SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES



Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai Approved by Pharmacy Council of India, New Delhi.

Coimbatore -641035

COURSE NAME: HUMAN ANATOMY AND PHYSIOLOGY (ER20-14T)

I D. PHARM

TOPIC 1: JOINTS

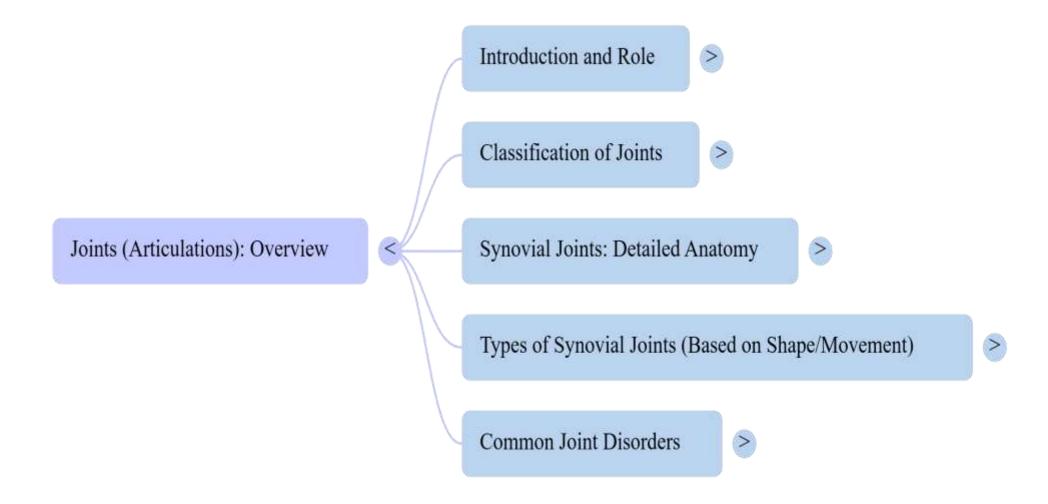


DESIGN THINKING IN JOINTS

- 1. Empathize: Understand how joints help in body movement and flexibility.
- 2. Define: Define what a joint (articulation) is the connection between two or more bones.
- 3. Ideate: Brainstorm ways to visualize and remember different joints.
- 4. Prototype: Create diagrams, posters, or clay models of joints.
- 5. Test: Evaluate your understanding by identifying joints on skeleton models or answering quiz questions.

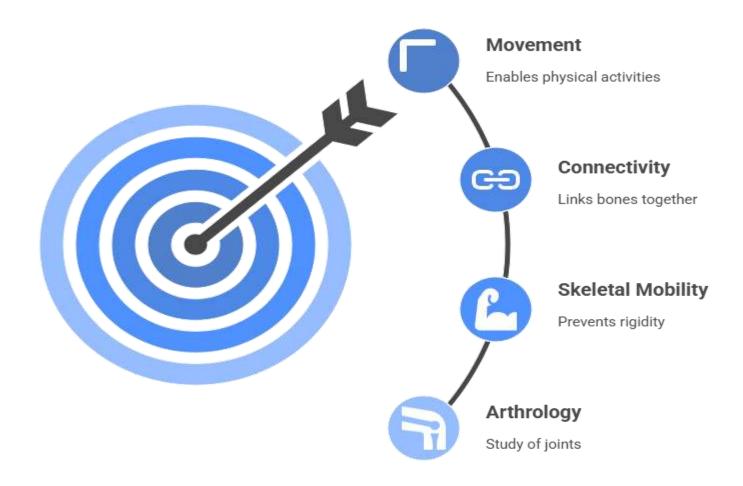
MINDMAP FOR JOINTS





Introduction- Joints





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Joints classification

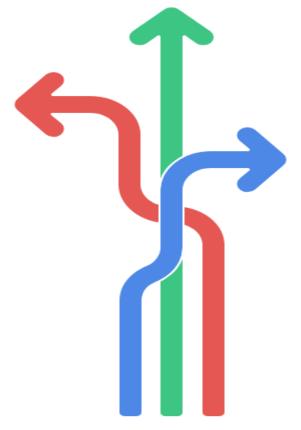


Cartilaginous Joints

United by cartilage, providing some flexibility and shock absorption.

Fibrous Joints

Connected by dense connective tissue, offering stability but limited movement.

