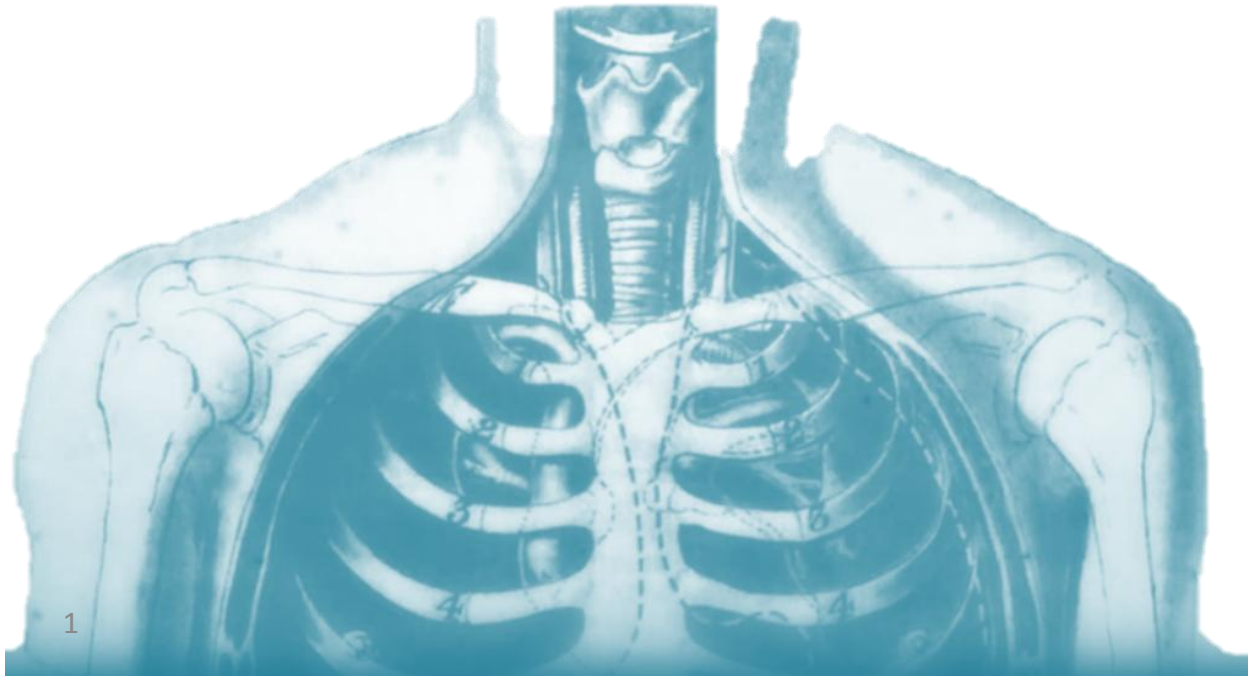




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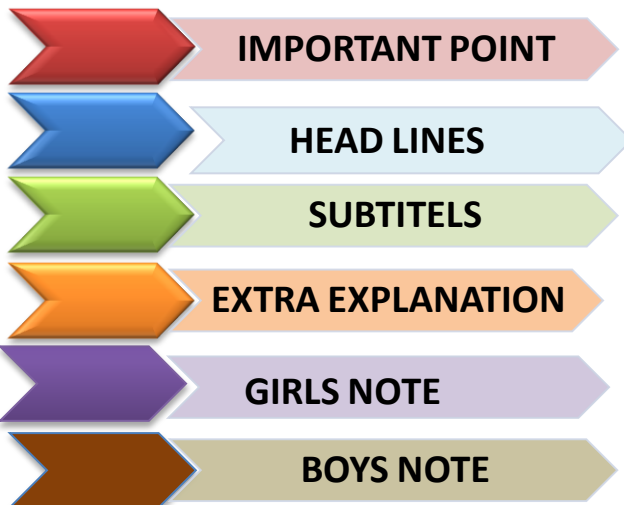
Muscular system



Objectives

- 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.

