Chapter 14

Lower Extremity and Pelvis

Learning Objectives

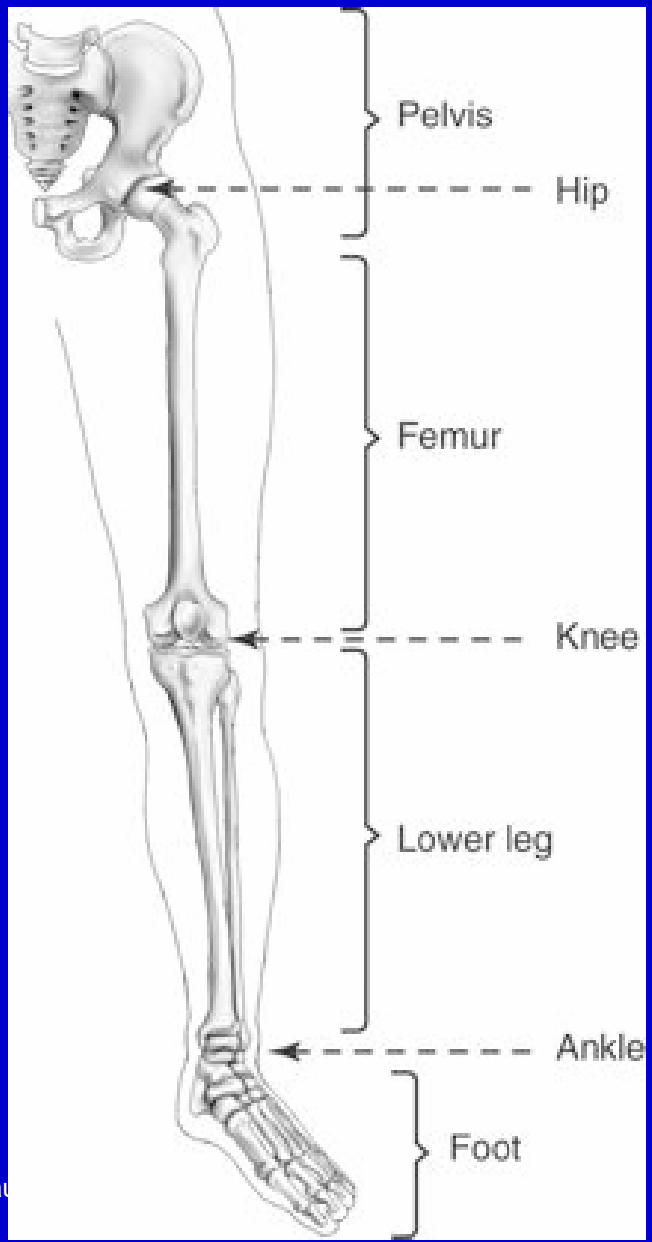
- Name the bones that make up the lower extremity and pelvis, and identify each on an anatomic diagram and on a radiograph
- Name and identify the significant bony prominences and depressions of the lower extremity and pelvis, and identify significant positioning landmarks by palpation

Learning Objectives

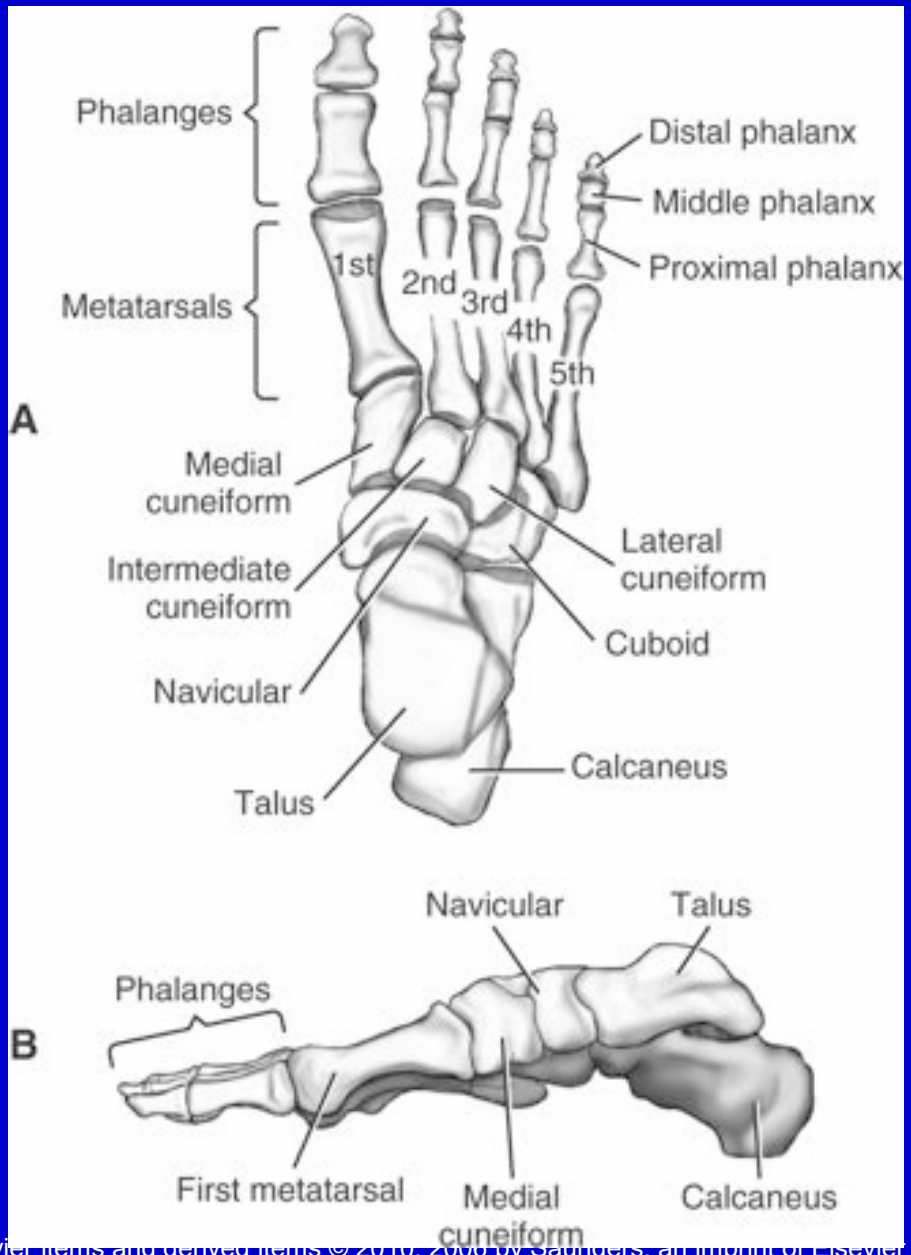
- Demonstrate correct body and part positioning for routine projections and common special projections of the lower extremity and pelvis
- Correctly evaluate radiographs of the lower extremity and pelvis for positioning accuracy
- Describe and recognize on radiographs pathologic conditions common in the lower extremity and pelvis