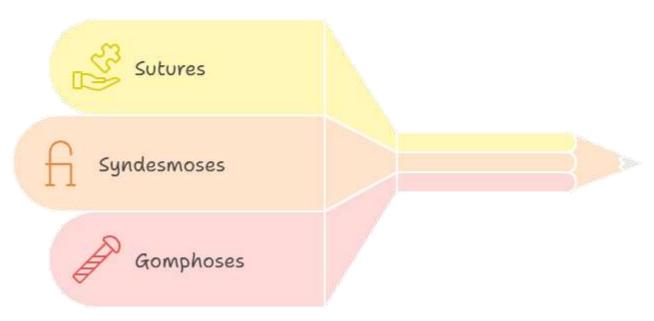


Synovial Joints

Characterized by a fluidfilled cavity, allowing for a wide range of motion.



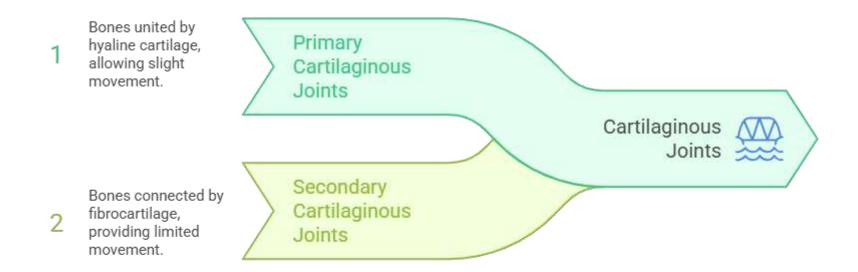
Types of Fibrous Joints



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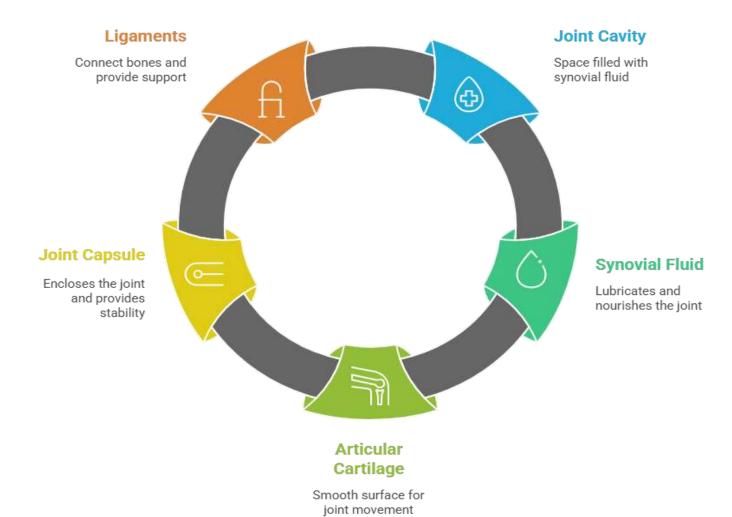
Types of Cartilaginous Joints



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Synovial Joints

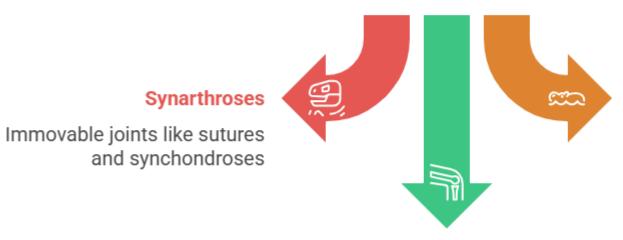




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Functional classification of Joints



Freely movable joints like synovial joints

Diarthroses

Amphiarthroses

Slightly movable joints like syndesmoses and symphyses

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Components of a Synovial Joint

Synovial Fluid

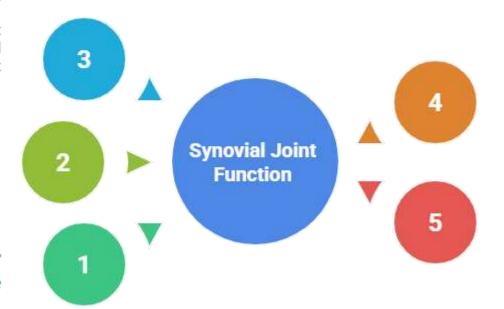
Viscous fluid that lubricates and nourishes the joint