COLOR INDEX



Muscular system

Has 2 main types

مخططة لأنها
عبارة عن
fabrious

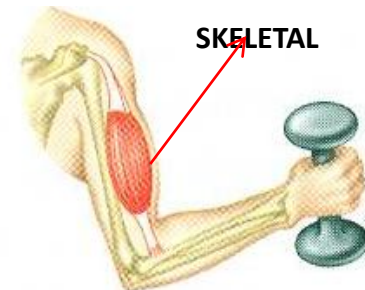
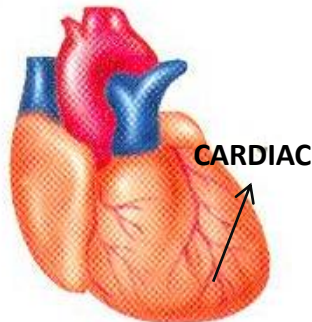
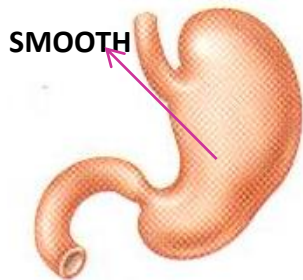
A) Involuntary muscles

B) Voluntary muscles

1- Smooth :
Found in the
walls of viscera .

2- cardiac :
Found only in the
heart .

Skeletal muscles:
Attached to the
skeleton and cause its
movement.



Main criteria of skeletal muscles:

- 1- **Striated** : because of their bonding pattern when seen under the microscope .
- 2- **Attached to the skeleton and cause its movements** .
- 3- **Voluntary** :because their contraction can be consciously controlled .
- 4 –**supplied by somatic nerves** .

Arrangement or the direction of muscle fibers :

وفي الشرائح ذكر نوعان فقط و هما :

١- الألياف المتوازية مع خط الحركة

1) Parallel Fibers

More range of movement → less powerful

2) Pennate (oblique) Fiber

More powerful → Less rang of movement

٢- الألياف العضلية المائلة

Pennate (oblique) Fibers

Uni-pennate

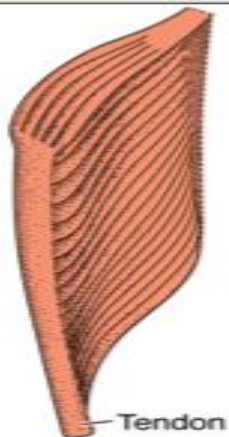
The muscle resembles a half of a feather .

Bi-pennate

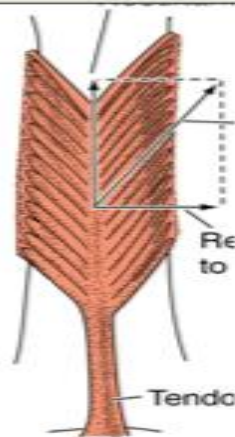
The muscle resembles a complete feather .

Multi-pennate

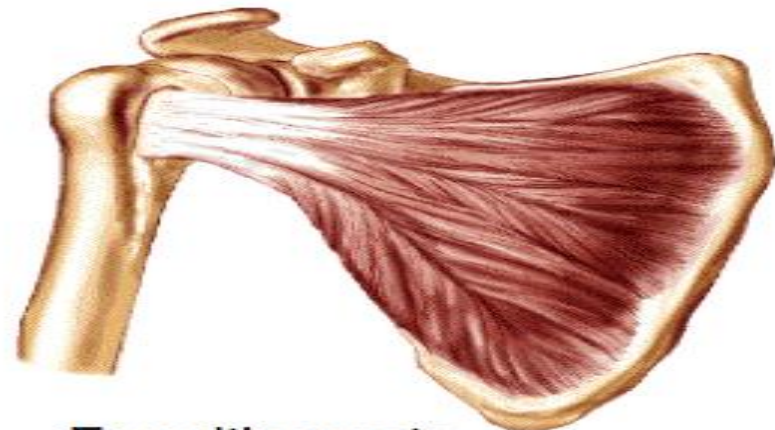
The muscle resembles three or more feathers attached at their bases.