Parts of the Lower Extremity

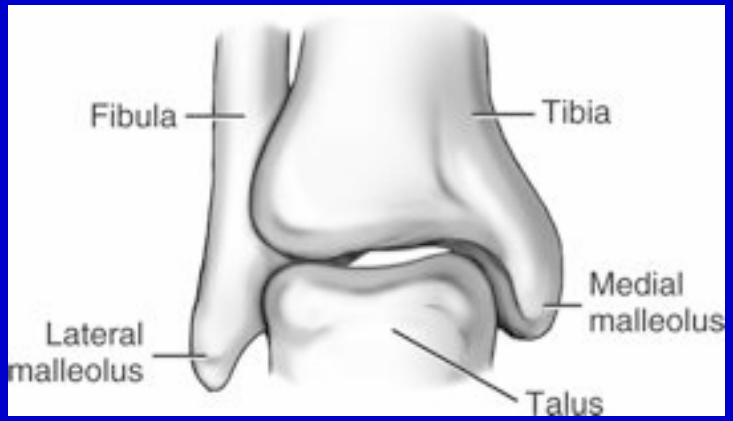
- Hip
- Femur
- Knee
  - Patella
- Lower leg
  - Tibia
  - Fibula
- Foot
  - Metatarsals
  - Phalanges

