Synovial Joint Components:

1. **Articular Cartilage**:
   - ✓ Modified hyaline covering:
     - ★ **Functions**:
       a. 
       b. 
     - ★ **Modification**:
       - ☢️ Lacks:
       - ☢️ Matrix more fluid: Releases synovial fluid during:
         - *Clinical*: Chondromalacia

2. **Joint (Articular) Capsule**:
   - ✓ Dense connective tissue:
   - ✓ Continuous with:
     - • Collagen fibers continuous with:
       - ➢ Sharpey’s Fibers:
     - ★ **Functions**:
       a. Adds:
       b. Refines:
       c. Defines:

3. **Synovial Membrane**:
   - ✓ Membrane lining inside of:
     - ➢ Does NOT cover:
   - ★ **Function**:
     a. **Provides**:
     b. **Nourishes**:
       - ☢️ Chondrocytes acquire:
     c. **Shock absorber**
       - ☢️ Absorbs and distributes:
   - • **Synovial Joint Accessory Components**:
     1. **Accessory Ligaments**: *Intrinsic & Extrinsic*
       - ✓ Thick bands of:
Continuous with periosteum & bone:

✓ Function:

   a. Intrinsic Ligaments: “Capsular Ligaments”
      ✓ Distinct thickenings of:
         ➢ Pubofemoral Ligament

   b. Extrinsic Ligaments: “Extracapsular” & “Intracapsular”

1. Extracapsular Ligaments: “Outside”
   ✓ Distinct fiber bands:
      ➢ Ulnar Collateral Ligament
      ➢ Medial Collateral Ligament Knee

2. Intracapsular Ligament: “Within”
   ✓ Distinct fiber bands:
      ➢ Anterior Cruciate Ligament

2. Articular Discs (Menisci):

   • Fibrocartilage Discs
     • Location:
     • Functions:
        a. Change shape of articulating surface
           ⇨ Provide better:
        b. Refines:
           ⇨
        c. Absorb:
        d. Channel & distribute:

3. Bursae: “Fluid filled pouch”

   • Lined w/
   • Location:
     ✓
     ✓ Form where:
        ➢ Around: Ligaments, tendons, skin, bone
   • Function:
Selected Articulations (Joints):

1. Intervertebral Articulations:
   - 2 sites of articulation (Joints):
     a. Articulation:
        - Structural:
        - Functional:
     b. Articulation:
        - Structural:
        - Functional:

• Intervertebral Joint:

1. Intervertebral Discs:
   - Separate adjacent:
   - Disc structure: 2 layers
     a. Annulus Fibrosus:
        ⇨ Collagen fibers secure:
     b. Nucleus Pulposus:
        ⇨ 1° water (75%), Reticular & Elastic Fibers
   - Function: Compression cushioning - “Shock Absorbers”
        ⇨ Allow rocking movements while maintaining:

2. Intervertebral Ligaments:
   - Function:
   - Spinal Ligaments:
     a. Longitudinal Ligaments: Anterior & Posterior
        ⇨ Location: Anterior & posterior aspects of:
     b. Ligamentum Flavum:
        ⇨ Location: Anterior surface of:
     c. Spinous Ligaments: Inter & Supraspinous:
        ⇨ Interconnect:

• Clinical Applications:
   a. Discs comprise ~25% of:
**Water content:**

- Result:
- Increasing risk of:

b. **Slipped (Bulging) Disc**: Annulus Fibrosus bulges into:

**Cause**: Disc Compression

**Result**: Impingement of:

c. **Herniated Disc**:

- Nucleus Pulposus breaks through:

**Study Questions**:

1. Diagram a typical synovial joint. Label ALL joint structures. (Draw 2 articulating bones with the synovial joint structures).
2. Describe the functional significance of the joint capsule. What type of tissue comprises the joint capsule? How is the joint capsule attached to the bone (What are Sharpey’s Fibers)?
3. The articular cartilage functionally separates the articulating bone surfaces, what is the functional significance of this separation. How else does the cartilage function to increase joint function and performance?
4. What is the functional significance of the meniscal cartilage? When menisci are torn one option the injured individual has is to leave the torn menisci within the joint. What possible complications might this choice produce? Why does the knee joint in particular need menisci as part of the anatomical make-up of the joint?
5. What is the functional significance of synovial fluid? What advantages does “warming-up” prior to an exercise have on a synovial joint function?
6. What is a ligament? How are the ligaments attached to the bone? Describe the similarities & differences between extracapsular & intracapsular ligaments. Provide examples.
7. What are burase? What might increase the size of existing burase or cause the appearance of new burase?
8. Describe the 2 different articulations of the intervertebral joints. What is the anatomical and functional classification of each?
10. Describe the supporting ligaments of the spinal column: Anterior and posterior longitudinal ligaments, ligamentum flavum, spinous ligaments (supra spinous and interspinous) ligaments.
12. Which function to limit hyperextension of the vertebral column (back)? Which function to limit flexion of the vertebral column?
13. What is the difference between a slipped disc and a herniated disc? Why do you think herniations usually occur in a posterior direction? Why do they generally protrude into the intervertebral canal or the vertebral canal? Why is this condition characterized by extreme pain?