Steps to Successful Data Acquisition, Bio 112

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Preparation steps

1. Verify hardware configuration and make sure power is turned on to every device.
2. Verify software is installed correctly – does AcqKnowledge start without issuing an error message?
3. Create a template file (this is detailed on another handout). It should be called "frogtemp.acq"

These dialogs are set via the MP100 drop-down menu.

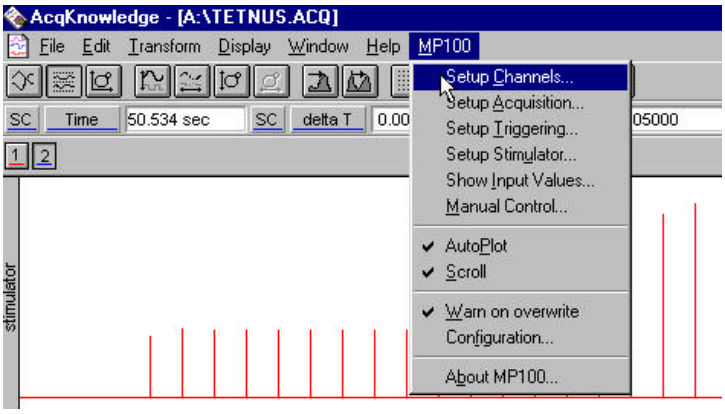
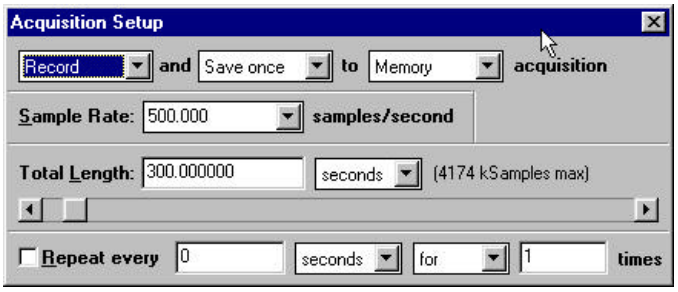
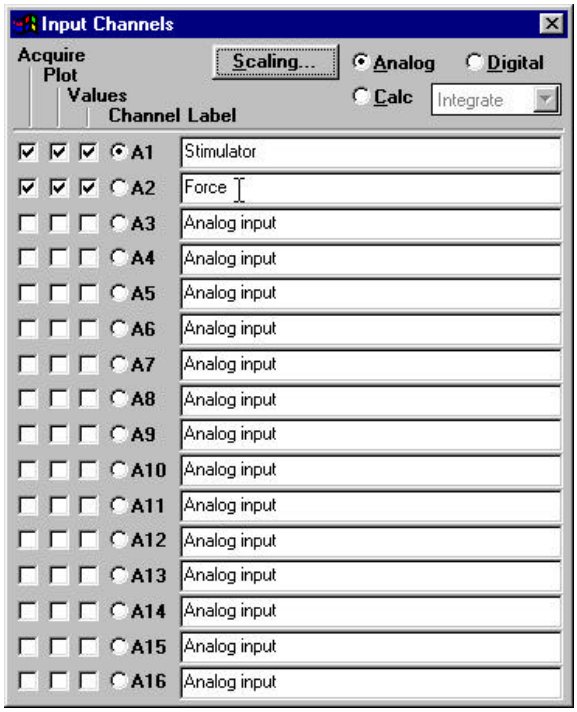


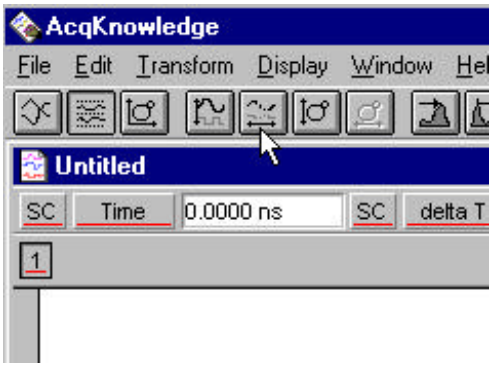
Figure: Setting up the channels and acquisition parameters



