


Dr. H. N. Sinha Arts and  
Commerce College, Patur

Zoology Department

Presented By,  
Asst. Prof. Sangita Telgote

# Anatomy & Physiology

The background features a stylized anatomical illustration of a human torso. A red, semi-transparent heart is positioned in the lower center. Overlaid on the heart and the surrounding blue-toned skeletal and muscular structures is a white ECG (heart rate) line. The overall aesthetic is scientific and digital, with a blue and red color palette.

## MUSCULAR SYSTEM



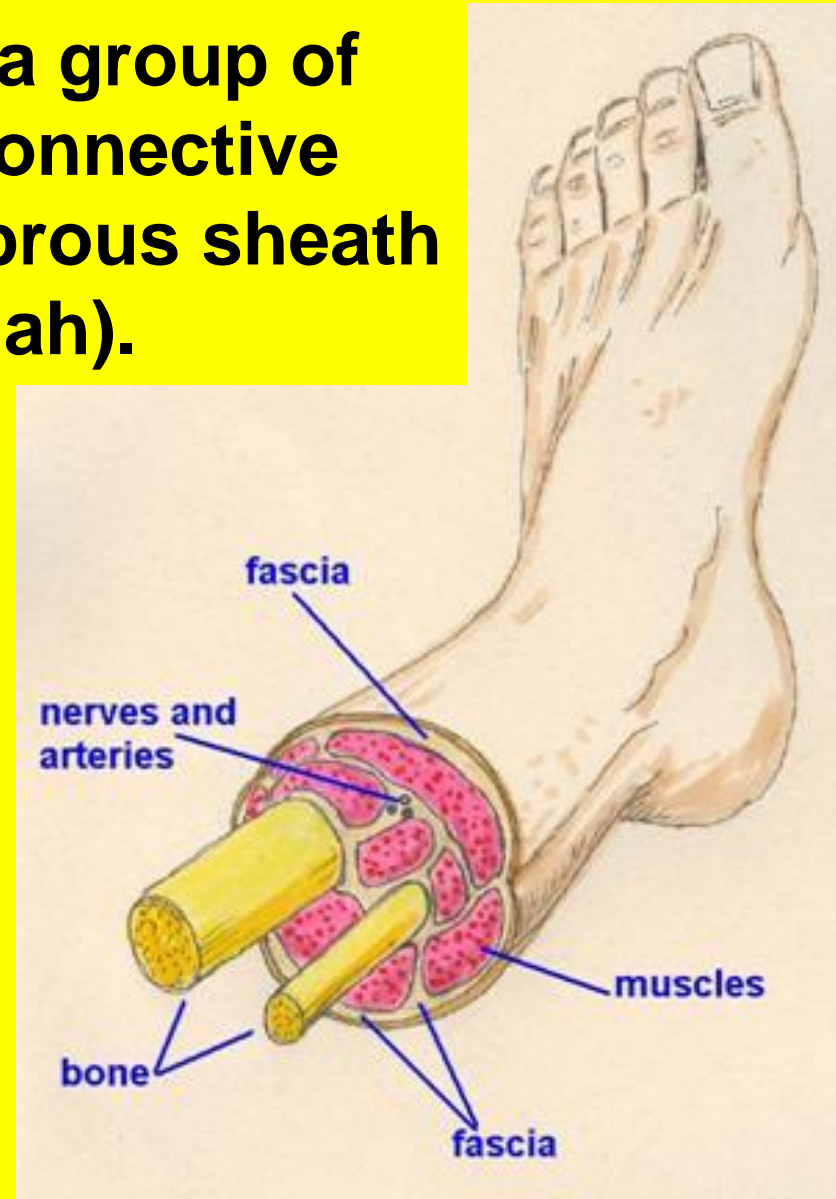
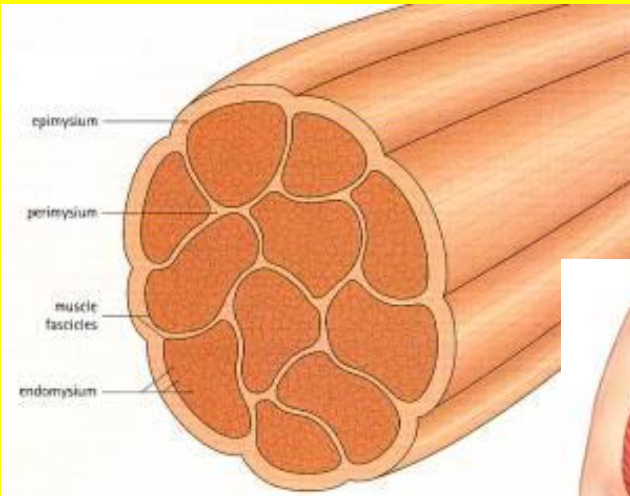
# What is the muscular system?

