

# Section 26: Joints – Types and Movement

# Synovial joints: stability

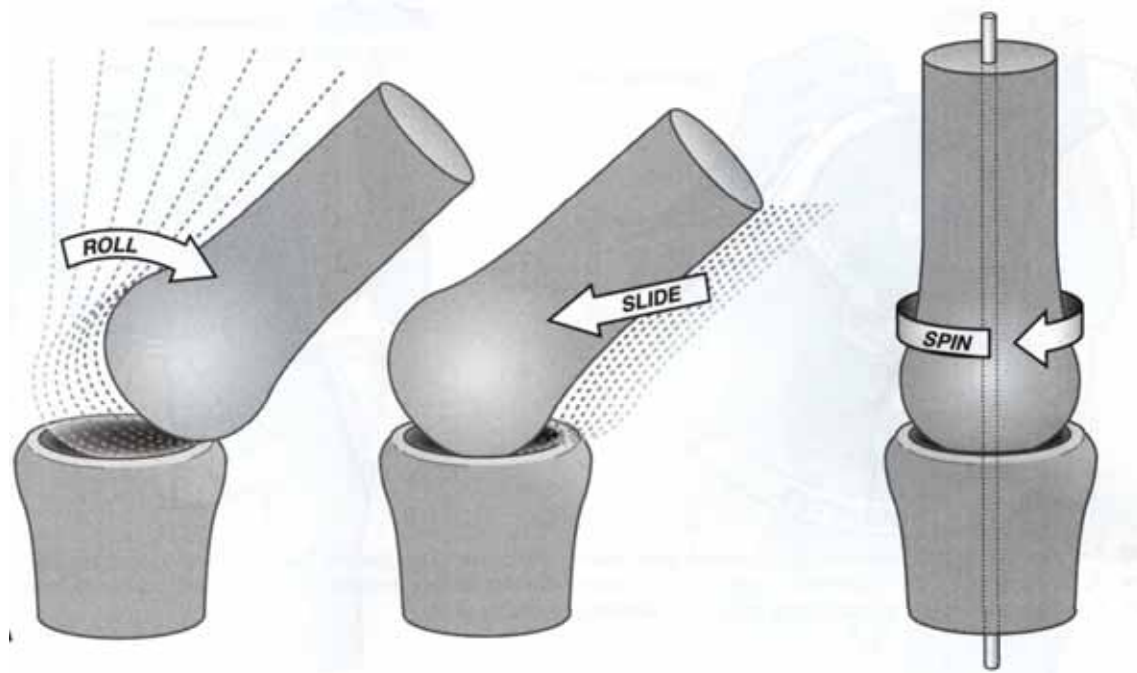
- Stability is determined by:
  - Articular surfaces – shape determines what movements are possible
  - Ligaments – unite bones and prevent excessive or undesirable motion
  - Muscle tone

# Synovial joints: stability

- Muscle tone is accomplished by:
  - Muscle tendons across joints acting as stabilizing factors
  - Tendons that are kept tight at all times by muscle tone

# Terms

- Pivot Point – The point that the joints rotate about.
- The fundamental movements are roll, slide, and spin.



# More Terms

- Motion – Either active or passive
  - Active is the patients movement of his or her arm
  - Passive is the examiners movement of the patient's arm
- Extension – Natural movement opposite to flexion at the zero position.
- Hyperextension – Unnatural motion opposite to flexion at the zero position.