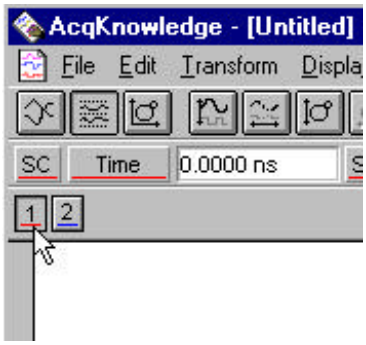


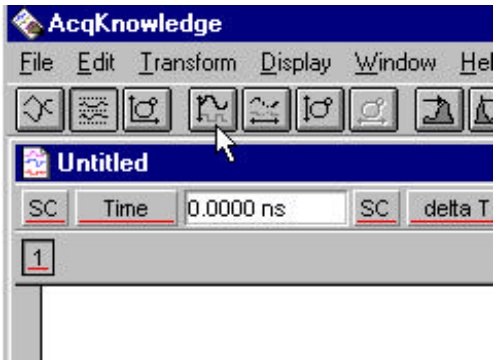
Acquisition steps

1. Start the Biopac AcqKnowledge
2. Prepare your experimental subject
3. Begin data capture: use Alt+space on the keyboard to begin the acquisition
4. Stop data capture: use Alt+space on the keyboard to stop the acquisition.
5. SAVE YOUR DATA. Use a “meaningful” filename, but remember that filenames are limited to 8 characters only with NO SPACES.
6. Scale your data:
   Automatic scaling –
   Horizontally Auto-scale first!

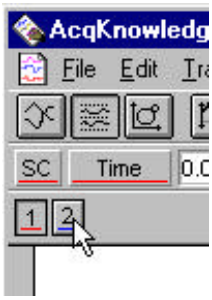


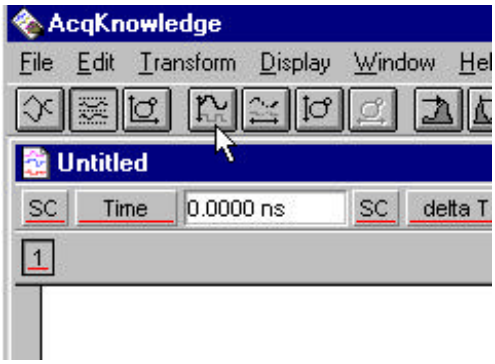
Vertically Auto-scale channel 1 (stimulator). Now, click on the channel number first, then click on the vertical auto-scale button.



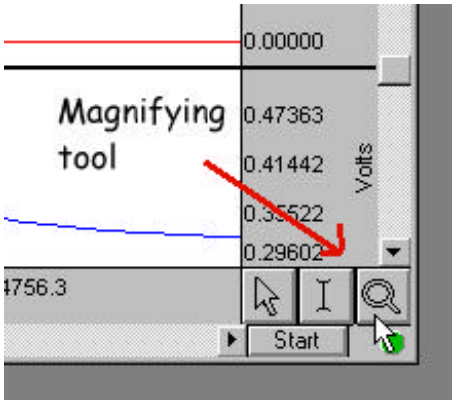


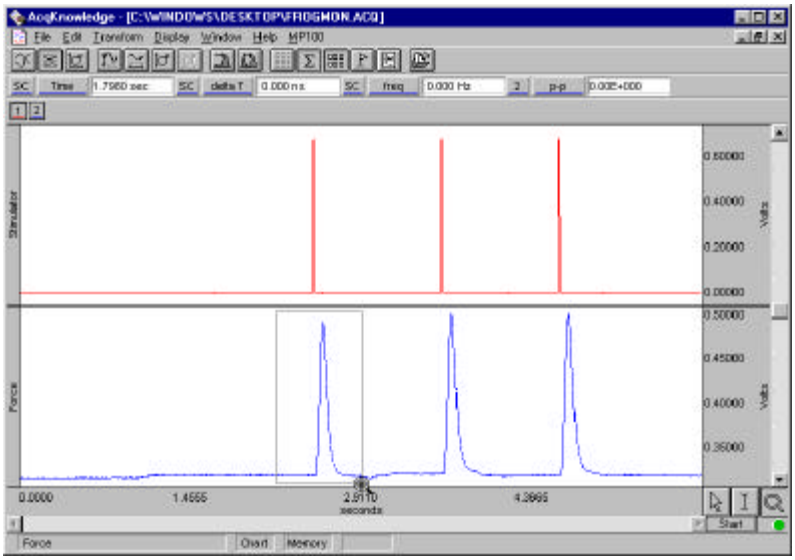
Vertically Auto-scale channel 2 (force)





