جامعة الملك سعود
King Saud University

RADIOLOGY
TEAM 435



LECTURE 3

LOWER LIMB

Objectives:

- **Familiarize the students with radiological anatomy of the lower limb.**
- **Familiarize the students with radiological modalities available.**
- **Familiarize the students with applied anatomical abnormalities of the lower limb.**

Extra information

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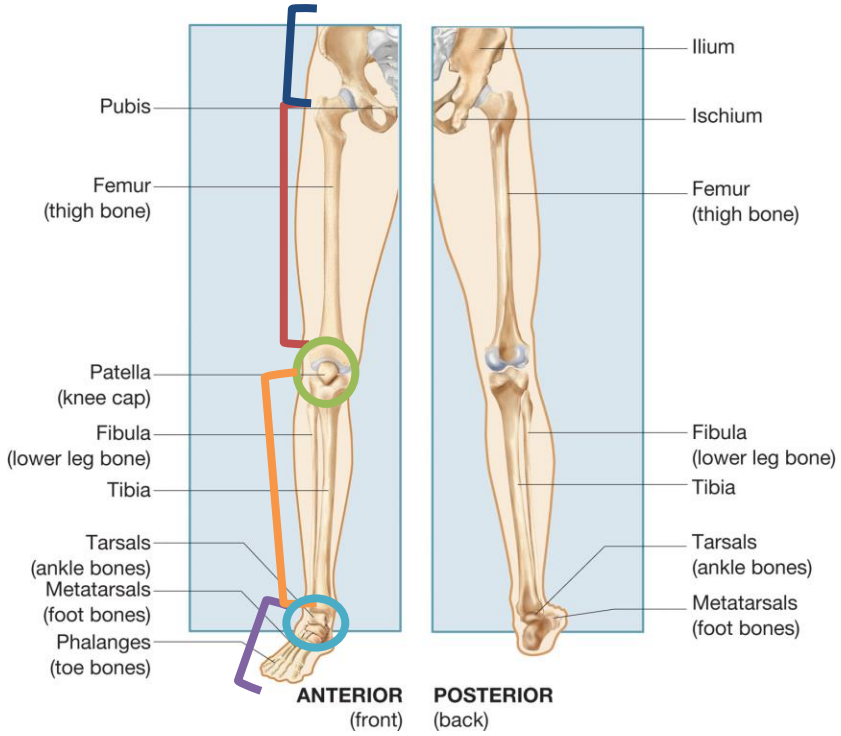
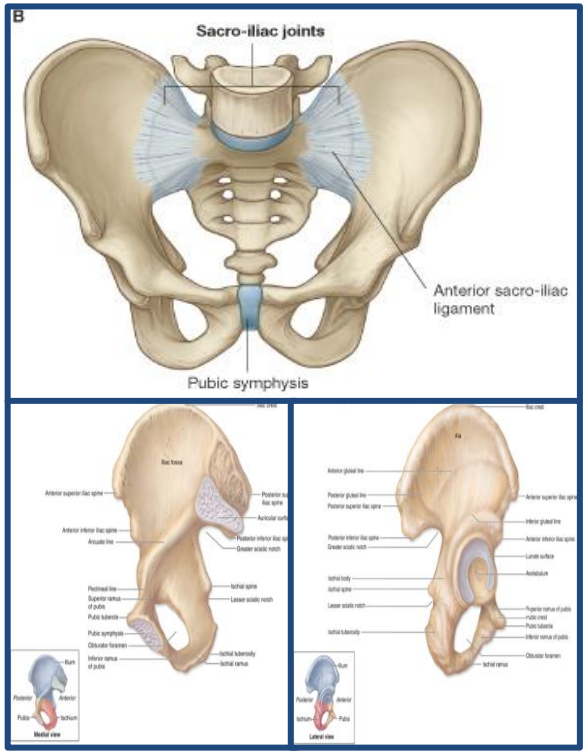
Lower limb parts

- Hip (ilium + ischium + pubis)
- Thigh (femur)
- Knee (patella)
- Leg (fibula + tibia)
- Ankle (tarsals)
- Foot (metatarsals + phalanges)

