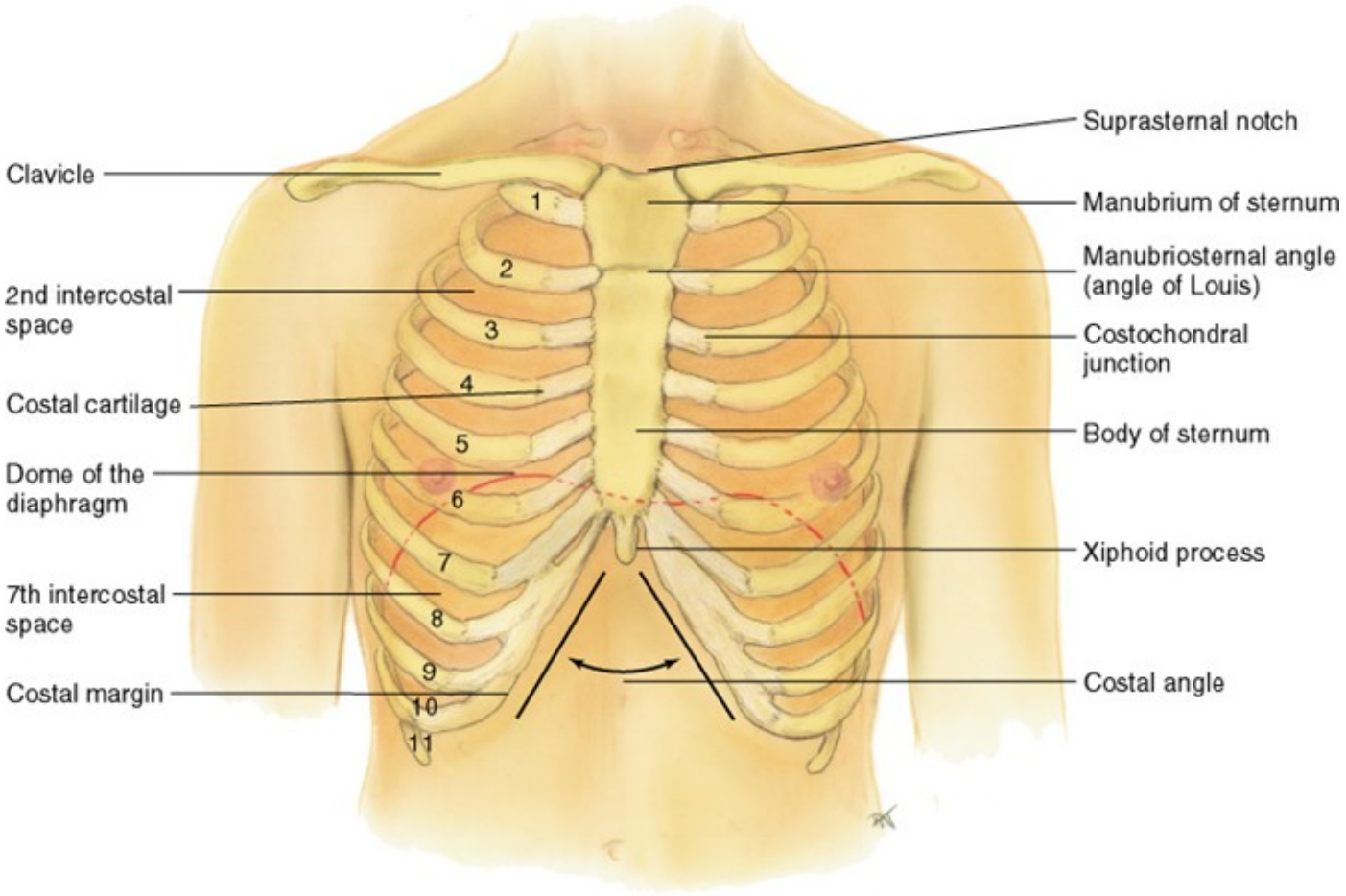
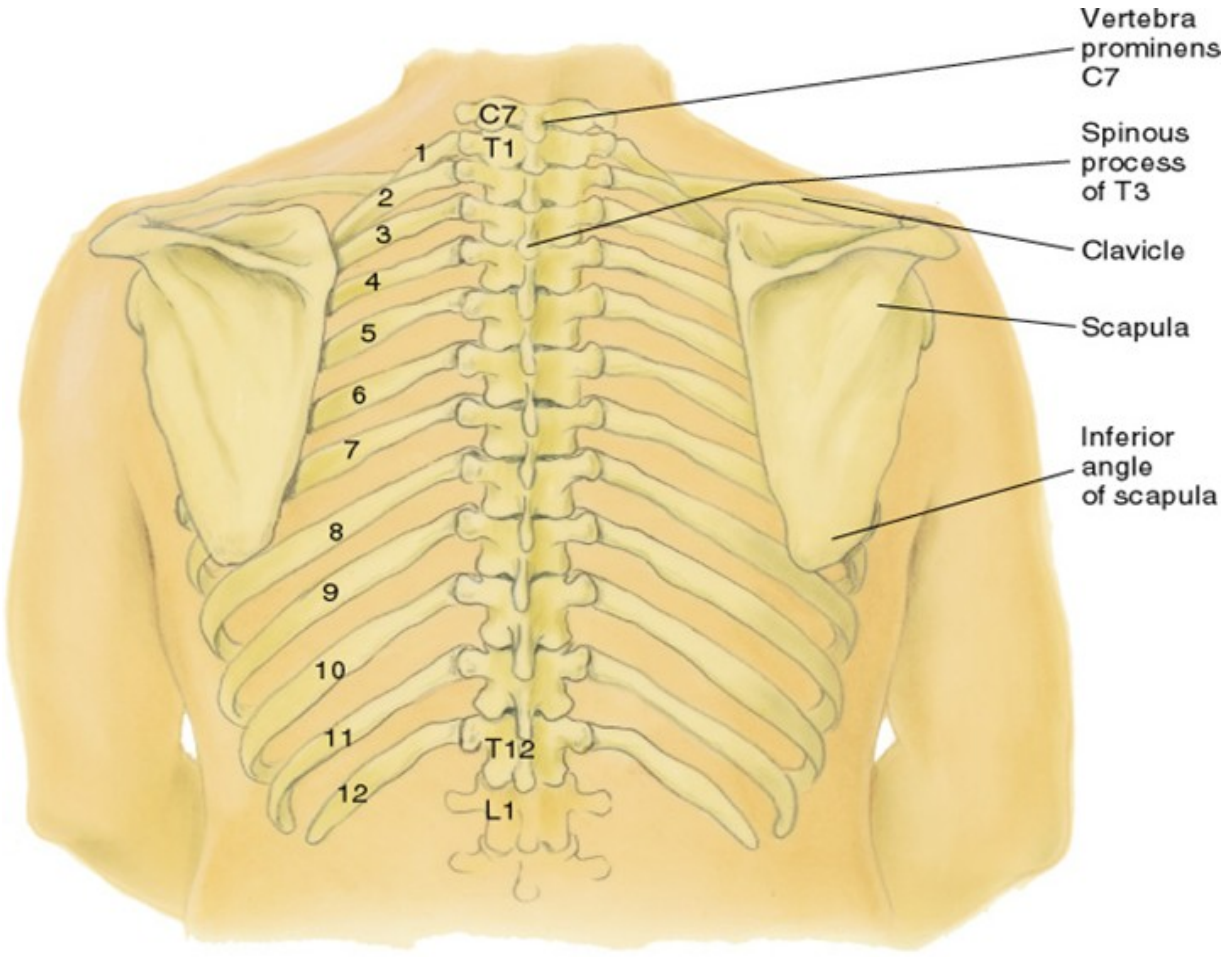
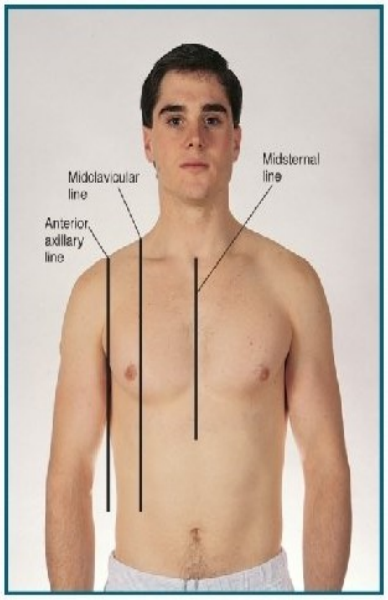
Thorax Assessment





