Muscles of the lower extremities
Surface Anatomy

- Posterior leg
- Posterior fossa
  - Boundaries
    - Biceps femoris (superior-lateral)
    - Semitendinosus and semimembranosus (superior-medial)
    - Gastrocnemius heads (inferior)
  - Contents
    - Popliteal artery and vein posterior tibial N

![Diagram of the posterior leg and popliteal fossa](image-url)
Muscle Compartments Actions of the lower limbs

- **Gluteals**
  - Posterior pelvis
  - Extend thigh
  - Rotate thigh
  - Abducts thigh

- **Anterior Compartment Thigh**
  - Flexes thigh at hip
  - Extends leg at knee

- **Medial/Adductor Compartment**
  - Adducts thigh
  - Medially rotates thigh

- **Posterior Compartment Thigh**
  - Extends thigh
  - Flexes leg
Action of lower Limb Muscles

Extensors:
- e.g., triceps brachii, extensor digitorum

Flexors:
- e.g., biceps brachii, flexor carpi ulnaris

Extensors:
- e.g., quadriceps femoris, tibialis anterior

Flexors:
- e.g., hamstrings, gastrocnemius

(e) Limb muscles: From myotomes.
Muscles of the Hip
The gluteal region

• The **gluteus maximus**.
  – the largest and heaviest of the three gluteal muscles
  – one of the largest muscles in the body
  – is the chief extensor of the thigh
  – laterally rotates the thigh

• Deep to the gluteus maximus is the **gluteus medius**.
  – a powerful abductor of the thigh
  – medially rotates the thigh
  – intramuscular injections are often given here

• The smallest of the gluteal muscles is the **gluteus minimus**.
  – lies deep to the gluteus medius
  – works with the gluteus medius to abduct and medially rotate the thigh
Tensor fasciae latae

O – iliac crest and anterior inferior iliac spine
I – iliotibial tract
Action - Flex thigh, abduct thigh, medial rotation of thigh
Inner – Superior gluteal nerve
Gluteus maximus

- O - Ilium, sacrum and coccyx
- I - Gluteal tuberosity of femur, iliotibial tract
- Action - Extends thigh, lateral rotation and abduction
- Innervation - Inferior gluteal nerve
Gluteus medius

O - Outer surface of ilium
I - greater trochanter

A - powerful abductor at hip and medially rotate the thigh
Inner. - superior gluteal nerve

Gluteus minimus

O - Iliac fossa
I - Greater trochanter of femur
A - Abduction, medial rotation
Inner. - Superior gluteal nerve

- Gluteals minimus help stabilize hip to allow
**Piriformis**
Key muscle of gluteal region

**Origin**
Pelvic surface of sacrum 2\(^{nd}\), 3\(^{rd}\), & 4\(^{th}\) pieces
Sacrotuberous ligament

**Insertion**
Upper border of greater trochanter
Leaves the pelvis through greater sciatic foramen and separates gluteal vessels and nerves to superior and inferior

**Nerve**
S1, 2 anterior rami
Obturator Internus

**Origin:** from pelvic surfaces of
- Body of ischium
- Ischial tuberosity
- Ischio-pubic ramus
- Obturator membrane & fascia.

**Insertion:** tendon passes out of the pelvis through the lesser sciatic foramen and enters gluteal region

>> upper border of greater trochanter.