The muscular system consists of all the muscles of the body. These make up approximately 42% of total body weight, and are composed of long, slender cells known as fibers. The fibers are different lengths and vary in color from white to deep red.



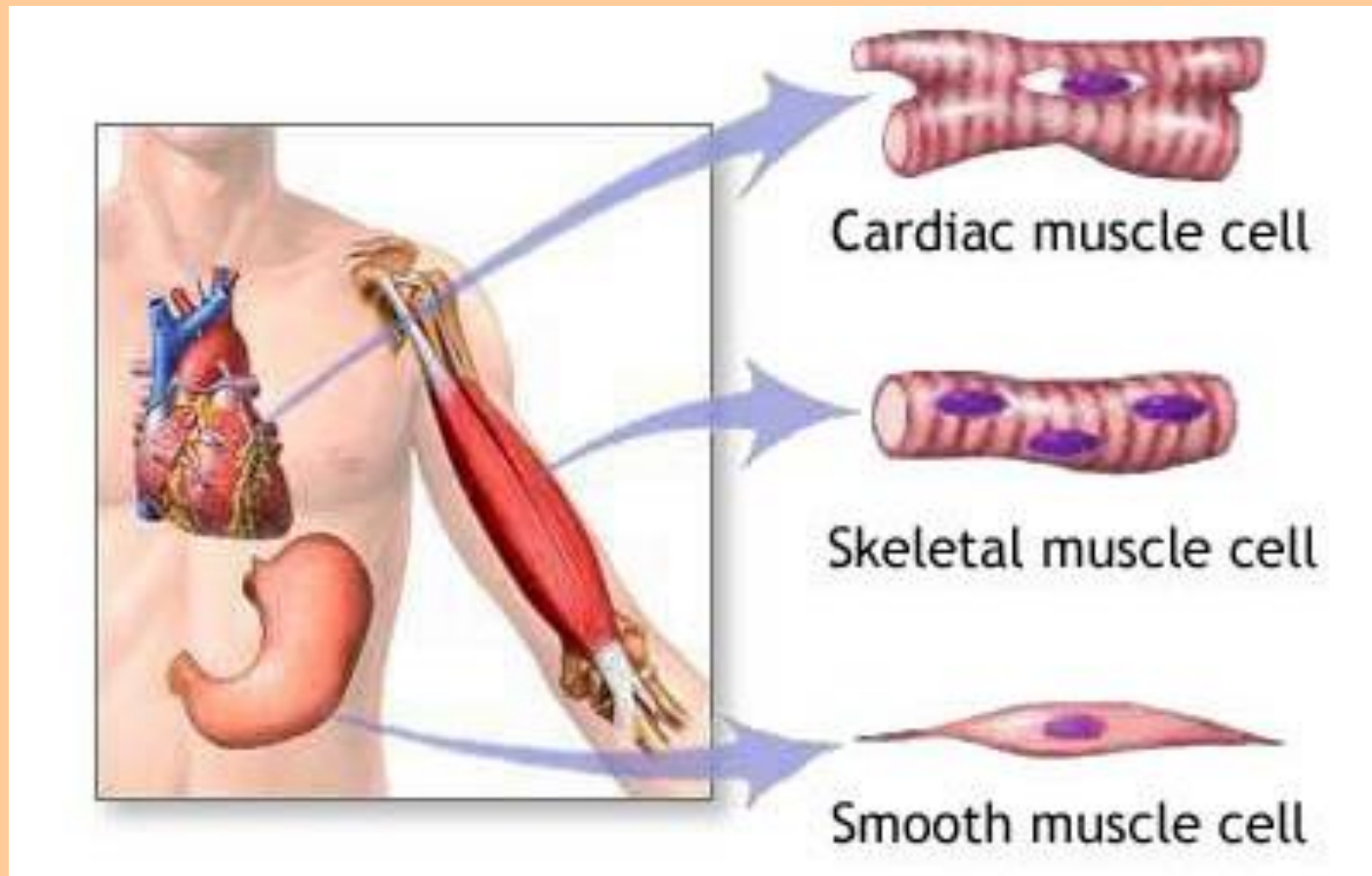
# What is the muscular system?

