

Physiology p.p¹⁻⁴



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In diving, divers first hyperventilate before they go into water. This hyperventilation allows one to hold one's breath for a longer period of time, because hyperventilation:

- a. increases the oxygen reserve of systemic arterial blood
- b. decreases the PCO₂ of systemic arterial blood
- c. decreases the pH of systemic arterial blood
- d. increases brain blood flow
- e. make alveolar air full of O₂ which divers can use while diving

Answer:B

Which of the following decreases oxygen content but does not alter PaO₂ or percentage saturation of hemoglobin:

- a. Ascent to an altitude of 3500 m
- b. Polycythemia (high RBC count)
- c. Breathing 50% oxygen
- d. Anemia
- e. Development of a large right-to-left shunt

Answer:D

In normal resting individual breathing room air at sea level, voluntary trebling (3x normal) of alveolar ventilation:

- a. raises plasma pH.
- b. raises alveolar PCO₂ .
- c. trebles the partial pressure of oxygen in the alveoli.
- d. raises arterial blood oxygen saturation by 3 %.
- e. raises arterial blood oxygen content by 3 %.

Answer:A

A 20-year-old male college student participates in a pulmonary study in his physiology lab. He is healthy and in good physical shape. He is asked to run on a treadmill for 20 minutes at a moderate pace, during which time his arterial PCO₂ is measured. What is his predicted arterial PCO₂ (in mm Hg)?

- a. 20
- b. 60
- c. 80
- d. 40

Answer:D

Hypoventilation causes one of the following changes in arterial blood gases:

- a. Increase in arterial PO₂, increase in arterial PCO₂, and decrease pH
- b. Increase in arterial PO₂, decrease in arterial PCO₂, and increase pH
- c. Decrease in arterial PO₂, decrease in arterial PCO₂, and increase pH
- d. Increase arterial PO₂, no change in arterial PCO₂, and increase pH
- e. Decrease in arterial PO₂, increase in arterial PCO₂, and decrease pH

Answer:E

When will be happen to the partial pressures of O₂ and CO₂ when ascending to high altitude:

- a. PO₂ increases, and PCO₂ increases
- b. PO₂ increases, and PCO₂ decreases
- c. PO₂ decreases, and PCO₂ increases
- d. PO₂ increases, and PCO₂ doesn't change
- e. PO₂ decreases, and PCO₂ decreases

Answer:E

hyperventilation can result from:

- a.increase alveolar P_{CO_2}
- b.increase alveolar P_{O_2}
- c.decrease arterial P_{CO_2} below 30 mmHg
- d.direct stimulation of central chemosensitive receptors due to increase PH
- e.a decline of arterial P_{O_2} from 100 mmHg to 70 mmHg

Answer:A

A patient with anemia has which of the following?

- A. A normal arterial blood O_2 content
- B. Arterial PO_2 of 99 mmHG
- C. A decreased venous blood PO_2
- D. Hyperventilation
- E. Cyanosis

Answer: C

A patient has the following arterial blood values: pH=7.52 pCO₂=20 mmHg HCO₃⁻=16 mEq/L. He most likely:

- A. Hypo-ventilating
- B. Has an acid base disorder caused by over-production of fixed acid
- C. Has a respiratory alkalosis
- D. Has a complete respiratory compensation
- E. Has renal compensation that causes his arterial HCO₃⁻ to increase

Answer: C

All of the following parameters are decreased on ascending to high altitude except:

- A. Arterial pO₂
- B. Alveolar air pCO₂
- C. Hb % saturation
- D. Systemic arterial pH
- E. Arterial O₂ content

Answer: D

Rapid forced breathing:

- a. Is called hyperventilation
- b. Induced a state of alkalosis
- c. Induces a state of acidosis
- d. A and B are correct
- e. A and C are correct

Answer: D

At high altitude the following changes take place EXCEPT:

- a. Increase alveolar PCO_2
- b. Increase ventilation
- c. Increase respiratory rate
- d. Increase in O_2 carrying capacity of blood
- e. Decrease alveolar PO_2

Answer:A

Hypoxic hypoxia mainly attributed to:

- A. Respiratory membrane thickness
- B. Increased distance between alveolar and capillary distance
- C. Decreased partial pressure of O₂ in atmosphere
- D. Increased red blood cells in pulmonary arterioles
- E. Increased PO₂ in inspired air

Answer: C

Which of the following sets of differences best describe the hemodynamics of the pulmonary circulation when compared with systemic circulation (in skeletal muscles)?

- a. A
- b. B
- c. C
- d. D
- e. E

	Blood π_c	interstitial π_c	Vascular Resistance	Pc
A.	Same	Higher	Higher	Lower
B.	Same	Higher	Lower	Lower
C.	Higher	Same	Same	Higher
D.	Lower	Lower	Lower	Lower
E.	Higher	Higher	Higher	Higher

Answer: B

Good luck 