*One ½ of muscle in pelvis
other ½ in perineum
Tendon in gluteal region*

**Nerve:**
Nerve to obturator internus L5 S1 2
Short Lateral Rotators of Thigh

Gamellus superior
Origin - spine of ischium
Insertion - tendon of OBT int
Nerve - to OBT internus

Gamellus inferior
Origin - ischial tuberosity
Insertion - tendon of OBT internus
Nerve - to Quadratus femoris

Quadratus femoris
Origin - ischial tuberosity
Insertion - quadrate tubercle
Nerve - sacral plexus
Muscles of the Hip and Thigh

- The posterior thigh contains a group of muscles that are collectively referred to as the **hamstrings**.
  - biceps femoris
  - semimembranosus
  - semitendinosus
- Share a common origin on the ischial tuberosity of the os coxae.
- Insert on the leg.
- Move both the thigh and the knee.
- Primary thigh movement is extension.
Thigh extensors (posterior)

Arise posterior to hip joint

- Gluteus maximus
- Hamstrings (cross hip and knee joints: extend thigh & flex knee)
  - Biceps femoris
  - Semitendinosus
  - Semimembranosus
  (antagonists of quads)

http://www.rad.washington.edu/academics/academic-sections/msk/muscle-atlas
(a) Right thigh, posterior view

- Iliac crest
- Gluteus medius
- Gluteus maximus
- Adductor magnus
- Gracilis
- Iliotibial tract
- Hamstrings
  - Semimembranosus
  - Semitendinosus
- Biceps femoris, long head
- Biceps femoris, short head
Muscles of the Hip and Thigh

• Multiple muscles insert on the anterior thigh and flex the coxal joint.
  – the psoas major and the iliacus have different origins, but they share the common insertion at the lesser trochanter of the femur
  – they merge and insert on the femur as the iliopsoas
  – work synergistically to flex and laterally rotate the thigh
  – the sartorius crosses over the anterior thigh and helps flex the thigh
Anterior Muscles That Move the Thigh at the Hip Joint

Anterior

Flex femur at hip; extend leg at knee (e.g. foreswing phase of walking)

- Iliopsoas
  - Origin - Ilia, sacrum, lumbar vertebrae
  - Insertion - lesser trochanter
  - Action - flexor of thigh
  - Innervation - femoral nerve
Anterior compartment
Muscles that flex thigh at hip

Originate from vertebral column and pelvis and pass anterior to hip joint

- Sartorius
- Iliopsoas
- Tensor fasciae lata
- Rectus femoris (only quad with origin on pelvis)
- Pectineus (medial compartment)
Anterior Compartment
Thigh

Quadriceps femoris
- Rectus femoris
  - Origin – anterior inferior iliac spine, margin of acetabulum
  - Insertion – patella and tibial tuberosity via the patellar ligament
  - Action – extends knee, flexes thigh
- Vastus lateralis
- Vastus medialis
- Vastus intermedius
  - Origin - femur
  - Insertion – patella and tibial tuberosity via the patellar ligament
  - Action – extends knee

All above innervated by the femoral nerve!!!
Sartorius

- **Origin** - anterior superior iliac spine
- **Insertion** – medial tibia
- **Action** - flex, abduct, lat rotate thigh; weak knee flexor
Muscles that flex thigh at hip: individually
(go between last slide and this one)

- Iliopsoas
- Sartorius
- Tensor fascia lata
- Pectineus

- Rectus femoris

*Inserts on tibial tuberosity via patellar tendon*
Muscles of the Hip and Thigh

- Five muscles are located in the medial compartment of the thigh.
- Adduct the thigh and perform additional functions.
- Adductor longus, adductor brevis, gracilis, and pectineus also flex the thigh.
- Adductor magnus extends and laterally rotates the thigh.
Adduction of thigh

Muscles originate medial to hip joint

- Gracilis
- Adductor magnus
- Adductor longus
- Adductor brevis
- Pectineus
Adductor magnus
Adductor longus

Thigh adductors

Pectineus
Adductor brevis
Gracilis

(Originate medial to hip joint)

. Adductor (medial)
Move thigh only, not leg
Knee extensors

Quadriceps femoris – the only extensors of the leg (lower leg) at the knee

- Rectus femoris (only quad with origin on pelvis)
- Vastus lateralis
- Vastus intermedius
- Vastus medialis

Antagonized by hamstrings
Muscles of the Pelvic Girdle and Lower Limbs

The Relationship between the Action Lines and the Axis of the Hip Joint
Review compartments of lower limb
Leg Muscles

