



ANATOMY TEAM

Lecture (5)

Muscles of the back

OBJECTIVES

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

- ***Distinguish between the different groups of back muscles.***
- ***Compare between groups of back muscles as regard their nerve supply and action.***
 - ***List the back muscles of each group.***
- ***Describe the attachments of each muscle of the superficial group, as well as, its nerve supply and action.***
- ***Describe the triangles of back and their clinical significance.***

تنويه / هذا العمل لا يعتبر مصدر أساسي للمذاكرة وإنما هو للمراجعة فقط والمصدر الأساسي هو السلايدز ، وقد تم التأكد بأنه لا يوجد أي اختلاف بين سلايدز الأولاد والبنات.

Some important notes:

- **Remember** : The origin is the immovable end, while insertion is the movable end
- Deep group is **intrinsic** muscles while Intermediate and Superficial are **extrinsic** muscles.
- The Only group develop in the back is **deep** group
- The largest muscle in the deep group is **erector spinae**
- erector spinae = erect the spine=**extend the spinal column**
- erector spinae : a group of muscle laying longitudinally, **short muscles** fibers.
- **Thoracolumbar fascia** separates the Intermediate from deep group.
- **Deep, Intermediate and Superficial** group found anatomically in the back but **functionally** → *only the deep group is involved in the movement of vertebral column.*
- All muscles in the superficial connecting vertebral column to scapula except **Latissimus dorsi** (**humerus**)
- All muscles in the superficial group supply by anterior rami of spinal nerves through brachial plexus except **Trapezius** (**eleventh cranial**)
- **Trapezius covered** other three muscle connecting vertebral column to scapula "levator scapulae , rhomboid minor & major".
- Levator scapulae and rhomboid minor & major have the same: **Nerve supply, insertion "medial border of scapula"**.
- **Levator scapulae is attached to transverse process "** of the *first 4 spinal bone "*
- **Levator scapula** → **origin: transverse processes of cervical vertebrae**
- Levator scapulae above Rhomboid minor and Rhomboid minor above Rhomboid major
- (**Erector spinae**) is formed of 3 vertical columns and **each one has a different size and arrangement which allows us to have many degrees of movement not only direct flexion or extension** _ يعني اختلاف اطوال عضلات الظهر يساعد على الانحناء بعدة مستويات وليس فقط بمدى واحد

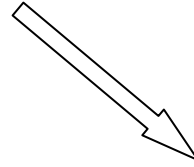
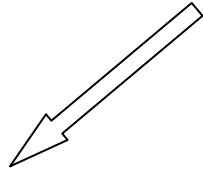
- **Thoracolumbar fascia is a thick fascia** → " **deep fascia**" **which covers the DEEP muscle group**
- Lose areolar connective tissue → when you remove skin "superficial fascia"
- All muscles are covered by thick dense connective sheath called **deep fascia**

Read more :

- 1) http://en.wikipedia.org/wiki/Deep_fascia
- 2) [Muscular System - Skeletal Muscles - Fibers, Called, Myosin, and Cell - JRank Articles http://science.jrank.org/pages/4503/Muscular-System-Skeletal-muscles.html#ixzz2Ex82B1Ea](http://science.jrank.org/pages/4503/Muscular-System-Skeletal-muscles.html#ixzz2Ex82B1Ea)

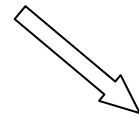
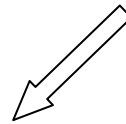
- **TRAPEZIUS**: rotation of scapula during abduction of **humerus above horizontal**
- Abduction of the arm up till 20-30 degree: **supraspinatus muscle**
- Abduction of the arm From 30 or 50-90 degree: **Deltoid muscle**
- Abduction of the arm more than 90 degree: **trapezium**
- **Accessory nerve has 2 parts: one is cranial and the other is spinal**
- Increase Intraabdominal pressure may lead to protruding out of viscera "**hernia**"
- Deep muscles are also called the "postvertebral muscles"
- **iliocostalis and longissimus are going up while spinalis is going down** → " موجود في سلايد الاولاد فقط "
- **Lumber triangle** → **weak point**

BACK MUSCLES



intrinsic muscles

extrinsic



Deep group

Intermediate

Superficial group

1st	erector spinae (iliocostalis, longissimus & spinalis)
2nd	1-Semi spinalis 2-rotators 3-multifideus
3rd	1-Inter spius 2-inter tarsversus

**1-Serratus posterior superior.
2-Serratus posterior inferior .
3-(levator costornum)**

1st layer	1-trapizius 2- latismus dorsi
2nd layer	1-Rhomboid major 2-Rhomboid minor 3-Levator scapulae

N.B: . اللى باللون الأحمر فى هذه الصفحة اخذ بالعملى وليس موجود بالاسلايد

❖ DEEP GROUP OF BACK MUSCLES

(intrinsic muscles)

The word "intrinsic" means the muscle whose origin and insertion is on the vertebral column

Origin	vertebral column
Insertion	vertebral column
Action	move vertebral column & head.
Nerve supply	Posterior "dorsal" rami of spinal nerves

❖ INTERMEDIATE GROUP OF BACK MUSCLES

(Extrinsic muscles)

Origin	vertebral column
Insertion	ribs
Action	respiratory functions. 1-Serratus posterior <i>superior</i> (<i>rib elevator</i>). 2-Serratus posterior <i>inferior</i> (<i>rib depressor</i>).
Nerve supply	Anterior "ventral" rami of thoracic spinal nerves

❖ SUPRERFICIAL GROUP OF BACK MUSCLES:

A-Muscles connecting vertebral column to scapula:-

(Extrinsic muscles)

1- Trapezius

Origin	Spines of cervical & thoracic vertebrae	
Insertion	lateral 1/3 of clavicle + acromion & spine of scapula .	
Action	rotation of scapula during abduction of humerus above horizontal.	<ol style="list-style-type: none"> 1. Upper fibers: elevate scapula. 2. Middle fibers: retract scapula 3. Lower fibers: depress scapula.
Nerve supply	Spinal part of accessory (11 th cranial) nerve.	