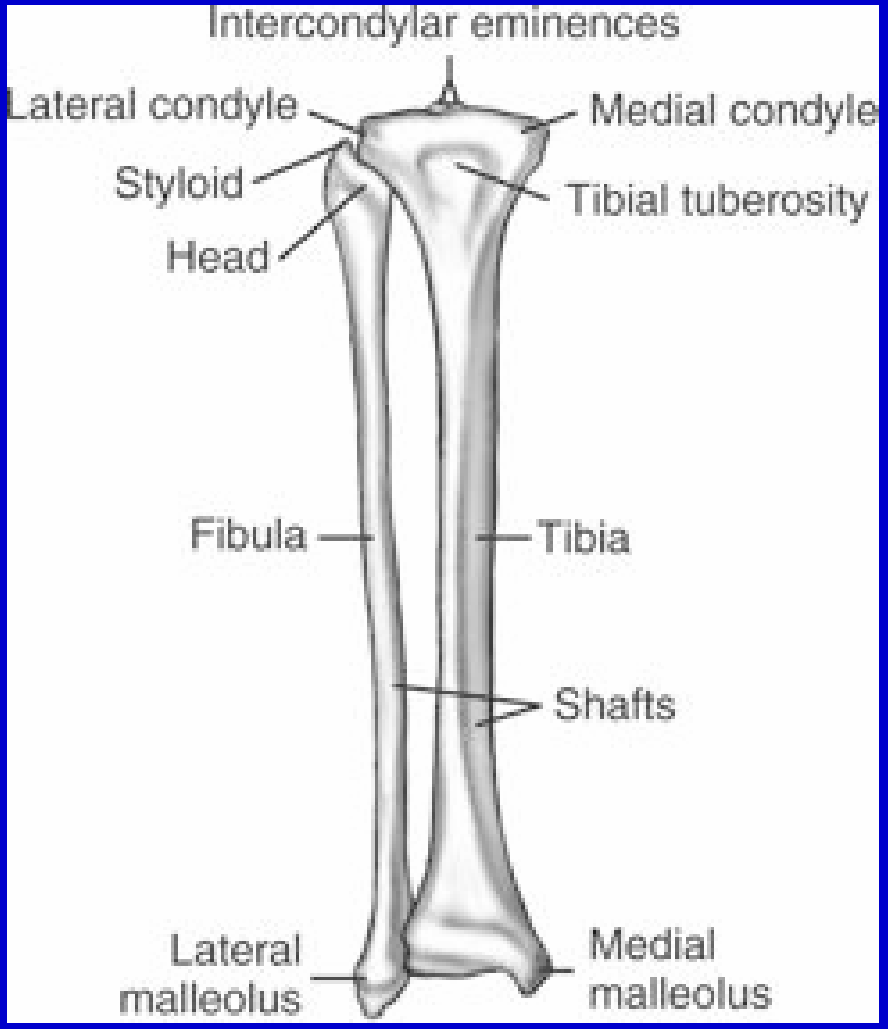


Foot

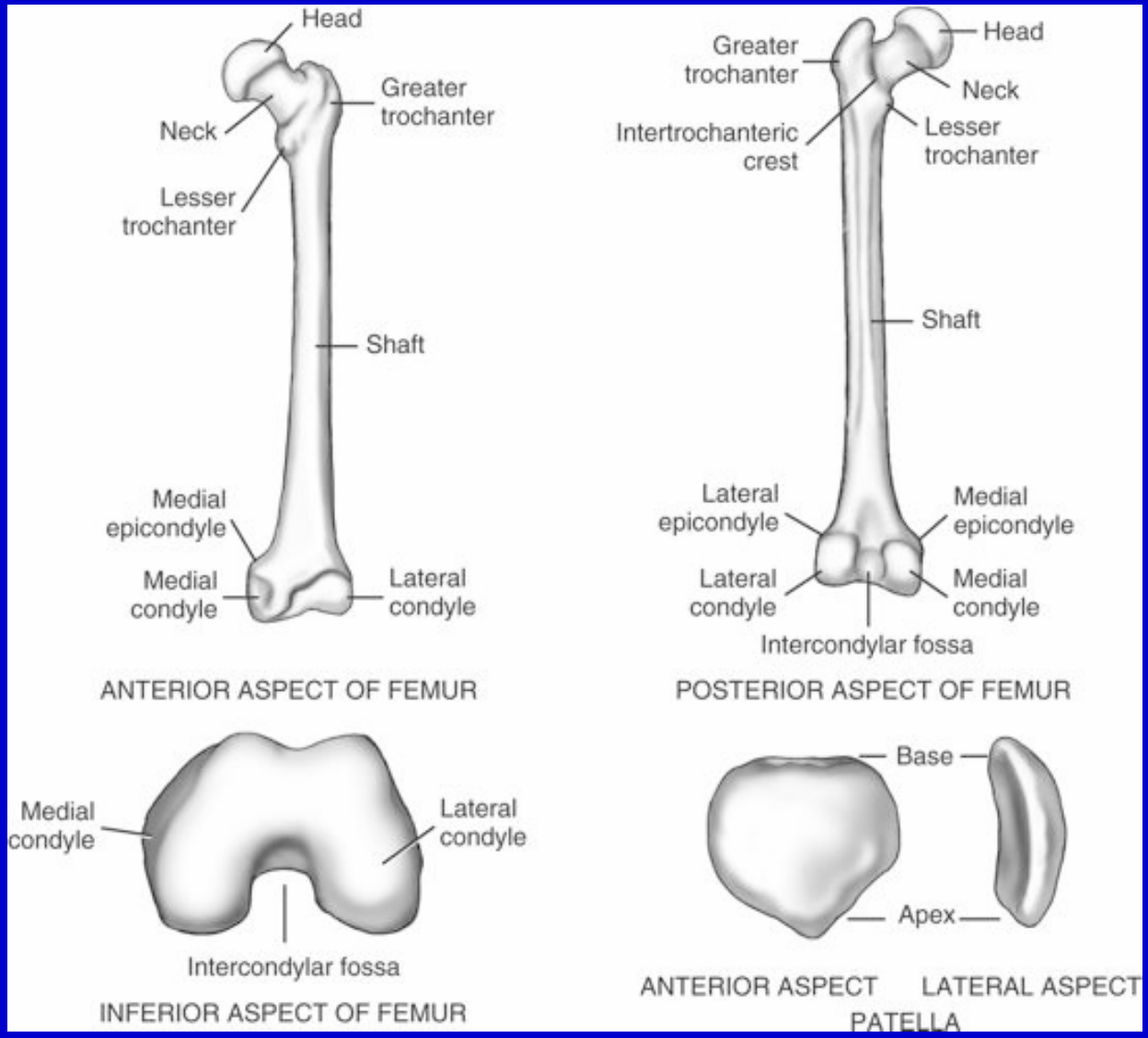


Ankle and Lower Leg





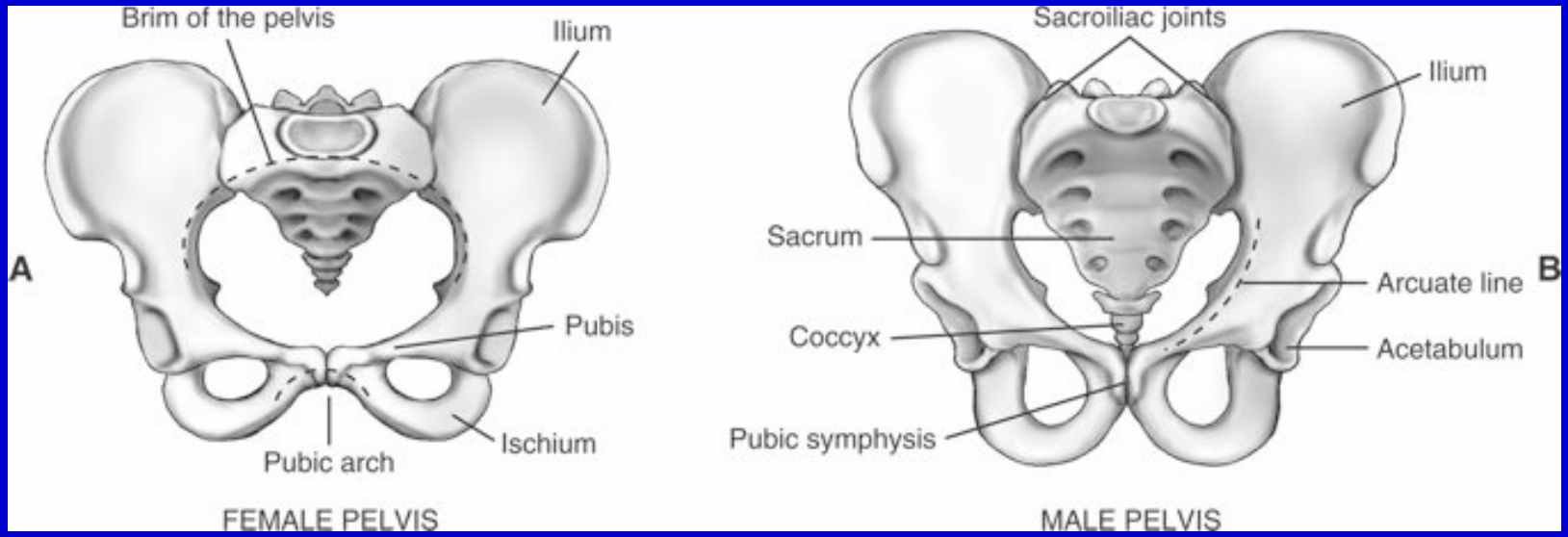
Femur and Patella



Parts of the Pelvis

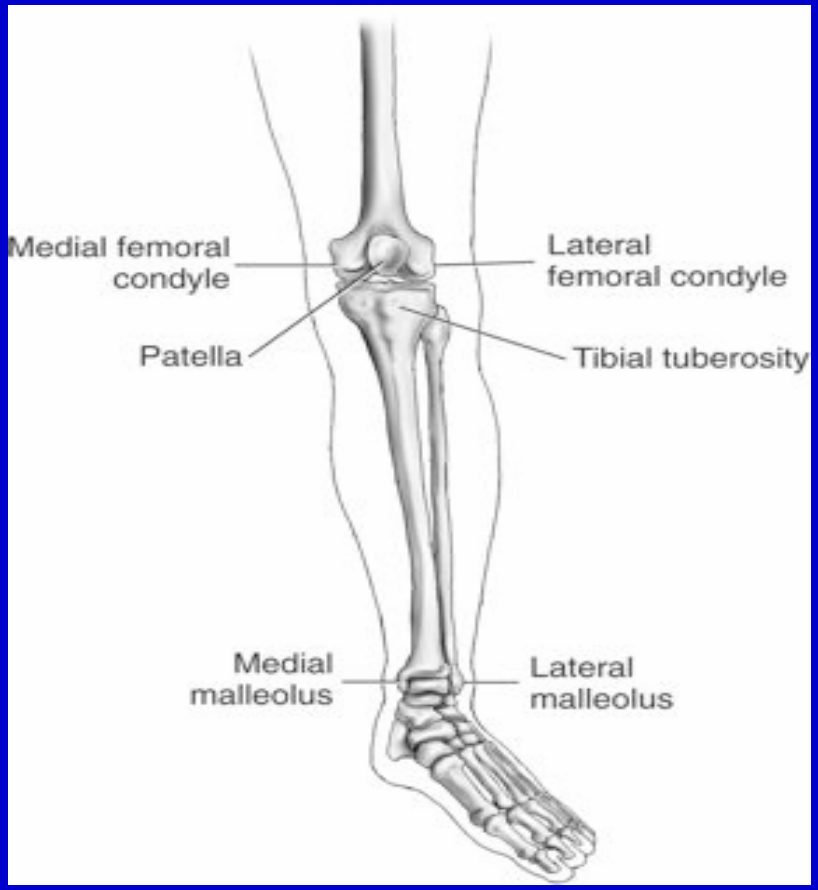
- Ilium
- Ischium
- Pubis
- Sacrum
- Coccyx