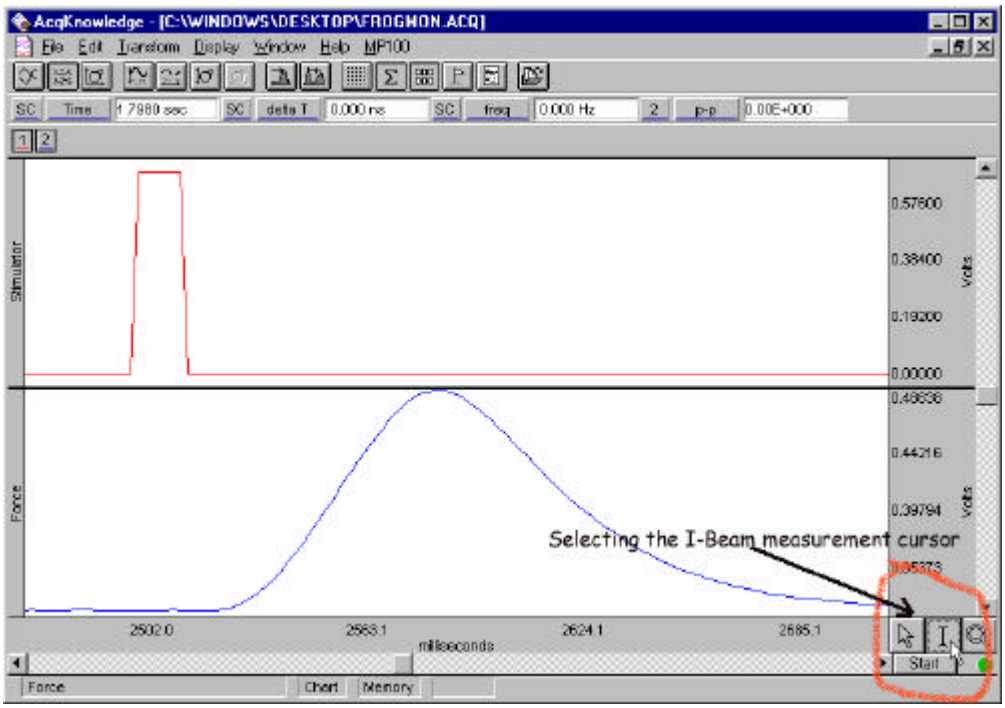
7. Use the **Magnifying glass tool** in the lower right-hand corner of the window to isolate a single myogram by holding down the left mouse button and drawing a rubber-band box around the muscle contraction.





8. Normalizing the readings (optional). You can normalize you vertical and horizontal axes by manually scaling and rounding up or down to make your axes more legible. For example, if my horizontal scale was 0.487 seconds per division, I might change it to 0.50 seconds per division. To do this, click in the axis you wish to scale and change the scaling value.