# 8.8-8.13 Joint Types

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**Plane Joint**



**Saddle Joint**



**Hinge Joint**



**Pivot Joint**



**Ball-and-Socket Joint**



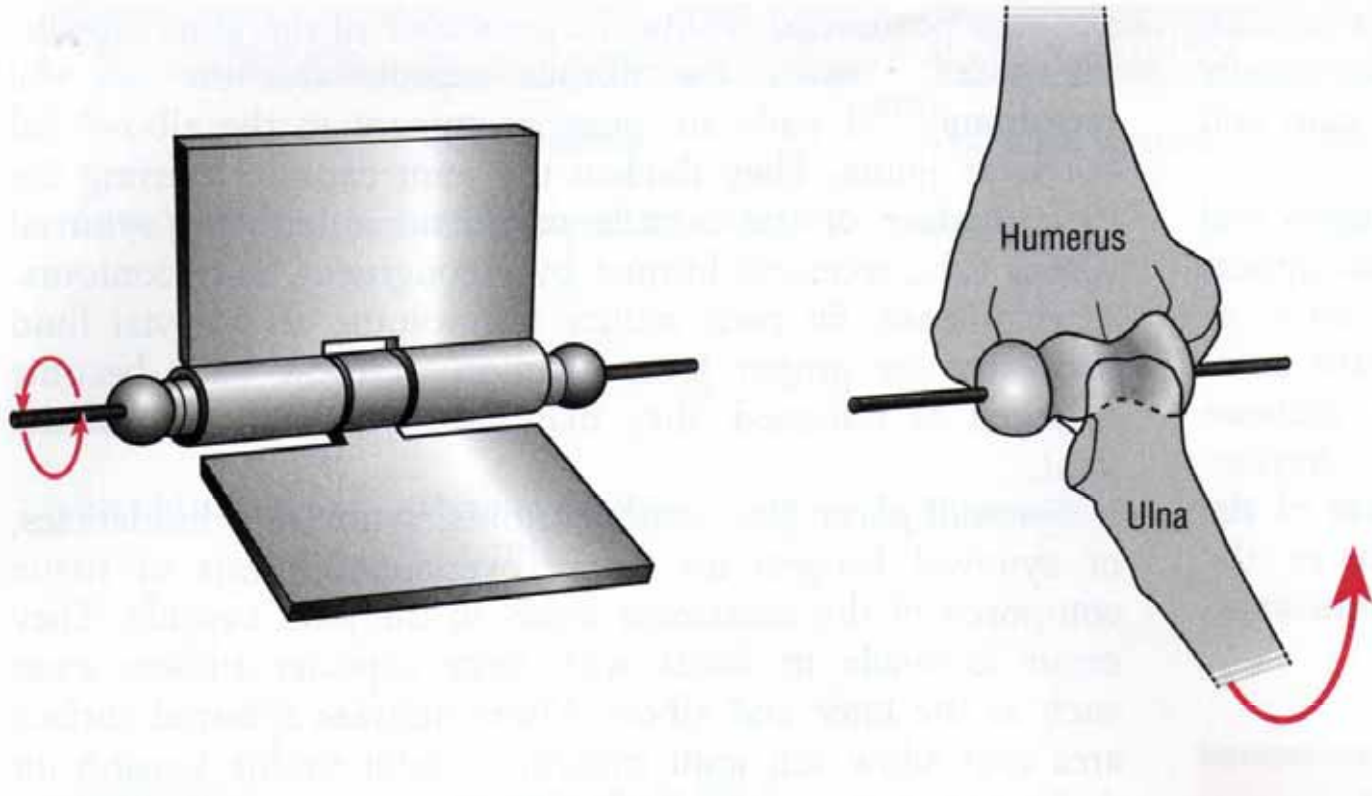
**Ellipsoid Joint**



# Types of synovial joints

- Hinge joints
  - Cylindrical projections of one bone fits into a trough-shaped surface on another
  - Motion is along a single plane
  - Uniaxial joints permit flexion and extension only

# Hinge Joint

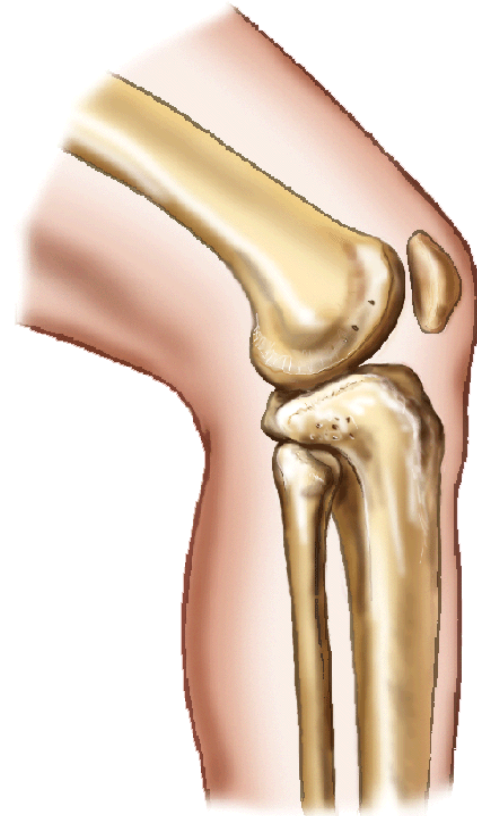


An example of a hinge joint is the elbow joint.

