

Chapter 45

Musculoskeletal Function and Assessment

Skeletal System Tissues

- Bone
- Cartilage
- Fibrous Connective Tissue (Ligaments)

Skeletal System Functions

- Movement
- Protection
- Stores Calcium

Muscular System Tissues

- Skeletal Muscle
- Fibrous Connective Tissue (Tendons)
- Fasciae

Muscular System Functions

- Movement
- Heat Production
- Returns Blood From Legs

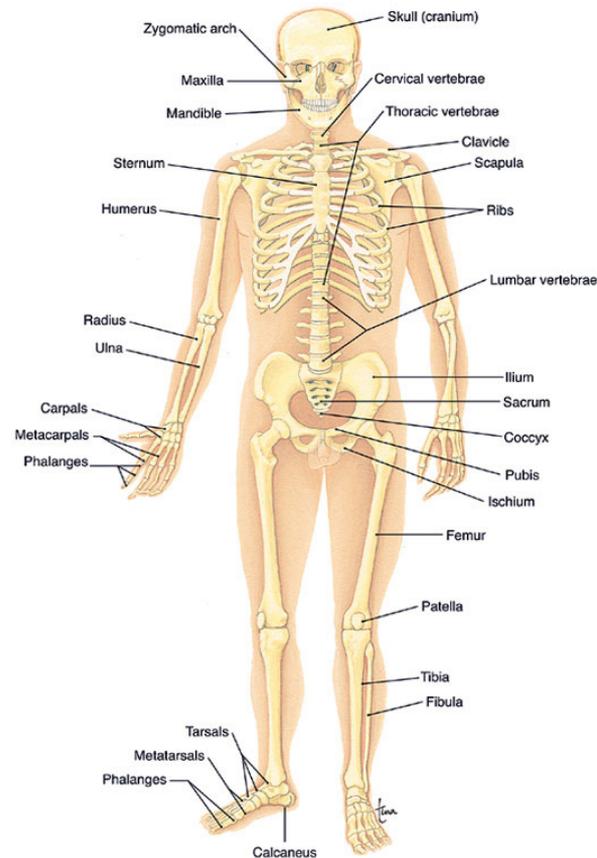
Bone Tissue

- Osteocytes
- Calcium Salts
- Collagen
- Periosteum

Growth of Bone