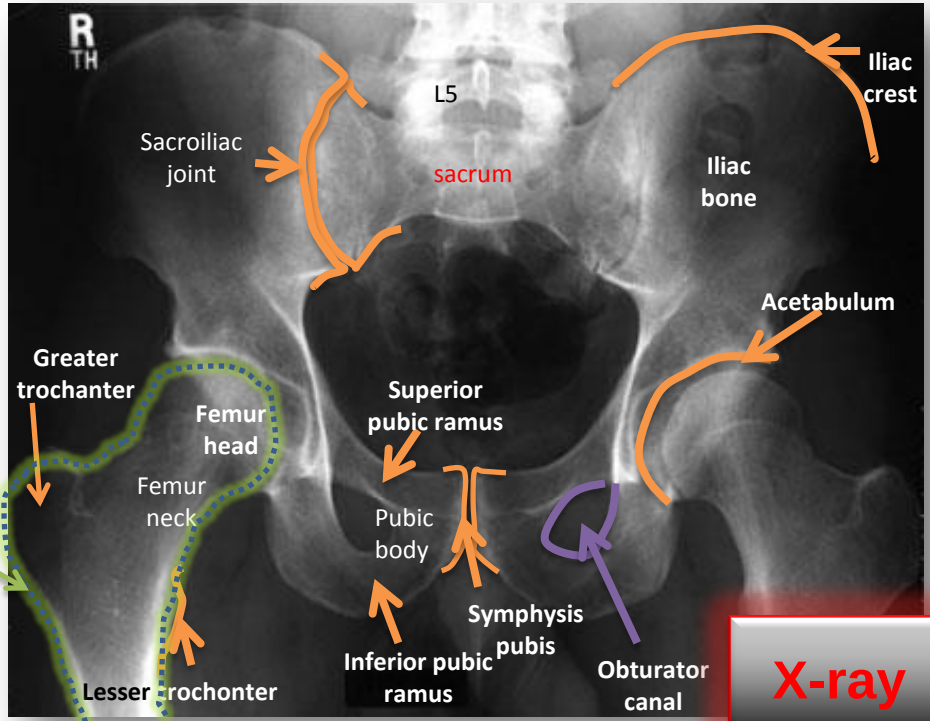
In reading a scan image your right is left and your left is right.
(like looking at a mirror or shaking hands)



PELVIS



The lesser trochanter and the greater trochanter with the head of the femur looks like a gun.



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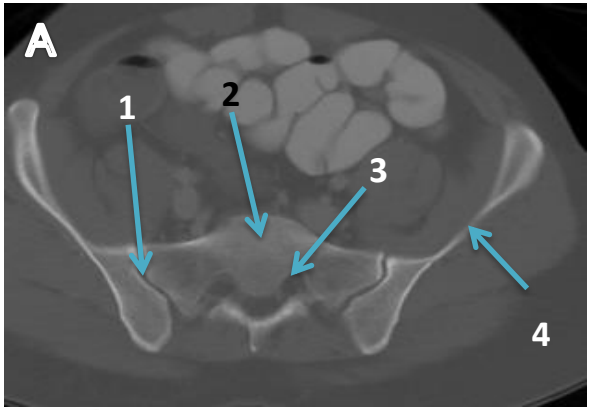
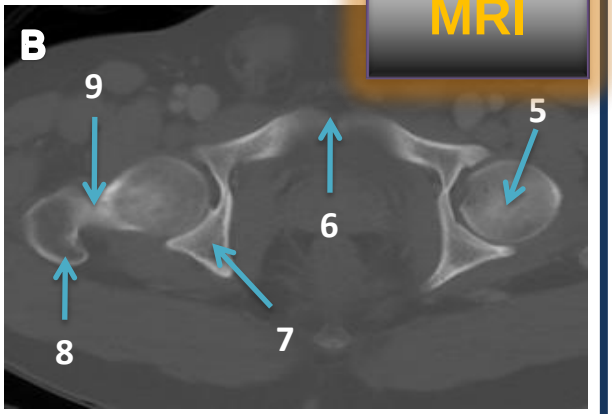
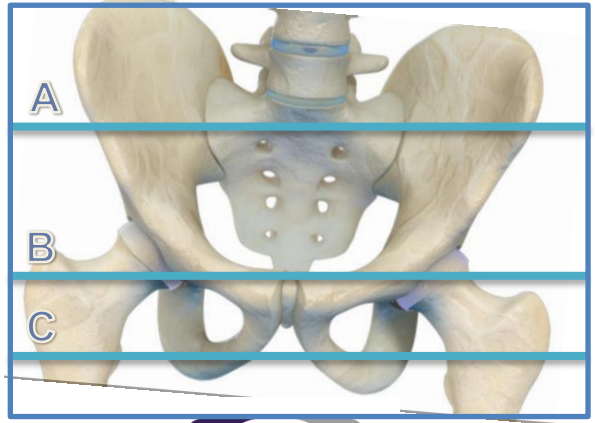
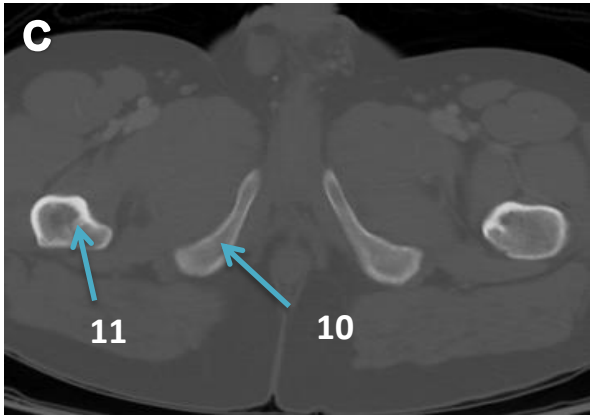
Pelvis

