



# Sports & Physical Education

## Human Anatomy

### Muscular System



# Muscular System

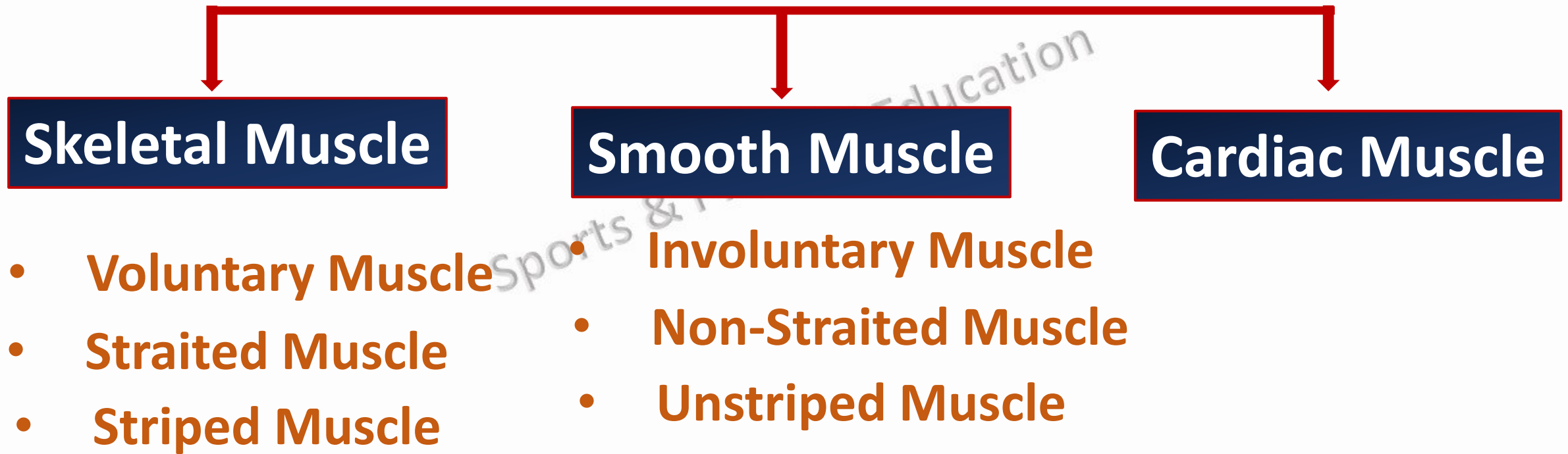
## Muscles

The muscular system is responsible for the movement of the human body. Attached to the bones. Muscles have an important role in the human body because the muscles have a different ability to contract and help in mechanical work. **600-640 muscles are found in human body. Muscle mass is about 45% of the body mass, 25% of muscle is protein and 75% is water.**



