

Lower Limb Spotter Answers

1. Gluteus maximus

Nerve supply : Inferior gluteal nerve
Action : Powerful extensor of thigh
(as used for running climbing steps rising from sitting position)
-lateral rotator
-stabilises knee joint through iliotibial tract

2. Gluteus medius

Nerve supply : Superior gluteal nerve
Action : Abducts the thigh
Medial rotator
Flexion of thigh
Important function – supports the pelvis in walking

3. Piriformis

L₅ S₁ S₂ nerves : ventral rami
Action : Lateral rotator of extended thigh
Abducts flexed thigh

4. Sciatic nerve

Root value : L₄L₅S₁₂₃

Branches in gluteal region : Articular branch to hip joint

In thigh : muscular branches from medial side : Biceps femoris long head
(Tibial Part) Semitendinosus
Semimembranosus
Ischial part of adductor magnus

Muscular branch : from lateral side (safe side) : Short head of biceps femoris
(Common Peroneal part)

5. Femoral artery

Extent : Continuation of external iliac artery at mid inguinal point upto adductor hiatus magnus (tendinosus opening in adductor magnus)

Branches : **Superficial :** Superficial external pudendal
Superficial circumflex iliac
Superficial epigastric

Deep : Deep external pudendal
Profunda femoris
Muscular branches

In subsartorial canal : Muscular branches,
Descending genicular a. divides into articular and saphenous branches

6. Femoral vein

Extent : At the adductor hiatus the Popliteal vein becomes femoral vein. The femoral vein (ascends) traverses the sub-sartorial canal, enters femoral triangle, traverses intermediate compartment of femoral sheath upto (medial to) mid inguinal point & continues as external iliac vein

Tributaries : Great Saphenous vein
Profunda femoris vein
Occasionally Lateral circumflex vein & Medial circumflex vein

7. Femoral nerve : Root Value L₂ L₃ L₄

Branches : Anterior division : Medial, intermediate Cutaneous nerve and nerve to sartorius

Posteriordivision: Saphenous nerve, nerve to quadriceps femoris

Types of branches : Cutaneous, muscular, articular

8. Sartorius

Origin : Anterior superior iliac spine

Insertion: Upper part of subcutaneous medial surface of shaft of tibia
It is separated from insertion of gracilis & semitendinosus by bursa anserine

Nerve supply : Femoral N. anterior division

Action : Flexes both hip and knee joint
Lateral rotation of thigh

9. Quadriceps femoris

Muscles forming: Rectus femoris, vastus medialis, vastus intermedius, vastus lateralis

Insertion : The four muscles are inserted into the patella then forms the Ligamentum patella which gets inserted into the tibial tuberosity.

Nerve supply : Femoral nerve

Action : Powerful extensor of knee joint
Locks knee joint
Stability to knee joint during standing
Rectus femoris is a flexor of hip joint
Articularis genu retracts synovial membrane superiorly to prevent being caught between patella and femur during extension of knee it.

10. Ligamentum patella

Attachment : Lower apex of patella to tibial tuberosity

Muscles forming Ligamentum patellae :

1) Rectus femoris 2) Vastus medialis 3) Vastus intermedius 4) Vastus lateralis

11. Anterior cruciate ligament

Attachment : Tibial end is attached to anterior part of Intercondylar area of tibia

Femoral end is attached to posterior part of medial surface of lateral condyle

When it becomes taut / tight: During extension of knee joint

12. Meniscus

Type of cartilage : C shaped, white fibrous cartilage

Medial meniscus is more prone for injury, bucket handle rupture of medial meniscus is common in football players

13. Great Saphenous vein

Formation (2 types)

- Medial end of venous arch and medial marginal vein of the foot continues as Great Saphenous vein
- Medial end of dorsal venous arch and dorsal digital vein of medial side of big toe join to form Great Saphenous vein

Termination : Into femoral vein after piercing the anterior wall of femoral sheath

Tributaries :

Before it drains into femoral vein : Deep external pudendal vein

At saphenous opening : superficial external pudendal, superficial epigastric, superficial circumflex iliac veins

At thigh : Anterolateral vein of thigh, posteromedial vein of thigh

At Leg : Posterior arch vein, anterior leg vein

Clinical importance : These superficial veins are connected to the deep veins by perforators which are guarded by valves.

If these valves are incompetent it leads to Varicose veins

14. Popliteal artery

Extent : From adductor hiatus to lower border of Popliteus muscle

Branches : Superior muscular branches

Sural artery – supplies soleus, gastrocnemius and plantaris

Lateral and medial superior genicular artery

15. Popliteal vein

Formation : Popliteal vein begins at the distal border of Popliteus muscle by the union of venae comitantes accompanying anterior and posterior tibial arteries

Termination: Popliteal vein continues as femoral vein at the adductor opening

16. Popliteus muscle

Nerve supply : Tibial nerve

Action : initiates flexion of knee by unlocking the knee joint

17. Soleus

Nerve supply : Tibial nerve

Clinical importance : Soleus contains a rich plexus of small valveless veins.