1. Sacroiliac joint.
2. Sacrum.
3. Sacral neural foramen.
4. Iliac bone.
5. Femur head.
6. Symphysis pubis.
7. Ischium.
8. Greater trochanter.
9. Femur neck.
10. Pubic bone (inferior ramus)
11. Femur shaft



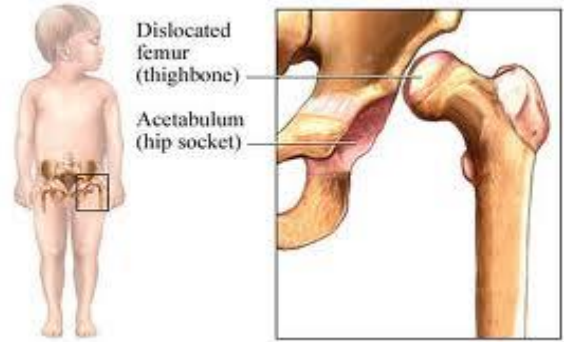




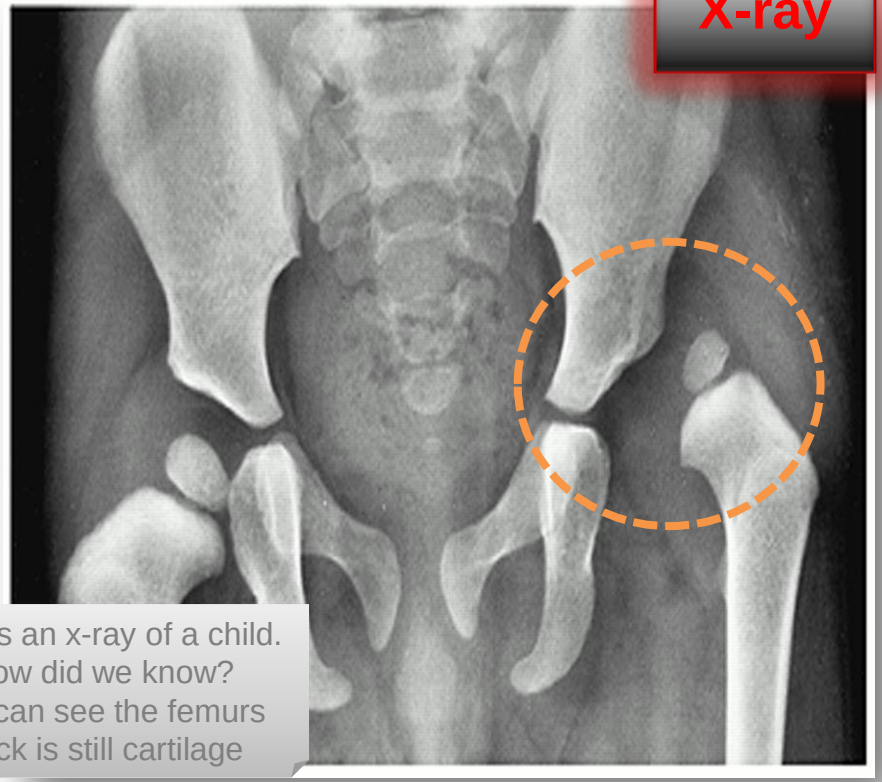


Congenital hip dislocation

Congenital hip dislocation (CHD) occurs when a child is born with an unstable hip due to abnormal formation of the hip joint during their early stages of fetal development. This instability worsens as your child grows. The ball-and-socket joint in their hip may sometimes dislocate. This means that the ball will slip out of the socket with movement. The joint may sometimes completely dislocate, one out of every 1,000 infants is born with a dislocated hip.



X-ray



This is an x-ray of a child. How did we know? We can see the femurs neck is still cartilage

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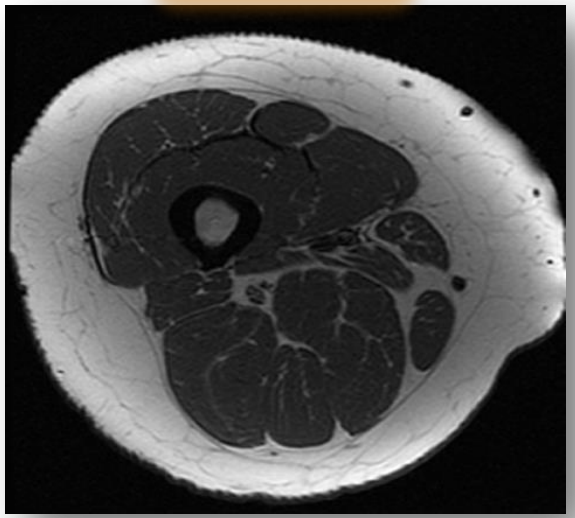
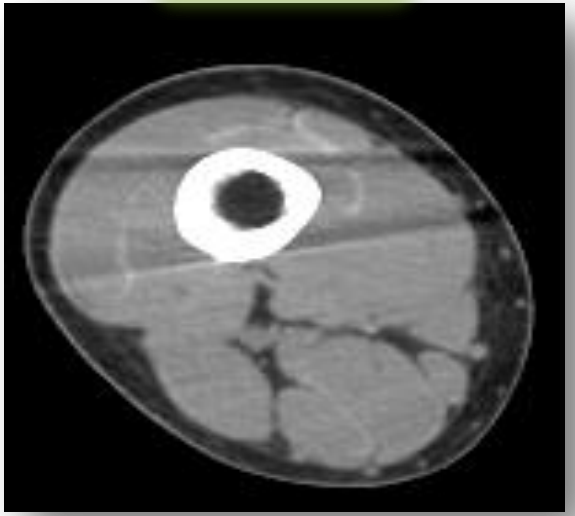
THIGH