Joint Capsule

Double-layered structure providing support and fluid production

Articular Cartilage

Smooth cartilage that reduces friction and absorbs shock



Reinforcing Ligaments

Strong bands that stabilize the joint

Nerves and Blood Vessels

Provide sensory information and nutrients

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Types of synovial joint





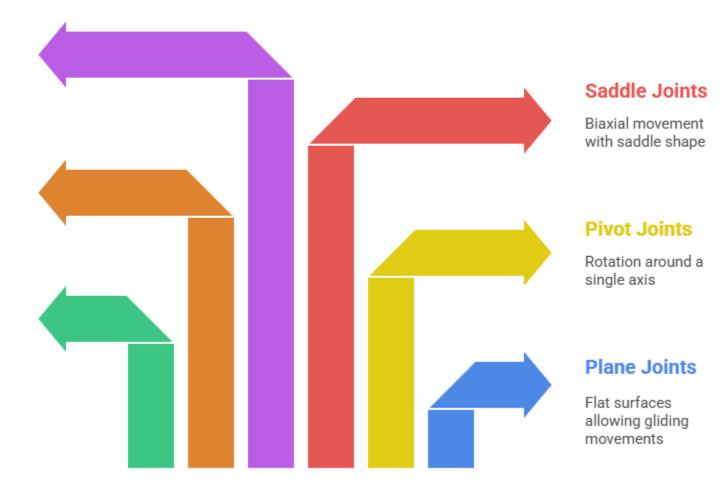
Multiaxial movement with spherical head

Condylar Joints

Biaxial movement with oval condyle

Hinge Joints

Uniaxial movement like flexion and extension



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Synovial Joint Movements



Flexion

Depression

Decreasing the angle between bones

Extension



Plantar Flexion

Pointing the toes downward

Dorsiflexion

Lifting the foot toward the shin

Supination

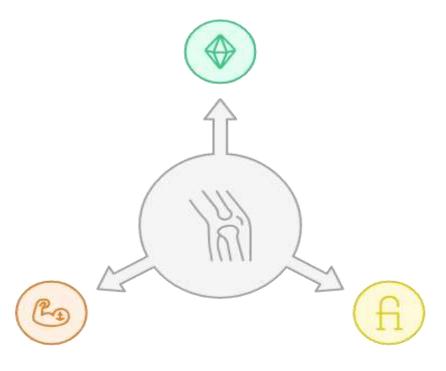
Rotating the forearm palm up

Factors Affecting Joint Stability



Articular Surface Shape

Deep sockets enhance stability by providing a secure fit.



Muscle Tone

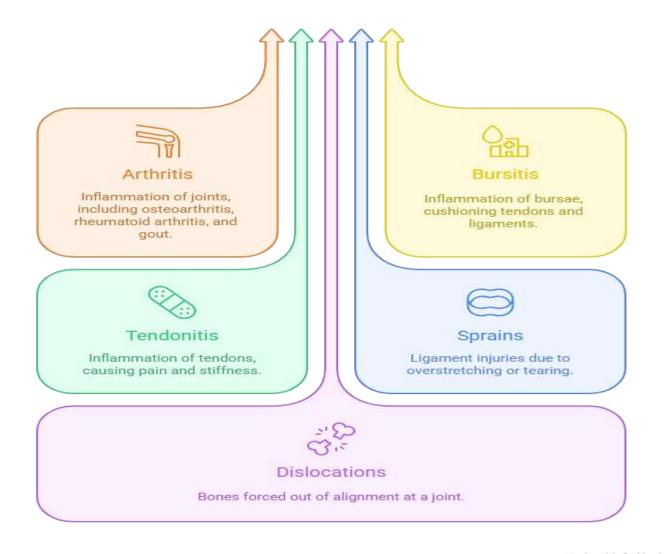
Muscle tendons stabilize joints, especially those with poor surface fit.

Ligaments

Strong ligaments prevent excessive movement and maintain joint integrity.