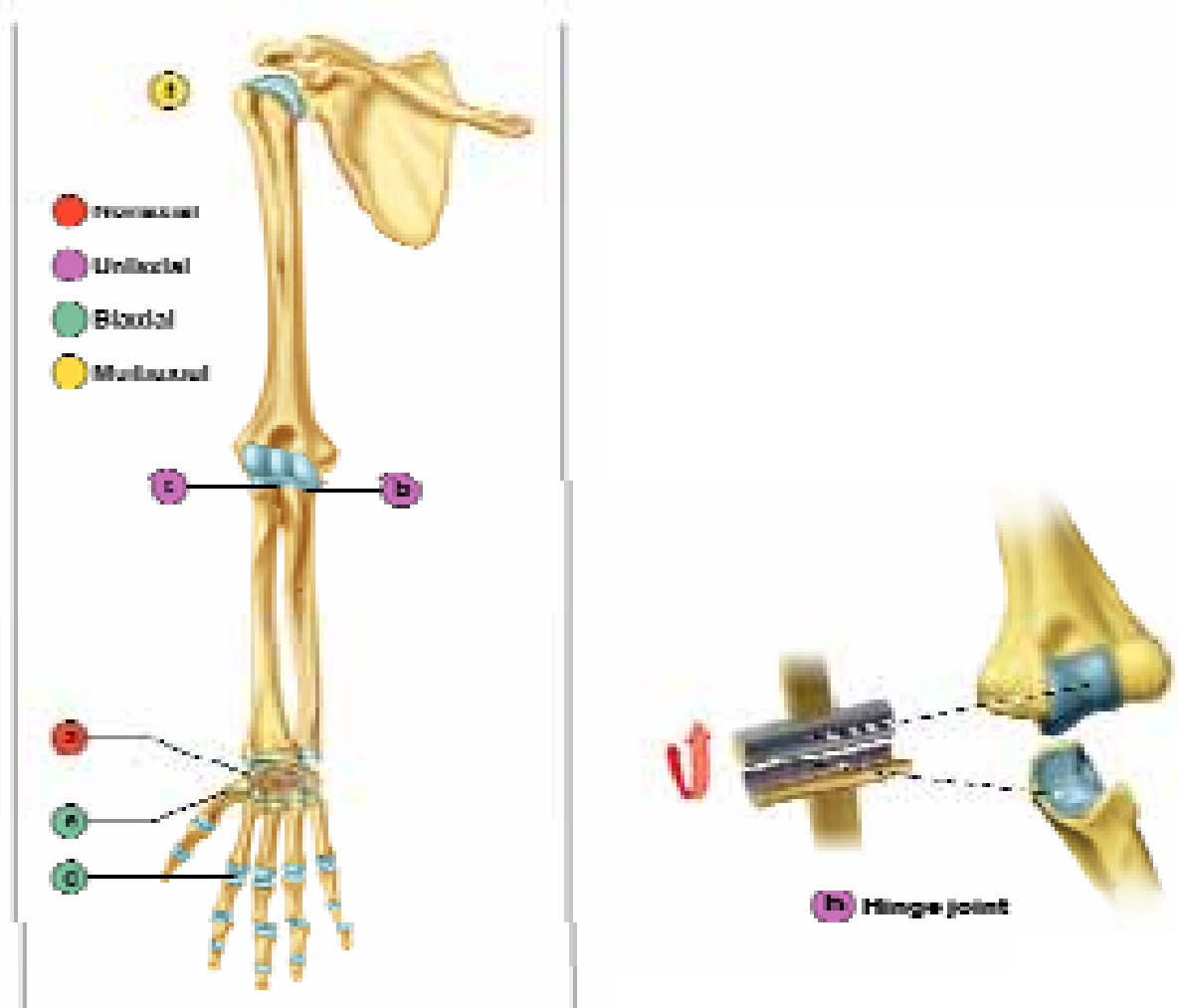


# Hinge Joints

- The knee joint
- In the knee joint the femur articulates with the tibia.
- The patella (knee cap) helps to give a better angle of pull.
- The fibula is not part of the knee joint and so the tibia is the weight bearing bone.