# Muscular System

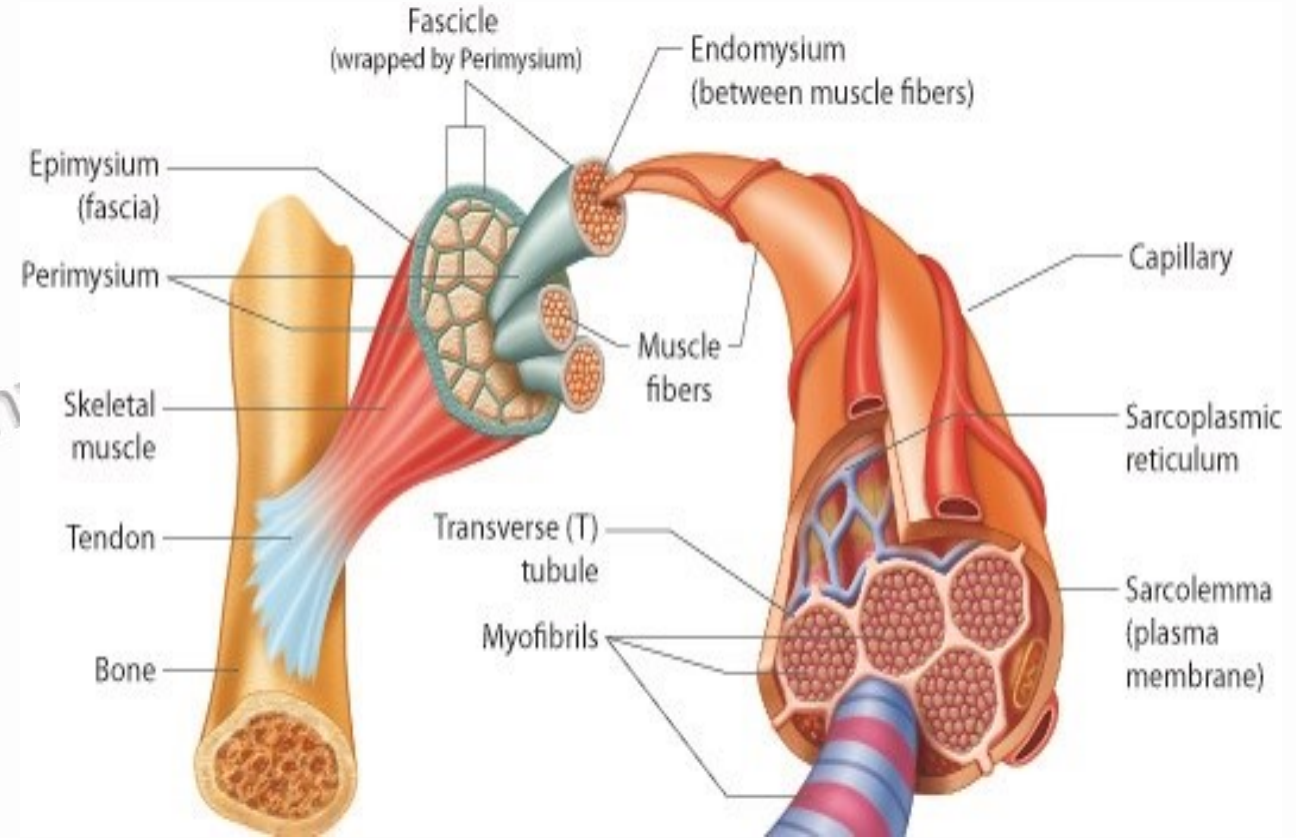
## Type of Muscle





# 1. Skeletal Muscle

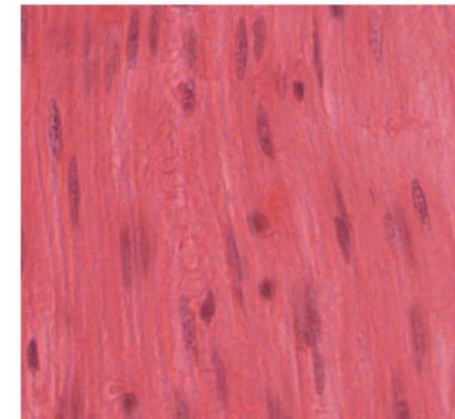
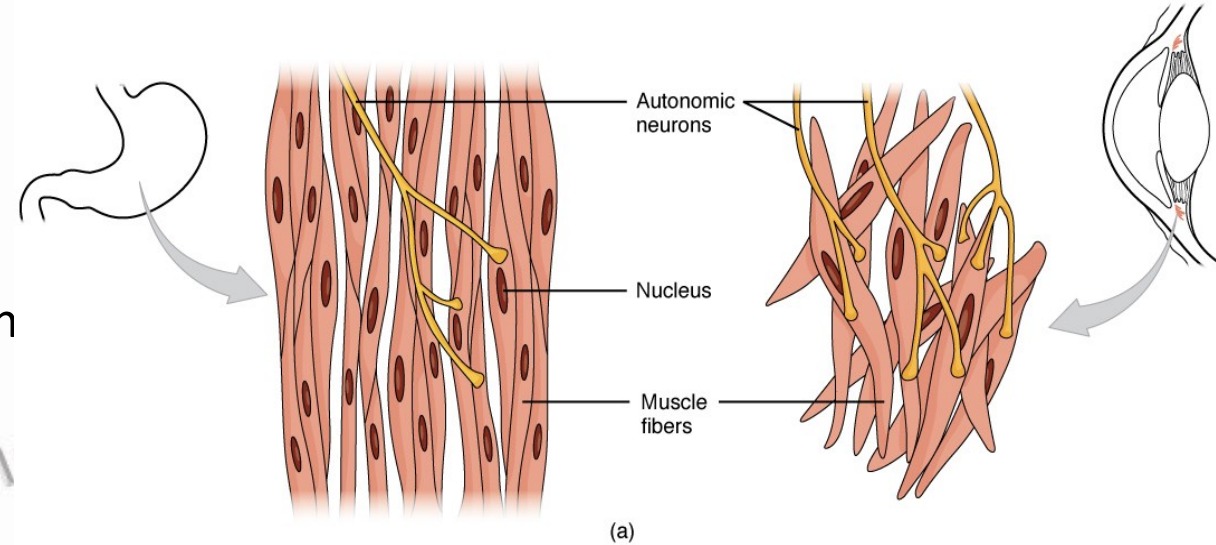
skeletal muscle, also called voluntary muscle, in vertebrates, most common of the three types of muscle in the body. Skeletal muscles are attached to bones by tendons, and they produce all the movements of body parts in relation to each other. Unlike smooth muscle and cardiac muscle, skeletal muscle is under voluntary control.



