



What is a Joint?

- **Joint:** Where two or more bones meet.
 - Etymology: [joint \(n.\)](#) late 13c., “a part of a body where two bones meet and move in contact with one another,” from Old French joint “joint of the body” (12c.), from Latin iunctus “united, connected, associated,” past participle of iungere “join” (see [jugular](#)). ([Etymology Online](#))
- The **naming** of joints:
 - The names of joints are nothing to be intimidated by -no matter how long or complex the word may appear. Joints are generally named by combining the names of the two bones or prominences in contact with one another. (The technical term for combed words is a [portmanteau](#))
 - Examples:
 - The shoulder is technically referred to as the glenohumeral joint – where the humerus meets the glenoid fossa of the scapula.
 - The knee is technically referred to as the tibiofemoral joint – where the tibia meets the femur meet
- **Joint Motion:**
 - All motion occurs at joints
 - Muscles pull on bones which creates movement at joints
 - The type/structure of a joint, dictates which [joint actions](#) are possible at that joint.

Types of Synovial Joints:

- A. Hinge
- B. Ball and Socket
- C. Pivot
- D. Gliding
- E. Saddle
- F. Condylloid

The importance of understanding joint structure:

- In future lessons we will be discussing the function of each muscle, and you will be asked to determine the [joints actions](#) that each muscle is capable of producing. If you know the type of joint the muscle crosses, you will be able to reduce the possible actions to the few the joint is capable of producing. Regardless of how a muscle attaches to a bone, it is not capable of producing motion restricted by the structure of the joint.
Practical application: As we analyze muscles, we will start each lesson with a "word bank of joint actions" for each joint the muscle crosses.



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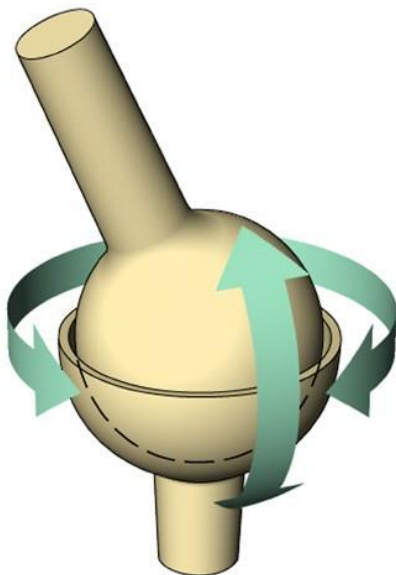
Hinge:

Examples:

- Elbow (humeroulnar)
- Knee (tibiofemoral)
- Ankle (tibiotalor/talocrural)
- Interphalangeal Joints

Joint Actions (Sagittal Plane):

- Flexion
- Extension



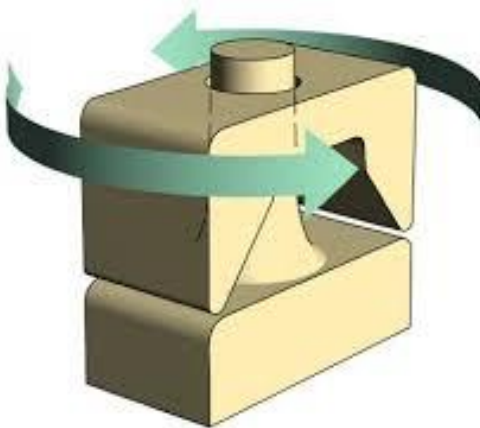
Ball and Socket:

Examples:

- Shoulder (glenohumeral)
- Hip (acetabulofemoral joint)

Joint Actions (All Planes):

- Flexion
- Extension
- Adduction
- Abduction
- Internal Rotation
- External Rotation
- Horizontal Abduction
- Horizontal Adduction



