Muscles of Leg
Lecture Objectives

• List the muscles of the leg.
• Describe the attachments of the leg muscles and their nerve supply.
• Describe the popliteal fossa.
• List the content of the popliteal fossa.
• Understand the clinical importance of the popliteal fossa.
Popliteal fossa

- Shape
- Boundaries
- Content
  - Popliteal vessels
  - Small saphenous vein
  - Common peroneal & tibial nerves
  - Lymph nodes
- Popliteal fascia
Leg Compartments

- Tibialis anterior (TA)
- Deep fibular nerve and anterior tibial vessels
- Extensor hallucis longus (EHL)
- Extensor digitorum longus and fibularis tertius (EDL)
- Anterior intermuscular septum of leg (AC)
- Superficial fibular nerve
- Fibularis brevis (FB)
- Fibularis longus (FL)
- Fibula (F)
- Posterior intermuscular septum of leg (PC)
- Flexor hallucis longus (FHL)
- Fibular vessels
- Soleus (SOL)
- Gastrocnemius aponeurosis (GA)
- Tibialis posterior (TP)
- Posterior tibial vessels and tibial nerve (TV)
- Transverse intermuscular septum (TIS)
- Plantaris (P)
**Anterior compartment** (brown): deep fibular nerve territory; dorsiflexors of foot and toes

**Lateral compartment** (light brown): superficial fibular nerve territory; evertors of foot

**Posterior compartment** (green): tibial nerve; plantar flexors of foot and toes

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**B. Transverse section**

**C. Transverse section**
Muscles of Anterior Compartment of Leg

- Dorsiflexors of the ankle
- Deep fibular nerve
- Superior extensor retinaculum
- Inferior extensor retinaculum
Muscles of Anterior Compartment of Leg

• Tibialis anterior

• Extensor digitorum longus
  • Extensor expansion (proximal phalanx)
    • Central band (middle phalanx)
    • Lateral bands (distal phalanx)

• Extensor hallucis longus

• Fibularis tertius
Muscles of Lateral Compartment of Leg

- Eversion of foot
- Superficial fibular nerve
- Superior peroneal retinaculum
- Inferior peroneal retinaculum
Muscles of Lateral Compartment of Leg

- Peroneus (fibularis) longus m.
  - Longer & superficial
- Peroneus (fibularis) brevis m.
Anterolateral Compartment of Leg: Relations

- **Common Peroneal Nerve**
  - Superficial peroneal n.
    - Descends in the lateral compartment between peroneus longus & peroneus brevis.
  - Deep peroneal n.
    - Descends in the anterior compartment deep to the extensor digitorum longus.
    - Anterior to the interosseous membrane.
    - Accompanies the anterior tibial vessels.

- **Anterior Tibial Artery**
  - Traverse the interosseous membrane.
  - Companies the deep peroneal n.
# TABLE 5.10. MUSCLES OF ANTERIOR AND LATERAL COMPARTMENTS OF LEG

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Proximal Attachment</th>
<th>Distal Attachment</th>
<th>Innervation&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Main Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anterior compartment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tibialis anterior (1)</td>
<td>Lateral condyle and superior half of lateral surface of tibia and interosseous membrane</td>
<td>Medial and inferior surfaces of medial cuneiform and base of 1st metatarsal</td>
<td>Deep fibular nerve (L4, L5)</td>
<td>Dorsiflexes ankle and inverts foot</td>
</tr>
<tr>
<td>Extensor digitorum longus (2)</td>
<td>Lateral condyle of tibia and superior three quarters of medial surface of fibula and interosseous membrane</td>
<td>Middle and distal phalanges of lateral four digits</td>
<td></td>
<td>Extends lateral four digits and dorsiflexes ankle</td>
</tr>
<tr>
<td>Extensor hallucis longus (3)</td>
<td>Middle part of anterior surface of fibula and interosseous membrane</td>
<td>Dorsal aspect of base of distal phalanx of great toe (hallux)</td>
<td></td>
<td>Extends great toe and dorsiflexes ankle</td>
</tr>
<tr>
<td>Fibularis tertius (4)</td>
<td>Inferior third of anterior surface of fibula and interosseous membrane</td>
<td>Dorsum of base of 5th metatarsal</td>
<td></td>
<td>Dorsiflexes ankle and aids in eversion of foot</td>
</tr>
<tr>
<td><strong>Lateral compartment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibularis longus (5)</td>
<td>Head and superior two thirds of lateral surface of fibula</td>
<td>Base of 1st metatarsal and medial cuneiform</td>
<td>Superficial fibular nerve (L5, S1, S2)</td>
<td>Everts foot and weakly plantarflexes ankle</td>
</tr>
<tr>
<td>Fibularis brevis (6)</td>
<td>Inferior two thirds of lateral surface of fibula</td>
<td>Dorsal surface of tuberosity on lateral side of base of 5th metatarsal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Numbers refer to Figure 5.55A & B.