## 2. Smooth Muscle



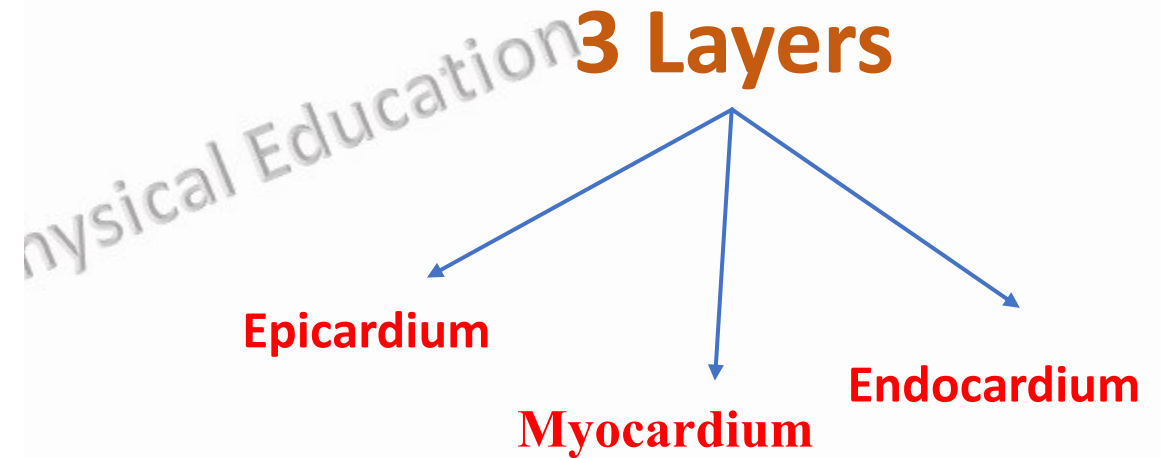
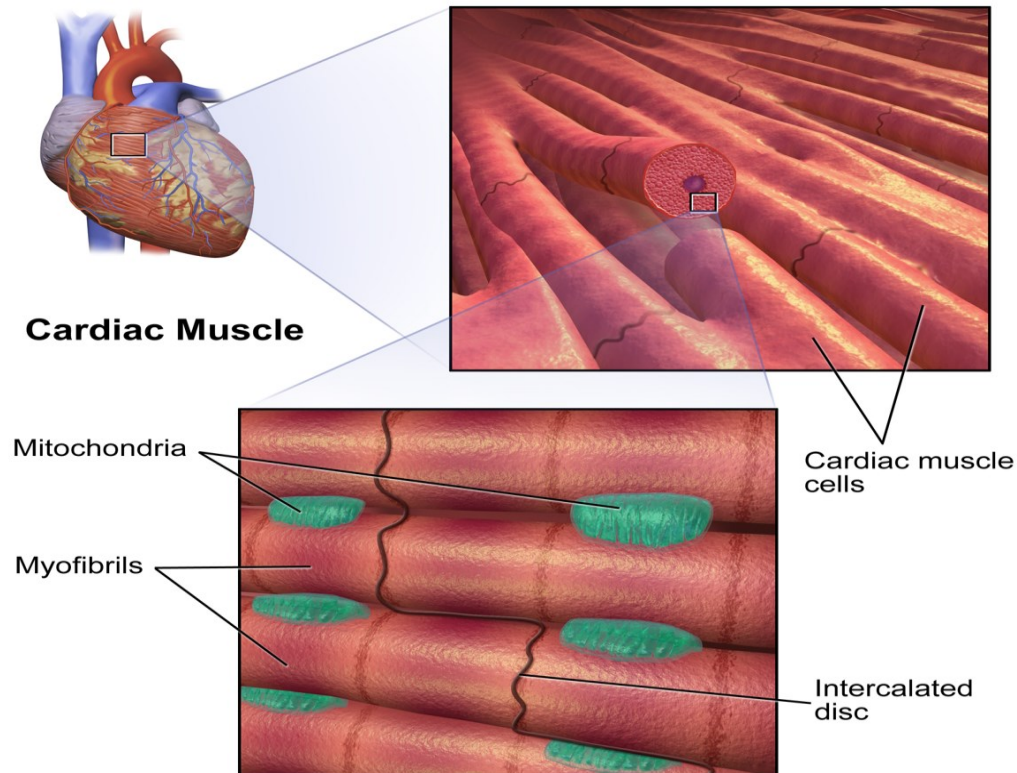
Smooth muscle, also called involuntary muscle. These are the muscles on which there is no effect of the desire of the person, it works automatically, it is compressed and expands on its own. **Smooth muscle is found in stomach and intestines** where it helps with digestion and nutrient collection. It is **found throughout the urinary system** where it functions to help rid the body of toxins and works in electrolyte balance. It is **found throughout arteries and veins** where it plays a vital role in the regulation of blood pressure and tissue oxygenation. Without these vital functions, the body would not be able to maintain the most basic functions. All the internal organs and internal organs in our body are made up of involuntary muscles like lungs, liver, spleen etc. In which the contractile proteins actin and myosin are not found .