Contraction of soleus squeezes the venous plexus and acts as peripheral heart

Soleus the conjoint tendon of triceps surae forms the Tendo-Achillis and is inserted into the middle 1/3rd of posterior surface of calcaneum

18. Any one of Hamstring muscle

Semi membranousus

Action: Flexion of knee joint
Extension of hip joint
In semi flexed knee, it acts as medial rotator

Nerve supply: Motor branches from medial side of sciatic nerve (L₄₅ S₁₂₃)

Semi tendinosus

Action : Flexion of knee joint
Extension of hip joint
In semi flexed knee, it acts as medial rotator

Nerve supply :Motor branches from medial side of sciatic nerve (L₄₅ S₁₂₃)

Biceps femoris

Action : Flexion of knee joint
Extension of hip joint
In semiflexed knee, it acts as lateral rotator

Nerve supply :Motor branches from medial side of sciatic nerve (L₄₅ S₁₂₃)

19. Adductor Magnus

Action : Adduction of thigh
Extension of hip joint
Medial rotator of hip joint

Nerve supply: Adductor part – Obturator nerve
Hamstring part – Tibial division of sciatic nerve

Name of the opening – 5 openings

- a. First 3 perforators
- b. 4th opening for profunda femoris artery
- c. 5th opening is the adductor hiatus magna through which the femoral artery continues as Popliteal artery

Clinical importance : Lower part of the tendon degenerates to form tibial collateral ligament

20. Popliteal fossa

Boundaries : Above and medial – Semi tendinosus and semi membranous
Above and Lateral – Biceps femoris
Below and medial – Medial head of gastrocnemius
Below and lateral – Lateral head of gastrocnemius
Floor – From above down
-Popliteal surface of femur
-Oblique Popliteal ligament
- posterior part of upper end of tibia.
-Fascia covering Popliteus muscle
Roof – Popliteal fascia, Small Saphenous vein.

Contents : Popliteal artery and vein,
Tibial nerve
Common Peroneal nerve
Popliteal lymph nodes
Pad of fat
Genicular br. of obturator nerve

21. Adductor canal

Boundaries : Anterolaterally : Vastus medialis

Posteriorly : Adductor longus above and adductor magnus below

Roof: Fascia extending from vastus medialis to adductor longus

Subsartorial plexus of nerves

Sartorius

Contents : Femoral artery

Femoral vein

Saphenous nerve

Nerve to vastus medialis

Posterior division of obturator nerve

Terminal part of profunda femoris

22. Femoral triangle

Boundaries

Laterally – Medial border of Sartorius

Medially – Medial border of adductor longus

Floor – Iliacus, Psoas, Pectineus, Adductor longus

Roof – Fascia lata

Base – Inguinal ligament

Apex – Meeting point of Sartorius and adductor longus

Contents :

Femoral artery

Femoral vein and tributaries

Femoral nerve and branches

Lateral femoral cutaneous nerve

Femoral branch of genito femoral nerve

Deep inguinal lymphnodes

Fibrofatty tissue

23. Common Peroneal nerve

Root value : L₄₅ S₁₂

Branches : Cutaneous : Sural communicating nerve and lateral sural nerve

 Articular : Superior lateral genicular

 Inferior lateral genicular

 Recurrent genicular nerve

Terminal branches : Deep and superficial Peroneal nerves

Clinical importance : Fracture neck of fibula leads to injury to Common Peroneal nerve results in **foot drop**

24. Tibialis anterior

Action : Inverter of foot at mid tarsal and sub talar joints

 Dorsiflexor of foot at ankle joint

 Maintains medial longitudinal arch of foot

Nerve supply : (Anterior tibial) Deep Peroneal nerve

25. Tibialis posterior

Action : Inverter & adductor of fore foot

 Plantar flexor at ankle joint

 Maintains medial longitudinal arch

Nerve supply : Tibial nerve

26. Flexor retinaculum of foot

Attachments : Medially to medial malleolus
 Laterally to tubercle of calcaneum

Structures passing beneath from medial to lateral

Tom Dick An Harry

Tibialis posterior

Flexor Digitorum longus

Posterior tibial Artery with a pair of venae comitantes

Tibial Nerve

Flexor Hallucis longus

27. Extensor retinaculum of foot

Superior extensor retinaculum : Attached laterally to anterior border of fibula and medially to anterior border of tibia above medial malleolus

Inferior extensor retinaculum : Y shaped stem attached to anterior part of upper surface of calcaneum. Stem splits into upper and lower limb. Upper limb is attached to medial malleolus, lower limb blends with plantar aponeurosis

Structures passing through in order from medial to lateral.