Common Joint Disorders





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Strategies for Joint Health

Regular Exercise

Strengthens muscles and improves flexibility

Healthy Weight

Reduces stress on weight-bearing joints

Proper Posture

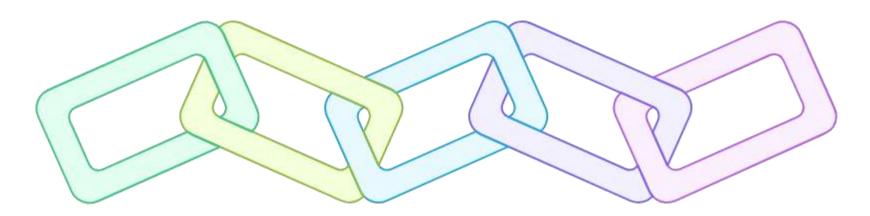
Minimizes strain on joints

Balanced Diet

Provides essential nutrients for joint health

Avoiding Overuse and Injury

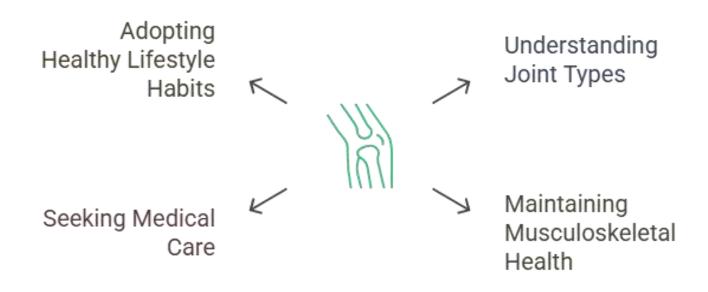
Prevents joint damage



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Joint Health Strategies



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Summary



Structural Classification

Focuses on the material binding bones and the presence of a joint cavity.



Functional Classification

Emphasizes the degree of movement allowed at the joint.



Synovial Joint Anatomy

Details the key features of the most versatile joint type.



Types of Synovial Joints

Classifies joints based on shape and movement.



Common Joint Disorders

Highlights prevalent conditions affecting joint health.

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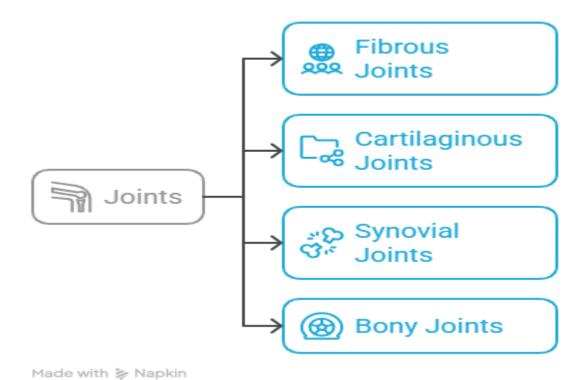
ASSESSMENTS





1. Which of the following is NOT a classification of joints based on structure?



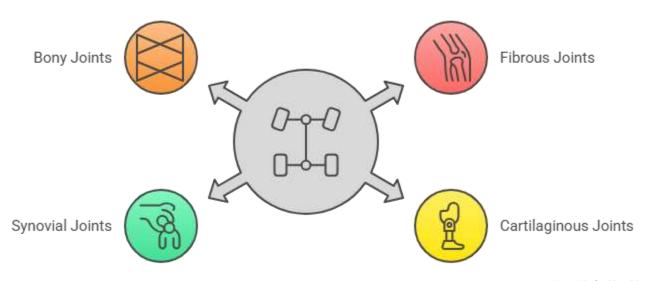




2. Which type of joint allows the greatest range of motion?







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3. Sutures are an example of which type of joint?





4. Which of the following is a characteristic of synovial joints?



5. The intervertebral discs are examples of which type of joint?



REFERENCES



- 1.Tortora GJ, Derrickson BH. *Principles of Anatomy and Physiology*. 15th ed. Hoboken (NJ): John Wiley & Sons; 2017. p. 250–270.
- 2.Marieb EN, Hoehn K. Human Anatomy & Physiology. 11th ed. Boston (MA): Pearson Education; 2019. p. 280–310.
- 3. Standring S, editor. *Gray's Anatomy: The Anatomical Basis of Clinical Practice*. 42nd ed. London: Elsevier; 2020. p. 88–112.
- 4.Ross MH, Pawlina W. *Histology: A Text and Atlas with Correlated Cell and Molecular Biology.* 8th ed. Philadelphia (PA): Wolters Kluwer; 2020. p. 204–210.
- 5. Snell RS. Clinical Anatomy by Regions. 10th ed. Philadelphia (PA): Wolters Kluwer; 2019. p. 92–107.



