Examination of the lower back

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2012

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History

- NB in lower back examination
- 80% of people have lower back pain
- Age
  - Disk – 15 – 40yr
  - Ankylosing Spondylitis 18 – 45yr
  - OA > 45 yr
  - Malignancy > 50 yr
- Mechanism of injury

History

- Pain – personality
  - Radiating
  - Dermatomal distribution
  - Present at night
  - Worse in the morning
  - Increase with coughing,sneezing
  - Previous occurrences of pain
  - What makes it better/worse – posture
    - Discogenic pain worse in flexion
  - Paresthesia - distribution

History

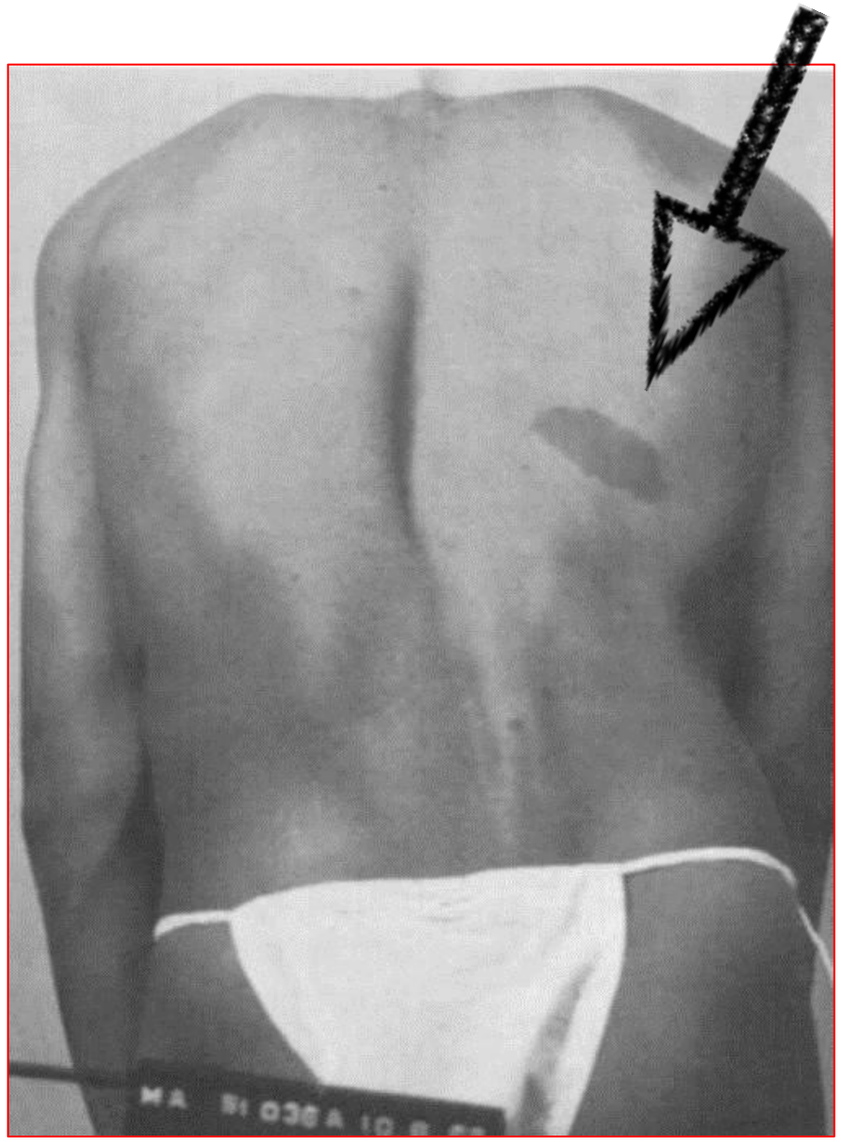
- Bladder and bowel function
- Peri-anal anesthesia
- Any litigation/compensation
- Other diseases - Diabetes
- Previous surgery

Observation

- Gait
  - Antalgic gait – caveat
- Spinal posture
  - Look from behind
    - Scoliosis
    - Pelvic tilt
    - Leg length discrepancies
  - Look from the side
    - Saggital alignment
    - Kyphosis/lordosis

Observation

- Skin markings
  - Scars
  - Tuft of hair
  - Dimple
  - Café au lait spots
  - Neurofibromas

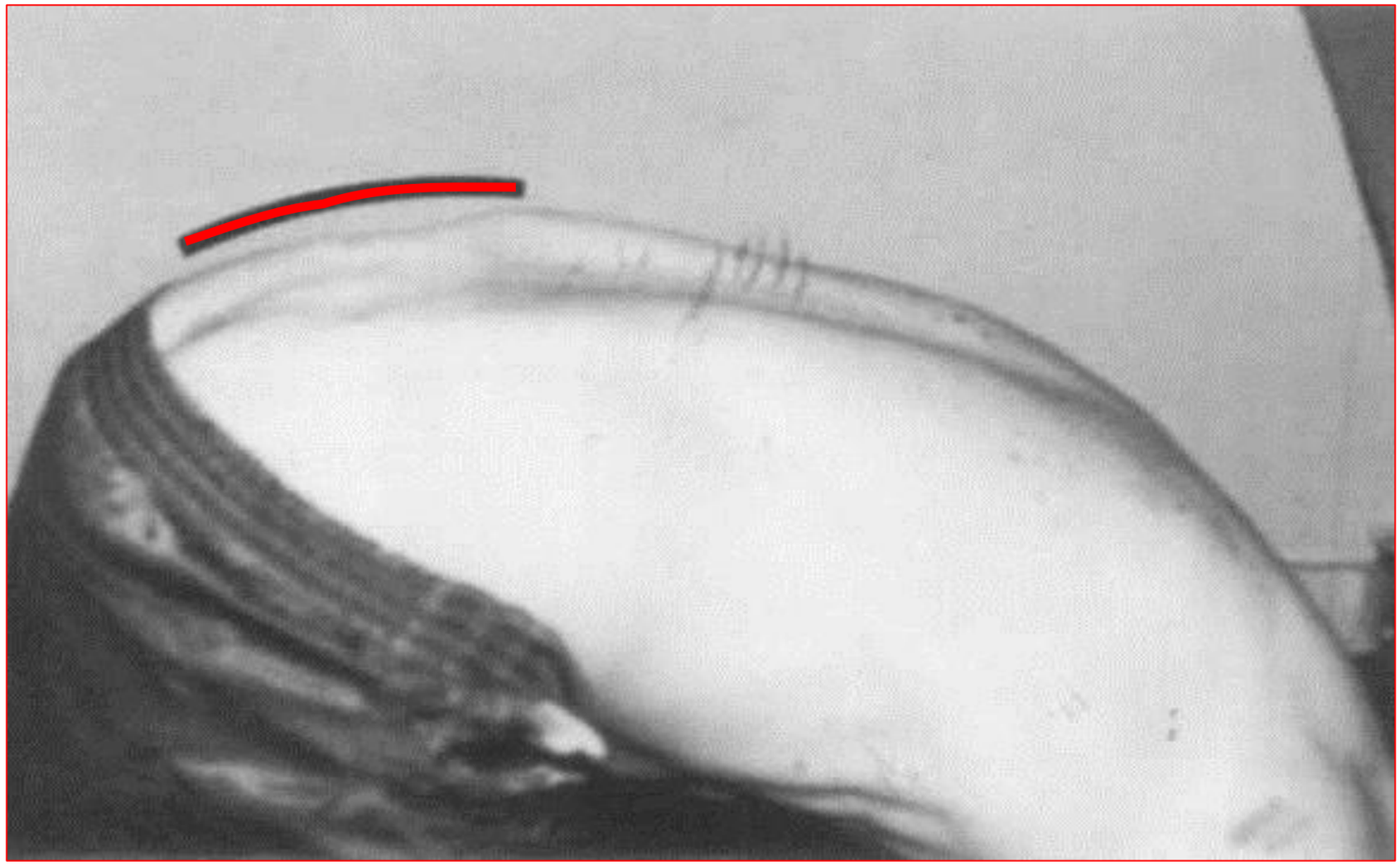


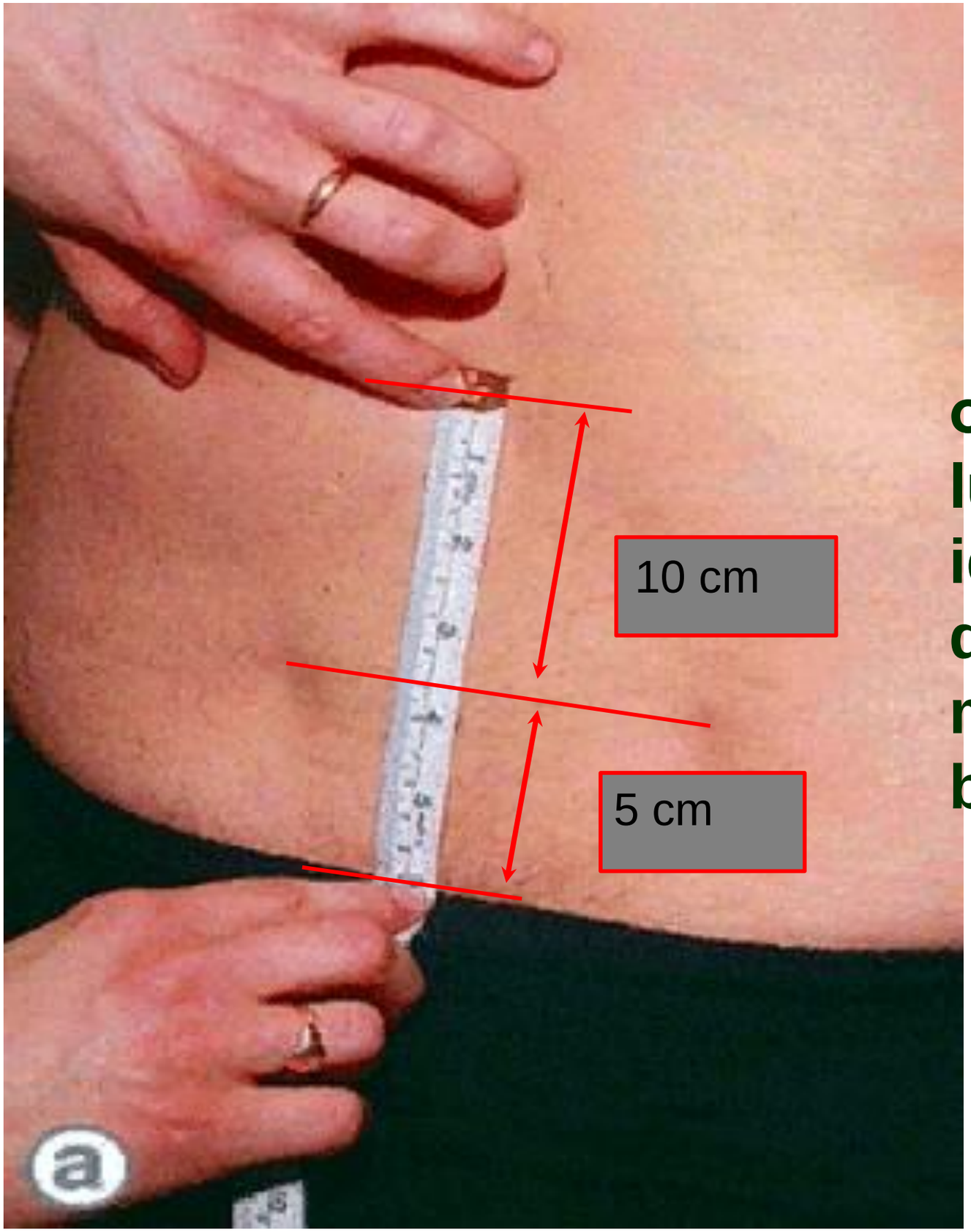
Palpation

- Important to identify the exact point of tenderness
  - Spinous processes
  - SI joint
  - Muscles
  - Previous surgical scars
  - Level of tenderness in disk prolapse

Active movements

- Remember to support patient
- Flexion – ensure that movement is in the lumbar spine





Macrae's modification of Schober's test. The lumbosacral junction is identified between the dimples of Venus, and measurement made 5cm below and 10cm above

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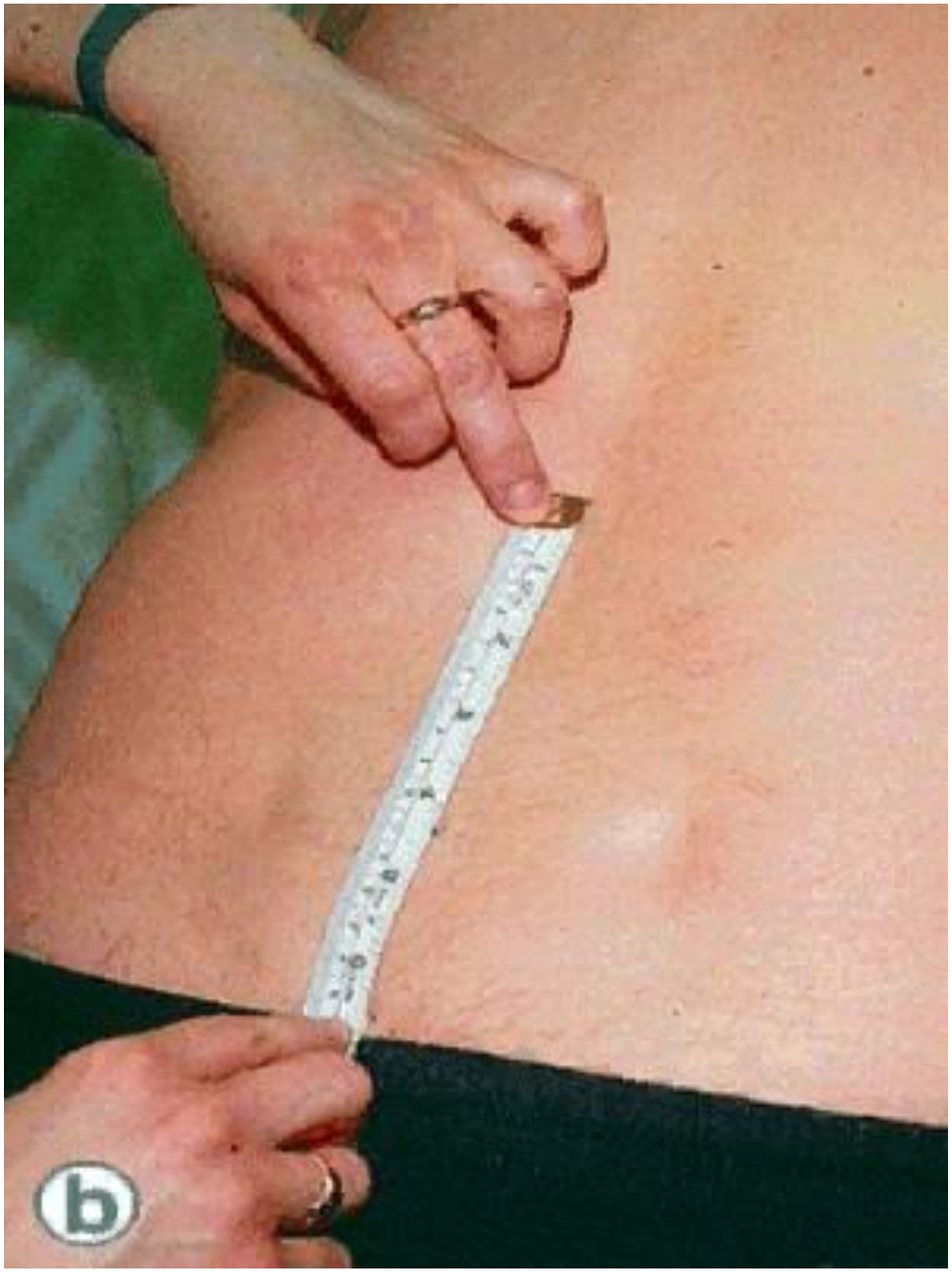

⑩Macrae’s modification of Schober’s test. The distraction of these marks is proportional to true lumbar flexion: in this case the patient has AS and skin distraction is limited.

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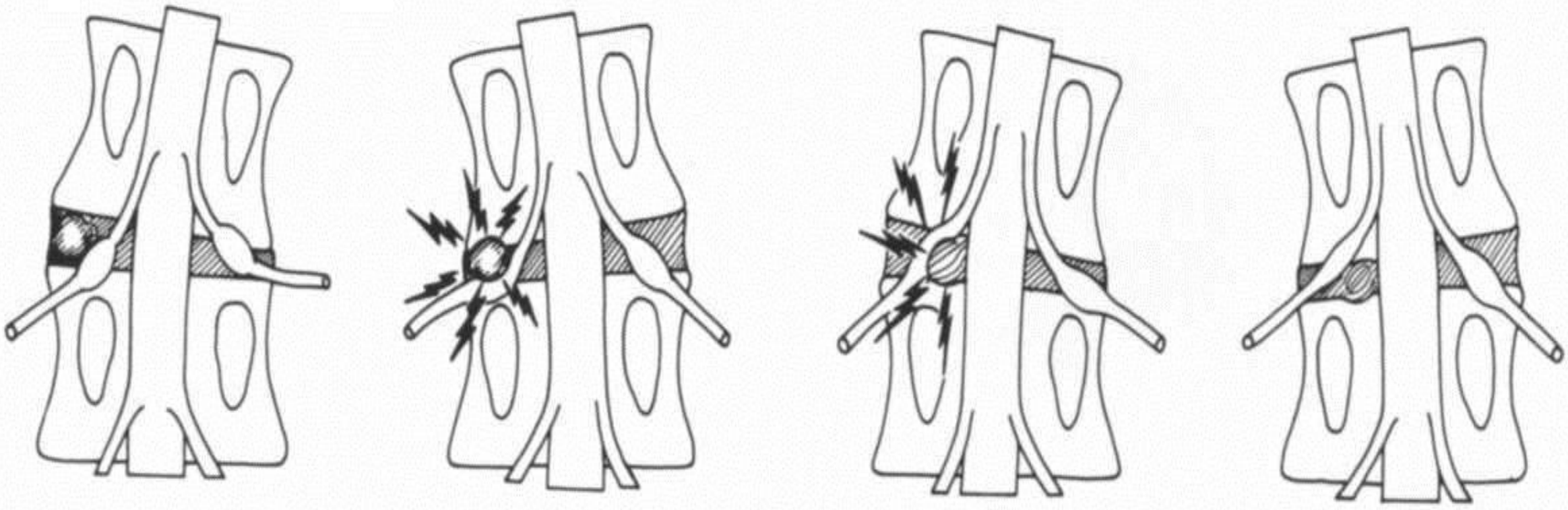
Active movements

- Extension
- Testing for mechanical symptoms
- Lateral flexion
  - Pain on the side being flexed to = articular pain – other structures are relaxed
  - Lateral disk – root symptoms worse on that side
  - Pain with flexion away – muscular or articular
  - Disk protrusion medial to root

