

# Clinical physiology of the respiratory system I

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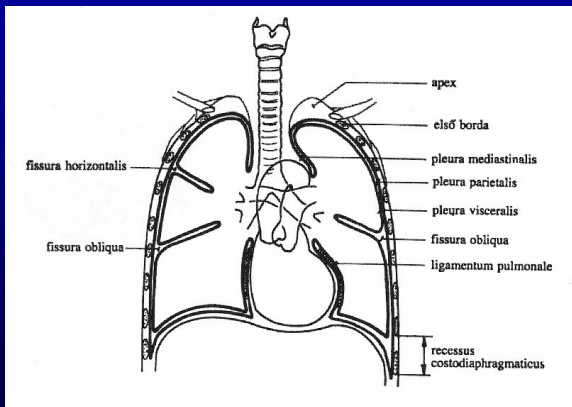
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## The respiratory system



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## Mechanical considerations

Elasticity of the respiratory system

$$\text{Respiratory compliance (C)} = \frac{\Delta \text{ volume}}{\Delta \text{ pressure}}$$

Resistance to airflow

Airway resistance (R)

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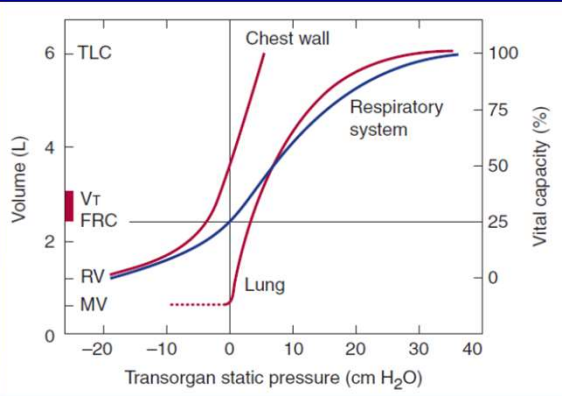
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## Static pressure-volume relationships




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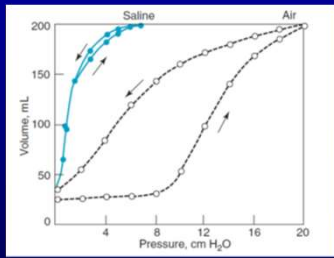
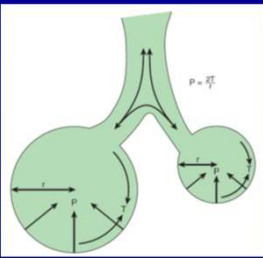
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## Lung compliance and surface tension




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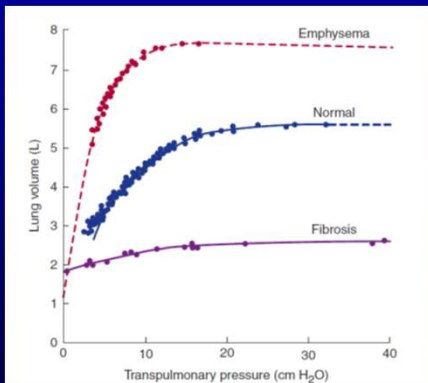
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## Pulmonary compliance curves during health and disease




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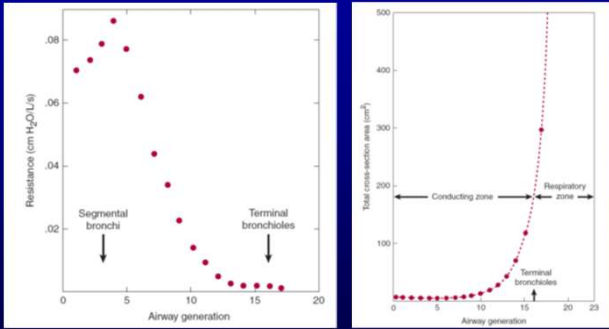
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## Resistance to airflow




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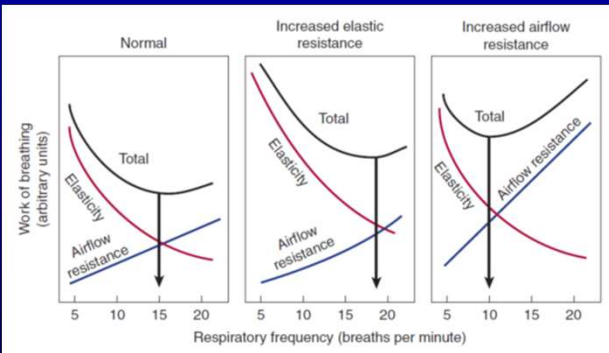
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## The work of breathing




