Control of Human Gas Exchange

NAME ___________________________ DATE _____________

Your oxygen exchange system allows you to obtain oxygen, eliminate carbon dioxide, and regulate the blood’s pH level. This process is known as ventilation. The process of taking in air is known as inspiration, while the process of blowing out air is called expiration. A ventilation cycle consists of one inspiration and one expiration. The rate at which your body performs a cycle is dependent upon the levels of oxygen and carbon dioxide in your blood.

You will monitor the ventilation patterns of one member of your group under different conditions.

MATERIALS
Read over the procedures and write in the materials you will need

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PROCEDURES

1. Sit quietly for five minutes, make sure you are completely relaxed
2. Count the number of breaths taken in one minute, recording this information in a table
3. Wait one minute, and then count the breaths again. Record the results. Repeat if necessary until you get a steady value for the resting rate.
4. Carry out a vigorous exercise, such as running in place for three minutes.
5. Upon finishing the exercise, immediately sit down and record the breathing rate as before.
6. Continue to record breaths per minute, every minute, until you return to the normal resting rate
7. Plot a graph of the results. Leave a gap during the periods of exercise, when no readings were taken.

DATA TABLE (draw data table here)
QUESTIONS

1. Did the breathing rate change after the exercise? If so, describe how it changed.

2. Why does breathing rate need to rise during exercise? Explain fully.

3. Why does the rate not return to normal as soon as you finished the exercise?

4. Compare your breathing rate with another student? Describe the differences? Who is more fit? Explain your reasoning.

5. Explain how you think carbon dioxide affects your breathing.