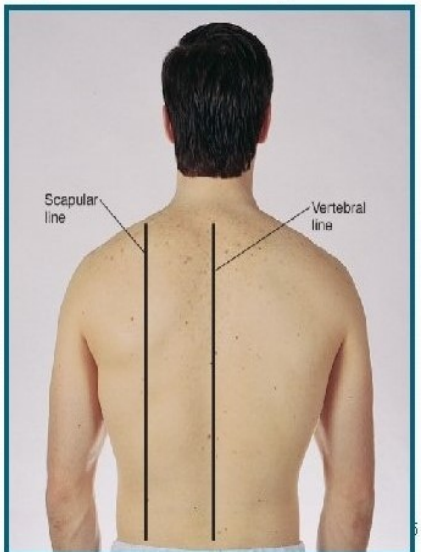
Reference lines-Anterior

- Midsternal line
- Midclavicular line
- Scapular line
- Vertebral line
- Anterior, posterior, midaxillary lines



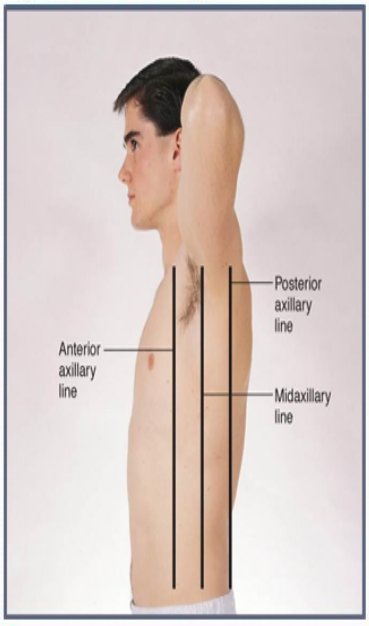
Reference Lines (Posterior)

- Vertebral Line
- Scapular Line



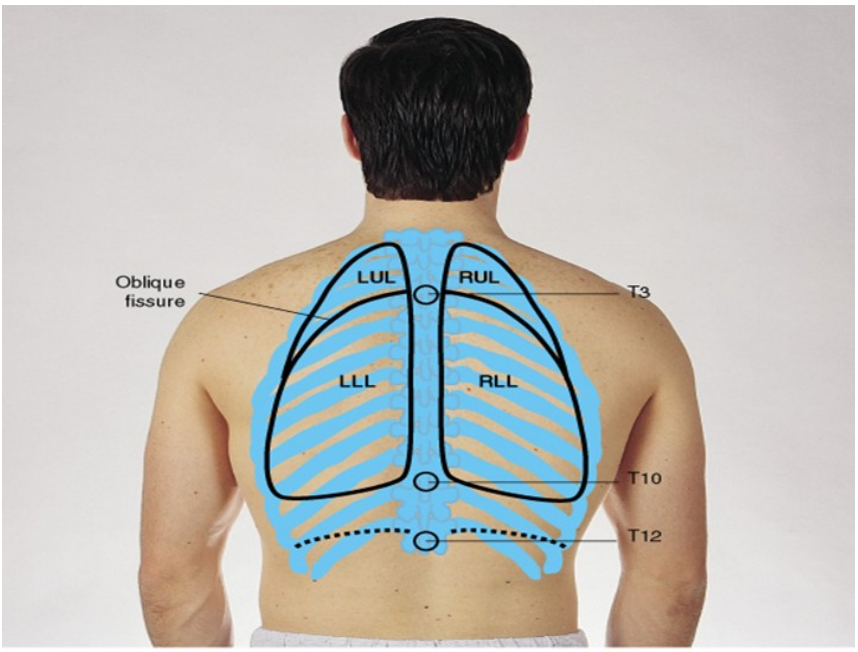
Reference Lines (Lateral)

