

MUSCLES OF THE BACK



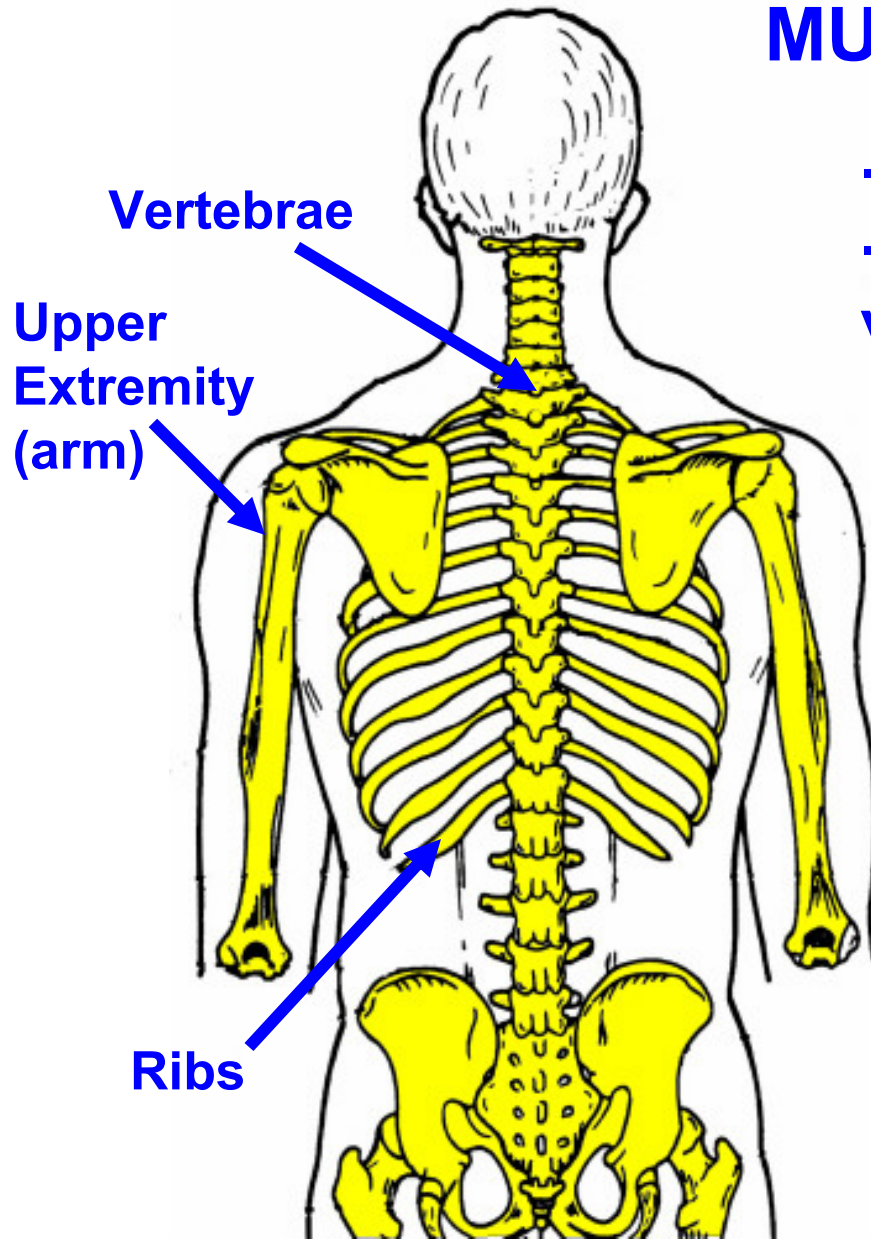
**Complex but divisible
into 3 groups (in layers)
with different functions:**

**A. SUPERFICIAL LAYER -
move upper extremity
(arm)**

**B. INTERMEDIATE
LAYER- Respiratory
muscles (insert to ribs)**

**C. DEEP LAYER - move
trunk and back**

MUSCLES OF THE BACK



- layered and multifunctional
- almost all take origin from vertebrae

IN LAB: ORIENT TO SKELETON

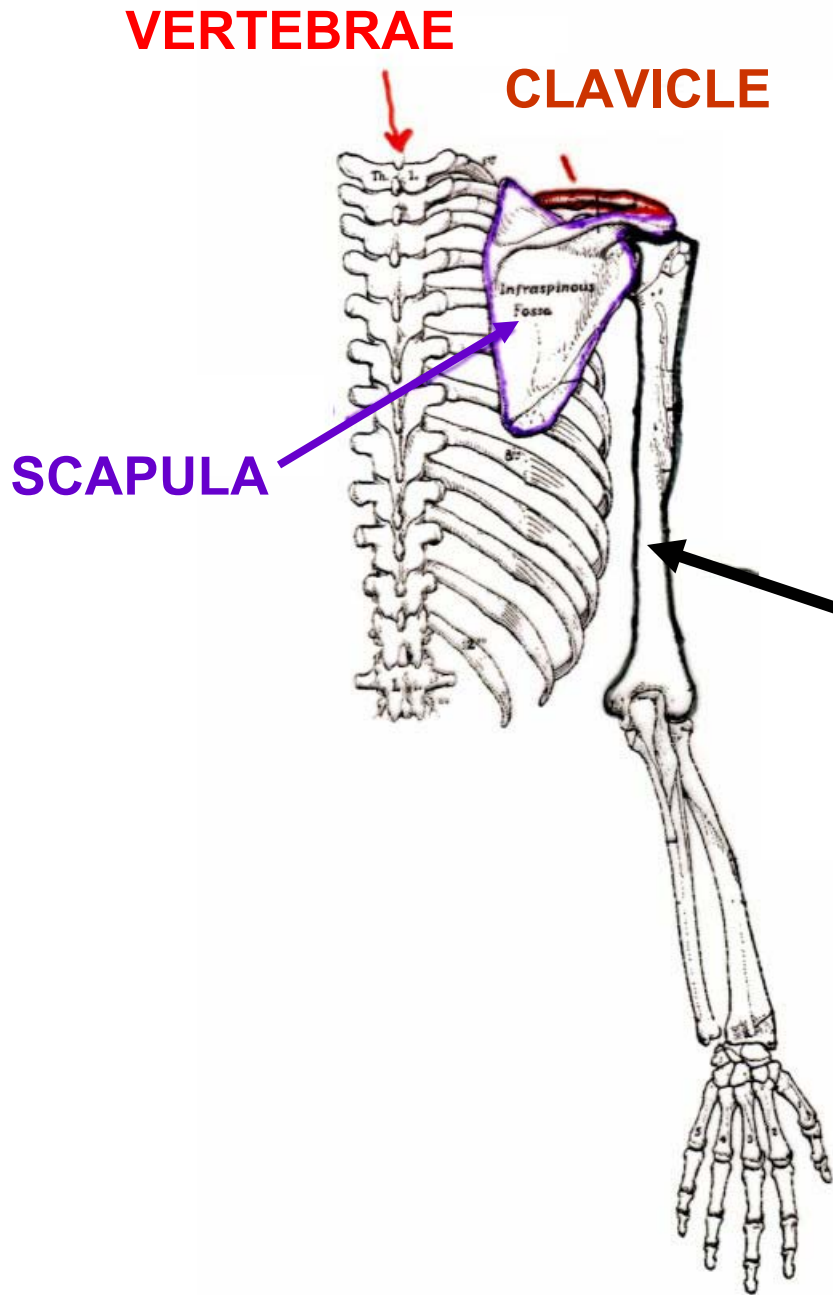
- 1) Vertebra in midline
- 2) Ribs attach to vertebrae (thorax) - ribs move in respiration
- 3) Upper extremity (arm) - mostly free to move; attach to vertebrae by muscles

SUPERFICIAL GROUP- origin VERTEBRAE; insert scapula, clavicle, humerus

SUPERFICIAL MUSCLES OF THE BACK - Atlas Fig. 4.28

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MUSCLE	ORIGIN	INSERTION	ACTION	NERVE
Trapezius	Skull - External occipital protuberance Fascia - ligamentum nuchae Vertebrae - spines of C7, T1-12	Clavicle - lateral 1/3 Scapula - acromion and spine	Both elevates (upper fibers) and depresses (lower fibers) shoulder; retracts scapula; also extends head	Accessory n. (Cranial nerve XI)
Latissimus dorsi	Vertebrae - spines of T6-T12 Fascia - thoracolumbar fascia Pelvic bone - iliac crest	Humerus - Intertubercular (bicipital) groove	Adducts, extends, and medially rotates arm	Thoracodorsal n.
Levator scapulae	Vertebrae - transverse processes of C1-C4	Scapula - superior angle and medial border	Elevates and adducts scapula	Dorsal scapular n.
Rhomboid minor	Vertebrae - spines of C7, T1	Scapula - Medial border	Elevates and adducts scapula	Dorsal scapular n.
Rhomboid major	Vertebrae - spines of T2-T5	Scapula - Medial border to inferior angle	Elevates and adducts scapula	Dorsal scapular n.



