

## Title: Lab 9- Muscle physiology

### Purpose:

The motivation behind this lab is to research the various withdrawal qualities of skeletal, heart, and smooth muscle. Additionally we will get familiar with the various impacts of synapses, acetylcholine, and norepinephrine and the pace of the constrictions of the cardiovascular and smooth muscle will be inspected. We will likewise be recording an electromyogram (EMG) and the different impact of oxygen accessibility in the muscle.

### Procedure 9-D

#### 1. To get things started:

- Before you turn anything on, be sure the IWX/214 unit is plugged in, and that the IWX/214 unit is connected to the laptop by USB cable.
- Be sure that the C-AAMI-504 EEG cable is inserted into the isolated inputs of Channels 1 and 2 of the IWX/214. Be sure that the color-coded lead wires are correctly inserted in the lead pedestal of the C-AAMI-504 EEG cable. Insert the connectors on the electrode lead wires into the color-coded matching sockets on the lead pedestal of the ECG cable.
- Once everything is connected, FIRST turn on the laptop and allow it to fully boot up before you turn on the IWX/214 unit. Once the Iworx unit is on, the red indicator light on the Iworx unit should light up and you may hear the USB chime from the laptop if the laptop does not default to mute (many are set to default to mute).

2. Open the LabScribe3 program by clicking on the LabScribe3 icon on the desktop. As soon as the program opens, you should see a window pop-up that says "Hardware found IWX214:2008-1-24," click "OK."

3. In the second from the top row (the row that says "File Edit View Tools Settings Advanced External Devices Help"), click on the "Settings" tab. About half way down the drop-down window should be a tab called "Human Muscle." Click on that tab and that should lead you to another drop-down list with the second tab from the top called "Antagonistic Muscle," click on that tab and then close the pdf file that appears, you don't need it.

4. Instruct the subject to remove all jewelry from his/her arm and wrist. Use an alcohol swab to clean the regions of skin on the forearm you are going to use (Fig. 9-1.). Let the subject be ready. Remove a disposable electrode from its plastic shield, and apply the electrode to the six locations.

5. Place the electrodes from proximal to distal on the forearm in the following order: +2, -2 on the posterior and +1, -1 and ground on the anterior. (Fig. 9-1.) Snap the lead wires onto the electrodes as follows:

- the red "+1" lead is attached to the proximal electrode on the anterior surface
- The black "-1" lead is attached to the distal electrode on the anterior forearm.
- The green "C" lead (the ground) is attached to the middle electrode on the anterior surface.
- the white "+2" lead is attached to the proximal electrode on the

### 9-E 1.

#### 2. 3. 4.

Firmly squeeze a tennis ball as rapidly as possible with your non-dominant hand until you feel fatigued can no longer squeeze it. Record the duration of this effort.

Have a partner attach a sphygmomanometer cuff to your dominant arm and inflate it to 150 mmHg, or 10 mmHg above your normal systolic pressure, if you know your blood pressure values.

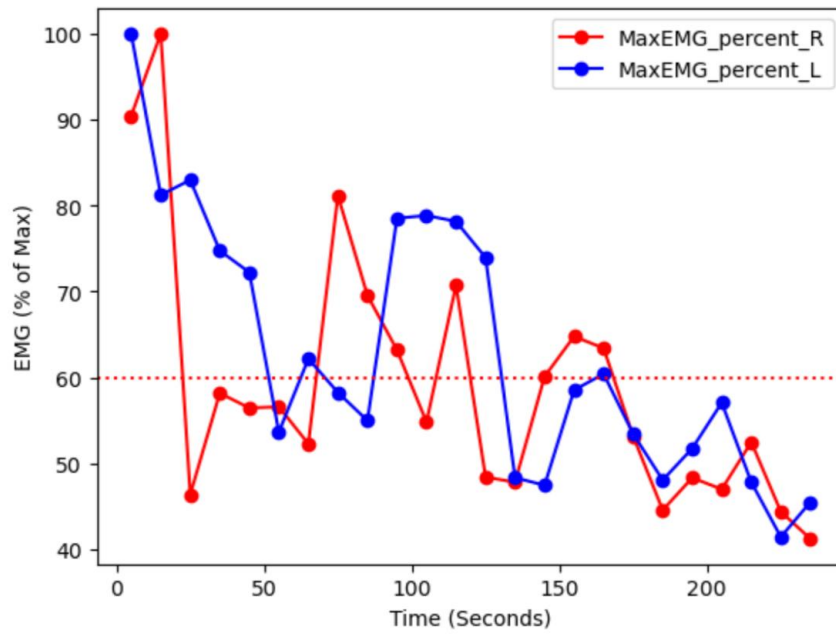
Repeat the squeezing exercise with your dominant arm. Record the time duration of this effort. (NOTE: it is important to stop at the same sensation of fatigue, or "burn," as then on-dominant arm.)