Each muscle consists of a group of fibers held together by connective tissue, and enclosed in a fibrous sheath or fascia (FASH ee ah).

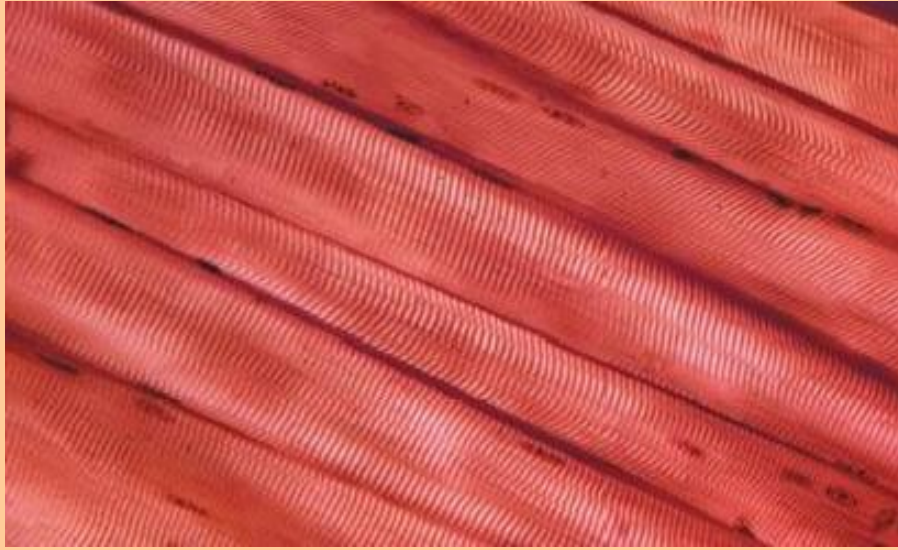


# 3 types of muscle...

Muscles cause movement, help to maintain posture, and produce heat. There are 3 types, classified according to function and appearance:



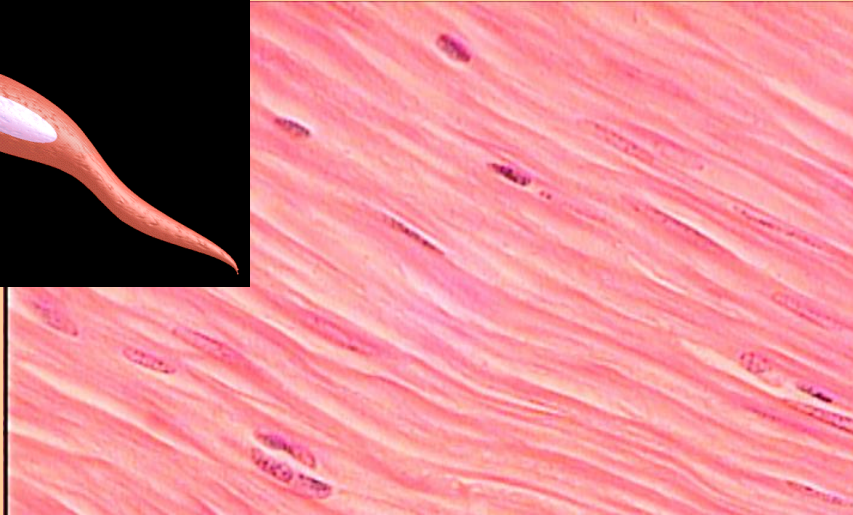
# 3 types of muscle...



Skeletal muscles are elastic and work in pairs - one flexing while the other is extending. They are striated, with horizontal markings, and are stimulated to contract by electrical impulses from the nervous system.

