Organization of the Lower Limb

Most illustrations from:

Limb Development
Limb Rotation

- Medial rotation
- Adduction
- Extension

Lower Limb Rotation
- Medial rotation
- Adduction
- Extension
Basic Organization of the Lower Limb

- Segments
  - Pelvic girdle (gluteal)
Basic Organization of the Lower Limb

- **Segments**
  - Pelvic girdle (gluteal)
  - Thigh
Basic Organization of the Lower Limb

• Segments
  - Pelvic girdle (gluteal)
  - Thigh
  - Leg
Basic Organization of the Lower Limb

- Segments
  - Pelvic girdle (gluteal)
  - Thigh
  - Leg
  - Foot
Joints of the Lower Limb
Articulation with Axial Skeleton

Sacroiliac jt.

Sternoclavicular jt,
Sacroiliac Joint

Anterior sacroiliac ligaments

Sacroiliac joint

Posterior sacroiliac ligaments
Joints of the Free Limb

Hip

Polyaxial ball and socket joint:
- Flexion/extension
- Adduction/abduction
- Medial/lateral rotation
Joints of the Free Limb

Knee

Modified hinge joint

Femur
Tibia
Patella
Joints of the Free Limb

Ankle (talocrural) joint

Hinge joint

1 axis of movement: Dorsiflexion/plantarflexion
Joints of the Free Limb

Foot

Inversion/eversion occurs at subtalar joint

Interphalangeal joints:
- Distal
- Proximal
- Metatarsophalangeal joints
Vasculature of the Lower Limb
Superficial Veins

Great saphenous v.

Small saphenous v.
Arterial Blood Supply

External Iliac a
  ↓
  Femoral a
  ↓
  Popliteal a
  ↓
  Anterior tibial a
  ↓
  Anterior tibial a
  ↓
  dorsalis pedis

Internal Iliac a
  ↓
  Superior gluteal a
  ↓
  Inferior gluteal a
  ↓
  Obturator a
  ↓
  Posterior tibial aa
  ↓
  med/lat plantar a
Deep Femoral Artery

Medial & lateral femoral circumflex arteries
Fascial Compartments
Fascia of the Lower Limb

Gluteal Fascia

Fascia Lata

Crural Fascia
Fascial Compartments of the Thigh

Fascia Lata

Anterior compartment

Medial (adductor) compartment

Posterior compartment
Fascial Compartments of the Leg

Crural Fascia

Anterior crural compartment

Lateral crural compartment

Superficial & deep posterior crural compartments
Lumbosacral Plexus
Innervation of the Lower Limb: Lumbosacral Plexus (L1 - S3)
Gluteal innervation:

Superior gluteal n (L4,5, S1):
- gluteus medius m.
- gluteus minimus m.
- tensor fascia lata

Inferior gluteal n (L5, S1,2):
- gluteus maximus m.

N to obturator internus (L5, S1, 2):
- obturator internus
- superior gemellus

Nerve to quadratus femoris (L4,5, S1):
- inferior gemellus
- quadratus femorus
## Compartmental Innervation Of the Free Limb

<table>
<thead>
<tr>
<th></th>
<th>Anterior compartment</th>
<th>Medial compartment</th>
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Anterior compartment of the thigh

Innervation: femoral nerve
Medial compartment of the thigh

Innervation:
obturator nerve*

*Adductor Magnus innervated by both obturator n and tibial division of sciatic n
Posterior compartment of the thigh

Hamstring mm: arise from ischial tuberosity & innervated by tibial division of sciatic n.

Innervation:

- Tibial division of sciatic nerve
  - Except short head of biceps femoris: common fibular division of sciatic nerve
Posterior compartment of the leg

Innervation: tibial n.
Plantar surface of the foot

Innervation:
Medial & lateral plantar nerves
Innervation of intrinsic muscles of the foot

Medial plantar n

- flexor digitorum brevis
- flexor hallucis brevis
- abductor hallucis m
- 1st lumbrical

Lateral plantar n

- abductor digiti minimi
- quadratus plantae
- 2nd, 3rd & 4th lumbricales
- adductor hallucis
- Flexor digiti minimi
- dorsal & plantar interossei
Common fibular nerve

Nerve supply to the lateral and anterior crural compartments
Lateral crural compartment:

Superficial fibular nerve
Fibularis longus
Fibularis brevis
Anterior crural compartment:

Deep fibular nerve

- Tibialis anterior m.
- Extensor hallucis longus m.
- Extensor digitorum longus m.
- Fibularis tertius m.
Dorsum of the foot:

- deep fibular nerve
- Extensor hallucis brevis
- Extensor digitorum brevis
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<td>Tibial division of sciatic n.</td>
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<td>adductor magnus - obturator n and tibial n</td>
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<td>Deep fibular n.</td>
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<td>Tibial nerve</td>
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<td>Tibial n. (medial and lateral plantar n.)</td>
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Key dermatomes

- thumb - C6
- 5th digit of hand - C8
- nipples - T4
- umbilicus - T10
- hip crease - L1
- great toe - L4
- 5th toe - S1

*area of skin supplied by a dorsal nerve root*
Key dermatomes of the Lower Limb

- umbilicus - T10
- hip crease - L1
- great toe - L4
- 5th toe - S1

*area of skin supplied by a dorsal nerve root*
Cutaneous Nerve Supply to the Lower Limb
References