

Southern Technical University
College of Health and Medical Technology \ Basra
Department of Medical Lab Technology
1st Stage
General Anatomy (Practical)



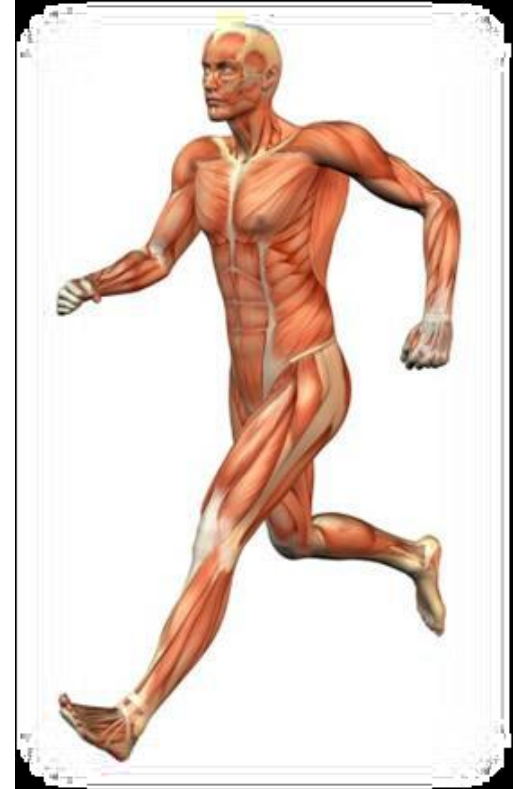
Muscular System

Firas Jabbar Taresh
B.V.M.S \ Msc.S.O

Introduction

There are more than 600 muscles in the Human Body

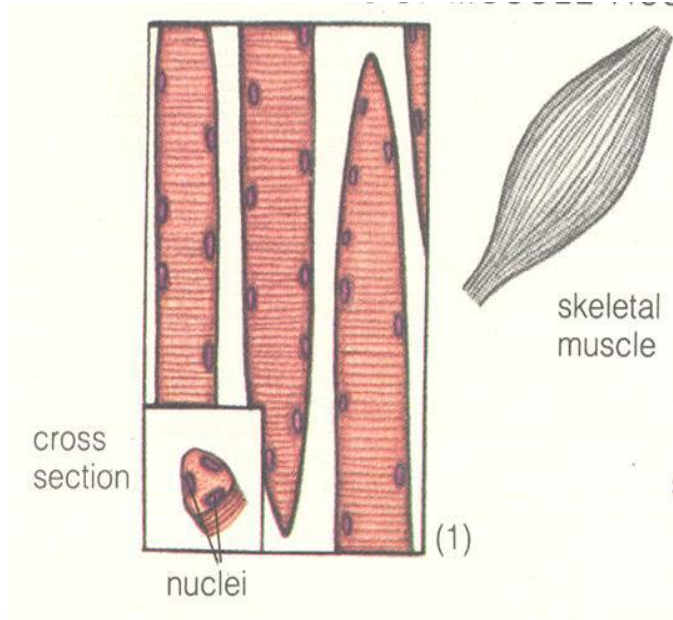
- *Needed for all types of movement
- *Needed to pump blood
- *Needed to breathe (diaphragm muscle).
- *Needed to produce body heat and regulate body temperature.
- *Needed to Protect internal organs.



3 Types of Muscle

1 – Skeletal Muscle

- *Move your bones (also your face, eyes etc).
- *Voluntary (you can control them).
- *Over 400 skeletal muscles in your body.
- *Long cells with several nuclei.
- *Stripes called striations in cell (visible in high power).



2- Smooth Muscle

*The muscles of the esophagus, stomach, intestines and other internal organs.