<sup>b</sup>The spinal cord segmental innervation is indicated (e.g., “L4, L5” means that the nerves supplying the tibialis anterior are derived from the fourth and fifth lumbar segments of the spinal cord). Numbers in boldface (L4) indicate the main segmental innervation. Damage to one or more of the listed spinal cord segments or to the motor nerve roots arising from them results in paralysis of the muscles concerned.
Muscles of the Posterior Compartment of Leg

- Planter flexion
- Tibial nerve

- Superficial layer (calf muscles)
  - Transverse intermuscular septum
- Deep layer
Posterior Compartment of Leg
Superficial layer (calf muscles)

- Calcaneal tendon
- Gastrocnemius
  - Large, superficial
  - Two heads
  - Flex knee and ankle
- Soleus
- Plantaris
  - Flex knee and ankle
  - Traverse the knee articular capsule
<table>
<thead>
<tr>
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<th>Innervation</th>
<th>Main Action</th>
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</thead>
<tbody>
<tr>
<td>Gastrocnemius (1)</td>
<td>Lateral head: lateral aspect of lateral condyle of femur</td>
<td></td>
<td></td>
<td>Plantarflexes ankle when knee is extended; raises heel during walking; flexes leg at knee joint</td>
</tr>
<tr>
<td></td>
<td>Medial head: popliteal surface of femur; superior to medial condyle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soleus (2)</td>
<td>Posterior aspect of head and superior quarter of posterior surface of fibula; soleal line and middle third of medial border of tibia; and tendinous arch extending between the bony attachments</td>
<td>Posterior surface of calcaneus via calcaneal tendon</td>
<td>Tibial nerve (S1, S2)</td>
<td>Plantarflexes ankle independent of position of knee; steadies leg on foot</td>
</tr>
<tr>
<td>Plantaris (3)</td>
<td>Inferior end of lateral supracondylar line of femur; oblique popliteal ligament</td>
<td></td>
<td></td>
<td>Weakly assists gastrocnemius in plantarflexing ankle</td>
</tr>
</tbody>
</table>

*a Numbers refer to Figure 5.60A.

*b The spinal cord segmental innervation is indicated (e.g., “S1, S2” means that the nerves supplying these muscles are derived from the first and second sacral segments of the spinal cord). Damage to one or more of the listed spinal cord segments or to the motor nerve roots arising from them results in paralysis of the muscles concerned.
Posterior Compartment of Leg: Deep layer

- Transverse intermuscular septum
- Flexor retinaculum
Posterior Compartment of Leg:
Deep layer

- Popliteus
- Flexor hallucis longus
- Flexor digitorum longus
- Tibialis posterior
  - inversion
Deep Layer: Muscular Relation

**At Ankle**
- Tibialis Posterior
- Flexor digitorum longus
- Flexor hallucis longus
- Calcaneal tendon

**At Leg**
- Popliteus
- Tibialis posterior
- Flexor digitorum longus
- Flexor hallucis longus
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<th>Main Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Popliteus</td>
<td>Lateral surface of lateral condyle of femur and lateral meniscus</td>
<td>Posterior surface of tibia, superior to soleal line</td>
<td>Tibial nerve (L4, L5, S1)</td>
<td>Weakly flexes knee and unlocks it by rotating femur 5° on fixed tibia; medially rotates tibia of unplanted limb</td>
</tr>
<tr>
<td>Flexor hallucis longus (4)</td>
<td>Inferior two thirds of posterior surface of fibula; inferior part of interosseous membrane</td>
<td>Base of distal phalanx of great toe (hallux)</td>
<td>Tibial nerve (S2, S3)</td>
<td>Flexes great toe at all joints; weakly plantarflexes ankle; supports medial longitudinal arch of foot</td>
</tr>
<tr>
<td>Flexor digitorum longus (5)</td>
<td>Medial part of posterior surface of tibia inferior to soleal line; by a broad tendon to fibula</td>
<td>Bases of distal phalanges of lateral four digits</td>
<td></td>
<td>Flexes lateral four digits; plantarflexes ankle; supports longitudinal arches of foot</td>
</tr>
<tr>
<td>Tibialis posterior (6)</td>
<td>Interoosseous membrane; posterior surface of tibia inferior to soleal line; posterior surface of fibula</td>
<td>Tuberosity of navicular, cuneiform, cuboid, and sustentaculum tali of calcaneus; bases of 2nd, 3rd, and 4th metatarsals</td>
<td>Tibial nerve (L4, L5)</td>
<td>Plantarflexes ankle; inverts foot</td>
</tr>
</tbody>
</table>

<sup>a</sup> Numbers refer to Figure 5.60A.

<sup>b</sup> The spinal cord segmental innervation is indicated (e.g., “S2, S3” means that the nerves supplying the flexor hallucis longus are derived from the second and third sacral segments of the spinal cord). Damage to one or more of the listed spinal cord segments or to the motor nerve roots arising from them results in paralysis of the muscles concerned.
Posterior Compartment of Leg: Relations

- Posterior Tibial Artery
- Tibial Nerve
  - Accompany each other
  - Deep to gastrocnemius and soleus mm.
  - Deep to flexor retinaculum
    - Superficial