- Brim
- Arcuate line
- Sacroiliac joints
- Acetabulum
- Pubic symphysis
- Pubic arch



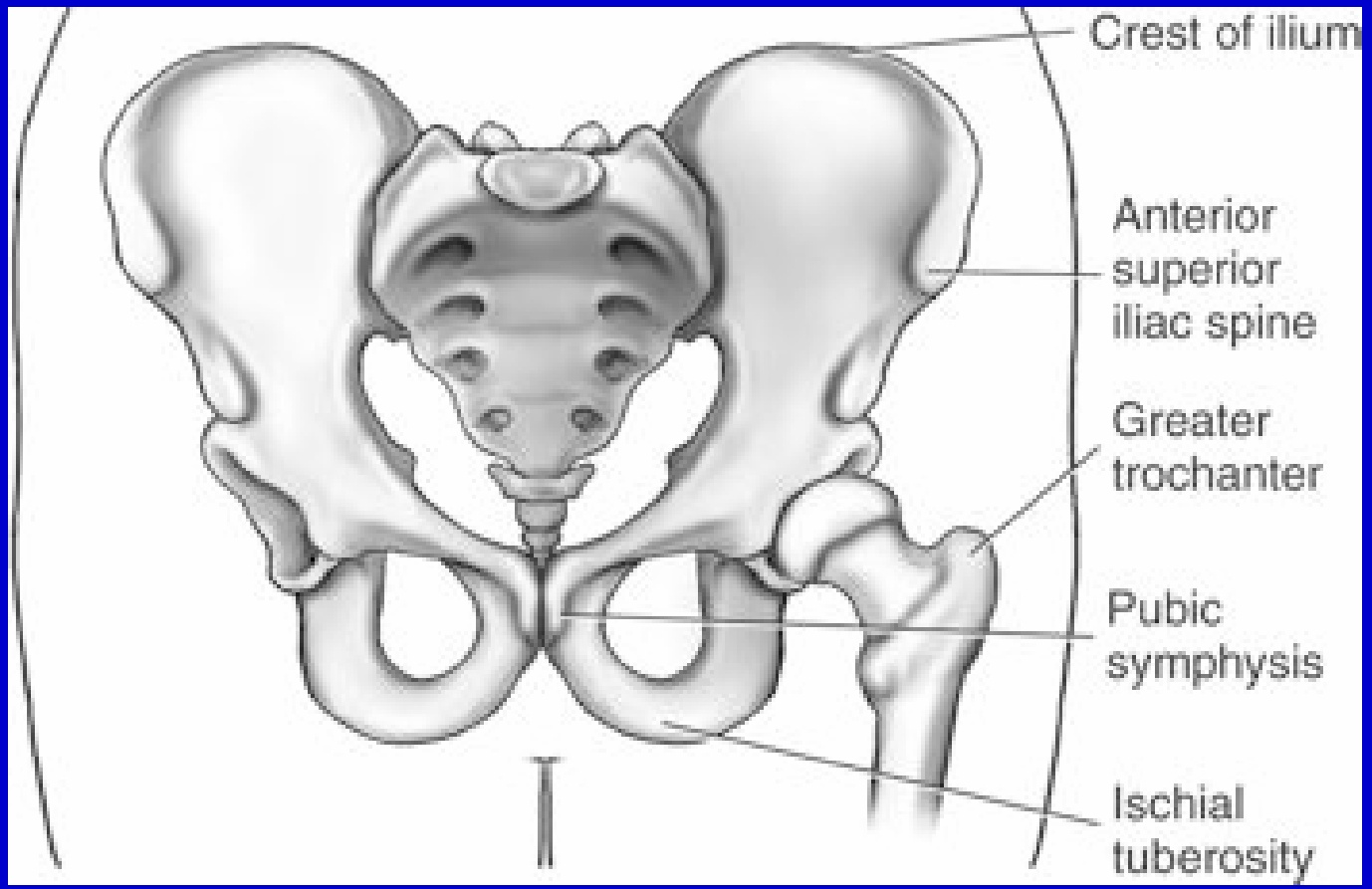
Palpable Bony Landmarks of the Lower Extremity

- Used to position the body part correctly



Palpable Bony Landmarks of the Pelvis and Hip

- Used to position the body part correctly



Examination of the Foot, Calcaneus, Ankle, and Lower Leg

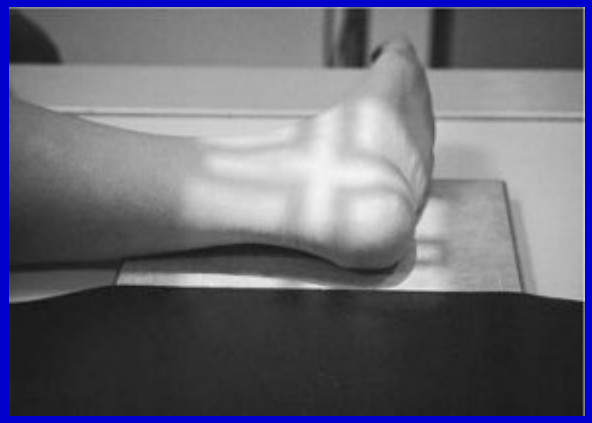
- Place IR on table top
- Place patient recumbent or seated on table
- Remove shoes, clothing, or other items that may be within the radiation field
- Place appropriate image markers
- Shield gonads