9. Use the I-Beam cursor tool to perform measurements on the myogram.



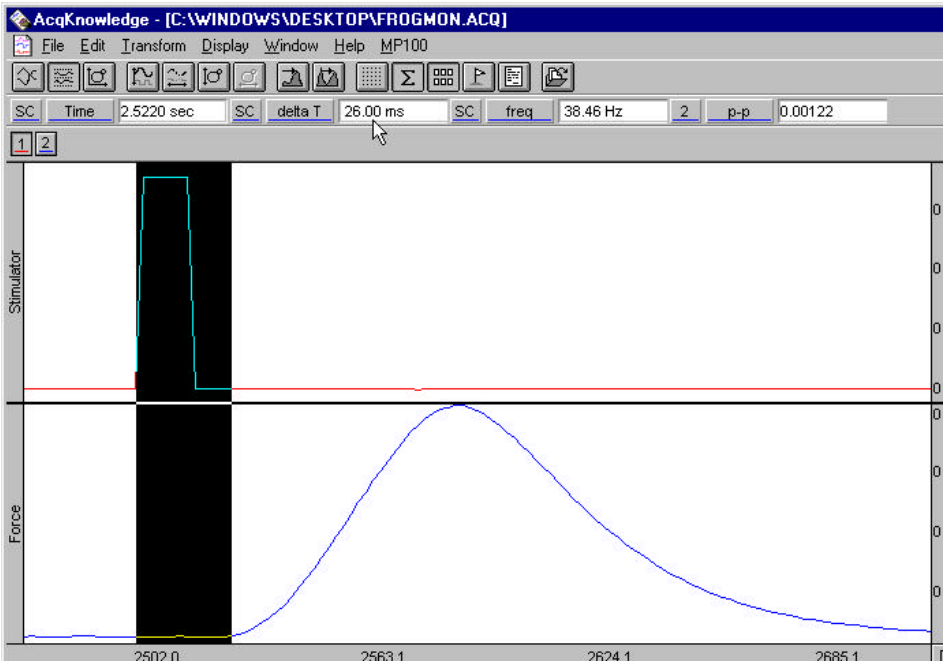
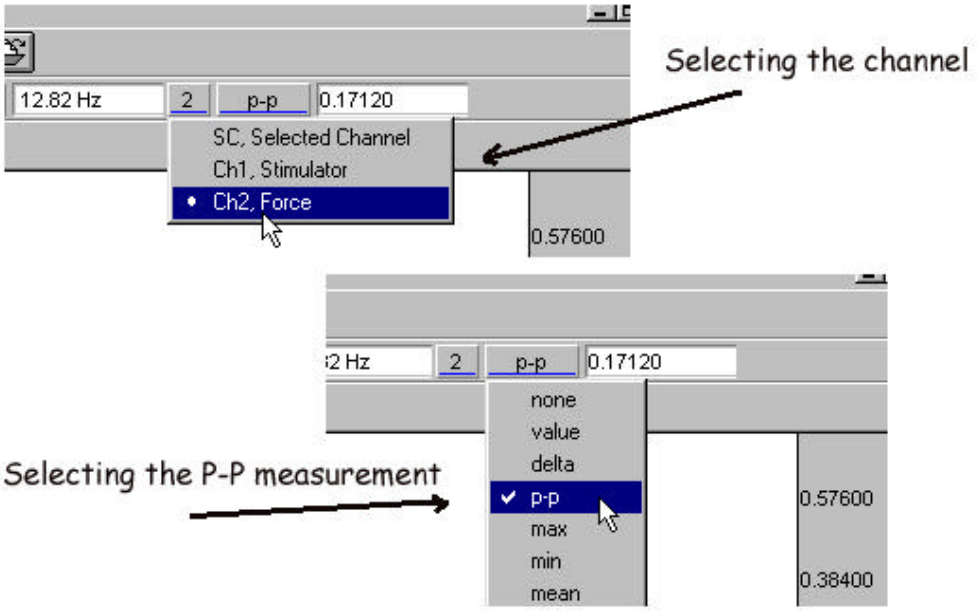


