18

Respiratory Physiology

LAB REPORT / QUESTIONS

1. Identify (name) the following lung volumes and capacities:
   (a) maximum amount of air that can be expired after a maximum inspiration ____________
   (b) maximum amount of air that can be inspired after a normal inspiration ____________
   (c) maximum amount of air that can be expired after a normal expiration ____________
   (d) amount of air left in the lungs after a maximum expiration ________________

2. Pulmonary disorders in which the alveoli are normal but there is an abnormally high resistance to airflow are categorized as ________________ disorders.

3. An example of a disorder in the category described above is ____________________.

4. Does your chest expand because your lungs inflate, or do your lungs inflate because your chest expands? Explain.

5. High total minute volume during exercise is called hyperpnea. How does this differ from hyperventilation?

6. What happens to the respiratory rhythm following hyperventilation?

7. What causes the apnea that sometimes occurs after hyperventilation? Explain.
8. Why does a person often get light-headed and dizzy after blowing up a balloon or blowing a horn vigorously? What mechanism causes these sensations? Explain.

9. Compare a person's respiratory movements after hyperventilation in a closed system (in a paper bag) to the respiratory movements after hyperventilation in an open system. Explain.

10. What mechanism(s) is/are responsible for the changes in the respiratory rhythm seen with rebreathing, breath holding, or obstruction of airway passages? Hint: how do blood gases change in each case?

11. What factors operate during exercise to increase the rate and depth of breathing?

12. From your breathing experiments, which of the following is more likely to be the primary stimulus in the regulation of respiration (i.e. stimulus for breathing): lack of oxygen or too much carbon dioxide? Explain your answer.
13. Explain why blood carbon dioxide concentrations and pH are more effective indicators of respiratory requirements. (why is oxygen not a good means of regulating ventilatory rates?)

14. Distinguish between obstructive and restrictive respiratory diseases. How does spirometry aid in their diagnosis (i.e. How are ventilation rates and volumes altered from normal)?
   a. Obstructive Respiratory Disorder

   b. Restrictive Respiratory Disorder