



BIOPAC
Systems, Inc.

Physiology Lessons
for use with the
Biopac Student Lab

PC under Windows® 98SE, Me, 2000 Pro
or Macintosh® 8.6 – 9.1®

Manual Revision
PL3.6.7-ML3.0.7/112403

Richard Pflanze, Ph.D.
Associate Professor
Indiana University School of Medicine
Purdue University School of Science

J.C. Uyehara, Ph.D.
Biologist
BIOPAC Systems, Inc.

William McMullen
Vice President
BIOPAC Systems, Inc.

BIOPAC Systems, Inc.

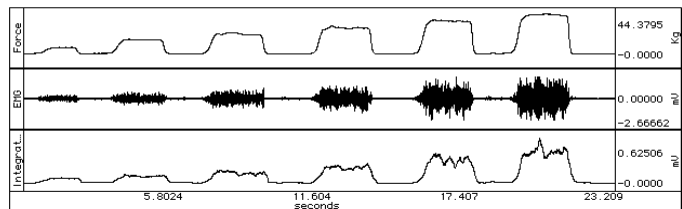
42 Aero Camino, Goleta, CA 93117
(805) 685-0066, Fax (805) 685-0067

Email: info@biopac.com

Web Site: <http://www.biopac.com>

Lesson 2 Data Report
ELECTROMYOGRAPHY II

Motor unit recruitment
Fatigue



Lesson 2

ELECTROMYOGRAPHY II

Motor unit recruitment and Fatigue

DATA REPORT

Student's Name: _____

Lab Section: _____

Date: _____

I. Data and Calculations

Motor Unit Recruitment

Subject Profile

Name _____

Height _____

Age _____

Weight _____

Gender: Male / Female

Dominant forearm: Right / Left

A. Complete Table 2.1 using *Segment 1* data. In the "Force (kg) Increments" column, note the force increment assigned for your recording under Peak #1; the increment was pasted to the Journal and should be noted below from Data Analysis—Step 2. For subsequent peaks, add the increment (i.e., 5, 10, 15 or 10, 20, 30). You may not need nine peaks to reach max.

Table 2.1 Segment 1 Data

		<i>Forearm 1 (Dominant)</i>			<i>Forearm 2</i>		
		Force at Peak [CH 1] mean (kg)	Raw EMG [CH 3] p-p (mV)	Int. EMG [CH 40] mean (mV)	Force at Peak [CH 1] mean (kg)	Raw EMG [CH 3] p-p (mV)	Int. EMG [CH 40] mean (mV)
Peak #	Force (kg) Increments Assigned						
1	kg						
2	kg						
3	kg						
4	kg						
5	kg						
6	kg						
7	kg						
8	kg						
9	kg						

Fatigue

B. Complete Table 2.2 using *Segment 2* data from each arm.

Table 2.2 Segment 2 data

Forearm 1 (Dominant)			Forearm 2		
Maximum Clench Force	50% of max clench force	Time to Fatigue	Maximum Clench Force	50% of max clench force	Time to fatigue
CH 1 value	<i>calculate</i>	CH 40 delta T*	CH 1 value	<i>calculate</i>	CH 40 delta T*

***Note:** You do not need to indicate the delta T (time to fatigue) polarity. The polarity of the delta T measurement reflects the direction the "I-beam" cursor was dragged to select the data. Data selected left to right will have a positive ("+") polarity, while data selected right to left will have a negative ("-") polarity.

II. Questions

C. Is the strength of your right arm different than your left arm? _____ Yes _____ No

D. Is there a difference in the absolute values of force generated by males and females in your class? _____ Yes _____ No

What might explain any difference?

E. When holding an object, does the number of motor units remain the same?

Are the same motor units used for the duration of holding the object?

F. As you fatigue, the force exerted by your muscles decreases. What physiological processes explain the decline in strength?

G. Define Motor unit

H. Define Motor unit recruitment

I. Define Fatigue

J. Define EMG

K. Define Dynamometry

End of Lesson 2 Data Report