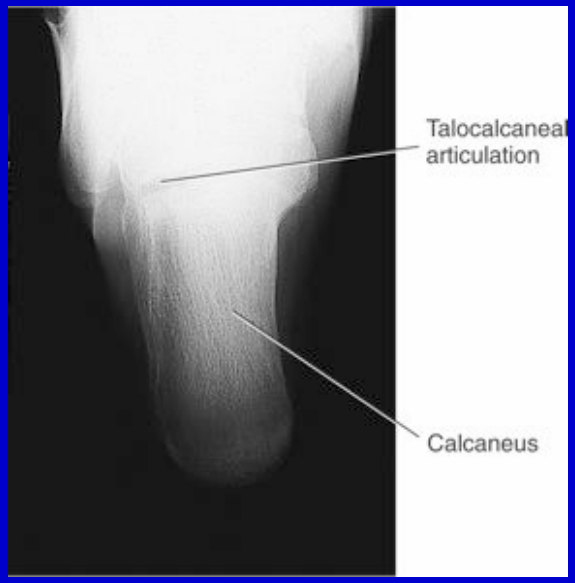
AP Projection of the Foot

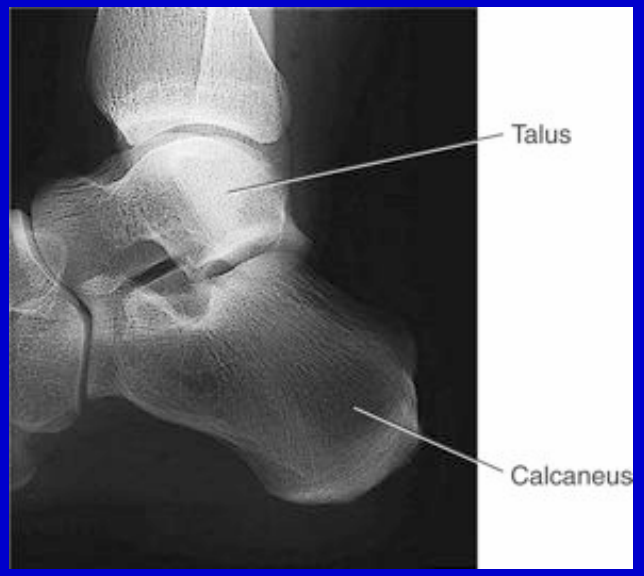
AP Oblique Projection of the Foot with Medial Rotation

