

L01 - Electromyography (EMG) I (4.1.2 Jan 11 2017)

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First recording (starts at event labeled 'Dominant arm'): Four clench-release-wait cycles; fourth clench is maximum force.

Second recording (starts at event labeled 'Nondominant arm'): Four clench-release-wait cycles; fourth clench is maximum force.

L01 DATA REPORT

Student's Name: Michael Lenehan

Lab Section: L01

Date: 8/2/2019

I. Data and Calculations

Subject Profile

Name: Michael Lenehan Height: 1.78m Weight: 89.8kg

Gender: Male Age: 22 Dominant arm: Right

Note: This Data Report assumes that all lesson recordings were performed, which may not be the case for your lab. Please disregard any references to excluded recordings.

A. EMG Measurements

<i>Clench</i>	<i>Dominant arm</i>	<i>Nondominant arm</i>
#1	Mean = 0.15136 mV-sec	Mean = 0.08836 mV-sec
#2	Mean = 0.19062 mV-sec	Mean = 0.15010 mV-sec
#3	Mean = 0.25095 mV-sec	Mean = 0.23751 mV-sec
#4	Mean = 0.32289 mV-sec	Mean = 0.32036 mV-sec

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 the Dominant arm.

Calculation: Answer: 113.326% Increase

C. Tonus Measurements

<i>Between Clenches #</i>	<i>Dominant arm</i>	<i>Nondominant arm</i>
1-2	Mean = 0.02551 mV-sec	Mean = 0.01552 mV-sec

2-3	Mean = 0.03061 mV-sec	Mean = 0.03028 mV-sec
3-4	Mean = 0.04813 mV-sec	Mean = 0.02080 mV-sec

II. Questions

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

Are they the same or different? Same Different

Which one suggests the greater clench strength? Right Left Neither

Explain

As the right hand is the dominant hand for the subject, it is in use more often for, and as such has a greater clench strength

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.

It would be expected that there would be a slight difference between the dominant and nondominant muscles, as

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

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

Motor unit recruitment refers to the increase in available motor units in a muscle when and increase in the contraction strength of that muscle is required.

I. Define skeletal muscle tonus.

Skeletal muscle tonus is a phenomenon in which skeletal muscle maintains a constant slight tension, maintaining the muscle in a state of readiness.

J. Define electromyography.

Electromyography is the detection, amplification and recording of skin voltages, which are produced, and vary, due to contractions of skeletal muscle.

III. OPTIONAL Active Learning Portion

A. Hypothesis

B. Materials

C. Method

D. Set Up

E.Experimental Results

End of Lesson 1 Data Report

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