MRI



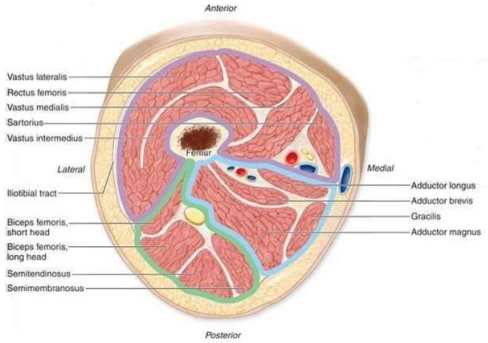
We can see muscles and tendons clearly in MRI imaging

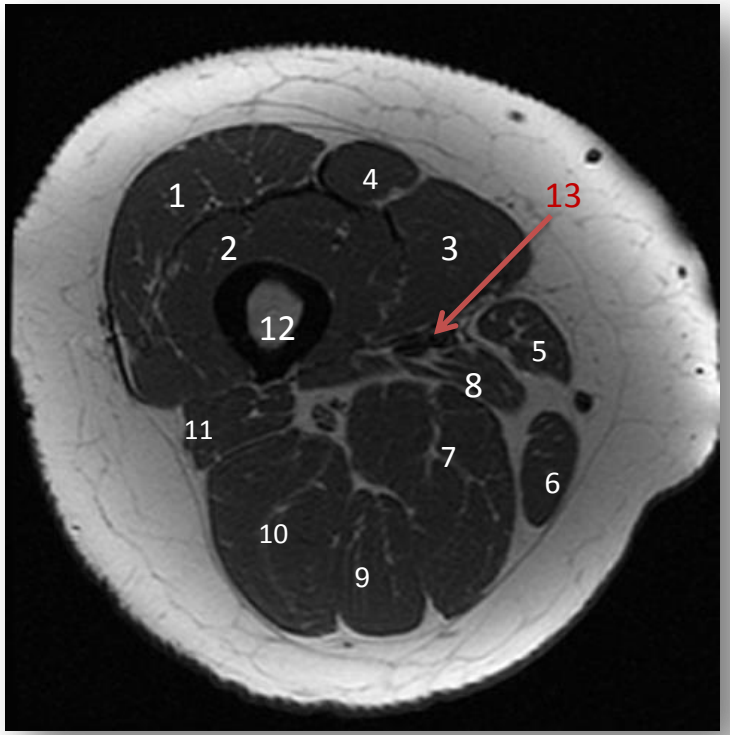
CT scan



Thigh

1. Vastus lateralis muscle
2. Vastus intermedius muscle
3. Vastus medialis muscle
4. Rectus femoris muscle
5. Sartorius muscle
6. Gracilie muscle
7. Adductor magnus muscle
8. Adductor longus muscle
9. Semimemranous muscle
10. Semitendinousus Muscle
11. Biceps femoris muscle
12. Femur
13. Femoral artery





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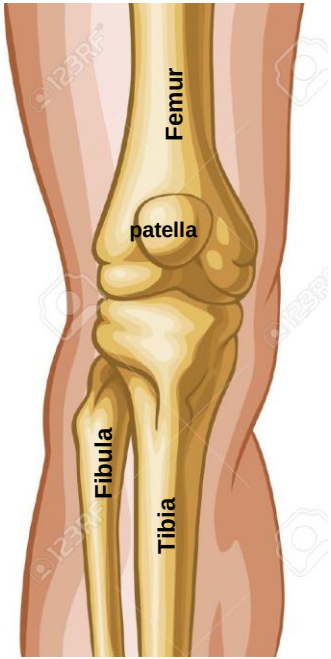
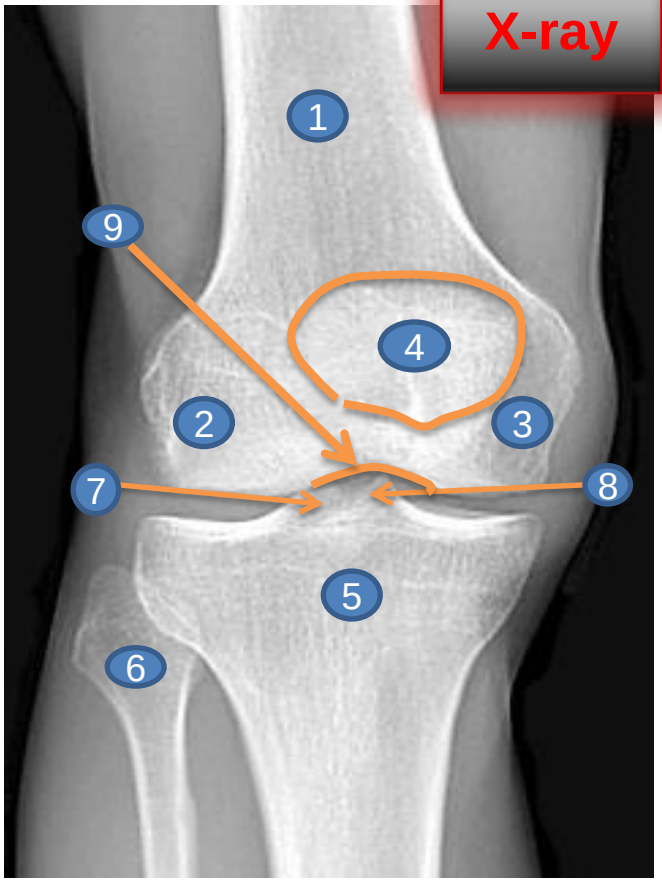
Knee