# Hinge Joints

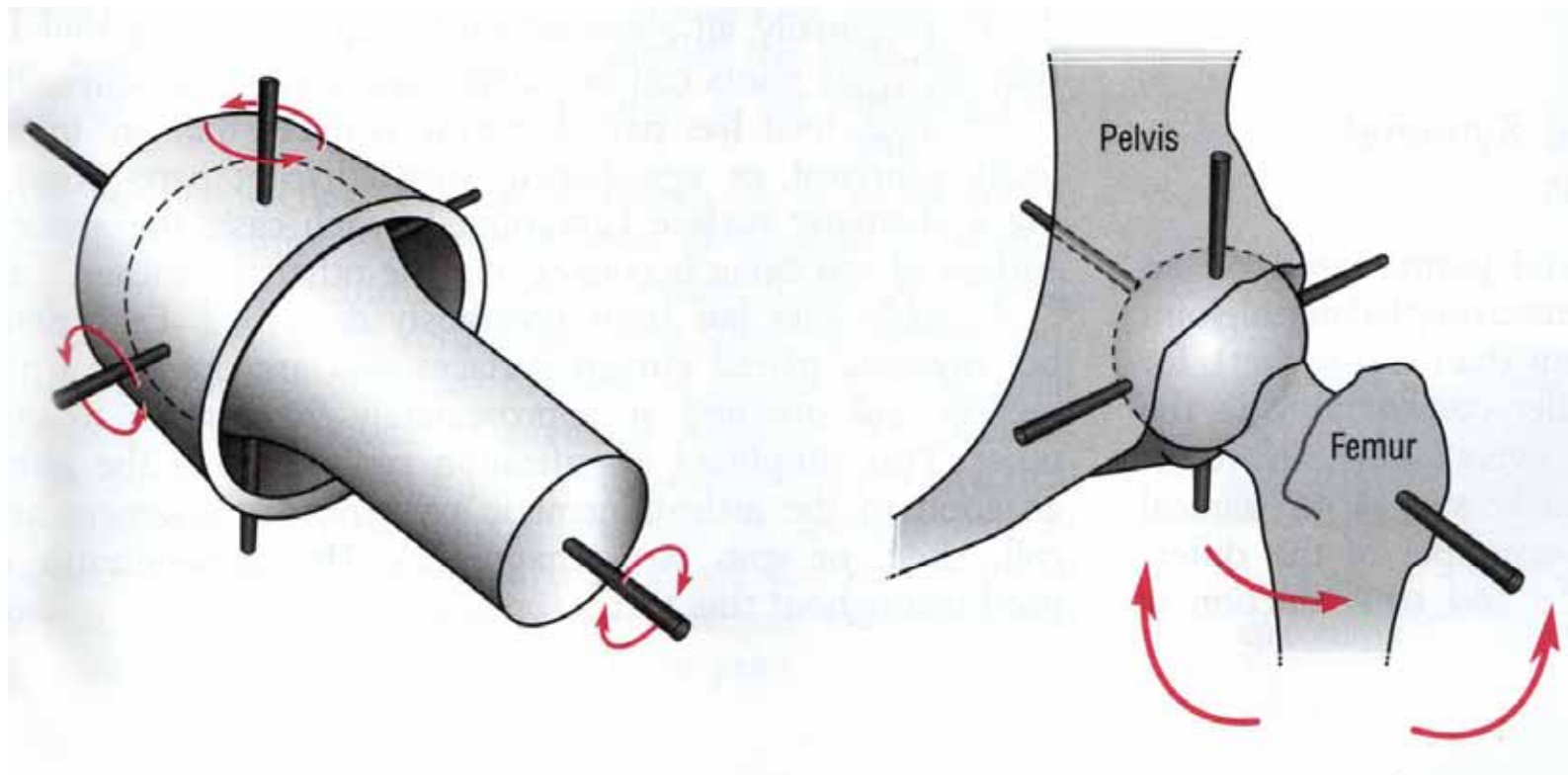


- A ball-and-socket joint consists of a ball (head) inserted into a socket. Movement is multiaxial allowing movement in almost any direction

# Ball-and-Socket joints

- A spherical or hemispherical head of one bone articulates with a cuplike socket of another
- Multiaxial joints permit the most freely moving synovial joints