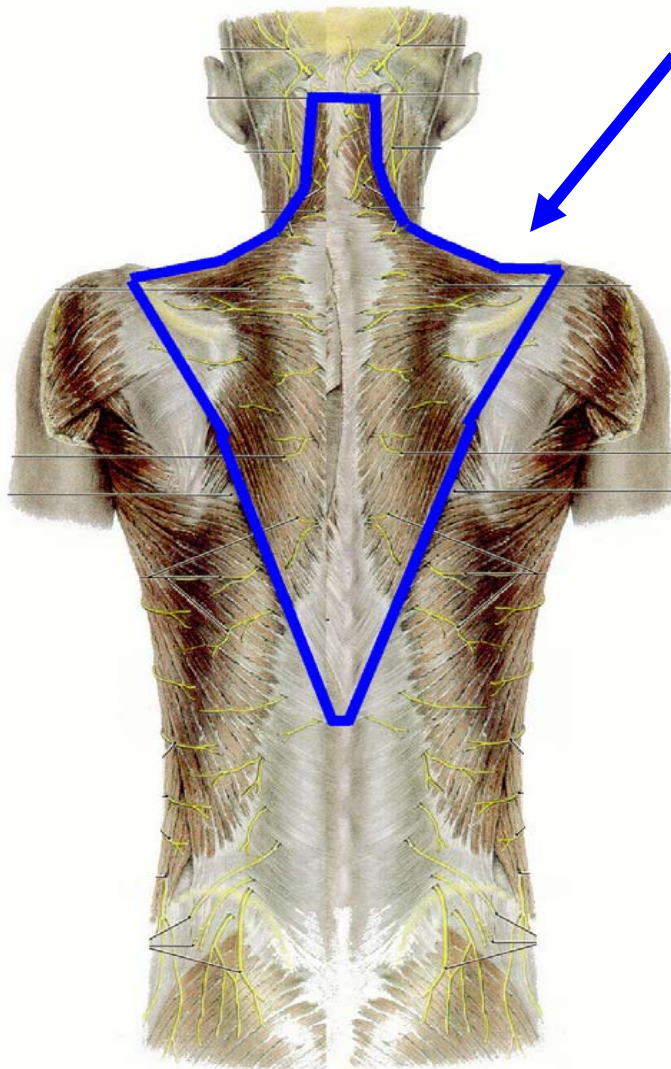
SUPERFICIAL GROUP- insert to bones of upper extremity

1) CLAVICLE- only bony attachment of upper extremity to rest of skeleton

2) SCAPULA- shoulder blade

3) HUMERUS- arm attaches to scapula, if move scapula, move arm

Functions- specialized for freedom of movement



1. TRAPEZIUS –

Origin:

- 1) Skull - External occipital protuberance
- 2) Fascia - Ligamentum nuchae
- 3) Vertebrae - spines of C7, T1-T12

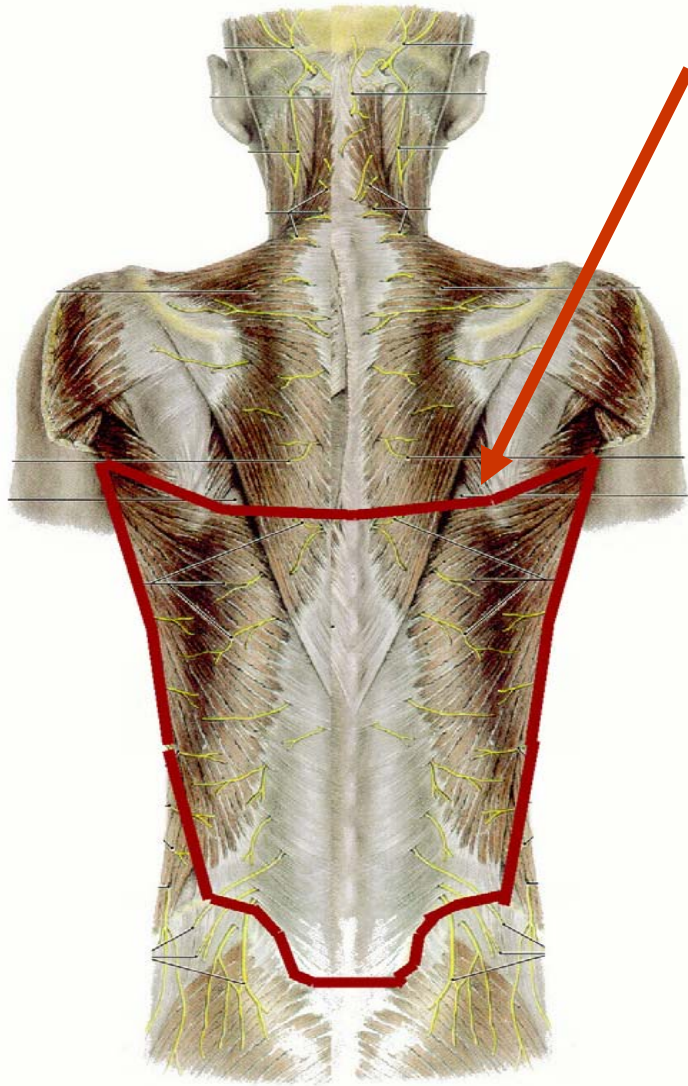
Insert:

- 1) Clavicle - lateral 1/3;
- 2) Scapula - acromion and spine

Actions:

- 1) Elevates (upper fibers) and Depresses (lower fibers) Shoulder
- 2) Retracts scapula
- 3) Extends head

Innervation: Accessory nerve
(Cranial nerve XI)



2. LATISSIMUS DORSI

Origin: Vertebrae T6-T12
(spines)

Fascia- Thoracolumbar fascia

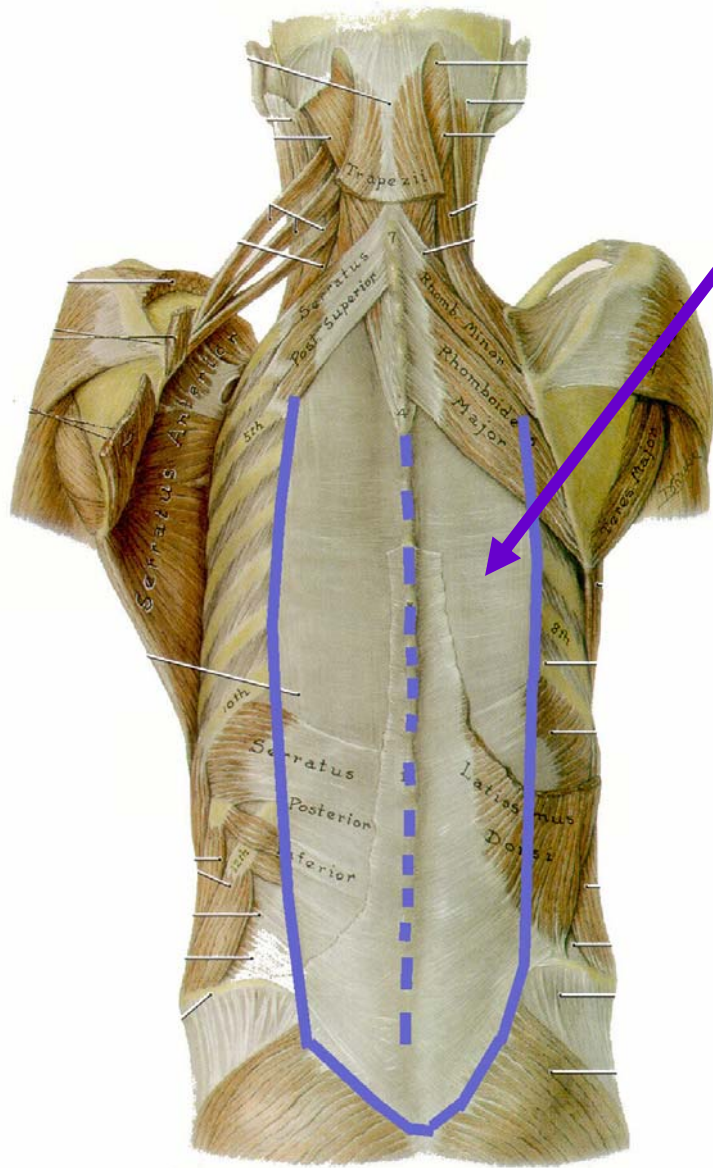
Pelvic Bone- Iliac crest;

Insertion: Humerus-
Intertubercular (bicipital)
groove

Actions: Adducts, extends,
and medially rotates arm

Innervation: Thoracodorsal
nerve

Latissimus = broad, wide in Latin



**THORACOLUMBAR (LUMBAR)
FASCIA – covers deep muscles
of back**

- attaches medially to
spines of vertebrae
- inferiorly to ilium
(pelvic bone)

**Provides for muscle
attachments**

3. LEVATOR SCAPULAE

Origin: Vertebrae (C1-C4 transverse processes)

Insertion: Scapula (sup. angle and medial border)

4. RHOMBOID MINOR

Origin: Vertebrae (C7, T1 spines)

Insert: Scapula (med. border)

