**V. REACTION TIMES – INTRODUCTION TO LABSCRIBE**

# Throughout this course, we will be using a data acquisition system called iWorx to collect physiological data. iWorx refers to the equipment and box that converts the physiological data (an analog signal) into a digital signal that can be read by the computer software called LabScribe. It is important to become comfortable collecting data with LabScribe as soon as possible, so the other labs run smoothly. See also Appendix A.

# In order to introduce you to iWorx and LabScribe, we will run a simple experiment today to measure reaction times. You will compare the reaction times to a visual stimulus versus an auditory stimulus.

# A. Procedures

# The event marker should be connected to the back of the iWorx unit. Make sure the iWorx unit is turned on and connected to the computer.

# **Intro to LabScribe**

# 1. LabScribe will usually already be open, but if you ever need to open the software, then click the LabScribe 3 icon in the dock at the bottom of the screen. You should get a message saying that the hardware has been detected.

# 2. Again, the correct settings will usually already be loaded, but just in case you need to load them, you can open the Settings menu and choose the lab that you will be performing today (Reaction Times). This will open up a recording window with time along the x-axis and volts along the y-axis. The units on the y-axis are not important for this activity.

# 3. Press the Record button at the top of the screen. To stop recording, click the same button which now says “Stop”. A thick black vertical line appears whenever a recording is stopped. No data are discarded from memory, but it’s a good idea to save frequently. Note that you can also use Preview to see what your traces will look like before recording the data. Make sure, though, that you are recording during your experiments, because you cannot save a preview.

# 4. Create a folder for your lab section. From the File menu, choose Save and name your file based on the lab number and your names or initials.

# 5. Click Record again and press the event marker several times. Note how the recording changes. Every time the event marker is pressed, it should make an upward vertical deflection. If the recording is going off the screen at the top or bottom, you can scale the y-axis using the magnifying glass buttons on the top left of the recording.

# 

# The image with the plus will zoom in and the image with the minus will zoom out. The magnifying glass in the middle with the arrows will “autoscale” your data, so all of the vertical data currently on the screen will fit perfectly into the window. **If you cannot find your recording on the screen, click Autoscale first before trying anything else.**

# 6. To scale the x-axis, you can click on the small and large “mountain” buttons near the top of the screen, in the menu bar (see image on next page). The button with one large mountain will zoom in the time axis. The button with two smaller mountains will zoom out the axis.

# 7. Find the Mark button above the recording. Type in “test” into the bar next to it and press Enter on the keyboard during the recording. This will make a vertical line with the word “test” below it. Whenever starting a new experiment, you should make a mark and label it, so you will be able to find it again.

# **Reaction times to visual cue**

# 1. Have a subject sit in a chair and face the computer screen. One of their hands should be positioned on the keyboard, so they can quickly press the Enter key.

# 2. The subject will watch the right side of the computer screen and quickly press the Enter key on the keyboard as soon as the signal generated by the event marker first appears on the screen.

# 3. Out of sight of the subject, another student should prepare to *quietly* press and release the button of the event marker. Since this is not meant as an auditory cue, every effort should be made to not make a sound with the event marker.

# 4. Write in a mark “Visual Cue”. Start recording and hit Enter to make the mark.

# 5. Note that in order to make another mark quickly, you will need to type something into the Mark textbox. For instance, the student whose reaction time is being tested can type in a space or period or number in the Mark textbox in between each trial, so it is ready for them to hit Enter.

# 6. At random intervals, one student will press the event marker. Each time the subject sees the mark on the computer, they will hit the Enter key as fast as possible. Remember to type something into the Mark textbox after each trial. Repeat this 5 times and then stop the recording.

# **Reaction times to auditory cue**

# 1. Have a subject positioned so they are not facing the computer screen. One of their hands should be positioned on the keyboard, so they can quickly press the Enter key.

# 2. Out of sight, another student should prepare to *loudly* press and release the event marker. The subject should be able to hear this cue.

# 3. Write in a mark “Auditory Cue”. Start recording and hit Enter to make the mark.

# 4. At random intervals, one student will press the event marker. Each time the subject hears the event marker, they will hit the Enter key on the keyboard as fast as possible. Someone will need to type into the Marx textbox after each trial. Repeat this 5 times and then stop the recording.

# B. Data Analysis

# 1. Scroll to the Visual Cue experiment in the recorded data.

# 2. Click on the Double Cursors button in the menu bar (see image below). Two vertical cursor lines should appear.

# 3. Remember that you can zoom in and out on the x-axis using the mountain buttons (half display time and double display time). The autoscale button in the menu bar will autoscale the y-axes of *all* the recording panels (but there is only one in this experiment).

# **Menu bar diagram**

# 4. Drag one cursor to the *onset* of the signal from the event marker. Drag the other cursor over the vertical mark made by the subject responding to the visual cue.

# 5. Record the value for T2-T1, located in the upper right hand area of the LabScribe window. This is the time at cursor 2 minus the time at cursor 1, so this is the time it took for the subject to respond (i.e. the reaction time).

# 5. Repeat this for all 5 trials and find the average value. Repeat for the 5 trials in the auditory cue experiment too. Record all data in the table in the worksheet.

# Think about the results in the table and try to explain any differences.

|  |  |  |
| --- | --- | --- |
| **Trial number** | **Visual reaction time** | **Auditory reaction time** |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **4** |  |  |
| **5** |  |  |
| **Mean reaction time** |  |  |

Which experiment had the fastest reaction time? Explain biologically why that might be.