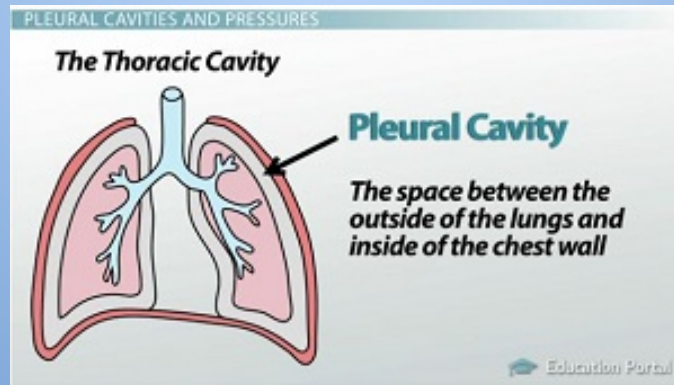


Respiratory System

Respiration

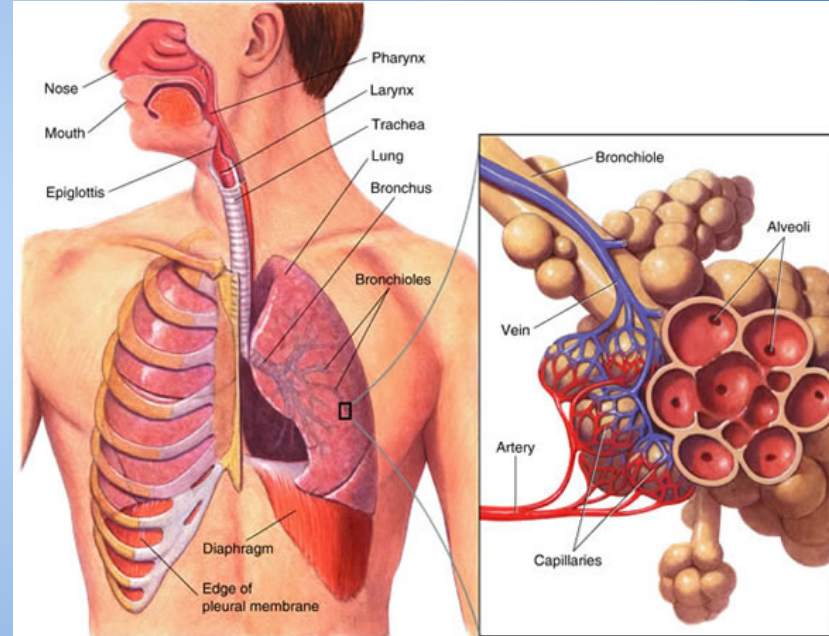
The Pleural Cavities

- Each lung is surrounded in a pleural cavity
- Visceral & Parietal pleura
- Prevent friction when breathing



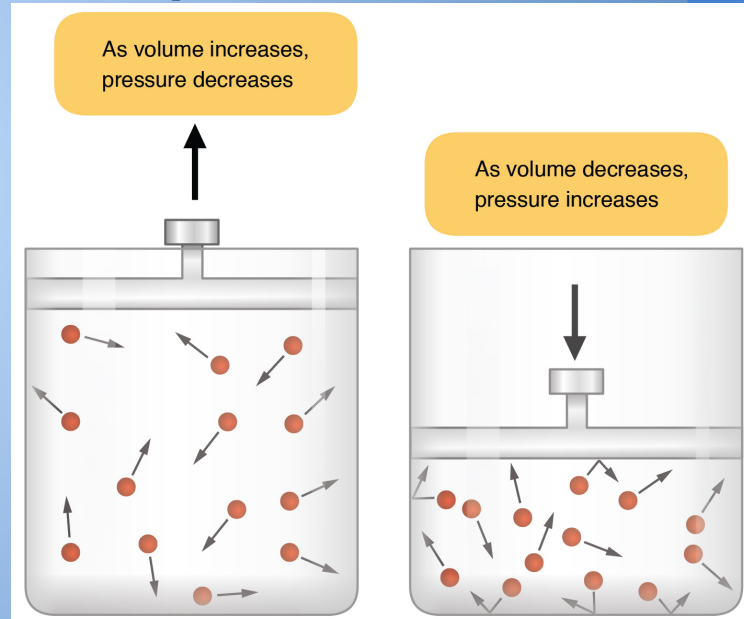
Respiration

- External Respiration
 - exchange between you the environment
- Internal Respiration
 - gas exchange between respiratory cells



