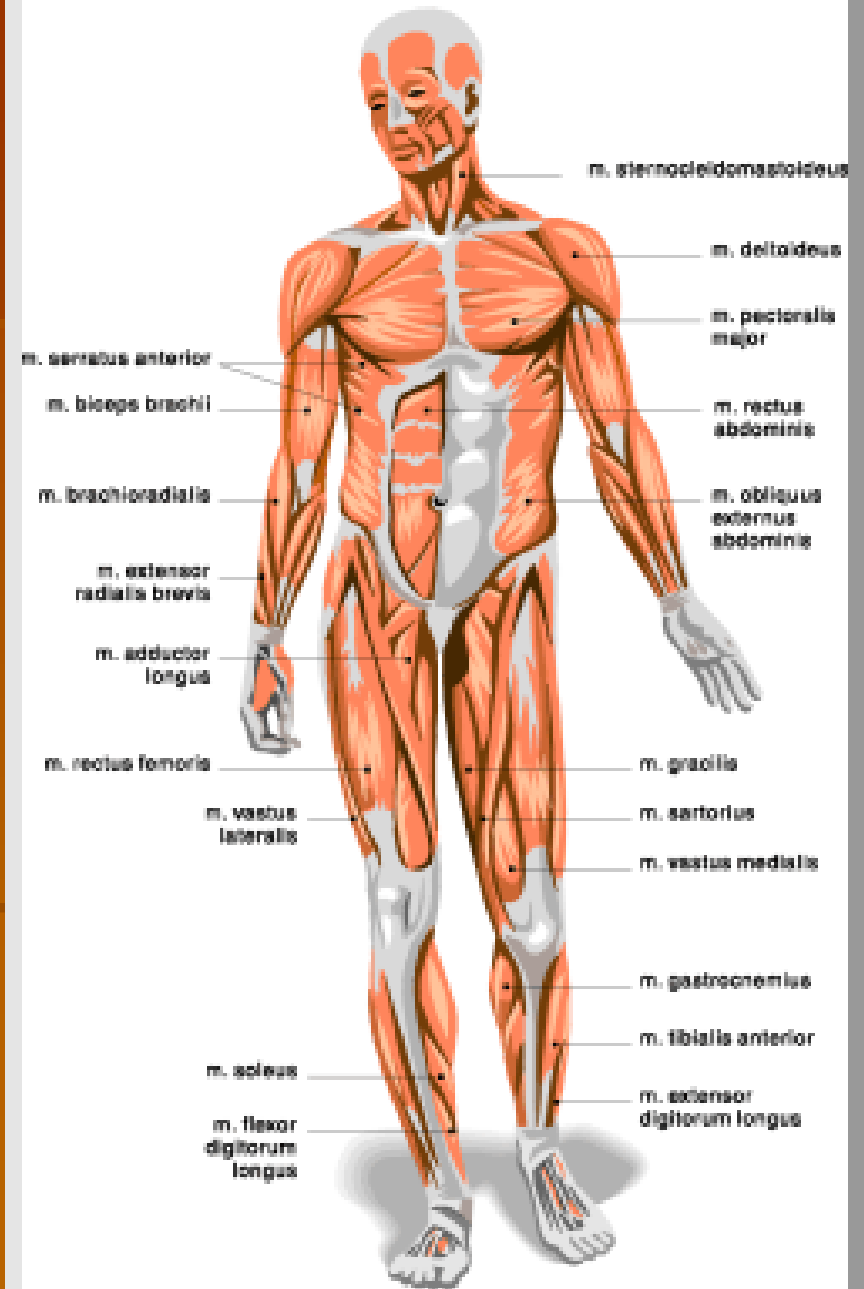


MUSCLES

Muscles

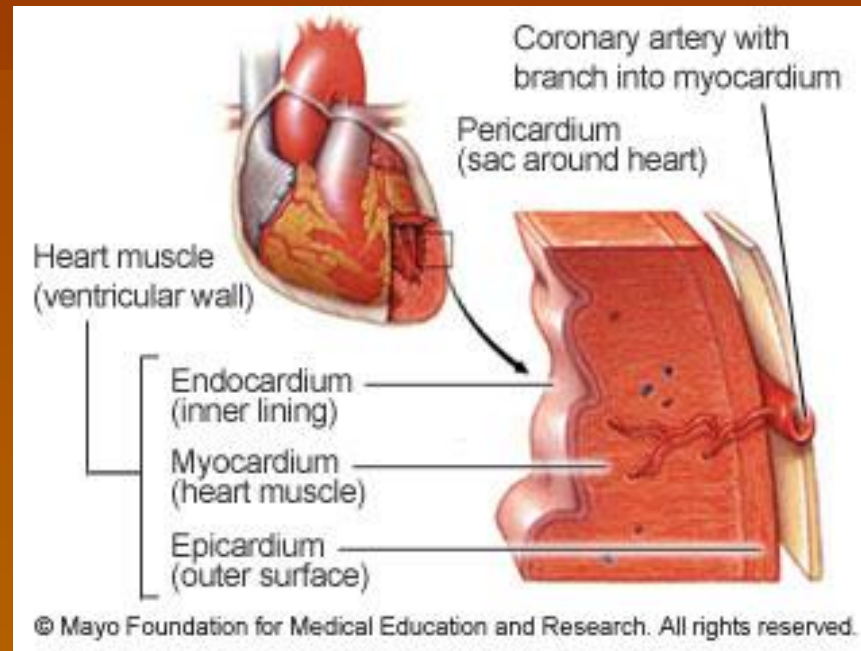
- Over 600 muscles in muscular system
- Made of bundles of muscle fibers that are held together by connective tissue



