

Subject: Human Anatomy II

Class: Radiology, 2nd semester

Section: B

Instructor: Dr. Arooba.

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Marks 30.

Select the best option.

1. A metatarsal bone has the following basic parts:

- A. Head, shaft, and tail
- B. Head, shaft, and base. (TRUE)
- C. Head, neck, tubercle, and base
- D. Head, neck, tubercle, and tail

2. Sustentaculum tali is located on _____ of calcaneum.

- A. Medial surface. (TRUE)
- B. Lateral surface
- C. Anterior surface
- D. Superior surface

3. Circumduction is the combination of?

- A. Flexion, extension, medial rotation, and lateral rotation
- B. Flexion, extension, abduction, and adduction. (TRUE)

- C. Abduction, adduction, medial rotation, and lateral rotation.
- D. Extension, adduction, medial rotation, and lateral rotation

4. It looks like inverted Y shaped:

- A. Iliofemoral ligament. (TRUE)
- B. Pubofemoral ligament
- C. Ischiofemoral ligament
- D. Plantar aponeurosis

5. The increase in neck angle with the shaft of the femur is called:

- A. Coxa valga
- B. Coxa vara. (TRUE)
- C. Coxa benda
- D. Coxa increase

6. The floor of the acetabulum is non-articular called:

- A. Acetabular fossa. (TRUE)
- B. Acetabular margin
- C. Acetabular notch
- D. Capsule

7. The tubercle separating the tendons of peroneus longus and peroneus brevis is:

- A. Anterior tubercle
- B. Posterior tubercle
- C. Medial tubercle
- D. Peroneal tubercle. (TRUE)

8. The symphysis pubis is:

- A. Primary cartilaginous joint
- B. Secondary cartilaginous joint. (TRUE)
- C. Synovial joint
- D. Fibrous joint

9. Which bone does not part in the formation of the knee joint?

- A. Femur
- B. Tibia
- C. Fibula. (TRUE)
- D. Patella

10. Regarding tibia:

- A. Anterior border is subcutaneous. (TRUE)
- B. Lateral border is subcutaneous
- C. Medial border is subcutaneous
- D. Medial surface is subcutaneous

Give brief answers to the following questions. Add diagrams/ pictures where needed.

Each question carries 5 marks.

1. Describe the arches of foot. Name the factors responsible for the maintenance of these arches.

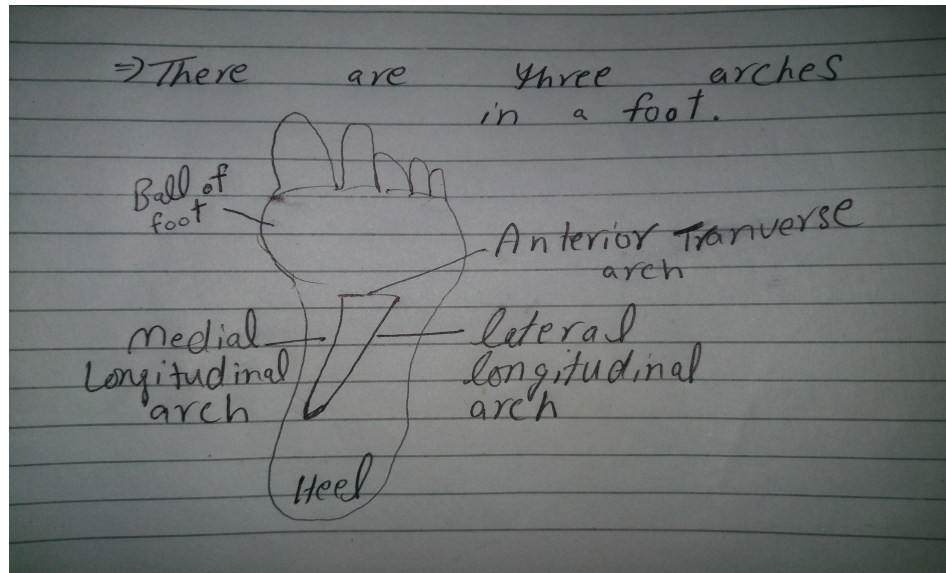
Answer to Qno1: There are three arcs of foot which is,

1. longitudinal arch, Medial and lateral arches

2. Anterior transverse arch

They are formed by the tarsals and metatarsals bones and support by ligaments and tendons in the foot.

In this diagram we examine the anatomy of the arches of the foot.



Longitudinal Arches:

*There are two longitudinal Arches ,the medial and lateral arche

*Medial Arch

The medial arch is the higher of the two longitudinal arches. It is formed by the calcaneus, talus, navicular, three cuneiforms and first three metatarsal bones. It is supported by:

*Muscular support: Tibialis anterior and posterior, fibularis longus, flexor digitorum longus, flexor hallucis, and the intrinsic foot muscles

*Ligamentous support: Plantar ligaments (in particular the long plantar, short plantar and plantar calcaneonavicular ligaments), medial ligament of the ankle joint.

*Bony support: Shape of the bones of the arch.

*Other: Plantar aponeurosis.

Lateral arch

The lateral arch is the flatter of the two longitudinal arches, and lies on the ground in the standing position. It is formed by the calcaneus, cuboid and 4th and 5th metatarsal bones. It is supported by:

*Muscular support: Fibularis longus, flexor digitorum longus, and the intrinsic foot muscles.

*Ligamentous support: Plantar ligaments (in particular the long plantar, short plantar and plantar calcaneonavicular ligaments).

*Bony support: Shape of the bones of the arch.

*Other: Plantar aponeurosis.

Transverse arch

The transverse arch is located in the coronal plane of the foot. It is formed by the metatarsal bases, the cuboid and the three cuneiform bones. It has:

*Muscular support: Fibularis longus and tibialis posterior.