Lateral Projection of the Foot

Axial and Lateral Projections of the Calcaneus

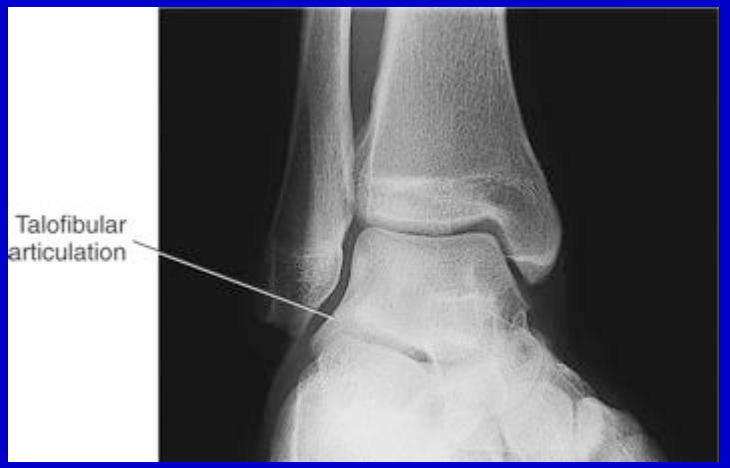






AP and Lateral Ankle Projections

AP Oblique Ankle Projections with 45° and 15° to 20° of Medial Rotation



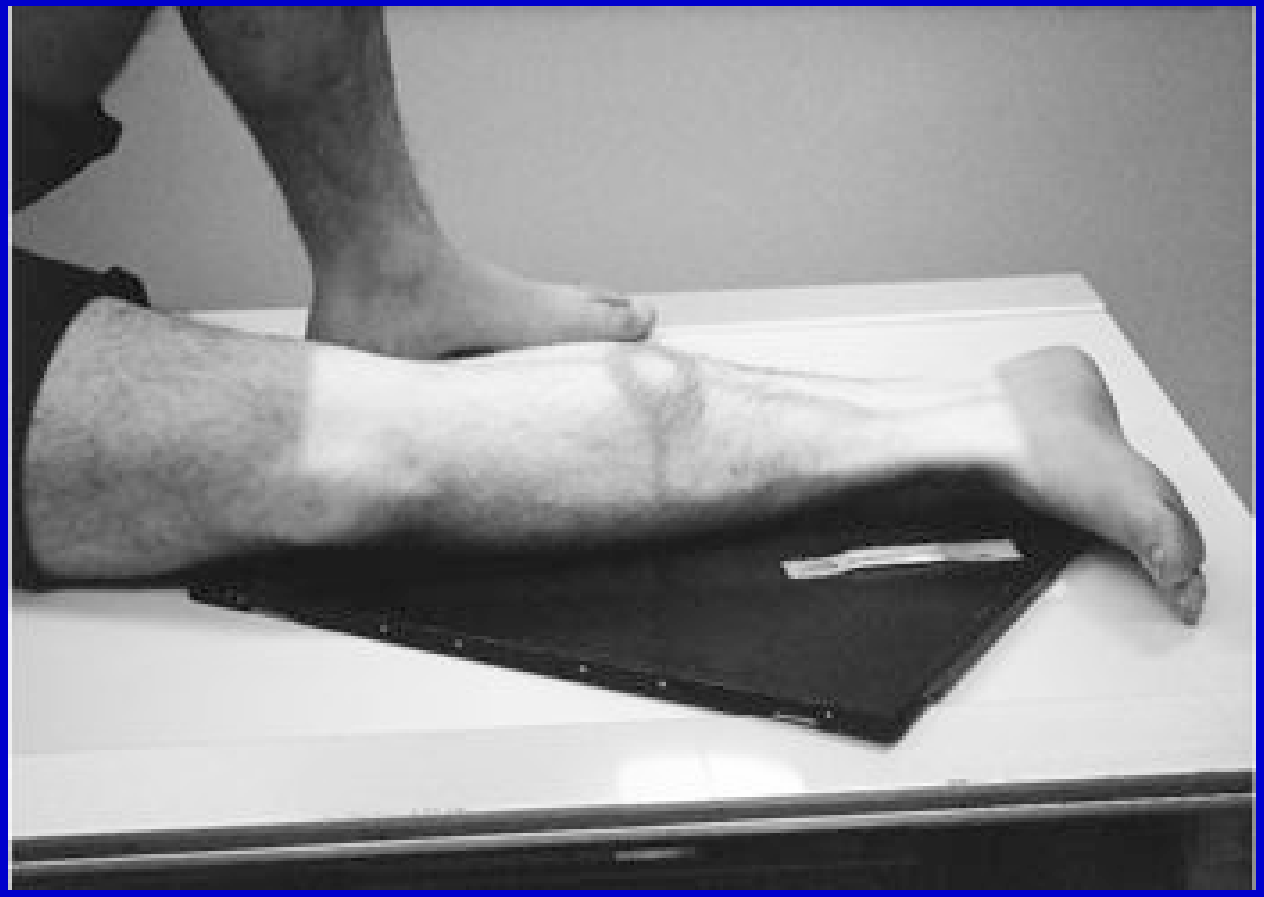
Clicker Question

An AP oblique projection of the ankle with a 45° medial rotation demonstrates the:

a) subtalar joint
b) mortise joint spaces
c) tibiofibular joint

AP Projection of the Lower Leg

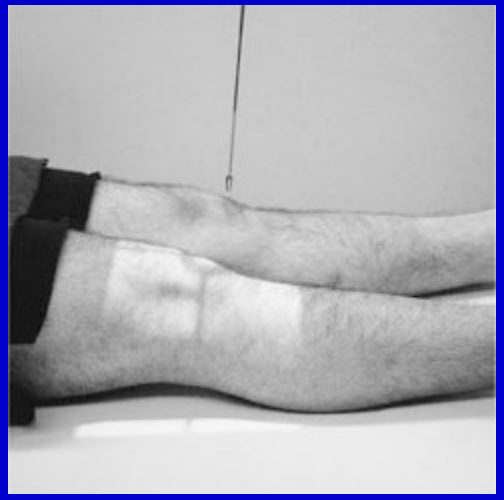
Lateral Projection of the Lower Leg

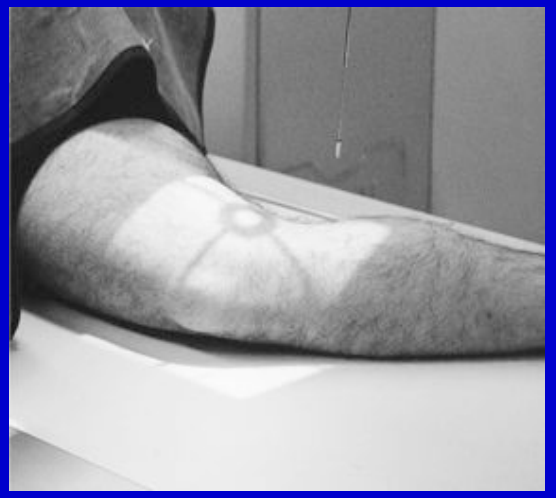


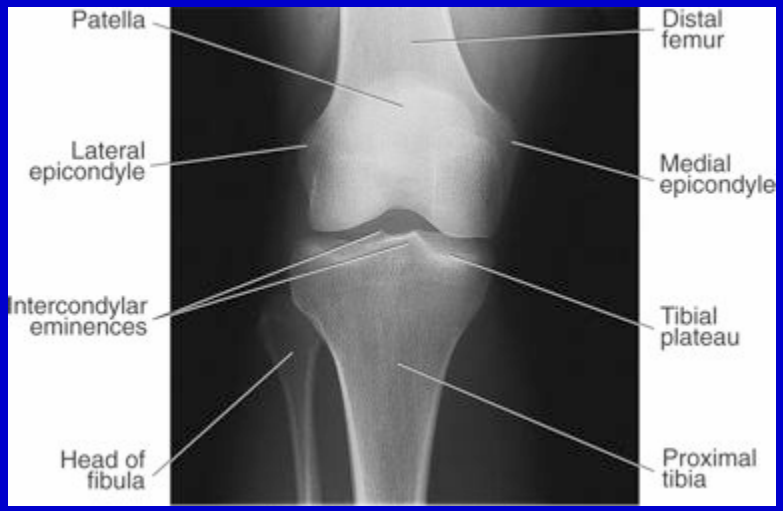
Examination of the Knee, Patella, Femur, Pelvis, and Hip

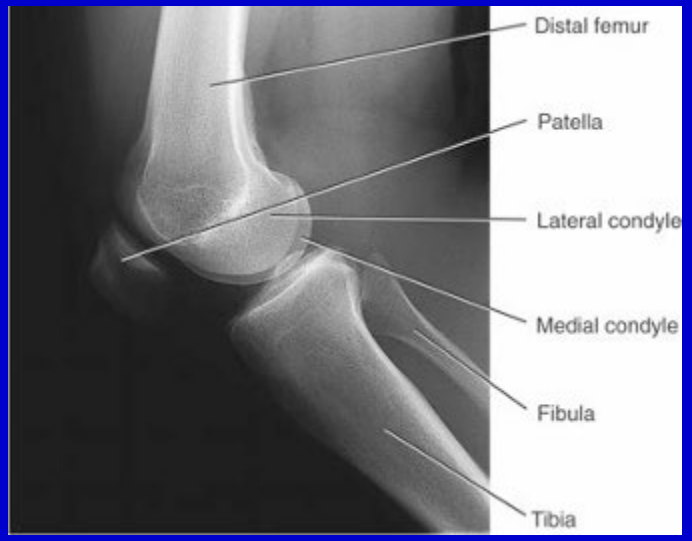
- Place IR in Bucky tray
- Place patient recumbent on table
- Remove clothing or other items that may be within the radiation field
- Place appropriate image markers
- Shield gonads