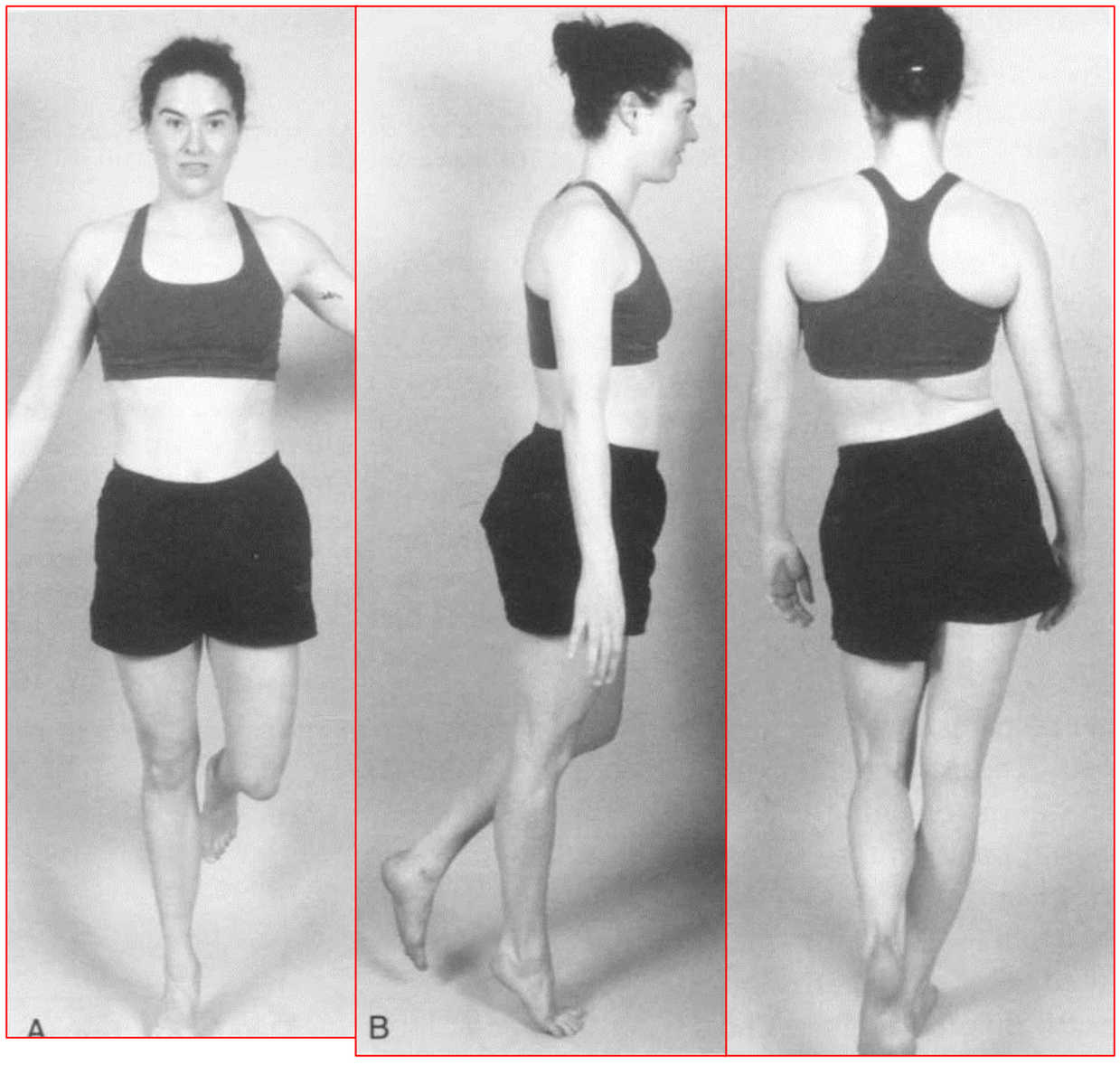


A

B

Standing

- Squat test
- Trendelenburg test



Standing

⑩One-leg lumbar extension test

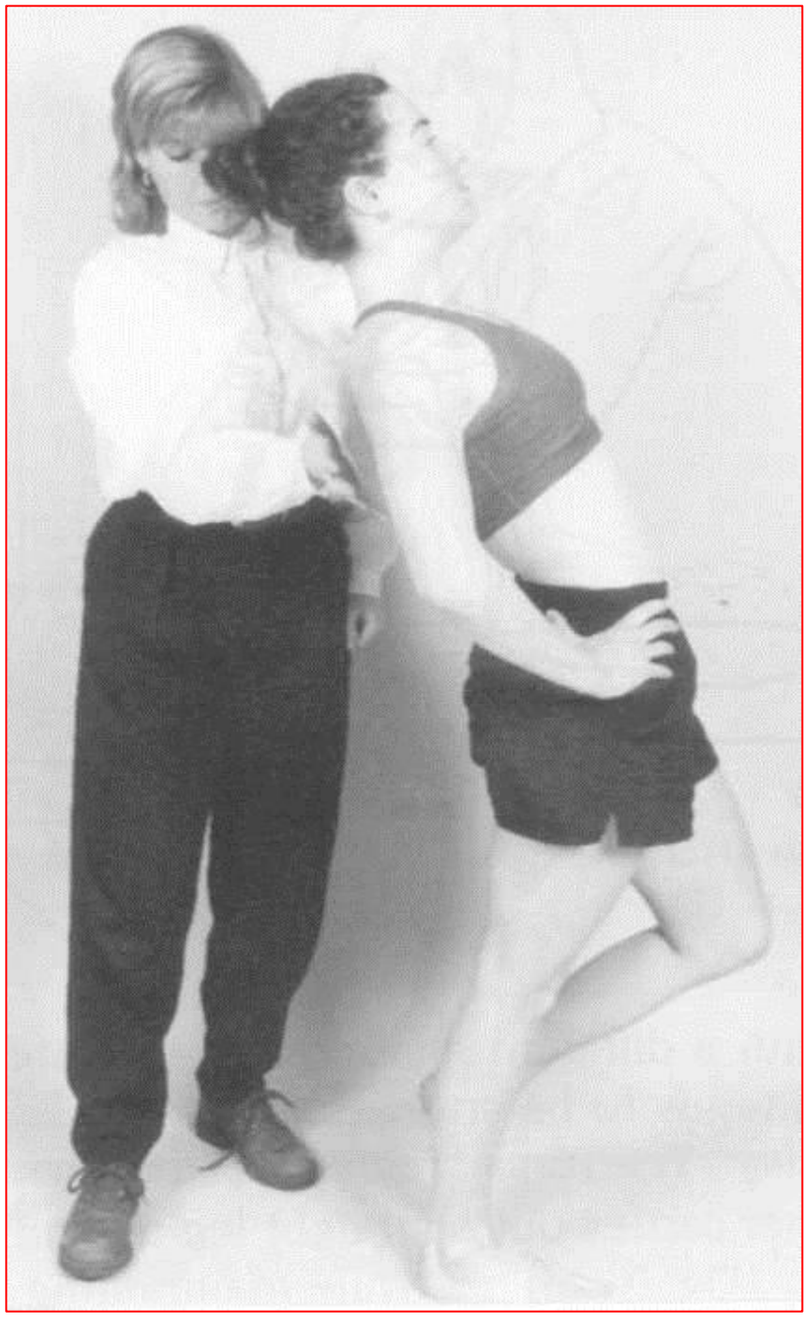
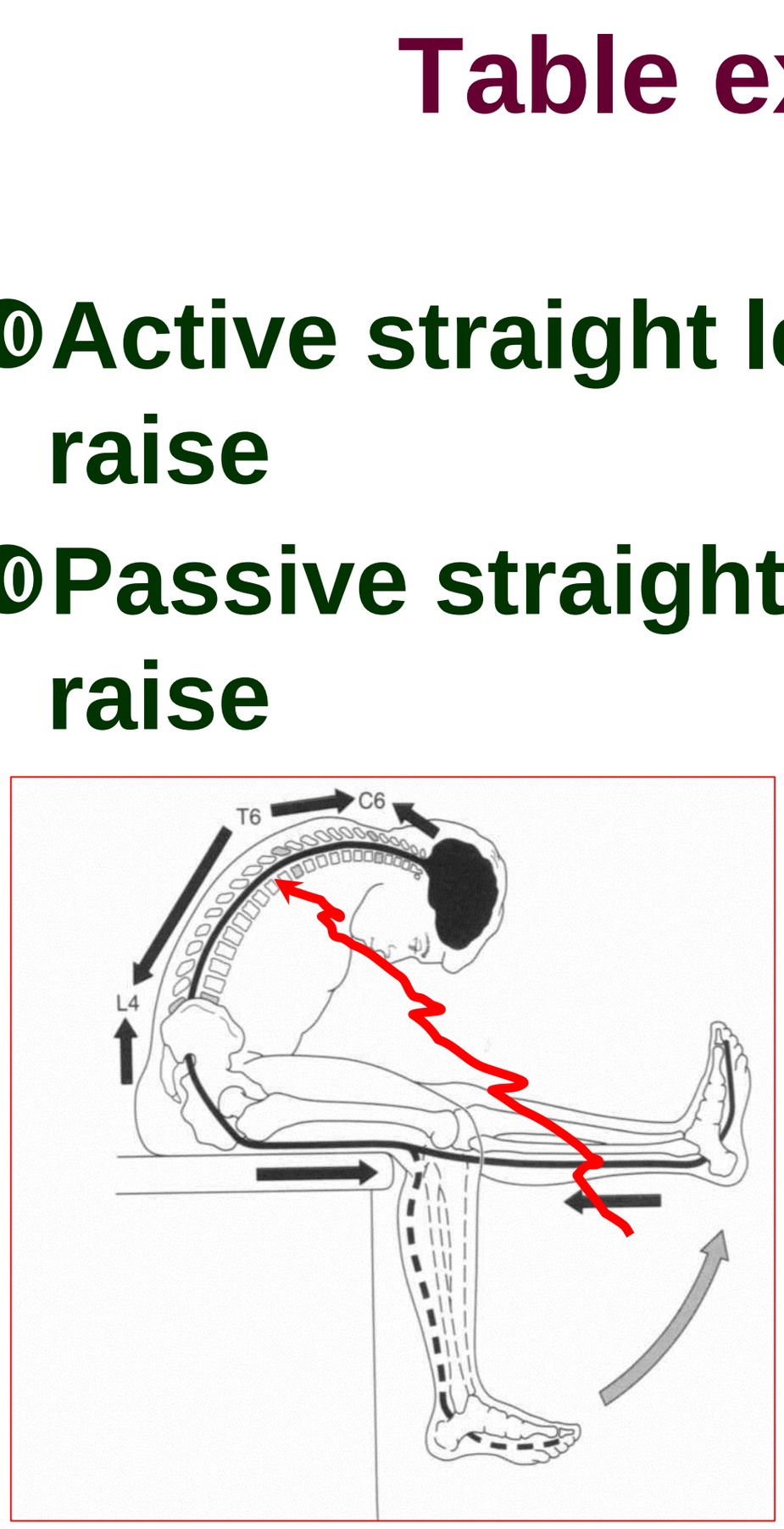


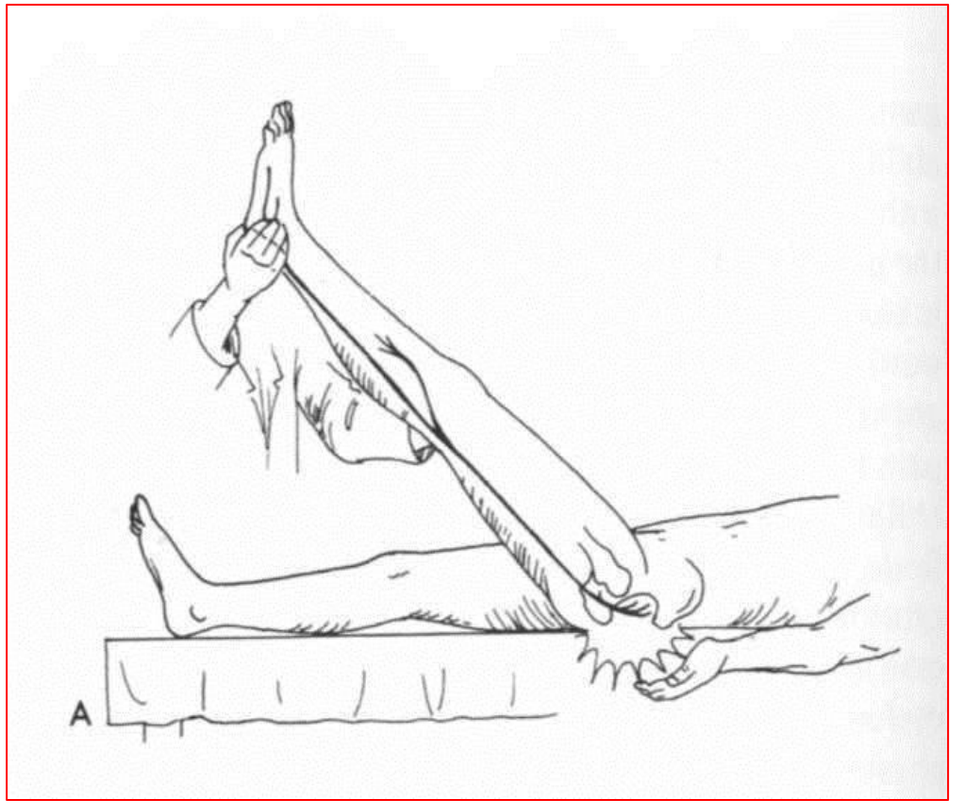
Table examination

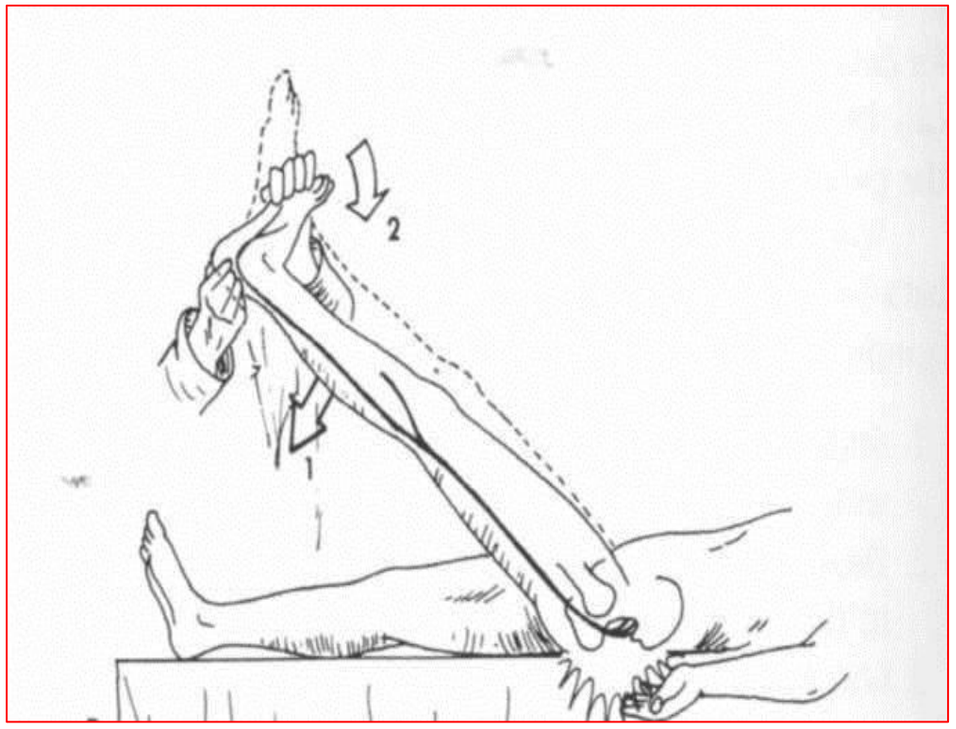
- Exclude other pathology
- Scan upper limbs
- Abdominal examination
- Peripheral pulses
- Skin,Hair
- Other joints
  - Hip
  - Knee
  - Ankle/Foot
  - SI joint
- Faber test (Patrick's test)

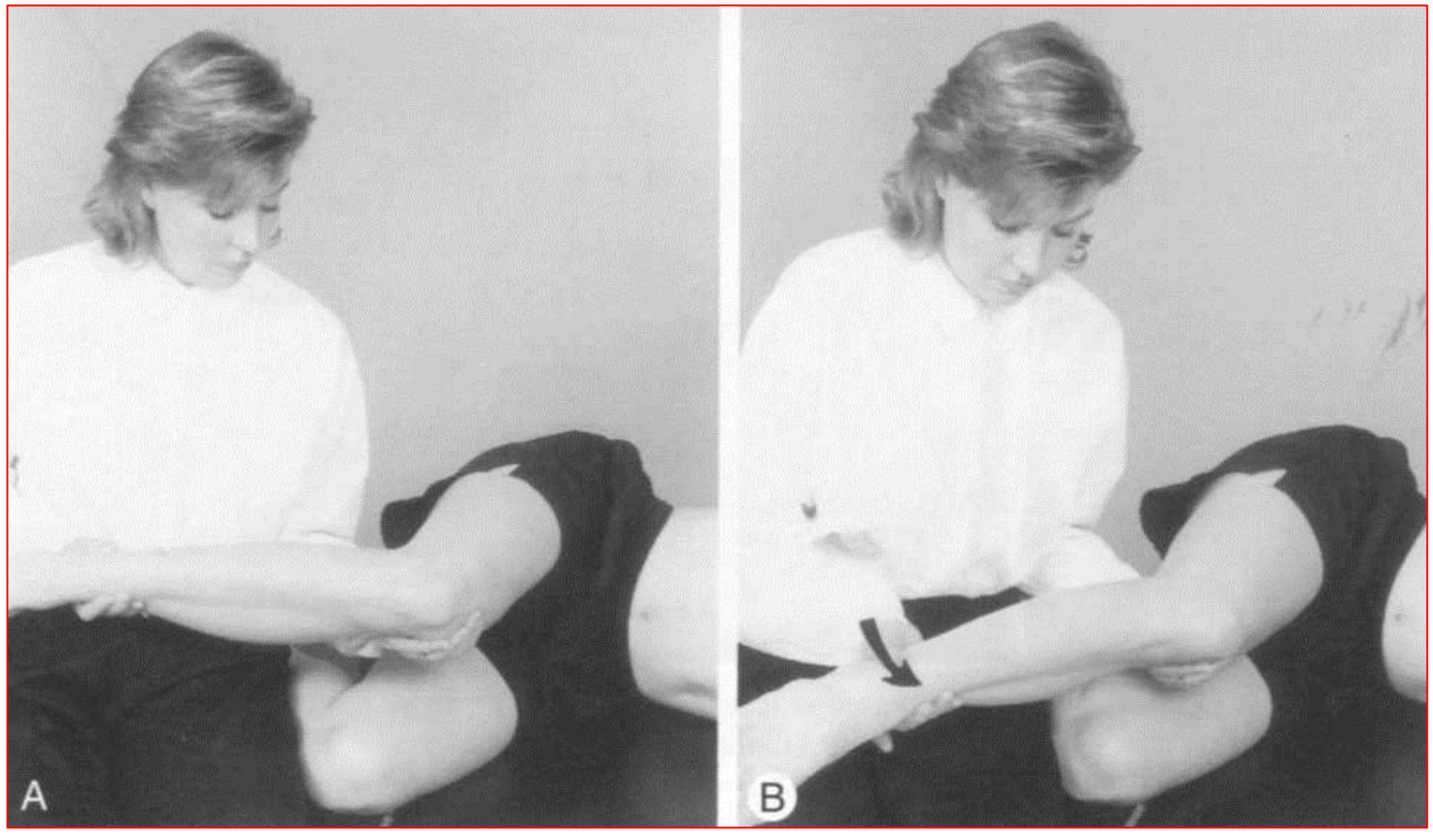
Table examination

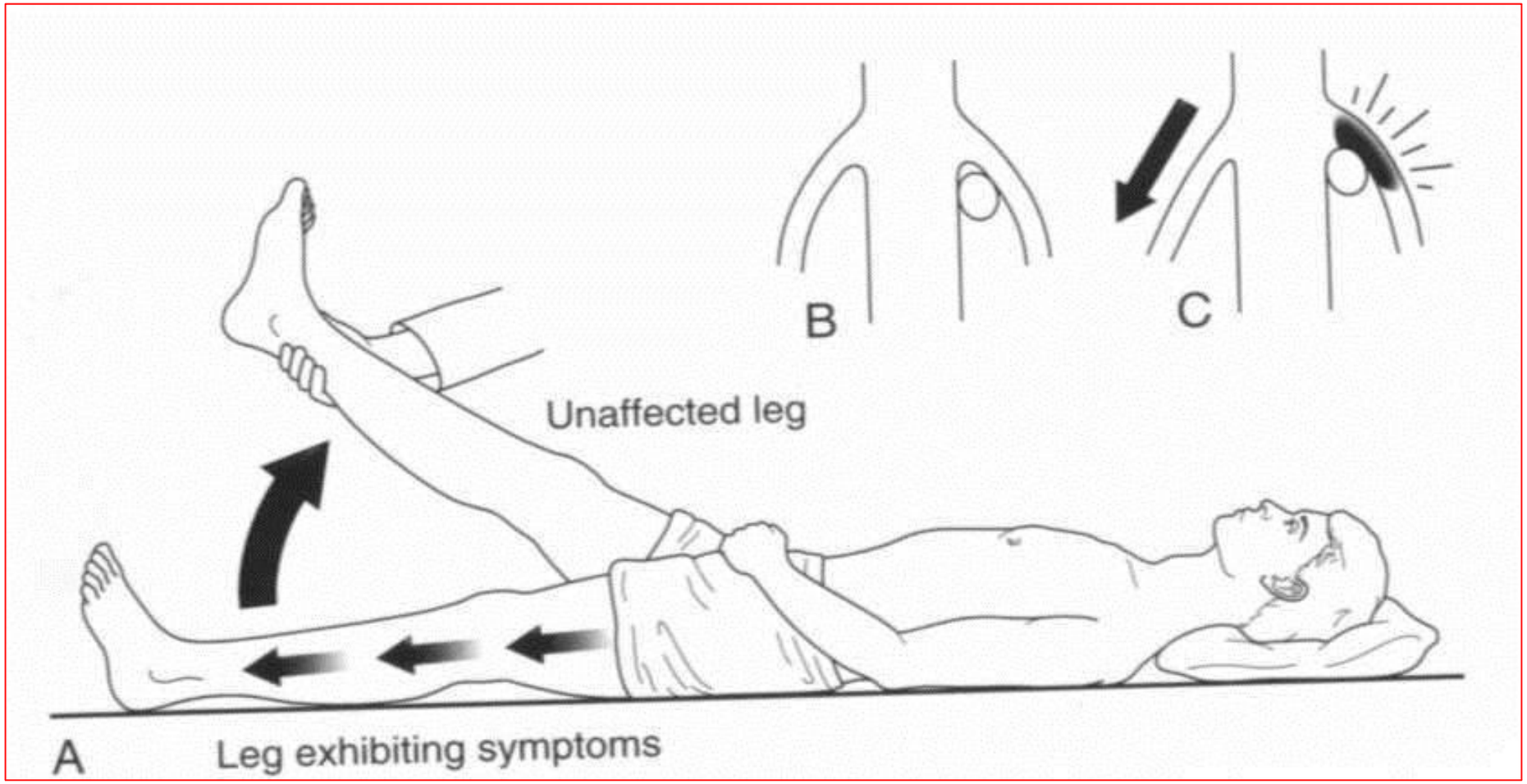
- ⑩ **Active straight leg raise**
- ⑩ **Passive straight leg raise**








A
B

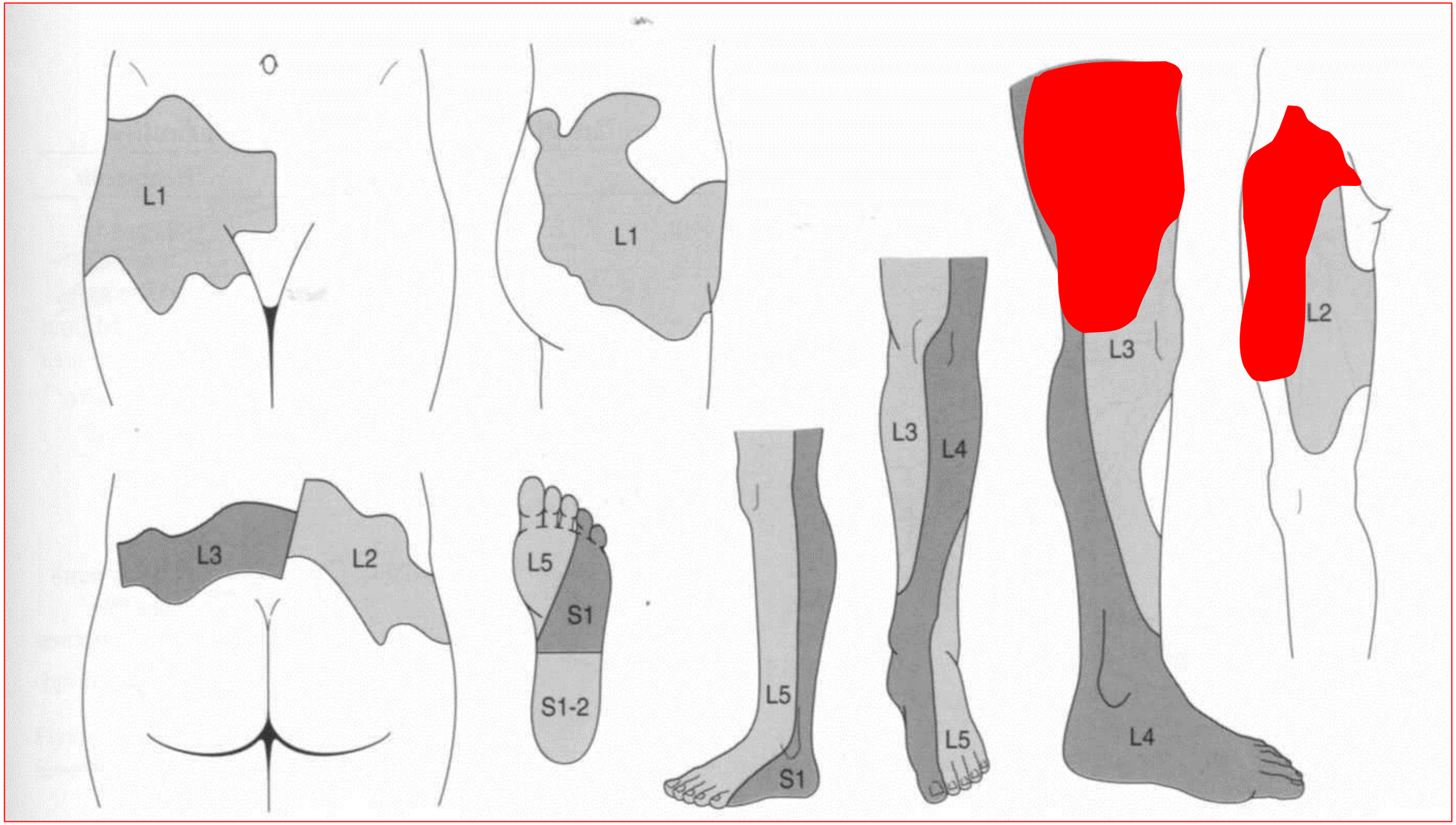

B
C
Unaffected leg
A
Leg exhibiting symptoms

Myotomes

- ⑩Hip flexion L2
- ⑩Knee extension L3
- ⑩Foot dorsiflexion L4
- ⑩Extension big toe L5
- ⑩Ankle eversion and plantarflexion S1
- ⑩Patient still on back

