

Muscles

Definition of muscles

A band or bundle of fibrous tissue in a human or animal body that has the ability to contract, producing movement in or maintaining the position of parts of the body.

Human body has more than 600 muscles.

Functions of the Muscles:-

1. Movements.
2. Protects Organs.
3. Maintaining Postures.
4. Generating Warmth.

Classifications of muscles:-

1. Depending upon the presence or absence of striation.
2. Depending upon the control.
3. Depending upon the Function.

Depending upon the presence or absence of striation

- a) Striated Muscles:- A large number of Transverse lines are seen at regular interval (striped or streaked like structure.) e.g.:- Skeletal and cardiac muscles.
- b) Non Striated Muscles: - The muscles without cross striations. For an example: - Bladder.

Depending upon the control

In this again muscles are classified into two types:-

- a) Voluntary muscles: - (under control) e.g.:- Skeletal muscles.
- b) Involuntary muscles:- (not under control). e.g.:-Cardiac muscle.

Depending upon the function

The muscles are classified into three types depending upon the functions:-

- a) Skeletal Muscle
- b) Cardiac Muscle
- c) Smooth Muscle

a) Skeletal Muscle

- Skeletal Muscles are in association with bones forming the Skeletal System.
- These muscles form 40 to 50% of body mass.
- These muscles are Voluntary and striated.
- These muscles are supplied by somatic nerves.

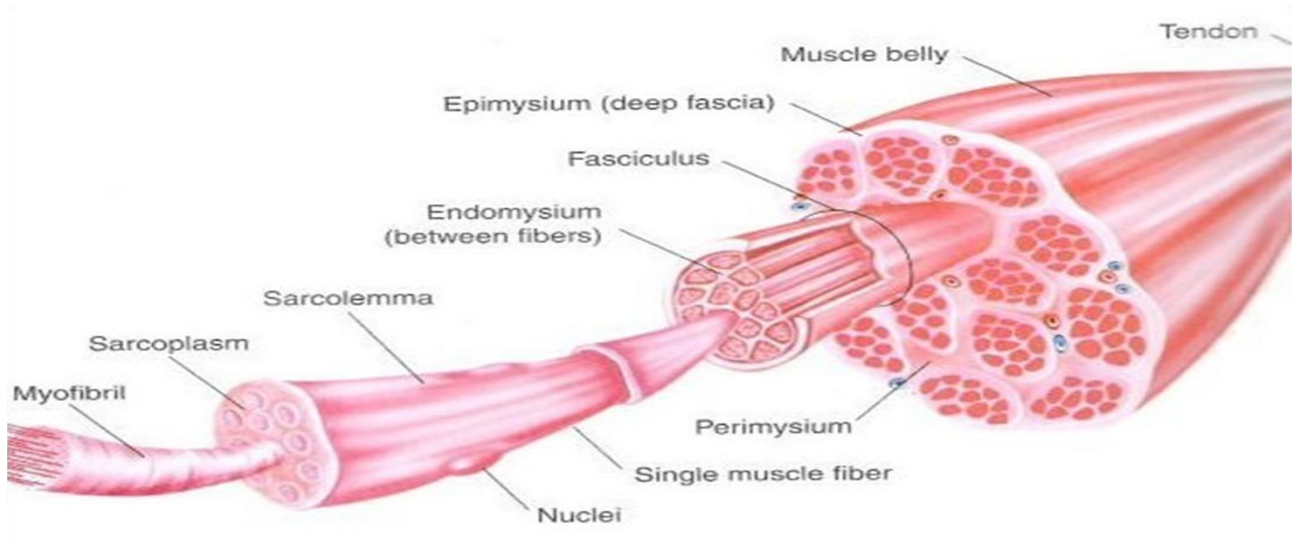
b) Cardiac Muscles

- Cardiac muscle forms the musculature of the heart.
- These muscles are Striated and Involuntary.
- Cardiac muscles are supplied by both sympathetic and parasympathetic divisions of autonomic nervous system.

c) Smooth Muscles

- The muscles which are association with Viscera, are called smooth muscles or visceral muscles.
- These muscles are supplied by supplied by sympathetic and parasympathetic divisions of autonomic nervous system.
- Smooth muscles forms the main contractile units of wall of the various visceral organs and pre present in the following structure:-
 1. Wall of organs like oesophagus, stomach and intestine in gastrointestinal tract.
 2. Ducts of digestive glands.
 3. Trachea, bronchial tube and alveolar ducts of respiratory tract.
 4. Wall of blood vessels in circulatory system.
 5. Ureter, urinary bladder and urethra in excretory system, reproductive system.

Structure of skeletal muscle:-



Features Of skeletal, cardiac and smooth muscle fibres are:-

Features	Skeletal	Cardiac	Smooth
Location	In association with bones	In heart	In the visceral organ
Shape	Cylindrical and unbranched	Branched	Spindle Shape and unbranched
No of nucleus	One or more	one	one
Cross striations	present	Present	Absent
Depolarization	Upon stimulation	Spontaneous	Spontaneous
Tetanus	Possible	Not possible	Possible
Speed of contraction	Fast	Intermediate	Slow
Neuromuscular junction	Well defined	Not well defined	Not well defined
Action	Voluntary action	Involuntary action	Involuntary action
Fatigue	Possible	Not possible	Not possible

Reference Book:-

- ✓ General Anatomy by B. D. Chaurasia, (5th edition)
- ✓ Essentials of Medical Physiology by Sembulingam (6th edition).