

Name _____ Date _____

Chapter 9 Lab Investigation: Respiration

Purpose

In this activity you will measure and monitor breathing rates to better understand respiration, inspiration, and lung capacity.

Materials

your textbook, a timer, and your body

Procedure

Work with a partner to determine breathing rates, intervals between expiration and inspiration, depth of breathing, and lung capacity. Do the following procedure once, then reverse roles with your partner.

1. Determine your at-rest breathing rate. Have your partner count the number of breaths you take in one minute. Do this three times, find the average, and then record the average. This is your breathing rate at rest.

first minute: _____

+

second minute: _____

+

third minute: _____

= total breaths _____

divided by 3 = your at-rest breathing rate: _____

2. You and your partner should note the depth of your breathing and the amount of time between the expiration of one breath and the inspiration of the next breath.

On a scale of 1-10, with 10 being the deepest, how deep were your breaths? _____

What was the approximate expiration/inspiration interval? _____

3. Hold your breath for as long as you can. Your partner will time you.

Length of time holding breath: _____

4. Run in place or walk vigorously around the room for two minutes. Immediately afterward, while standing, have your partner count and record the number of breaths that you take in one minute.

Number of breaths in first minute: _____

5. While your partner is counting breaths per minute, you will note the depth of your breathing and measure the expiration/inspiration intervals in the first minute after the vigorous exercise.

On a scale of 1-10, with 10 being the deepest, how deep were your breaths? _____

What was the approximate expiration/inspiration interval? _____

6. After one minute, hold your breath for as long as possible while your partner times you.

Length of time holding breath: _____

7. While standing, hyperventilate by breathing in and out rapidly for one minute. Stop if you feel dizzy. Again, hold your breath for as long as possible while your partner times you.

Length of time holding breath: _____

Conclusions

1. In which situation did you breathe deeper, at rest or after exercise?

2. What is the effect of breathing depth on lung volume?

3. When does the shorter expiration/inspiration interval occur—at rest or after exercise?

4. What is the effect of expiration/inspiration intervals on breathing rate?

5. What is the effect of depth of breathing and breathing rate on the amount of oxygen supplied to the blood?

6. In which situation could you hold your breath longer—at rest, after exercise, or after hyperventilating?

7. Why do you think the condition above (#6) allowed you to hold your breath longer?

8. Why did you always stand while taking the measurements?