C. Unipennate



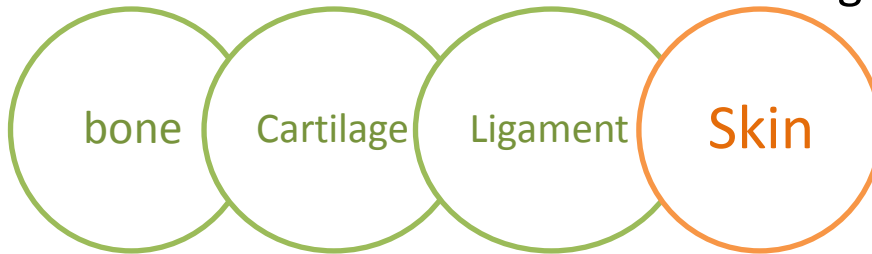
D. Bipennate



E. multipennate

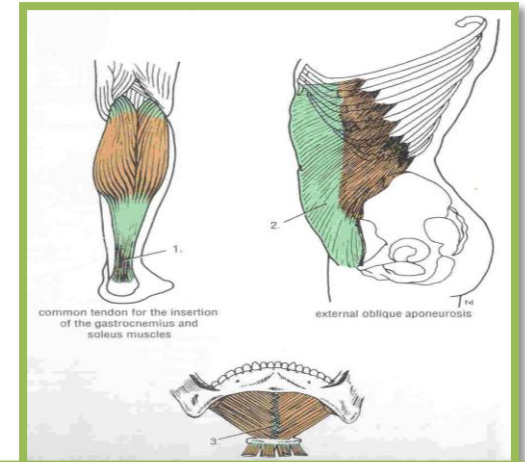
Attachments of skeletal muscle :

A skeletal muscle usually attaches a bone to another bone (often across a joint) or bone to another structure such as cartilage , ligament or skin .



الجلد: غير مذكور بالشرائح

Types of attachments :



1-Tendons

- (وتر)
- Fiber bundle
- e.g: Muscles parties

2-Aponeurosis

- الصفاق :
- وهو غشاء ليفي شبيه بالوتر المنبسط والذي يعمل على ربط العضلات ببعضها أو بالعظام أو أي من التراكيب السابقة.

3-Raphe

- تداخلات إصبعيه الشكل للنهايات الوترية للعضلات المنبسطة.

Number of attachments :

Each muscle has **mostly two attachments**

1 – Origin : → proximal end + Mostly fleshy + least moveable .

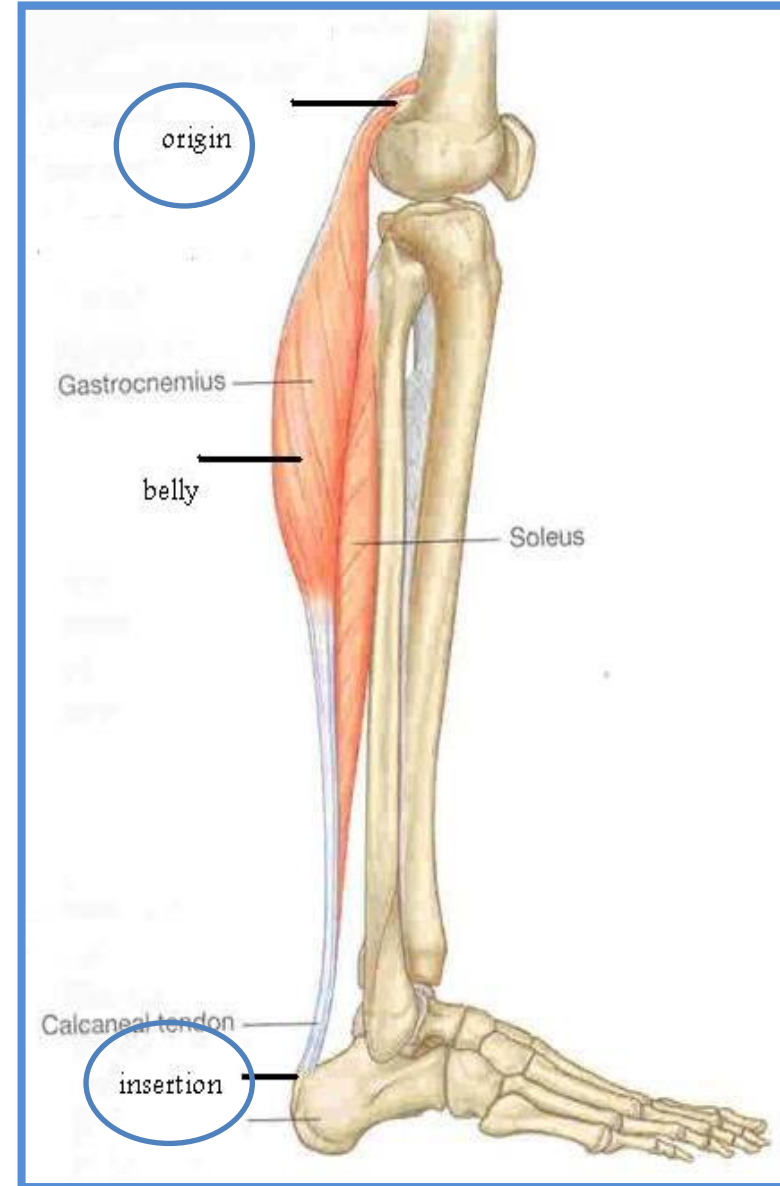
هو الطرف القريب و حركته تكون ضئيلة وأكثره لحمي .