- **Anterior compartment leg muscles**
  - dorsiflex the foot and/or extend the toes

- **Extensor digitorum longus**
  - sends four long tendons to attach to the dorsal surface of toes 2–5
  - dorsiflexes the foot and extends toes 2–5

- **Extensor hallucis longus**
  - sends a tendon to the dorsum of the great toe (hallux)
  - dorsiflexes the foot and extends the great toe

- **Fibularis (peroneus) tertius**
  - extends from the extensor digitorum longus muscle
  - dorsiflexes and weakly everts the foot
Muscles That Move the Foot and Toes
Anterior Compartment

- **Tibialis anterior**
  - Origin - tibia
  - Insertion - tarsals
  - Action - dorsiflexion, foot inversion

- **Extensor digitorum longus**
  - Origin – tibia and fibula
  - Insertion - phalanges
  - Action – toe extension

- **Extensor hallucis longus**
  - Origin – fibula, interosseous membrane
  - Insertion – big toe
  - Action - extend big toe, dorsiflex

All innervated by deep fibular nerve
Lateral Compartment

Fibularis (peroneus) longus
- Origin – lateral fibula
- Insertion – 5th metatarsal, tarsal
- Action – plantarflex, evert foot

Fibularis (peroneus) brevis
- Origin – distal fibula
- Insertion – proximal fifth metatarsal
- Action – same as above!!

All innervated by the superficial fibular nerve
Lateral Muscles That Move the Foot and Toes

- Gastrocnemius
- Tibialis anterior
- Soleus
- Fibularis muscles
- Extensor digitorum longus
- Calcaneal tendon
- Lateral malleolus

(d) Lateral view
Leg Muscles

• The lateral compartment leg muscles
  – contains two synergistic muscles that evert and plantar flex the foot
  – very powerful evertors of the foot
  – plantar flexion is a secondary function for them

• Fibularis (peroneus) longus
  – superficial lateral muscle that covers the fibula
  – its tendon attaches to the plantar side of the foot
  – the fibularis (peroneus) brevis lies deep to the fibularis longus
    • its tendon inserts onto the base of the fifth metatarsal
Superficial Posterior Compartment

- **Triceps surae**
  - **Gastrocnemius (2 heads)**
    - Origin - medial and lateral condyles of femur
    - Insertion - posterior calcaneus via Achilles tendon
  - **Soleus**
    - Origin – tibia and fibula
    - Insertion – same as above
    - Action of both – plantarflex foot
- **Plantaris (variable)**
  - Origin – posterior femur
  - Insertion – same as above!
  - Action – plantarflex foot, week knee flexion

All innervated by the tibial nerve
Muscles That Move the Foot and Toes

SUPERFICIAL MUSCLES

Gastrocnemius

Soleus

Calcaneal tendon

SECOND LAYER

Popliteus

Soleus

Gastrocnemius, cut and removed

(a) Posterior view

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Deep Posterior Compartment

- **Popliteus**
  - Origin - lateral condyle femur and lateral meniscus
  - Insertion – proximal tibia
  - Action – flex and medially rotate leg

- **Flexor digitorum longus**
  - Origin - tibia
  - Insertion - distal phalanges of toe 2-5
  - Action – plantarflex and invert foot, flex toe

- **Flexor hallucis longus**
  - Origin - fibula
  - Insertion - distal phalanx of hallux
  - Action - plantarflex and invert foot, flex toe

- **Tibialis posterior**
  - Origin – tibia, fibula, and interosseous membrane
  - Insertion - tarsals and metatarsals
  - Action - plantarflex and invert foot

All innervated by the tibial nerve
Deep Posterior Muscles of the Leg

- Gastrocnemius
- Popliteus
- Head of fibula
- Soleus
- Tendon of plantaris
- Flexor digitorum longus
- Flexor hallucis longus
- Tibialis posterior
- Flexor hallucis longus
- Flexor digitorum longus
- Tendons of fibularis muscles