# 3. Cardiac Muscle

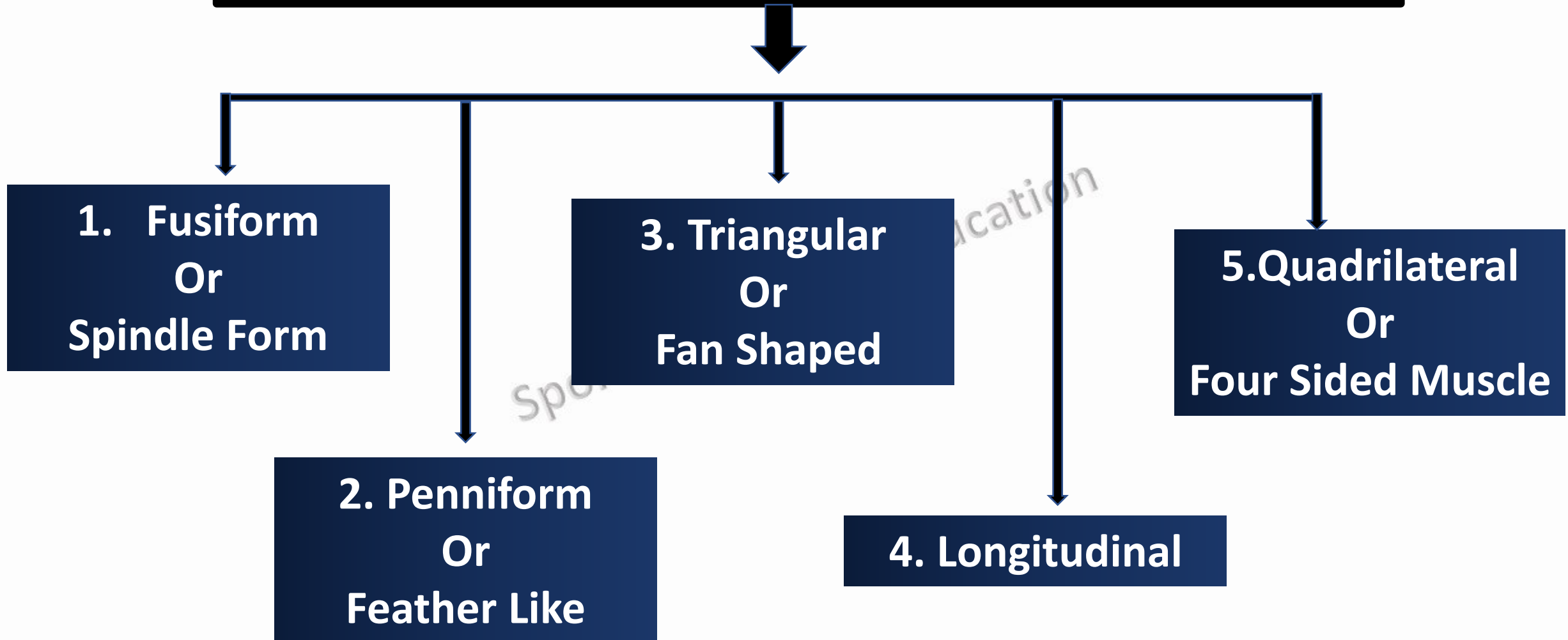


Cardiac muscle also called **heart muscle** . These muscles make up the internal organs of the heart Heart muscles surround the heart The structure of these muscles is striated like skeletal muscles but their function is like involuntary muscles which is compressed by itself . These are not controlled by human will.