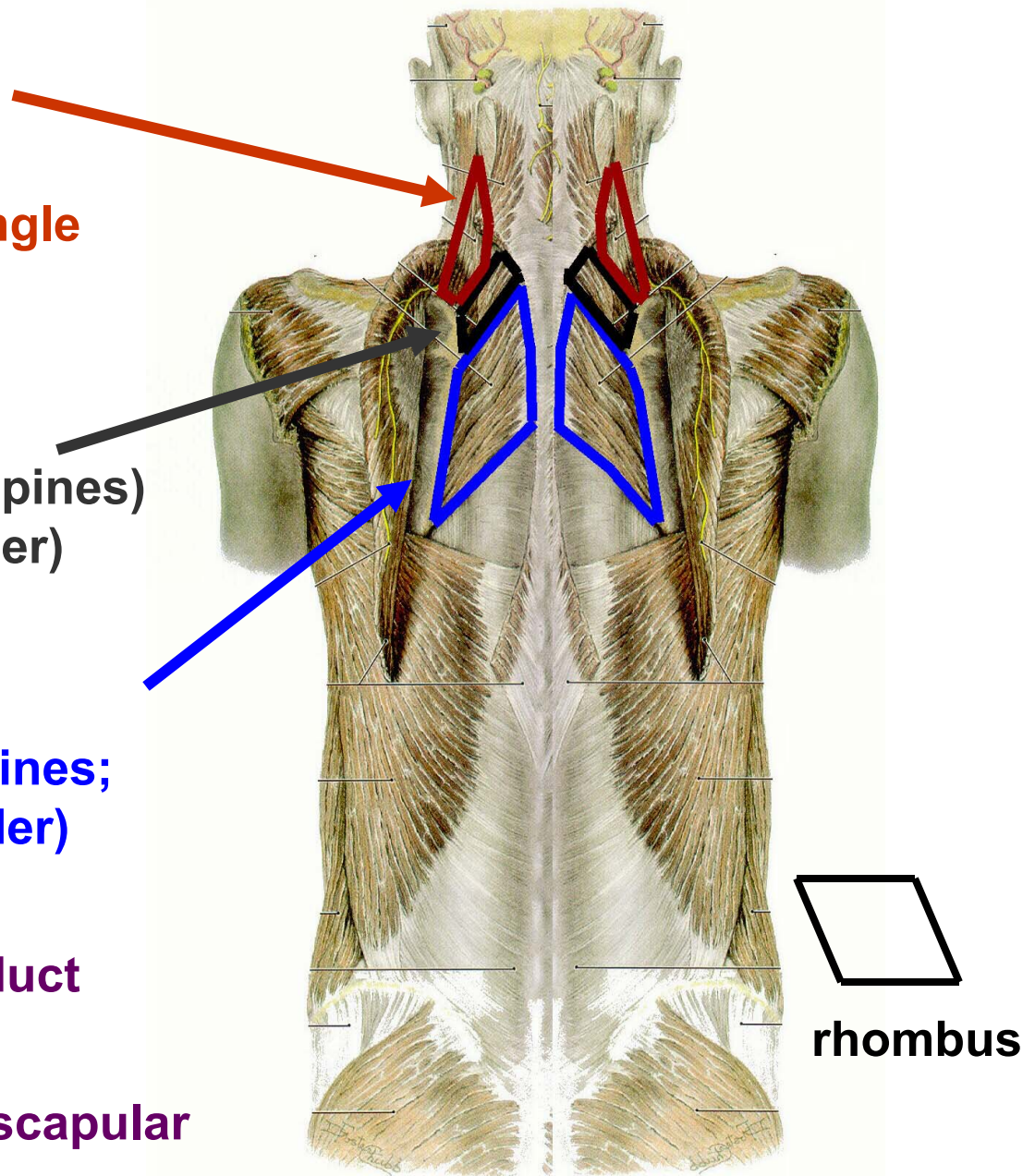
5. RHOMBOID MAJOR

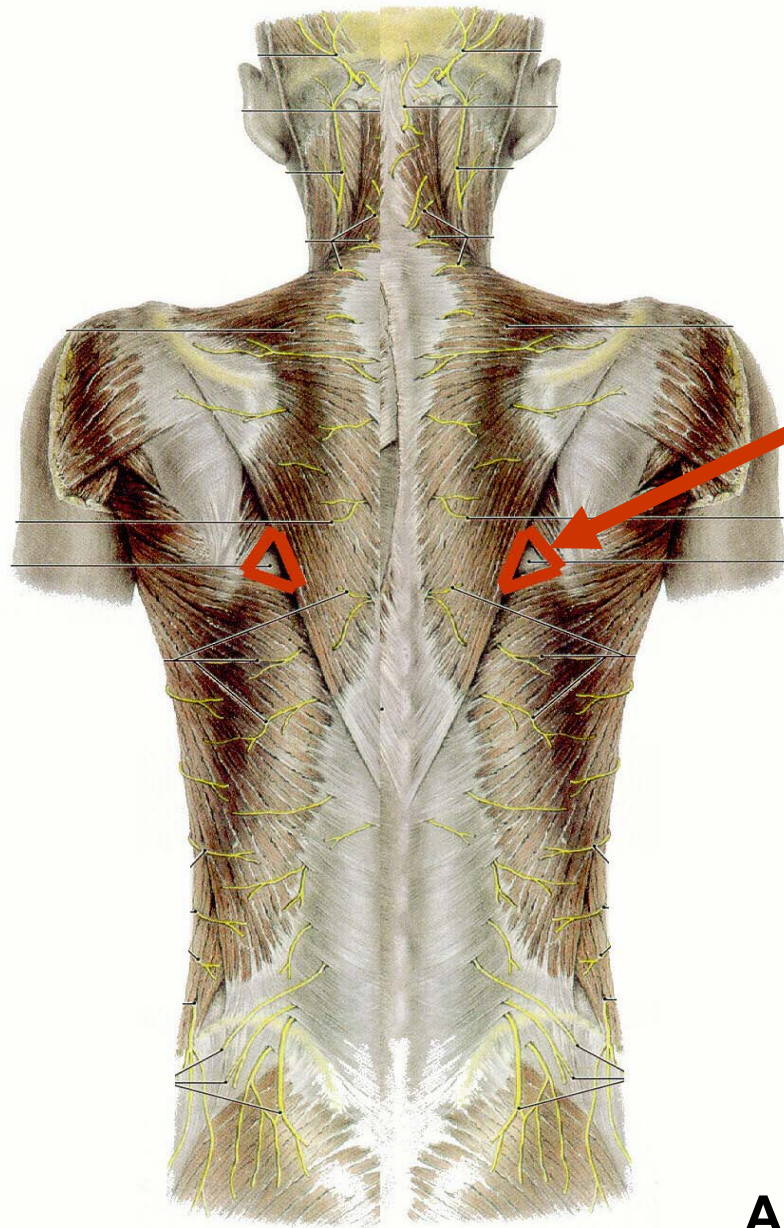
Origin: Vertebrae T2-T5 spines;

Insert: Scapula (med. Border) to Inferior Angle

Action: All elevate and adduct scapula

Innervation: All by Dorsal scapular nerve





**TRIANGLE OF
AUSCULTATION – Medial
to scapula**

Boundaries

Inferior - Lat. Dorsi

Superior - Trapezius

Lateral - Rhomboid

Major

**overlies 6th intercostal
space; floor has no
large muscles- good
place for listening with
stethoscope**

Auscultation = listening

Intermediate Group- associated with Respiration

All Origin- Vertebra; All Insert- Ribs

INTERMEDIATE MUSCLES OF THE BACK - Atlas Figs. 4.29, 4.34

MUSCLE	ORIGIN	INSERTION	ACTION	NERVE
Levatores costarum	Vertebrae - Transverse processes of C7, T1-11	Ribs - inferior to origin	Raise ribs in inspiration	Dorsal rami of thoracic spinal nerves
Serratus posterior superior	Vertebrae - Spines of cervical and upper thoracic vertebrae	Ribs	Raise ribs in inspiration	Intercostal nerves
Serratus posterior inferior	Vertebrae - Spines of upper lumbar and lower thoracic vertebrae	Ribs	Lower ribs in expiration	Intercostal nerves

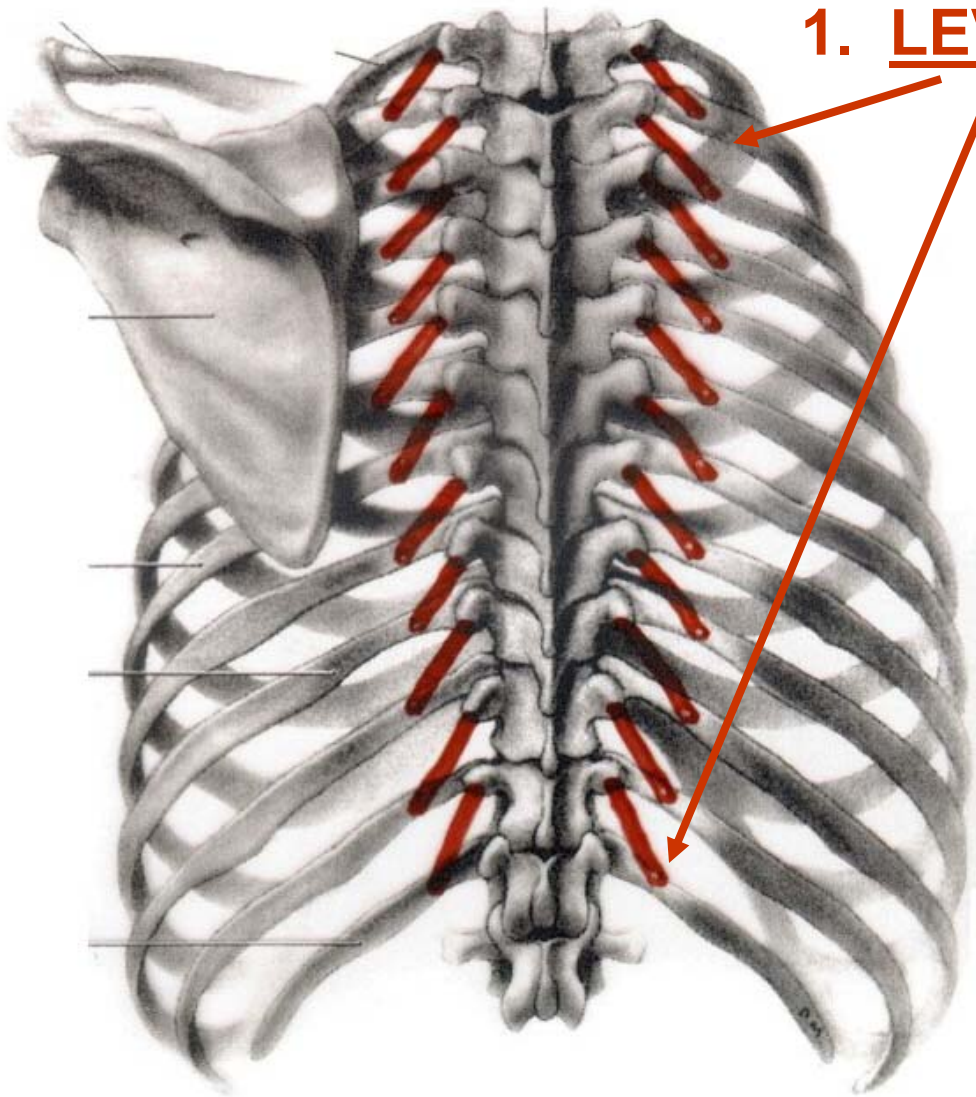
1. LEVATORES COSTARUM

Origin: Vertebrae (C7, T1-11 transverse processes)