Three Kinds of Muscles

- Cardiac
- Smooth
- Skeletal

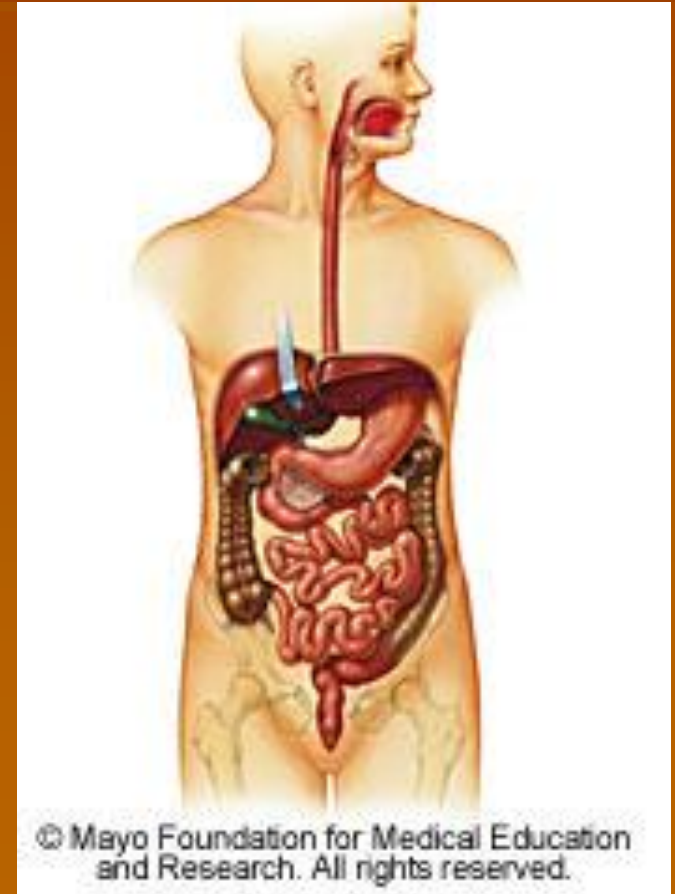
Cardiac Muscle



- Forms the walls of the heart
- Contract to circulate blood
- Involuntary; function without conscious thought