# Structural Classification of Muscle



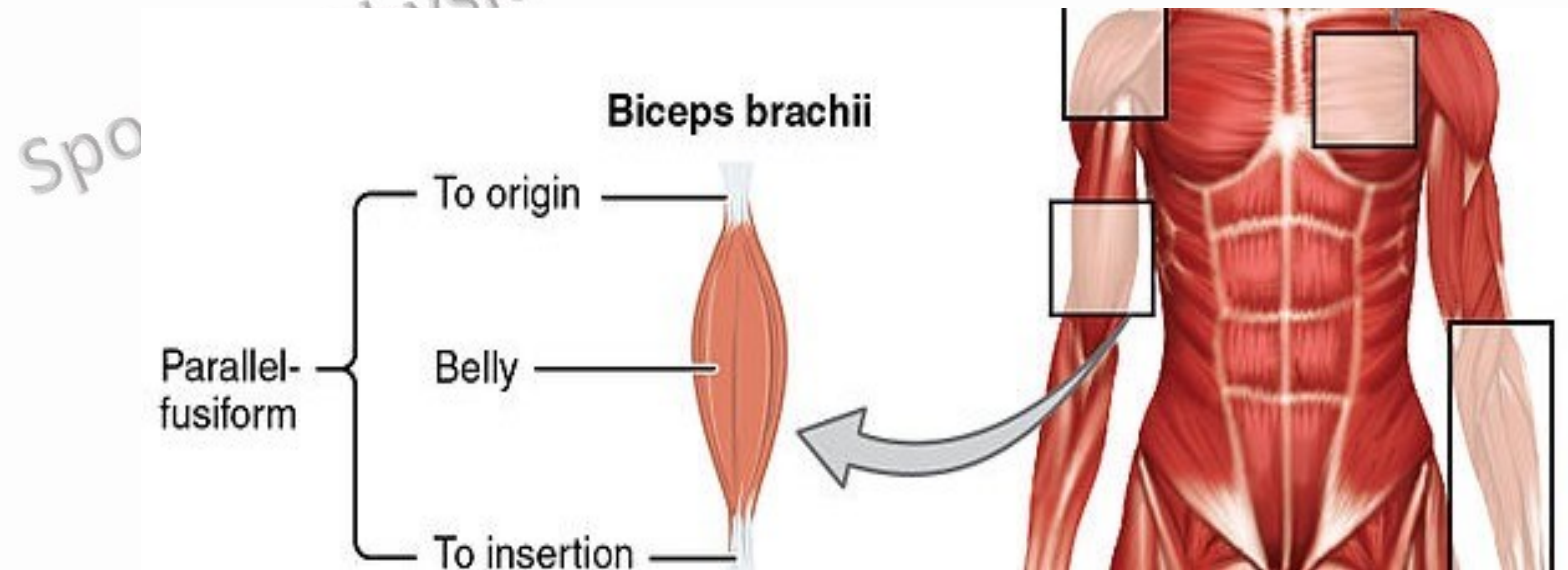
# Structural Classification of Muscle

## 1. Fusiform Or Spindle Form

In a type of muscle, the fibers are arranged in such a way that the muscle appears round in the middle and narrow at both ends, this type of muscle is long, short, thick and thin, in shape it looks like a cylinder.

### ➤ Example –

- **Biceps Brachialis**
- **Radialis**





# Structural Classification of Muscle



## 2. Penniform Or Feather Like

This muscle is shaped like a bird's wing, in which the fibers are arranged parallel to each other. The arrangement of these fibers in diagonal is related to the direction of stretch.

