

# Respiratory Volumes and Capacities

- Factors affecting respiratory volumes and capacities
  - **Size**
  - **Sex**
  - **Age**
  - **Physical condition**
- Tidal volume (TV)
  - **Normal quiet breathing**
  - 500 mL of air is moved in/out of lungs with each breath

# Respiratory Volumes and Capacities

- Inspiratory reserve volume (IRV)
  - Amount of air that can be **taken in forcibly over the tidal volume**
  - Approximately 3,100 mL
- Expiratory reserve volume (ERV)
  - Amount of air that can be **forcibly exhaled after a tidal expiration**
  - Approximately 1,200 mL

# Respiratory Volumes and Capacities

- Residual volume
  - **Air remaining in lung after expiration**
  - **Cannot be voluntarily exhaled**
  - Allows gas exchange to go on continuously, even between breaths, and helps keep alveoli open (inflated)
  - Approximately 1,200 mL

# Respiratory Volumes and Capacities

- Vital capacity
  - **Total amount of exchangeable air**
  - Vital capacity = **TV + IRV + ERV**
  - 4,800 mL in men; 3,100 mL in women
- Dead space volume
  - **Air that remains in conducting zone and never reaches alveoli**
  - About 150 mL

# Respiratory Volumes and Capacities

- Functional volume
  - **Air that actually reaches the respiratory zone**
  - Approximately 350 mL
- Respiratory capacities are measured with a **spirometer**



