



Respiratory System Name _____

Breathing Rate

Background Information: Oxygen is essential to life. We use the oxygen we breathe and the food we eat to produce energy. Physical activity increases our need for energy; increasing the use of oxygen and nutrients.

The body can store some of the things it needs to function. However, oxygen cannot be stored for more than a few minutes at a time.

At rest the blood holds about a quart of dissolved oxygen, but it is constantly being used by the cells to produce energy during cellular respiration. The respiratory system must work all of the time to supply enough oxygen to the body.

Question: What is the effect of exercise on breathing rate?

Hypothesis (Use an *If, Then* statement):

Materials:

Clock with second hand or stopwatch

Procedure:

1. Work with a partner. One person will be the participant; the other will be the investigator.
 - ★ The investigator is responsible for starting, stopping and timing.
 - ★ The participant is responsible for counting the breaths he/she takes during the investigation.
2. The participant will sit very still for 1 minute; breathing normally. At a signal from the investigator, the participant will count how many complete breaths (in and out) he/she takes in one minute. The investigator will watch the clock and start and stop the participant.

3. Record the data in the spreadsheet.
4. Repeat the process while walking in place for one minute. Record the data on the spreadsheet.
5. Repeat the process while jogging in place for one minute. Record the data on the spreadsheet.
6. Switch participant / investigator roles and repeat the experiment.

Data:

Open the spreadsheet titled "Breathing Rate".

Type in your names under Participant.

Record your data on the spreadsheet.

Save the spreadsheet in Scommon.

Data Analysis:

Use Excel to make a bar graph of your data.

(Excel calls it a column graph)

Remember to title and label the graph.

If you don't remember how to make a graph, open the Flash file and watch the short movie called "How to Make a Graph."
You can find the file in the Poarch folder in Scommon.

Save the graph on the same sheet as the data.

Print the graph & staple it to this paper.

Describe the relationship between breathing rate and exercise.
