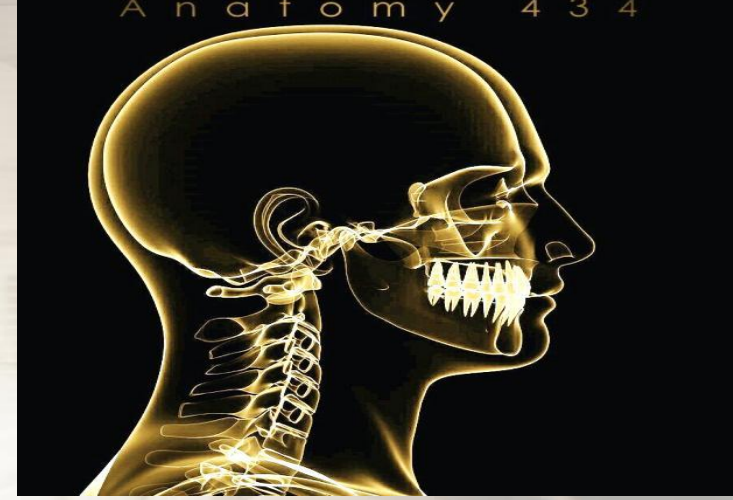


# Anatomy teamwork

## Lecture 2



# Skeletal muscles

Color coding

- Very important
- Notes

هذا العمل لا يعني عن المصدر الأساسي للمذاكرة

# Objectives

At the end of the lecture, students should be able to:

- Describe the main criteria of skeletal muscles.
- Describe the attachments of skeletal muscles.
- Describe the different directions of skeletal muscle fibers.
- Describe the mode of action of skeletal muscles.
- Describe briefly the naming of skeletal muscles.
- Describe briefly the nerve supply of skeletal muscles.

