Lower Extremity

Chapter 10

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New Terminology

Combining Form	Meaning	Example	Meaning of New Term
Acr/o	Extremities	Acroanesthesia	Absence of sensation in the extremities
Ankyl/o	Stiff joint	Ankylosis	Abnormal condition of a stiff joint
Arthr/o	Joint	Arthrocentesis	Surgical puncture of a joint
Articul/o		Articular	Pertaining to a joint
Burs/o	Bursa, sac	Bursitis	Inflammation of a bursa

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New Terminology

Combining Form	Meaning	Example	Meaning of New Term
Chondr/o	Cartilage	Chondrodysplasia	Bad, painful, or difficult formation or growth of cartilage
Fasci/o	Fascia	Fasciodesis	Binding or surgical fixation of a fascia
Femor/o	Femur	Femorotibial	Pertaining to the femur and tibia
Ili/o	Ilium	Iliolumbar	Pertaining to the ilium and lower back
Kinesi/o	Movement	Kinesiology	Study of movement

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New Terminology

Combining Form	Meaning	Example	Meaning of New Term
Menisc/o	Meniscus	Meniscectomy	Excision or surgical removal of a meniscus
Metatars/o	Metatarsals, ankle	Metatarsophalangeal	Pertaining to the ankle, metatarsals, and phalanges
Muscul/o	Muscle	Musculoskeletal	Pertaining to the muscles and skeleton
My/o		Myocardial	Pertaining to heart muscle

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New Terminology

Combining Form	Meaning	Example	Meaning of New Term
Oste/o	Bone	Osteolytic	Pertaining to the destruction of bone
Patell/a	Patella	Patellapexy	Surgical fixation of the patella
Patell/o		Patelloptosis	Prolapse of the patella
Pelv/i	Pelvis	Pelvimeter	Measuring instrument for the pelvis
Phalang/o	Phalanges	Phalangitis	Inflammation of the phalanges
Pub/o	Pubis	Pubofemoral	Pertaining to the pubis and femur

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New Terminology

Combining Form	Meaning	Example	Meaning of New Term
Sacr/o	Sacrum	Sacrodynia	Pain of the sacrum
Sthen/o	Strength	Myasthenia	Condition of absence of muscle strength
Synov/o	Synovial membrane	Synovectomy	Surgical removal of a synovial membrane
Synovi/o		Synovioma	Tumor of a synovial membrane
Tars/o	Ankle (tarsal bones)	Tarsometatarsal	Pertaining to the ankle

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New Terminology

Combining Form	Meaning	Example	Meaning of New Term
Ten/o	Tendon	Tenodynia	Pain of a tendon
Tend/o		Tendotome	Cutting instrument for a tendon
Tendin/o		Tendinous	Pertaining to a tendon
Tibi/o	Tibia	Tibiofibular	Pertaining to the tibula and fibula

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Bony Anatomy

- Hip
  - Acetabulum
    - Cup-like cavity created by
      - Ilium
      - Ischium
      - Pubis

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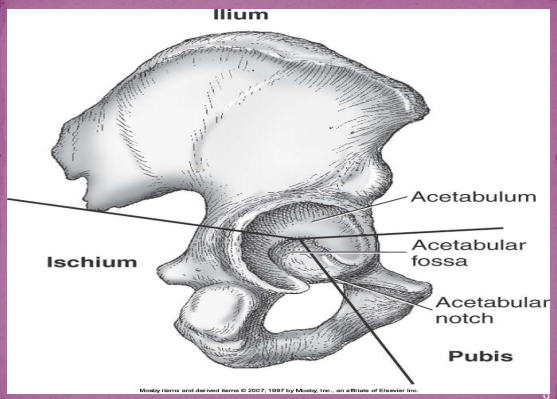

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Femur

- Longest
- Heaviest → Bone in the body
- Strongest

- Femoral head
  - Fits into acetabulum

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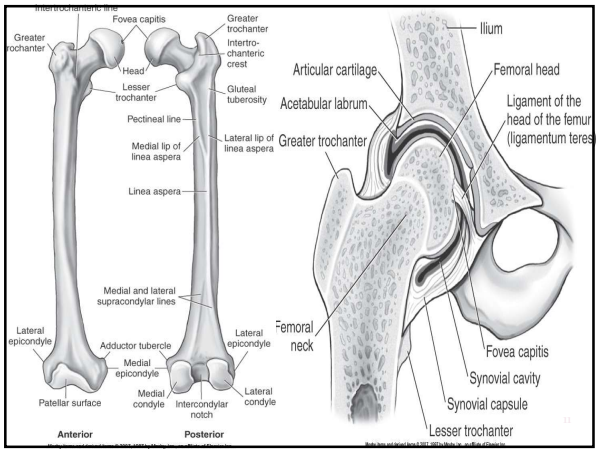