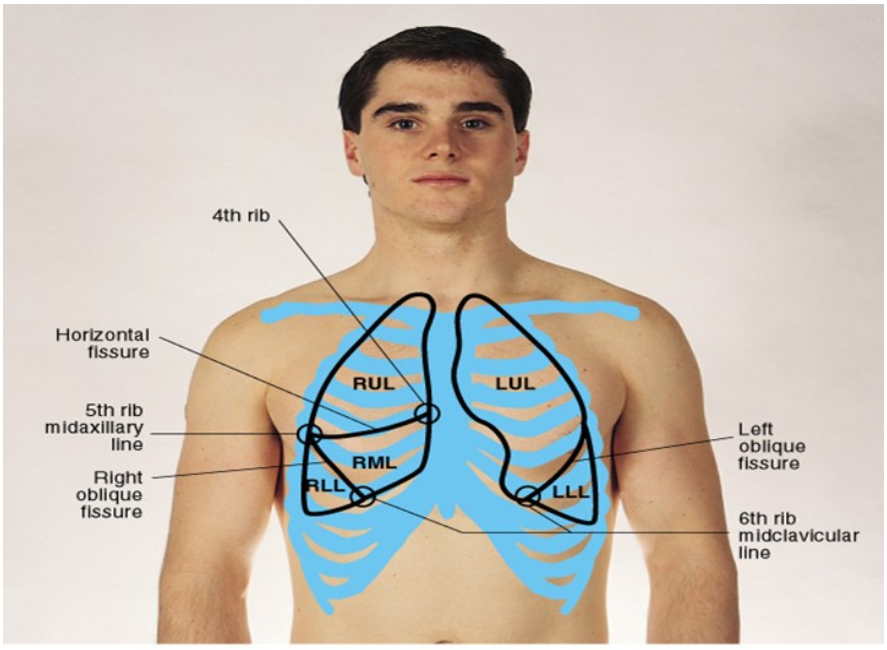
- Anterior Axillary
- Midaxillary
- Posterior Axillary



Lung Borders

- Anterior Chest –
  - Apex 3 -4 cm. ↑ inner 1/3 of the clavicles
  - Base – rests on the diaphragm, 6th rib, MCL
- Lateral Chest
  - Extends from Axilla apex to 7th –8th rib
- Posteriorly
  - Apex of lung is at C7 – Base T10 (on deep inspiration to T12)





Lobes of Lung

- Right Lung
  - 3 lobes, upper, middle , lower
  - Shorter due to liver
- Left Lung
  - LUL = Left Upper and Lower (2 lobes)
  - Narrower due to heart

Current symptoms	Do you ever experience difficulty breathing? Describe.	Dyspnea difficulty breathing can indicate number of health problems most of which are respiratory in nature
	Do you have difficulty breathing when you sleep?	Orthopnea (difficulty when lying supine) may be associated with congestive heart failure
	Do you snore when you sleep	Sleep apnea (period of breathing cessation during sleep) may be source of snoring and gasping
	Do you have chest pain	Pain sensitive nerve endings are located in the parietal pleura thoracic muscles and trachea bronchial tree but not the lung
	Do you have cough	Continuous coughs are usually associated with acute infections ,whereas those occurring only early in the morning are often associated with bronchial inflammation or smoking
	Do you produce any sputum when you cough?	White or mucous sputum —viral infections or bronchitis Yellow or green sputum — bacterial infection
		Blood in sputum (hemoptysis) serious respiratory infection

		Pink —frothy sputum — pulmonary edema
	Do you wheeze when you cough or when you are active?	Wheeze indicates narrowing of the airways due to spasm or obstruction
Past History	Do you have prior respiratory problems?	A history of respiratory disease increases the risk for reoccurrence
	Have you been tested for diagnosed with allergies	Many allergic responses are manifested with respiratory symptoms as dyspnea ,cough or hoarseness
	Is there history of lung disease in your family	The development of lung cancer is patriotically based on genetics
	Did any family members in your home smoke when you were growing up?	Second hand smoke puts individual at risk for emphysema
	Have you ever smoked cigarettes or other tobacco products?	smoking is linked to a number of respiratory conditions including lung cancer
	Are you exposed to certain environmental inhalation pollution?	Exposure to certain environmental inhalation can result in an increase incidence of certain respiratory condition
	Do you have difficulty performing your usual daily activities?	Respiratory problem can negative affect a person's ability to perform the usual activities of daily living
	What kind of stress are you experiencing at this time? How does it affect your breathing?	Shortness of breath can be a manifestation of stress