1. Femur
2. Lateral condyle
3. Medial condyle
4. Patella
5. Tibia
6. Fibula
7. Lateral tibial spine
8. Medial tibial spine
9. Intercondyle notch





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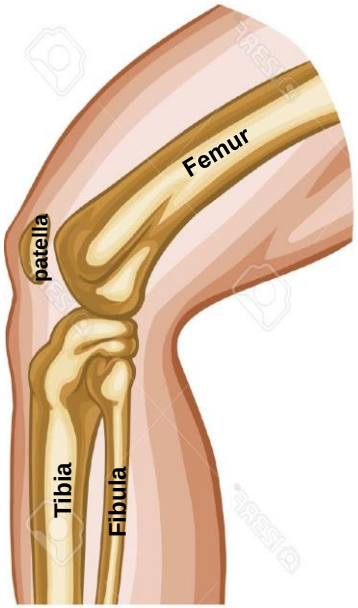
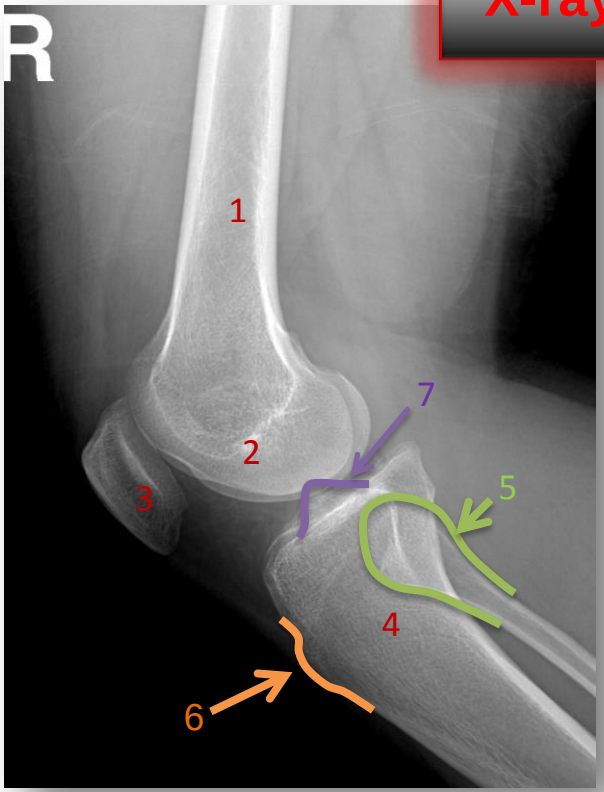
Knee