Fast, white muscle fibers contract rapidly, have poor blood supply, operate without oxygen, and tire quickly. Slow, red muscle fibers contract more slowly, have better blood supplies, operate with oxygen, and do not tire as easily. They are used in ongoing movements, such as maintaining posture.

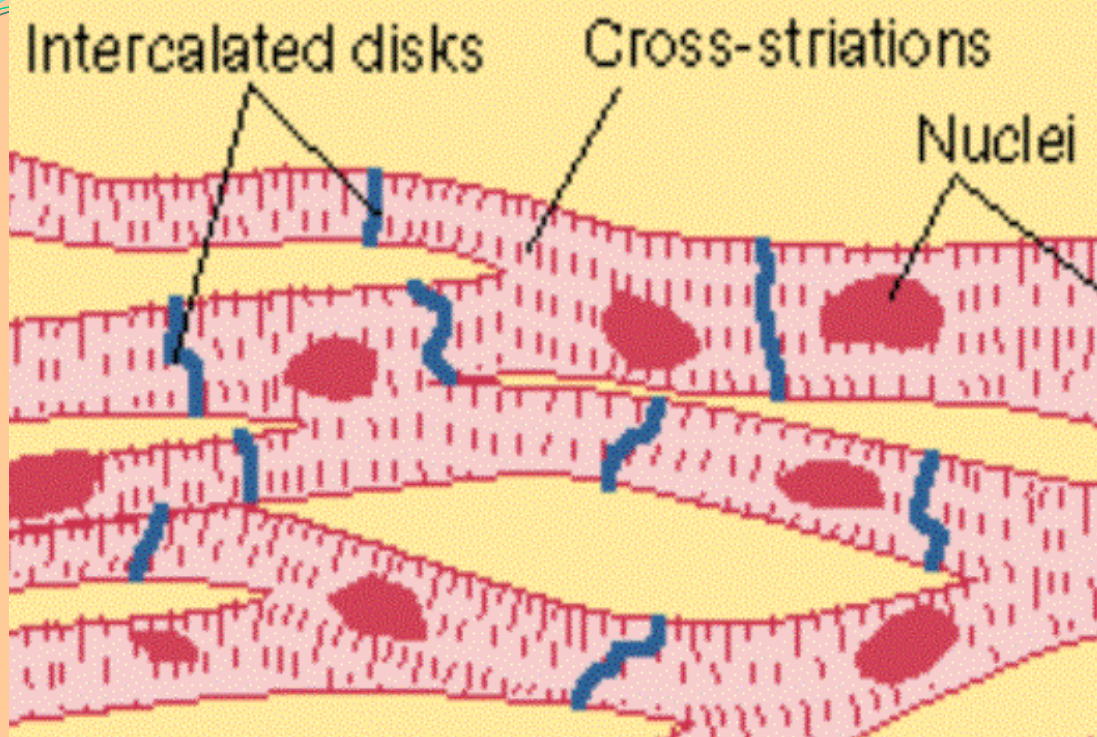
# 3 types of muscle...



**Smooth muscles contract slower than skeletal muscles, but can remain contracted longer, and are not as dependent on oxygen. They are stimulated by electrical impulses or hormones, and use carbohydrates for energy.**

**Smooth muscle lines most hollow organs of the body, such as the intestines, stomach, and uterus. They help move substances through tubular areas such as blood vessels and the small intestines, contracting automatically and rhythmically.**

# 3 types of muscle...



The cardiac muscle or myocardium are striated like skeletal muscles, but are smaller and shorter.

They are stimulated to contract by electrical impulses sent out from small clumps of specialized tissue in the heart... the sinoatrial (sī-nō-Ā-trē-ul) and atrioventricular node (ā-trē-ō-ven-trik-y ə-lər) nodes.