Inspect configuration	Scapula are symmetric and no protruding Shoulders and scapula are at equal horizontal position
Inspect configuration Anteroposterior Diameter = The distance between the spine and the sternum that is used to determine the proper shape of the thoracic cag transverse diameter = the distance between the right and	The Ratio of Antero posterior to transverse diameter 1:2

left axillary lines that is used to determine the proper shape of the thoracic cage	
	Spinous processes appear straight and thoracic appears symmetric
	Scoliosis : spinal process that are deviated laterally in the thoracic
	Barrel Chest increased the ratio between the Antero posterior to transverse diameter. This is commonly the result of emphysema due to hyperinflation of the lungs

Observe use of accessory muscles	The client doesn't use accessory muscles (trapezes or shoulder) to assist breathing	In cases of acute and chronic airway obstruction or atelectasis trapezes or shoulder are used to facilities breathing
Inspect client's position	Client should be sitting up and relaxed , breathing easily with arms at sides or in lap	Leans forward and uses arms to support weight and lift chest to increase breathing capacity in chronic obstructive pulmonary disease (tripod position)
Palpate for tenderness and sensation	No tenderness pain or unusual sensation reported by the client -Warm should be equal bilaterally	Inflamed fibrous connective tissues cause tender or painful areas -Pain over the intercostals spaces may be from inflamed pleura Increased warmth may be related to local infection
Palpate for crepitus	No palpate crepitus	Palpate crepitus area for extreme congestion or consolidation. Margins should be marked for follow up
Palpate skin surface characteristic	Skin and subcutaneous tissue are free of lesion	Unusual palpable mass, need further evaluation
Palpate for fremitus	Fremitus is symmetric and easily identified in the upper region of the lung	Unequal fremitus is usually the result of consolidation that increase fremitus or bronchial obstruction ,air trapping in emphysema that decreases fremitus

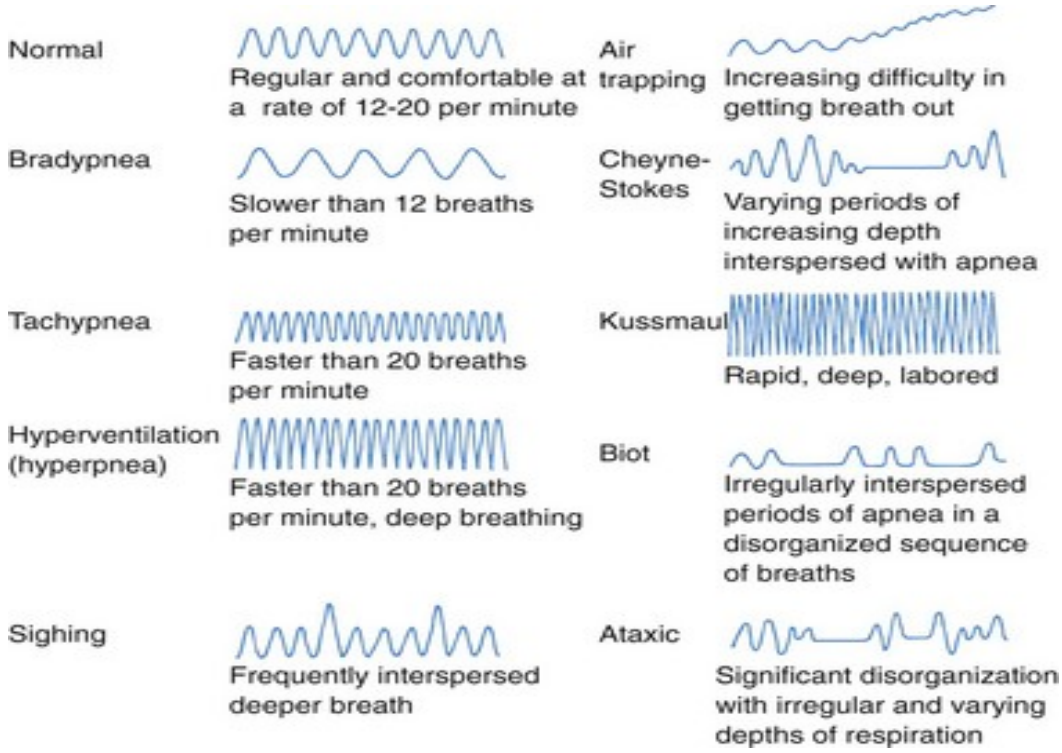
Palpate cheat expansion	When the client take a deep breath, the examiner's thumbs should move 5-10 cm apart symmetrically	Un equal chest expansion can occur with sever atelectasis ,pneumonia, chest trauma or pneumonia thorax (air in the pleural space)
Per cuss for Tone	Resonance is the percussion tone elicited over normal tissue	Hyper resonance elicited in cases of trapped air such as in emphysema or pneumothorax Dullness present when fluid or solid tissues replace air in the lung or occupies the pleural space as in lobar pneumonia, plural effusion or tumor
Per cuss for diaphragmatic excursion	Excursion should be equal bilaterally and measured 3 to 5 cm in adults The level of diaphragm may be higher on the right because of position of the liver	diaphragm decent may be limited by atelectasis of the lower lobes ,extreme ascites or pregnancy .Uneven excursion may be seen with inflammation from unilateral pneumonia or splenomegaly
Auscultate for breath sound	Three types of normal breath sounds ,bronchial, bronchovesicular and vesicular	Diminished or absent breath sounds often indicate that little or no air is moving in or out of the lung area being as auscultator. This May be obstruction of the lung as a result of secretions
Auscultation for adventitious sounds	No adventitious sounds such as crackles (discontinued sound) or wheeze (musical continues) are Auscultated	adventitious sounds