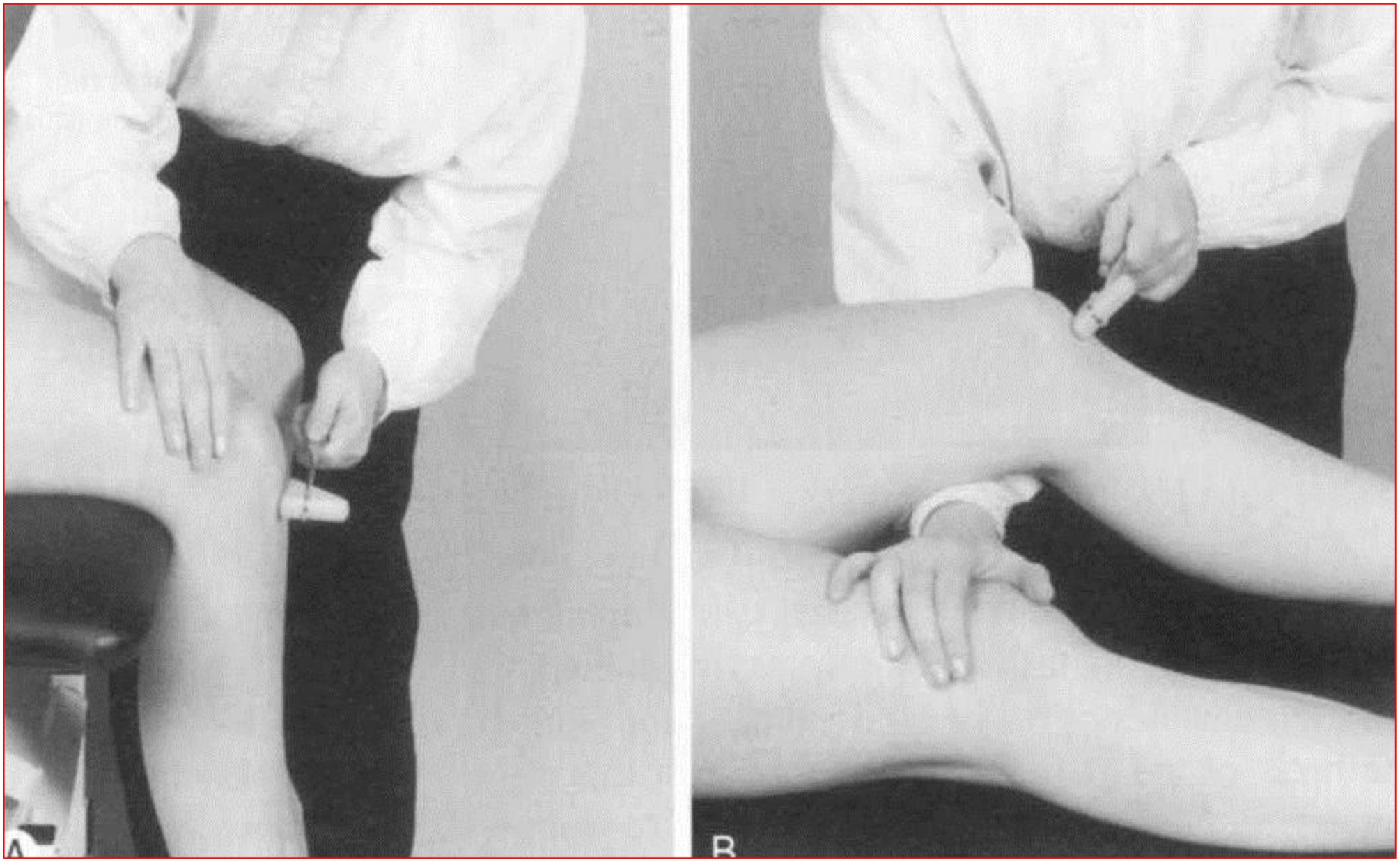
Sensation

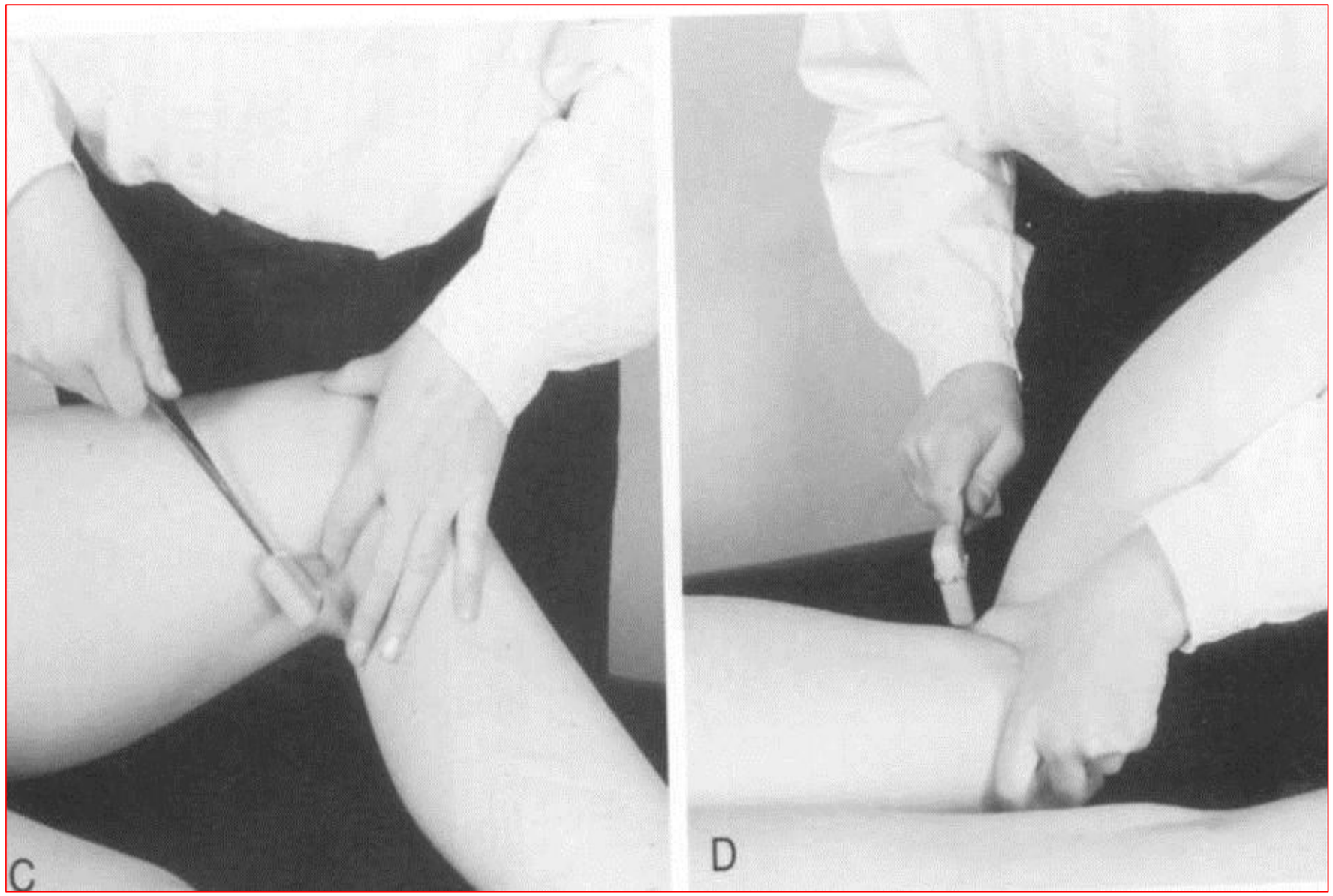
⑩Anterior dermatomes

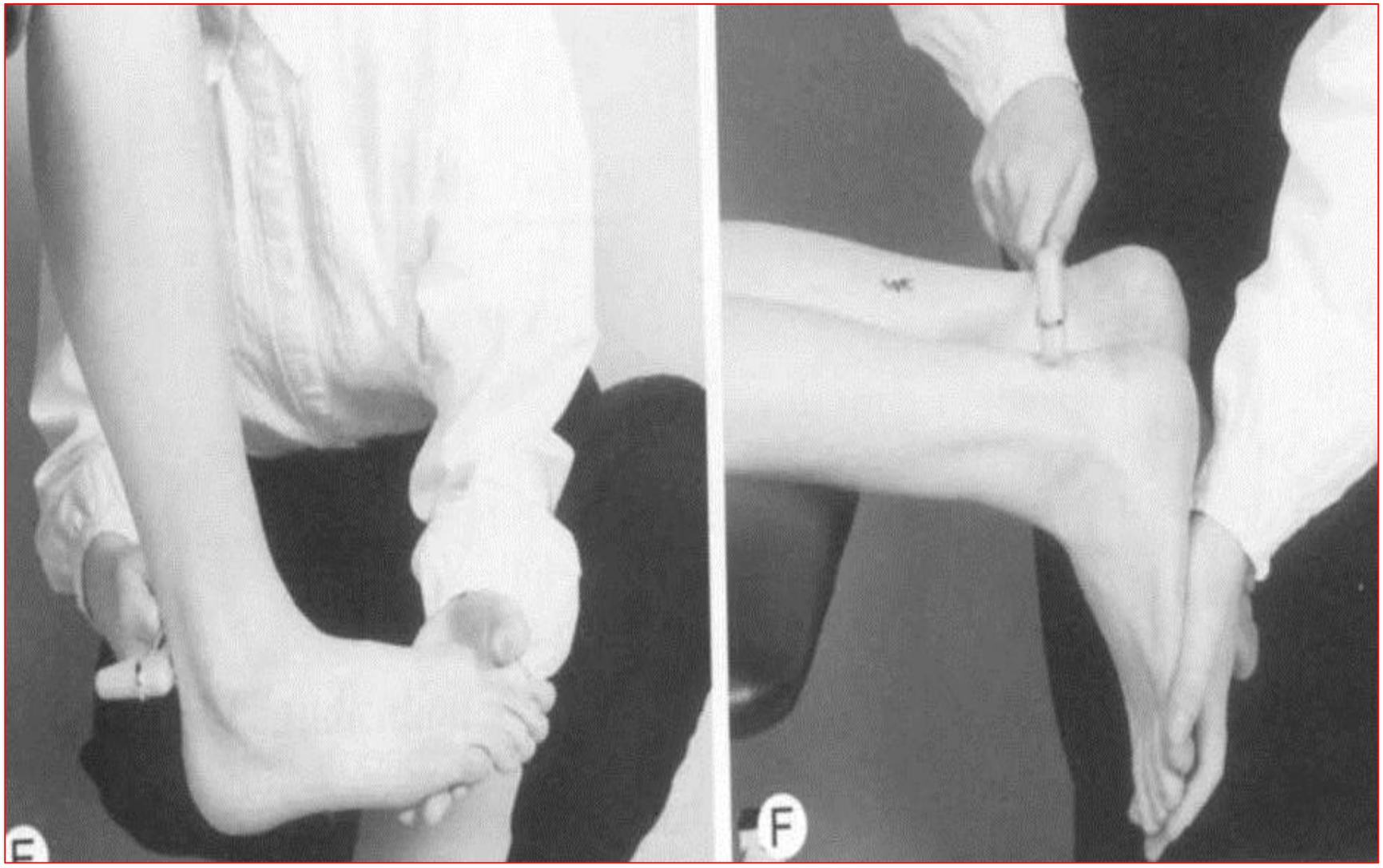


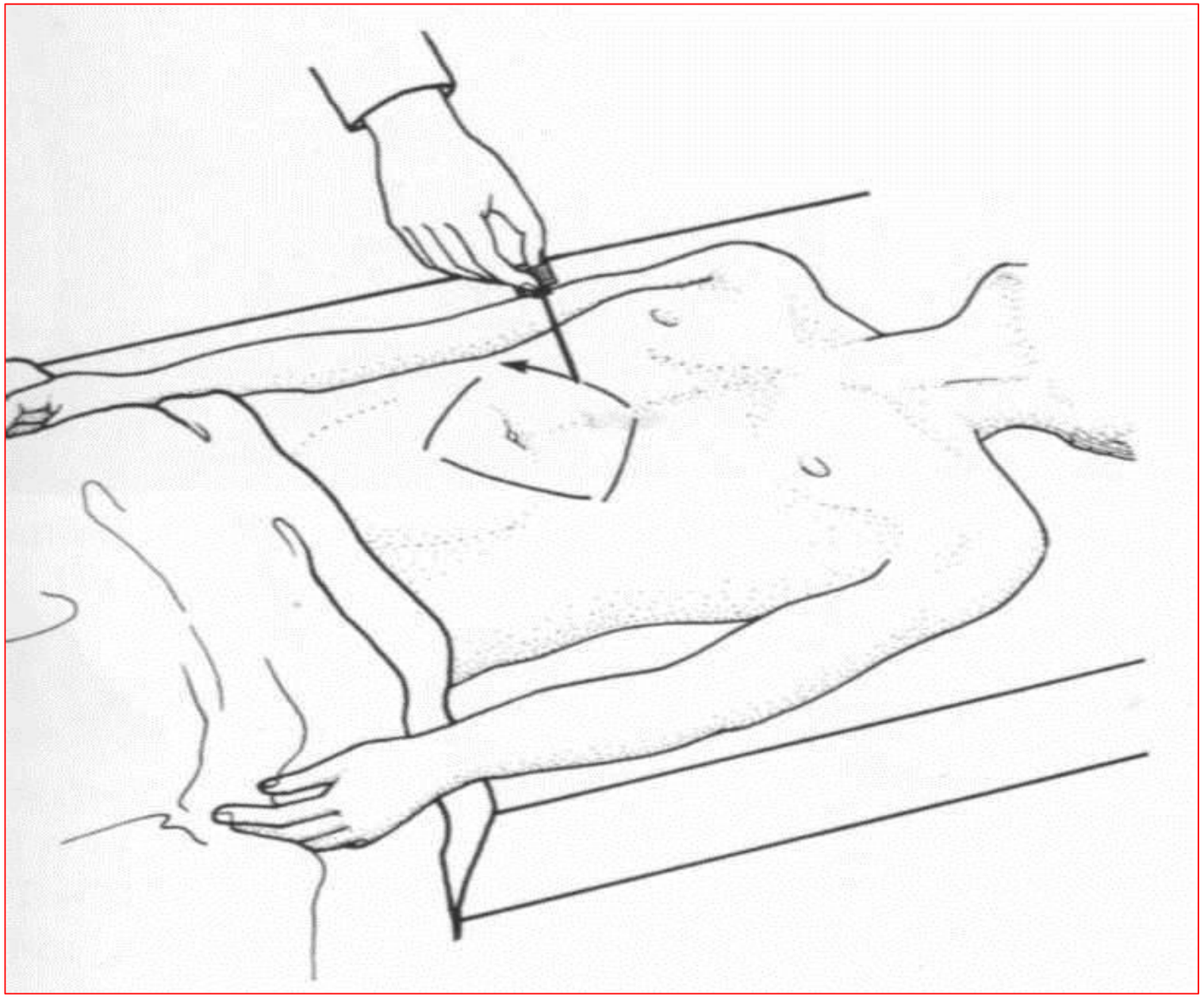
Reflexes

- Can also be done with patient sitting
- Personal preference
- Knee L3
- Ankle S1
- Medial Hamstring L5
- Lateral Hamstring S1
- Posterior Tibial L4,L5









If umbilicus moves:
indicative of myelopathy

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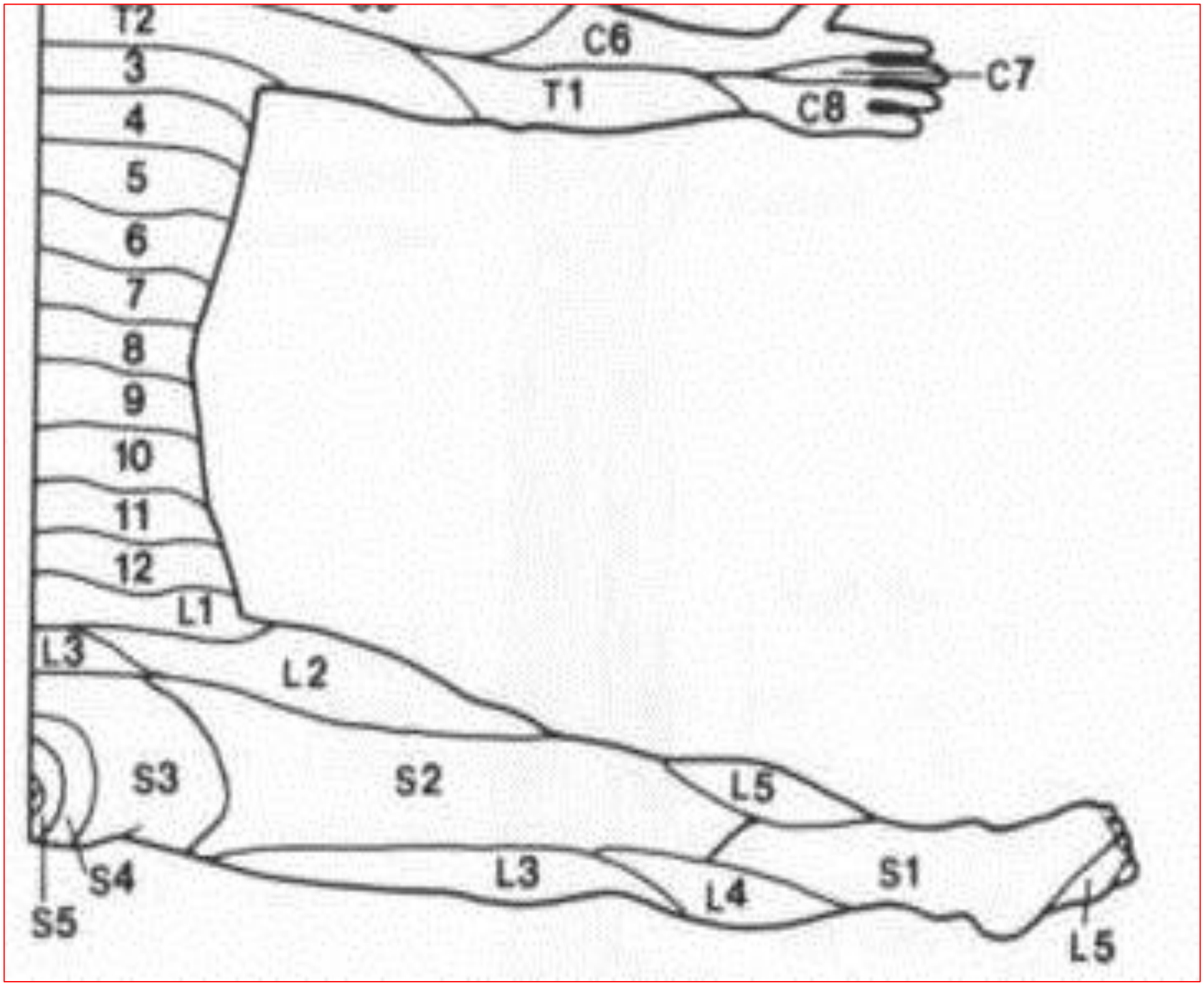
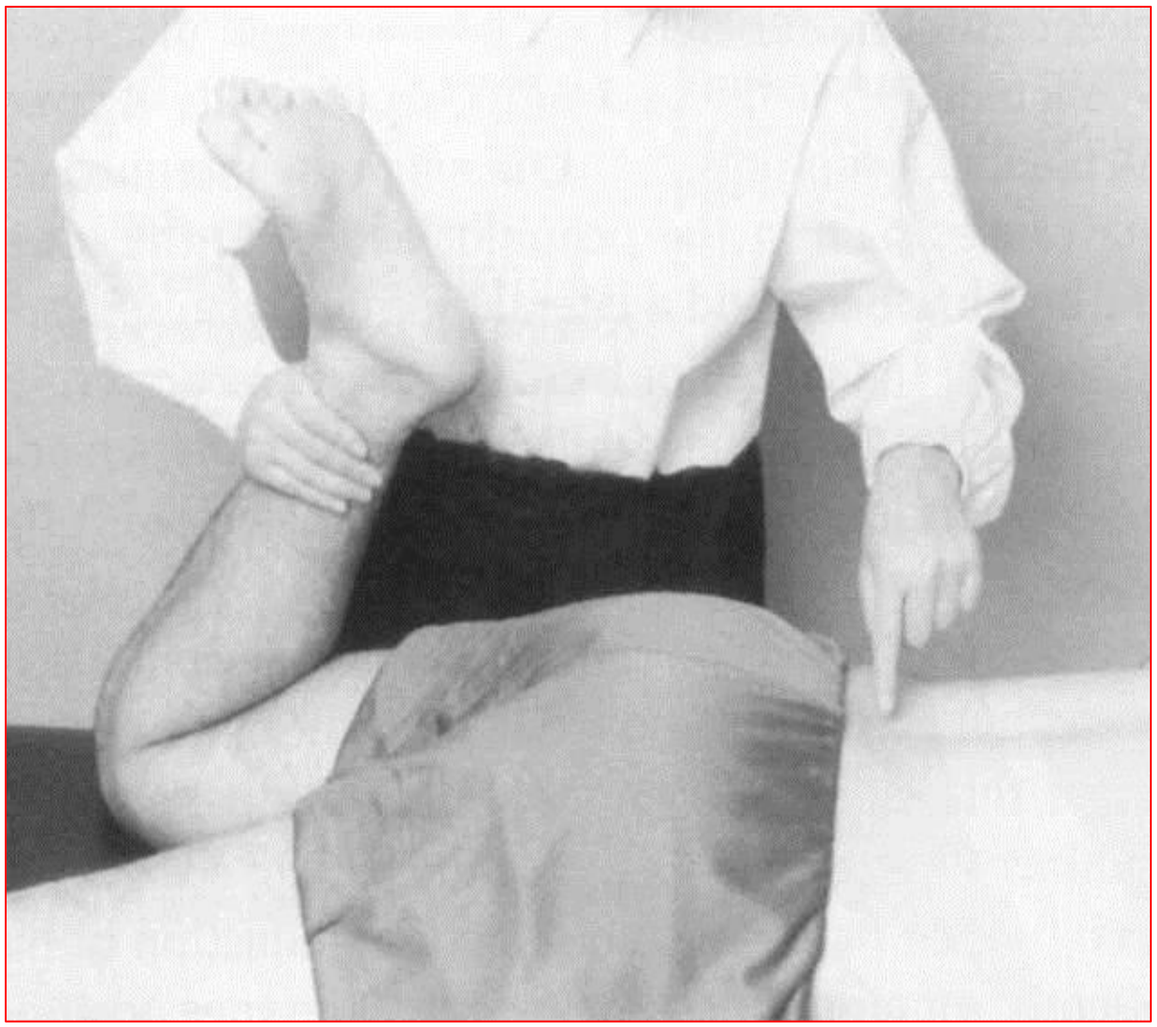
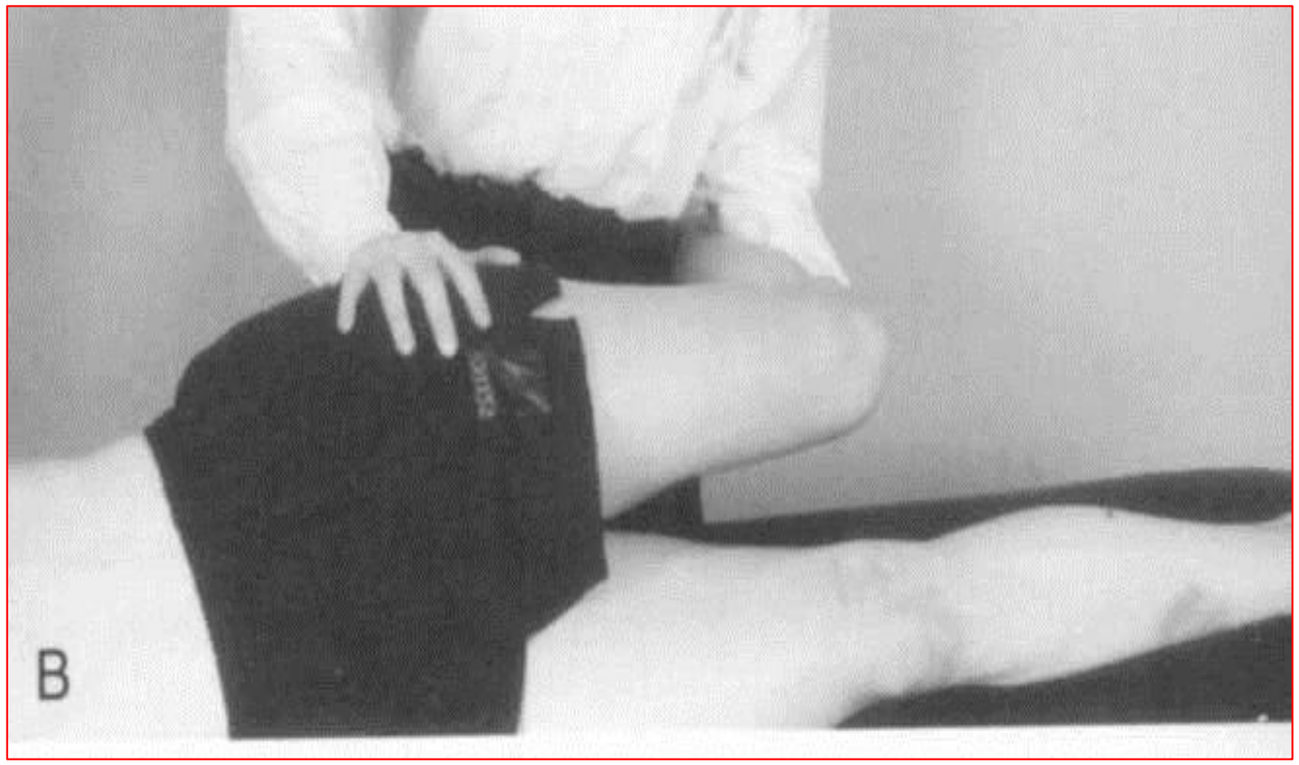
Turn patient around