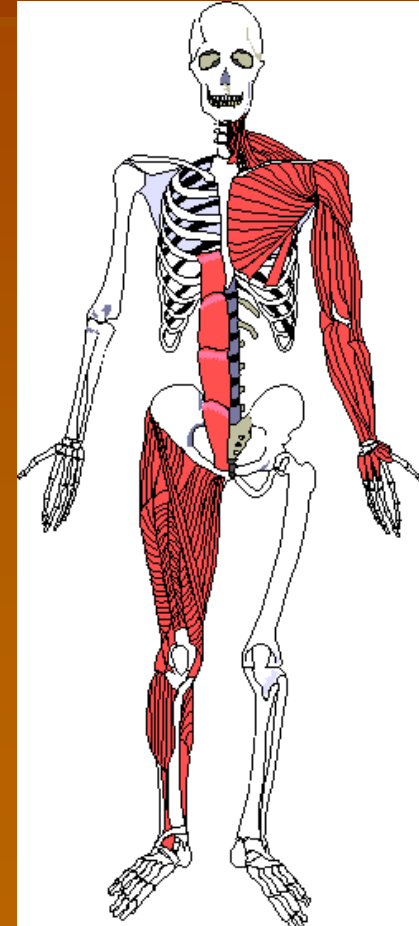
Smooth Muscle

- Found in the internal organs of the body
- Contract to cause movement in these systems
- Involuntary; function without conscious thought



Skeletal

- Attached to bones
 - Cause body movements
 - Voluntary; person has control over their action
-



Skeletal Muscles Function

- Attach to bones to provide movement
- Produce heat and energy