- Osteoblasts Produce Bone Growth and Repair Bone

Anterior Full Skeleton

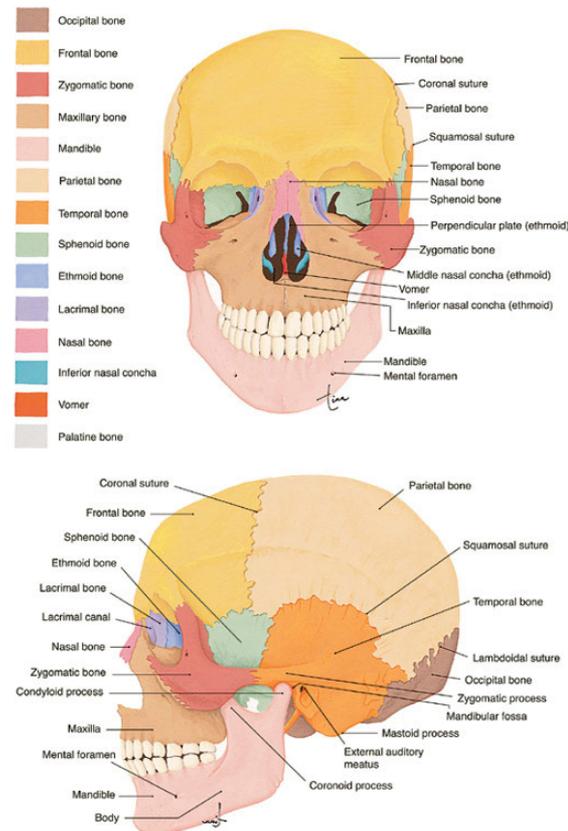


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Structure of Skeleton

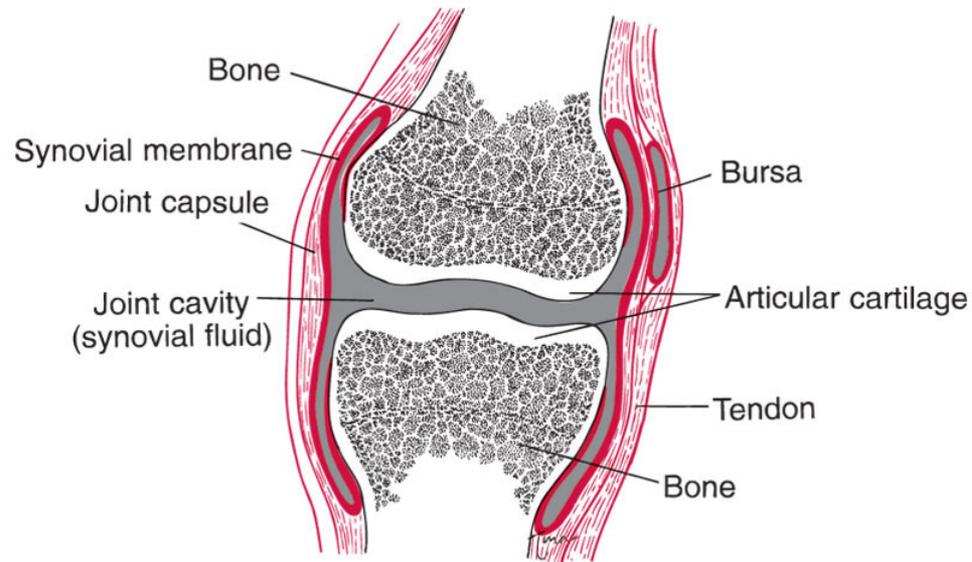
- 206 Bones
- Axial Skeleton
 - ◆ Skull, Vertebral Column, Rib Cage
- Appendicular Skeleton
 - ◆ Arms/Legs, Shoulder, Pelvic Girdles

Anterior and Lateral Skull



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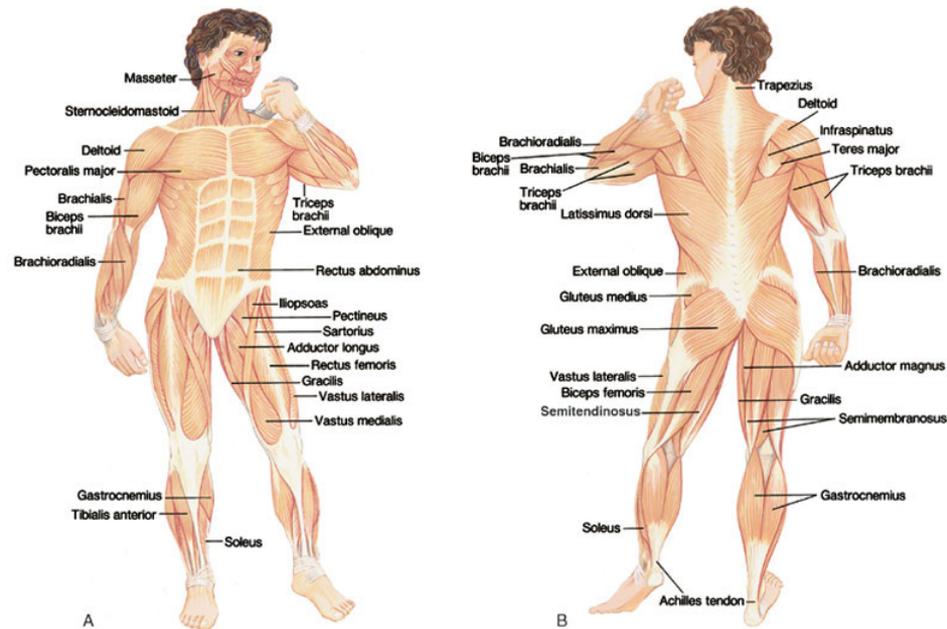
Typical Synovial Joint