# Muscular system

## Muscles

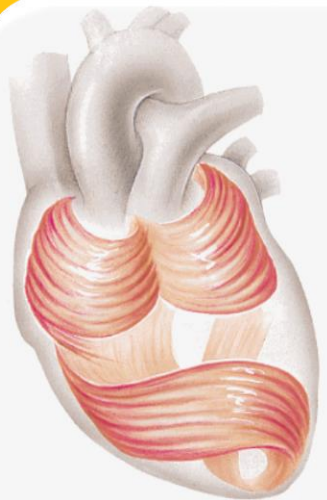
Involuntary

Voluntary

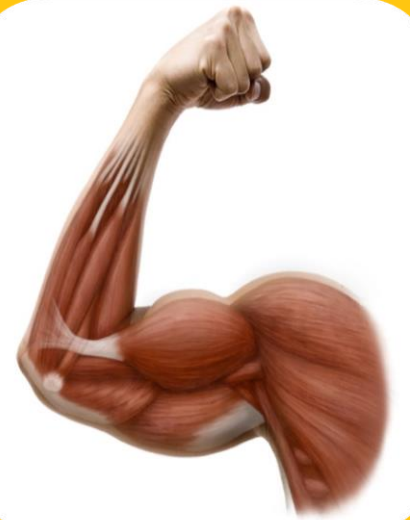
Cardiac

Smooth

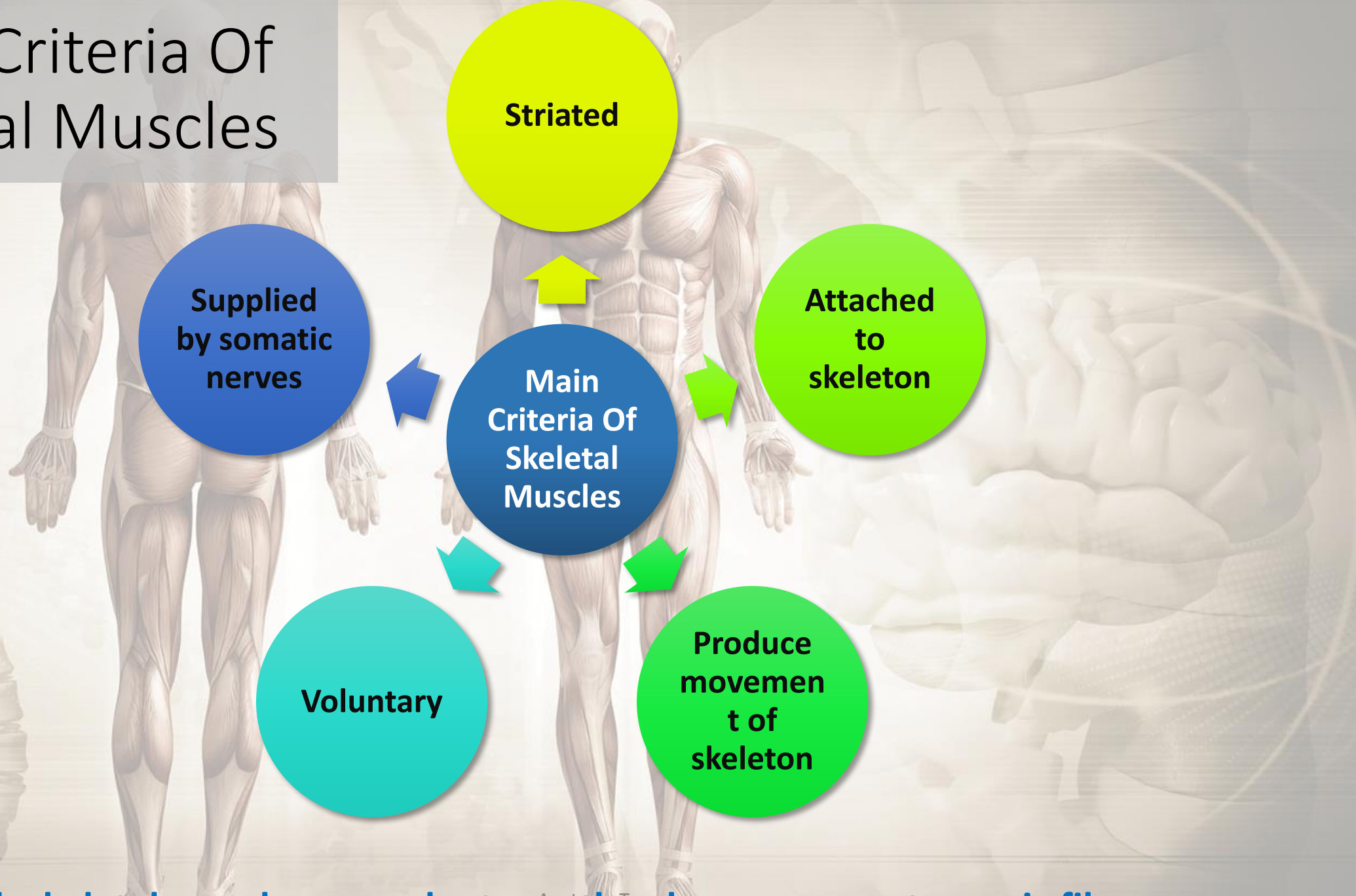
Skeletal



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# Main Criteria Of Skeletal Muscles



