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| Inspiration | Diaphragm contracted, ribs and sternum raised<br><br>Increase in thoracic and pulmonary volume resulting in decrease in intrapulmonary pressure |
| Expiration | Diaphragm relaxed and arched upwards, ribs and sternum returned to original position<br><br>Decrease in thoracic and pulmonary volume resulting in increase in intrapulmonary pressure |
| Tidal volume | Volume of air inspired or expired normally<br><br>500 ml |

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| Inspiratory reserve volume (IRV) | Additional air inspired by a forcible inspiration<br><br>2500-3000 ml<br><br>Inspiratory capacity (IC) = TV+IRV |
| Expiratory reserve volume (ERV) | Additional air expired by a forcible expiration,1000 -1100 ml<br><br>Expiratory capacity (EC) = TV+ERV |
| Residual volume (RV) | Air remaining in the lungs after forcible expiration,1100 - 1200 ml<br><br>Functional residual capacity = ERV+RV |

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| Vital capacity (VC) | The maximum volume of air that can be inspired or expired = ERV+TV+IRV<br><br>Total lung capacity = VC+RV |
| Oxygen transport | Formation of oxyhaemoglobin in alveoli - high $pO_2$, low $pCO_2$, $H^+$ and temp<br><br>Dissociation of oxyhaemoglobin in tissues - low $pO_2$, high $pCO_2$, $H^+$ and temp |
| Carbon dioxide transport | Carbamino-haemoglobin - 20-25%<br><br>Bicarbonate - 70%<br><br>Dissolved in plasma - 7% |

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| Neural regulation of respiration | Rhythm centre - medulla region<br><br>Pneumotaxic centre - pons region |
| Chemical control of respiration | Chemosensitive area in medulla oblongata - sensitive to $CO_2$ and $H^+$ conc.<br><br>Receptors in aortic arch and carotid artery - sense changes in $CO_2$ and $H^+$ conc. |
| Emphysema | Due to damage in alveolar walls |

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| Alveoli | Thin squamous epithelium of pneumocyte cells<br><br>Type I - smaller and help in gaseous exchange<br><br>Type II - larger and secrete lecithin, which acts as a surfactant and decreases surface tension |
| Diffusion membrane | Alveolar thin squamous epithelium<br><br>Middle basement membrane<br><br>Endothelium of blood capillaries |