Tibialis anterior

Extensor hallucis longus

Anterior tibial veins

Anterior tibial artery

Deep Peroneal nerve

Extensor digitorum longus

Peroneus tertius

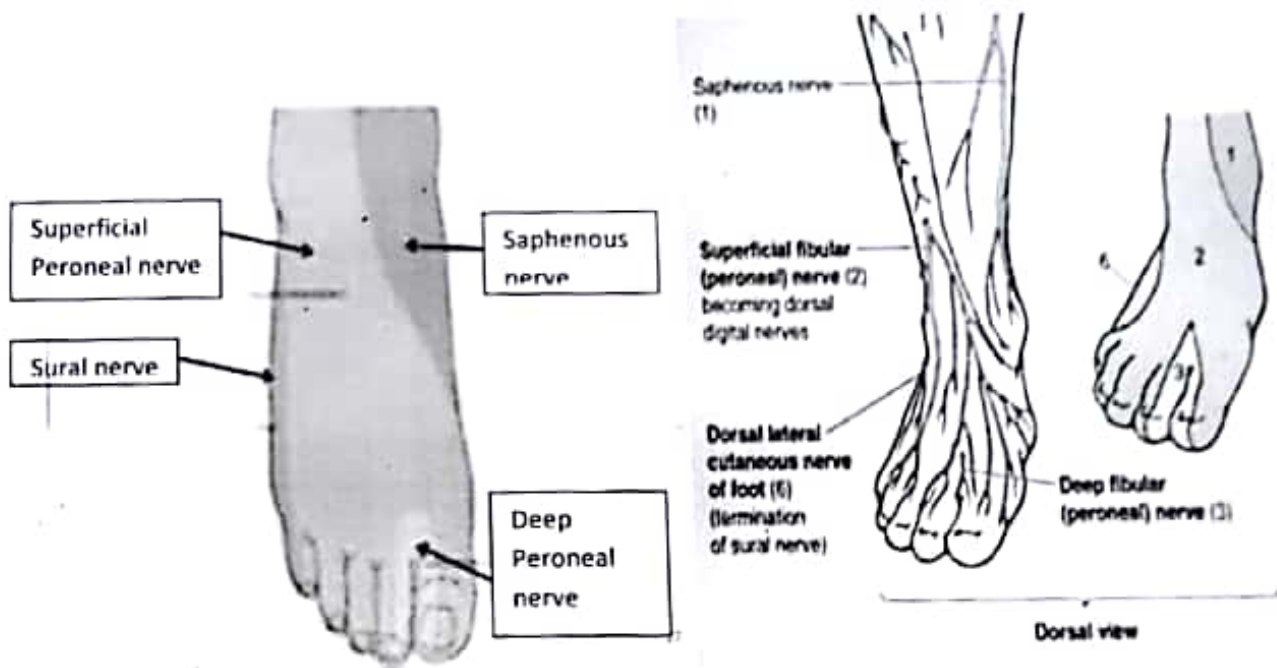
28. Peroneus longus

- Origin :** Upper 2/3rd of Peroneal surface of fibula
Lateral condyle of tibia & adjacent surface
Intermuscular septum joining above two
- Insertion:** Base of 1st metatarsal bone and adjacent medial cuneiform bones
- Nerve supply:** Superficial Peroneal nerve
- Action:** Evertor of foot, planter flexor of foot.
Maintains lateral longitudinal arch and transverse arch of foot

29. Peroneus brevis

- Origin :** Upper 2/3rd of Peroneal surface of tibia
Adjoining Intermuscular septa lies in front of Peroneus longus
- Insertion :** Base of 5th metatarsal bone
- Nerve supply :** Superficial Peroneal nerve
- Action :** Evertor of foot
Maintains lateral longitudinal arch and transverse arch of foot

30. Cutaneous innervations of dorsum of foot



31. Cutaneous innervations of 1st interdigital space

Deep Peroneal nerve

Lower Limb spotter questions

1. Gluteus maximus -- Nerve supply, action
2. Gluteus medius -- Nerve supply, action, clinical importance
3. Piriformis -- Nerve supply, action
4. Sciatic nerve -- Root value, types of branches, few muscles it supplies
5. Femoral artery - Extent, superficial or deep branches, clinical importance
6. Femoral vein -- Extent, Tributaries
7. Sartorius -- Insertion, nerve supply, action
8. Quadriceps femoris -- Insertion, nerve supply, action, and muscles present in it
9. Ligamentum patella -- Attachment
10. Anterior cruciate ligament -- Attachment, when does become taut
11. Meniscus -- type of cartilage, clinical importance
12. Great Saphenous vein -- Formation, termination, tributaries, clinical importance
13. Popliteal artery -- Extent, branches
14. Popliteal vein -- Formation, termination
15. Popliteus muscle -- Nerve supply, action
16. Soleus -- Nerve supply, clinical significance
17. Any one of Hamstring muscle - -- Nerve supply, action
(Semi membranosus, semi tendinosus, biceps)
18. Adductor Magnus -- Nerve supply, action, and openings present in it
19. Popliteal fossa -- Boundaries, content
20. Adductor canal -- Boundaries, content
21. Femoral triangle -- Boundaries, content
22. Common Peroneal nerve -- Muscles it supplies, clinical importance