Laboratory Exercise 4: Articulations and Body Movements

Introduction

The goals of this laboratory session are to study the three types of joints in the human body and characterize their structure and mobility. Special emphasis will be placed in the structure and function of synovial joints, and you will study the knee, hip, and shoulder joint in detail. You should also become familiar with the various types of body movements allowed by synovial joints.

Preparation -- required

1. Read and study Exercise 13 in your lab manual. At times you will also have to consult Chapter 8 in your textbook

2. Complete the assigned in lab exercise.

3. Homework: Complete review Sheet exercise 13 in your lab manual, pp. 533 – 536. This is due <u>at the time you take your practical exam</u>. You can turn in it earlier if preferred – if so give it to Mani in class.

Outline – specific objectives

1. Structural classification of joints – features and examples
   A. fibrous joints
   B. cartilaginous joints
   C. synovial joints

2. Functional classification of joints – basis for classification, correlate with above structural classification
   A. synarthroses
   B. amphiarthroses
   C. diarthroses

3. Fibrous joints – structural features, examples
   A. sutures
   B. syndesmoses

4. Cartilaginous joints – structural features, examples
   A. symphyses
   B. synchrondoses

5. Synovial joints (see Chapter 8, text)
   A. General structure
      a. Articular cartilages
      b. Joint cavity
      c. Articular capsule
      d. Synovial membrane
      e. Synovial fluid
      f. Strengthening ligaments
         i. Intrinsic or capsular ligaments
         ii. Extrinsic ligaments
            - Extracapsular ligaments
            - Intracapsular ligaments

   B. Movements allowed by synovial joints
      a. Gliding movements
      b. Angular movements
         i. flexion
         ii. extension
         iii. dorsiflexion and plantar flexion of foot
         iv. abduction
         v. adduction
         vi. circumduction
      c. Rotation
      d. Supination and pronation
      e. Inversion and eversion
      f. Protraction and retraction
      g. Elevation and depression
      h. Opposition

   C. Types of synovial joints – general description, examples
      a. Plane joints
      b. Hinge joints
      c. Pivot joints
      d. Condyloid joints
      e. Saddle joints
      f. Ball-in-socket joints

6. Select synovial joints
   A. Knee joint
      a. Medial collateral ligament
      b. Lateral collateral ligament
      c. Patellar ligament
      d. Posterior cruciate ligament
      e. Anterior cruciate ligament
      f. Medial and lateral meniscus

   B. Hip joint
      a. Ileofemoral ligament
      b. Pubofemoral ligament
      c. Ischiofemoral ligament
      d. Ligamentum teres

   C. Shoulder joint
      a. Coracohumeral ligament
      b. Glenohumeral ligament
      c. Transverse humeral ligament
      d. Tendon of long head of biceps brachi muscle
      e. Role of rotator cuff