- Hip extension S1
- Knee flexion S2
- Femoral stretch test L2 or L3 root
- Posterior dermatomes
  - Perianal sensation S4,S5
  - Anal wink
  - Anal tone



Femoral stretch test





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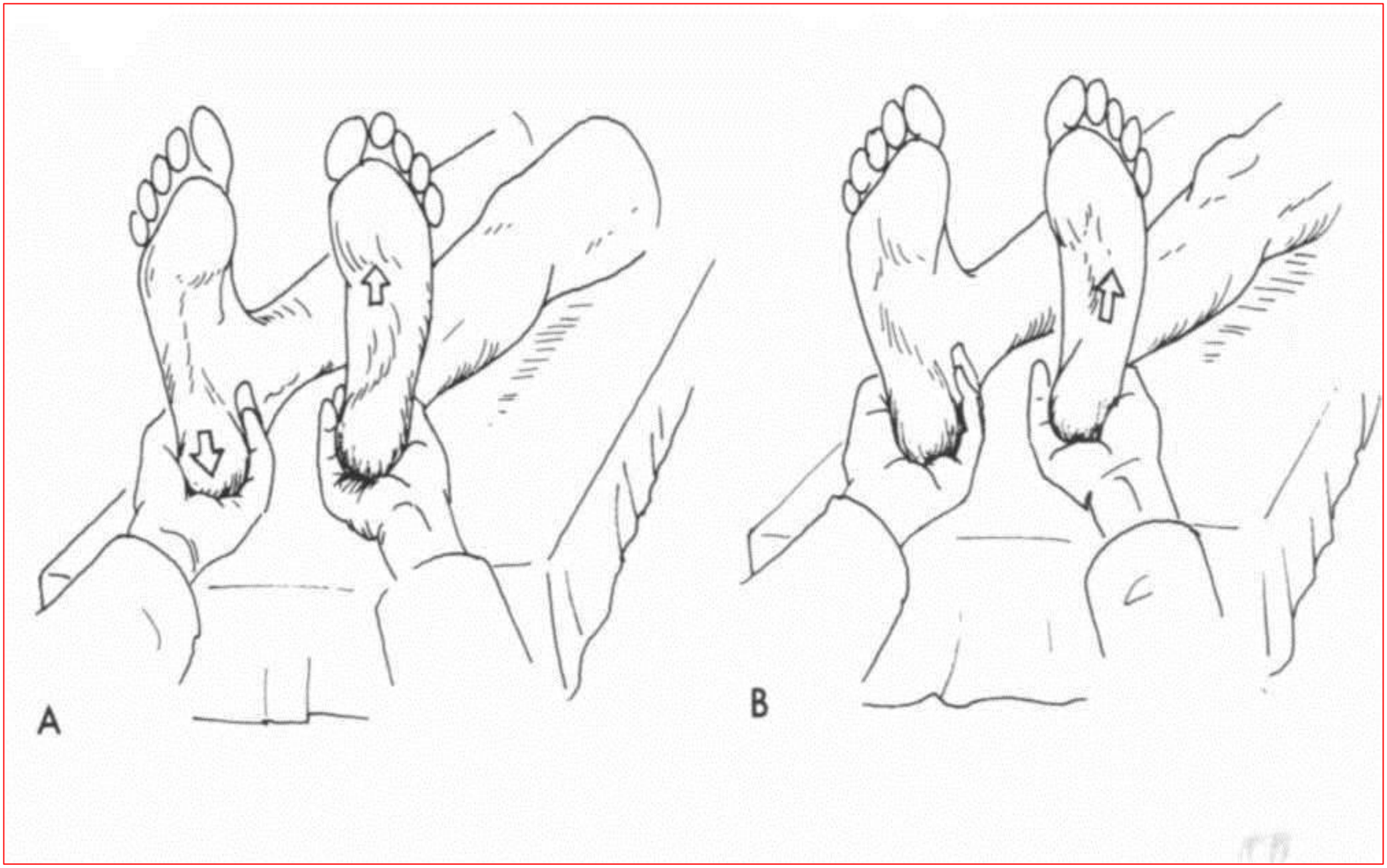
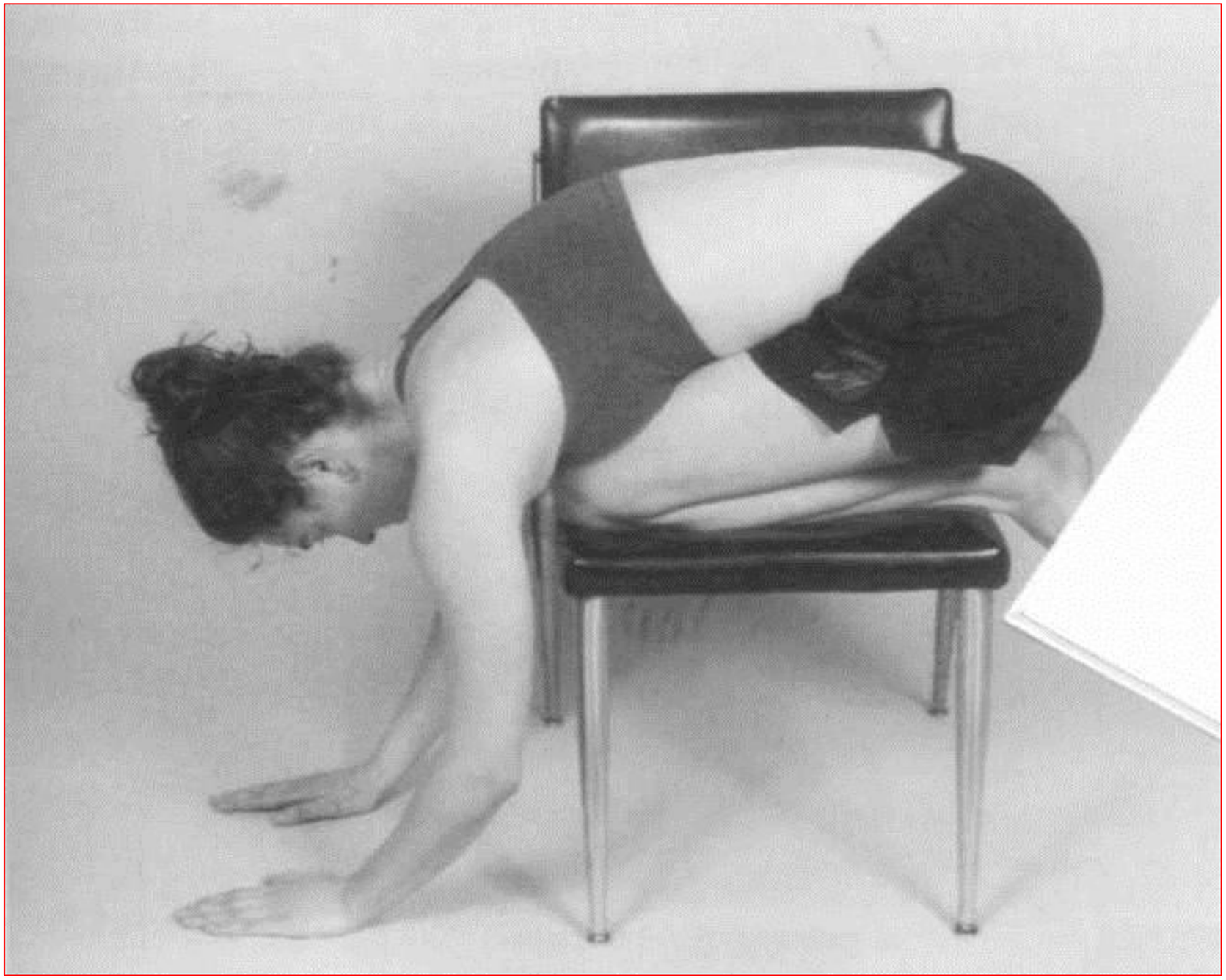
Special tests

- Intermittent claudication
  - Reflexes
- Bicycle test of van Gelderen
- Tests for malingering
- Hoover test
- Burns Test
- Seated straight leg raise





Questions

- Is the patient malingering?
- Is there any secondary gain?
- What is the pain generator?
  - Mechanical
    - Anatomic structure
  - Neurogenic
    - Localizing of lesion/level

  - Inflammatory
- Neurological status of patient
- Special investigations

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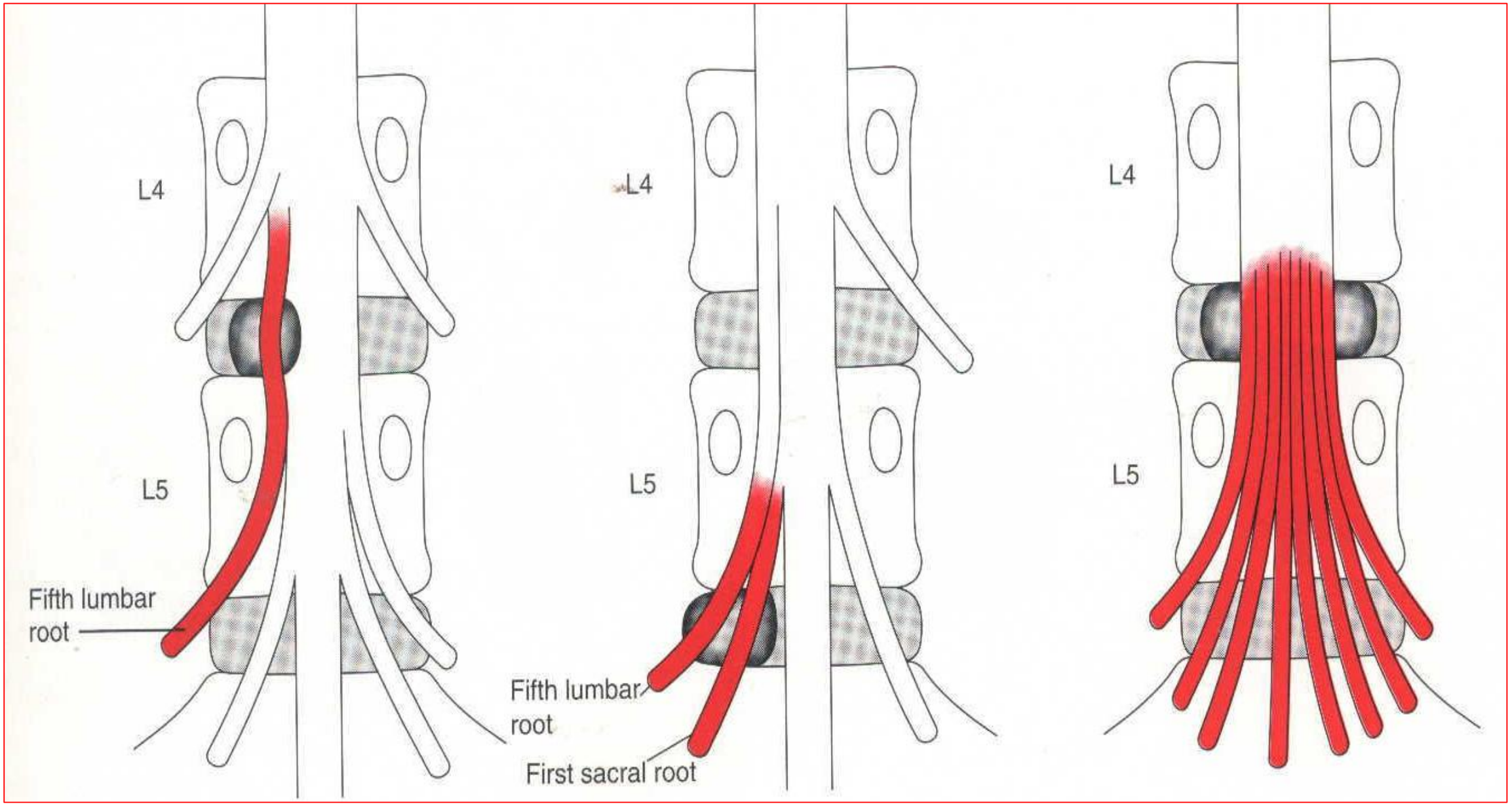
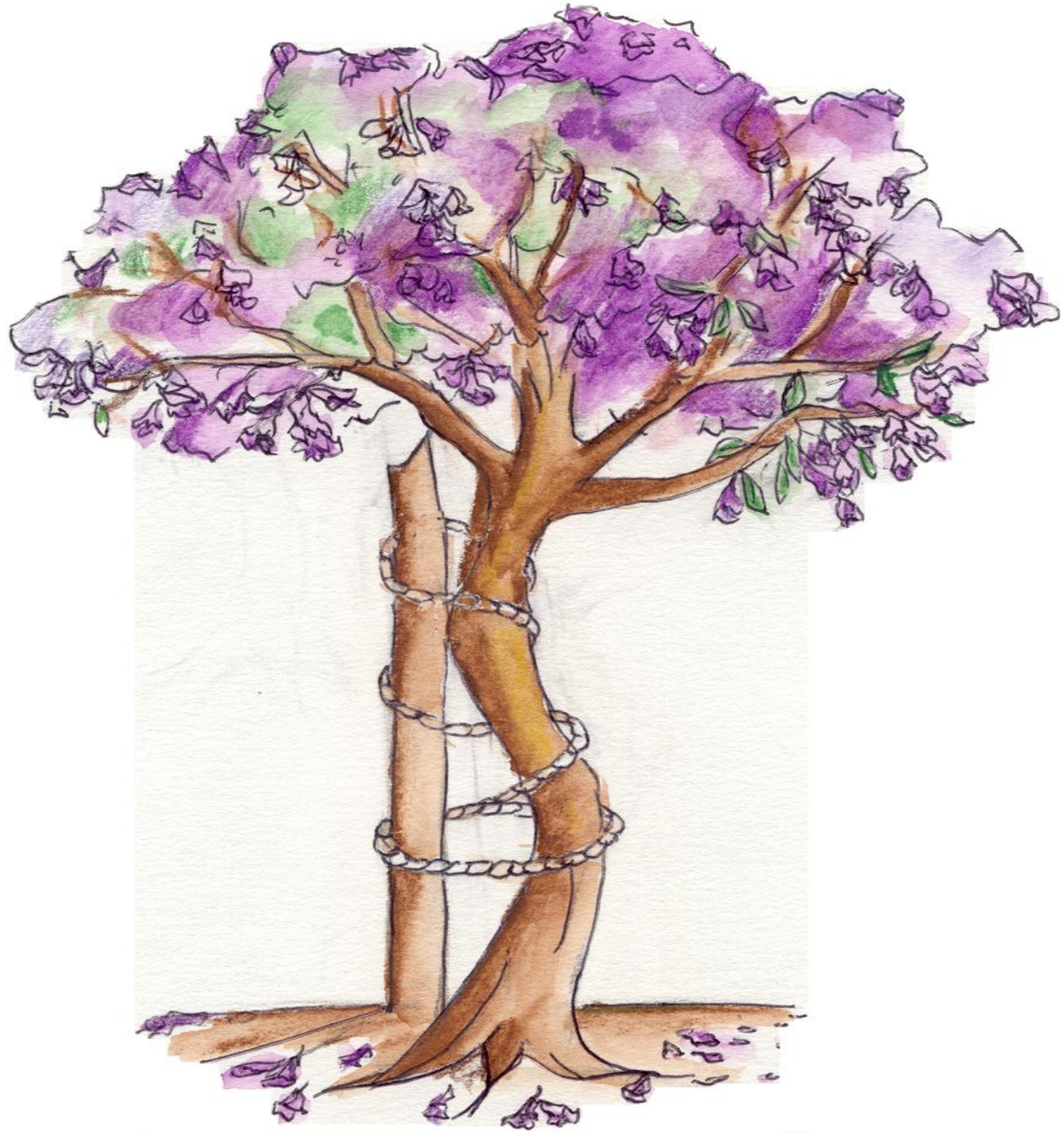


Examination of the neck



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History

- Age
- What is the complaint
- Timing of symptoms
- Other diseases
- Severity of symptoms
- Trauma?
  - Mechanism
  - Remember “burners,stinger”

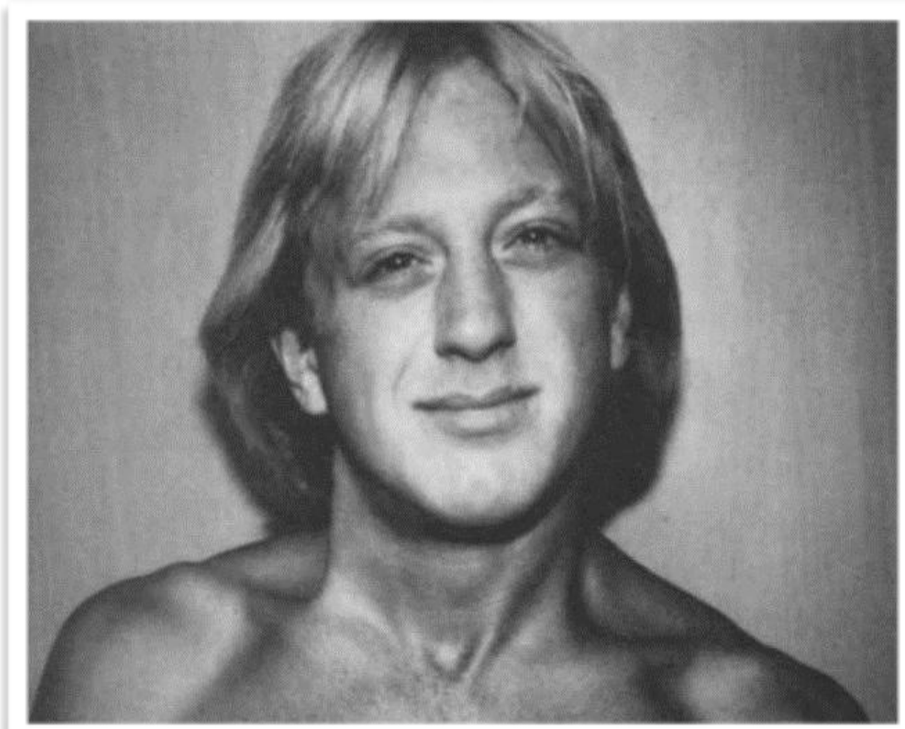
- Sites and boundaries of pain
  - Radiculopathy
  - Myelopathy
  - Sclerotomal pain

History

- Radiation of pain
  - Lhermitte’s sign
- Laughing,coughing,straining
- Headaches
  - Occipital
  - Neck movement
  - Nuchal tenderness
  - Sensory abnormalities
  - Painful neck movements
- Bakody’s sign – hand on head
- Balance