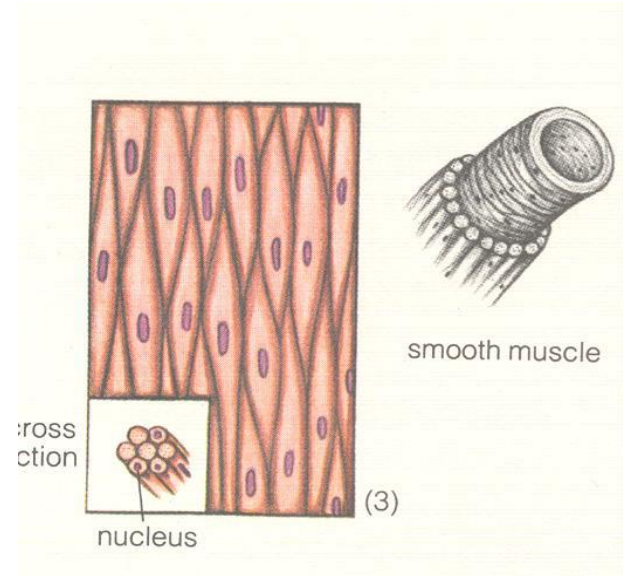
*Involuntary (you cannot control them).

*Contract slowly and smoothly.

*Can remain contracted for long periods of time.

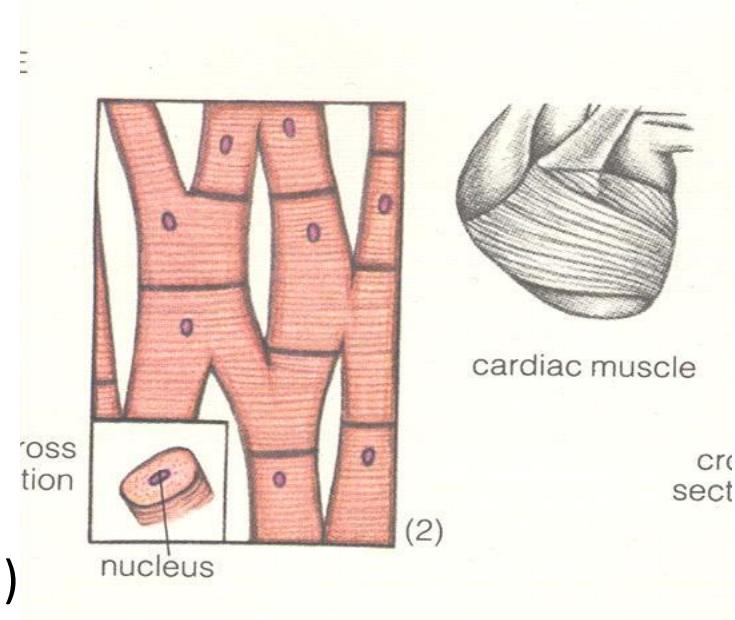
*Usually one nucleus per cell (usually in center of cell).

*No striping (striations).