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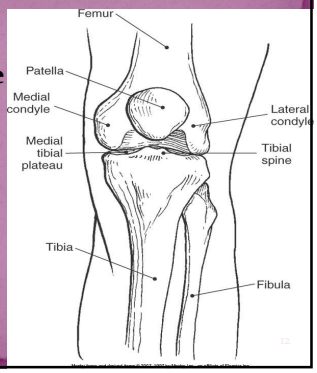
Knee

- Bones that contribute to knee joint
  - Femur
  - Tibia
  - Patella
  - Fibula



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Popliteal Fossa

- Posterior aspect of knee

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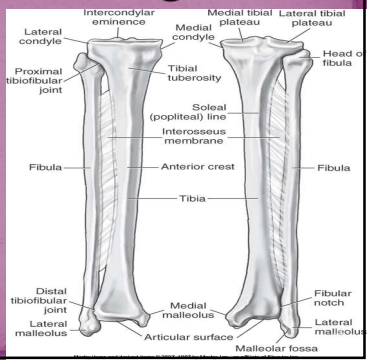
Lower Leg

- Tibia
  - "shin bone"
  - Medial
  - Thicker
- Fibula
  - Lateral
  - Thinner



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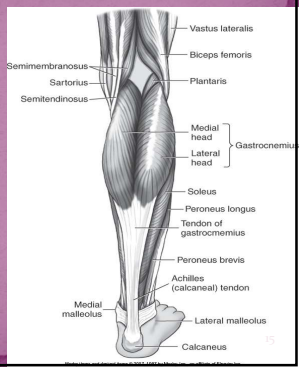
Gastrocnemius Muscle

- Superficial muscle located
  - Distal popliteal area
  - Proximal lower leg



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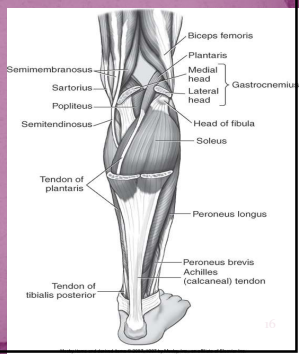
Soleus Muscle

- Located beneath gastrocnemius
  - Deeper than gastrocnemius



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Lower Extremity Arteries

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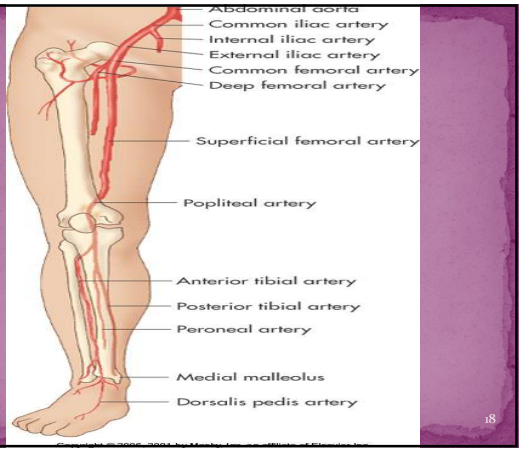

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Common Iliac

- Terminal branches of the Aorta
- Right Common Iliac
  - Approximately 5 cm's in length
- Left Common Iliac
  - Approximately 4 cm's in length
- Common Iliac arteries divide into:
  - Internal Iliac
  - External Iliac

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Internal Iliac

- Also known as ***hypogastric artery***
- Descend into the pelvis dividing into:
  - Anterior
  - Posterior
- Supplies the:
  - Pelvis viscera and wall
  - Buttocks
  - Genital organs
  - Medial thigh
  - Perineum

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External Iliac

- Larger than the Internal Iliac Artery
- Branches into:
  - Inferior Epigastric Artery
    - Arises anteriorly just proximal to the inguinal ligament
    - Supplies the abdominal muscles and peritoneum
    - Used in TRAM or CABG procedures
  - Deep Circumflex Iliac Artery
    - Arises laterally near the inguinal ligament
    - Supplies the abdominal muscles

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Common Femoral

- Is a continuation of the External Iliac Artery
- Divides into:
  - Superficial Femoral
  - Deep Femoral or also known as Profunda Femoris

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Femoral Artery

- Descends along the anteromedial part of the thigh in the femoral triangle
- Courses the length of the thigh
- Passes through an opening in the adductor magnus (Also known as Adductor Canal or Hunter's Canal)
  - Tunnel in the middle third of the thigh through which the femoral vessels reach the popliteal fossa
- Enters the popliteal fossa

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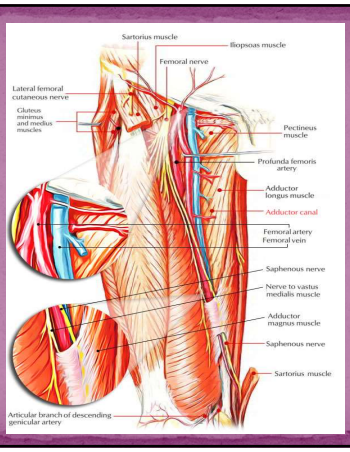