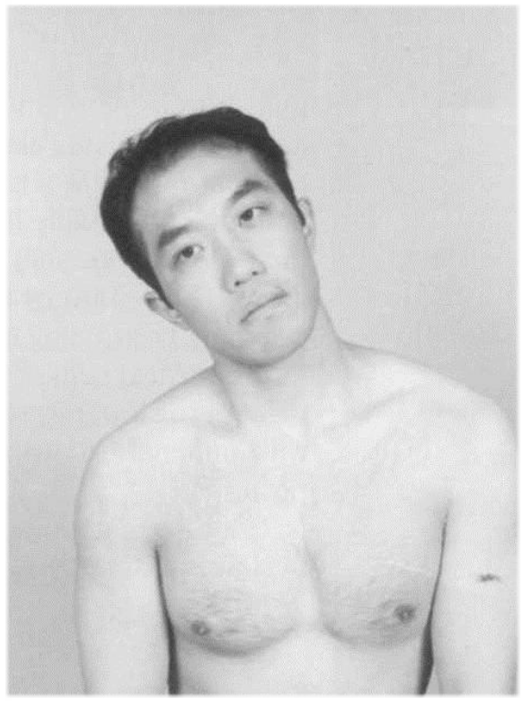
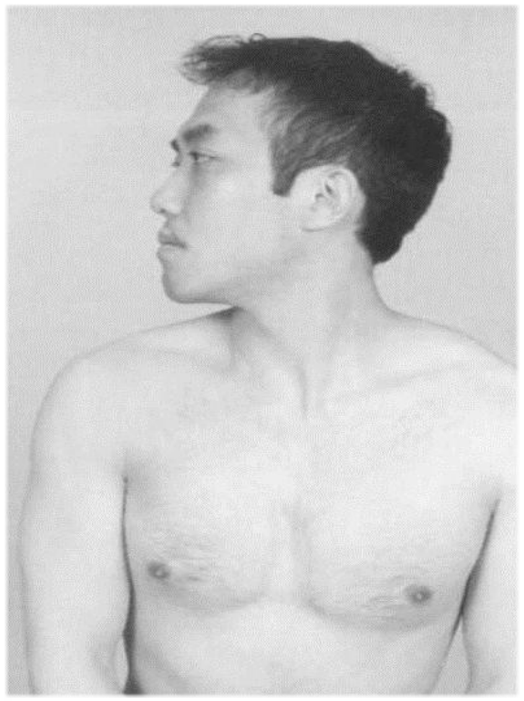
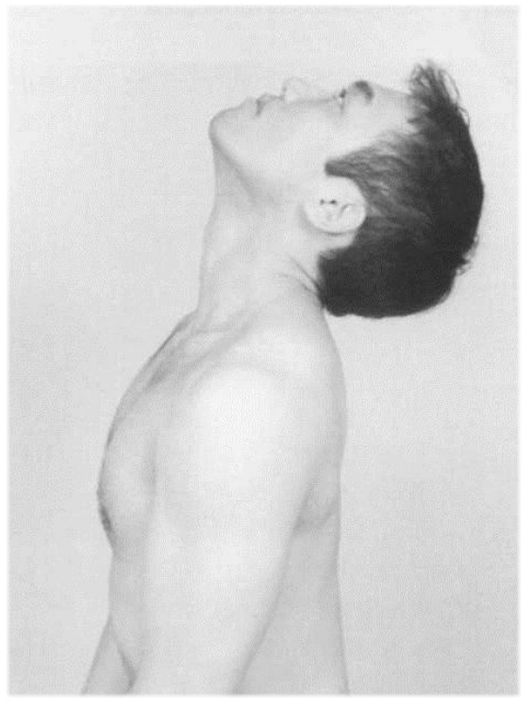
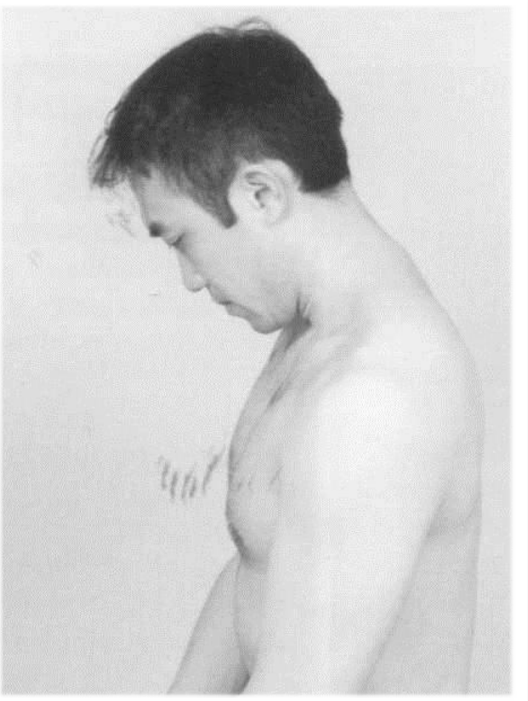
Observation

- Walking into exam room – Gait
- Romberg's test
- Shoulder levels
- Posture of head and neck



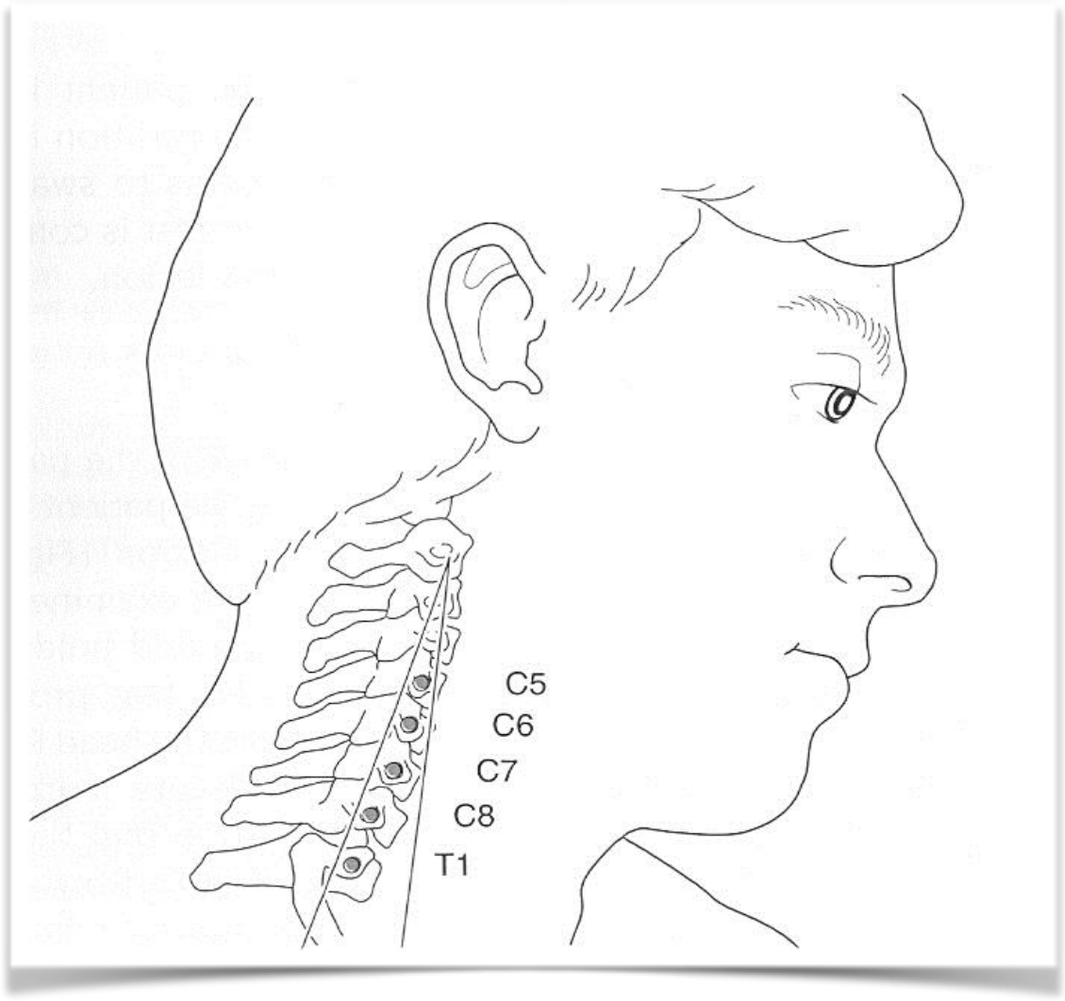
Examination

- Active movements
- Nodding versus flexion
- Remember the levels of movement

Palpation

- Whole spine ant and posterior
- Muscle atrophy
- Paraspinal muscles
- TM joint
- Shoulder
  - AC joint
  - Rotator cuff
- Brachial plexus
  - Percussion

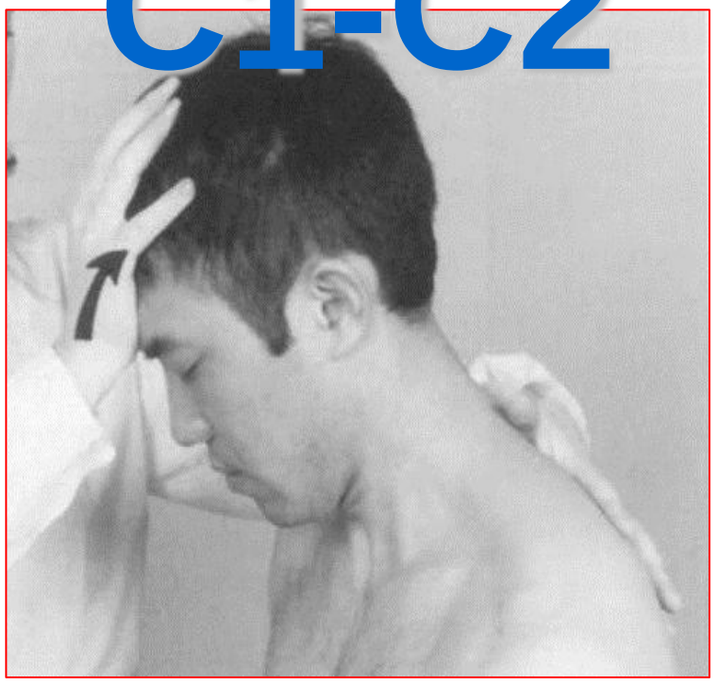


Passive movements

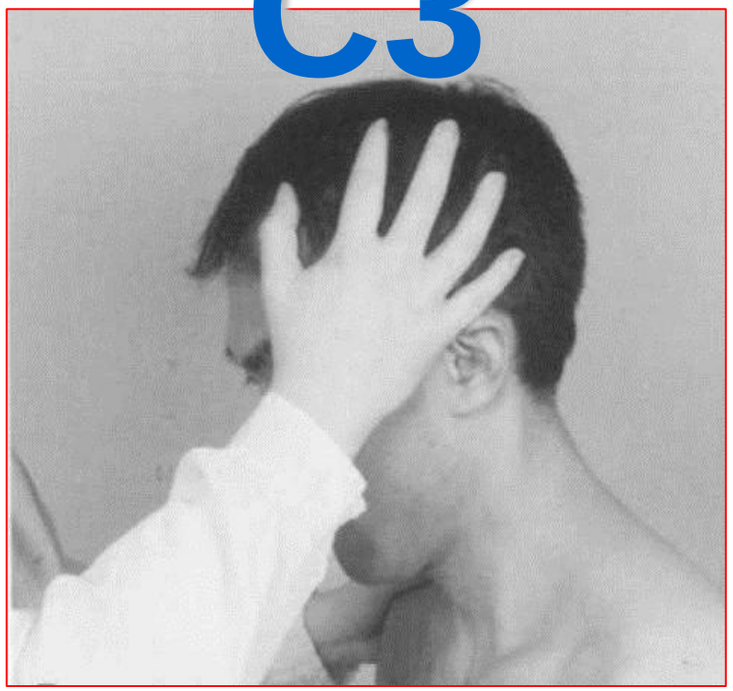
- Full Rom
- Overpressure can be applied
- Resisted isometric movements
- Question?
  - mechanical pain
  - Neurogenic origin
- Scanning of peripheral joints
  - Pre flight check

Myotomes

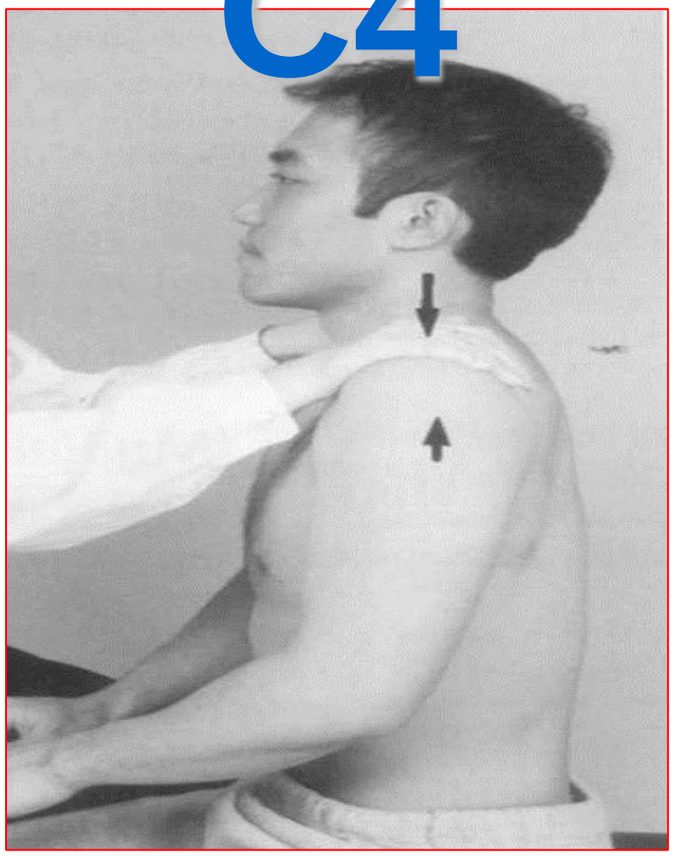
C1-C2



C3



C4



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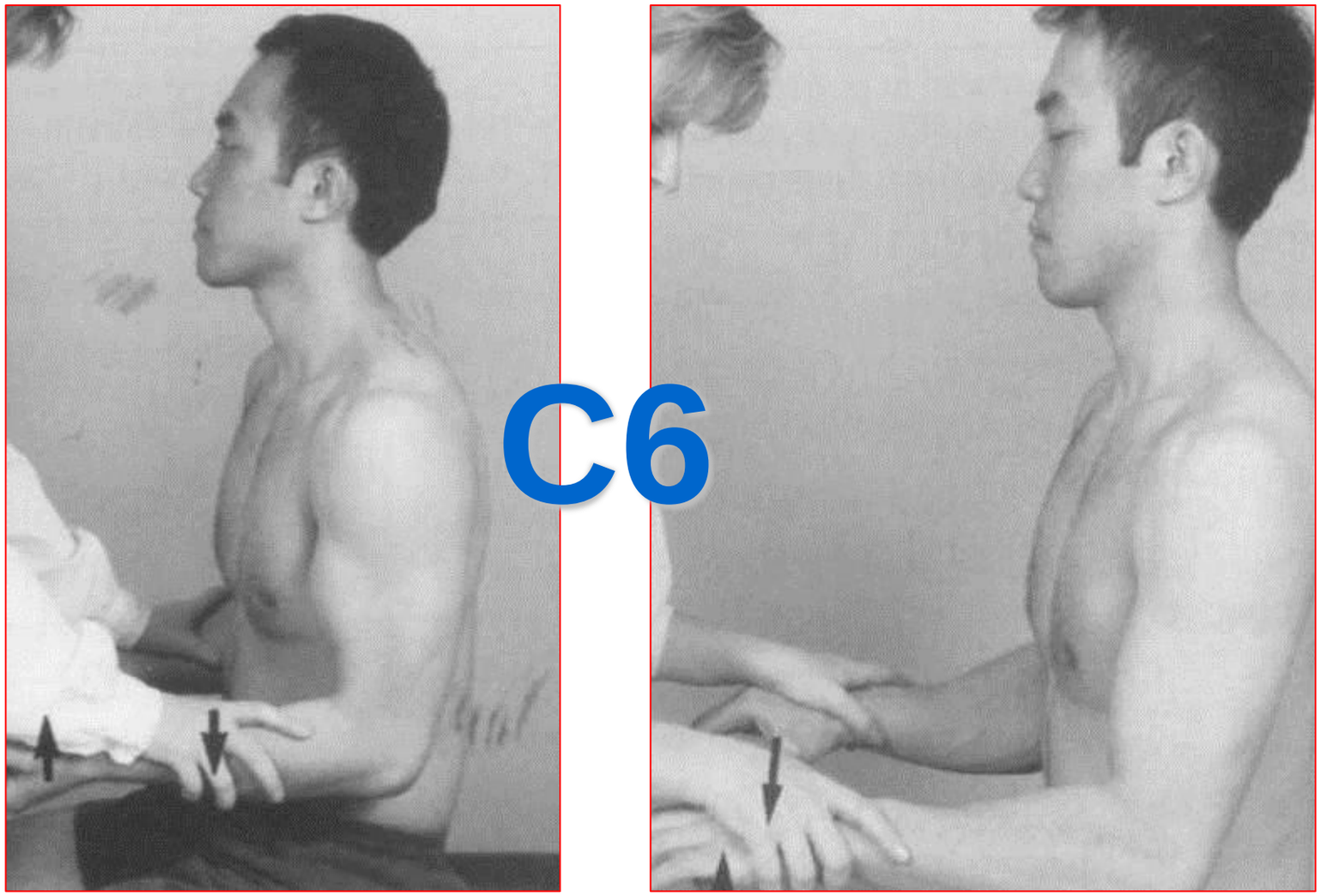
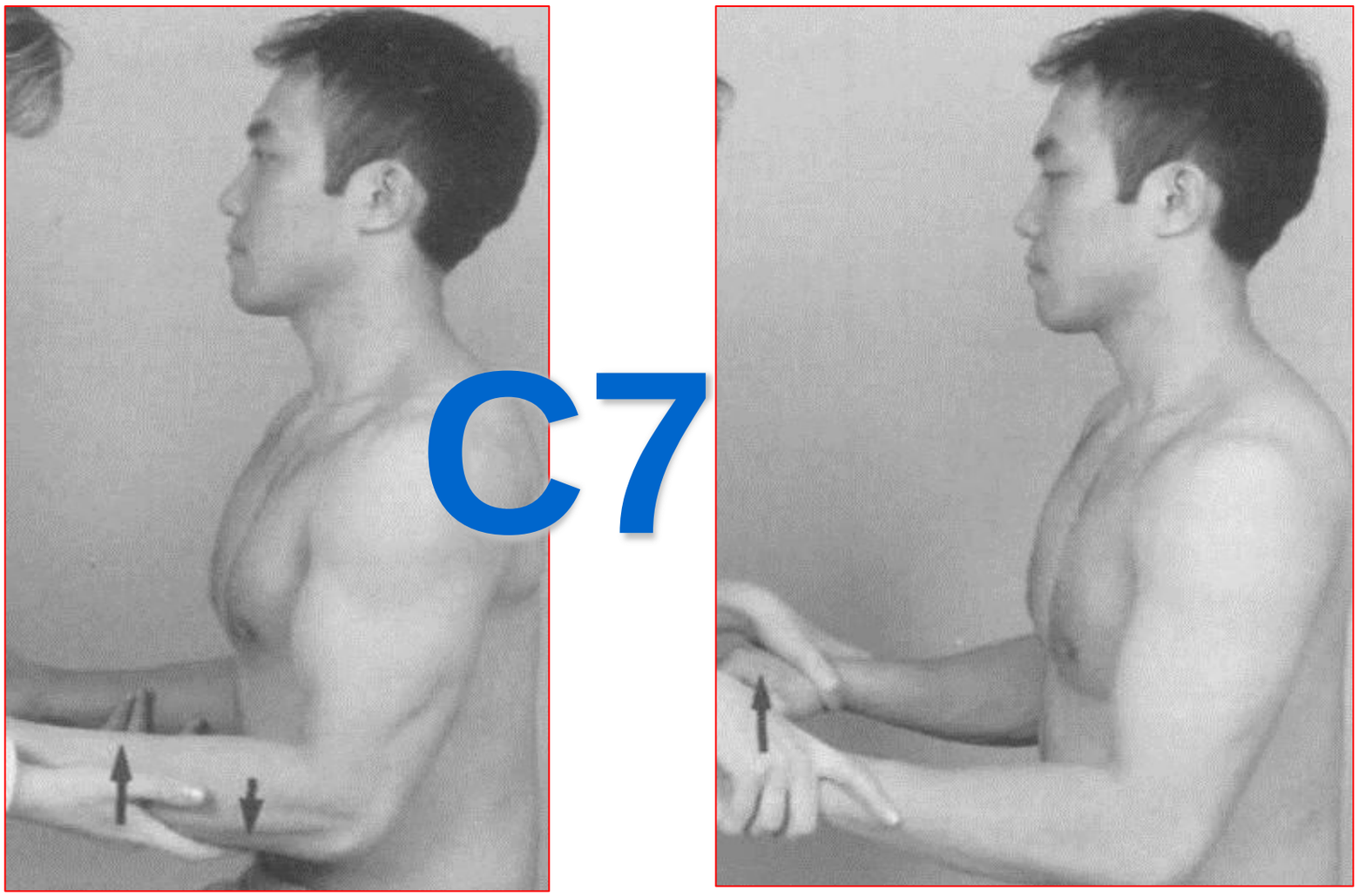
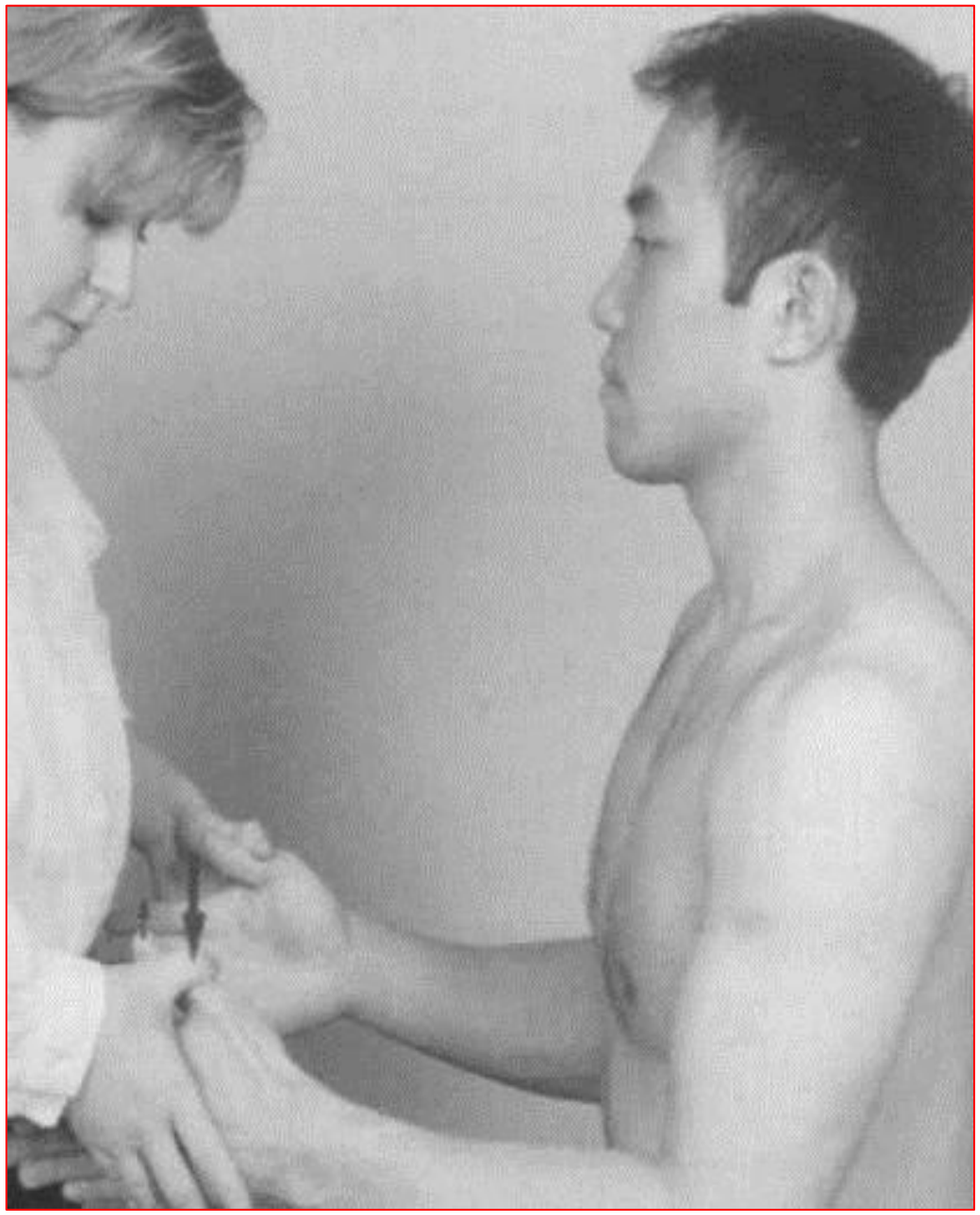
Myotomes