Boyle's Law

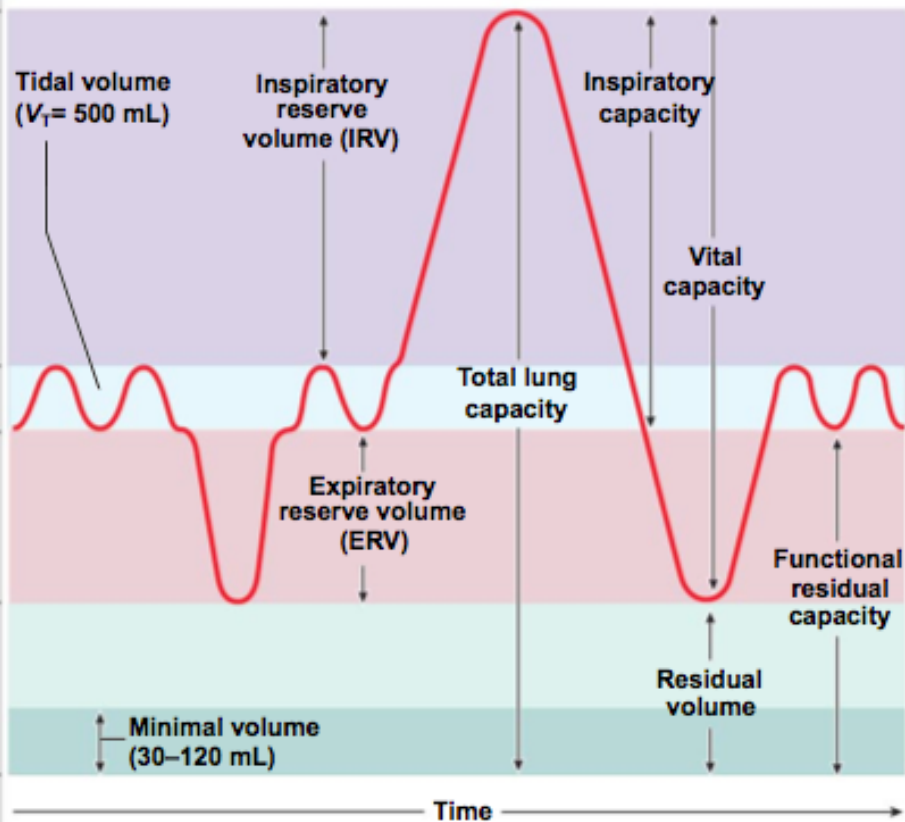
- $P = 1/V$; If volume increases, pressure decreases.
- Atmospheric Pressure
 - pressure from Earth
- Intrapulmonary Pressure
 - pressure at the alveoli
- Intrapleural Pressure
 - pressure between pleurae



Respiratory Cycle

- Inhalation → Exhalation
- Tidal Volume
 - the amount of air inhaled and exhaled of the lungs during a cycle
- Expiratory Reserve Volume
 - amount of air that you are able to expel
- Residual Volume
 - amount of air that remains in your lungs after exhalation
- Vital Capacity
 - maximum amount of air you can inhale in a cycle

Pulmonary Volumes and Capacities (adult male)



Gender Differences

	Males	Females	
Vital capacity	IRV 3300	1900	Inspiratory capacity
	V_T 500	500	
	ERV 1000	700	Functional residual capacity
Residual volume 1200	1100		
Total lung capacity 6000 mL		4200 mL	

Respiratory Rate

Volume of air moved each minute
=
breaths per minute x tidal volume

Acceptable Range of Respiratory Rates for Age	
Age	Rate (Breaths per Minute)
Newborn	30-40
Infant (6 months)	20-40
Toddler (2 years)	25-32
Child	20-30
Adolescent	16-19
Adult	12-20

Receptors

- Chemoreceptors
 - respond to oxygen, carbon dioxide, and pH
 - influenced by nervous system
- Baroreceptors
 - respond to pressure change
 - found in carotid and aorta