AP and Lateral Projections of the Knee







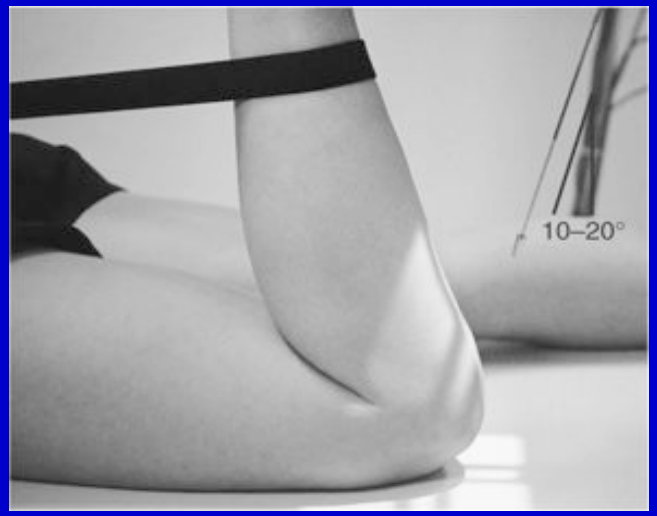


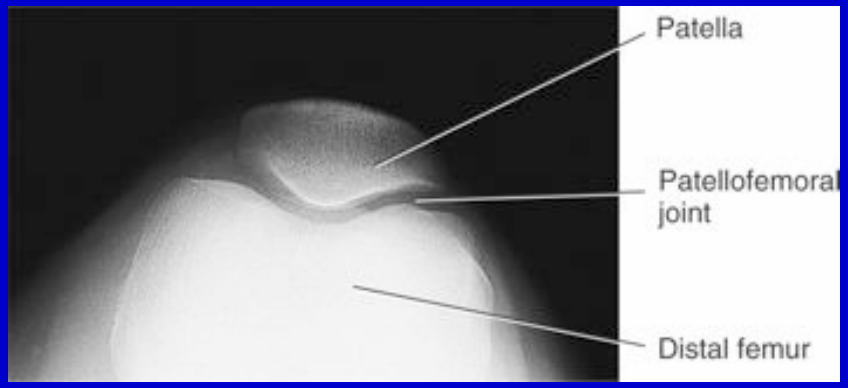
Clicker Question

For an AP projection of the knee the CR is directed 5°:

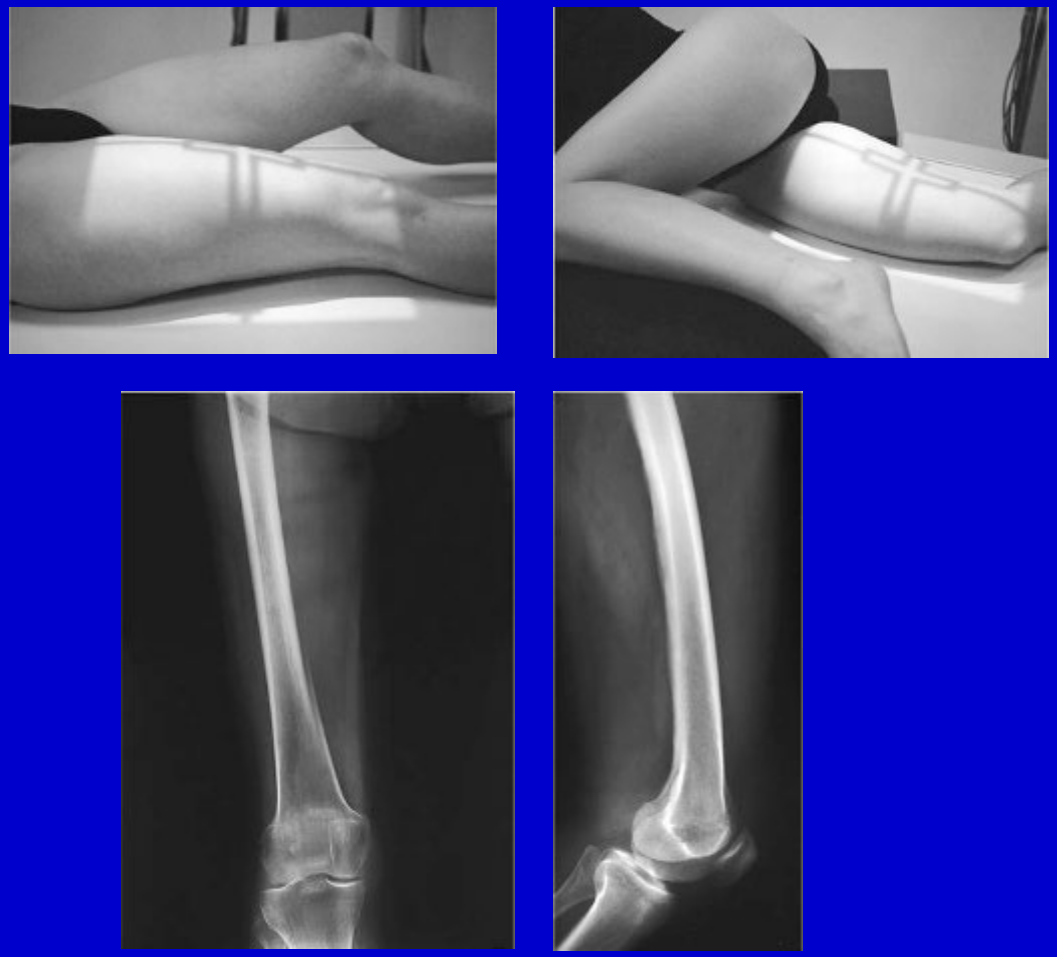
a) caudad to the apex of the patella
b) cephalad to the apex of the patella
c) caudad to the base of the patella
d) cephalad to the base of the patella