2 – Insertion : → Distal end + Mostly fibrous + Most moveable .

وهو الطرف البعيد ويكون ليفي في معظمه ومدى الحركة يكون كبير .

- **Origin less moveable than insertion**

Each movement has a main special muscle and other helpful muscles.



Mode of action

1 – Prime mover (agonist)	العضلة الرئيسية المسؤولة عن حركة معينة مثال : Extension of the knee joint
2- Antagonist	They are the responsible muscle for muscle movement of anti-move e.g : Flexor of knee joint
3 – Synergist	العضلة التوافقية .. عملها : تقوم بمنع الحركات الغير مرغوب فيها في الـ agonist intermediated joint وتعتبر مساعدة للنوع الأول
4- Fixator	انقباضها لا يحدث أي حركة لكن تقوم بتثبيت او موازنة الـ organ لحركة عضلة الـ prime mover
<p>(Agonist and antagonist) متعاكستين في الحركة لكنهما ينتجان عملية تكاملية للحركة << يحدث عضلة ما (agonist) فيحدث لعضلة أخرى (antagonist) agonist شد لعضلة Antagonist ارتخاء لعضلة</p>	

video to explain these
movement in a simple way



(2:07)minutes

<http://www.youtube.com/watch?v=tUyp5v0kfac>

Remember:

The difference between type 3&4

synergist عمله يكون على مفصل joint
Fixator عمله يكون على عضو organ

Naming of Muscles according to:

Size :

- 1- Major or maximus (large).
- 2- Minor or minimus (small).
- 3- Latissimus (broad).
- 4- Longus (long).
- 5- Brevis (short).

Position :

Pectoralis (pectoral region)
Pectoral organ نسبة للمنطقة الصدرية

Depth :

- 1- Superficialis (superficial). سطحية
- 2- Profundus (deep). عميقة
- 3- Externus (external). خارجية

Shape :

- 1- Deltoid (triangular).
- 2- Teres (rounded)
- 3- Rectus (straight).

Number of heads :

- 1- Biceps (2 heads).
- 2- Triceps (3 heads).
- 3- Quadriceps (4 heads).

Attachments :

Coracobrachialis (from coracoid process to arm).

يذكر فيها الاسم على هيئة اسم مركب (بمعنى الجذور اللاتينية للمكانين تدمج في كلمة واحدة).

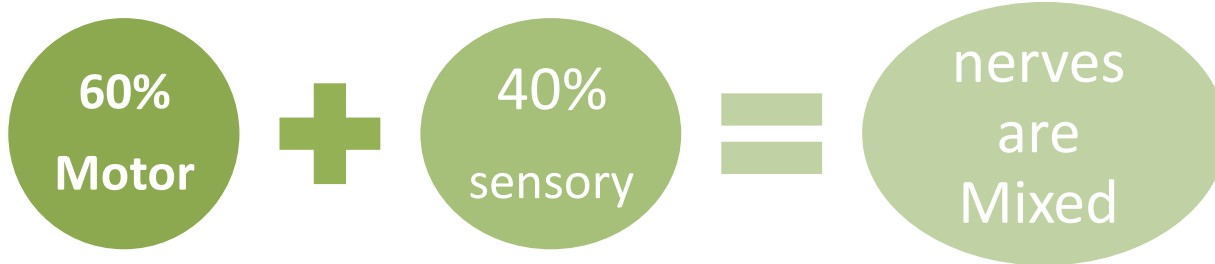
Action :

Flexor digitorum: flexion of digits.

Nerve supply of skeletal muscles :

الأعصاب المرتبطة والمزودة للعضلات الهيكلية تكون مختلطة.
بمعنى أنها ليست حركية أو حسية فقط بل خليط منها بنسبة ٦٠ % أعصاب حركية
و ٤٠ % أعصاب حسية
+ بالإضافة إلى وجود بعض من الألياف اللا إرادية (Autonomic) التي
تغذي الأوعية الدموية للعضلة.

The nerve enters the muscle at about the middle point of its deep surface.