Myotomes



Myotomes



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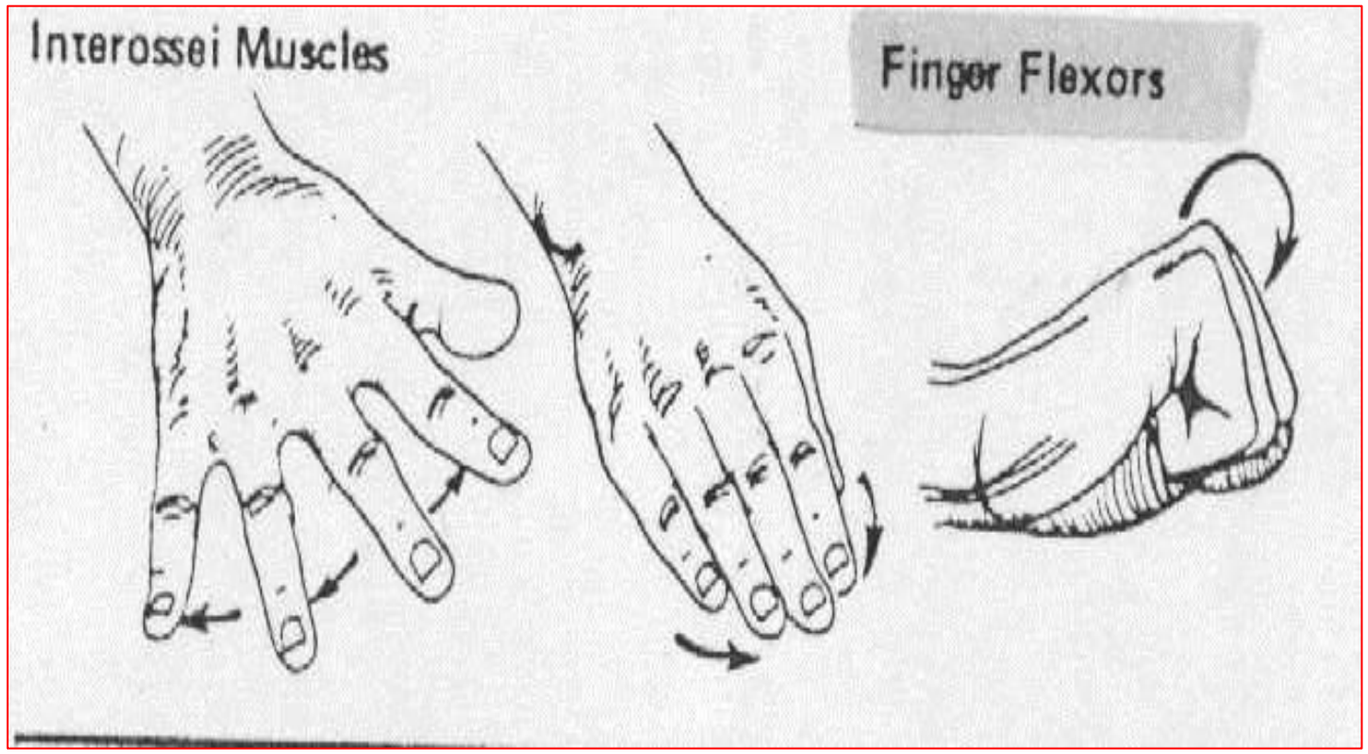

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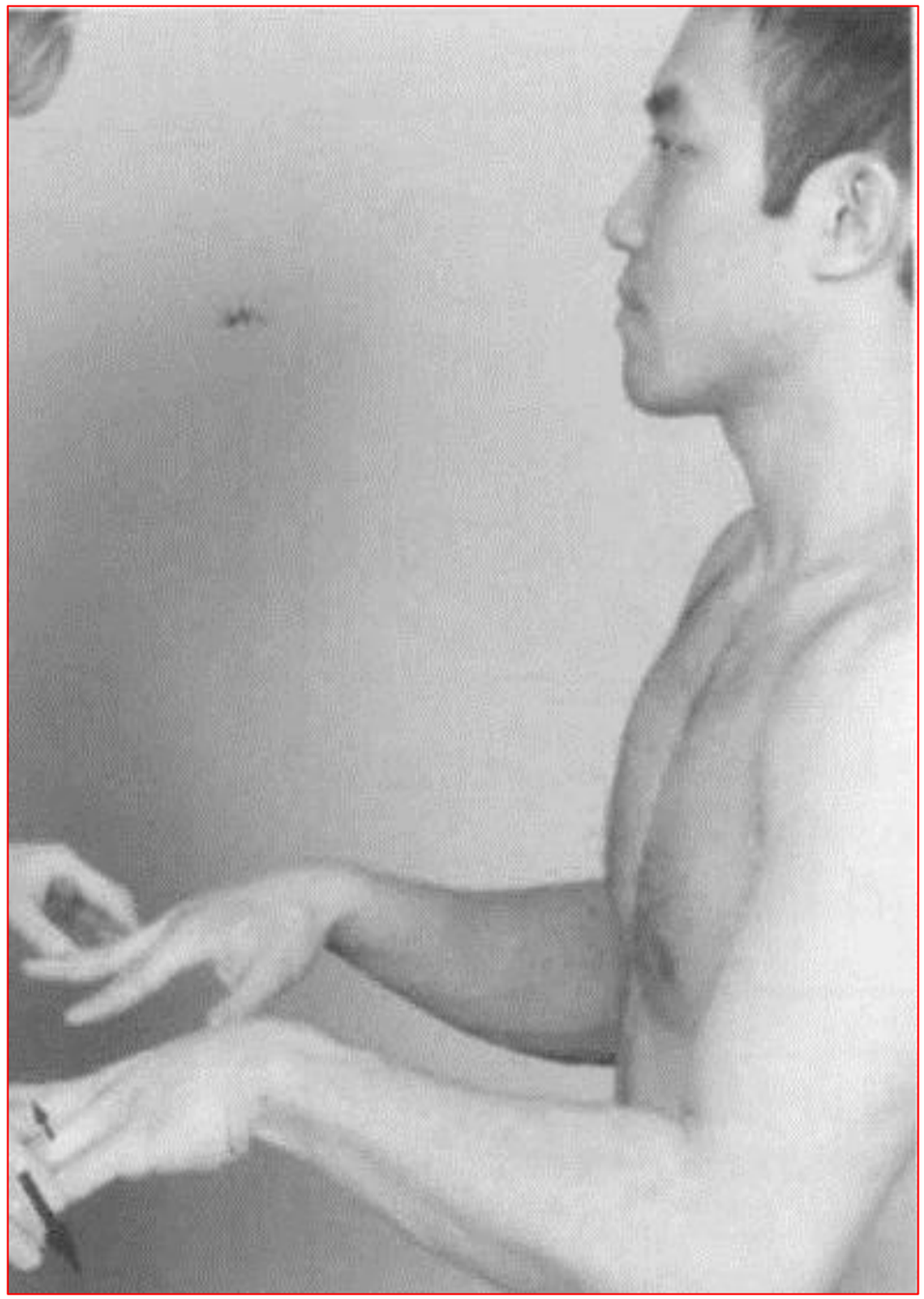
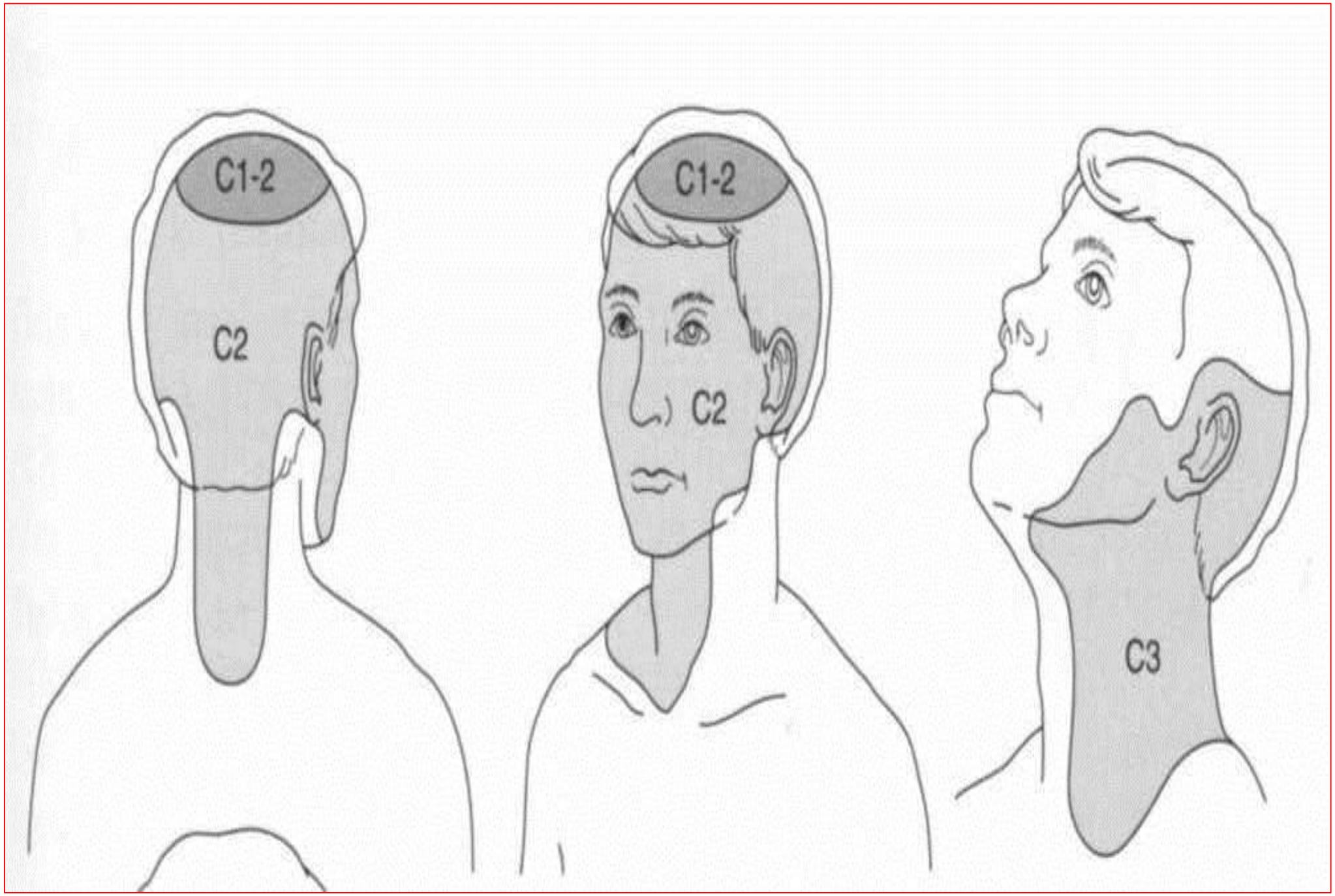
Myotomes

T1

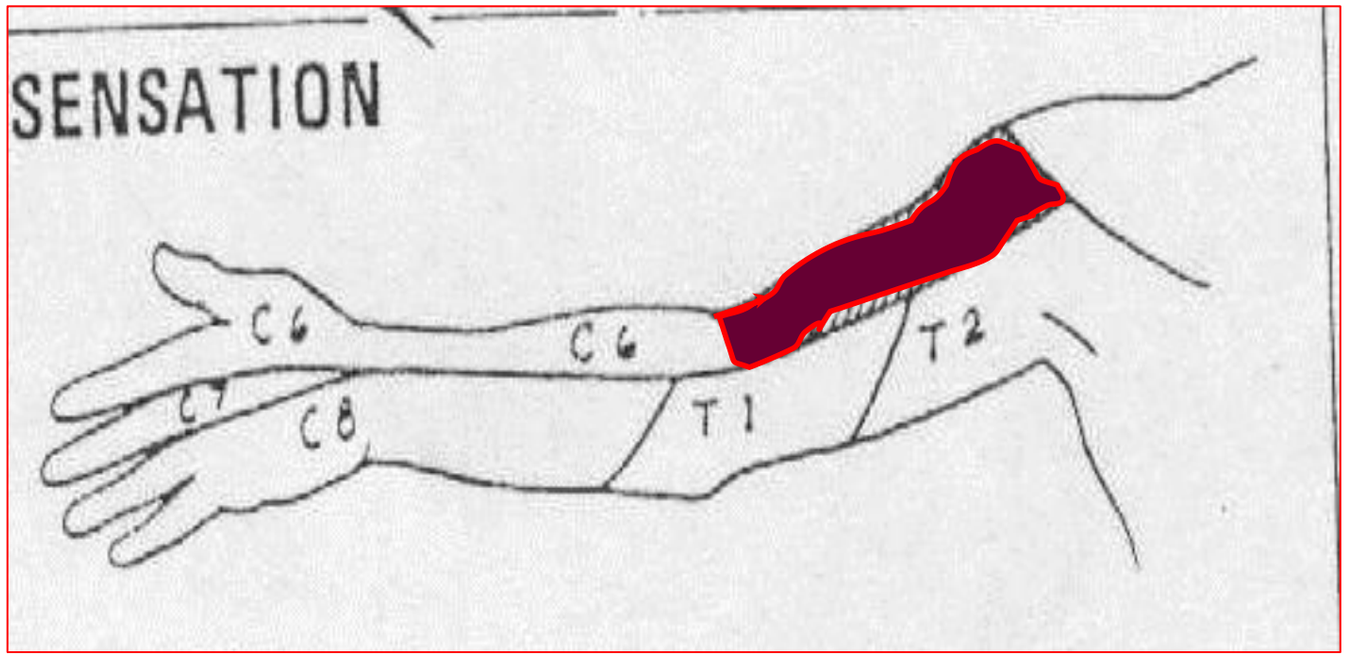


Dermatomes



Dermatomes

C5



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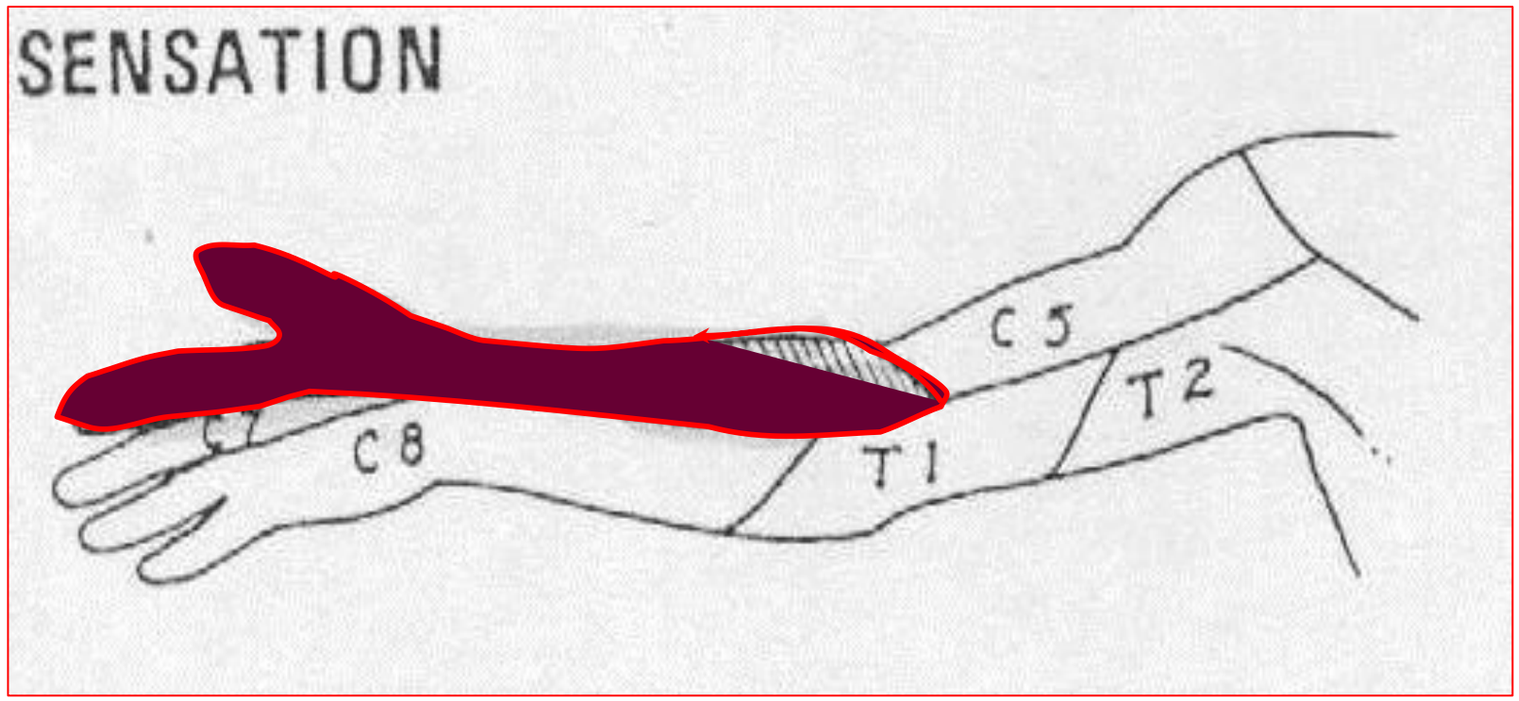
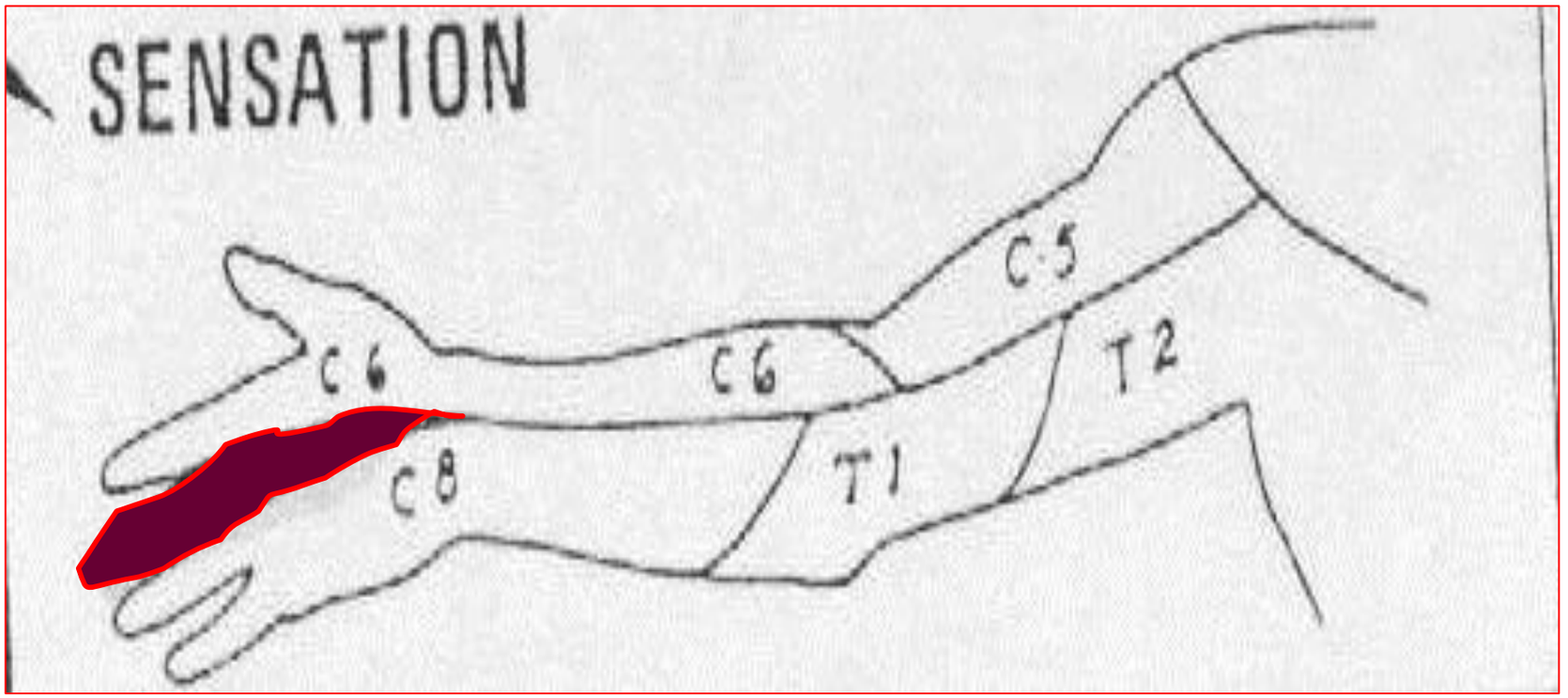
Dermatomes