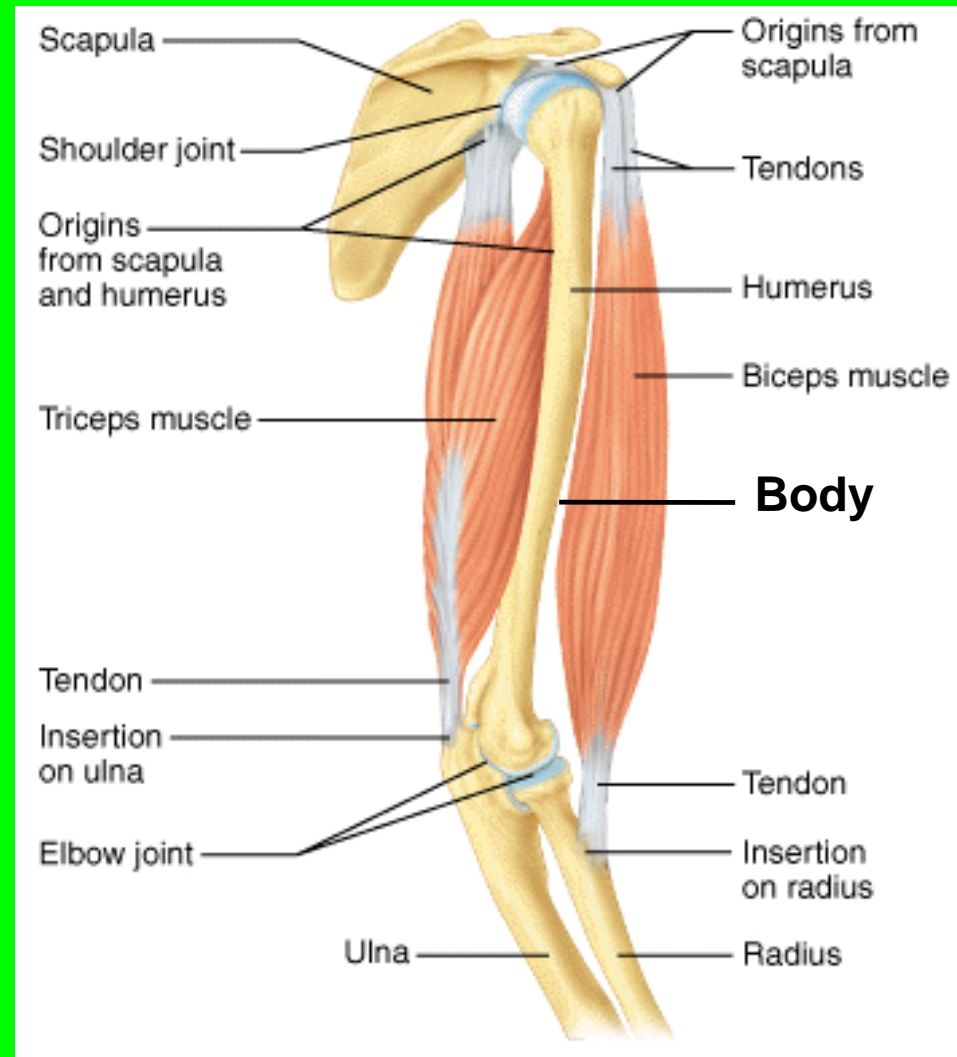
# Parts of a muscle... Each muscle has 3 parts:

