

V. DATA ANALYSIS

FAST TRACK Data Analysis

1. Enter the **Review Saved Data** mode.

- Note Channel Number (CH) designations:

Channel Displays

CH 1 **EMG**

CH 40 **Integrated EMG**

- Note measurement box settings:

Channel Measurement

CH 40 **Mean**

2. Set up your display window for optimal viewing of **Dominant arm** recording.

Detailed Explanation of Data Analysis Steps

If entering **Review Saved Data** mode from the Startup dialog or Lessons menu, make sure to choose the correct file.

The data window should resemble Fig. 1.12.

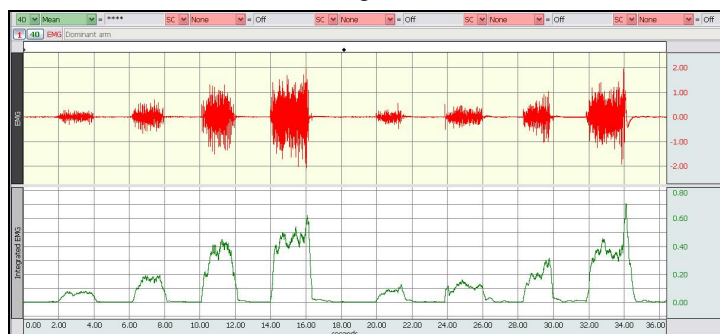


Fig. 1.12 Example data

The measurement boxes are above the marker region in the data window. Each measurement has three sections: channel number, measurement type, and result. The first two sections are pull-down menus that are activated when you click them.


Brief definition of measurements:

Mean: Displays the average value in the selected area.

The selected area is the area selected by the **I-beam** tool (including endpoints).

Record measurement data individually by hand or choose **Edit > Journal > Paste measurements** to paste the data to your journal for future reference.

Note:

The append event markers  mark the beginning of each recording. Click on (activate) the event marker to display its label.

Useful tools for changing view:

Display menu: Autoscale Horizontal, Autoscale Waveforms, Zoom Back, Zoom Forward

Scroll Bars: Time (Horizontal); Amplitude (Vertical)

Cursor Tools: Zoom Tool

Buttons: Overlap, Split, Show Grid, Hide Grid, -, +

Hide/Show Channel: ⌘Alt + click (Windows) or ⌥Option + click (Mac) the channel number box to toggle channel display.

Data Analysis continues...

3. Use the I-Beam cursor to select an area on the plateau of the first EMG clench data (Fig. 1.13).



A

4. Repeat Step 3 on each successive EMG cluster.



A

5. Scroll to the second recording.
6. Repeat Steps 3 and 4 for **NonDominant arm** data.
7. Scroll to the first recording.
8. Use the I-Beam cursor to select the area between the first and second clenches (Fig. 1.14).
9. Repeat Step 7 between each successive clench.
10. Scroll to the second recording.
11. Repeat Steps 7 & 8 for **NonDominant arm** data.



C



C

12. Answer the questions at the end of the Data Report.
13. **Save** or **Print** the Data Report.
14. **Quit** the program.

END OF DATA ANALYSIS

Fig. 1.13 below shows an EMG data selection in the first recording.

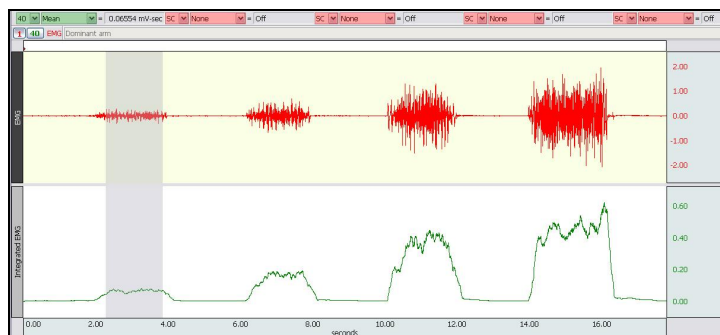


Fig. 1.13 EMG data selection

The second recording begins at the append event marker labeled **NonDominant arm** and includes four clenches from **Subject's** nondominant arm.

Tonus is the resting state, and is represented by the area between clenches (clusters). Fig. 1.14 below shows the selected area between clenches.

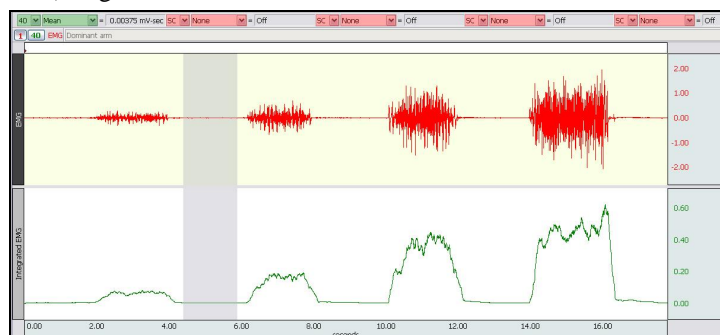


Fig. 1.14 Selection between clenches to measure tonus

An electronically editable **Data Report** can be found in the journal (following the lesson summary,) or immediately following this Data Analysis section. Your instructor will recommend the preferred format for your lab.

END OF LESSON 1

Complete the Lesson 1 Data Report that follows.

ELECTROMYOGRAPHY I

• *Standard and Integrated EMG*

DATA REPORT

Student's Name: _____

Lab Section: _____

Date: _____

I. Data and Calculations

Subject Profile

Name: _____

Height: _____

Gender: Male / Female

Age: _____

Weight: _____

Dominant arm: Right / Left

A. EMG Measurements

Table 1.1

Clench #	Dominant arm	Nondominant arm
	40 Mean	40 Mean
1		
2		
3		
4		

- B. Use the mean measurement from the table above to compute the percentage increase in EMG activity recorded between the weakest clench and the strongest clench of Dominant arm.

Calculation: _____

Answer: _____ %

C. Tonus Measurements

Table 1.2

Between Clenches #	Dominant arm	Nondominant arm
	40 Mean	40 Mean
1-2		
2-3		
3-4		

II. Questions

- D. Compare the mean measurement for the right and left maximum clench EMG data.

Are they the same or different? _____ Same _____ Different

Which one suggests the greater clench strength? _____ Right _____ Left _____ Neither

Explain.

E. What factors in addition to sex contribute to observed differences in clench strength?

F. Does there appear to be any difference in tonus between the two forearm clench muscles? ____ Yes ____ No

Would you expect to see a difference? Does Subject's gender influence your expectations? Explain.

G. Explain the source of signals detected by the EMG electrodes.

H. What does the term "motor unit recruitment" mean?

I. Define skeletal muscle tonus.

J. Define electromyography.

III. OPTIONAL Active Learning Portion**A. *Hypothesis***

B. *Materials*

C. *Method*

D. *Set Up*

E. *Experimental Results*