C6



Dermatomes

C7



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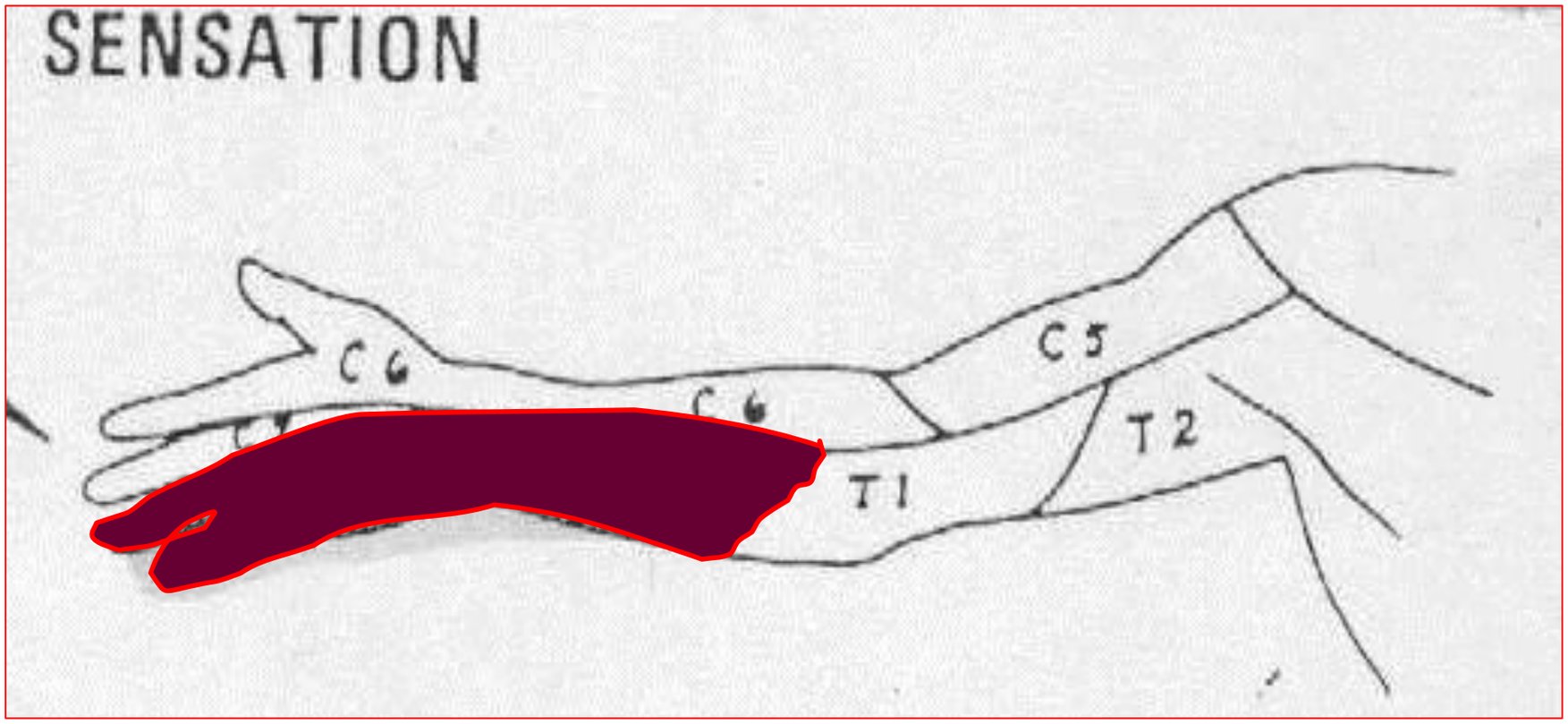
Dermatomes

C8



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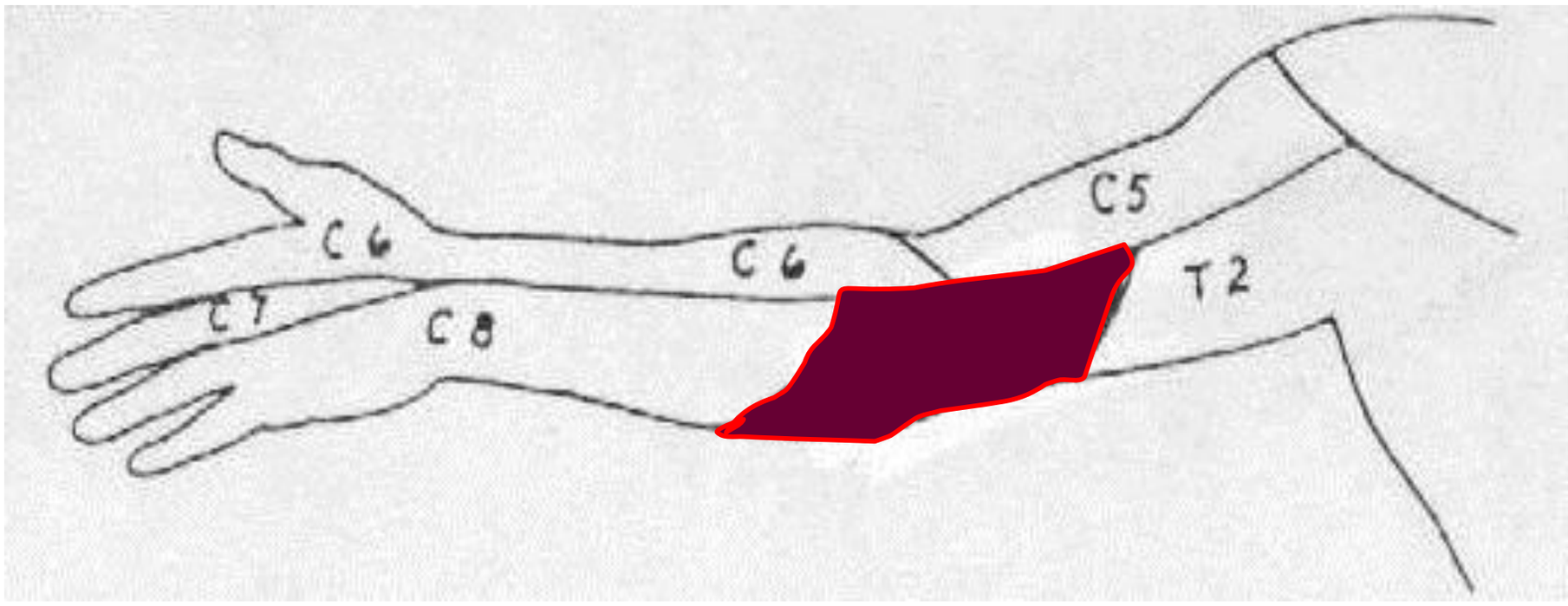
Dermatomes

T1



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Reflexes

- Biceps C5,C6
- Brachioradialis C5,C6
- Triceps C7,C8
- Babinsky – Plantar
- Hoffman’s sign
- Clonus
- Abdominal reflex

Mindset at this point

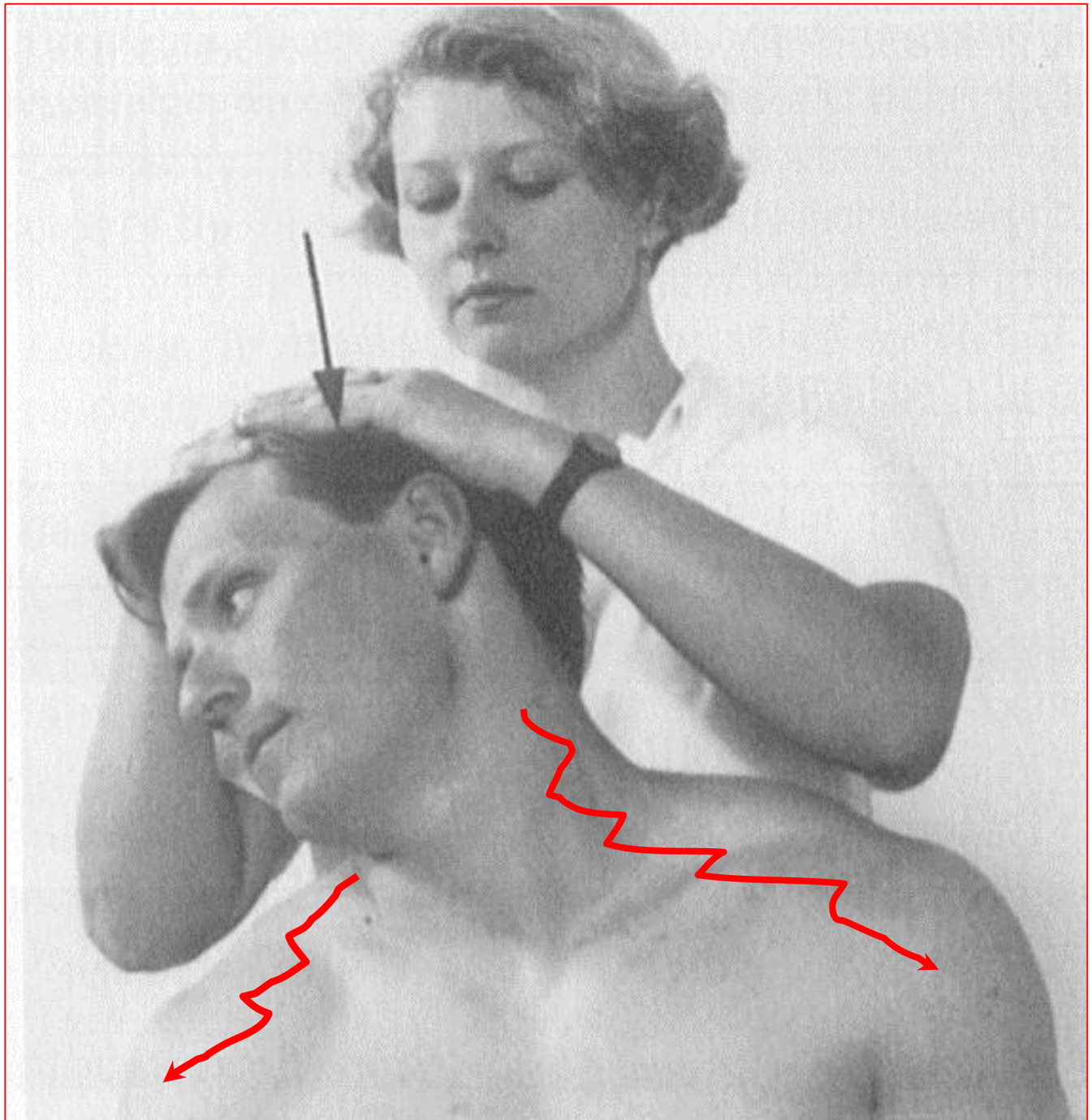
- Always examine the lower extremities
- Is this a mechanical pain?
- Is this pain of neurological origin?
- Is there a vascular component?
- Is there a radiculopathy?
- Is there a myelopathy?

Special tests

- Some used in most examinations
- Some only done as confirmation tests
- Commonly performed tests
  - Spurling
  - Distraction test
  - Upper limb tension test
  - Shoulder abduction test
  - Vertebral artery test

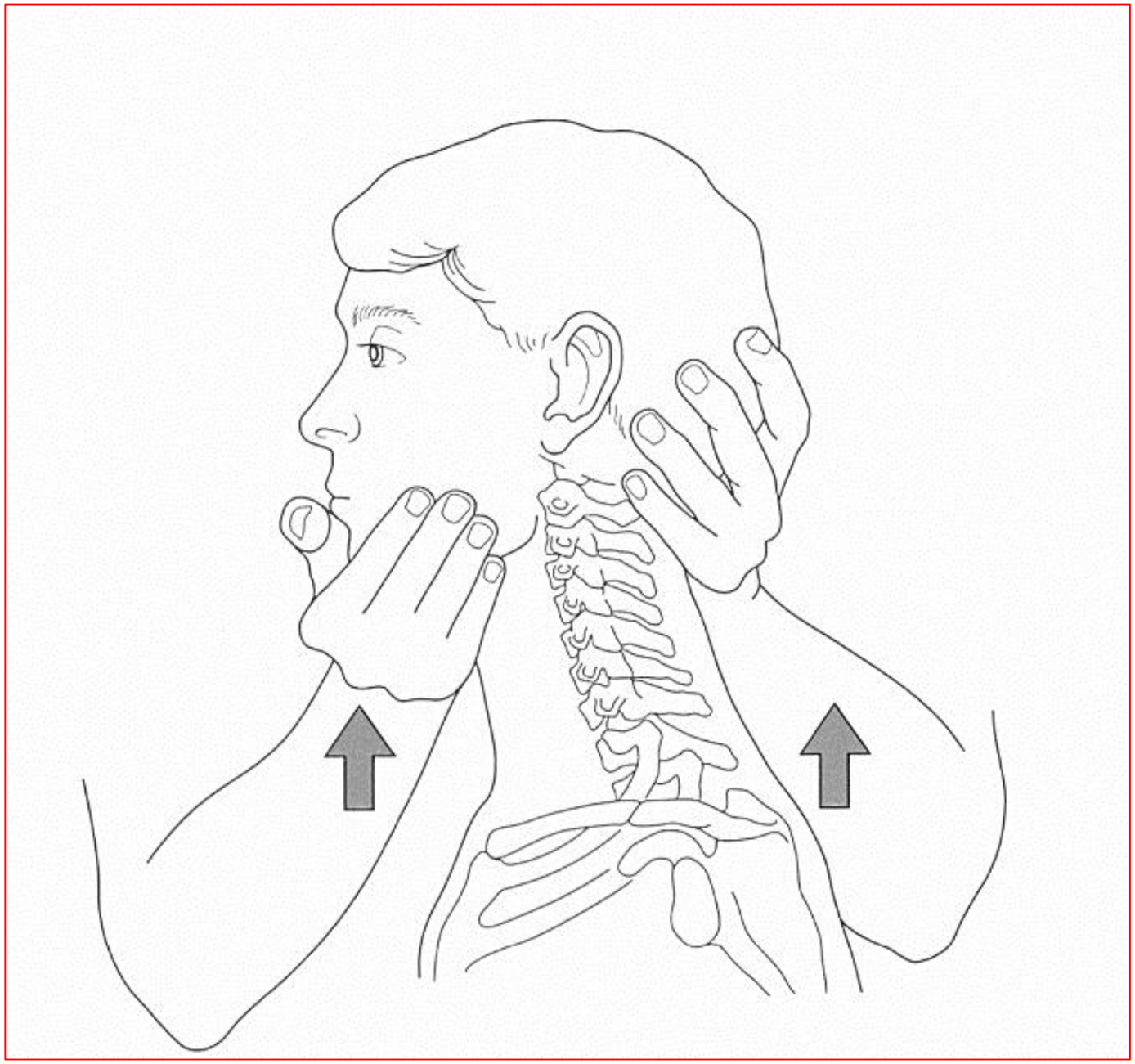
Spurling

⑩Forminal compression



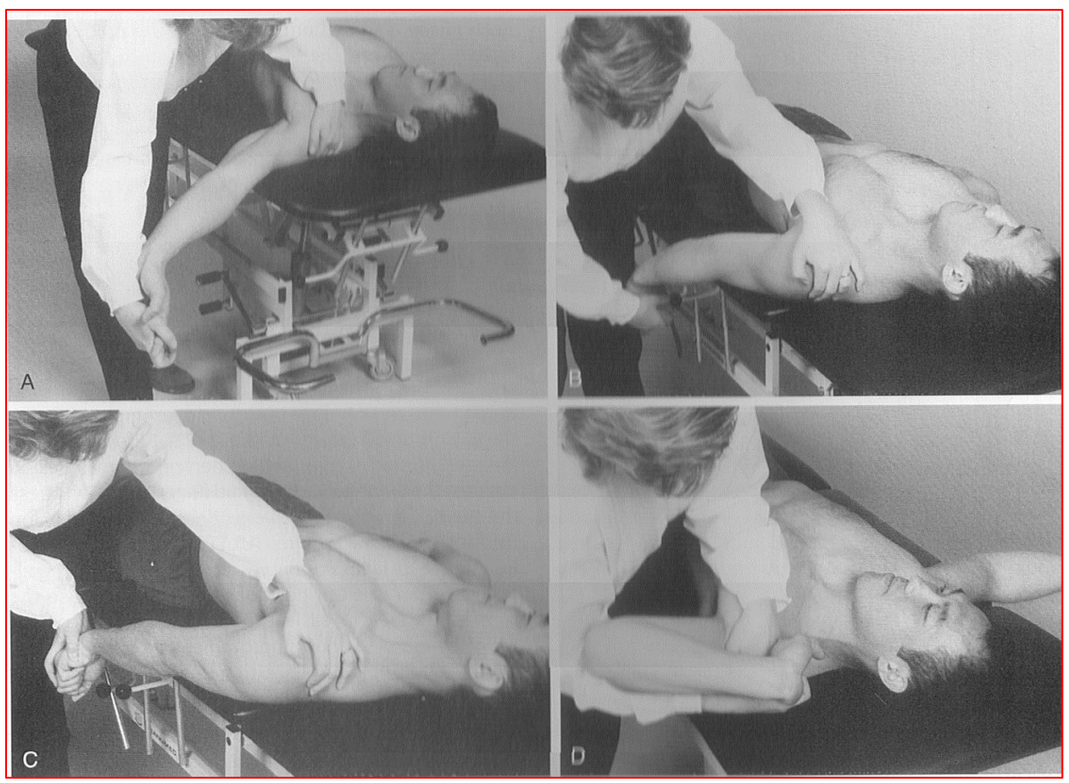
Distraction test

⑩Distraction test

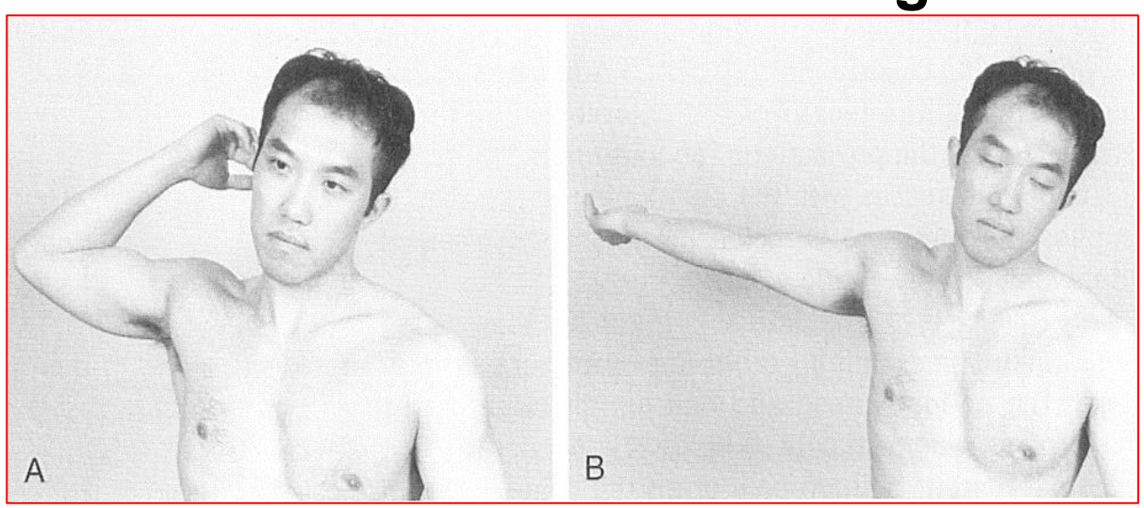


Upper limb tension tests

- Like the straight leg raise test in the lower limb
- Also called Elvey's test
- Different positions put tension on different nerve roots