Tangential Projections of the Patella

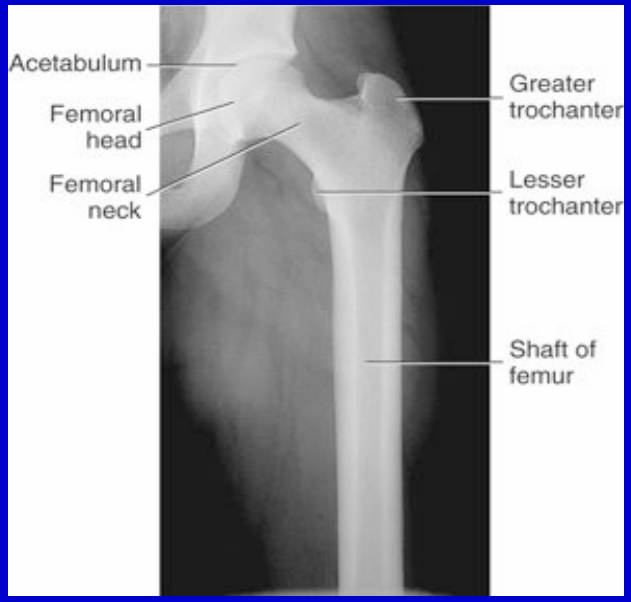


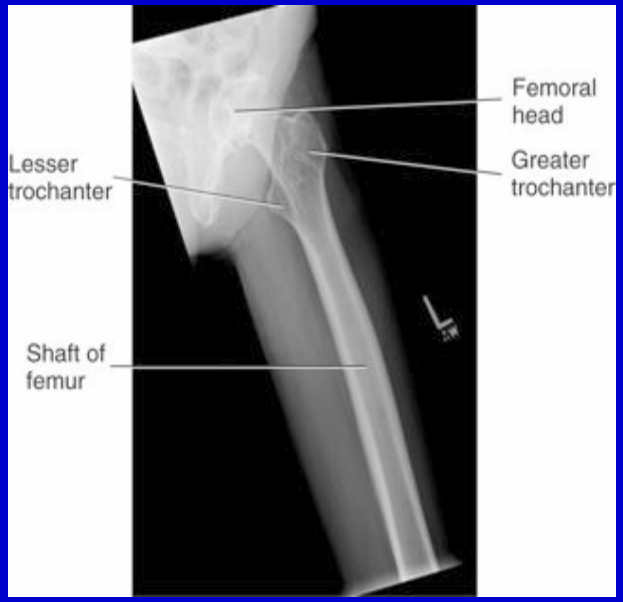


AP and Lateral Projections of Distal Femur

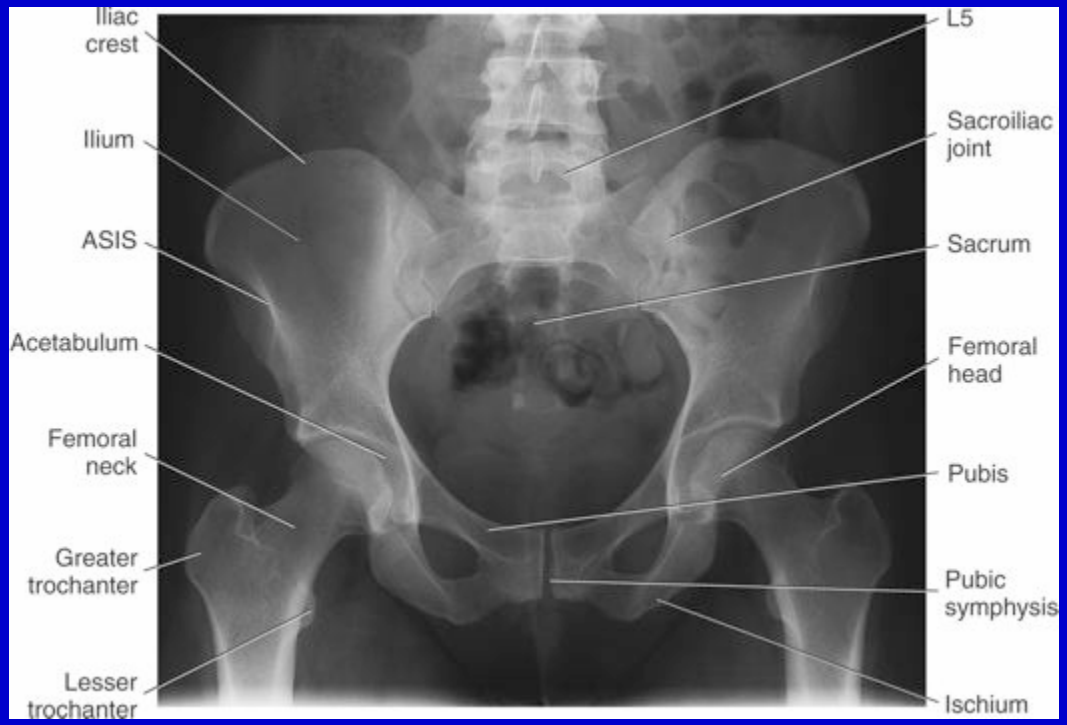


AP and Lateral Projections of the Proximal Femur

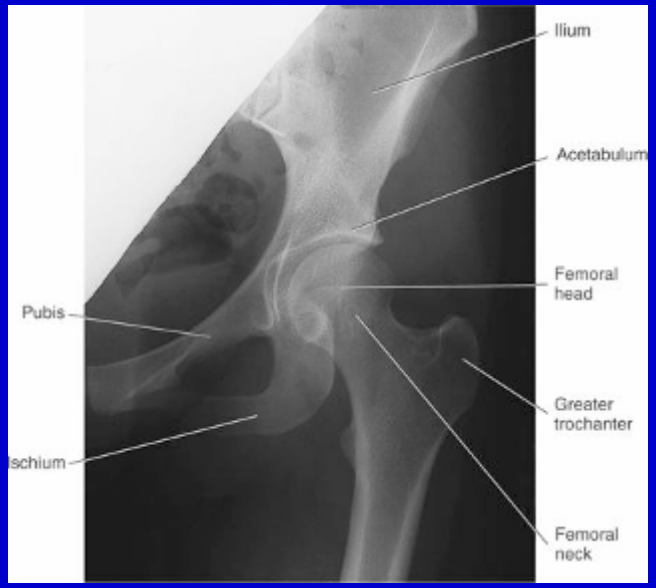




AP Projection of the Pelvis



AP and Lateral Projections of the Hip



Pathology

- Fractures
  - Stress
  - Bimalleolar
  - Spiral
  - Intertrochanteric

Clicker Question

A bimalleolar fracture is demonstrated on a radiograph of the:

a) hip
b) knee
c) ankle
d) pelvis

Pathology

- Rheumatoid arthritis
- Gouty arthritis
- Osteoarthritis
- Osteomyelitis
- Neoplasm
- Metastasis

Summary

- Bones of the lower extremity and pelvis include the ilium, ischium, pubis, femur, patella, tibia, fibula, metatarsals, and phalanges
- Bony landmarks such as the iliac crest and medial and lateral femoral condyles are used to position the pelvis and lower extremity

Summary

- Basic projections include
  - Foot
    - AP, oblique, lateral
  - Calcaneus
    - Axial and lateral
  - Ankle
    - AP, oblique, and lateral
  - Lower Leg
    - AP and lateral
  - Knee
    - AP and lateral

Summary

- Basic projections include
  - Patella
    - Tangential
  - Distal and proximal femur
    - AP and lateral
  - Pelvis
    - AP
  - Hip
    - AP and lateral

Summary

- Fracture is one of the most common injuries of the pelvis and lower extremity
- Other pathologic conditions include rheumatoid arthritis, gouty arthritis, osteoarthritis, osteomyelitis, neoplasm, and metastasis