Lesson 10

Developmental Aspects

- Muscle development
- Homeostatic Imbalances

Developmental Aspects of Muscular System

Embryo Development

- Muscular system is laid down in segments
- Develops early in pregnancy
- First movements of the fetus, called **quickening**, occur by the 16th week of pregnancy

Developmental Aspects of Muscular System

Infancy

- Initial movements of baby are gross reflexes
- Nervous system must mature before baby can control muscles

Developmental Aspects of Muscular System

- Development proceeds in a cephalic to caudal direction
- Gross muscular movements precede fine motor movements
  - Can raise their head before they sit up
  - Can sit up before they can walk

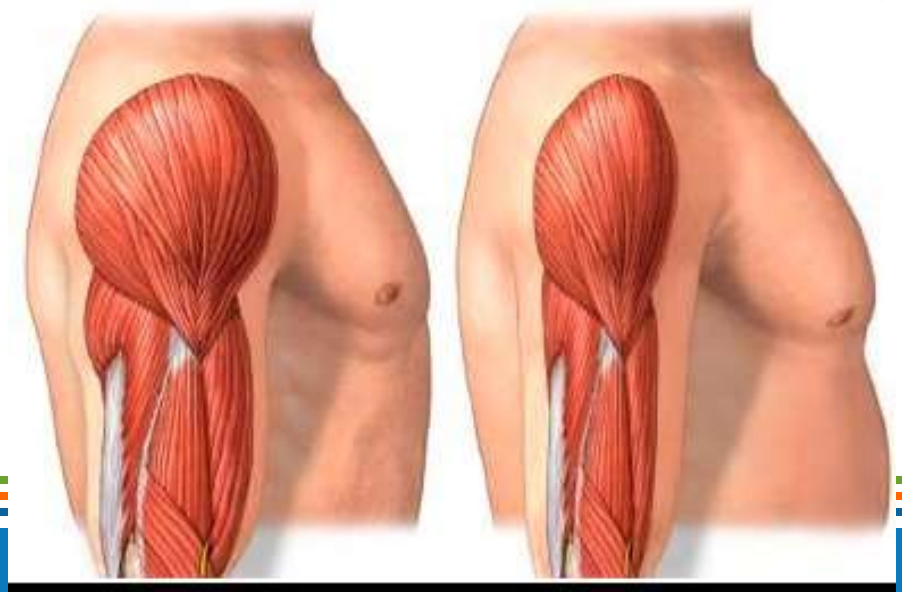
Developmental Aspects of Muscular System

- Development also proceeds in a proximal to distal direction
  - Can wave bye-bye before can use pincher grasp

Developmental Aspects of Muscular System

As we age

- Amount of connective tissue in muscle **increases** while amount of muscle tissue **decreases**
- Body weight begins to decline in an older person due to loss of **muscle mass**



Developmental Aspects of Muscular System

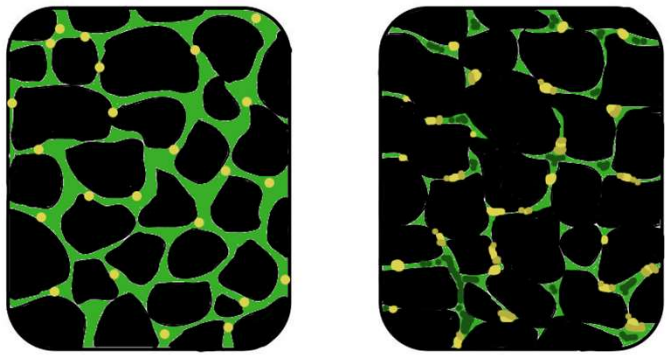
- Muscle strength decreases by 50% by age 80
- Weight training can rebuild muscle mass and increase strength in older people

Homeostatic Imbalances

Duchenne's Muscular Dystrophy

- Muscle destroying disease that progresses from the extremities **upward**, final effects on the head and **chest** muscles
- Caused by lack of muscle protein called **dystrophin** that helps maintain the sarcolemma

Muscular Dystrophy



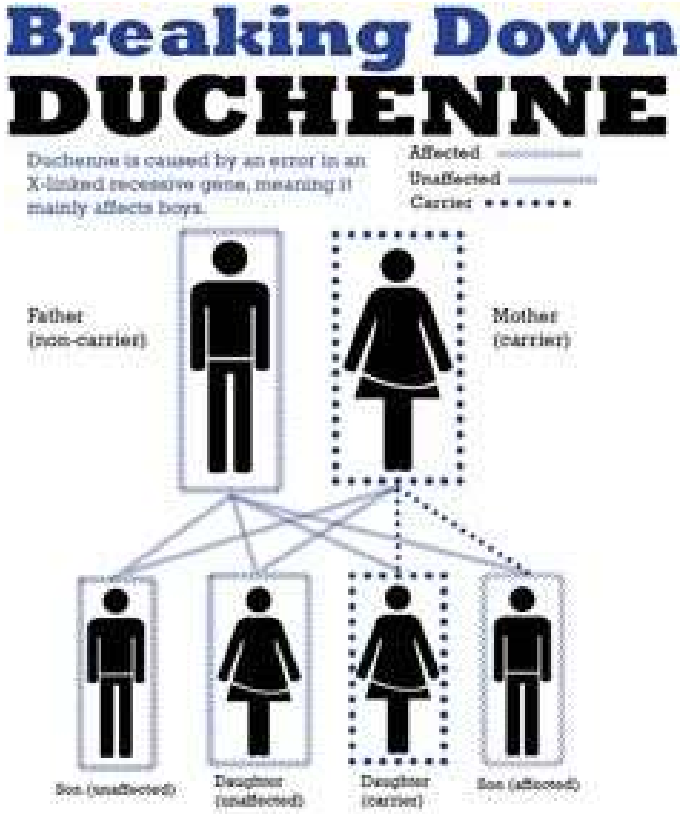
Normal Muscle Tissue

Affected Muscle Tissue

Homeostatic Imbalances

Duchenne's Muscular Dystrophy

- Almost exclusively in **boys** (sex-linked genetic disorder)
- Diagnosed between age 2 – 7
- Active normal children become clumsy and fall frequently as muscles **weaken**
- Rarely live beyond their 20s
- Die of **respiratory** failure



Homeostatic Imbalances

- **Myasthenia Gravis**
  - **Rare disease that affects muscles during adulthood, thought to be an autoimmune disease**
  - **Drooping of upper eyelids, difficulty swallowing & talking, generalized muscle weakness and fatigue**

Homeostatic Imbalances

- **Myasthenia Gravis**
  - **Shortage of acetylcholine receptors at neuromuscular junctions**
  - **Death usually due to respiratory failure**