Characteristics of Adventitious Breath Sounds

Breath Sound	Respiratory Phase	Description	Conditions
fine crackle	Predominantly inspiration	Dry, high pitched crackling, popping; short duration; roll hair by ears between your fin. gers to simulate this sound	Chronic obstructive pulmonary disease, congestive heart failure, pneumonia, pulmonary fibrosis, atelectasis
Coarse crackle	Predominantly inspiration	Moist, low pitched crackling, gurgling; long duration	Pneumonia, pulmonary edema, bronchitis, atelectasis
Sonorous wheeze	Predominantly expiration	Low pitched; snoring	Asthma, bronchitis, airway edema, tumor, bronchiolar spasm. foreign body obstruction
Sibilant wheeze	Predominantly expiration	High pitched; musical	Asthma, chronic bronchitis, emphysema, tumor, foreign body obstruction
Pleural friction rub	Inspiration and expiration	Creaking, grating	Pleurisy, tuberculosis. pulmonary infarction, pneumonia, lung abscess
Stridor	Predominantly inspiration	Crowing	Croup, foreign body obstruction, large airway tumor

Auscultation Voice sounds	Voice transmission is soft, muffled and indistinct. The sound of voice may be heard, but the actual phrase cannot be distinguished	The words may be easily understood and louder over areas of increased density. This may indicate consolidation from pneumonia ,atelectasis or tumor
Inspect Shape and configuration	Anteroposterior diameter is less than transverse diameter. The ratio is 1: 2	Antero posterior equals transverse diameter. Resulting in a Barrel Chest as in emphysema
Inspect position of sternum	Sternum mid line and straight	Pectus excavatum is a markedly sunken sternum and adjacent cartilages (funnel chest)
		Pectus carinatum is a forward protrusion sternum causing adjacent ribs to slope backward. Both conditions may restrict and decrease lung expansion
Inspect Slope of the ribs	Rips slope downward with symmetric intercostals spaces - Costal angle is within 90 degree	Barrel —Chest Configuration results in more horizontal position and costal angle of more than 90 degrees

Observe Quality and pattern of respiration	Respiration are relaxed effortless and quiet -They are of a regular rhythm and normal	Labored and noisy breathing is often seen with severe asthma or chronic bronchitis



