

Musculoskeletal Function

Anatomy and Physiology

Bones

- Long Bones
- Short Bones
 - Wrist and ankle
- Flat Bones
 - Skull, sternum, and ribs
- Irregular Bones
 - Vertebrae, scapula and the bones in the pelvis

Bone Cells

- Osteoblasts
 - Cells that form bone
- Osteocytes
 - Cells that maintain bone
- Osteoclasts
 - Cells that reabsorb bone
- Compact – smooth and dense
- Spongy – contain spaces
 - Contain bone marrow

Joints

- Joints – where two bones meet
- Hold the skeleton together
- 3 types of joints
 - Immovable – skull structures
 - Slightly movable – vertebral joints
 - Freely movable – limbs, shoulders, hips
 - Bursae – small sacs of synovial fluid that cushion and protect bone

Joints

- Synovial or Free moving
 - Abduction
 - Adduction
 - Extension
 - Flexion
 - Dorsiflexion
 - Pronation
 - Supination

Ligaments

- Bands of connective tissue that connect bone to bone.
- Ligaments either limit or enhance movement
- Provide joint stability
- Enhance joint strength

Tendons

- Fibrous connective tissue bands
- Connect muscle to bone
- Enable bones to move when muscles contract

Muscles

- 3 Types
 - Skeletal muscle
 - Voluntary movement
 - Smooth muscle
 - Involuntary movement
 - Cardiac muscle
 - Involuntary movement

Changes in the older adult

- Older adults/women lose bone mass
- Joint and disk cartilage dehydrates and loses flexibility
- Posture changes-height loss
- Cartilage deteriorates causing pain and stiffness
- Ligaments and tendons lose flexibility
- Skeletal muscle atrophy
- Muscle tone, strength and stamina decreases

Health History

- Ask about chief complaint
 - Onset
 - Duration
 - Pain
 - Location, radiation, character, aggravation or alleviation
 - Effects on ADL's
 - Precipitating events...falls, injury etc
 - Associated complaints
 - Past history

Physical Examination

- Posture, gait and ability to walk and change direction
- Ability to sit and rise from chair
- ADL's – with or without assistance
- ROM/Muscle Strength (table 41-2, 41-4)
- Inspection/palpation
 - Look for any abnormalities
 - Compare corresponding areas

Diagnostic Tests

- Laboratory testing
 - ESR, C-reactive protein, Calcium, Phosphorous, Alkaline Phosphatase. Uric acid, rheumatoid factor
- Radiologic studies
 - X-ray, CT scan, MRI, bone density scan, bone scan, arthrocentesis, and arthroscopy