Evaluate the differences between the two duration measurements obtained in terms of energy demands of skeletal muscle and fatigue.

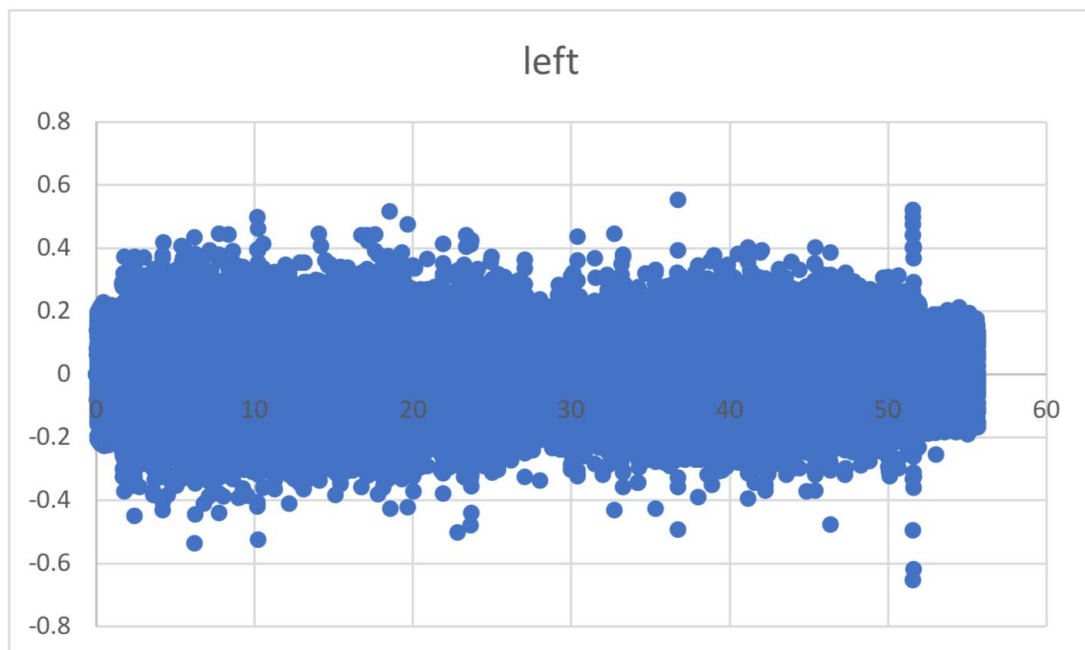
Results 9-D

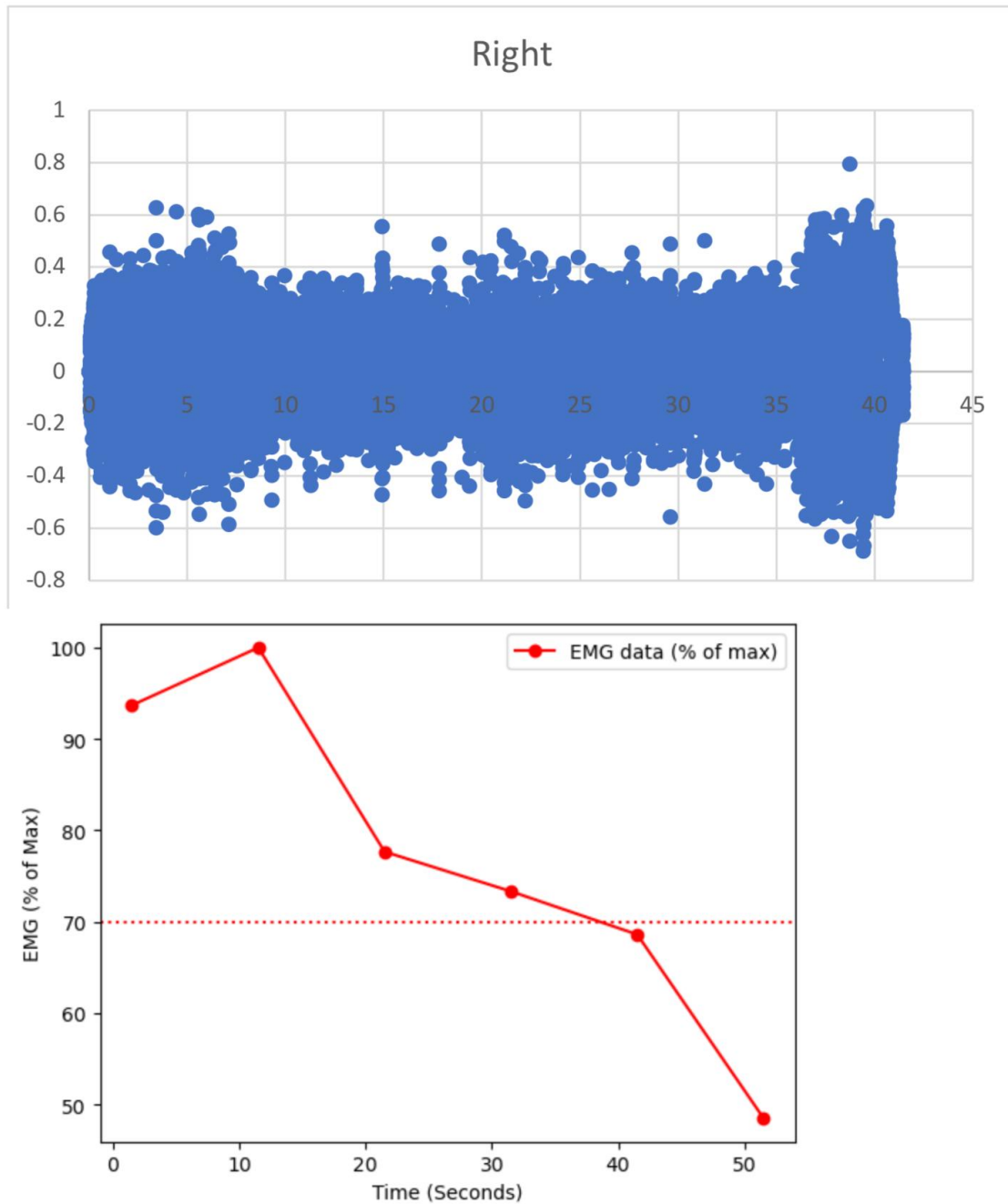
EMG 0000000000000000000000000000000000  
000000000000000000000000000000000000  
0.226675 0.146403 -0.0745588 -0.186767 -  
0.130635 0.0606579 0.254987 0.0810203 -  
0.157612 -0.178331 -0.0151714 0.14045 0.149315  
0.00788003 -0.217784 -0.146497 0.132439...





9-E





#### Discussion:9-D

The engine enrollments expanded over the long haul during these tasks. 9-E Over time, the motor recruitment decreased.

In conclusion, All in all, we were able to perceive how it looks when a muscle contracts. We were able to observe that the contractions decreased as we continued to perform the exercises, beginning with stronger contractions. We were able to produce larger contractions than when

squeezing a tennis ball when pushing up on someone's arm. We were also able to tell the difference between a fully contracted muscle and a partially contracted muscle.