1. Femur
2. Femur condoyle
3. Patella
4. Tibia
5. Fibula
6. Tibial teberosity
7. Tibial spine



X-ray



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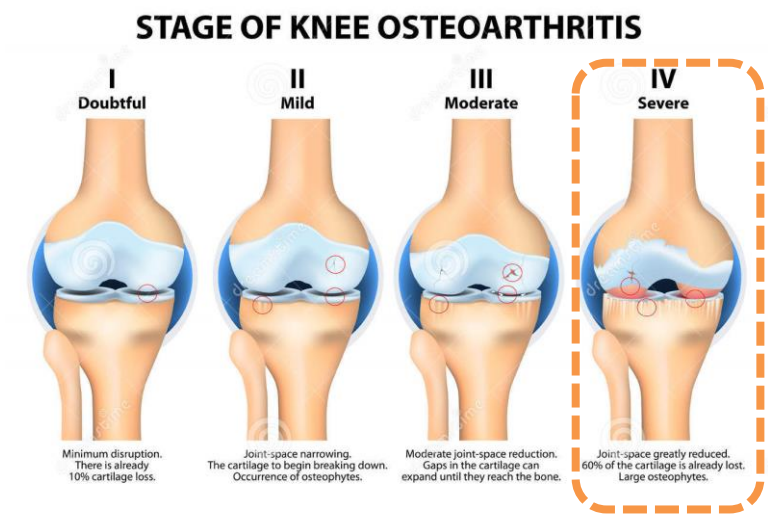
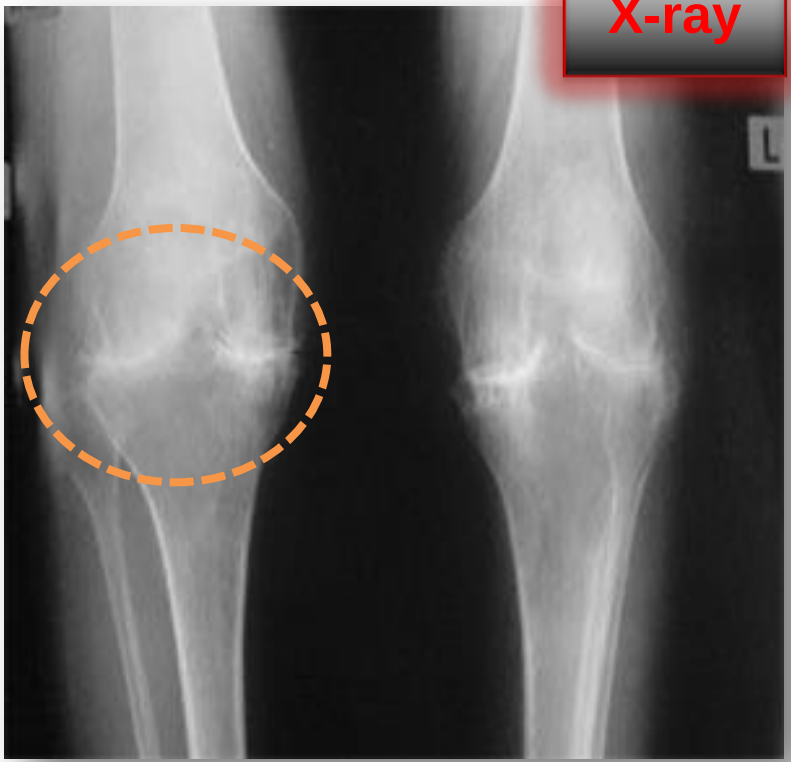
Severe Osteoarthritis



In osteoarthritis patients we can see the articular surfaces of the femur and the tibia are closer to each other, that's because the protective cartilage is fading away



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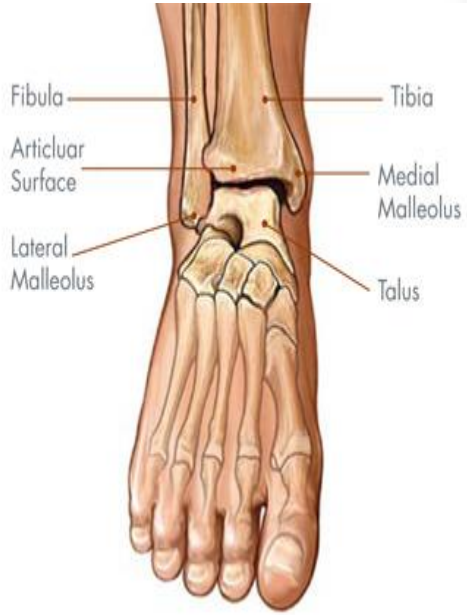
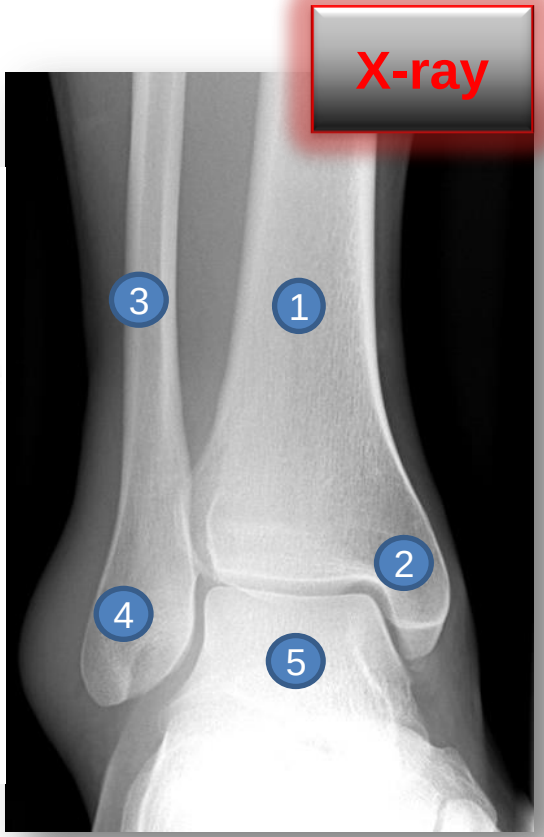
Ankle

