

Respiratory muscles: chart

07.024

Type of breathing	Muscle	Action in respiration
Normal inspiration	Diaphragm	Most important muscle of inspiration; pushes abdominal contents downward to increase vertical capacity of thoracic cavity
	Intercostal muscles (11 pairs)	Move ribs nearer to each other; when 1st rib is fixed by neck muscles, ribs are raised; when 12th rib is fixed by quadratus lumborum, ribs are lowered
	Levatores costarum muscles (12 pairs)	Each muscle raises rib below
	Scalenus interior	Raises 1st rib
	Scalenus medius	Raises 1st rib
	Scalenus posterior (not always present)	Raises 2nd rib
	Serratus posterior inferior	Pulls down lower ribs
	Serratus posterior superior	Raises upper ribs
Normal expiration (largely passive)	Serratus posterior inferior	Minor role in pulling down lower ribs
Forced inspiration	All muscles used in normal inspiration	As for normal inspiration
	Sternocleidomastoid	Acts as accessory muscle of respiration when head is fixed by contraction of prevertebral and postvertebral muscles
Forced expiration	Muscles of anterior abdominal wall	Most important muscles of expiration
	Quadratus lumborum	Fixes or lowers 12th rib
	Serratus posterior inferior	Pulls down lower ribs
	Latissimus dorsae	Acts as accessory muscle of respiration when arms are fixed
Respiratory distress	All muscles used in normal and forced inspiration	As for normal and forced inspiration
	Levator scapulae	Raises medial border of scapula
	Pectoralis major	Can raise 2nd to 6th ribs
	Pectoralis minor	Raises 3rd to 5th ribs when shoulder is fixed
	Rhomboides major	Raises medial border of scapula and draws it toward midline
	Serratus anterior	Draws scapula forward and rotates inferior angle of scapula to side
	Trapezius	Upper fibers raise scapula; middle fibers pull scapula toward midline; lower fibers pull medial border of scapula downward