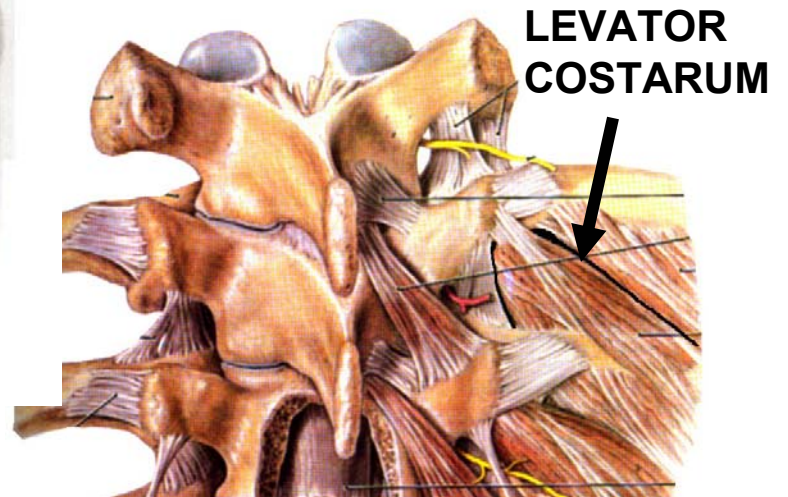
Insert: Ribs (below origin)

Action: Raise ribs in Inspiration

Innervation: Dorsal primary rami of thoracic spinal nerves



Costa = Rib



2. SERRATUS

POSTERIOR SUPERIOR -

Origin: Vertebrae
(cervical and upper
thoracic spines)

Insert: Ribs

Action: Raise ribs in
inspiration

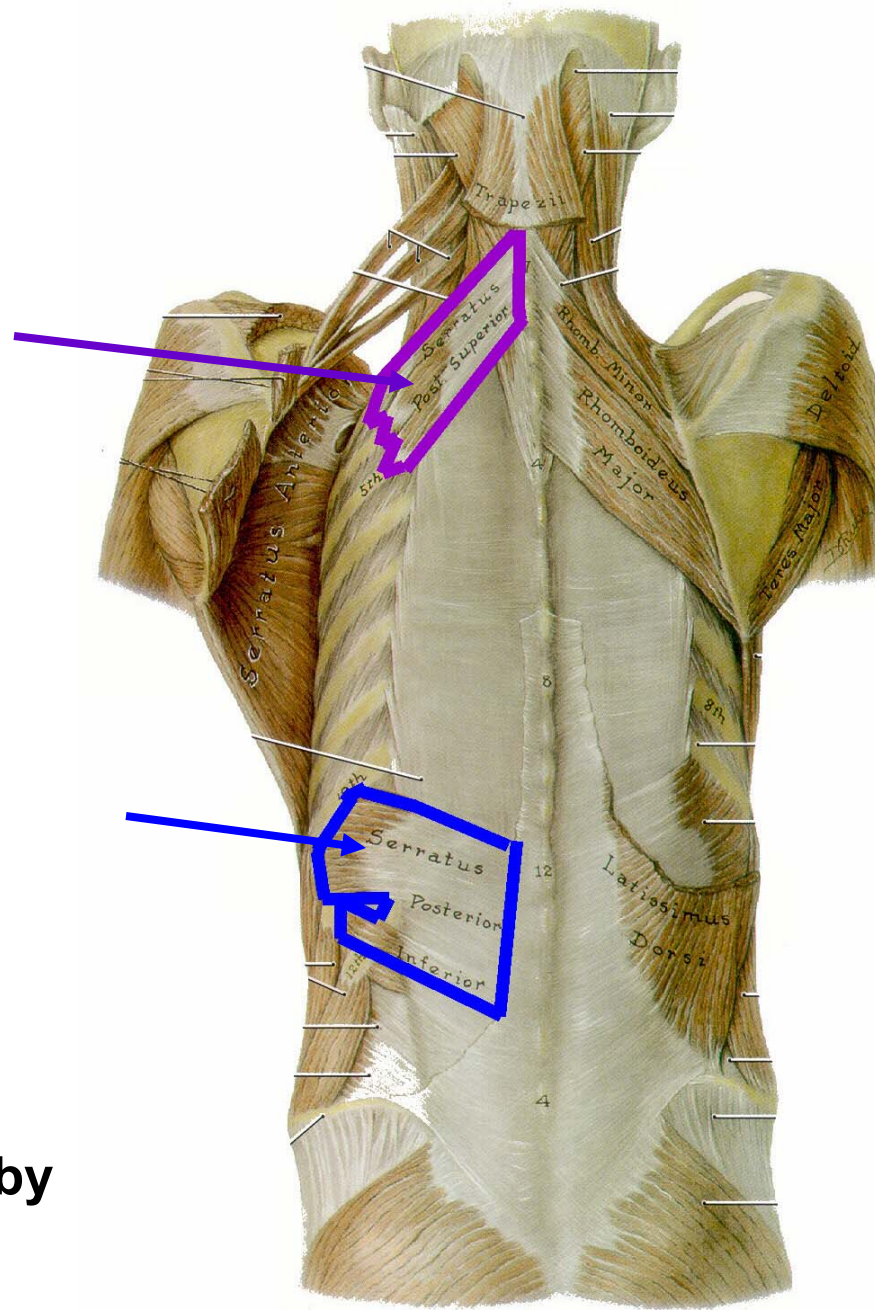
3. SERRATUS POSTERIOR INFERIOR -

Origin: Vertebrae lumbar
and lower thoracic spines;

Insert: Ribs

Action: Lower ribs in
expiration

Innervation: both muscles by
Intercostal Nerves



DEEP GROUP- divisible into 3 subgroups: Splenius, Erector Spinae, Transversospinalis

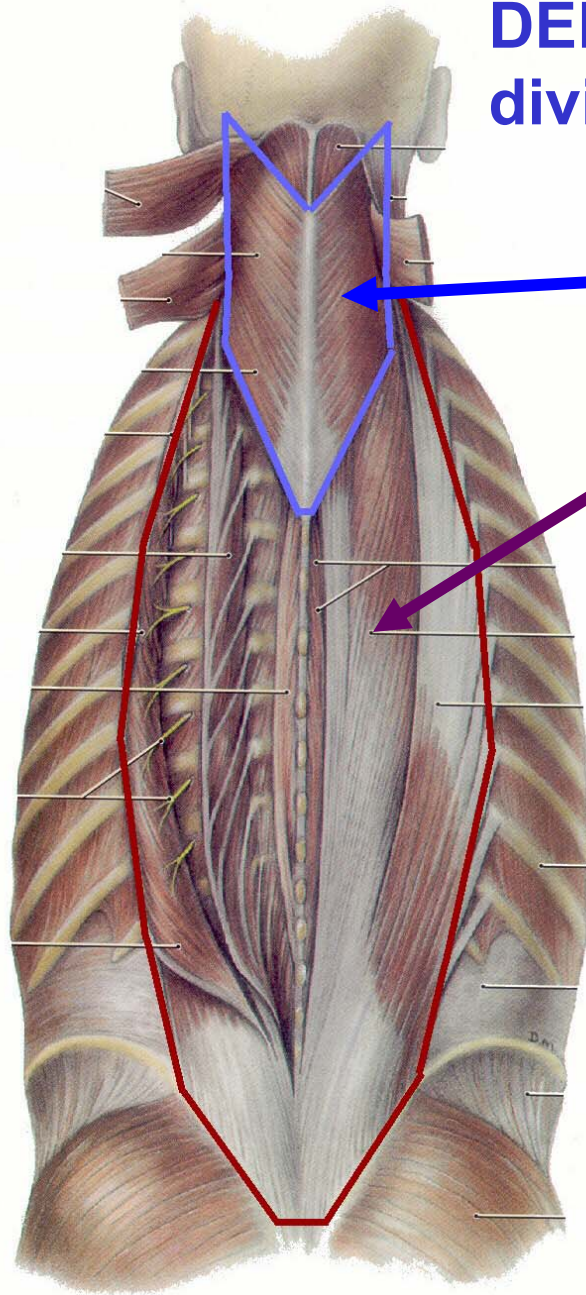
DEEP MUSCLES OF THE BACK - Atlas Figs. 4.30 - 4.34

MUSCLE	ORIGIN	INSERTION	ACTION	NERVE
Splenius	Vertebrae - Spines of T1-T4	Splenius Capitis to Skull - Occipital and temporal bones Splenius Cervicis to Vertebrae - Transverse processes of C2-C3	Extend neck and head (rotate in unilateral action)	Dorsal rami of spinal nerves
Erector Spinae 1) Iliocostalis 2) Longissimus 3) Spinalis	1) Iliocostalis from Ilium and ribs 2) Longissimus from transverse processes of vertebrae 3) Spinalis from spinous processes	1) Iliocostalis to ribs and transverse processes 2) Longissimus to transverse processes of vertebrae 3) Spinalis to spinous processes	Extend trunk and vertebral column	Dorsal rami of spinal nerves
Transverso-spinalis 1) Semispinalis 2) Multifidus 3) Rotatores	All take origin from transverse processes of vertebrae	All insert upon spines of vertebrae superior to origin : Differ in how many vertebrae they extend across 1) Semispinalis extend across 5 or 6 vertebrae 2) Multifidus extend across 3 or 4 vertebrae 3) Rotatores extend across 1 or 2 vertebrae	All extend trunk in bilateral action and rotate vertebral column in unilateral action	Dorsal rami of spinal nerves

- all extend trunk of neck when act bilaterally
- all located dorsal to vertebral column
- all innervated by dorsal rami of spinal nerves

