



“Working together for  
a green, competitive and inclusive Europe”

“HE-RO-IS strategic cooperation in hematology”

F SEE 2014-2021 No. 19-COP-0031

Curricula in hemophilia

Disclaimer: This curricula was realised with the EEA Financial Mechanism 2014-2021 financial support. Its content (text, photos, videos) does not reflect the official opinion of the Programme Operator, the National Contact Point and the Financial Mechanism Office. Responsibility for the information and views expressed therein lies entirely with the authors.

# Joint Physical Examination



# Objectives

- To be able to:
  - Do a simple examination of the musculoskeletal system
  - To communicate the results of a simple examination of the musculoskeletal system
  - Interpret the results of a simple examination of the musculoskeletal system

# Overall procedure

1. History
2. Clinical assessment
3. Other examinations?
  - Imaging?
  - Labs?

# History

Why is the patient here today?

# History

Who is the patient?

# History

What is the problem?

Where?

When?



# Clinical assessment

- First glance!
  - Is the patient ill?
- General examination
- Specific examination

# Clinical assessment

- ALWAYS

Examine distal to the region of interest

- Vascular function

- LE ADP,ATP

- UE A Radialis

- Motor function

- Sensation

After any treatment (such as reduction or casting) a new evaluation is mandatory!

# Clinical assessment

You have to examine the patient even if he or she is in pain- otherwise you can not help him or her.

# Clinical assessment

- Inspection
- Palpation
- Manipulation

# Clinical assessment

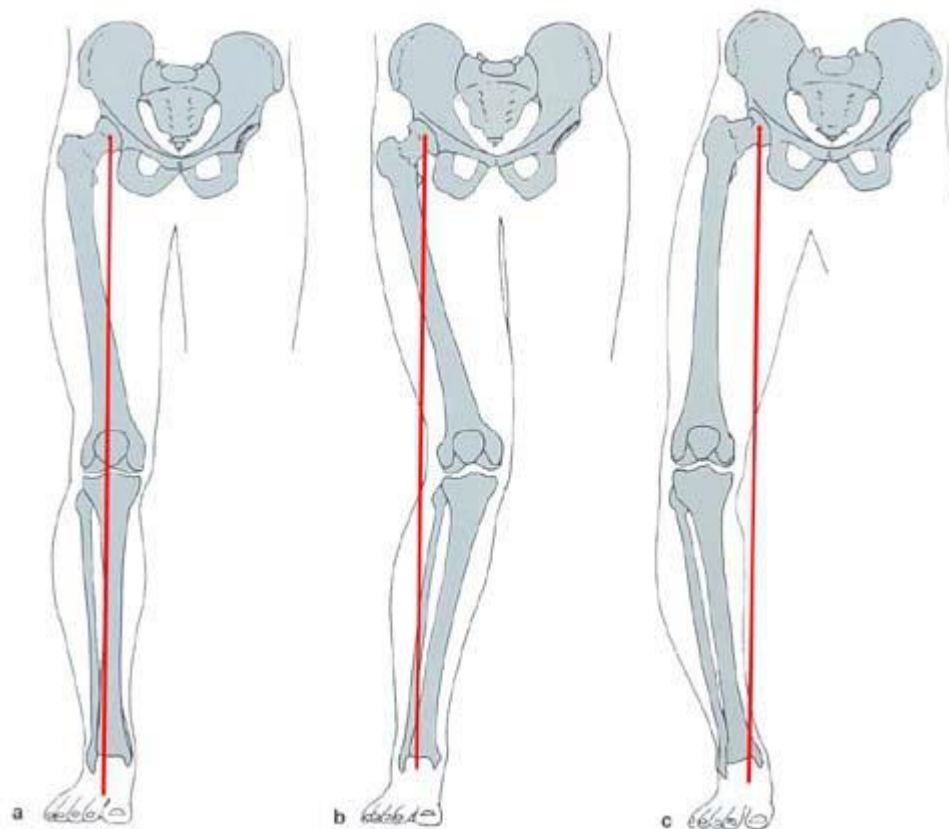
- Inspection
  - Posture/Gait
  - Gross anatomy
  - Alignment
  - Range of Motion (ROM)
  - Swelling
  - Discoloration