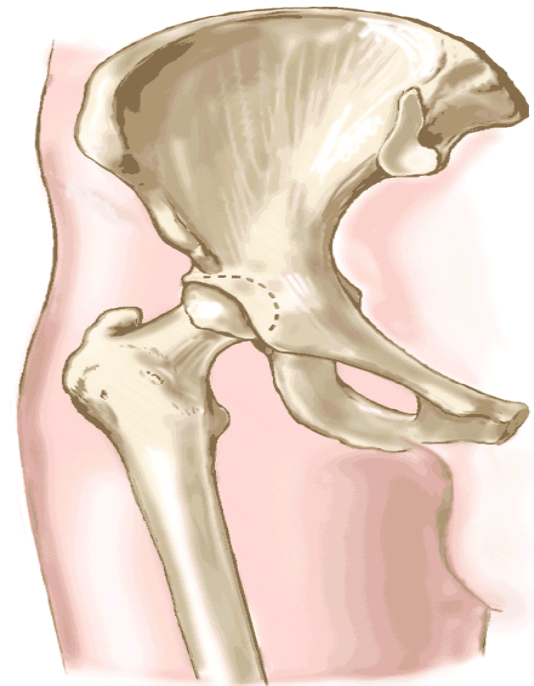
# Ball-and-Socket Joint



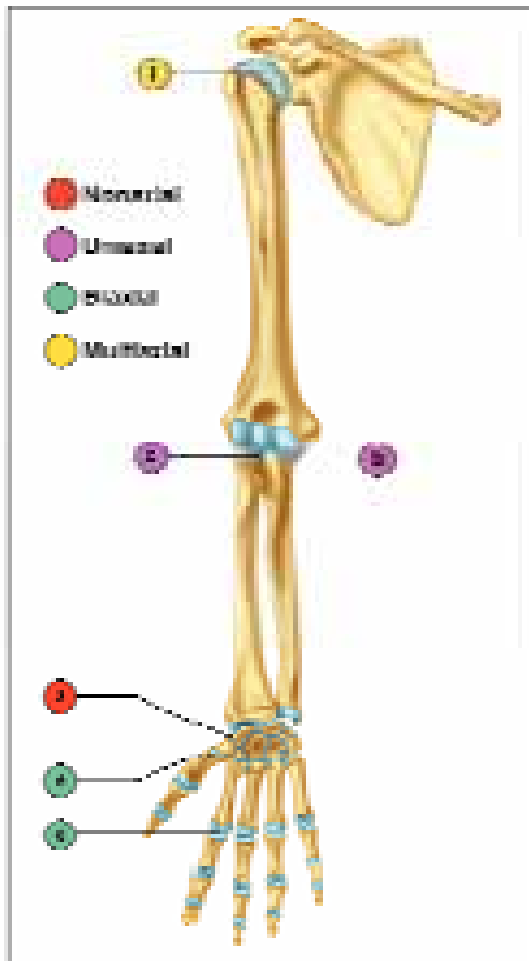
An example of a ball-and-socket joint is the hip joint.

