

RESPIRATORY SYSTEM

PART 2 NOTES

1

OUTCOMES

B11-3-15: Describe how breathing is controlled to help maintain homeostasis in the human body. (GLOs: D1, E2) Include: chemoreceptor and medulla oblongata

B11-3-16: Investigate and describe conditions/disorders associated with transportation and/or respiration in the human body. (GLOs: B3, C6, D1) Examples: cardiovascular diseases...

B11-3-17: Identify personal lifestyle choices that contribute to cardiovascular and respiratory wellness. (GLOs: B3, C4, D1) Examples: active lifestyle, not smoking...

2

RESPIRATION CONTROL

- The medulla oblongata is the primary control center for respiration. *sensor*
- Chemoreceptors within the control center and blood vessels measures the pH of the blood.

3

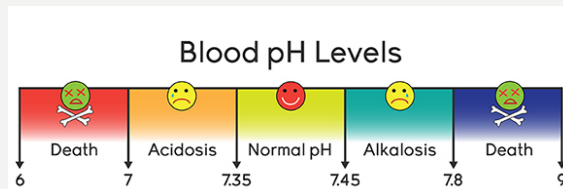
RESPIRATION CONTROL CONT'D

- Carbon dioxide in the blood changes its pH. *acidosis*
 - The more carbon dioxide, the more acid blood is
- If the chemoreceptors detect a low pH then the medulla will send signals to the respiratory muscles to increase breathing to get rid of carbon dioxide.

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RESPIRATION CONTROL CONT'D

- Likewise, if there is not enough carbon dioxide in the blood:
 - The less carbon dioxide, the more alkaline (basic) blood is
- If the chemoreceptors detect a high pH then the medulla will send signals to the respiratory muscles to slow breathing to keep come carbon dioxide in the blood

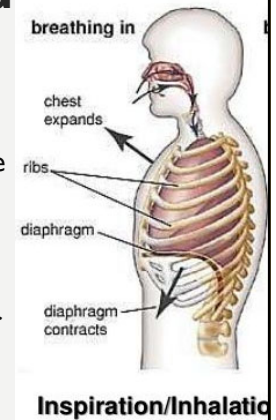


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MECHANICS OF BREATHING

Inhalation

- Diaphragm contracts increasing space in chest cavity
- Intercostal muscles contract pulling rib cage upward and outward, also expanding the chest cavity
- A larger chest cavity decreases the air pressure within the pleural cavity, pulling air into the alveolar sacs

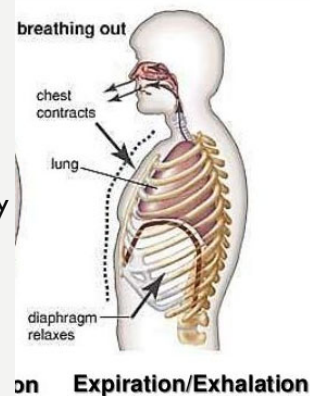


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MECHANICS OF BREATHING

Expiration

- Diaphragm relaxes back to the original size, decreasing chest cavity
- Intercostal muscles relax, also decreasing the size of the chest cavity
- The pressure increases within the pleural space and forces the air out of the lungs



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Surprise! You each will create a short “study sheet” of your PowerPoint Presentation that will be distributed to everyone. Each group will also submit one question to me that will make up the Short Answer Section of the test!!

- Pleural effusion

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RESPIRATION AND DEFENSE

Coughing

- It's a rapid expulsion of air from the lungs
- Can be voluntary or involuntary
- Purpose is to clear breathing passage of foreign particles, microbes, irritants, fluids, or mucus
- Also known as a **tussis**
- Note: some germs use coughing as a way to spread to new hosts.

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RESPIRATION AND DEFENSE

Sneezing

- It's a convulsive expulsion of air from the lungs through the nose and mouth
- Is semi-autonomous, usually triggered when the lining of your nasal cavity (cilia) is irritated
- Purpose is to expel mucus containing foreign particles or irritants
- Also known as a sternutation
- Note: may be the nose's way of resetting by rebooting the cilia

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RESPIRATION AND DEFENSE

Hiccupping

- It's an involuntary contraction of the diaphragm at the same time as a contraction of the voice box (larynx) which causes the sudden rush of air into the lungs
- The exact cause is unclear
- Also known as synchronous diaphragmatic flutter (SDF)
- Note: longest recorded case of hiccups lasted 60 years!

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RESPIRATION AND DEFENSE

Yawning

- It's an involuntary reflex of simultaneous inhalation of air and stretching of eardrums, followed by the exhalation of breath
- Reasons for yawning may include:
 - our bodies needing more oxygen
 - stretching the lungs
 - Redistributing surfactant
 - cooling the brain

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