Inspect the intercostals spaces	No retraction or bulging intercostals spaces noted	Retraction indicates an increased respiratory effort —obstruction of respiratory tract or atelectasis Bulging indicates trapped air as in emphysema
Observe use of accessory muscles	use of accessory muscles (Sternomastoid and rectus abdominal is not seen with normal respiratory effort)	Neck muscles (Stern mastoid, Scalene and trapezius) are used in acute or chronic air way Stern mastoid abdominal muscles and intercostal muscles are used COPD to facilitate expiration
Inspect for nasal flaring	No observed	nasal flaring is seen with labored respiration and is indicative of hypoxia
		Pursed lip breathing may be seen in asthma or emphysema as a physiologic response to help slow down expiration and keep alveoli open longer

Observe color of face, lips, chest and color and shape of nails	Ambient skin color with pink undertones	Cyanosis may be seen in cold or hypoxia .Ruddy to purple in COPD as a result of a polycythemia
Palpate for tenderness sensation, surface problems	No tenderness or pain palpate over the lung area during palpation -No crepitus palpated and no unusual surface masses or lesions	Crepitus may be palpated in area of extreme congestion or consolidation
Palpate for fremitus	fremitus symmetric bilateral and easily identified in the upper regions of the lung	Diminished vibration may indicate obstruction of the tracheobronchial tree
Palpate Anterior chest expansion	Thumbs move outward in a symmetric fashion from the midline	Un equal chest expansion Can occur with severe atelectasis, pneumonia, chest trauma, pleural effusion -Decreased chest expansion at the bases of the lung s is seen with COPD
Per cuss the Tone	Resonance is the percussion tone elicited over normal lung tissue	Hyper resonance elicited in cases of trapped air such as emphysema or pneumothorax Dullness over areas of increased density as in consolidation plural effusion ,tumor

Bronchial Breath Sound:

- Pitch: High
- Quality: Harsh or hollow
- Amplitude: Loud
- Duration: Short during inspiration, long in expiration
- Location : Trachea and larynx

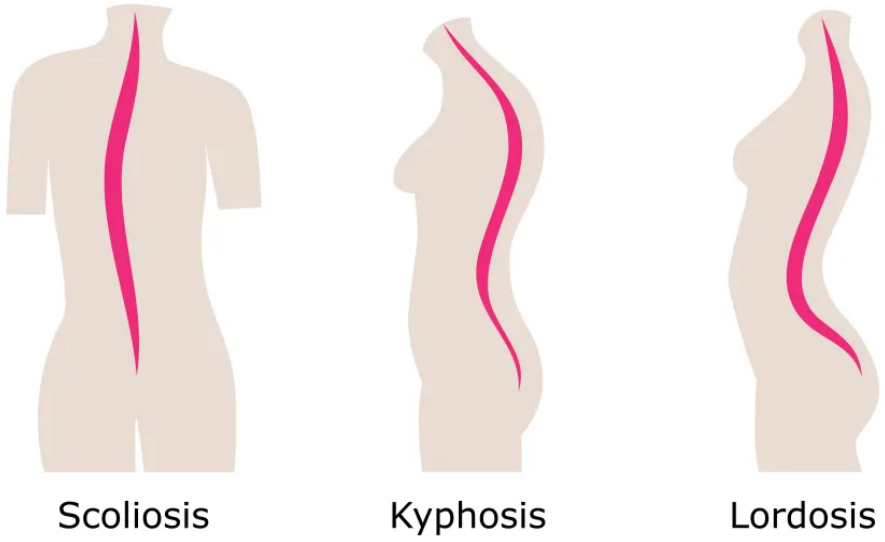
Bronch Vascular Breath Sound:

- Pitch: Moderate
- Quality: axed
- Amplitude: Moderate
- Duration: Same in inspiration, and expiration
- Location : Over the major bronchi —posterior between the scapulae ,anterior around the upper sternum in the first and second intercostals spaces

Vascular Breath Sound:

- Pitch: Low
- Quality: Breezy
- Amplitude: Low
- Duration: Long in inspiration, short in expiration
- Location : peripheral lung fields

Raafat Hatem



SPINAL DEFORMITY TYPES