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Lab 9

08/28/2023

Title: Muscle Physiology

Purpose: The purpose for this experiment was to see how agonist, antagonist, and synergistic muscles work using an electromyograph.

Procedures:

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 halfway 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 “AntagonisticMuscle,” click on that tab and the 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 area dry. 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.

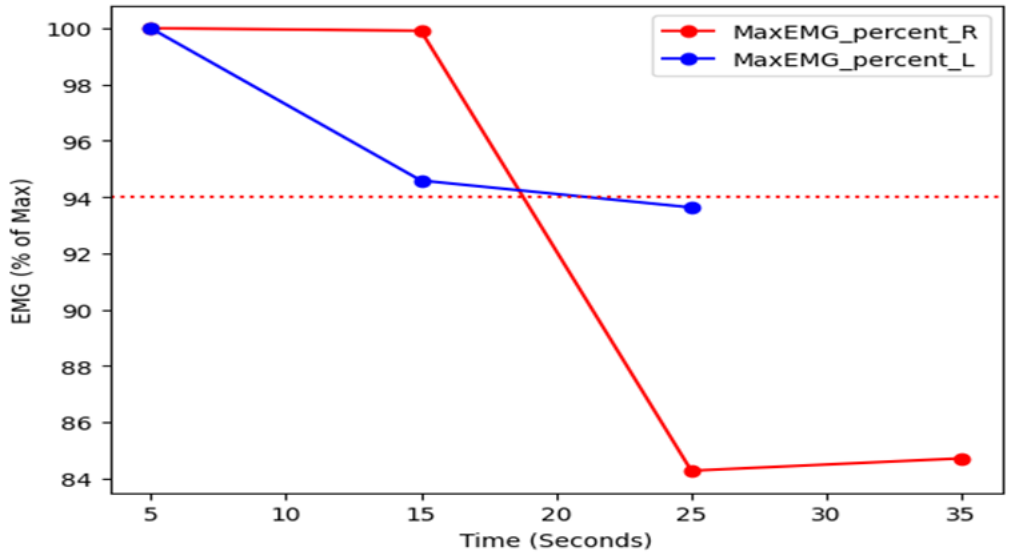
 the green “C” lead (the ground) is attached to the remaining electrode on the anterior surface.

 the white “+2” lead is attached to the proximal electrode on the posterior forearm.

 the brown “-2” lead is attached to the distal electrode on the posterior surface.

6. Record an EMG of the muscles of the forearm illustrating agonistic and antagonistic muscle activity for each of the exercises described below. Type the student’s name and the appropriate letter for the activity (A, B, C, D – see below) in the Mark box to the right of the Mark button. Click the red “Rec” button to begin the recording; then, press the Enter key on the keyboard to mark the beginning of each the activity. The recording for exercise “A” should look like Fig. 9-3. If you do not see anything, try clicking on the AutoScale tab and/or checking the electrode contacts. Repeat these procedures for each of the remaining activities.

Results:




Discussion: During this experiment my lab partner and I had trouble with the IWX unit. Once we were able to find one that worked, the experiment went smoothly. I was cool to see the waves from my movements on the graph. However, I realized I am allergic to the adhesive on the electrodes. Overall, this was a fun experiment.

Conclusion: In this lab, my partner and I used an IWX/214 unit and electrodes to measure muscle physiology. We recorded my EMG using Iworx and Labscribe3. The goal was to identify the agonistic and antagonistic muscle activity.