DEEP GROUP OF BACK MUSCLES

divisible into three subgroups



1. SPLENIUS

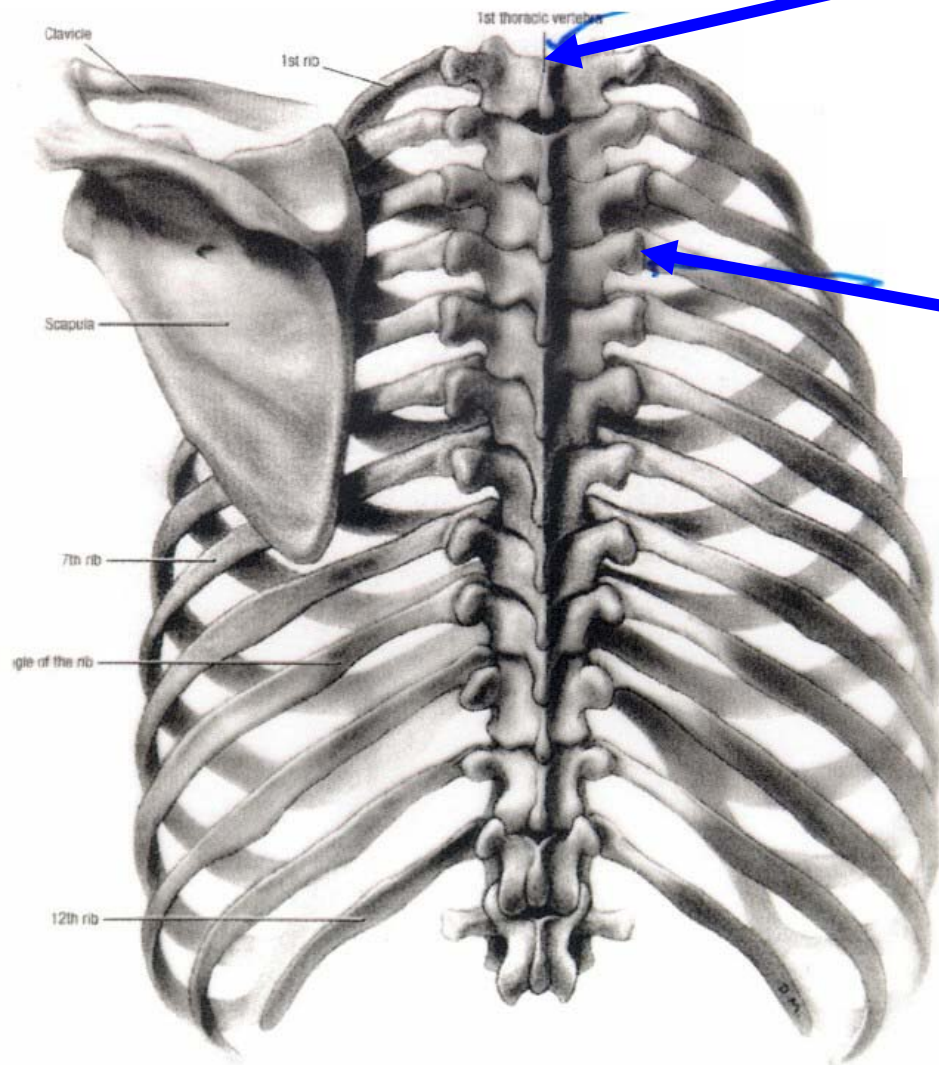
2. ERECTOR SPINAE

3. TRANSVERSO-SPINALIS –
deep to Erector Spinae

ALL

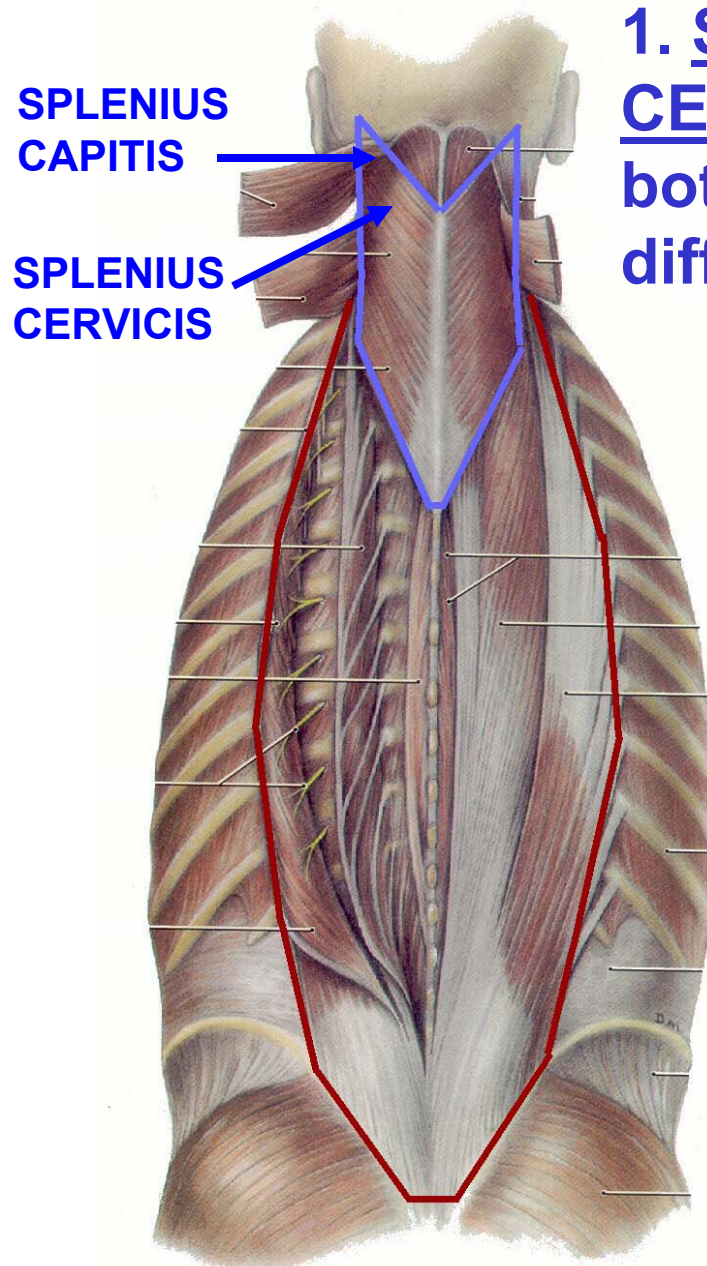
1. Act to Extend trunk when act bilaterally
2. Located dorsal to vertebral column
3. Innervated by Dorsal primary rami of spinal nerves

ORIENT – ON CADAVER (OR PATIENT)



- CAN PALPATE
SPINES OF
VERTEBRAE

TRANSVERSE
PROCESSES ARE
LATERAL TO
SPINE



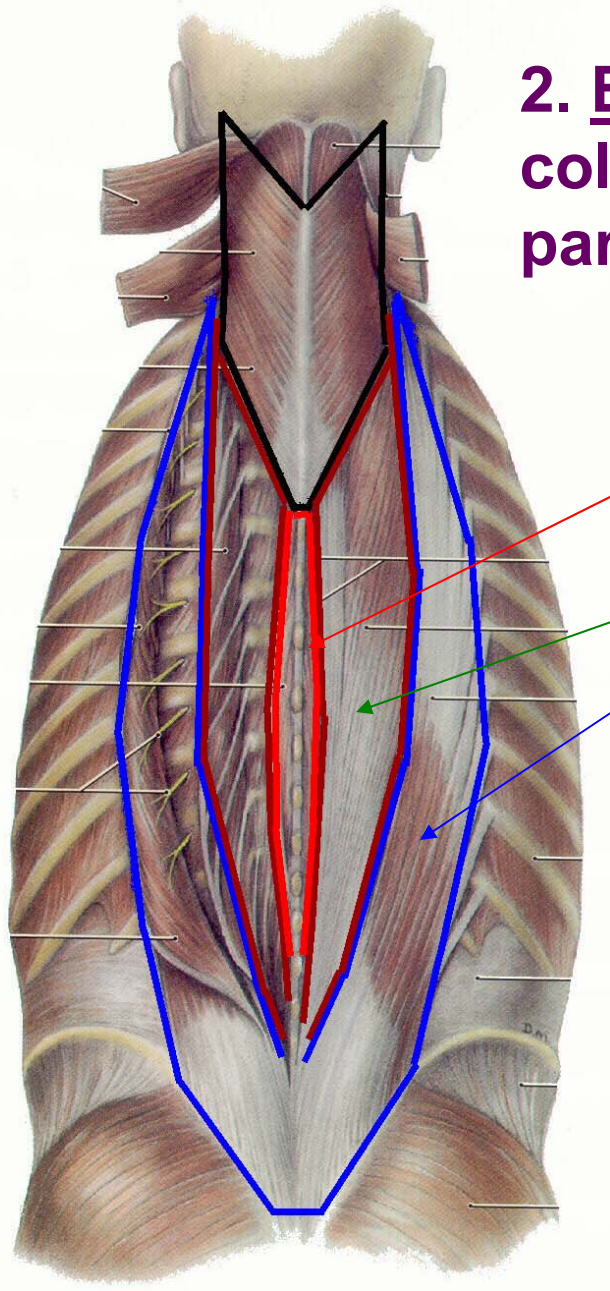
1. SPLENIUS CAPITIS AND SPLENIUS CERVICIS- located deep to trapezius; both muscles have same origin, different insertions

Origin: Vertebrae (Spines of T1-T4)

Insert: Splenius Capitis- Skull (Occipital, Temporal bones)

Splenius Cervicis- Vertebrae (Transverse processes C2, C3)