- Help maintain posture
- Protect internal organs

Methods of Attachment to Bones

- Tendon
 - Strong, tough connective tissue
- Fascia
 - Tough, sheetlike membrane
 - Covers and protects the tissue
- Origin and insertion
 - Origin: end that does not move
 - Insertion: end that moves when muscle contracts

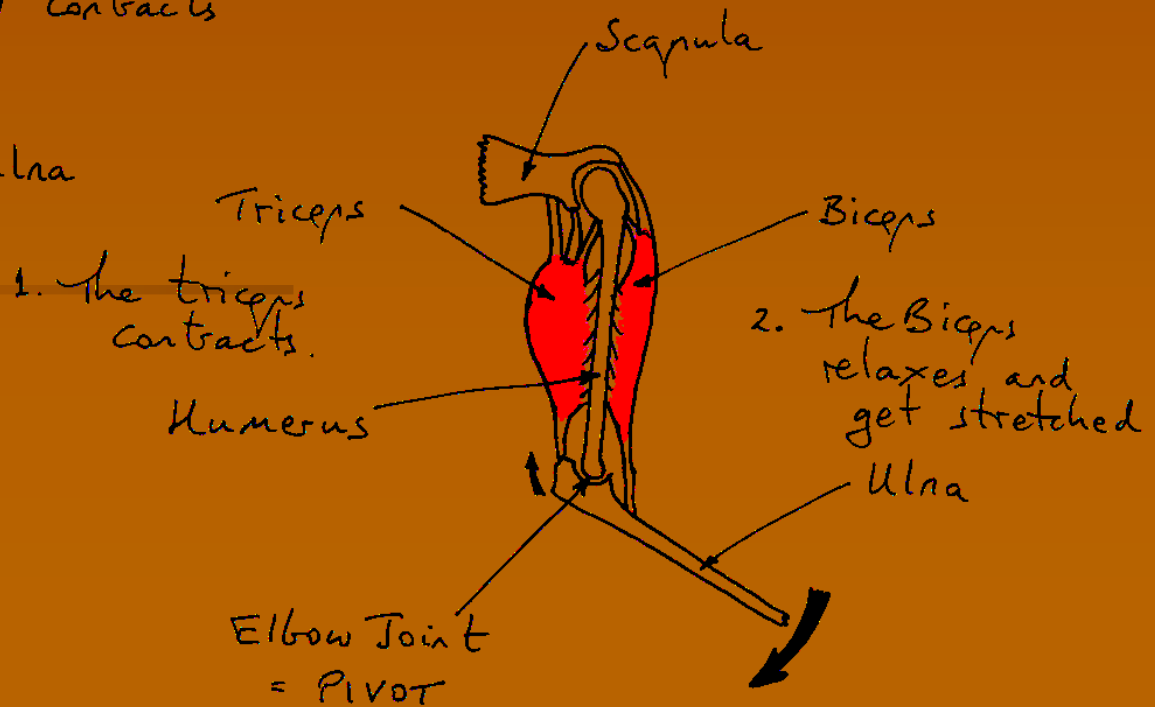
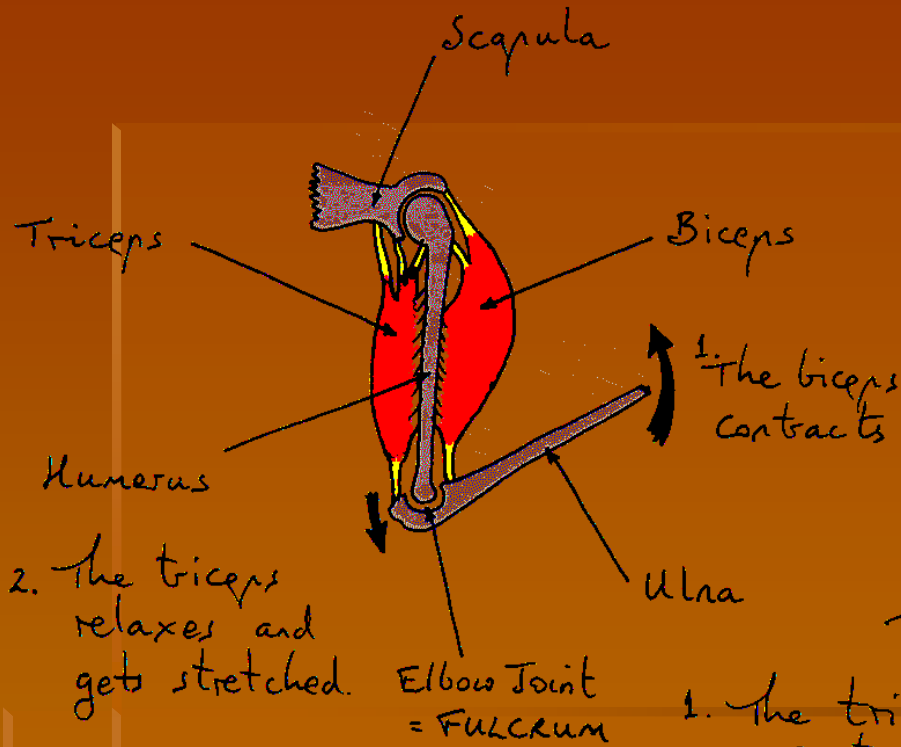
Actions of Muscles