(b) Posterior view, left leg

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Deep posterior leg

Flexor digitorum longus

Flexor hallucis longus

Tibialis posterior

Popliteus
## Muscles of the Pelvic Girdle and Lower Limbs

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Origin</th>
<th>Insertion</th>
<th>Action</th>
<th>Innervation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GLUTEAL GROUP</strong></td>
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</tr>
<tr>
<td>Gluteus maximus</td>
<td>Iliac crest, posterior gluteal line, and lateral surface of ilium; sacrum, coccyx, and thoracolumbar fascia</td>
<td>Iliotibial tract and gluteal tuberosity of femur</td>
<td>Extension and lateral rotation at hip; helps stabilize the extended knee; abduction at the hip (superior fibers only)</td>
<td>Inferior gluteal nerve (L₅–S₂)</td>
</tr>
<tr>
<td>Gluteus medius</td>
<td>Anterior iliac crest, lateral surface of ilium between posterior and anterior gluteal lines</td>
<td>Greater trochanter of femur</td>
<td>Abduction and medial rotation at hip</td>
<td>Superior gluteal nerve (L₄–S₁)</td>
</tr>
<tr>
<td>Gluteus minimus</td>
<td>Lateral surface of ilium between inferior and anterior gluteal lines</td>
<td>As above</td>
<td>As above</td>
<td>As above</td>
</tr>
<tr>
<td>Tensor fasciae latae</td>
<td>Iliac crest and lateral surface of anterior superior iliac spine</td>
<td>Iliotibial tract</td>
<td>Abduction and medial rotation at hip; extension and lateral rotation at knee; tenses fasciae latae, which laterally supports the knee</td>
<td>As above</td>
</tr>
<tr>
<td><strong>LATERAL ROTATOR GROUP</strong></td>
<td></td>
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</tr>
<tr>
<td>Obturators (externus and internus)</td>
<td>Lateral and medial margins of obturator foramen</td>
<td>Trochanteric fossa of femur (externus); medial surface of greater trochanter (internus)</td>
<td>Lateral rotation and abduction of hip; help to maintain stability and integrity of the hip</td>
<td>Obturator nerve (externus: L₃–L₄) and special nerve from sacral plexus (internus: L₃–S₂) Branches of sacral nerves (S₁–S₂) Nerves to obturator internus and quadratus femoris</td>
</tr>
<tr>
<td>Piriformis</td>
<td>Anterolateral surface of sacrum</td>
<td>Greater trochanter of femur</td>
<td>As above</td>
<td></td>
</tr>
<tr>
<td>Gemelli (superior and inferior)</td>
<td>Ischial spine (superior gemellus) and ischial tuberosity (inferior gemellus)</td>
<td>Medial surface of greater trochanter via tendon of obturator internus</td>
<td>As above</td>
<td>Nerves to obturator internus and quadratus femoris</td>
</tr>
<tr>
<td>Quadratus femoris</td>
<td>Lateral border of ischial tuberosity</td>
<td>Intertrochanteric crest of femur</td>
<td>Lateral rotation of hip</td>
<td>Special nerves from sacral plexus (L₄–S₁)</td>
</tr>
<tr>
<td>Muscle</td>
<td>Origin</td>
<td>Insertion</td>
<td>Action</td>
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<tr>
<td>Adductor brevis</td>
<td>Inferior ramus of pubis</td>
<td>Linea aspera of femur</td>
<td>Adduction and flexion at hip</td>
<td>Obturator nerve (L₃–L₄)</td>
</tr>
<tr>
<td>Adductor longus</td>
<td>Inferior ramus of pubis, anterior to adductor brevis</td>
<td>As above</td>
<td>Adduction, flexion, and medial rotation at hip</td>
<td>As above</td>
</tr>
<tr>
<td>Adductor magnus</td>
<td>Inferior ramus of pubis, posterior to adductor brevis and ischial tuberosity</td>
<td>Linea aspera and adductor tubercle of femur</td>
<td>Whole muscle produces adduction at the hip; anterior part produces flexion and medial rotation; posterior part produces extension</td>
<td>Obturator and sciatic nerves</td>
</tr>
<tr>
<td>Pectineus</td>
<td>Superior ramus of pubis</td>
<td>Pectineal line inferior to lesser trochanter of femur</td>
<td>Flexion and adduction at hip</td>
<td>Femoral nerve (L₂–L₄)</td>
</tr>
<tr>
<td>Gracilis</td>
<td>Inferior ramus of pubis</td>
<td>Medial surface of tibia inferior to medial condyle</td>
<td>Flexion and medial rotation at knee; adduction and medial rotation at hip</td>
<td>Obturator nerve (L₃–L₄)</td>
</tr>
<tr>
<td><strong>ILIOPSOAS GROUP</strong></td>
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<td></td>
</tr>
<tr>
<td>Iliacus</td>
<td>Iliac fossa</td>
<td>Femur distal to lesser trochanter; tendon fused with that of psoas major</td>
<td>Flexion at hip and/or lumbar intervertebral joints</td>
<td>Femoral nerve (L₂–L₃)</td>
</tr>
<tr>
<td>Psoas major</td>
<td>Anterior surfaces and transverse processes of vertebrae (T₁₂–L₃)</td>
<td>Lesser trochanter in company with iliac</td>
<td>As above</td>
<td>Branches of the lumbar plexus (L₂–L₃)</td>
</tr>
</tbody>
</table>
## Muscles of the Pelvic Girdle and Lower Limbs