Action: Extend neck and head; rotate in unilateral action



2. ERECTOR SPINAE- three columns of muscle lying in parallel

SPINALIS- most medial

LONGISSIMUS- intermediate

ILIOCOSTALIS- lateral

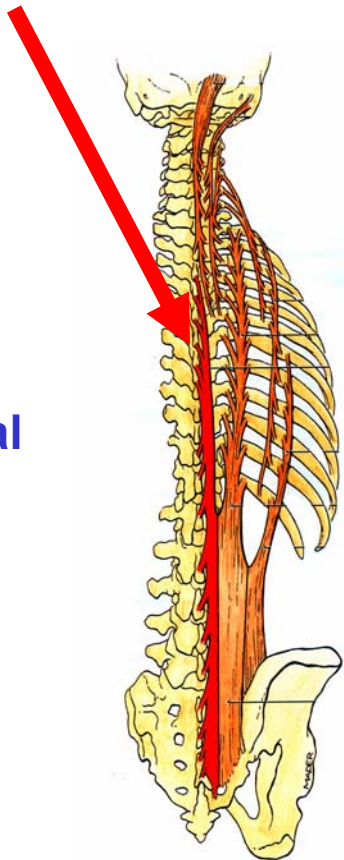
ERECTOR SPINAE- actually itself 3 subgroups in parallel

c. SPINALIS

Origin: Spinous processes

Insertion: Spinous processes

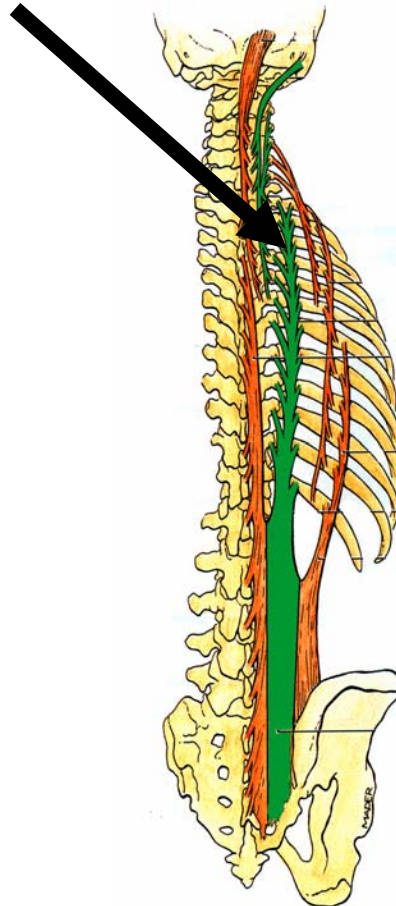
Medial



b. LONGISSIMUS

Origin: Transverse Processes

Insertion: Transverse Processes

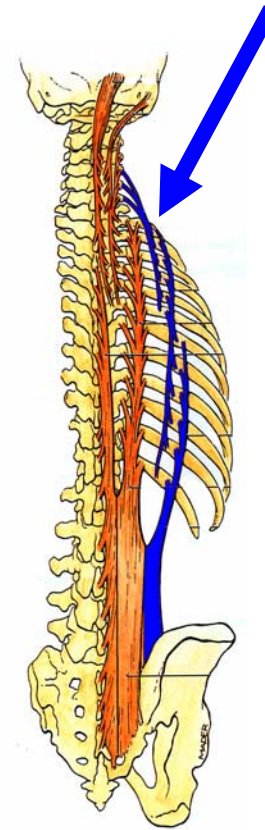


a. ILIOCOSTALIS

Origin: Ilium & ribs

Insertion: Ribs or Transverse Processes Above

Lateral



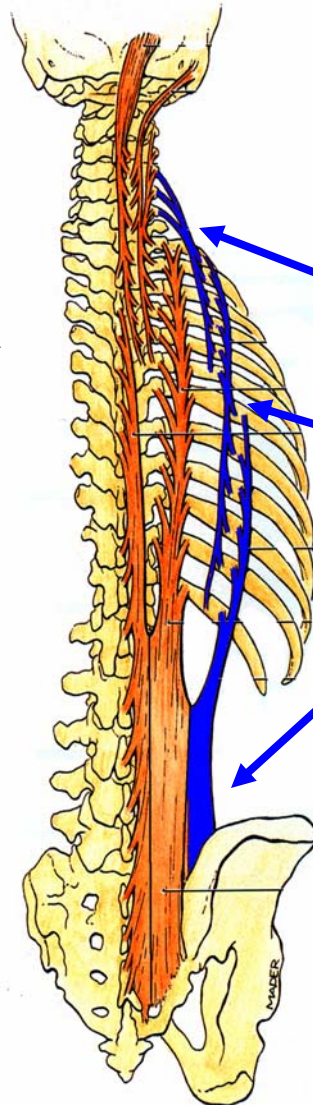
NOMENCLATURE- You learn as groups - single muscles named for location of insertion

Capitis = Head

Cervicis = Neck

**Thoracis = thorax
& vertebrae**

**Lumborum =
lumbar vertebrae**



Ex. Iliocostalis

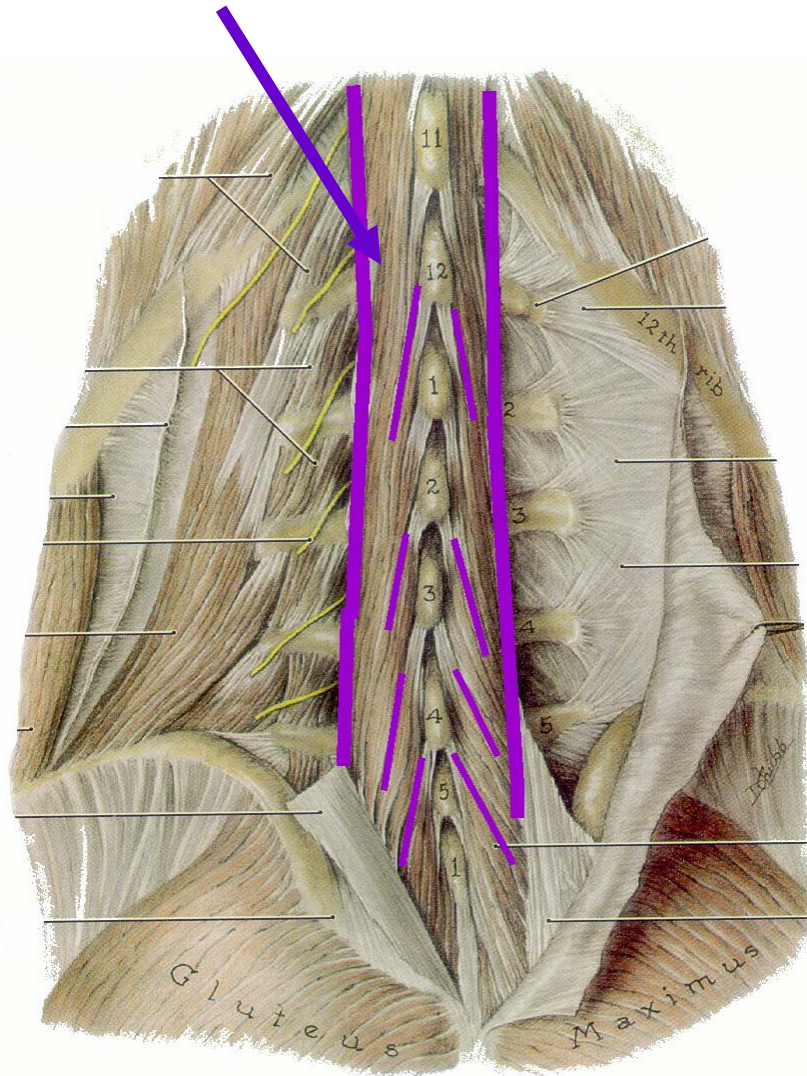
Single muscles:

Iliocostalis Cervicis

Iliocostalis Thoracis

Iliocostalis Lumborum

3. TRANSVERSOSPINALIS



- ALL: Origin:
transverse processes
Insert: spines of
vertebrae above

Parts differ in how many
vertebrae they extend
across

a. Semispinalis- 5 or 6

b. Multifidus- 3 or 4

c. Rotatores- 1 or 2

Act: Extend trunk in
bilateral action, rotate
unilaterally

Note: Orientation of muscle fibers: transversospinalis are
angled up and in toward spines; erector spinae are parallel to
vertebral column

MUSCLES OF BACK – LAB DO BOTH SIDES

- 1) Mid-Line incision along spines
- 2) Extend out as flaps
- 3) In neck just see trapezius

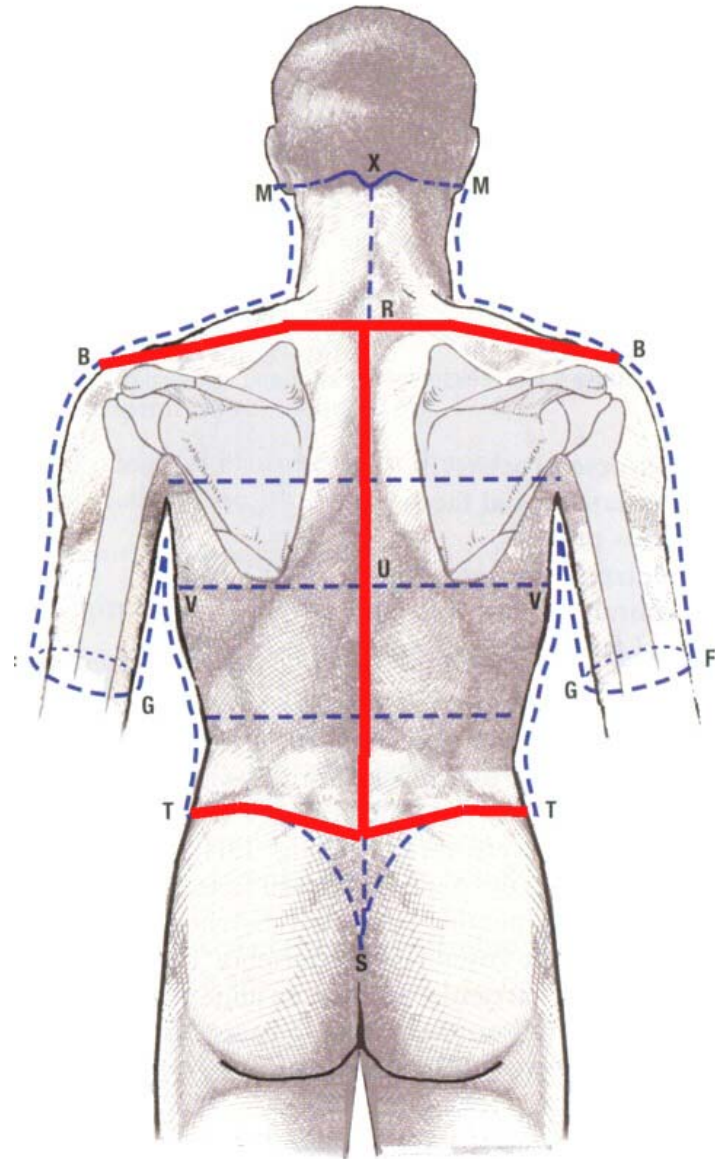
Skip:

p.133 Greater Occip. Nerve,
Occip. Artery)