# Clinical assessment

- Gross anatomy
  - Relative position
    - Anterior/Posterior
    - Proximal/Distal
    - Medial/Lateral
      - Hand
        - » Radial/ulnar
        - » Dorsal/volar
      - Foot
        - » Dorsal/plantar

# Clinical assessment

- Alignment
  - Varus/valgus
  - Rotation
    - Torsion (tibia)
    - Version (femur)



Normal

Valgus

Varus

# Clinical assessment

ROM (range of motion)

- Active/passive
  - Flexion/Extension
  - Abduction/Adduction
  - Internal/external rotation
    - Pronation/Supination



# Clinical assessment

- Palpation
  - Anatomical landmarks
  - Tenderness
  - Continuity
  - Temperature
  - Swelling/effusion
  - Pulses

# Clinical assessment

- Manipulation
  - Muscle strength
  - Sensibility testning
  - Reflexes
  - Stability testing
  - Special tests

# Clinical assessment

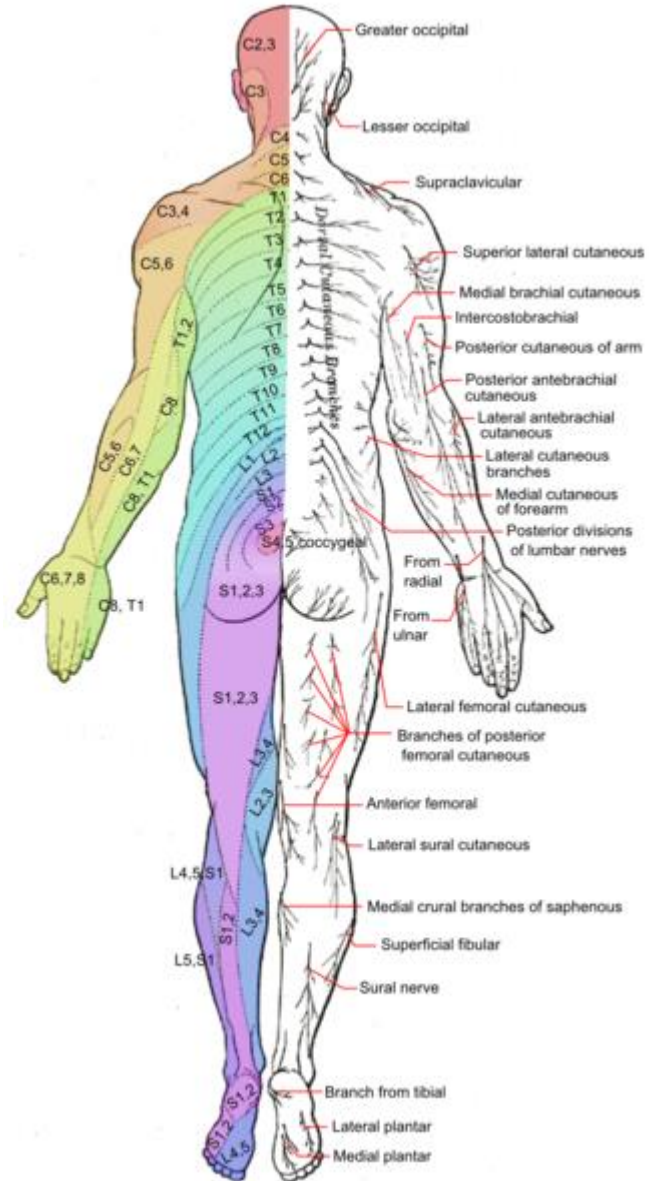
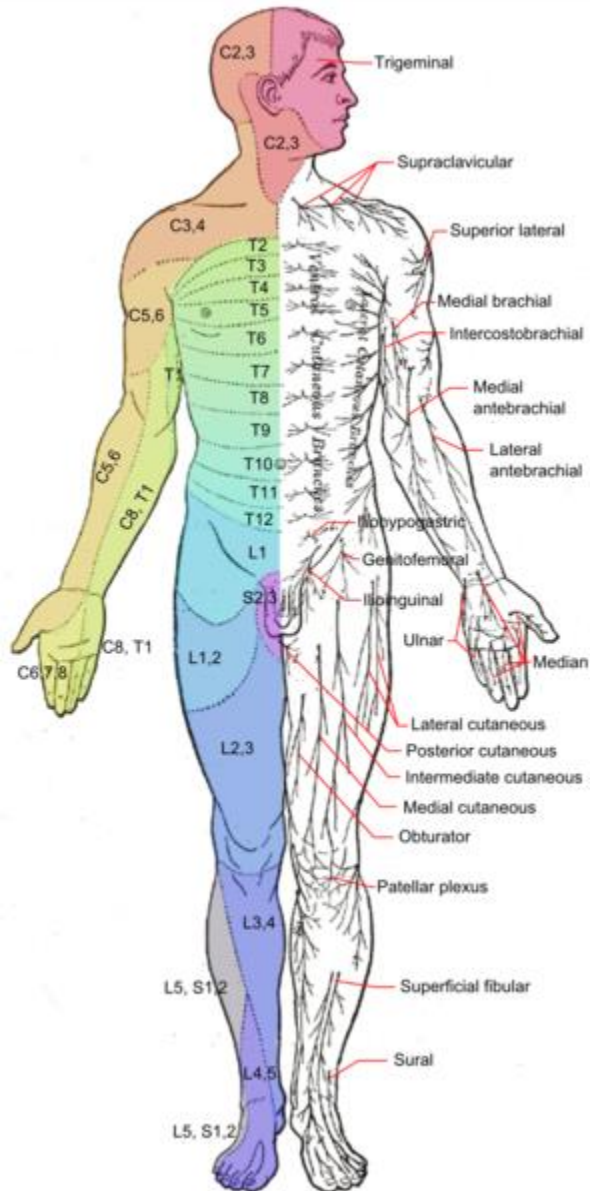
- Manipulation
  - Muscle strength grade 0-5
    - Grade 3 = against gravity only
  - Sensibility testning
    - Dermatomes
    - Peripheral sensory nerves
  - Reflexes
    - Bicep/Tricep/Brachiorad/Pat/Achilles
  - Stability testning
    - Ligamentous injury/laxity grade 1-3