### TABLE 11.7 Muscles That Move the Leg

<table>
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<th>Muscle</th>
<th>Origin</th>
<th>Insertion</th>
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<th>Innervation</th>
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</thead>
<tbody>
<tr>
<td><strong>FLEXORS OF THE KNEE</strong></td>
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</tr>
<tr>
<td>Biceps femoris</td>
<td>Ischial tuberosity and linea aspera of femur</td>
<td>Head of fibula, lateral condyle of tibia</td>
<td>Flexion at knee; extension and lateral rotation at hip</td>
<td>Sciatic nerve; tibial portion (S₁–S₃ to long head) and common fibular branch (L₅–S₁ to short head)</td>
</tr>
<tr>
<td>Semimembranosus</td>
<td>Ischial tuberosity</td>
<td>Posterior surface of medial condyle of tibia</td>
<td>Flexion at knee; extension and medial rotation at hip</td>
<td>Sciatic nerve (tibial portion L₅–S₁)</td>
</tr>
<tr>
<td>Semitendinosus</td>
<td>As above</td>
<td>Proximal, medial surface of tibia near insertion of gracilis</td>
<td>As above</td>
<td>As above</td>
</tr>
<tr>
<td>Sartorius</td>
<td>Anterior superior iliac spine</td>
<td>Medial surface of tibia near tibial tuberosity</td>
<td>Flexion at knee; abduction, flexion, and lateral rotation at hip</td>
<td>Femoral nerve (L₂–L₄)</td>
</tr>
<tr>
<td>Popliteus</td>
<td>Lateral condyle of femur</td>
<td>Posterior surface of proximal tibial shaft</td>
<td>Medial rotation of tibia (or lateral rotation of femur) at knee; flexion at knee</td>
<td>Tibial nerve (L₅–S₁)</td>
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<tr>
<td><strong>EXTENSORS OF THE KNEE</strong></td>
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<tr>
<td>Rectus femoris</td>
<td>Anterior inferior iliac spine and superior acetabular rim of ilium</td>
<td>Tibial tuberosity via quadriceps tendon, patella, and patellar ligament</td>
<td>Extension at knee; flexion at hip</td>
<td>Femoral nerve (L₂–L₄)</td>
</tr>
<tr>
<td>Vastus intermedius</td>
<td>Anterolateral surface of femur and linea aspera (distal half)</td>
<td>As above</td>
<td>Extension at knee</td>
<td>As above</td>
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<tr>
<td>Vastus lateralis</td>
<td>Anterior and inferior to greater trochanter of femur and along linea aspera (proximal half)</td>
<td>As above</td>
<td>As above</td>
<td>As above</td>
</tr>
<tr>
<td>Vastus medialis</td>
<td>Entire length of linea aspera of femur</td>
<td>As above</td>
<td>As above</td>
<td>As above</td>
</tr>
</tbody>
</table>
# Muscles of the Pelvic Girdle and Lower Limbs