Figure: Measuring the latency period

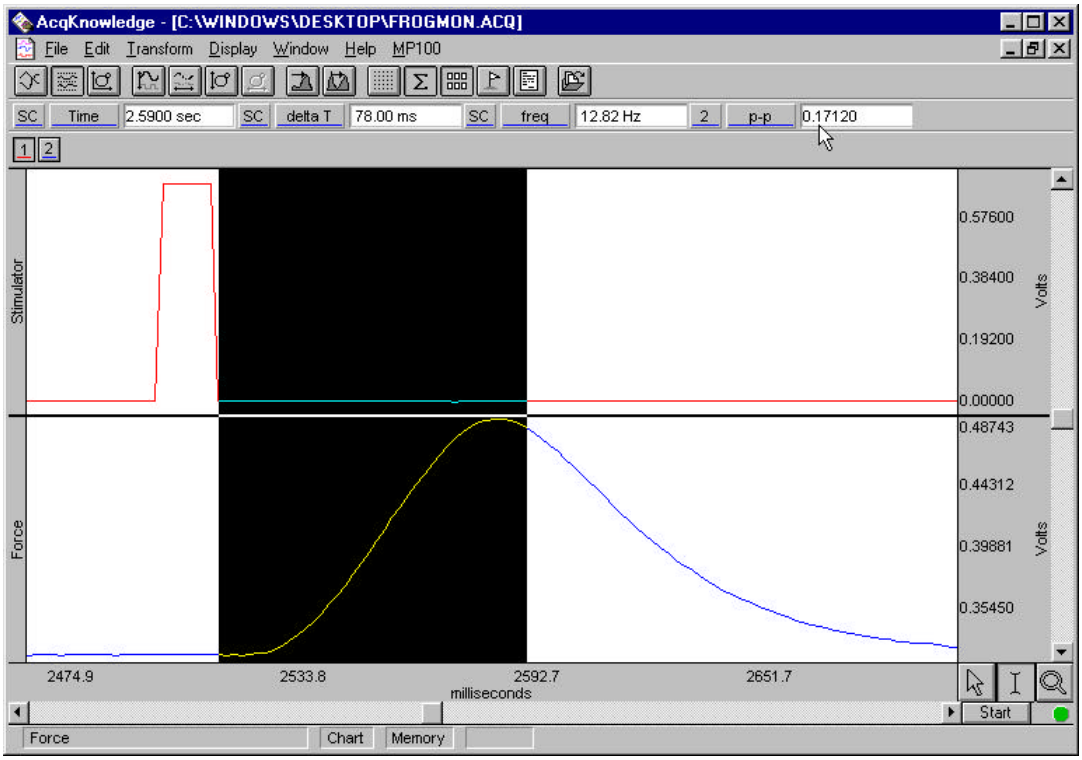
With the I-Beam cursor, you can highlight a slice of time from your acquisition graph. To highlight, move your cursor to the starting point, hold down on the left button and drag the mouse to the ending point. The measurement bar will present the selected function. The above illustration presents a student measuring the **latency period** of a frog gastroc muscle. In this experiment, it was (delta-T) 26 milliseconds.

10. Measuring **Latency period**: highlight the area of latency, and read the measurement from the **delta-T** box.
11. Measuring **Contraction period**: similar to measuring the latency, highlight the period of contraction and read the measurement from the **delta-T** box.
12. Measuring **Relaxation period**: similar to measuring the latency, highlight the period of relaxation and read the measurement from the **delta-T** box.

13. Measuring **Amplitude** of the contraction is slightly more difficult. You must change one of the measurement toolbar boxes to be CHANNEL 2 (Force) and use P-P measure:



Measuring **Amplitude**: highlight from a point of relaxation to just past the maximum contraction point. Read the measurement from the **P-P** box. The reading is in volts.



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14. Spatial and Temporal Summation, Tetanus and Fatigue

