

Lab: Factors Affecting Heart Rate and Blood Pressure

Problem:

What is the effect of _____ on blood pressure and heart rate?

Hypothesis

Make and record a hypothesis about the effects of one factor (exercise, temperature or stress) on heart rate and blood pressure, include why that occurs.

If

Then

Because

Materials

1. blood pressure cuff
2. watch with a second hand or a digital display of seconds

Methods

1. Outline, step-by-step, a procedure for your experiment. Assemble the materials you will require.

2. What will be your manipulated variable?

3. What will be your responding variable(s)?

4. What will be your control variable(s)?

5. How many trials will you run? Remember that you should test one variable at a time. Plan to collect quantitative data.

Analysis

1. What was the resting blood pressure and heart rate for each test subject?

2. How did the blood pressure change as a result of the factor you were testing? How did the heart rate change as a result of the variable you were testing?

Plot the difference between resting and “affected” heart rate:

3. What is the adaptive advantage of a temporary increase in blood pressure? What is the adaptive advantage of a temporary increase in heart rate?

Extension

1. High blood pressure is a common problem in North America. Fortunately, many different treatments are available. Some examples include treatments used in Western medicine, traditional Aboriginal medicine, traditional Chinese medicine, Ayurvedic medicine, naturopathy, homeopathy, massage therapy, and yoga. Research three different treatments for high blood pressure, and prepare a brief report to compare the main features of these treatments. If someone wanted to receive treatment for high blood pressure, which would you recommend? Justify your choice.

2. If possible, obtain two types of blood pressure cuffs. Newer cuffs give digital readings, while older cuffs require the use of a stethoscope to listen to the sounds of blood moving through the vessels. Use both types of blood pressure cuff to measure a partner's blood pressure. Compare the readings you got, and describe the differences in your experiences with the two cuffs.