- Adduction
 - Moving a body part toward the midline
 - Abduction
 - Moving a body part away from the midline
-

Actions of Muscles

- **Flexion**
 - Decreasing the angle between two bones or bending a body part
- **Extension**
 - Increasing the angle between two bones or straightening a body part

Flexion and Extension

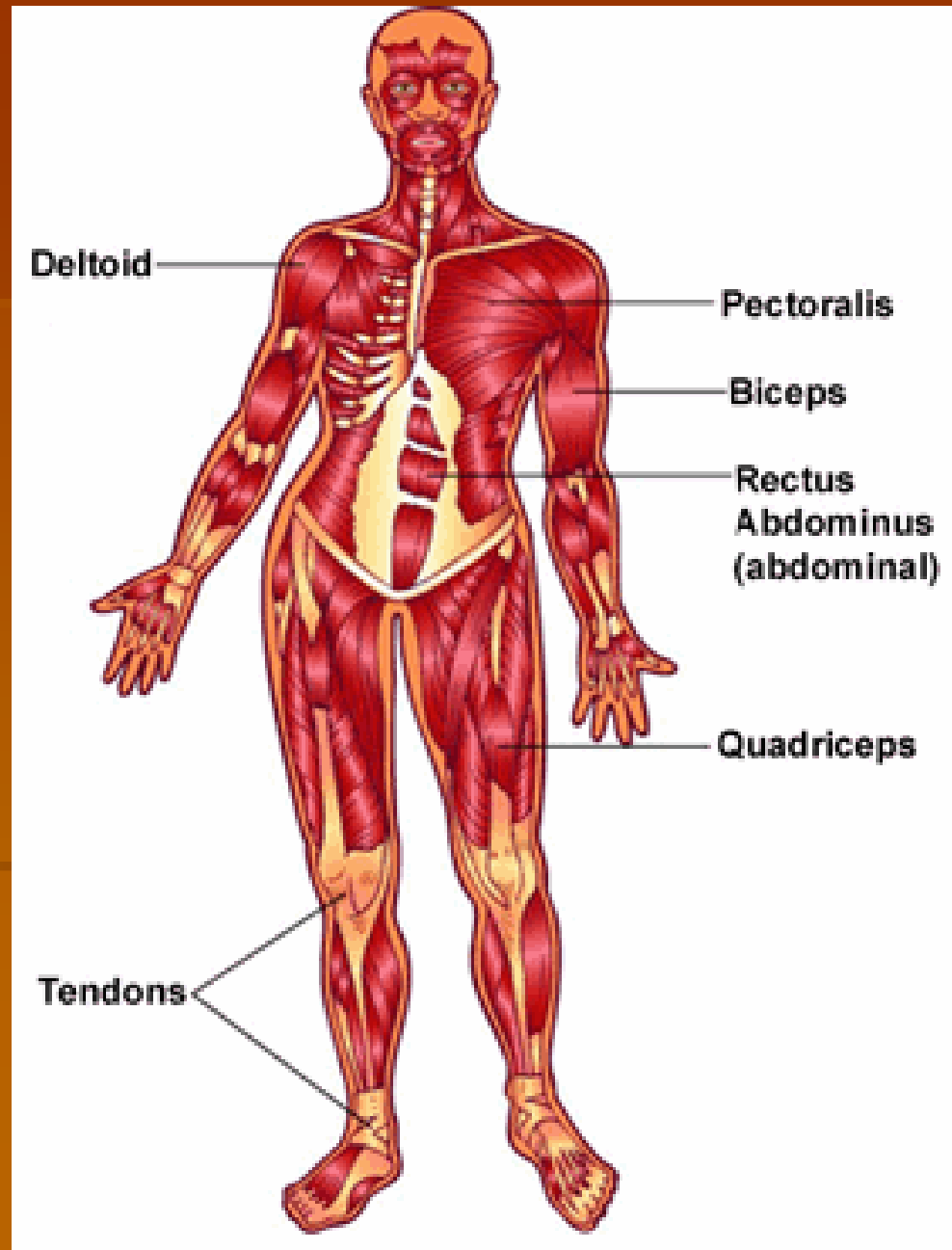


Actions of Muscles

- Rotation
 - Turning a body part around (head to side)
- Circumduction
 - Moving one end of a body part in a circle (swinging arm in a circle)

Major Muscles

- Pecs
- Abs
- Quads
- Biceps
- Triceps
- Hamstrings



Muscle Tone

- Muscles are partially contracted at all times
- A state of readiness to act
- Lack of use can result in a contracture
 - Severe tightening of a flexor muscle
 - Results in a bending of a joint
 - Foot drop is a common contracture
 - Fingers, wrists, knees and others can be affected

Muscular Diseases

- Fibromyalgia
- Muscular Dystrophy
- Myasthenia Gravis
- Rhabdomyosarcoma

Fibromyalgia

- Chronic, widespread pain
- Muscle stiffness, numbness or tingling in arms or legs, fatigue, headaches
- Etiology unknown, but stress, weather, and poor physical fitness affect disease
- Treatment
 - Pain relief
 - Physical therapy, massage, exercise, stress relief

Muscular Dystrophy

- Group of inherited diseases
 - Duchenne's
- Chronic progressive muscle atrophy
- Usually appears in early childhood
- Leads to total disability and early death
- Physical therapy is used to slow progress of disease

Myasthenia Gravis

- Chronic – Nerve impulses are not transmitted properly to the muscles
- Leads to progressive muscular weakness and paralysis
- Fatal when it affects respiratory muscles
- Etiology unknown, may be autoimmune
- No cure, treatment is supportative

Rhabdomyosarcoma

- Tumor of the muscles
- Usually in young children
- Arise from rhabdomyoblast(primitive muscle cells)
- Treatable with chemotherapy and radiation

Cramps

- Sudden, painful, involuntary contractions of muscles
- Usually occur in legs or feet
- May result from overexertion, low electrolyte levels, or poor circulation
- Stretch muscle to relieve pain

Strains

- Overstretching or injury to a muscle/tendon
- Usually in the back, arms, and legs
- Prolonged or sudden muscle exertion is usual cause
- Symptoms: muscle pain, swelling
- Treatment
 - Rest & elevation
 - Muscle relaxants, pain meds
 - Alternating heat & cold applications