Appendicular Skeleton

- Structure of Synovial Joints

Major muscles



Muscle Structure and Arrangements

- Over 600 muscles
- Anchored to bones by tendons
- Antagonistic muscles
- Synergistic muscles

Role of Nervous System

- Skeletal muscles are voluntary muscles
- Require nerve impulses for contraction

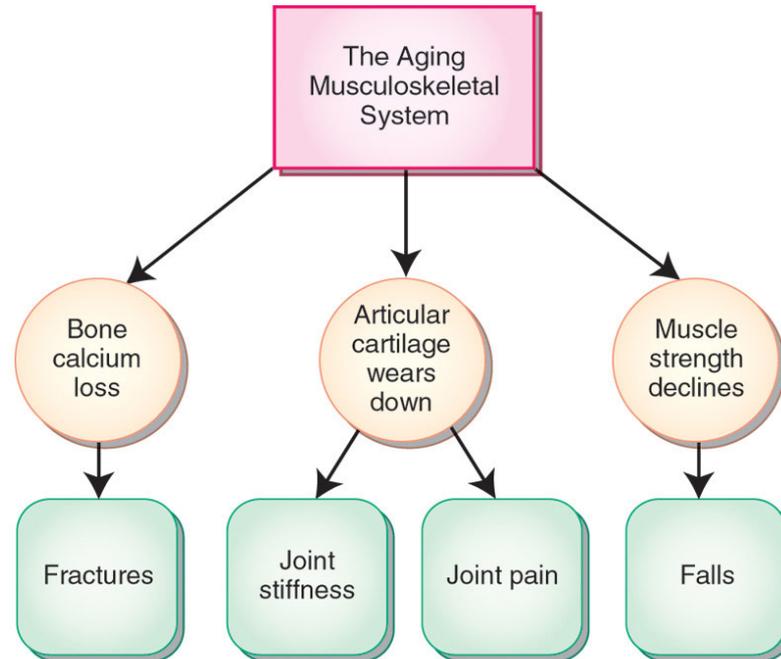
Neuromuscular Junction

- Termination of Motor Neuron on Muscle Fiber
- Contains Neurotransmitter Acetylcholine

Neuromuscular Junction

- Nerve Impulse Arrives at Terminal
- Release of Acetylcholine across Synaptic Cleft
- Acetylcholine Bonds to Acetylcholine Receptors
- Sarcomere Shortens

Aging and Musculoskeletal System



Aging and Musculoskeletal System

- Decreased Muscle Mass/strength
- Decreased Elasticity of Ligaments, Tendons, Cartilage
- Decrease in Intervertebral Space
- Changes in Posture and Gait Changes

Aging and Musculoskeletal System

- Impaired Mobility
- Increased Risk for Falls
- Pain

Data Collection for Musculoskeletal System

- Subjective Data
 - ◆ History
 - Injury
 - Occupation
 - Family History
 - Current Health
 - Diet History

Data Collection for Musculoskeletal System

- Physical Assessment
 - ◆ Inspection, Palpation, Range of Motion
- Psychosocial Assessment
 - ◆ Deformities affect Body Image

Diagnostic Tests

- Laboratory Tests
 - ◆ Serum Calcium
 - ◆ Serum Phosphorus
 - ◆ Alkaline Phosphatase
 - ◆ CK-MM
 - ◆ Aldolase
 - ◆ AST, LDH

Diagnostic Tests

- X-rays
- Computed Tomography
- Arthrography
- Myelogram
- Magnetic Resonance Imaging
- Gallium Scan

Diagnostic Tests

- Thallium Scan
- Arthroscopy
- Bone or Muscle Biopsy
- Ultrasonography
- Arthrocentesis
- Electromyography