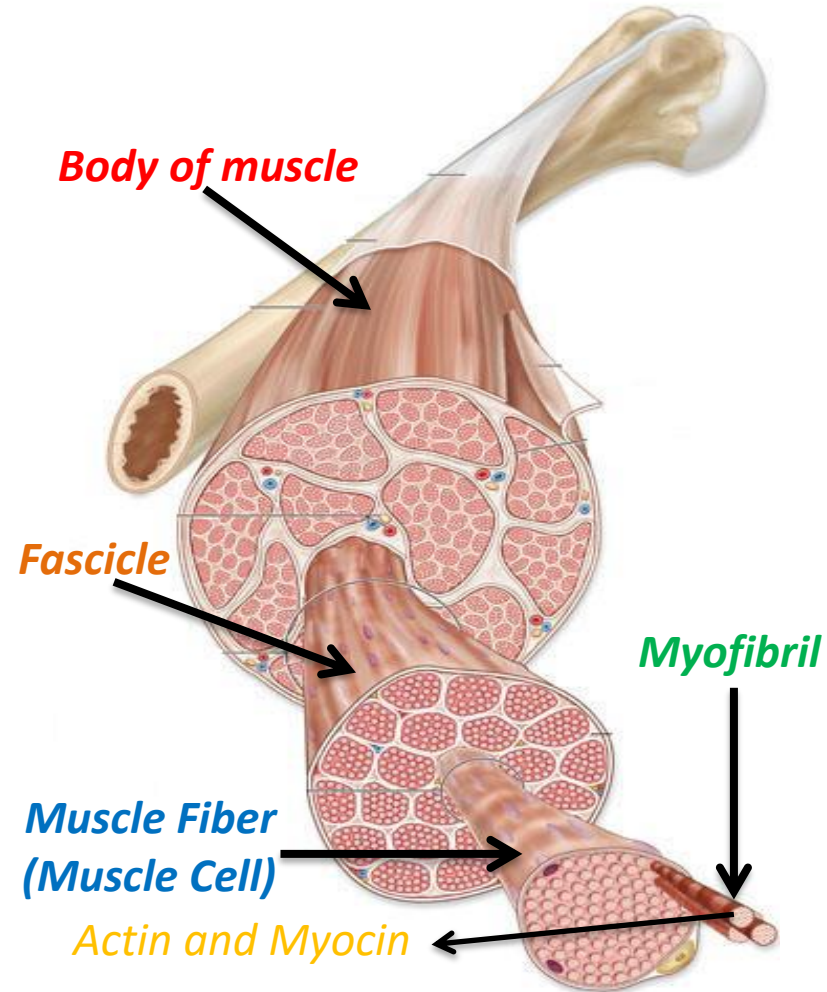
3- Cardiac Muscle

- *The muscle of the Heart.
- *Involuntary (you cannot control them).
- *Works 24 hours a day every day of your life!!!
- *Strongest type of muscle.
- *Only one nucleus per cell (usually in center of cell)
- *Some striping (striations) but not as much as skeletal muscle.



*****Anatomy of a Muscle*****

- *A skeletal muscle works by CONTRACTING (getting shorter).
- *The muscle can shorten as much as $\frac{1}{3}$ its resting length.
- *Each muscle cell is made up of many smaller MYOFIBRILS
- *The MYOFIBRILS are in contact with a nerve ending.
- *The nerve releases a chemical called a NEUROTRANSMITTER.
- *The Neurotransmitter stimulates the entire muscle cell to contract.