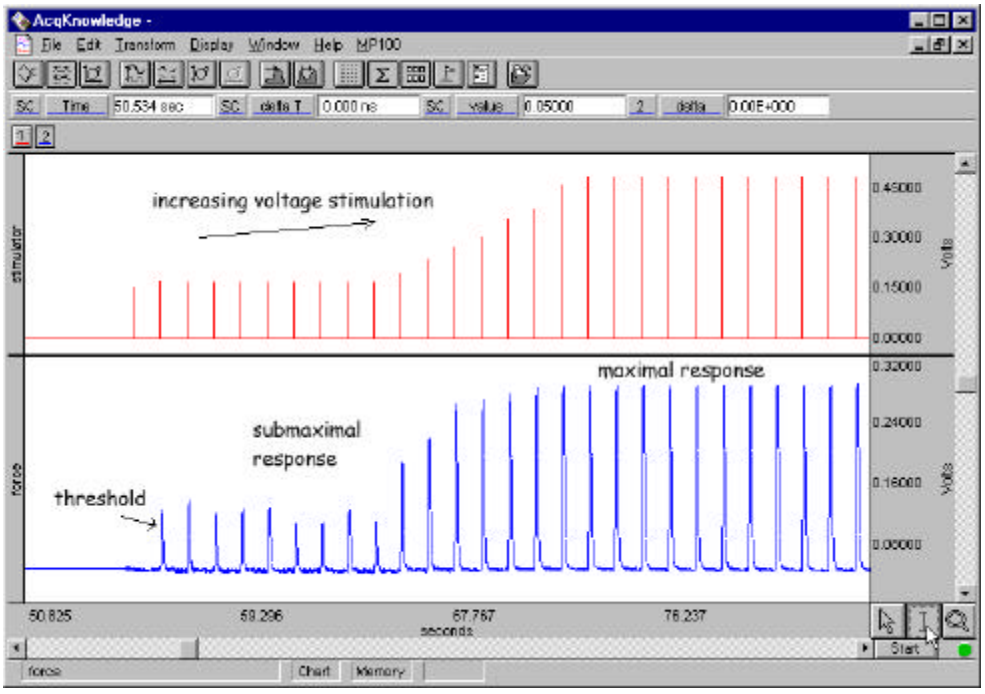

Figure: practical demonstration of Summation using AcqKnowledge.

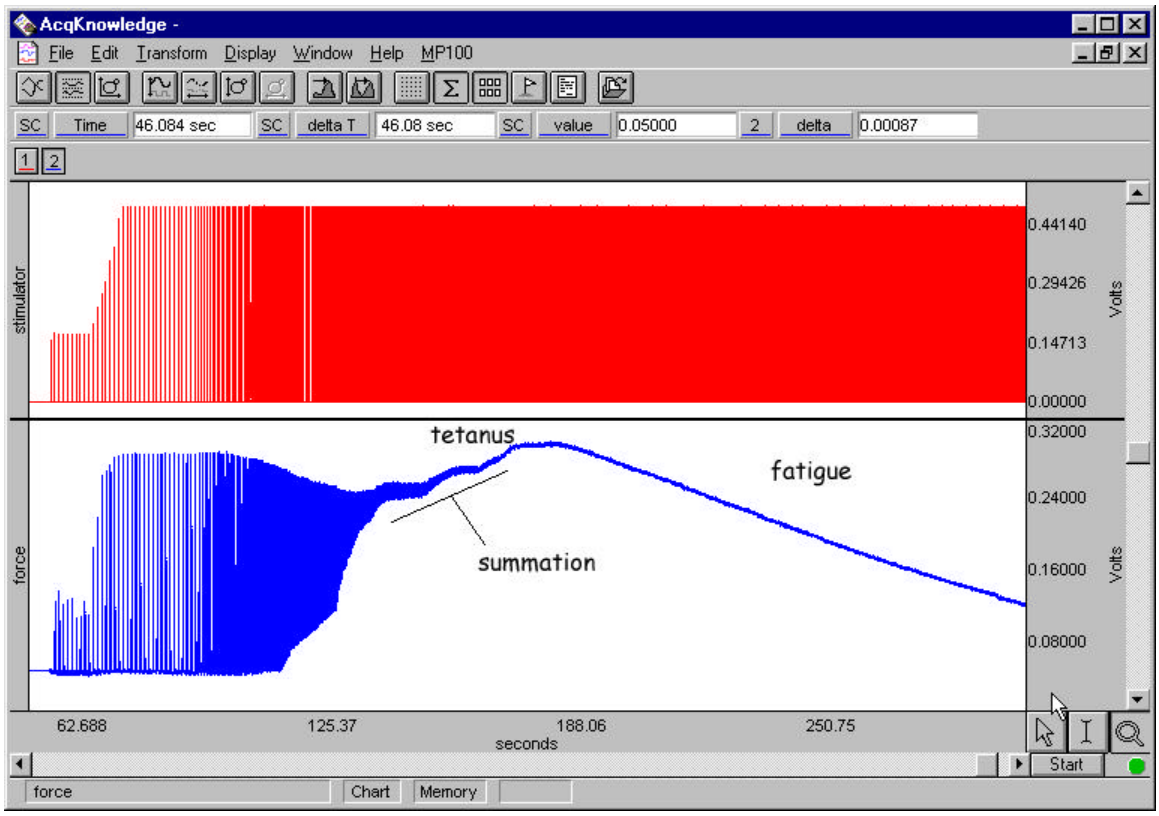

Figure: a practical demonstration of Tetanus using AcqKnowledge