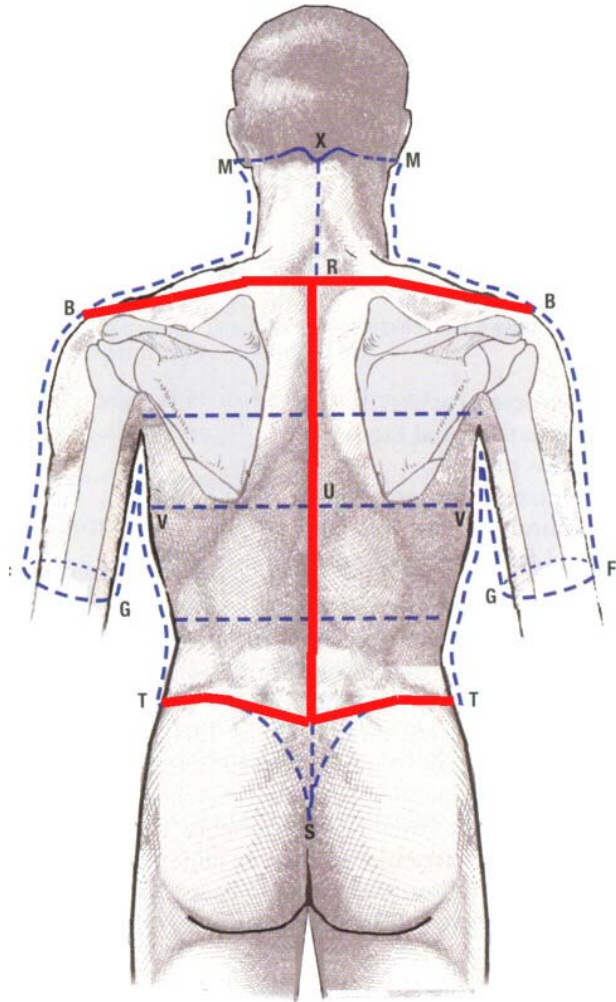
p.134 Accessory Nerve

p. 136 – Splenius capitis

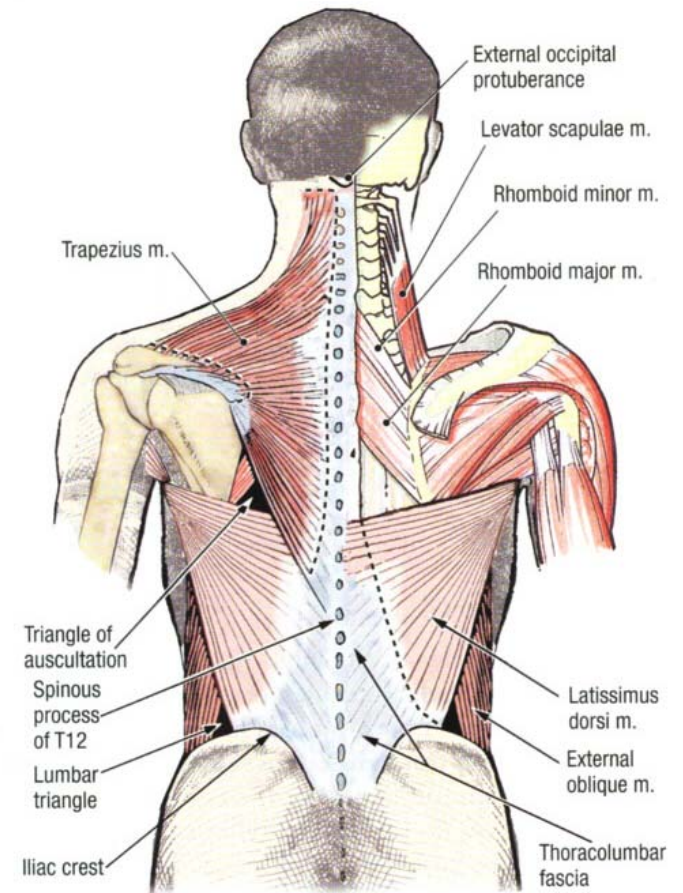
Semispinalis capitis



LAB - DO BOTH SIDES

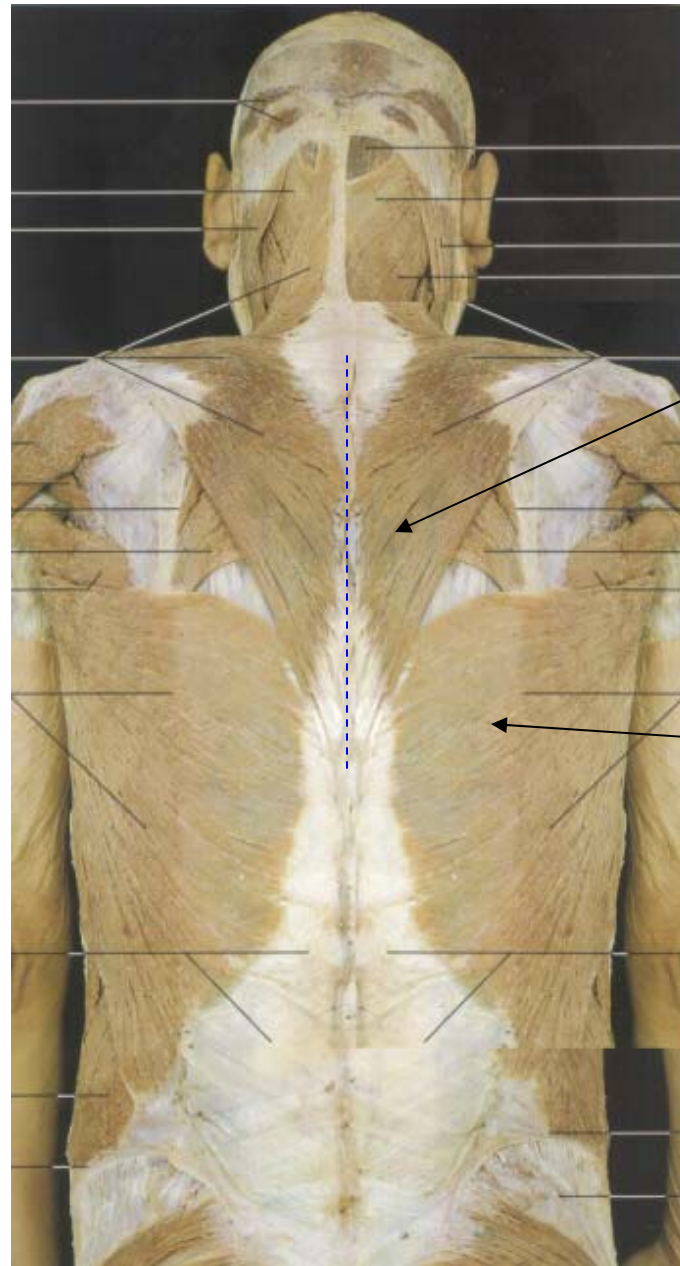


- 1) Make Midline Incision Along Spines of Vertebrae
- 2) Extend From Base of Skull to Pelvis (Sacrum)
- 3) Extend Laterally to Point of Shoulder, Side of Hips



LAB

- 4) Lift shoulder up
- 5) Define Lateral Border of Trapezius
- 6) Define Triangle of Auscultation
- 7) Cut Origin of Trapezius from Spines of Vertebrae
- 8) See Levator Scapulae and Rhomboids



