Specialized Synovial Joints (Cont.)

2. Glenohumeral Joint (Shoulder):

• Joint Characteristics:
  - Structural:
  - Functional:
  -
  -

• Articulating surfaces:
  a. Humerus:
  b. Scapula:
  -

• Stabilizing Structures:
  1. Girdle Bones: Stabilize extremity
     a. Acromion of Scapula: Stabilizes:
     b. Corocoid of Scapula: Stabilizes:

  2. Articular Capsule:
     • Loosely binding capsule: Provides
     • Stabilizes ONLY when joint reaches:

  3. Accessory Ligaments: Intrinsic and Extrinsic
     a. Glenohumeral ligaments: Intrinsic
        -
        -

     b. Extrinsic: Extra-capsular Ligaments:
        -

        1. Coracoacromial Ligament
           - Strengthen:

        2. Coracoclavicular Ligaments (Trapazoid & Conoid)
           - Stabilize:

        3. Acromioclavicular Ligament
           - Stabilize:
Acromioclavicular Ligament: Sprain

- “Shoulder separation”
- Most commonly:

4. **Muscle & Associated Tendons**: Stabilize extremity

- Provide *Greatest Degree* of:

- “Rotator Cuff Muscles”: 4 muscles:
  
  *Supraspinatus, Infraspinatus, Teres Minor, Subscapularis*

- Hold humeral head against:
- Tendons extend around the:
  
  → Tendons form the:

5. **Accessory Cartilage**:

- Stabilize extremity

- **Glenoid Labrum**: *labrum* = “lip”

- Fibrocartilage “lip”:

  → Increases surface area by:

  → Adding:

6. **Bursae**: Reduce friction where muscle & tendons:

3. **Tibiofemoral Joint** (Knee Joint)

- Joint Characteristics:

  - Structural:
  - Functional:

  → Bony articulations:

- Articulation between:
  a. 
  b. 

- **Complex Stabilizing Structures**

  a. **Articulating Capsule**:

  →

  b. **Menisci** (Medial & Lateral):

    • Medial Meniscus;
Lateral Meniscus:
- Function: Wedge Shaped – Periphery is thicker
  - Refine and stabilize:
  - Absorb:
  - Circulate:
- Clinical: Medial meniscus is more frequently injured:
  - *Less Mobile*: Attachment to:
    - ✓ Tears in:
  - *Limited Repair:

c. Extracapsular Ligaments:

1. Tibial (Medial) Collateral Ligament
   - Attached to

2. Fibular (Lateral) Collateral Ligament
   - Outside Joint Capsule

   ✓ BOTH: Stabilize:
   - Prevent join from:

3. Patellar Ligament
   - Stabilize:

d. Intracapsular Ligaments:

1. Anterior Cruciate: Limits:

2. Posterior Cruciate: Limits:
Clinical Applications:

• **Terrible Triad**: Lateral force to knee
  ✡ Force opens medial aspect of knee
  ⇒ ACL, Medial Meniscus, Medial Collateral ligament

4. **Talocrural Joint** (Tibiotalar)
   • Joint Characteristics:
     ✡ Structural:
     ✡ Functional:
     ⇒
     ⇒ *Motion* –
   ✡ Fairly Stable Joint structure
   • Articulating bones:
     a. **Tibia** :
     b. **Fibula** :
     c. **Talus** :
   • 2 Locations of Stabilization:
     1. **High Ankle Joint**: Distal Tibia and Fibula
        ✓ Functional Classification:
        • Stabilizing Structures:
          a. **Interosseous Membrane**:
             ✓ Function:
Prevents:

b. High Ankle Ligaments
   1. Anterior Tibiofibular ligament
   2. Posterior Tibiofibular ligament

✔ Function:
   ✔ Further Prevents:

2. Low Ankle Joint: Tibia, Fibula, & Tarsals

★ Attach the:

a. Lateral Ligaments: 3 ligaments
   1. Anterior Talofibular Ligament
   2. Posterior Talofibular Ligament
   3. Calcaneofibular Ligament

✔ Function:

b. Deltoid Ligament: 3 slips (sections)

★

✔ Function:

Clinical Significance:

1. Synovial Joint Dislocation: Luxation
   • Articulating surfaces forced out of position
     ★ Partial dislocation: Subluxation

   • Injury: Displacement can cause joint structure damage
     ★ Cartilage, ligaments, menisci

   • “Double Jointed” or Hypermobility:
     ★ Permit greater range of motion

✔ Causes: Strong genetic basis
   a. Joint misalignment or abnormal bone structure
   b. Collagen defect
   c. Injury

✔ Weakly stabilized joints
✔ More prone to luxation

2. Sprain: Over stretching or tearing of ligament or capsule

★ Connective tissue damage
   ✔ Cause: Joint over extension
   ✔ Repair: ~ 3-4 weeks

3. Strain: Over stretching or tearing of Muscle or muscle tendon
Muscle & Connective tissue damage
   - Cause: Joint over extension
   - Repair: ~ 3-4 weeks

4. Bursitis: Bursa inflammation
   - Cause: Direct fall or blow, overuse or infection

Study Questions:

1. Why is the glenohumeral joint the most unstable in the body? What are the primary stabilizing structures of this joint? How is the articulating surface modified to increase the joint cavity? What is unique about the shoulder joint capsule (hint: involvement in joint stability)?
2. Why is it more likely to luxate the shoulder joint anteriorly, inferiorly, or posteriorly than it is to luxate superiorly? Explain. What extracapsular ligaments stabilize the shoulder joint? What ligament is involved in a shoulder separation?
3. Describe the bony articulations of the knee joint. Note that although the bony articulations are not strong, the knee joint has a high degree of stability and in exchange for degree of motion. Describe the accessory structures which function to increase stability and refine mobility.
4. Describe the structure of the meniscus of the knee. Why is the medial meniscus more susceptible to injury than the lateral meniscus?
5. Describe the intracapsular ligaments of the knee. What motion do they individually refine and limit?
6. Describe the extracapsular ligaments of the knee. What motion do they individually refine and limit?
7. Why is it likely to damage the medial meniscus, medial collateral and ACL together (Terrible triad) in a lateral stress?
8. What bones articulate in the ankle joint? What bony articulations of these bones strengthen the lateral and medial aspects of the joint? What ligaments and membrane maintain the syndesmosis of the ankle?
9. What ligaments maintain the medial and lateral aspects of the ankle?
10. What are the high ankle joint stabilizing structures? What are the low ankle ligament joint stabilizing structures?
11. Describe the difference between a muscle strain and a sprain.
12. What is the difference between a luxation and a subluxation? What does it mean to be “double jointed”?
13. What is bursitis? How can it be treated?