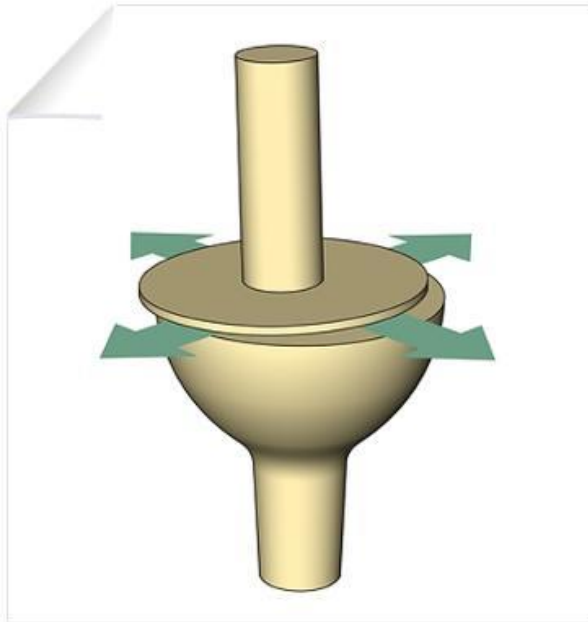
Pivot Joints:

Examples:

- Atlanto-axial Joint (C1 - C2)
- Proximal Radioulnar Joint

Joint Actions (Transverse Plane):

- Internal Rotation
- External Rotation
- Pronation
- Supination



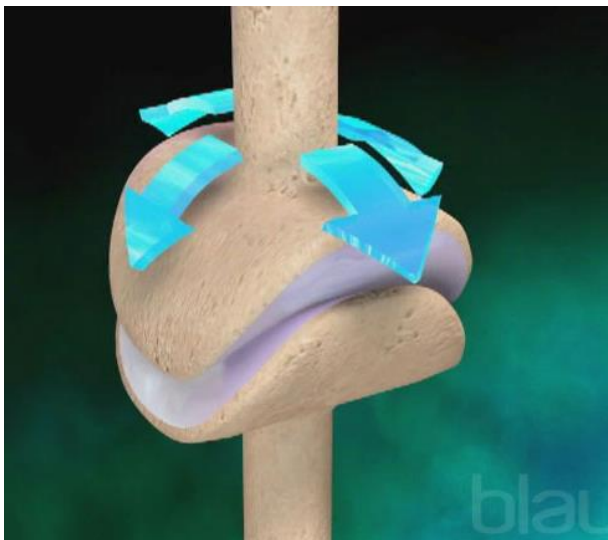
Gliding Joints:

Examples:

- Facet Joints of the Spine
- Tarsal joints of the foot/ankle
- Carpal joints of the wrist
- Acromioclavicular Joint
- Tibiofibular Joints

Joint Actions (All Planes - in small amounts):

- Flexion, Extension
- Abduction, Adduction
- Internal Rotation, External Rotation
- Pronation, Supination
- Protraction, Retraction
- Elevation, Depression
- Upward Rotation, Downward Rotation
- Anterior Tipping, Posterior Tipping



Saddle Joints:

Examples:

- 1st Carpometacarpal (1st CMC) Joint
- Sternoclavicular (SC) Joint

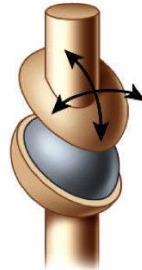
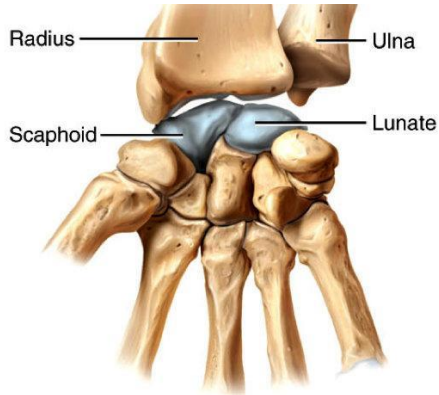
Joint Actions (Mostly Biplanar Joint - Allows for motion in any 2 planes):

1st CMC (Sagittal and Frontal)

- Flexion, Extension
- Abduction, Adduction

SC Joint (Frontal and Transverse)

- Elevation, Depression
- Protraction, Retraction



Condyloid Joints:

Examples:

- 2nd – 5th metacarpophalangeal joints
- Wrist

Joint Actions (Biplanar Joint - Sagittal and Frontal):

- Flexion
- Extension
- Abduction
- Adduction

Note: The knee (tibiofemoral) joint is occasionally referred to as a condyloid joint

- In this case the 2 planes of motion allowed are sagittal and transverse, and the joint actions the knee is capable of are flexion, extension, internal rotation and external rotation.