## TABLE 11.8 Extrinsic Muscles That Move the Foot and Toes

<table>
<thead>
<tr>
<th>Muscle</th>
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<tbody>
<tr>
<td><strong>ACTION AT THE ANKLE</strong></td>
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<tr>
<td><strong>DORSIFLEXORS</strong></td>
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<tr>
<td>Tibialis anterior</td>
<td>Lateral condyle and proximal shaft of tibia</td>
<td>Base of first metatarsal bone and medial cuneiform</td>
<td>Dorsiflexion at ankle; inversion of foot</td>
<td>Deep fibular nerve (L₄–S₁)</td>
</tr>
<tr>
<td><strong>PLANTAR FLEXORS</strong></td>
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</tr>
<tr>
<td>Gastrocnemius</td>
<td>Femoral condyles</td>
<td>Calcaneus via calcaneal tendon</td>
<td>Plantar flexion at ankle; flexion at knee</td>
<td>Tibial nerve (S₁–S₂)</td>
</tr>
<tr>
<td>Fibularis brevis</td>
<td>Midlateral margin of fibula</td>
<td>Base of fifth metatarsal bone</td>
<td>Eversion of foot and plantar flexion at ankle</td>
<td>Superficial fibular nerve (L₄–S₁)</td>
</tr>
<tr>
<td>Fibularis longus</td>
<td>Head and proximal shaft of fibula</td>
<td>Base of first metatarsal bone and medial cuneiform</td>
<td>Eversion of foot and plantar flexion at ankle; supports ankle; supports longitudinal and transverse arches</td>
<td>As above</td>
</tr>
<tr>
<td>Plantaris</td>
<td>Lateral supracondylar ridge</td>
<td>Posterior portion of calcaneus</td>
<td>Plantar flexion at ankle; flexion at knee</td>
<td></td>
</tr>
<tr>
<td>Soleus</td>
<td>Head and proximal shaft of fibula, and adjacent posteromedial shaft of tibia</td>
<td>Calcaneus via calcaneal tendon (with gastrocnemius)</td>
<td>Plantar flexion at ankle; postural muscle when standing</td>
<td>Tibial nerve (L₄–S₁)</td>
</tr>
<tr>
<td>Tibialis posterior</td>
<td>Interosseous membrane and adjacent shafts of tibia and fibula</td>
<td>Navicular, all three cuneiforms, cuboid, second, third, and fourth metatarsal bones</td>
<td>Inversion of foot; plantar flexion at ankle</td>
<td>Sciatic nerve, tibial branch (S₁–S₂)</td>
</tr>
</tbody>
</table>