**N.B Although skeletal muscles are voluntary, they have some autonomic fibers .**

# Attachments

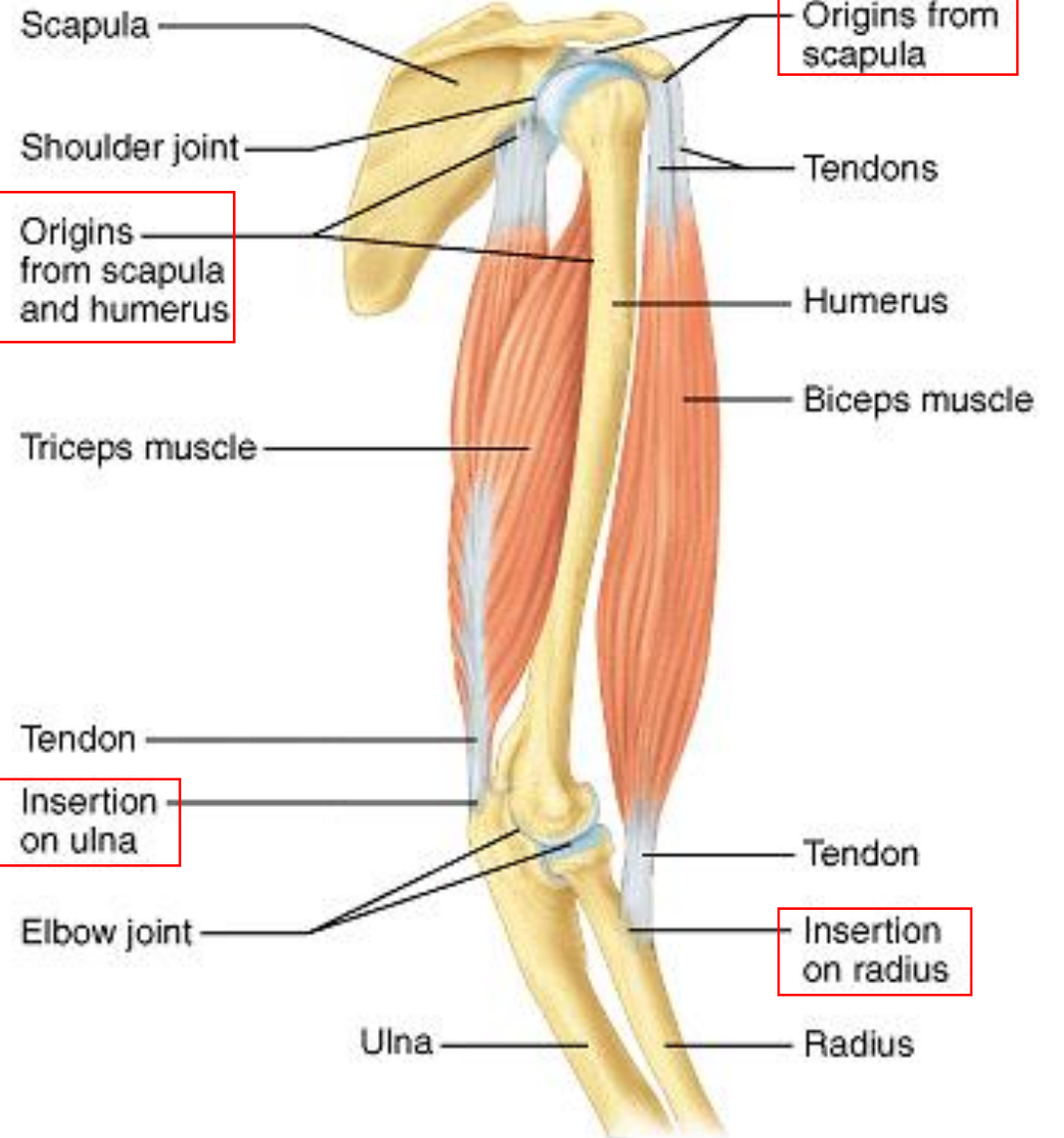
## Attachments

### Origin

- Less movable
- Mostly fleshy
- Proximal end

### Insertion

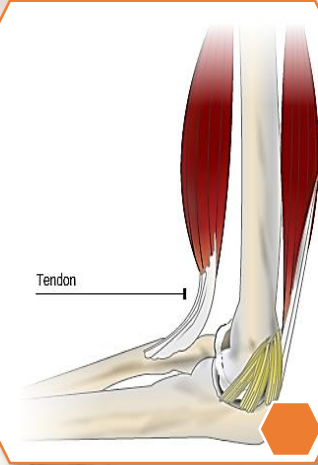
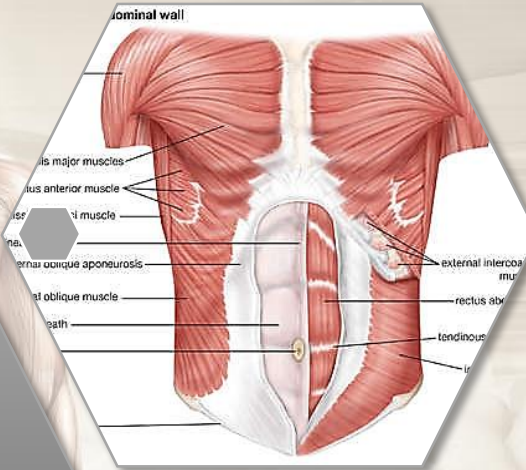
- Most movable
- Mostly fibrous
- Distal end



# Types of Attachments

## Aponeurosis

A thin broad and strong sheet of fibrous tissue.

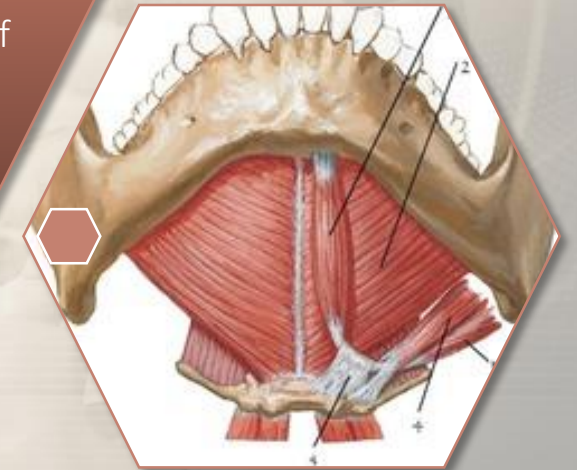


## Tendons

The Tendon is a tough band of fibrous connective tissue that usually connects muscles to bones.

## Raphe

An interdigitation of the tendinous ends of the flat muscles.



