

Biophysics of respiratory system

1. Laws describing the behavior of gases:
 - Laplace's law,
 - Henry's law,
 - Dalton's law,
 - general gas equation,
2. Mechanics of breathing:
 - the breathing cycle, the role of the intrapleural and intrapulmonic pressure
 - lung compliance and its determinants, elastic properties of lung tissue
 - surface tension and pulmonary surfactants, alveolar pressure, volume relationship
3. Airflow and mechanical energy balance, the work of breathing
4. Respiratory gas exchange: behavior of gases in liquids, diffusion of gases in the lung, determinants of gas diffusion