## TABLE 11.8 Extrinsic Muscles That Move the Foot and Toes (Continued)

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<tr>
<th>Muscle</th>
<th>Origin</th>
<th>Insertion</th>
<th>Action</th>
<th>Innervation</th>
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<tbody>
<tr>
<td><strong>ACTION AT THE TOES</strong></td>
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<tr>
<td><strong>DIGITAL FLEXORS</strong></td>
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</tr>
<tr>
<td>Flexor digitorum longus</td>
<td>Posteromedial surface of tibia</td>
<td>Inferior surface of distal phalanges, toes 2–5</td>
<td>Flexion of joints of toes 2–5; plantar flexes ankle</td>
<td>Tibial branch (L₅–S₁)</td>
</tr>
<tr>
<td>Flexor hallucis longus</td>
<td>Posterior surface of fibula</td>
<td>Inferior surface, distal phalanx of great toe</td>
<td>Flexion at joints of great toe; plantar flexes ankle</td>
<td>As above</td>
</tr>
<tr>
<td><strong>DIGITAL EXTENSORS</strong></td>
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<td></td>
</tr>
<tr>
<td>Extensor digitorum longus</td>
<td>Lateral condyle of tibia, anterior surface of fibula</td>
<td>Superior surfaces of phalanges, toes 2–5</td>
<td>Extension of toes 2–5; dorsiflexes ankle</td>
<td>Deep fibular nerve (L₅–S₁)</td>
</tr>
<tr>
<td>Extensor hallucis longus</td>
<td>Anterior surface of fibula</td>
<td>Superior surface, distal phalanx of great toe</td>
<td>Extension at joints of great toe; dorsiflexes ankle</td>
<td>As above</td>
</tr>
</tbody>
</table>

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**Sacral plexus**

Formed by the 4\(^{th}\) & 5\(^{th}\) lumbar ventral rami (lumbosacral trunk) and S\(_{1234}\)

- Forms on the ventral surface of the piriformis muscle

- The sacral plexus supplies innervation to the pelvic muscles, gluteal muscles, and perineal muscles. It also forms the sciatic nerve.
**Sciatic nerve**

(L₄, L₅, S₁, S₂, S₃)

- Is the largest branch of the sacral plexus and the largest nerve in body
- Consists of two separate nerves, the common peroneal nerve and the tibial nerve
- Leaves the pelvis through the greater sciatic foramen below the piriformis muscle
IM injection in buttock

- must be given into the upper & outer quadrant of buttock (gluteus maximus/medius)
- to avoid injecting into sciatic nerve!
- this is one of the most common causes of litigation against medical personnel!
**Superior gluteal nerve**  
(L₄, L₅, S₁)  
- Leaves the pelvis through the greater sciatic foramen above the piriformis muscle with the superior gluteal artery and vein  
- In the gluteal region supplies the gluteus medius, the gluteus minimus, the tensor fasciae latae, and the hip joint

**Inferior gluteal nerve**  
(L₅, S₁, S₂)  
- Leaves the pelvis through the greater sciatic foramen below the piriformis muscle with the inferior gluteal artery and vein  
- In the gluteal region supplies the gluteus maximus muscle
**Posterior cutaneous nerve**
(SI, S₂, S₃)

- Leaves the pelvis through the greater sciatic foramen inferior to the piriformis
- In the gluteal region descends on the posterior surface of the sciatic nerve
- Supplies the skin of the buttocks, posterior thigh, popliteal fossa, and external genitalia
Nerve to the obturator internus
\((L_5, S_1, S_2)\)

- Leaves the pelvis through the greater sciatic foramen below the piriformis muscle
- In the gluteal region descends on the superior gemellus muscle to pass below the ischial spine and enter the lesser sciatic foramen. Supplies the superior gemellus and obturator internus muscles

Nerve to the quadratus femoris
\((L_4, L_5, S_1)\)

- Leaves the pelvis through the greater sciatic foramen below the piriformis muscle and deep to the sciatic nerve
- In the gluteal region runs anterior to the superior and inferior gemellus and obturator internus muscles
- Supplies the inferior gemellus and quadratus femoris muscles
Pudendal nerve
(S₂, S₃, S₄)

• Leaves the pelvis through the greater sciatic foramen inferior to the piriformis muscle along with the internal pudendal artery and vein

• In the gluteal region descends posterior to the ischial spine and enters the lesser sciatic foramen

• Is distributed to the perineum and has no branches in the gluteal region