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Profunda Femoris

- Also know as Deep Femoral Artery
- Large lateral branch arising approximately 3.5 cm distal to the inguinal ligament
- Main blood supply to:
  - Adductor muscle
  - Extensor muscle
  - Flexor muscle

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Popliteal

- Continuation of the Superficial Femoral Artery
- As the SFA enters the popliteal fossa it becomes the popliteal artery
- Popliteal divides into:
  - Anterior Tibial
  - Posterior Tibial

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Anterior Tibial

- First branch off of the distal Popliteal Artery
- Terminal branch of the popliteal artery
- Passes superficial to the interosseous membrane and courses anteriorly along the interosseous membrane
- Distally – courses along the anterior aspect of the tibia
- Becomes the Dorsalis Pedis Artery

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Dorsalis Pedis

- Continuation of the Anterior Tibial Artery
- ATA becomes more superficial as it passes anteriorly to the lateral malleolus and becomes the DPA distal to the ankle
- Transverses the dorsal aspect of the foot towards the base of the great toe
- Branches:
  - Tarsal
  - Arcuate
  - First dorsal metatarsal arteries

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Tibioperoneal Trunk

- Second branch of the distal Popliteal Artery
- Sometimes referred to as the proximal segment of the Posterior Tibial Artery
- Branches into:
  - Posterior Tibial Artery
  - Peroneal Arteries

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Posterior Tibial

- One of the two branches of the Tibioperoneal Trunk
- Begins between the tibia and fibula, extending downward and medially to the midpoint between the medial malleolus and the heel
- Distal to medial malleolus divides into:
  - Medial Arteries
  - Plantar Arteries

* Feeds the sole of the foot *

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Peroneal

- Originates at the distal portion of the Tibioperoneal trunk
- Passes obliquely to the fibula
- Courses along the medial aspect of the fibula
- Supplies blood to:
  - Lateral lower leg
  - Calcaneus (Heel)

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Plantar Arch

- Comprised of:
  - Digital arteries
    - Terminal branches of Dorsalis Pedis and Posterior Tibial
- Deeply situated
- Extends from the 5th metatarsal base to the proximal end of the 1st intermetatarsal space
- Supply blood to: (In the sole of the foot)
  - Skin
  - Fasciae
  - Muscles

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Plantar Arch

- Deep Plantar Artery
  - Branch of the Dorsalis Pedis Artery
- Lateral Plantar Artery
  - Branch of the Posterior Tibial Artery

*Deep Plantar Artery unites with the Lateral Plantar Artery to complete the plantar arch *

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Digital

- Plantar and Dorsal metatarsals distribute blood to the digits

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Lower Extremity

- Venous system divided into 3 systems:
  - Deep system
  - Superficial System
  - Communicating or Perforating veins

We will begin with the foot and work up the leg
(Blood travels cephalad in the legs)

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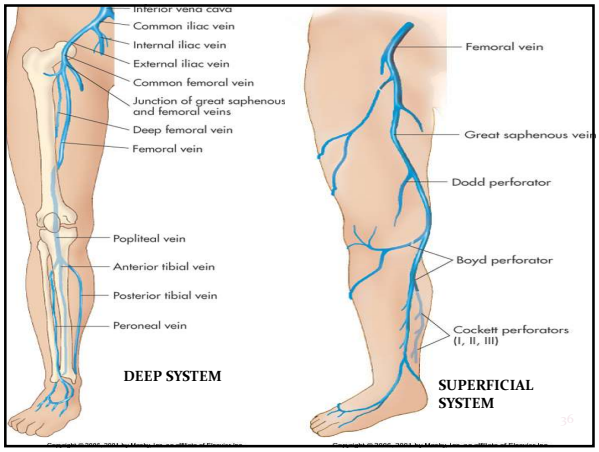

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Deep Veins

- Deep Digital Veins
  - Plantar digital and Dorsal digital veins join to form 4 Metatarsal veins
- Metatarsal Veins
  - Connected by perforators to the Dorsal Veins to form the Deep Plantar Venous Arch
- Peroneal Veins
  - Paired veins that course along the lateral aspect of the leg near the fibula
  - Carries blood cephalad to the tibioperoneal trunk
  - Forms the common peroneal trunk

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Posterior Tibial Veins

- Paired veins formed by plantar veins
- Course posterior to the tibia
- Carries blood cephalad to the tibioperoneal trunk
- Drains blood from the posterior aspect of the leg
- Tibioperoneal Trunk
  - Where the Common Tibial Trunk and the Common Peroneal Trunk converges