# Grading of muscle strength

0	No detection of muscular contraction
1	A barely detectable flicker or trace of contraction with observation or palpation.
2	Active movement of body part with elimination of gravity.
3	Active movement against gravity only and not against resistance
4	Active movement against gravity & some resistance
5	Active movement against full resistance without evident fatigue (Normal muscle strength)

# Clinical assessment

- Manipulation
  - Muscle strength grade 0-5
    - Grade 3 = against gravity only
  - Sensibility testning
    - Dermatomes
    - Peripheral sensory nerves
  - Reflexes
    - Bicep/Tricep/Brachiorad/Pat/Achilles
  - Stability testning
    - Ligamentous injury/laxity grade 1-3



# Clinical assessment

- **Manipulation**
  - Muscle strength grade 0-5
    - Grade 3 = against gravity only
  - Sensibility testning
    - Dermatomes
    - Peripheral sensory nerves
  - **Reflexes**
    - Bicep/Tricep/Brachiorad/Pat/Achilles
  - Stability testning
    - Ligamentous injury/laxity grade 1-3

# Clinical assessment

- Manipulation
  - Muscle strength grade 0-5
    - Grade 3 = against gravity only
  - Sensibility testning
    - Dermatomes
    - Peripheral sensory nerves
  - Reflexes
    - Bicep/Tricep/Brachiorad/Pat/Achilles
  - Stability testning
    - Ligamentous injury/laxity grade 1-3



# Grading of Ligamentous Injury

<b>1</b>	<b>Pain from provocation but normal stability. Some disrupted fibers</b>
<b>2</b>	<b>Pain and laxity with stop from provocation. More disrupted fibers</b>
<b>3</b>	<b>Pain and laxity without stop from provocation. All fibers are disrupted</b>