Body – the main portion

Origin – the fixed attachment

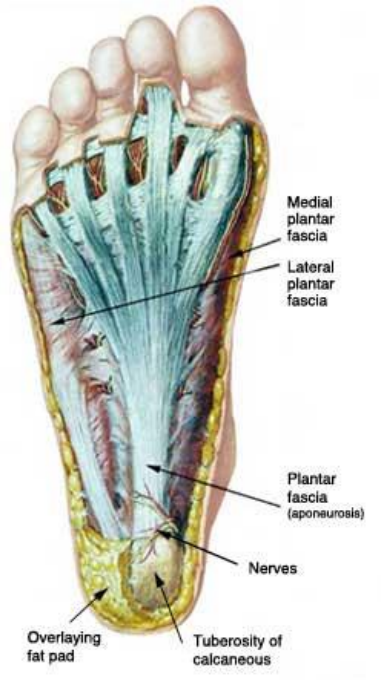
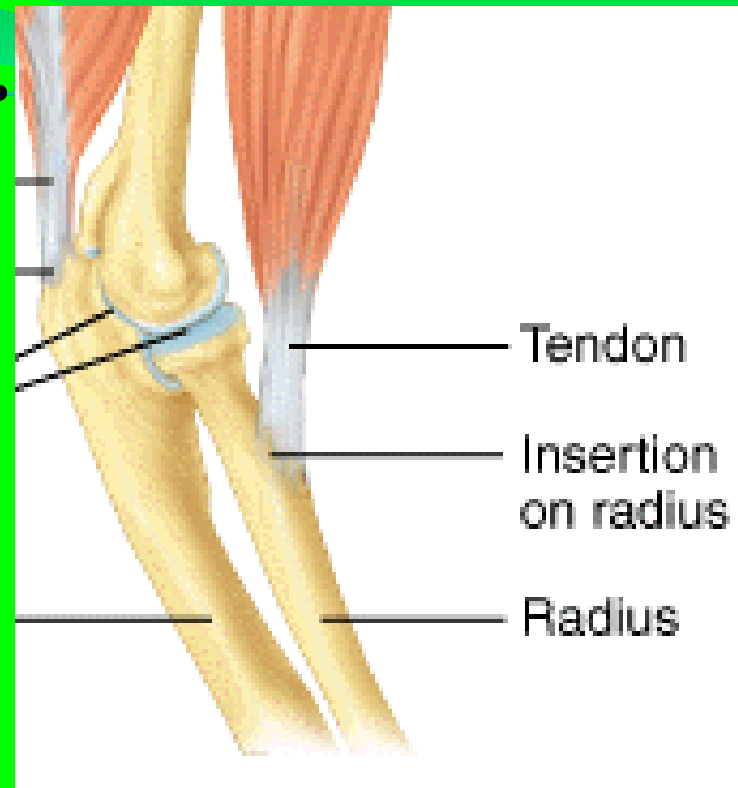
Insertion - the point of attachment to the part of the body moved by this muscle

In this picture, the origin of the muscle is the scapula attachment; a tendon provides the insertion on the ulna and radius bones.



# Parts of a muscle...

A tendon is a means of attachment, connecting the muscle to the bone. They vary in length, from less than an inch to more than a foot.



A wide sheet-like tendon is called an aponeurosis (ap ah nyu ROH siss).