# Directions of muscle fibers

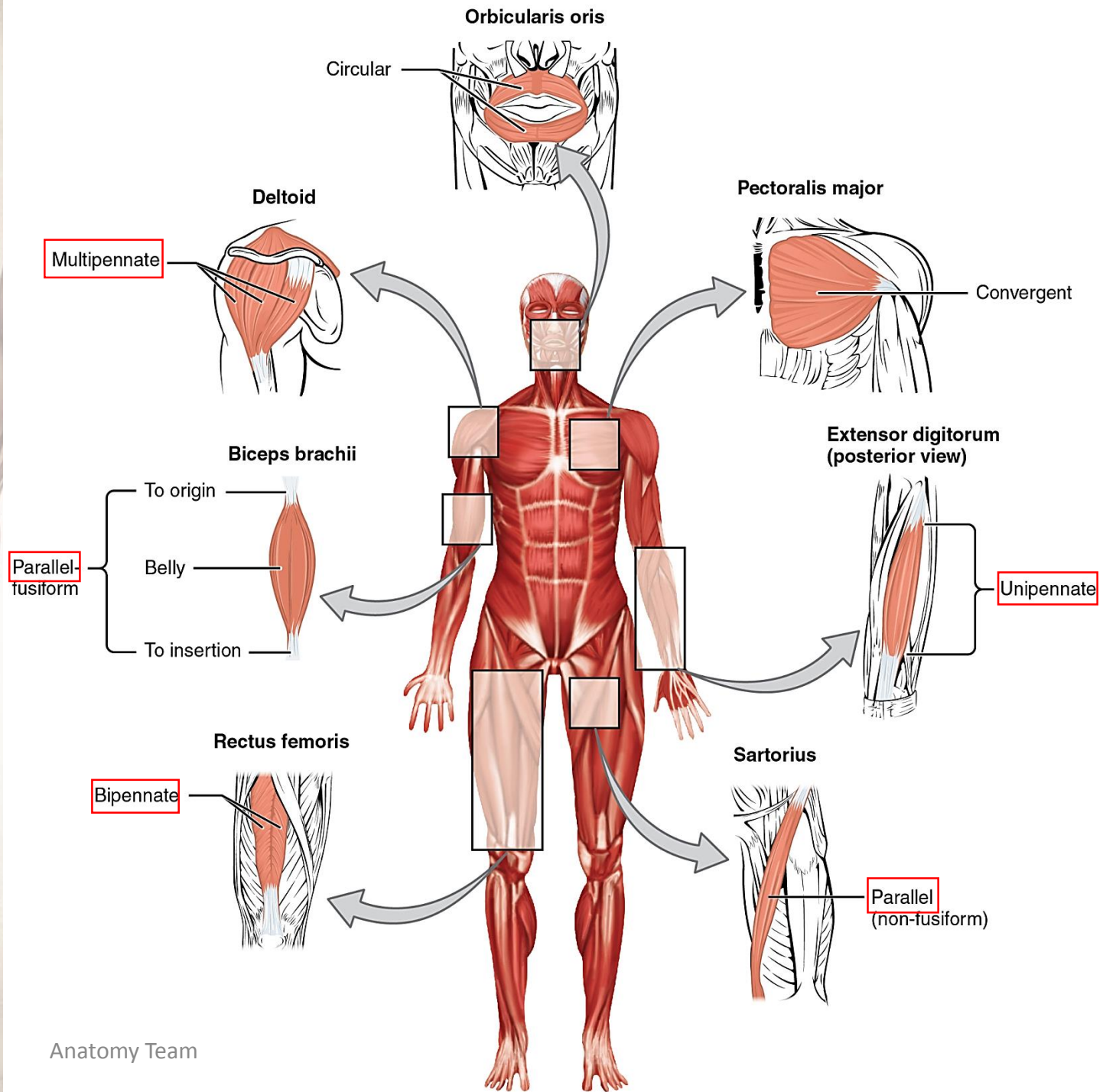
## Pennate

( More powerful, less range of movement )

- Unipennate
- Bipennate
- Multipennate

## Parallel

( More range of movement, less powerful )