This type of muscle is divided into **Three types-**

### (a) Unipenniform

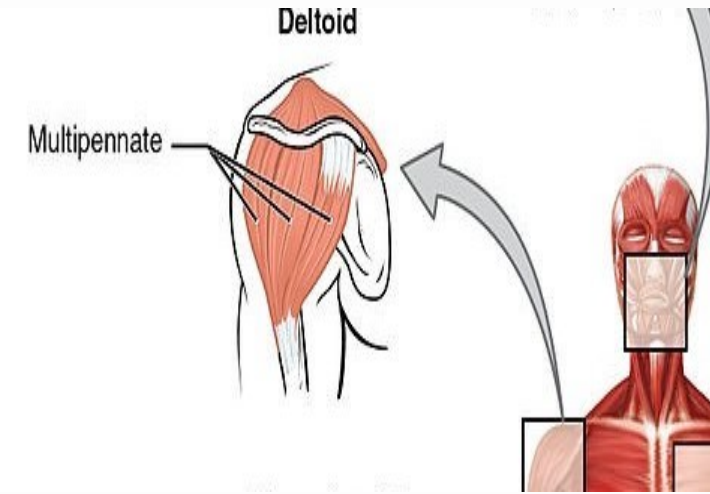
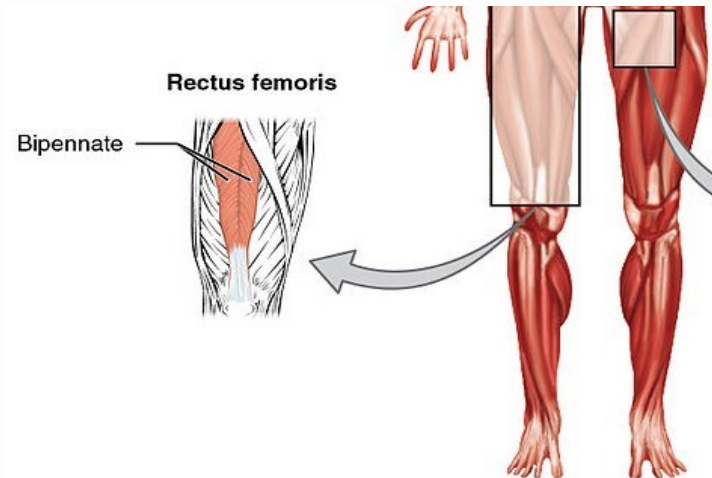
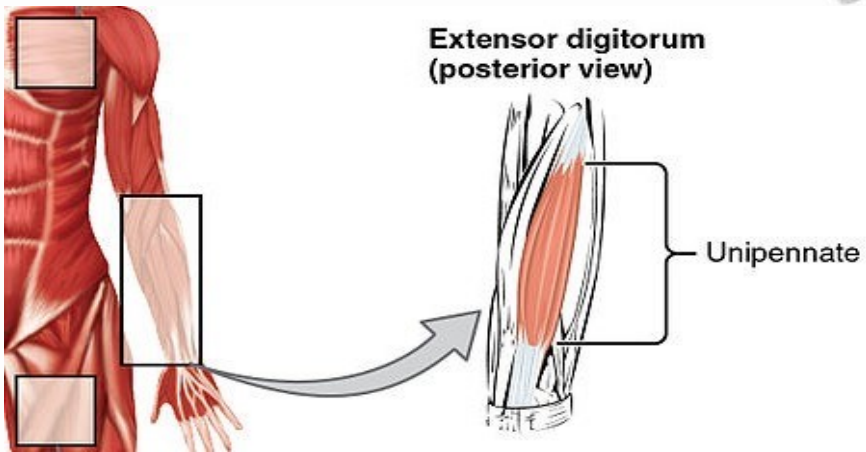
- Tibialis Posterior
- Semimembranosus
- Extensor Digitorum Longus