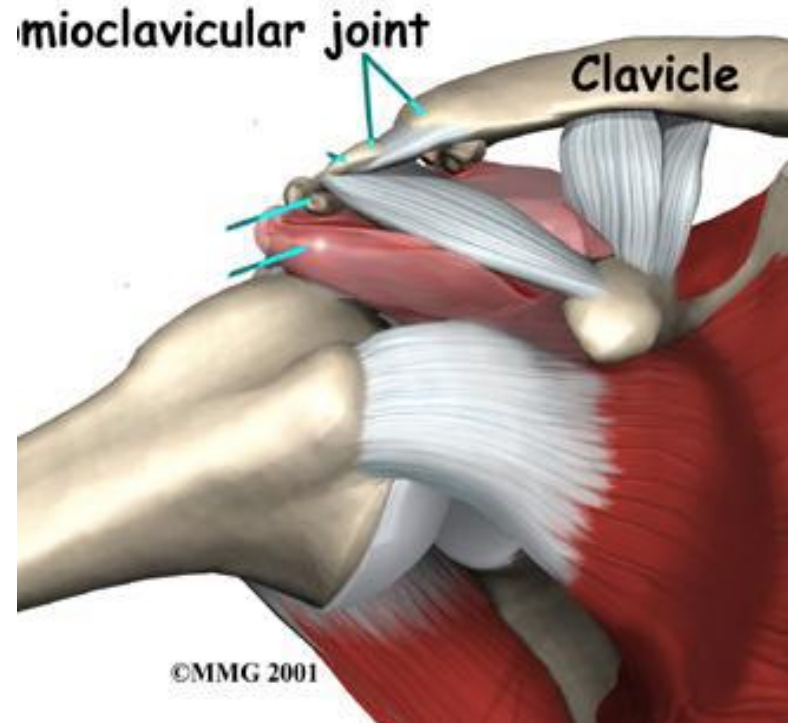
Muscle to Tendon to Bone

**Achilles
Tendon**

Fig. 1

Tendon
**Attached
Muscle to
Bone**

©MMG 2001



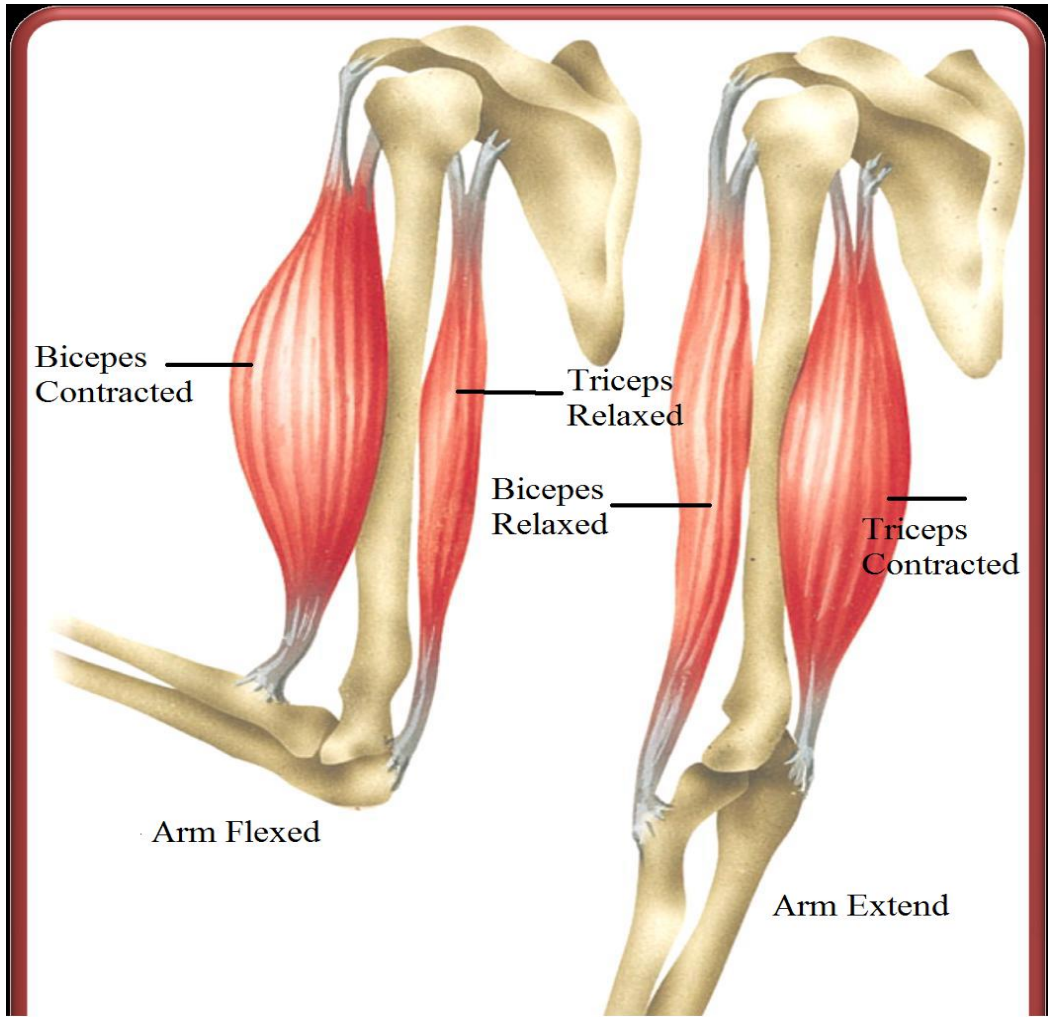
©MMG 2001

How Skeletal Muscle Work???