# Major muscles...

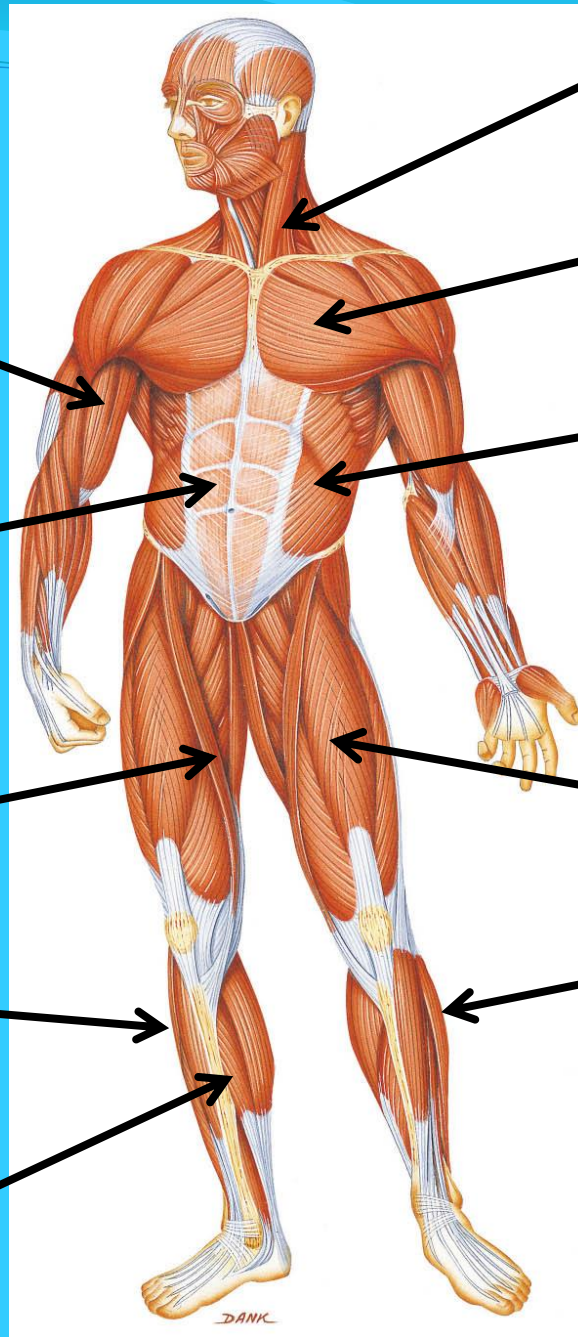
**Biceps**

**Abdominal**

**Sartorius**  
(sahr TOR ee us)

**Tibialis**  
(tib ee ALL us)

**Soleus**  
(SŌ lee us)



**Mastoid**

**Pectoral**

**Obliques**

**Rectus Femoris**  
(Rec tus FĔM er us)

**Gastrocnemius**  
(gas trock NEE mee us)

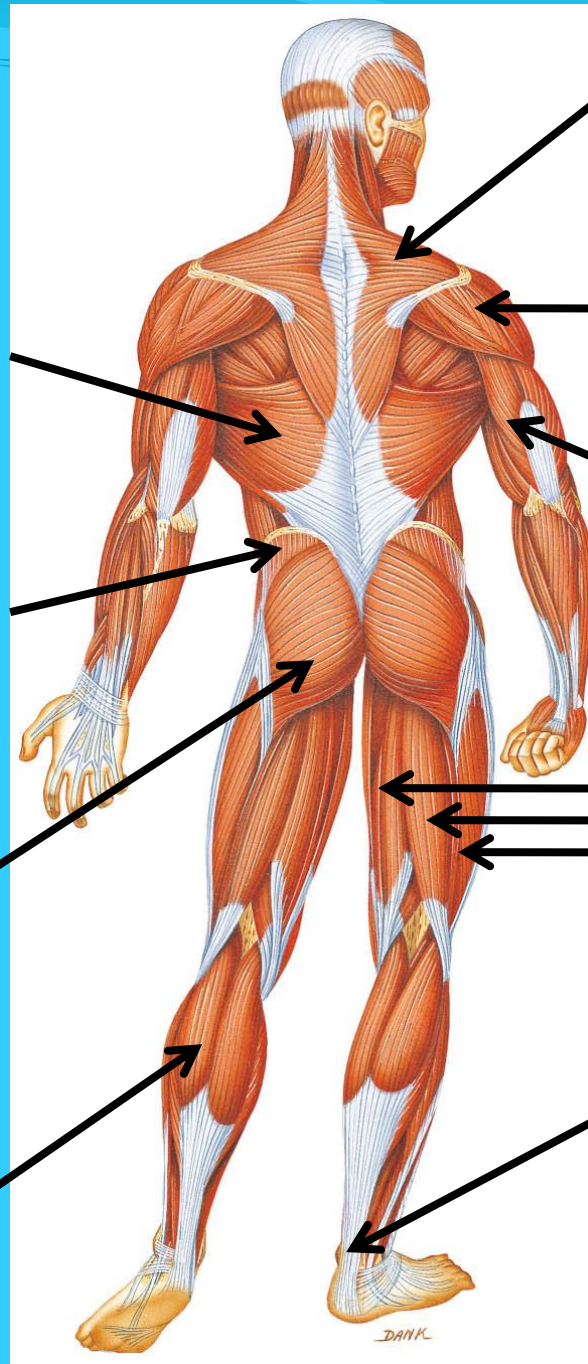
# Major muscles...