# Modes of Actions

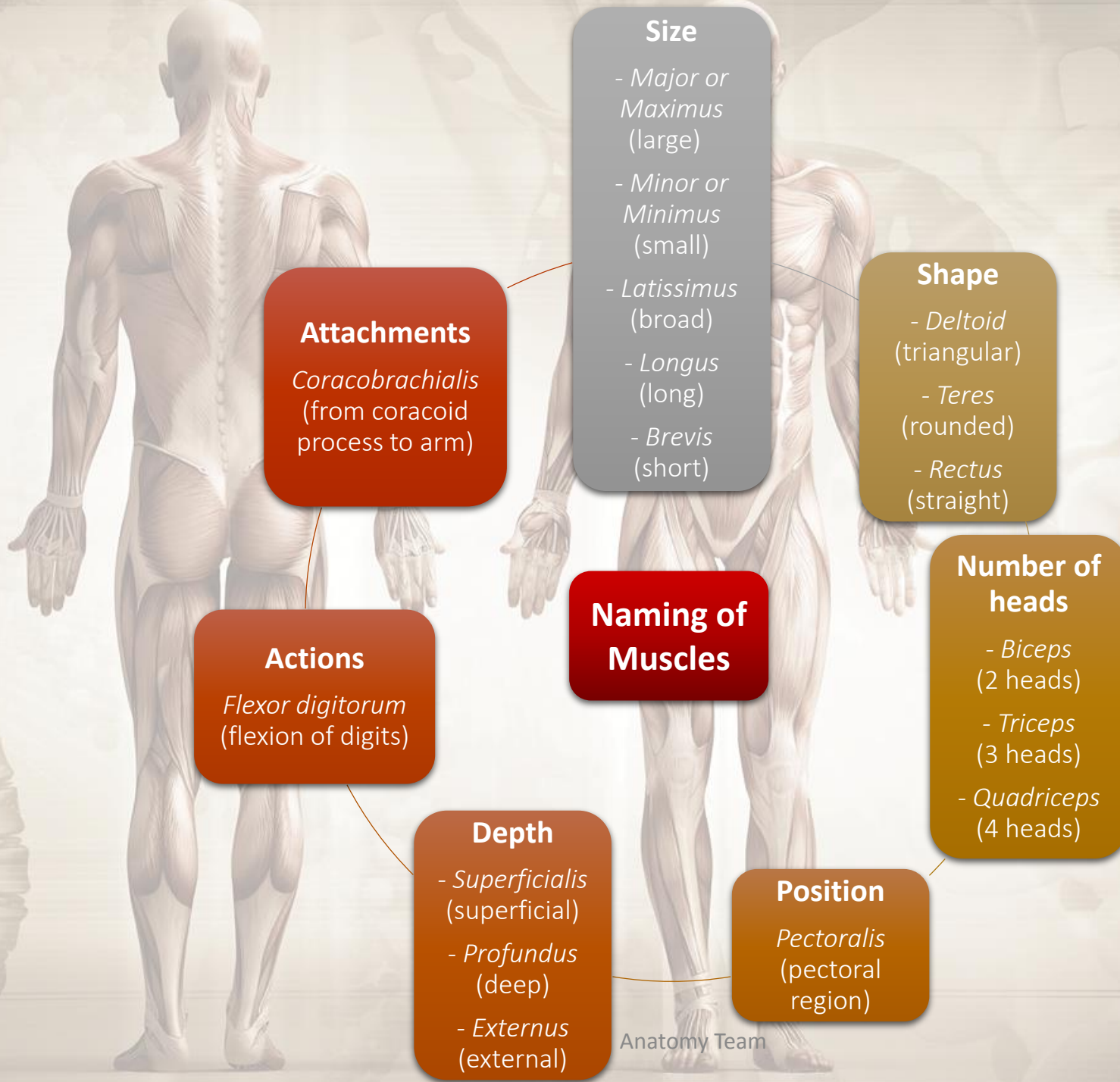
<http://www.youtube.com/watch?v=rAz2Pam73e0>

## Agonist VS Antagonist

Agonist ( prime mover )	Antagonist	Synergist	Fixator
It is the chief muscle responsible for a particular movement e.g. Quadriceps Femoris for extension of the knee joint.	It opposes the action of the prime mover, but before contraction of prime mover, antagonist must be relaxed. e.g. Biceps Femoris is the knee joint flexor.	Assist or prevents unwanted movement in an intermediate <u>joint</u> crossed by the Prime Mover. e.g. Brachioradialis acts as a synergistic muscle to stabilize the elbow joint.	Its contraction does not produce movement by itself but it stabilizes the <u>origin</u> of the prime mover so that it can act efficiently. e.g. Muscles attaching the shoulder girdle to the trunk contract to fix shoulder girdle.



