

## Unit 6:

# Bones and joints of the lower limb: leg and foot

### GENERAL OBJECTIVES:

- recognize, name and correctly orient leg bones (tibia/fibula) and bones of the foot
- explain how is anatomy of the leg and foot (in particular) fitting particular functions
- name and describe all joints of the leg and foot focusing anatomical and functional properties
- remember concepts and common structural properties of long and short bones

### SPECIFIC OBJECTIVES:

#### Bones of the leg and foot

##### PATELLA

TIBIA - Upper End (condyles, tibial plateau, intercondylar eminence and areas)

- Shaft (surfaces and borders, soleal line, tibial tuberosity)
- Lower End (articular facets, medial malleolus)

FIBULA- Upper End (head, apex)

- Shaft (borders)
- Lower End (lateral malleolus)

Identify the following bones and their principal features:

##### TARSALS

##### METATARSALS

##### PHALANGES

Identify the bony features on each part of the:

Talus and of the Calcaneus.

Identify the major bony feature of the:

Navicular and of the Cuboid.

Indicate the attachments of Flexor Retinaculum and define the "Tarsal Tunnel".

Demonstrate the ARCHES of the foot:

- Medial Longitudinal
- Lateral Longitudinal
- Transverse

Deduce (from the shape of the articular surfaces) the movements at:

- the knee joint
- the tibiofibular joints
- the ankle joint
- the subtalar and talo-calcaneo-navicular joints
- the other joints of the foot

Indicate the bony attachments of the major ligaments which help to maintain the stability of these joints (while allowing their mobility).

#### Joints of the leg and foot

##### Knee Joint

*Articular Surfaces (Patello-femoral & Femoro-tibial)*

*Fibrous Capsule & deficiencies*

*Synovial Membrane (& Communication with Suprapatellar Bursa)*

Ligaments: *Ligamentum Patellae*  
*Collateral Ligaments (Medial & Lateral)*  
*Cruciate Ligaments (Anterior & Posterior)*  
Oblique Popliteal  
Arcuate Popliteal, Transverse

Special Structures: *Menisci (Medial & Lateral)*  
Intracapsular tendon of popliteus  
Bursae: Suprapatellar, Prepatellar, Semimembranosus  
Others (Many)  
Infrapatellar Pad of Fat

Movements at the Knee Joint:  
*Locking Mechanism (Passive)*  
*Unlocking Mechanism (Active)*  
*Flexion/Extension*  
Medial Rotation/Lateral Rotation (of Flexed Knee)

### *Stability*

Tibiofibular Joints  
Proximal Tibiofibular Joint  
Distal Tibiofibular Joint (Syndesmosis)

### Ankle Joint

*Articular Surfaces*  
*Fibrous Capsule*  
Synovial membrane  
*Collateral Ligaments (Medial & Lateral)*  
Movements at the Ankle Joint: *Planter Flexion/Dorsi Flexion*  
*Stability*

### Joints of the Foot

Joints under the Talus: (Subtalar & Talocalcaneonavicular)  
Articular Surfaces, Spring Ligament  
Movements (of the Foot): *Inversion/Eversion*  
Other Intertarsal Joints (including Calcaneocuboid)  
Tarsometatarsal & Intermetatarsal Joints  
Metatarsophalangeal (M.P.) & Interphalangeal (I.P.) Joints  
Movements of the Toes: Flexion/Extension, Abduction/Adduction

### Arches of the Foot

*Longitudinal Arch (Medial & Lateral)*  
Transverse Arch  
Maintenance of the Arches