

Review Sheet
NYS Regents Lab Activity
Making Connections

Important Terms

Pulse Rate	Control variable
Muscle fatigue	Control group
Homeostasis	Trial
Hypothesis	Sample size
Independent variable	Histogram
Dependent variable	

Key Points I

1. In order to find a hypothesis, one looks for patterns. For example, we did not see a connection between pulse rate and height, but we did see a connection between pulse rate and exercise.
2. Graphs and data tables present data in a clear, organized way that is easy to understand.
3. Pulse rate increases during exercise because the cells need to be provided with more food and oxygen and more wastes are produced which need to be transported to the lungs (CO₂) and the kidneys (urea).
4. Muscles become fatigued, tired, due to waste products building up in them.
5. Organ systems interact in order to maintain homeostasis.

Procedure I

1. Students found their average pulse rates after three trials.
2. Class results were graphed in a histogram, bar graph.
3. Pulse rates were found to increase after exercising.
4. A clothespin was squeezed rapidly for one minute. The number of times that it was squeezed was recorded.
5. The clothespin was squeezed the same way for another minute.

Analysis:

1. Organ systems interacted to maintain homeostasis during exercise. For example:
 - a. The respiratory system takes in oxygen, which is transported to cells by the circulatory system. As cells use oxygen at a higher rate, an increased heart rate would get the oxygen to the cells more quickly
 - b. As muscle cells increase their activity, they produce waste products at a higher rate. These wastes are carried to the excretory system by the blood (circulatory system) more efficiently when the heart rate increases.
2. A reliable way to test a hypothesis or a claim is to do an experiment.

Key Points II:

1. Know how to design an experiment and how to interpret an experiment's design.
2. Independent variable: The variable that the scientist changes. Only one of these in an experiment. This is put on the x-axis in a graph.
3. Dependent variable: The variable that is changed by the independent variable. The results. Only one of these in an experiment. This is put on the y-axis in a graph.

4. Controlled variable: The variable that remains the same for all trials. All variables except for the independent and dependent variables must be controlled variables. If this is not true, the results may be invalid.
5. Control group: A group in which the independent variable is set to 0. This group is used to compare with an experimental group. Without this group, the results may be invalid.
6. Increasing the number of trials increases the validity of the experiment.
7. You should be familiar with constructing a data table and a graph (line and bar).

Procedure:

1. An experiment was designed to determine the effect on exercise on squeezing a clothespin using the “Guidelines for Designing a Controlled Experiment.” These guidelines are in your packet, and they were also a part of your independent investigation project.
2. You did the experiment following your design.
3. The data was included in a data table and a graph.
4. You determined if your data accepted or rejected your hypothesis.
5. Suggestions for improvement and further research were included in the final report.