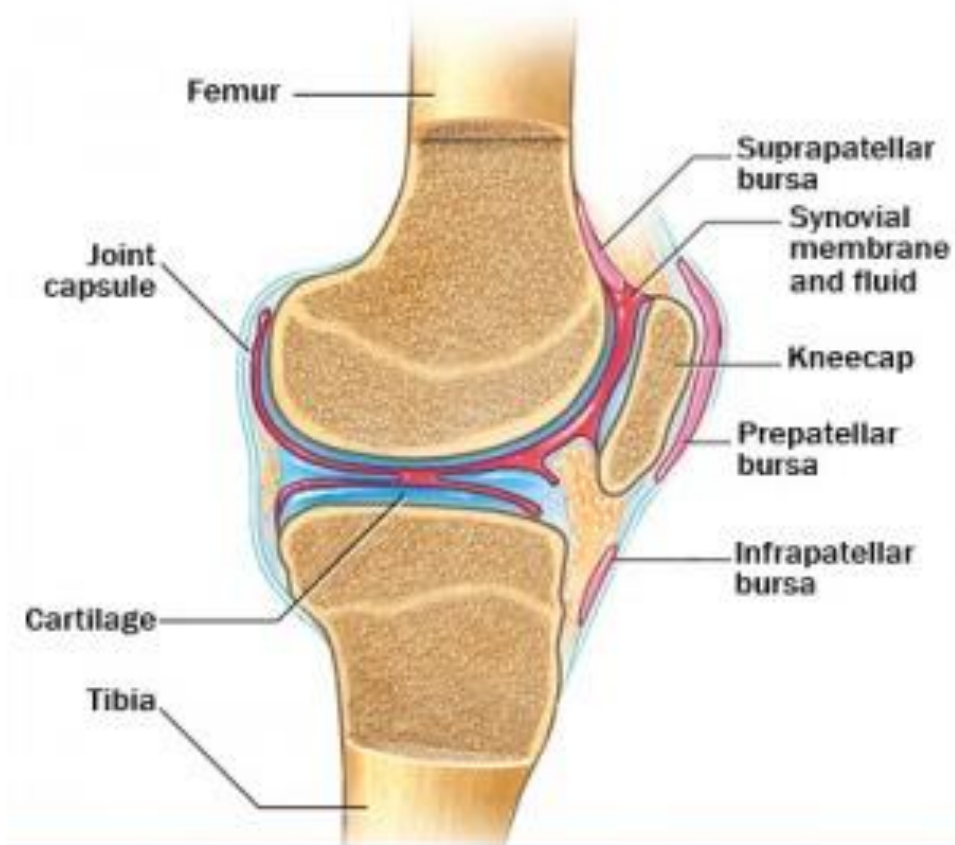
# The Knee



# The Knee

- ROM 0-135
- Valgus/varus stability w/wo pain
- Sagittal stability
- Meniscal tests
  - Appley's test
  - McMurrey's test

# The Knee



- Suprapatellar swelling
- Prepatellar swelling

# Foot and Ankle



# Foot and Ankle

- Ankle joint
  - One hand on shin, the other on the foot
    - Flexion/extension
- Subtalar joints
  - One hand on shin, the other around the heel
    - Pronation/supination

# Elbow



# Elbow

- Flexion
- Extension
- Rotation (pronation/supination)
- Effusion?
- Ulnar nerve
  - Tinell's sign



# Hip



# Hip

- Resting position
  - Leg length discrepancy?
- ROM
  - Flexion/extension
  - Internal/external rotation
  - Abduction/Adduction
- Palpation
- To rule out other origins of symptoms
  - Vascular evaluation
    - Claudicatio
  - Neurological evaluation
    - Spinal stenosis/radiculopathy

# General considerations

- Special patients can have uncommon diseases

# General considerations

- Special patients often have common diseases
  - Infection
    - Septic arthritis
    - Spondylitis/discitis
    - Osteomyelitis
  - Metastatic disease

# Orthopedic emergencies

- Compartment syndrome
  - Swelling in muscle compartment
    - Muscles die within 6 hours
    - Symptoms
      - Pain out of proportion
      - Severe tenderness by palpation
      - Severe pain with passive ext/flexion of peripheral joints
    - Clinical diagnosis – No X-ray/US/MRI!
  - Treatment: Acute surgical decompression

# Orthopedic emergencies

- Cauda equina syndrome
  - Compression of lubar roots
    - Symptoms
      - Muscle weakness in the lower extremity
      - Bilateral anesthesia
      - Urinary retention/fecal incontinence
    - Full examination with rectal exam
    - Acute MRI
  - Treatment: Acute surgical decompression