# Ball & socket joints

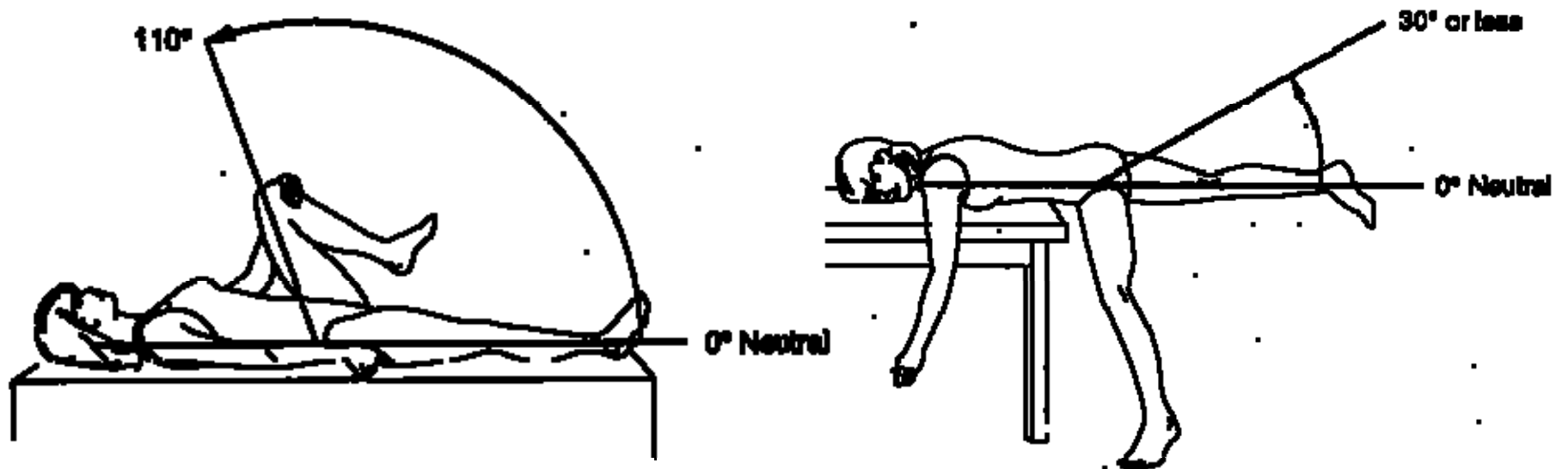
- **The hip joint**
- The head of the femur fits into a deep cavity called the acetabulum on the pelvic bone.
- This deep cavity gives the hip joint stability.
- The presence of strong ligaments add to the stability making it difficult to dislocate the hip.



# Ball-and-Socket Joints

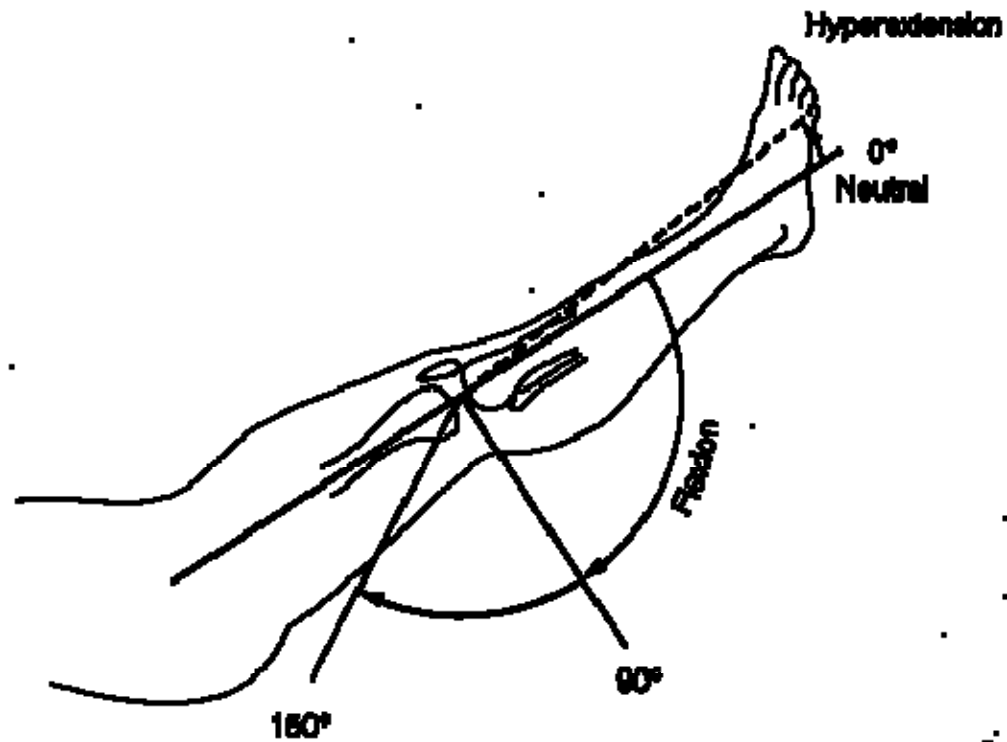


# Hip Joint ROM





# Knee Joint ROM



# Angular movements

- Angular movements involve changing the angle between two parts of the body
- Found in most of all our limb joints

# Flexion / Extension

- Flexion means to bend (decrease the angle)
- Extension means to straighten (increase the angle)

# 8.15 Flexion and Extension

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