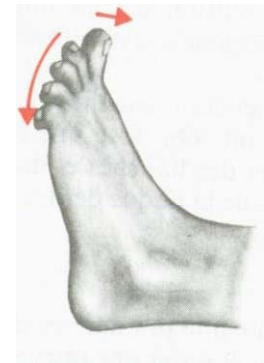


Figure 10.44 The plantar reflex examination

The pupillary reflex (light reflex):

- Direct light reflex: pupil constricts
- Consensual light reflex: The opposite eye also constricts

Deep or Tendon Reflexes

Reflexes are graded from absent to greatly ↑; using the following scale:

- 0 → absent
- +1 → present but reduced
- +2 → Normal
- +3 → increased, possibly NI
- +4 → greatly increased, usually with clonus

Jendrassik phenomenon: reinforcement manoeuvre

Biceps reflex (C5,C6)

- Contract^o of the biceps muscle and flexion of the forearm.



Figure 10.30 The biceps jerk examination

Triceps Reflex: (C6-C7)

- contract° of the triceps muscle and extension of the forearm.



Supinator reflex(C5-C6)

- Contract° of the brachioradialis muscle & flexion & supinat° of the forearm



Knee (Patellar) reflex: (L3-L4)

- Contract^o of the quadriceps muscle in the thigh with extension of the leg

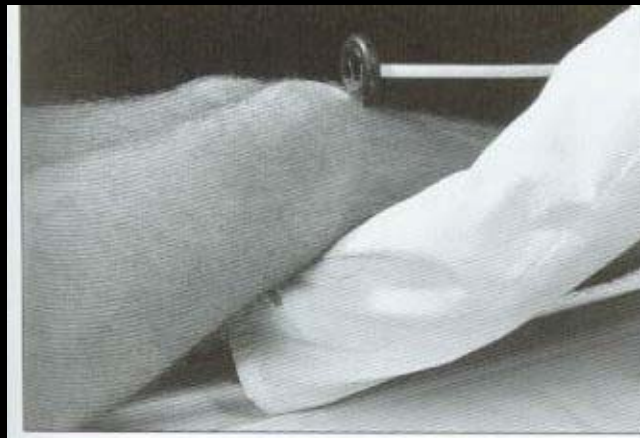


Figure 10.42 The knee jerk examination

Achilles reflex (S1)

- Plantar flexion of the foot at the ankle



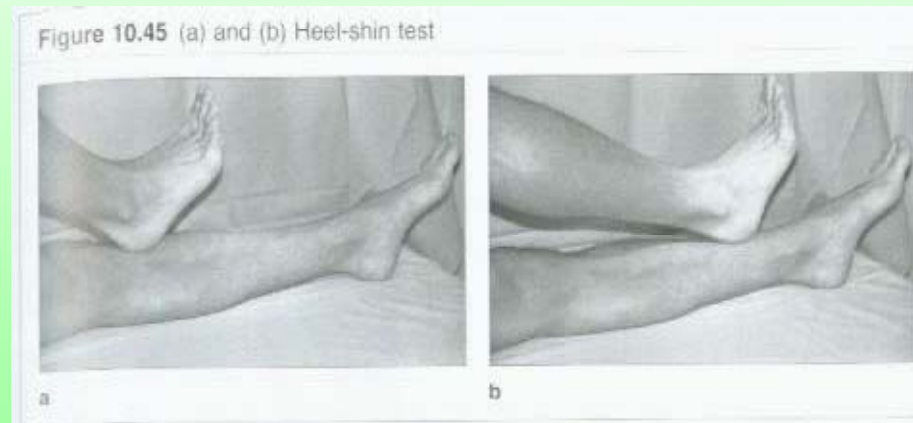
Coordination of movement

Test **cerebellar fct** by assessing rapid alternating mvts

- **Finger-nose test:**

Ask the subject to touch his nose with the R then L index finger.

- **Heel-knee test:**



- Observe if all mvts progress smoothly

GAIT

Spastic gait:

- Finds difficulty bending his knees, he drags his feet as if they were glued to the floor. (UMNL)

Festinant (shuffling gait):

- He has a fixed attitude, walks with short, small, steps.
(Parkinson's D)

Reeling gait (zig-zag)

- Walks with feet widely apart, clumsy, awkward, drunken gait. (Cerebellar lesion.)

Involuntary movement

Tremor: involuntary regular contraction of muscle

- **Static tremor:** (Parkinson's D). Appears at rest, ↑ with emotion, tiredness, thinking. Disappears with voluntary mvt and during sleep.
- **Chinetic tremor:** starts with mvt disappears at rest. (cerebellar D)

Chorea

Jerky, quasi-purposive and stimes explosive mvts, following each other but flitting from one part of the body to another.(disease of basal ganglia)

THE END.