2- LEVATOR SCAPULAE; RHOMBOID MINOR & MAJOR

		cervical transverse processes
Origin	1-Levator scapulae 2-Rhomboid minor & major	thoracic spines
Insertion	medial border of scapula.	
Action	1-Levator scapulae 2-Rhomboid minor & major	elevates scapula. retract scapula.
Nerve supply	dorsal scapular nerve	

B- MUSCLE CONNECTING VERTEBRAL COLUMN TO HUMERUS

Origin	<i>Spines of thoracic vertebrae</i>
Insertion	<i>bicipital groove of humerus</i>
Action	<i>extension, adduction & medial rotation of humerus (arm, shoulder joint).</i>
Nerve supply	<i>thoracodorsal nerve. (c6 - c7 – c8 cervical)</i>

❖ MUSCULAR TRIANGLES OF BACK

Auscultatory Triangle	Lumbar Triangle
Site on back where breath sounds are most easily heard with a stethoscope	Site where pus may emerge from the abdominal wall.
Boundaries: latissimus dorsi, (down) trapezius (medial) and medial border of scapula.(Lateral) N.B: ✓ (INSIDE NO MUSCLE)	Boundaries : latissimus dorsi, (medial) posterior border of external oblique muscle of the abdomen, and iliac crest.

This is a useful link for anatomy in general and this lecture in specific:

http://www.getbodysmart.com/ap/muscularsystem/back_muscles/longissimus_capitis/tutorial.html

Quiz time :-

1- *attached to transverse process of vertebrae:-*

- 1-rhomboid minor
- 2-rhomboid major
- 3-trapezius
- 4-longissimus

2- *Nerve supply of latissimus dorsi is:-*

- 1-thoracodorsal nerve
- 2- dorsal scapular nerve
- 3- Spinal part of accessory (11th cranial) nerve.
- 4- Posterior rami of thoracic spinal nerves

3-*the most superficial muscles:*

- 1- Trapezius.
- 2- Levator scapulae.
- 3- Rhomboid minor.
- 4- Rhomboid major

4-*the only muscle of upper limb supply by*

Spinal part of accessory (11 th cranial) nerve is:-

- 1-Levator scapulae.
- 2- Rhomboid minor.
- 3- Rhomboid major
- 4-Trapezius

5-*action of levator scapulae IS:-*

- 1- **Extensors vertebral column**
- 2- **Elevates humerus**
- 3- **depress scapula**
- 4- **elevates scapula.**

6-*What group of muscle is functionally involved in the movement of vertebral column:-*

- 1- **Deep group**
- 2- **superficial group**
- 3- **Intermediate group**
- 4- **all of the above**

7- *Site where pus may emerge from the abdominal wall.*

- 1- **erector spinae**
- 2- **shoulder girdle joints**
- 3- **Lumbar Triangle**
- 4- **Auscultatory Triangle**

8- *levator scapulae; rhomboid minor & major have the same:-*

- 1- **Origin**
- 2- **Action**
- 3- **insertion**
- 4- **all of them**

9-*origin of Levator scapulae is:-*

- 1- **Spines of cervical & thoracic vertebrae**
- 2- **Spines of thoracic vertebrae**
- 3- **thoracic spines**
- 4- **cervical transverse processes**

10- *one of the following is an action of LATISSIMUS DORSI muscle;-*

- 1- **extension**
- 2- **adduction**
- 3- **medial rotation**
- 4- **all of the above**

11- *group of muscle developed in the back;-*

- 1- **deep group of back muscles.**
- 2- **intermediate group of back muscles.**
- 3- **superficial group of back muscles.**
- 4- **intermediate and superficial**

12- *Spinae mean:-*

- 1- **Head**
- 2- **Scapula**
- 3- **Vertebra column**
- 4- **Clavicle**

13- Which one of the erector spine muscles is arising from the ilium of hip to the thoracic region :

1-iliocostalis

2-longissimus

3-spinalis

14-the muscle group that involves in respiratory function is:

1- deep group of back muscles.

2- intermediate group of back muscles.

3- superficial group of back muscles.

15- Thoracolumbar fasci

1-Covers the deep muscles

2- store fat

3- cover the spinal cord

16- rotation of scapula during abduction of humerus ABOVE horizontal by:

1-TRAPEZIUS

2-supraspinous muscle

3-Deltoid muscle

17- Site where breath sounds are most easily heard with a stethoscope:

1- Lumbar Triangle

2- Auscultatory Triangle

3- Thoracolumbar fascia

Q	A
1	4
2	1
3	1
4	4
5	4
6	1
7	3
8	3
9	4
10	4
11	1
12	3
13	1
14	2
15	1
16	1
17	2

GOOD LUCK ;)