Ligamentous support: Plantar ligaments (in particular the long plantar, short plantar and plantar calcaneonavicular ligaments) and deep transverse metatarsal ligaments.

*Other support: Plantar aponeurosis.

*Bony support: The wedged shape of the bones of the arch...

Factors responsible for maintenance of arches

*Shape of the bone

*Ligaments and muscle hold different segments of arch together

*The beams that connects two ends of arch

*Slings keep the summit of arch pulled up....

End

2. Mention the attachments, nerve supply and actions of the muscle largely responsible for the prominence of buttocks. Which site is safe for the intramuscular injection in this region?

Answer to Qno2:

***Attachments: Originates from the gluteal (posterior) surface of the ilium, sacrum and coccyx. It slopes across the buttock at a 45 degree angle, then inserts into the iliotibial tract and the gluteal tuberosity of the femur innervation: Inferior gluteal nerve.**

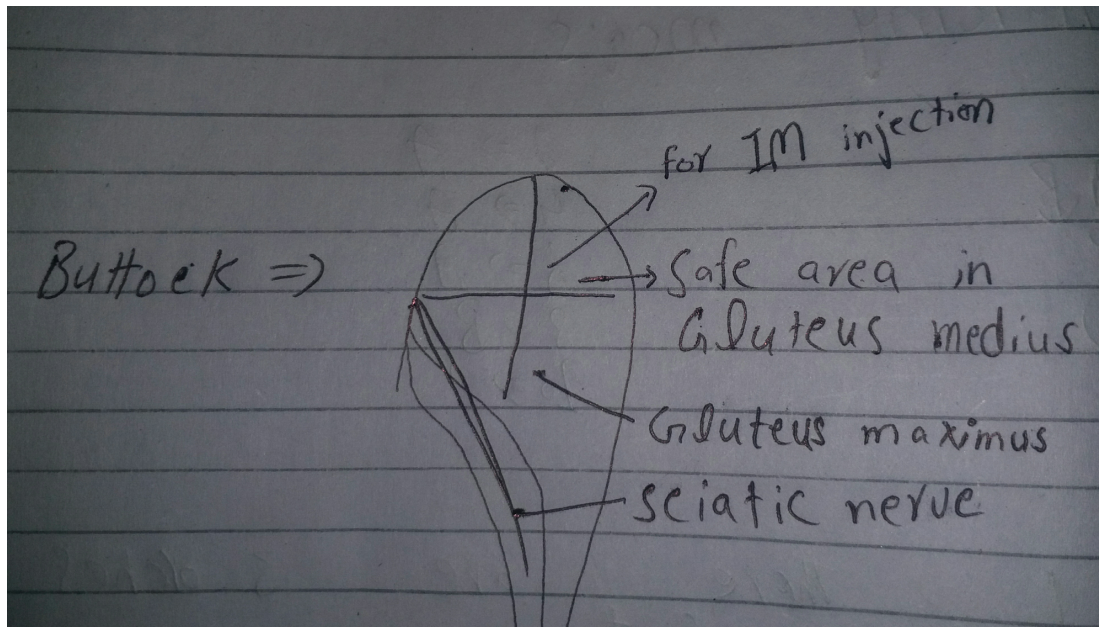
***Nerve supply: Gluteal nerves**

The superior gluteal nerve (Lumber4, Lumber5, Sacrum1) passes through the sciatic notch above the piriformis muscle. It supplies the gluteus medius and minimus and tensor fasciae latae muscles. The inferior gluteal nerve (L5, S1, S2) supplies the gluteus maximus.

***Action: The functions of the muscles include extension, abduction, external rotation, and internal rotation of the hip joint.**

***Safe area for intramuscular injection in buttock region,**

A syringe inject by 90 degree angle. The dorsogluteal muscle of the buttocks was the site most commonly selected by healthcare providers for many years. However, due to the potential for injury to the sciatic nerve, the ventrogluteal is most often used now. This site is difficult to use this site for self-injection and not recommended. IM injection in buttock region is given in diagram...



End

3. How greater and lesser sciatic foramina formed and enlist the structures passing through them

Answer to Qno3: Greater and lesser sciatic foramina is formed as:

*Lesser sciatic: The lesser sciatic foramen is an opening (foramen) between the pelvis and the back of the thigh. The foramen is formed by the sacrotuberous ligament which runs between the sacrum and the ischial tuberosity and the sacrospinous ligament which runs between the sacrum and the ischial spine.

Structure list which passing through the lesser sciatic foramen...

*Tendon of obturator internus

*Nerve to pudendal vessels

*Pudendal nerve

***Greater sciatic:.** The greater sciatic foramen is an opening (foramen) in the posterior human pelvis. It is formed by the sacrotuberous and sacrospinous ligaments. The piriformis muscle passes through the foramen and occupies most of its volume. The greater sciatic foramen is wider in women than in men.

Structure list which passing through the greater sciatic foramen....

*Superior gluteal nerve

*Superior gluteal vessels

*Inferior gluteal nerve

*Inferior gluteal vessels

*Sciatic nerve

*Pudendal nerve

End

4. What are hamstring muscles? Give their origin, insertion, nerve supply and action.

Answer to Qno4:

Hamstring muscle:In human anatomy, a hamstring is any one of the three posterior thigh muscles in between the hip and the knee (from medial to lateral: semimembranosus, semitendinosus and biceps femoris)] The hamstrings are quite susceptible to injury.

Origin. Suoerolateral impression of ischial tuberosity

Insertion: Medial condyl of tibia

Nerve supply: perforating branches of femoral and popliteal arteries

Action:hip joint: thigh extension and internal rotation

Knee joint:flexion and internal rotation of the leg stabilized pelvis...

End