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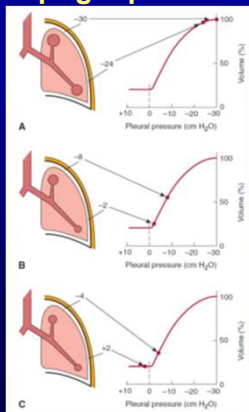
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## Regional distribution of ventilation in the upright position




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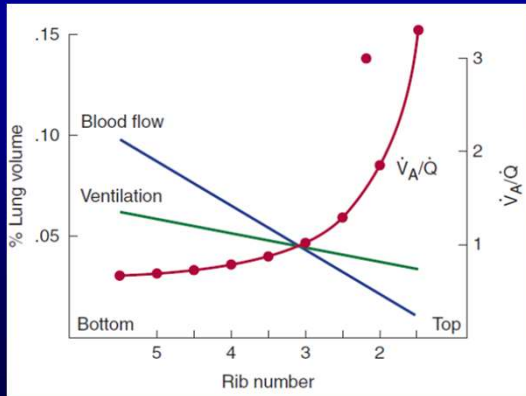
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## Ventilation / perfusion ratio in upright individuals




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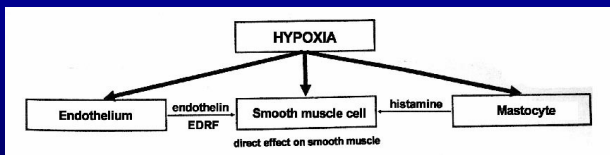
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## Matching of perfusion ( $\dot{Q}$ ) to ventilation ( $\dot{V}$ )




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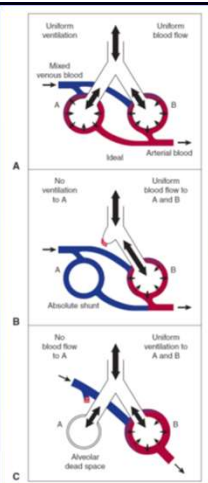
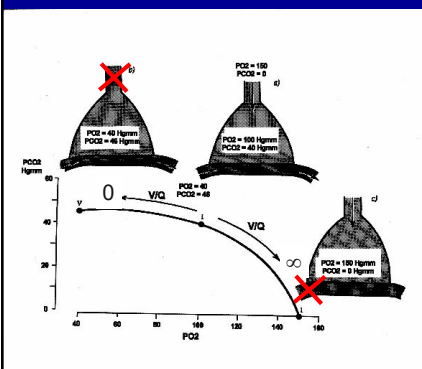
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## Ventilation ( $\dot{V}$ ) perfusion ( $\dot{Q}$ ) mismatch




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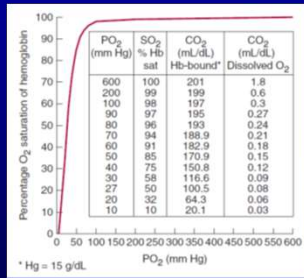
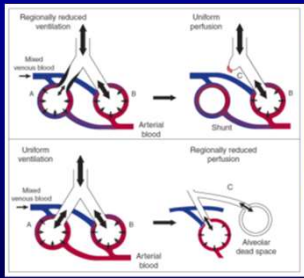
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## Ventilation (V) perfusion (Q) mismatch




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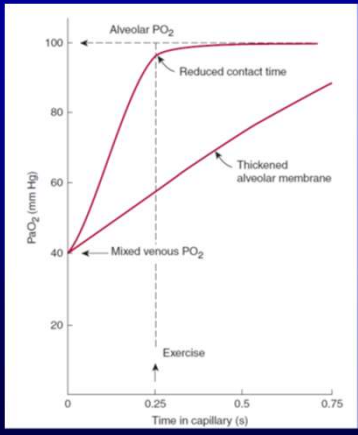
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## Alveolar-capillary contact time




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