Heart Investigation Lab

Factors Affecting Heart Rate

Your major open-ended investigation this year involves investigating factors that affect heart rate. An obvious one is exercise, you will need to dig a little deeper than straight exercise.

You will be doing some research in advance to determine your accuracy for measuring heart rate. You will need to do some Internet searches to find background information to be able to define a clear and focused research question.

Since you will be using human subjects you will need to create a form for your subjects to sign indicating that they understand the research and are a willing participant without health issues that might be aggravated by the lab activity.

Pre-Lab Preparation

1. Find your pulse while sitting down. You can either use the radial pulse in your wrist or the carotid pulse in your neck. It may be sufficient to count for 15 or 30 seconds and multiply to get a rate per minute, rather than count for an entire minute. Repeat the count 2 or 3 times. What is the reason for repeating the count?
2. Stand up and take your pulse again. What is the reason for the difference in heart rate between sitting and standing?
3. Repeat the counts using an electronic pulse-rate monitor. Are the results the same as the counts that you took manually? Are they more or less precise? This can be judged by how closely the repeats are clustered. Are the results more or less accurate? This is how close the results are to a true rate that you would obtain with no errors in your counts. Are there more or less errors and uncertainties than with manual counts?
4. Design an investigation of a factor that might affect the heart rate. Make sure you do the following things:
   1. Define a clear and focused research question
   2. develop methods for controlling all the variables that might influence heart rate during the experiment. What is your Independent variable?

Dependent variable?

Controlled variables?

c. Develop methods for collecting sufficient data to allow you to answer your research question. (try a 5 x 5)