

MUSCLES OF THE BACK

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I. MUSCLES OF THE BACK – complex but divisible into three groups: **superficial** muscles are associated with the **upper extremity**; **intermediate** muscles are associated with **respiration**; **deep** muscles are associated with **movements of the trunk and back** (see chart for muscle names, actions and innervation).

A. Superficial group – Muscle acting on upper extremity; extend from spines of vertebra to upper extremity (scapula and humerus): Trapezius, Latissimus dorsi, Levator scapulae, Rhomboideus minor, Rhomboideus major

Note: **Test of Accessory Nerve (Cranial nerve XI)** – The Trapezius muscle is innervated by a cranial nerve (Accessory Nerve). The upper fibers of Trapezius elevate the shoulder. In a standard neurological test of the Accessory Nerve (Cranial Nerve XI), the patient is asked to 'shrug their shoulder' against a resistance.

Note: **Triangle of Auscultation** - located medial to scapula; bounded **inferiorly by Latissimus dorsi, superiorly by Trapezius, laterally by Rhomboideus major**; floor of triangle has no large muscles; good place for listening to internal organs with a stethoscope (**overlies 6th intercostal space**).

B. Intermediate group – Muscles of respiration (acting on ribs; some raise ribs in inspiration (breathing in) or lower ribs in expiration (breathing out): Inspiratory muscles: Levatores costarum, Serratus posterior superior; Expiratory muscle: Serratus posterior inferior.

C. Deep group – True muscles of back divisible into three sub-groups: splenius, erector spinae and transversospinalis; All deep muscles 1) extend trunk when they act bilaterally; 2) all are located dorsal to the vertebral column; 3) **all are innervated by dorsal (posterior) rami of spinal nerves**.

Note: Dorsal rami of spinal nerves can be compressed by spondylosis (degenerative arthritis of facet joints between vertebrae); can result in pain or back spasms

1. Splenius muscles – Act to extend the head and neck in bilateral action, rotate head and neck in unilateral action. Muscles: Splenius Cervicis, Splenius Capitis

2. Erector Spinae - three columns of muscle lying in parallel; Lateral column - Iliocostalis; Intermediate column of muscle - Longissimus; Medial column - Spinalis muscle.

3. Transversospinalis – Deepest muscles; All extend from transverse processes of vertebrae and to spines of vertebrae above ; all muscles extend trunk in bilateral action and rotate spinal column in unilateral action.

SUPERFICIAL MUSCLES OF THE BACK - these muscles insert to Scapula or Humerus

MUSCLE	ACTION	NERVE
Trapezius	Both elevates (upper fibers, shrug shoulders) and depresses (lower fibers) shoulder; retracts scapula; also extends head	Accessory n. (Cranial nerve XI)
Latissimus dorsi	Adducts, extends, and medially rotates arm	Thoracodorsal n.
Levator scapulae	Elevates and adducts scapula	Dorsal scapular n.
Rhomboid minor	Elevates and adducts scapula	Dorsal scapular n.
Rhomboid major	Elevates and adducts scapula	Dorsal scapular n.

INTERMEDIATE MUSCLES OF THE BACK - these muscles insert to Ribs

MUSCLE	ACTION	NERVE
Levatores costarum	Raise ribs in inspiration	Dorsal rami of thoracic spinal nerves
Serratus posterior superior	Raise ribs in inspiration	Intercostal nerves
Serratus posterior inferior	Lower ribs in expiration	Intercostal nerves

DEEP MUSCLES OF THE BACK

MUSCLE	ACTION	NERVE
Splenius	Extend neck and head (rotate in unilateral action)	Dorsal rami of spinal nerves
Erector Spinae 1) Iliocostalis - Lab ID Ilium and ribs to ribs above 2) Longissimus- Lab ID - Transverse processes to Transverse processes 3) Spinalis -Lab ID spines to Spines	Extend trunk and vertebral column	Dorsal rami of spinal nerves
Transverso-spinalis	All extend trunk in bilateral action and Rotate vertebral column in unilateral action	Dorsal rami of spinal nerves