

## Experiment HP-5: Heart Rate, Blood Pressure, and Vagal Tone

### Vigilance & Reaction Time Section

*Note: If you choose to do Heart Rate, BP, Vagal Tone or Personality-Vagal Tone experiments – choose those labs from the Human Psychophysiology section.*

#### Exercise 1: Vigilance-Reaction Time Task

Aim: To determine if vigilance or careful monitoring of the environment has any effect on heart rate and blood pressure.

#### **Procedure**

1. Ask the subject to sit quietly as the rest of your group prepares for this exercise.
2. Before beginning the exercise, inform the subject of the experimental conditions:
  - When the event marker is pressed and released quickly, a signal pulse will appear in the Event Mark channel on the Main window.
  - The subject should watch for appearance of the signal pulse at the right margin of the computer screen. As soon as the subject sees the signal pulse, the subject should press the Enter key on the keyboard to place a mark on the data record.
  - The signals from the event marker will appear on the computer at intervals between four and eight seconds. A total of ten signal pulses will appear on the screen.
3. Designate a member of the lab group to press the event marker a total of ten times in one minute, at intervals between four and eight seconds.
4. Record a second baseline heart rate for the subject, since his or her resting heart rate may have changed over the course of the experiment.
5. Type 2nd Baseline HR <Subject's Name> in the Mark box to the right of the Mark button.
6. Click Record to begin recording the finger pulse of the subject. Click AutoScale on the Pulse and Heart Rate channels to increase the size of the signals. Press the Enter key on the keyboard. Record for one minute.
7. Click Stop to halt the recording.
8. Type Reaction Time 1 in the Mark box. Instruct the subject to place his or her finger on the Enter key of the keyboard, and to watch the trace on the Event Mark channel.
9. Click Record. Quietly press the button of the event marker to create a signal on the Event Mark channel. The subject should press the Enter key on the keyboard as soon as possible after the event mark signal appears on the computer screen. Continue recording as nine more event mark signals are delivered to the subject and the subject responds to the signals by pressing the Enter key on the keyboard.
10. After the subject's response to the tenth event mark signal, click Stop to halt the recording.
11. Select Save in the File menu.

### Data Analysis

1. Scroll through the data file and find the second recording of the subject's baseline heart rate.
2. Use the same procedures used in the Heart Rate-BP section of this lab to position the heart rate data taken during this period in the Main window and display the selected data in the Analysis window.
3. On the Heart Rate channel, click and drag one cursor to the left margin of the data displayed in the Analysis window. Drag the other cursor to the right margin of the same data and measure the following:
  - Maximum Heart Rate. The value for Max on the Heart Rate channel is the subject's maximum heart rate during the second baseline recording.
  - Minimum Heart Rate. The value for Min on the Heart Rate channel is the subject's minimum heart rate during the second baseline recording.
  - Mean Heart Rate. The value for Mean on the Heart Rate channel is the subject's mean heart rate during the second baseline recording.
4. Record the values for these rates in the Journal using one of the techniques described in the Heart Rate-BP section of this lab, and in [Table HP-5-L1](#).
5. Scroll through the recording and locate the section of data recorded during the subject's reaction time period.
6. Repeat Steps 2 through 4 for the reaction time data.

### Questions

1. Is the subject's mean heart rate higher or lower in the vigilance-reaction time period than in the baseline period?
2. Does your data support the hypothesis that heart rate decreases when tasks that require the careful monitoring of the environment are performed?

**Table HP-5-L1: Heart Rates for Reaction Times**

Subject_____			
Experimental Condition	Maximum Heart Rate (BPM)	Minimum Heart Rate (BPM)	Mean Heart Rate (BPM)
Reaction Time			

## References

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