1. Tibia
2. Medial malleolus
3. Fibula
4. Lateral malleolus
5. Dome of talus





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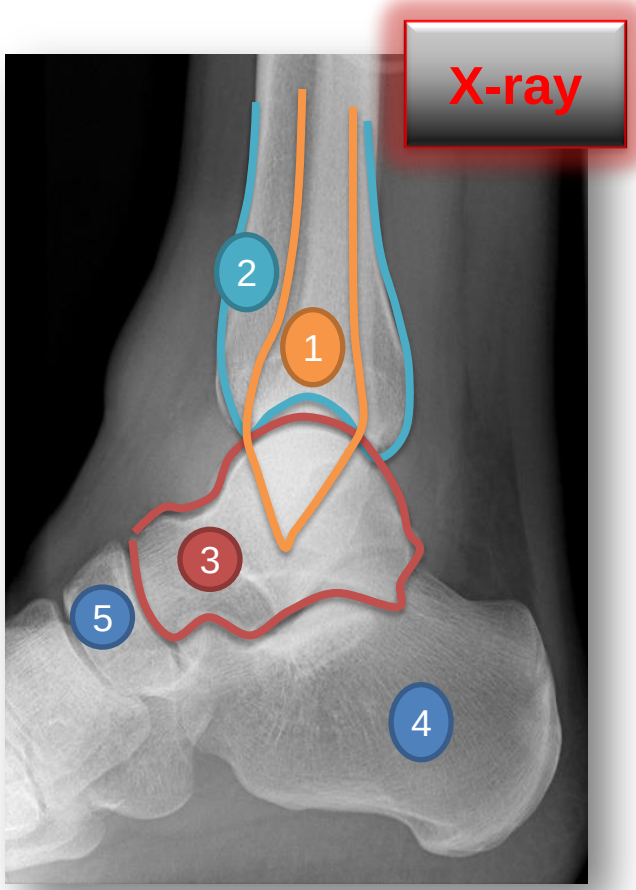
Ankle

1. Fibula
2. Tibia
3. Talus
4. Calcaneus
5. Navicular



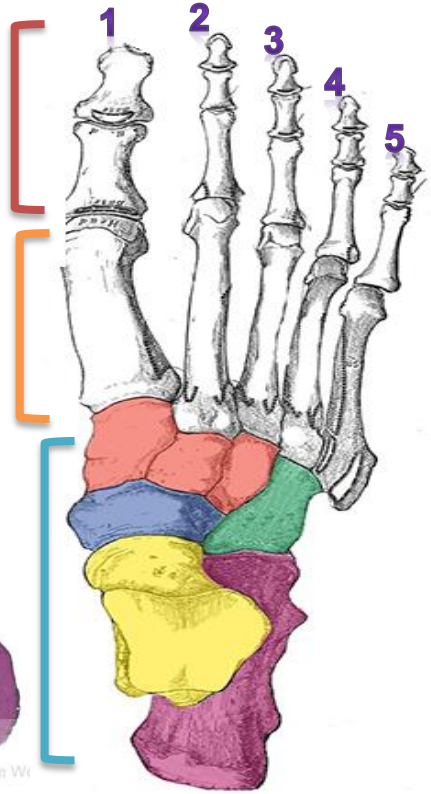
FOOT

We have 7 tarsal bones
(from lateral to medial & proximal to distal)

- Calcaneus
- Talus
- Cuboid
- Navicular
- Lateral Cuneiform
- Intermediate Cuneiform
- Medial Cuneiform

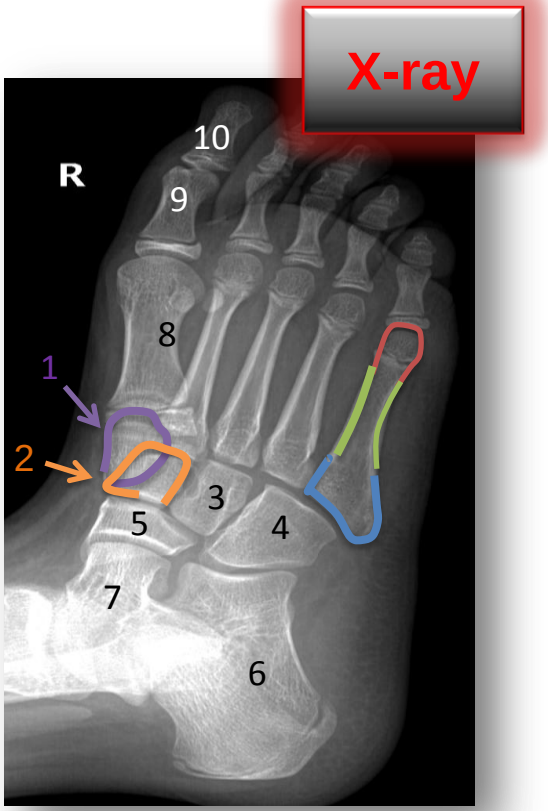
To help u memorize them :
"The Circus Needs More Interesting Little Clowns"