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Anterior Tibial Veins

- Paired veins formed by the Dorsal Pedis veins
- Lies lateral to the tibia (medial to fibula)
- Drains blood from the front of the leg
- Along with the tibioperoneal trunk veins join to form the popliteal vein just below the level of the knee

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Popliteal Vein

- Formed by the anterior tibial and the tibioperoneal trunk just bed just below the knee
  - Gastrocnemius Muscular Vein
    - Paired veins that drain the "muscle mass" of the calf
    - Drains in to the popliteal vein
    - Resemble a "dumb bell" shape

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Soleal Sinusoids

- Thin walled "reservoirs" that lie within the soleal muscle
- Drains into the Posterior Tibial and Peroneal Veins
- "Spindle Shaped" veins important for the "muscle pump" in the calf
- ** Frequent site of thrombus**

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Femoral Vein

- This vein is part of the "DEEP" system
- A continuation of the popliteal vein
- Becomes the Femoral Vein (FV) when it passes through the adductor hiatus
  - Also know as adductor canal

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Common Femoral

- A continuation of the femoral vein
- Formed by the FV and Deep Femoral Vein (Profunda Femoris)
- Becomes the External Iliac Vein (EIV) when it approaches the inguinal ligament
- Lies in the femoral triangle (Scarpa's triangle) medial to the Common Femoral Artery

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External Iliac

- A continuation of the CFV
- Becomes the External Iliac Vein when it passes through the inguinal ligament
- Joins with the Internal Iliac Vein to form the Common Iliac Vein
  - Internal Iliac Vein
    - Drains the pelvis

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Common Iliac

- Formed by the External Iliac and Internal Iliac veins
- Left Common Iliac Vein courses behind the Right Iliac Artery
- Pressure on the Left Common Iliac vein may account for a higher incidence of Deep Vein Thrombosis (DVT) and swelling of the left leg

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Inferior Vena Cava

- Formed by the:
  - Right Common Iliac
  - Left Common Iliac
    - Commonly at the level of the 5th Lumbar Vertebra
- Carries blood to the right atrium of the heart

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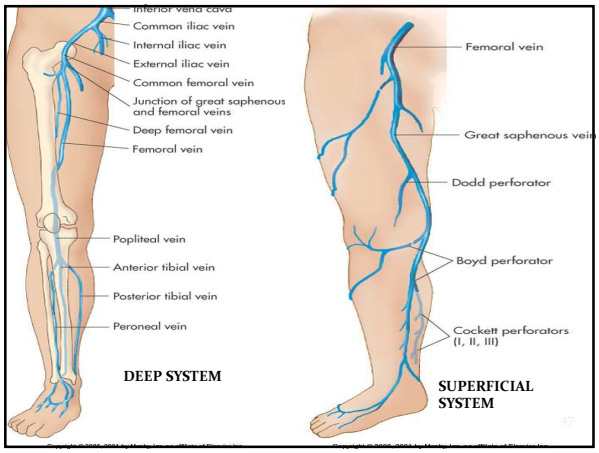

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Superficial Veins

- <u>Lesser Saphenous Vein</u>
  - Begins posterior to lateral malleolus
  - Courses midline along the back of the calf
  - Normally joins the Popliteal Vein
    - May continue up the posterior aspect of the thigh and unite with the Greater Saphenous

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Greater Saphenous

- Formed from digital veins that become larger venous channels of the foot
- Originates on the dorsum of the foot traveling medially to the Saphenofemoral Junction ending in the Common Femoral Vein
- Often duplicated (can have 2 GSV's)
- Longest vein in the body

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Communicating Veins

- Also known as Perforating Veins or Perforators
- Forms the communication between the superficial and deep venous systems
- Carries blood from the superficial veins into the deep system via the Perforators
- Contains valves that prevent bidirectional flow
  - As long as they are functioning properly

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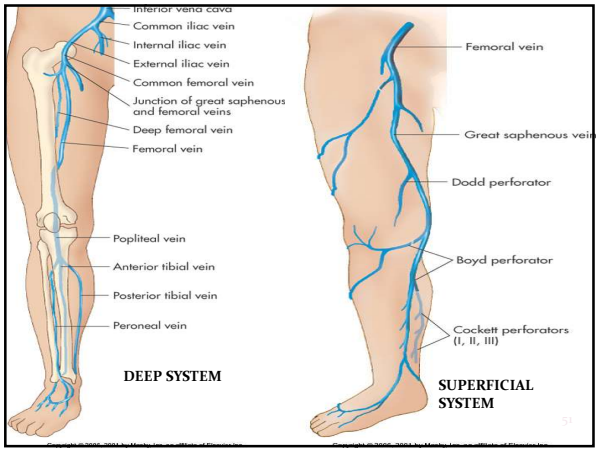

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