#Opposites Contract ... and Relax#

*Muscles work *in pairs*. Ex. The biceps muscle will bend the arm at the elbow and the triceps muscle will straighten the arm.

*While one muscle in the pair contracts the other must relax.



Muscle Fatigue

Your muscles need Glycogen (muscle sugar) in order to function. When the glycogen is broken down into energy for the muscles a waste product called lactic acid is produced.

A buildup of lactic acid decreases the muscles' ability to contract and Muscle Fatigue sets in.

Muscle Fatigue in the Heart??!!!!

Your heart is made up of a very special type of muscle called Cardiac Muscle. It keeps working hard from before the day you are born until the moment of your death. It never gets needs to stop and rest like your skeletal muscles do. Cardiac muscle does not experience muscle fatigue but skeletal muscles do.

Muscle Fatigue

After just 7 seconds of use the muscle begins producing lactic acid as glycogen is broken down to provide energy. To help delay muscle fatigue, the muscle fibers are constantly switching on and off to allow individual fibers a moment to rest. This activity will demonstrate the effects of action of muscle fibers.

Muscles Shapes

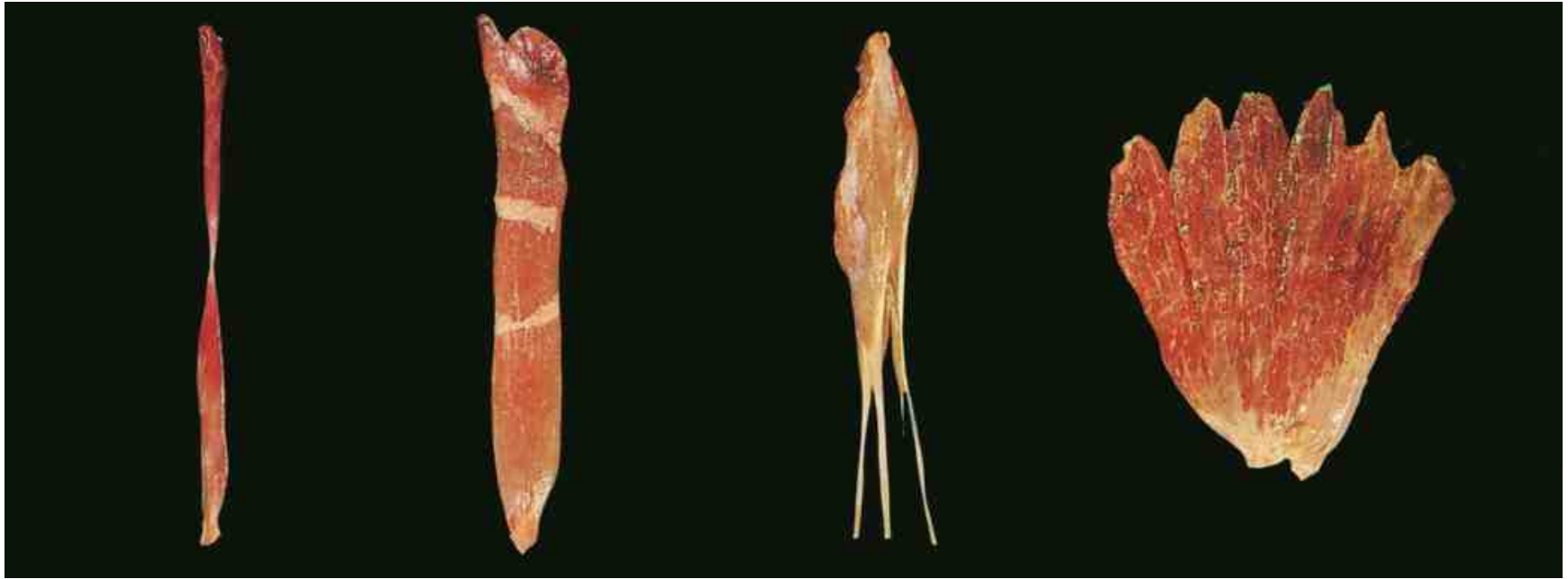


Fusiform
Palmaris
Longus

Bicipital
Biceps
Brachii

Tricipital
Triceps
Surae

Quadricipital
Quadriceps
Femoris



Digastric
Omohyoidus

Multiventral
Rectus
Abdominis

Multicaudal
Flexor
Digitorum

Serrated
Serratus
Anterior



Bipennate
Tibialis
Anterior

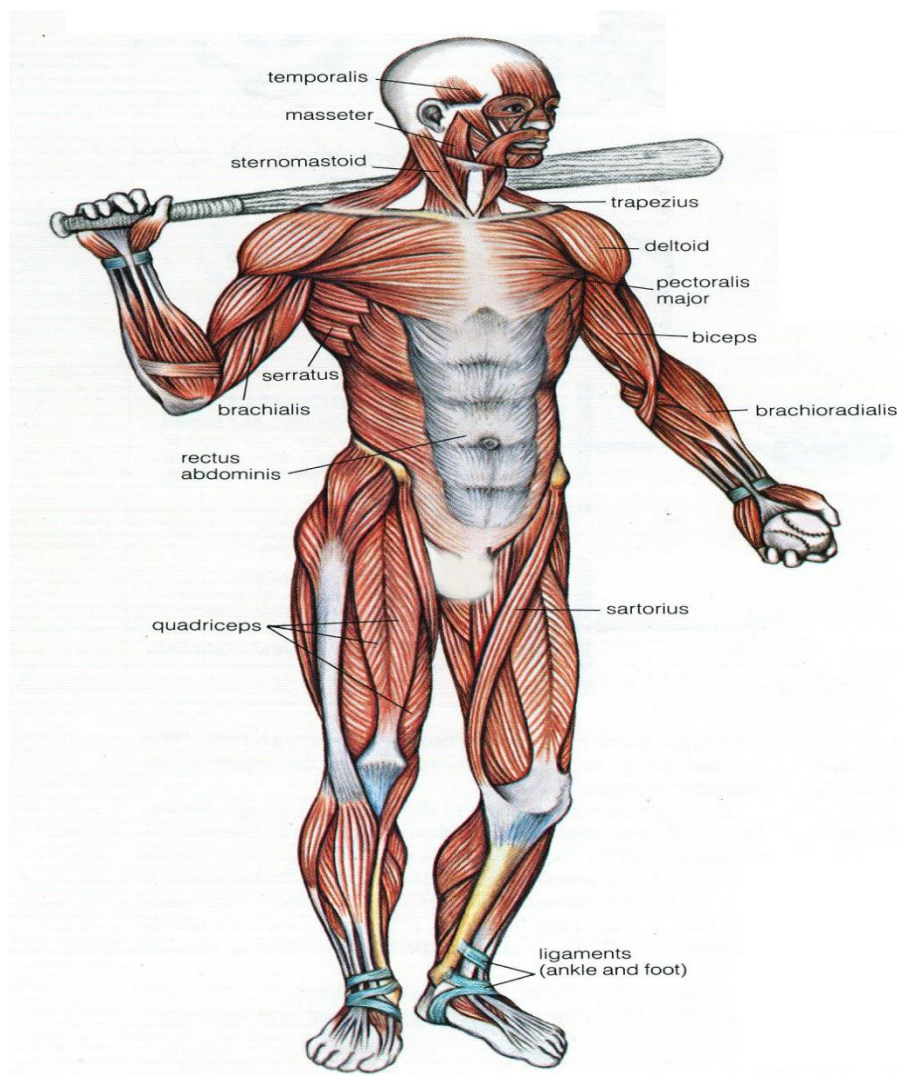
Unipennate
Semi
membranosus

Semitendinous
Semi
tendinosus

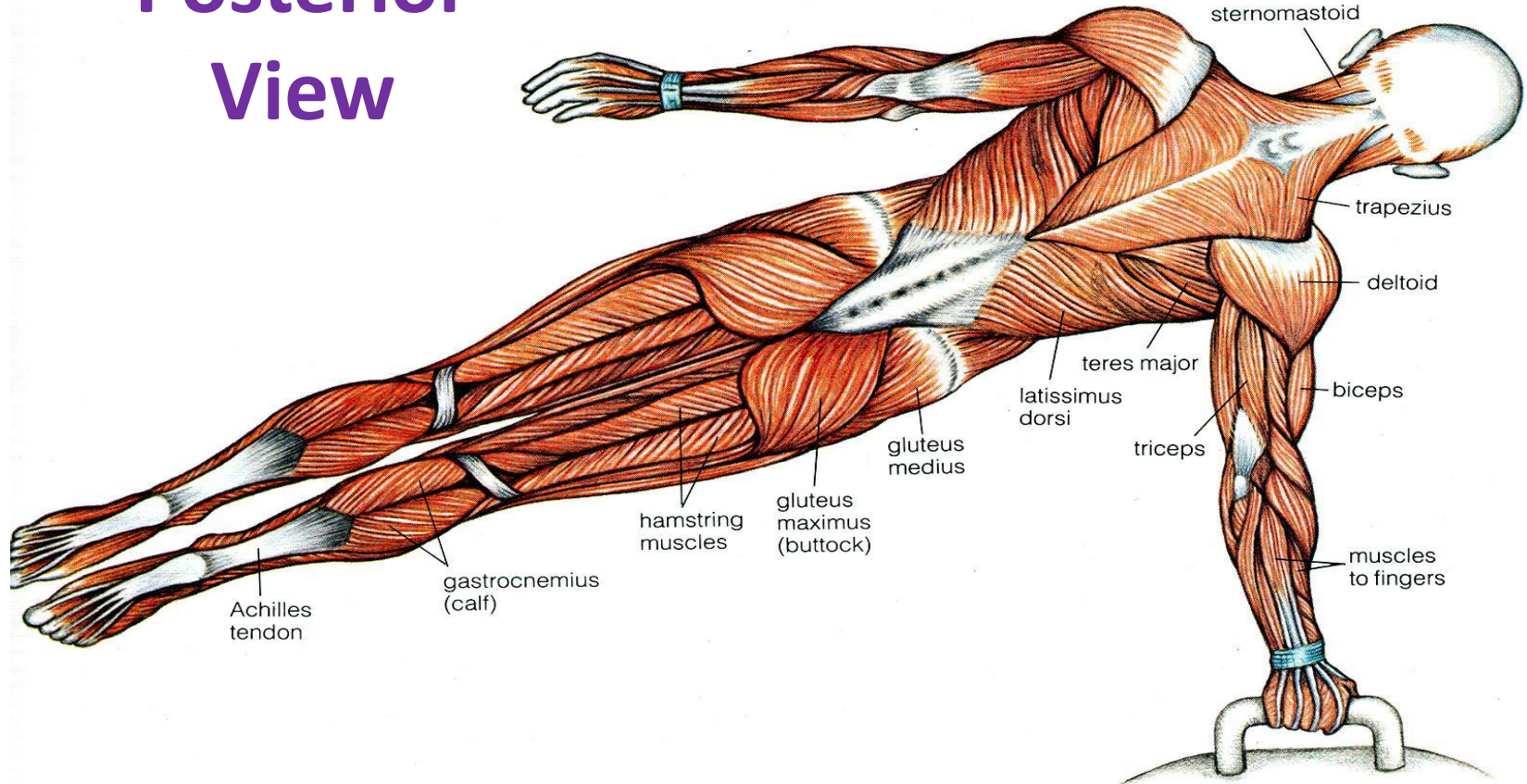
Broad , Flat
Latissimus
Dorsi

Ring Like
Sphincter
Ani
Extranus

Anterior View



Posterior View



Thank You