# Joints of the Appendicular Skeleton

## Lower Limb

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<th>Joint</th>
<th>Articulating Bones</th>
<th>Structural Type</th>
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<tr>
<td>Sacroiliac</td>
<td>Sacrum / Coxal bone</td>
<td>Synovial; plane</td>
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<tr>
<td>Pubic symphysis</td>
<td>Coxal bones</td>
<td>Cartilaginous; symphysis</td>
</tr>
<tr>
<td>Hip (Coxal)</td>
<td>Coxal bone / Femur</td>
<td>Synovial; ball-and-socket</td>
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<tr>
<td>Knee (Tibiofemoral)</td>
<td>Femur / Tibia</td>
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<tr>
<td>Knee (Femoropatellar)</td>
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<tr>
<td>Inferior tibiofibular</td>
<td>Tibia / Fibula</td>
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<td>Intertarsal</td>
<td>Adjacent tarsals</td>
<td>Synovial; plane</td>
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<tr>
<td>Tarsometatarsal</td>
<td>Tarsal(s) / Metatarsal(s)</td>
<td>Synovial; plane</td>
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<td>Metatarsophalangeal</td>
<td>Metatarsal / Proximal phalanx</td>
<td>Synovial; condylar</td>
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<td>Toe (Interphalangeal)</td>
<td>Adjacent phalanges</td>
<td>Synovial; hinge</td>
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</table>
A. **Hip Joint**:

The hip joint is a ball-and-socket type synovial joint (Figure 1). This joint has a good range of motion, but not nearly as wide of a range as the shoulder due to the presence of strong ligaments and a deep bone socket.

**Fibrocartilage:**

- **Acetabular labrum**: Rim of fibrocartilage on margin of acetabulum; deepens articulation point of coxal bone with femur.

**Ligaments:**

- **Ligamentum teres**: Attaches the head of the femur to the lower lip of the acetabulum of the coxal bone; protects artery entering fovea capitis.
- **Iliofemoral ligament**: Attaches ilium of coxal bone to the neck region of the femur; provides stability when a person stands up straight.
- **Pubofemoral ligament**: Attaches pubis of coxal bone to the neck region of the femur; provides stability when a person stands up straight.
- **Ischiofemoral ligament**: Attaches ischium of coxal bone to the neck region of the femur; provides stability when a person stands up straight.

*Figure 1*: Right hip joint, anterior and posterior views (note: acetabular labrum and ligamentum teres not shown)
B. Knee Joint:

The knee joint is the largest and most complex joint in the human body. The knee joint is composed of two independent joints, a hinge type synovial joint between the femur and tibia and a plane type synovial joint between the femur and patella (Figure 2).

Fibrocartilage:

- **Medial / Lateral Meniscus**: C-shaped fibrocartilage pad located on each tibial condyle; help deepen the shallow tibial articular surface, prevent side-to-side rocking, and absorb shock.

Ligaments:

- **Anterior cruciate ligament**: Attaches the anterior intercondylar area of the tibia to the medial side of the lateral condyle of the femur; prevents forward sliding of the tibia on the femur and checks hyperextension of the knee.
- **Posterior cruciate ligament**: Attaches the posterior intercondylar area of the tibia to the lateral side of the medial condyle of the femur; prevents backward displacement of the tibia or forward sliding of the femur.
- **Medial (Tibial) collateral ligament**: Attaches the medial epicondyle of the femur to the medial condyle of the tibia; prevents lateral rotation of the lower leg when the knee is extended.
- **Lateral (Fibular) collateral ligament**: Attaches the lateral epicondyle of the femur to the head of the fibula; prevents medial rotation of the lower leg when the knee is extended.
- **Patellar ligament**: Attaches the inferior region of the patella to the tibial tuberosity; transfers force from the quadriceps muscle group to the lower leg.

Figure 2: Right knee joint, anterior and superior views
CHECKLIST: SELECT LOWER LIMB JOINTS

HIP JOINT:

*Fibrocartilage*
- Acetabular labrum

*Ligaments*
- Ligamentum teres
- Iliofemoral ligament
- Pubofemoral ligament
- Ischiofemoral ligament

KNEE JOINT:

*Fibrocartilage*
- Medial meniscus
- Lateral meniscus

*Ligaments*
- Anterior cruciate ligament
- Posterior cruciate ligament
- Medial (tibial) collateral ligament
- Lateral (fibular) collateral ligament
- Patellar ligament