For naming & counting the metatarsal and phalanges:
1st through 5th goes from "big toe" to "little toe"
(from medial to lateral)



Foot

1-Medial cuneiform bone
2- Intermediate cuneiform bone
3- Lateral cuneiform bone
4- Cuboid bone
5- Navicular bone
6- Calceneal bone
7- Talus
8- Metatarsal bone (1st toe)
9- Proximal phalanx (1st toe)
10- Distal phalanx (1st toe)



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EXTRA INFORMATION

Fluorescein Angiogram
(Computerized fluoroscopy)

It’s a medical procedure in which fluorescent dye is injected into the bloodstream, the dye with highlight the blood vessels, then they use a special camera for imaging, this technique is safer and more economical than standard arteriography. Because of these advantages, CF is likely to expand the role of arteriography in the clinical management of vascular disease.

We usually use fluorescein angiogram for diagnosing eye disease.
But in arteries we use computerized fluoroscopy CF (that is a type of fluorescein angiogram)

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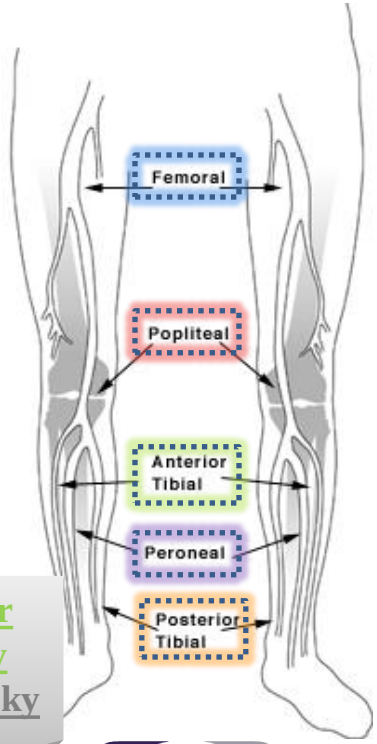
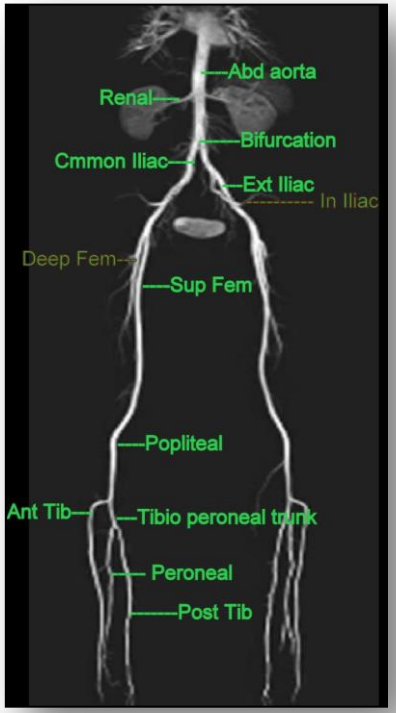
LOWER LIMB ARTERIES

The anterior tibial artery looks like hooky stick





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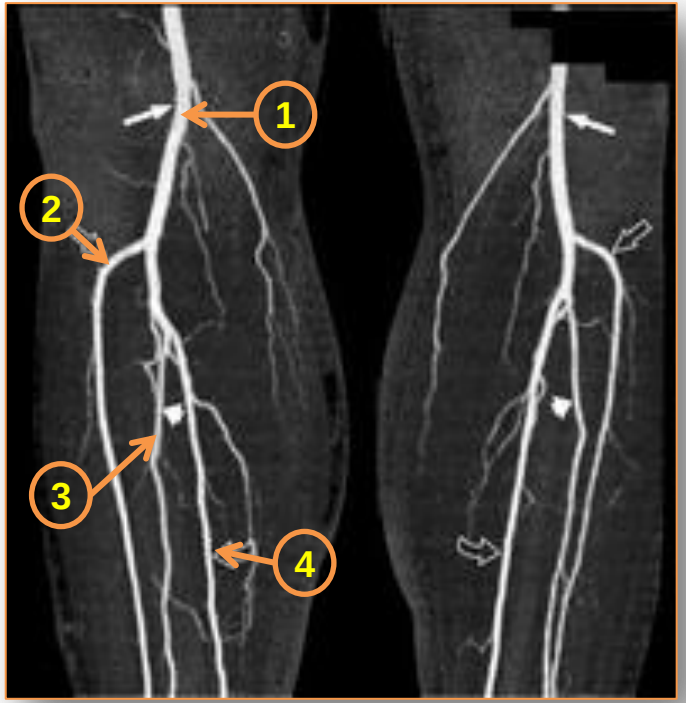
Lower limb arteries

1. Popliteal artery
2. Anterior tibial artery
3. Peroneal artery
4. Posterior tibial artery



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YouTube Useful videos

- Fluoroscopy imaging.
- Lower limb X-ray.

test your self

For more information about congenital hip dislocation.

For more information about osteoarthritis.

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