Trapezius

**Lat.
Dorsi**

LAB

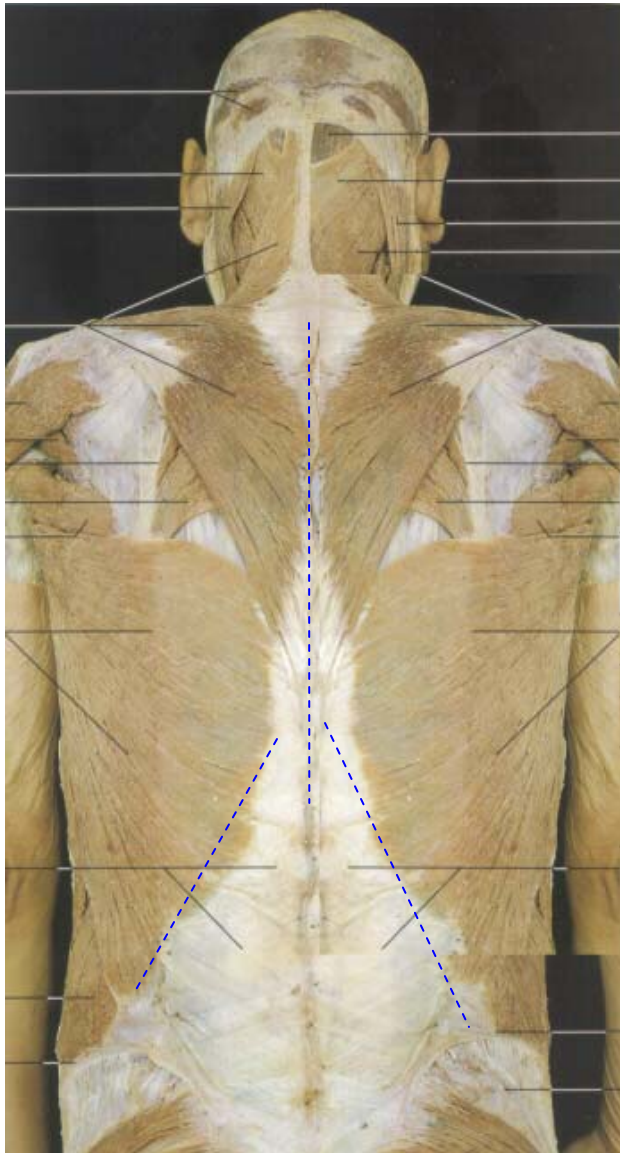
- 4) Lift shoulder up
- 5) Define Lateral Border of Trapezius
- 6) Define Triangle of Auscultation
- 7) Cut Origin of Trapezius from Spines of Vertebrae
- 8) See Levator Scapulae and Rhomboids



Levator
Scapulae

Rhomboideus
Minor

Rhomboideus
Major



LAB

**9) Extend down
midline incision
to origin of
Latissimus dorsi**

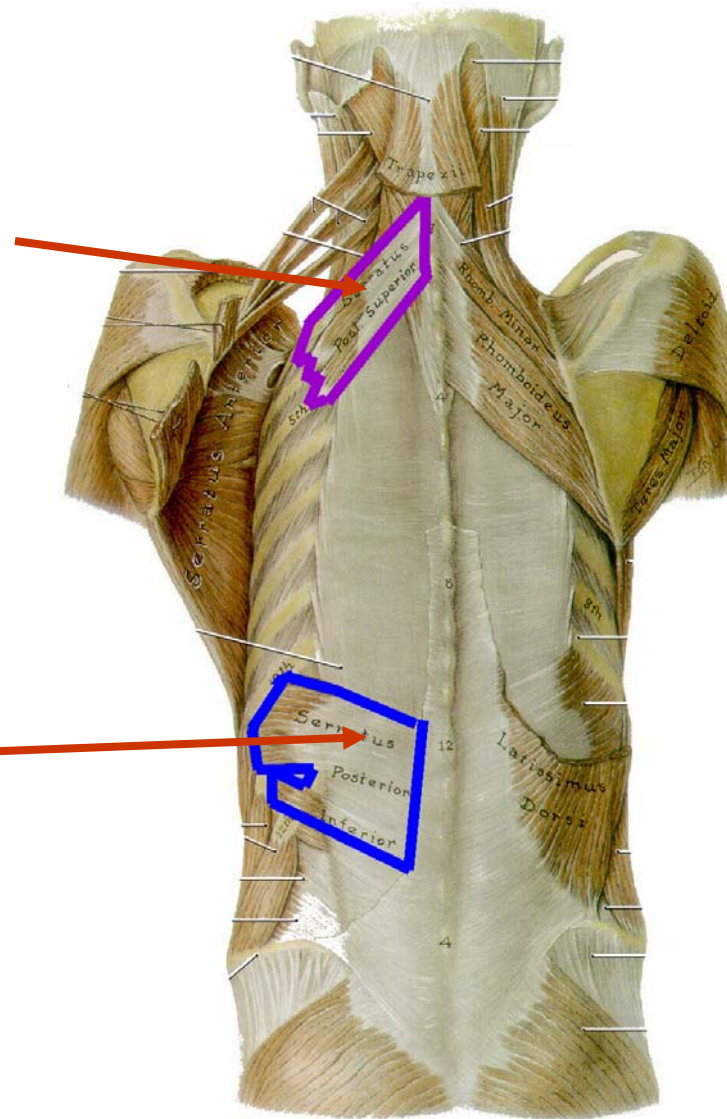
**10) Reflect
muscle laterally
(like opening a
book)**

**11) See second
layer and deep
muscles**

INTERMEDIATE GROUP - RESPIRATION

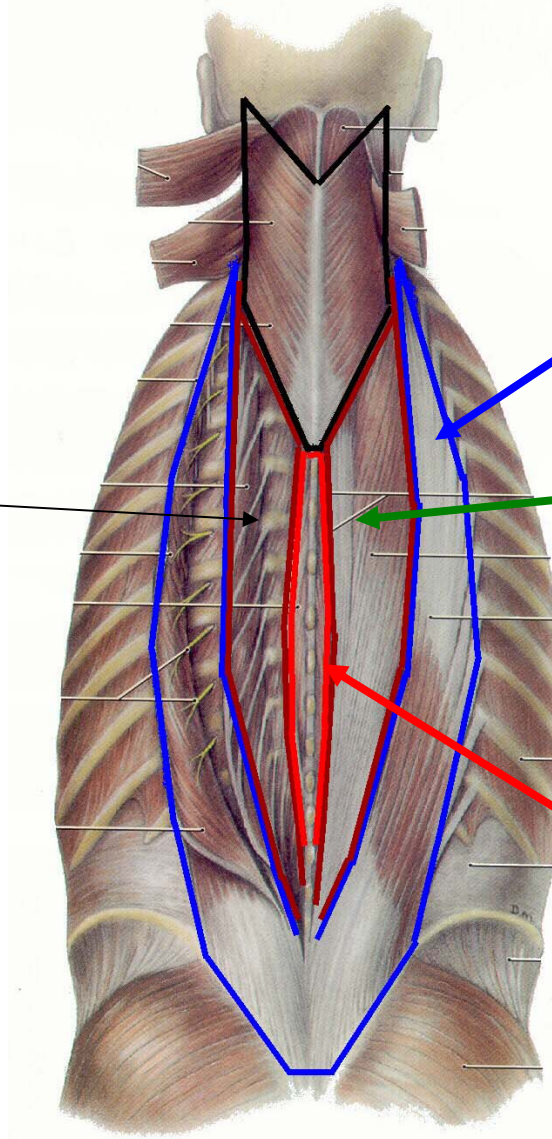
**Serratus
Posterior
Superior**

**Serratus
Posterior
Inferior**



ERECTOR SPINAE- orient to transverse processes

TRANSVERSE
PROCESSES



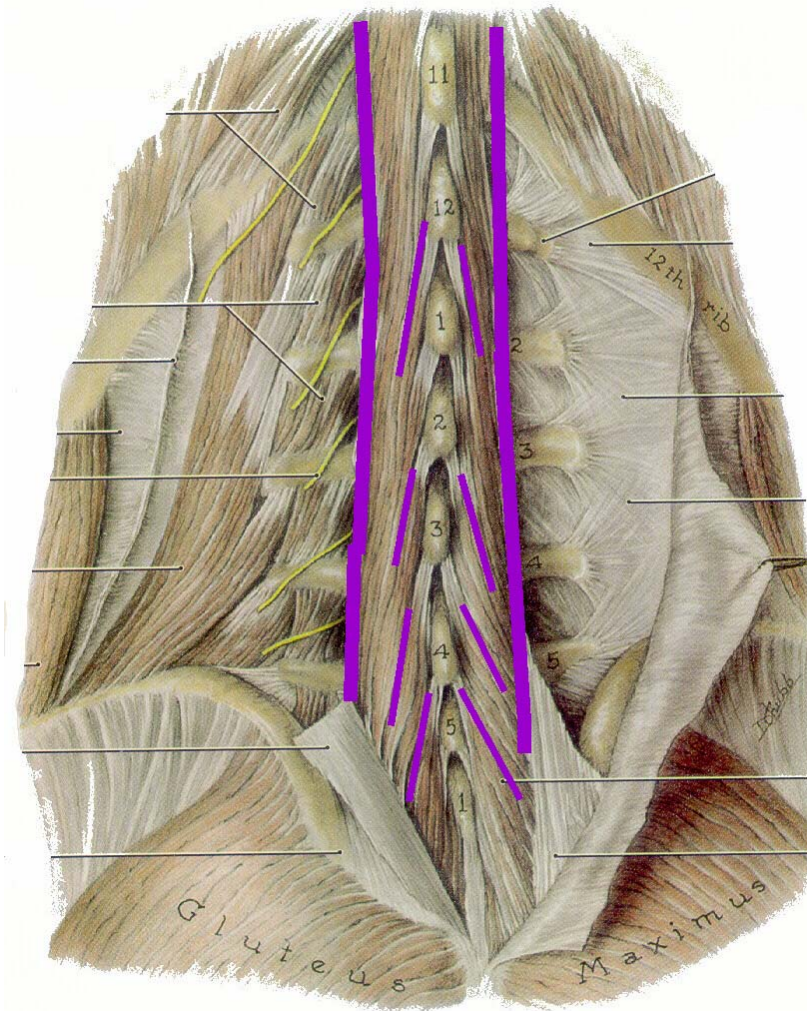
Iliocostalis -
Ilium -> Ribs
Ribs -> Ribs+
transverse processes

Longissimus -
transverse processes
-> transverse
processes

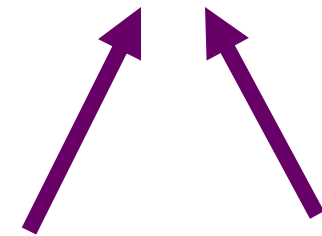
Spinalis -
spines -> spines

TRANSVERSOSPINALIS- deep

look for orientation - transverse process to spines



Orientation of
muscle fibers



angled