### (b) Bipenniform

- Rectus Femoris
- Longus Colli

### (c) Multi Penniform

- Deltoid muscle



# Structural Classification of Muscle

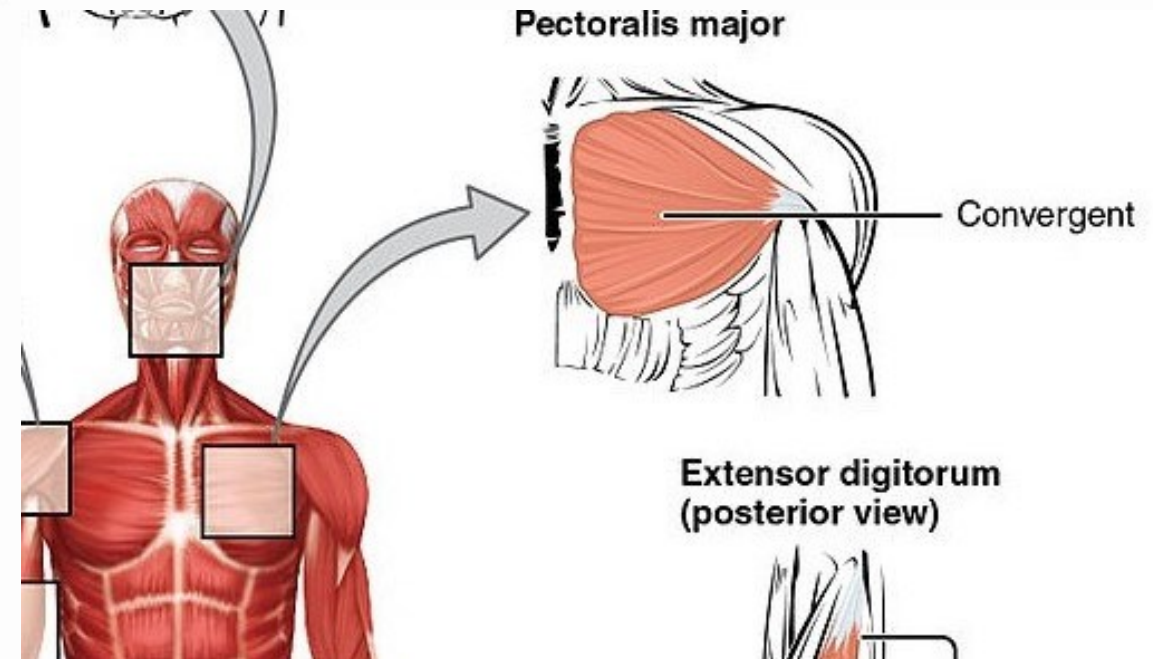


## 3. Triangular Or Fan Shaped

This muscle is thick and appears to be triangular in shape, in which the fibers start from one place and spread. That is to say, one end of the muscle is narrowly attached to the tendon, and the other is broadly attached to the tendon.

### ➤ Example –

- Trapezius
- Pectoralis Major
- Temporalis
- Gluteus Medius

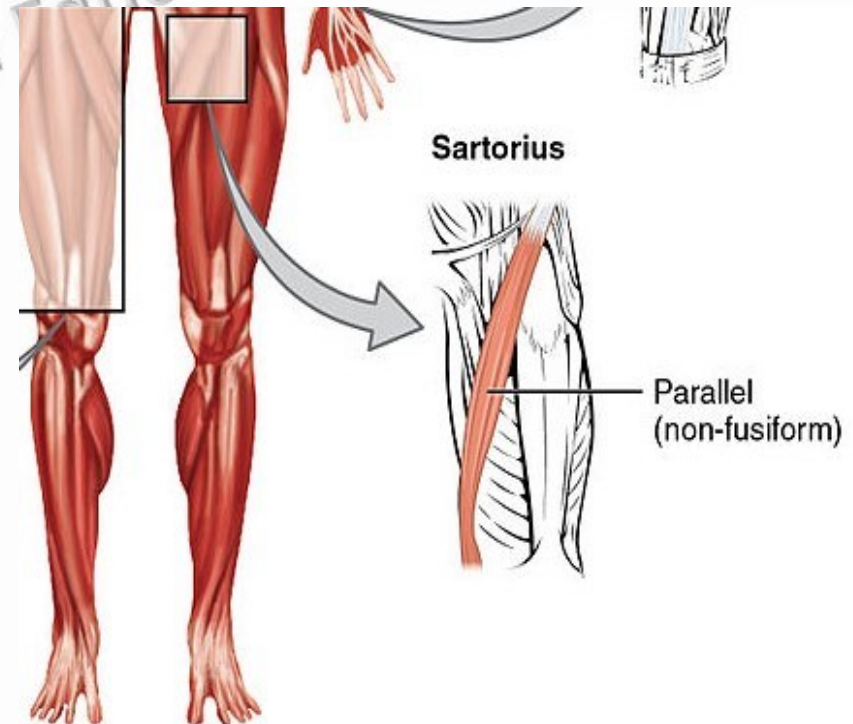


# Structural Classification of Muscle

## 4. Longitudinal

This muscle is long, thin and ribbon-like in which the fibers are parallel to each other. It is a weak muscle because it is long.

- **Example –**
  - **Sartorius**
  - **Rectus Abdominus**





# Structural Classification of Muscle

## 5. Quadrilateral

This muscle is square and thick, its fibers are parallel to each other, this muscle is small and strong.

- **Example –**
- **Rhomboid Muscle**
  - **Intercostal Muscle**
  - **Pronator Quadratus**





## **Myology** - Study of structure, function and diseases of muscle

- **Longest Muscle** – Sartorius
- **Smallest Muscle** – Stapedius
- **Largest Muscle** – Gluteus Maximus
- **Strongest Muscle** – Lower jaw Muscle



# Thank You for Watching



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