SUMMARY

- * Skeletal muscles are striated, voluntary muscles attached to & move the skeleton.
- * They have 2 attachments: **origin & insertion**.
- * Their fibers may be **parallel** or **oblique** (pennate) to the line of pull.
- * According to mode of action, they are classified as: **prime mover, antagonist, synergist** or **fixator**.
- * They may be named according to: size, shape, number of heads, position, attachments, depth or action.
- * They are supplied by a **mixed nerve**.



Enrichment Information+

Functions of the skeletal muscles :

- 1- they produce different movements of the body by their contraction , which approximate the bones of the skeleton on which they are attached.
- 2- their contractions pump the venous blood to the heart .
- 3- they share in the heat production to the body .

*معلومة ذكر منها فقط نقطيتين بالشرائح و هي :

طرق تنظيم الألياف العضلية المكونة للعضلة وذكر منها فقط الـ Parallel و الـ oblique
بينما هنا أنواع أخرى وهي :

* circular fibers : the muscle fibers are arranged in concentric rings . Muscles with this patter form sphincter .

*Triangular fibers : the muscle fibers converge into a narrow terminal tendon .

I read → I learn = I become a better person :")

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Designed by:

Sarah Al-Kharashi

Done by:

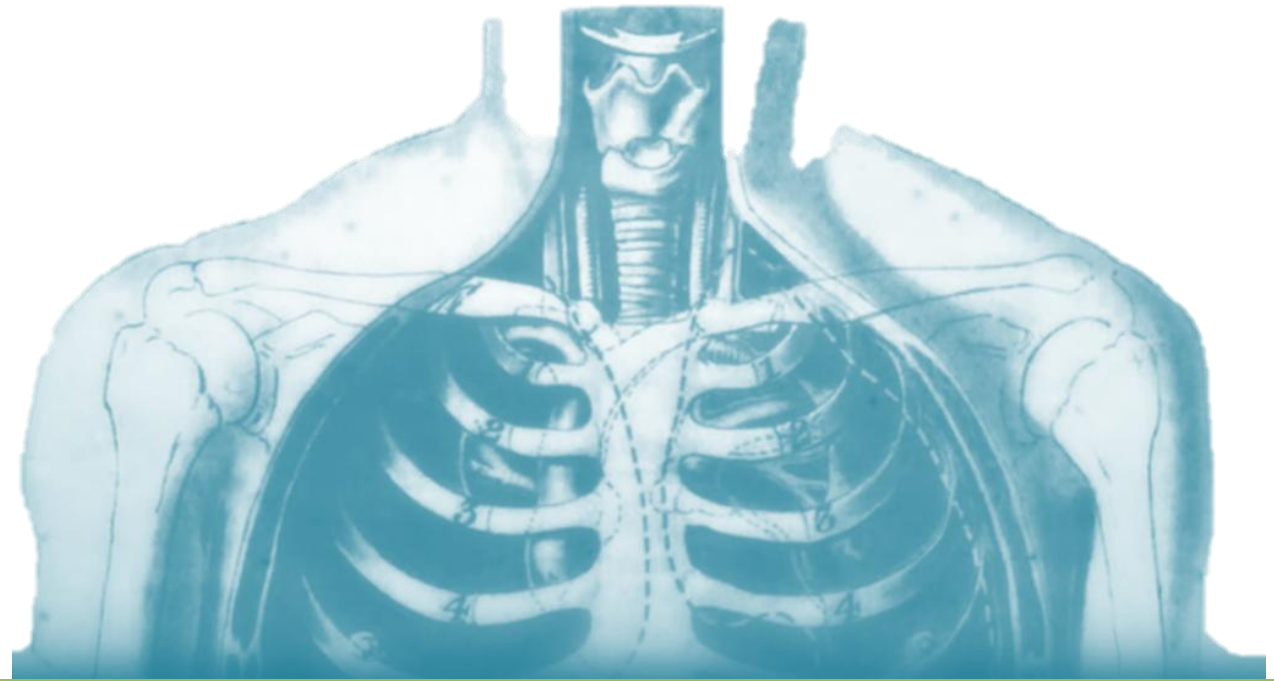
Fatma Saad AlShamrani
& Malak AlMutairi

Team Leaders:

Waad AlManie &
Omar AlMutair

For any comments
or mistakes please
don't forget to
contact us by this
email :

anatomy433@live.com



Good luck



Anatomy Team

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