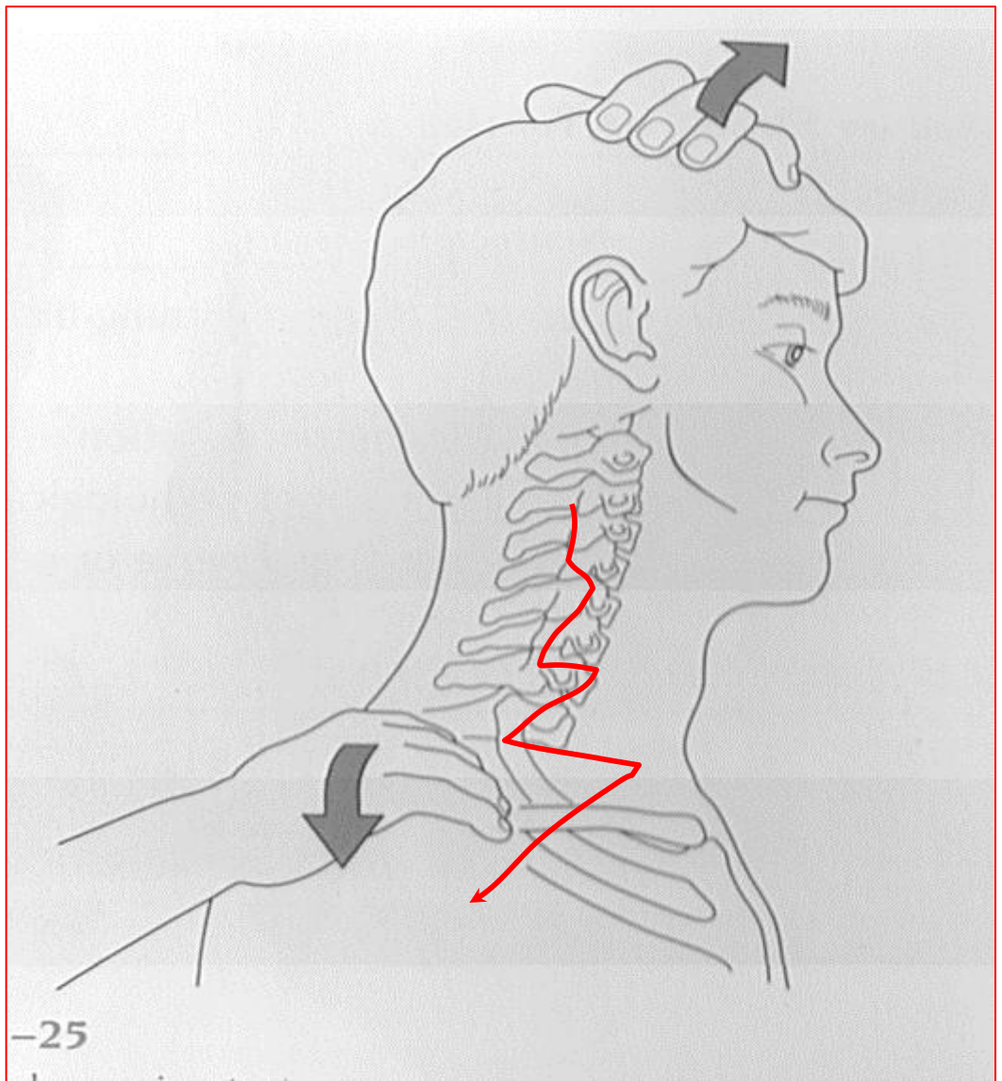


Evans's test – Bikele's sign



Shoulder depression test

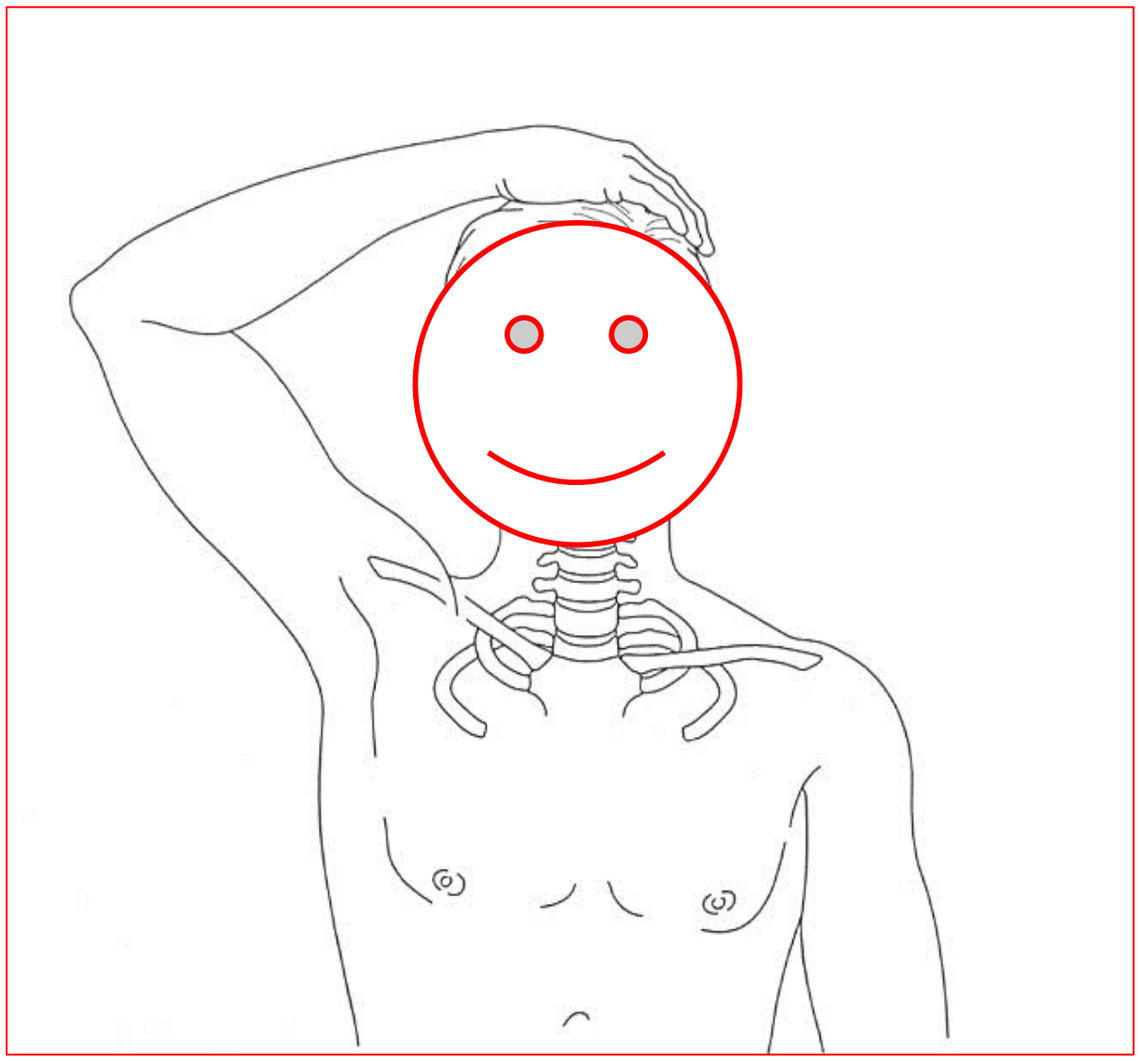
- Positive = irritation, adhesion or foraminal encroachment
- Brachial plexus = more than one root



Shoulder abduction test

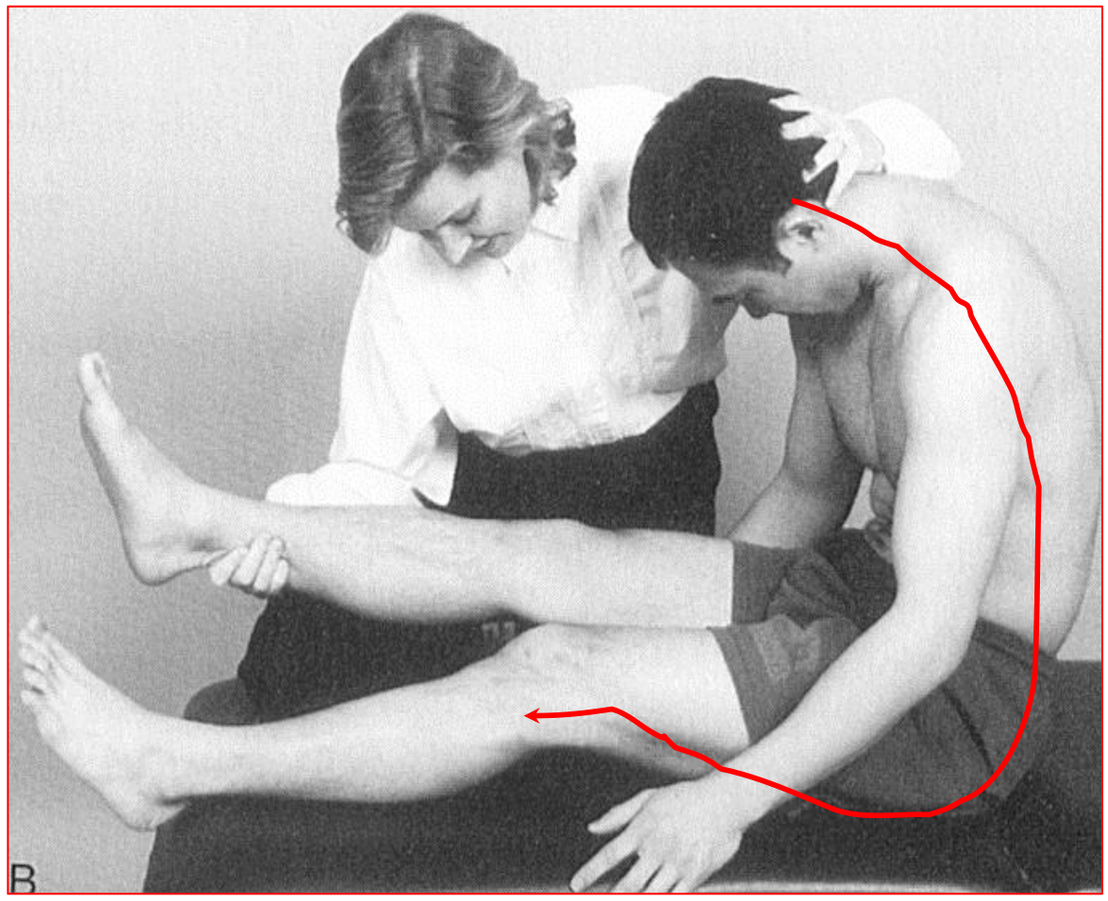
⑩Relief of symptoms=cervical exstradural compression

Bakody's sign



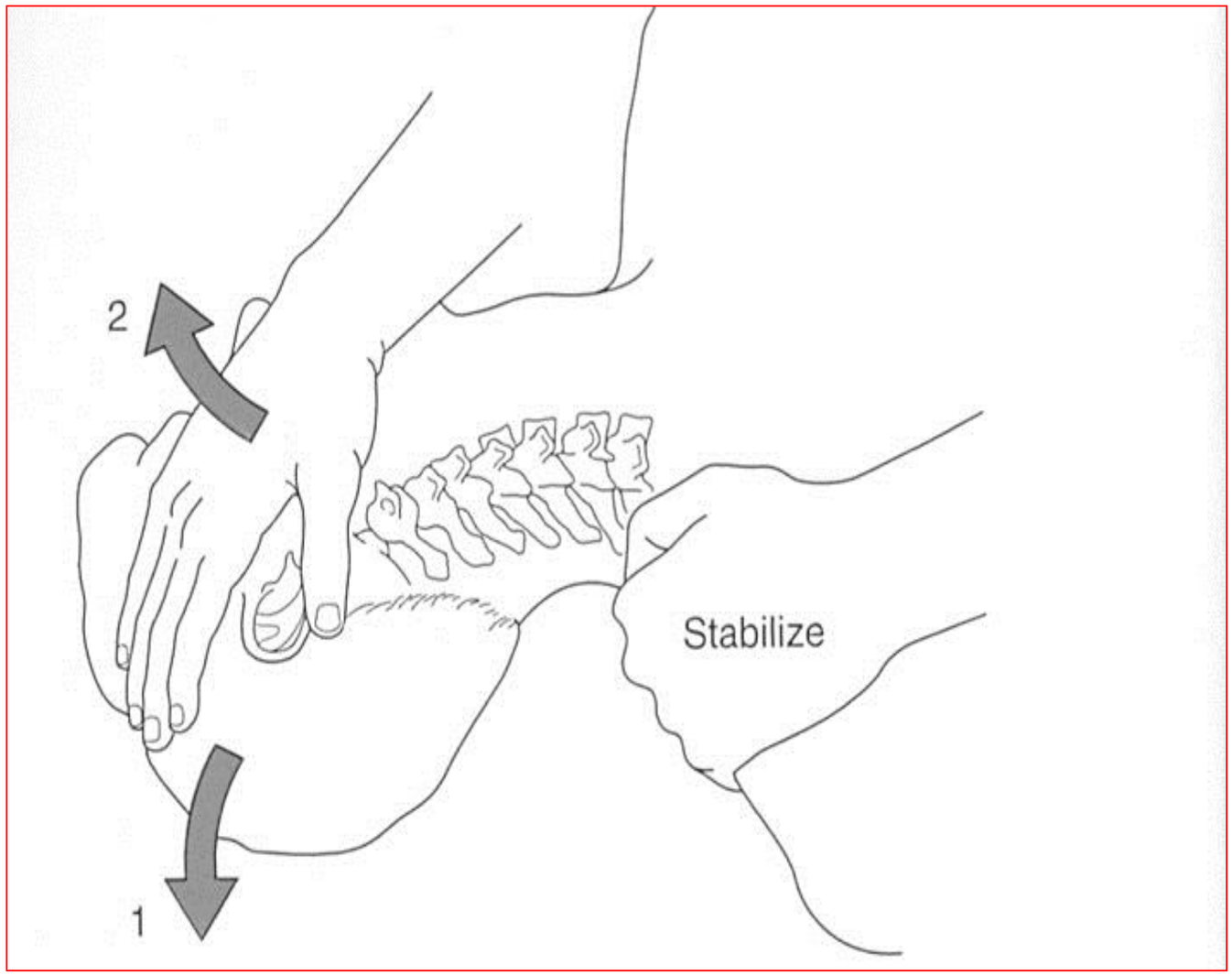
Lhermitte's sign

- Can also present as part of the history
- Dural or meningeal irritation or cervical myelopathy



Vertebral artery test

⑩Symptoms refer to the side that the head is turned

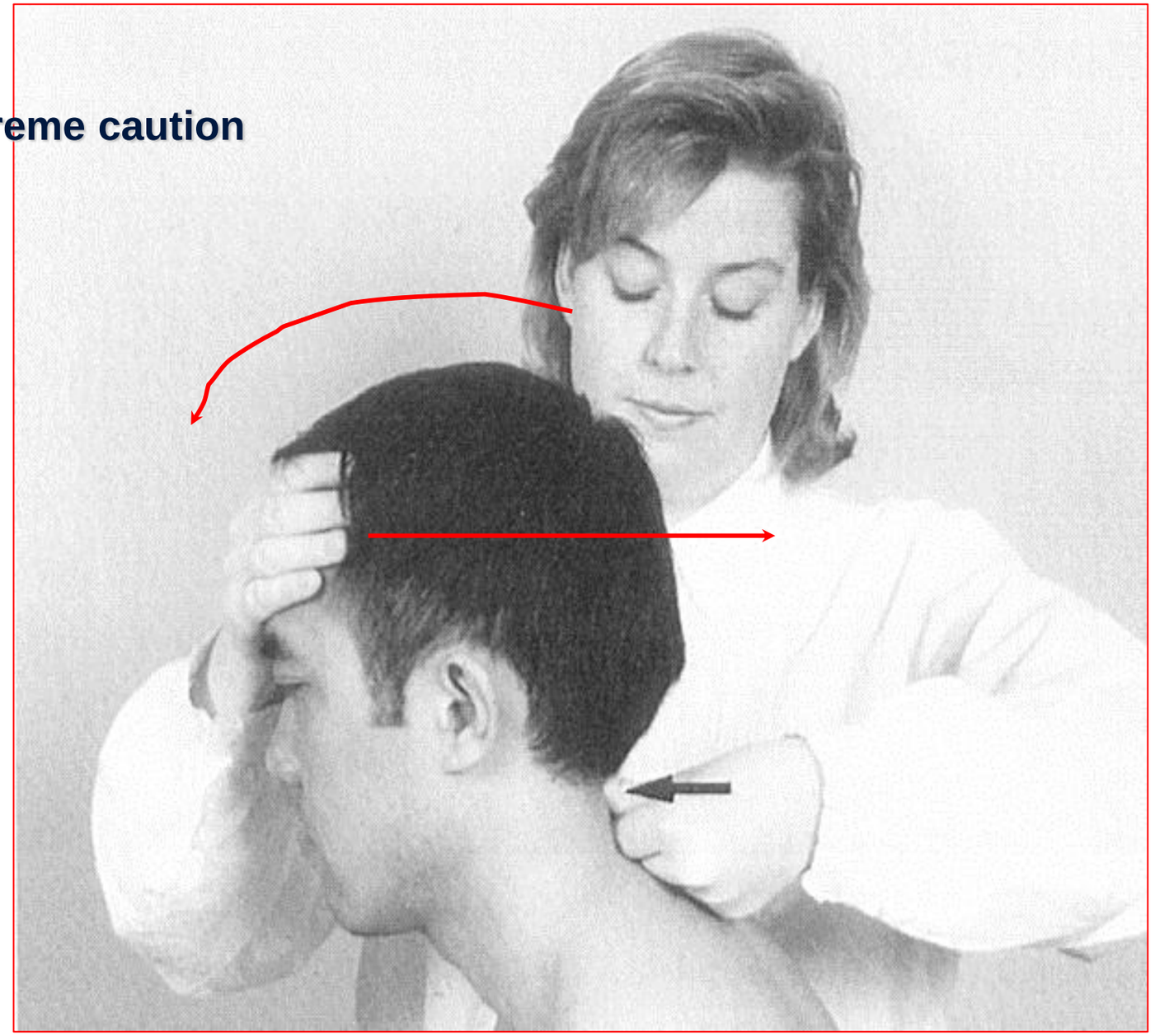


Look for Barre-Lieou sign

University of Pretoria

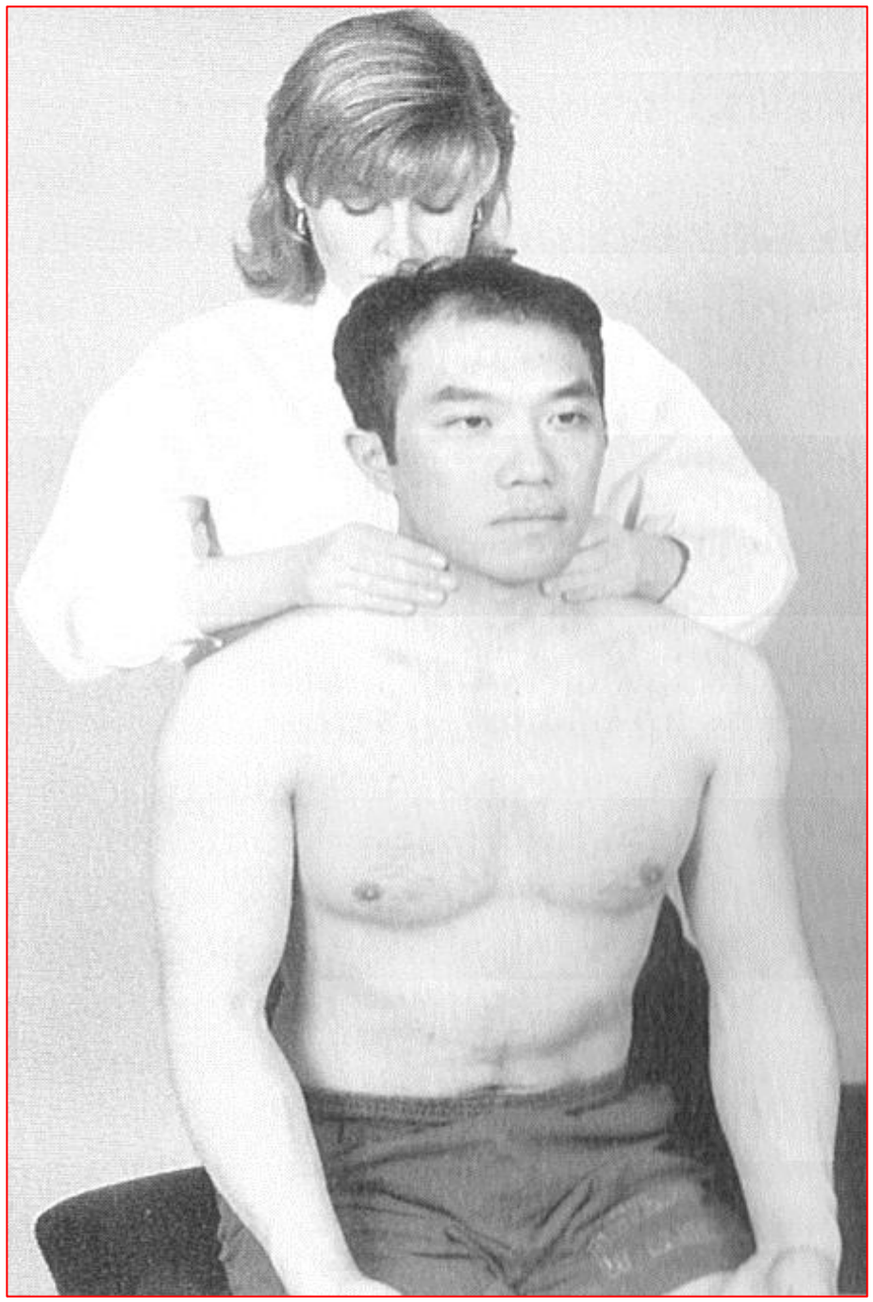
Sharp-Purser

⑩Determine C1-C2 instability



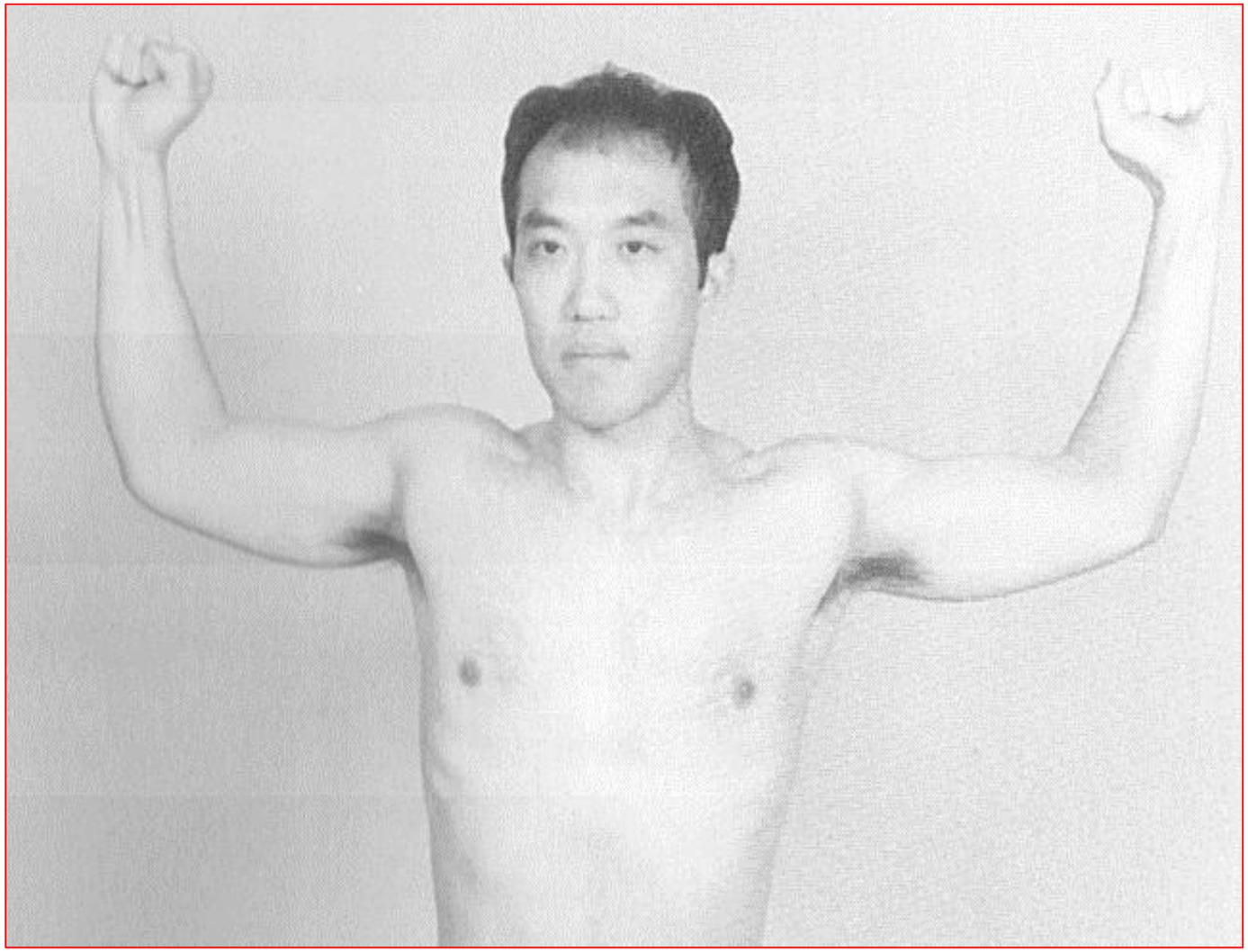
Valsalva tests

- Express against a closed glottis
- Nafzinger's test



Thoracic outlet syndrome

- ⑩Roos test
- ⑩3 minutes



Answers

- Secondary gain
- Myelopathy
- Radiculopathy
- Mechanical symptoms
- Pressure on the thecal sack
- Level of the pathology
- Special investigations