**Latissimus Dorsi**  
(lah TISS ah mus DOOR sigh)

**Gluteus medius**  
(GLOO tee us MEE dee us)

**Gluteus maximus**  
(GLOO tee us MAX ah mus)

**Gastrocnemius**  
(gas trock nee mee us)



**Trapezius**  
(trah PEE zee us)

**Deltoid**  
(DEL toid)

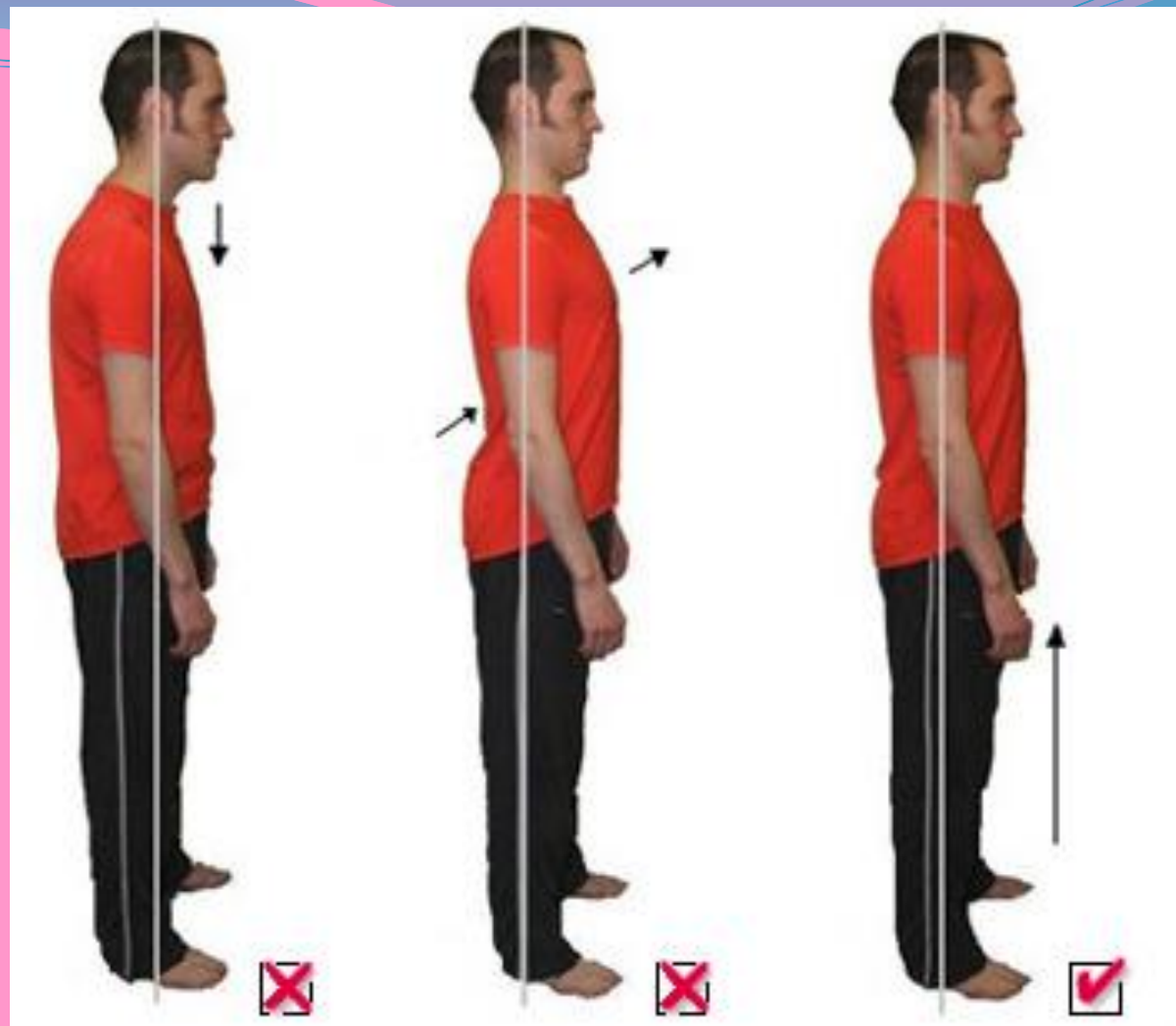
**Triceps**

**Hamstrings**

**Achilles tendon**

# Tonicity...

Muscles are continually working to maintain posture. This passive muscle contraction known as residual muscle tension is called tonicity.



Tonicity is not the same as achieving muscle tone through exercise.

# The effect of exercise...



**With aging, muscles decrease in strength, endurance, range of motion, coordination, and elasticity. Exercising the muscles can help prevent a loss of strength.**



# Anatomy & Physiology

**THE END**

**MUSCULAR SYSTEM**