# Naming of Muscles

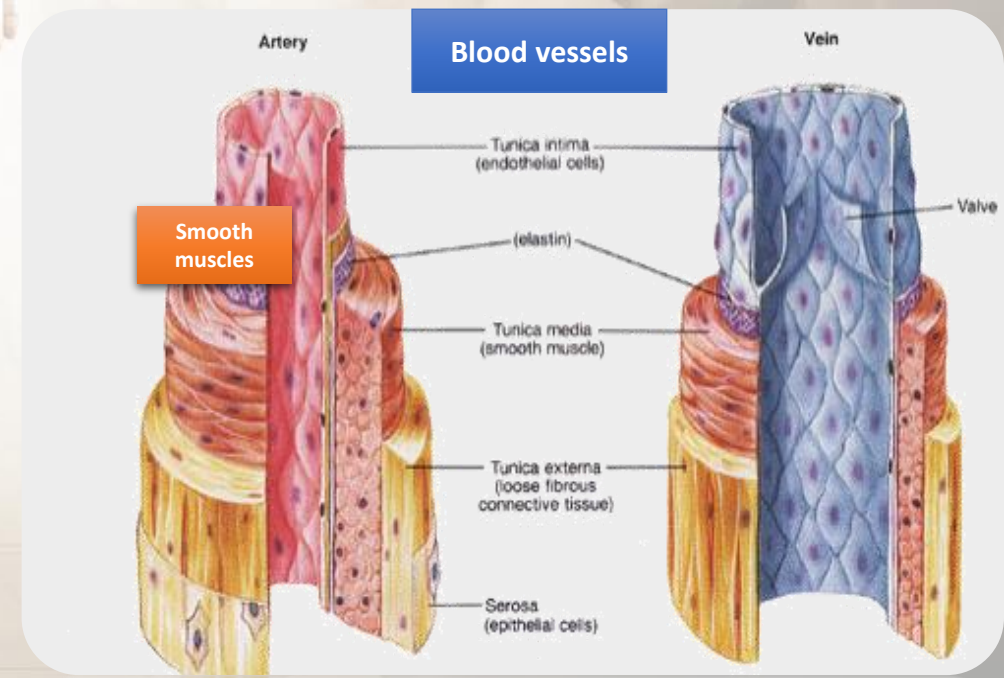
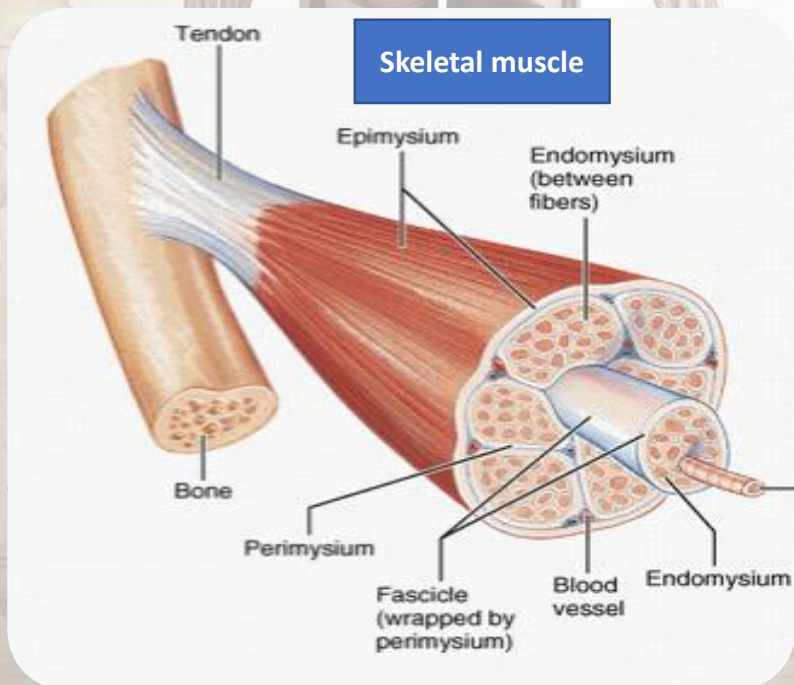


# Nerve Supply

The nerves supplying the skeletal muscles are **Mixed** 60% are Motor 40% are Sensory

The nerves enters the muscles at about the **middle point** of it's deep surface.

The smooth muscles of the blood vessels in the skeletal muscles are controlled by the autonomic nerves system (sympathetic NS).



# MCQs

- Smooth muscles are found in:  
a)The heart    b)walls of arteries    c)muscles attached to skeleton
- The origin of skeletal muscles is usually:  
a)Fleshy    b)distal    c)more movable
- Pennate muscles are usually :  
a)More range of movement    b) parallel to body midline    c)more powerful
- When a muscle is in a synergist mode of action its function is:  
a)Stabilize the origin of agonist mover    b) contraction responsible for a certain movement  
c) Prevent unwanted movement in a joint

# عمل الفريق

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