

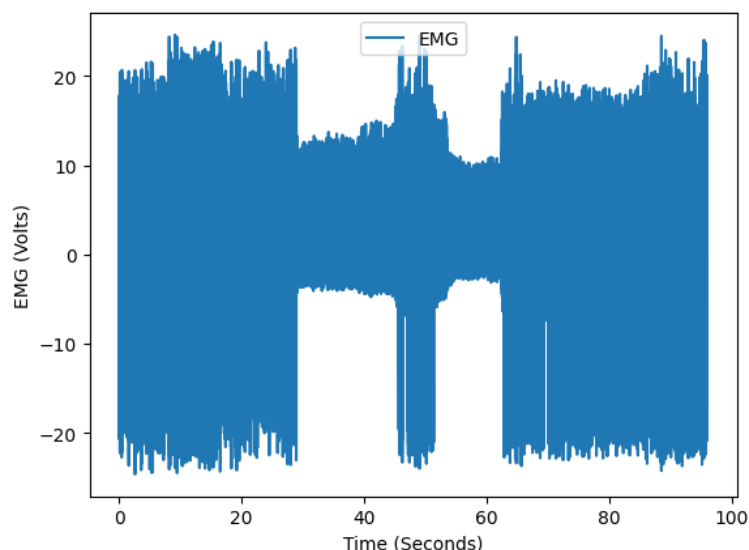
Laboratory 9-Muscle Physiology

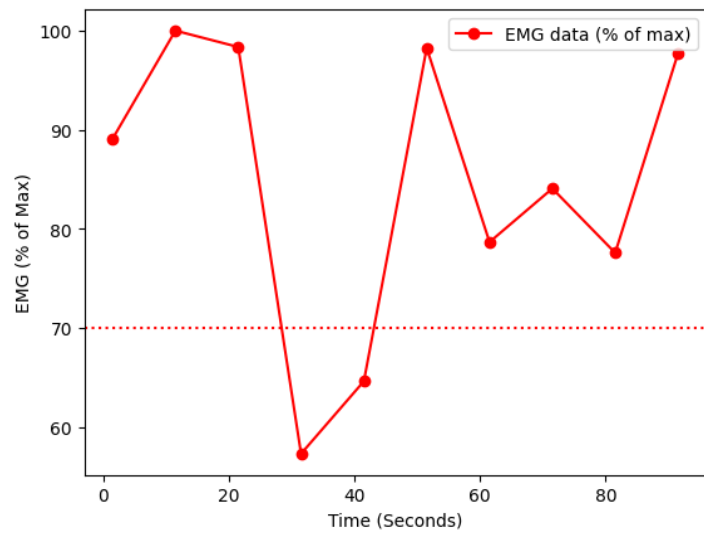
Purpose- Myology is the study of the different muscle groups, skeletal, cardiac, and smooth muscles. Muscle cells are similar in their ability to depolarize and contract, but they differ in their degree of innervation, rate of contraction and duration, fatigue rate, and their response to neurotransmitters. The purpose of laboratory exercise is to allow us to investigate the different characteristics of skeletal, cardiac, and smooth muscle. The lab showed us the effects of the neurotransmitters, acetylcholine, and norepinephrine, on the rates of contraction of the cardiac and smooth muscle. The experiment also allowed us to use an electromyogram (EMG) to see the concepts of agonist muscle(responsible for given movement), antagonist muscle (opposition to agonist), and synergist muscle (aids agonist and helps refine a given movement).

Procedures- The procedure for the muscle physiology experiment was we first had to plug in the IWX/214 unit to the laptop and plug the C-AAMI-504 EEG cable into the inputs of channels 1 and 2 of the IWX/214. We then were to insert the colored cables into the correct sockets of the EEG cable. After everything was connected all of the cables we were to turn on the laptop and open up Labscribe3. On Labscribe3 we were to click “File edit view tools settings advanced external devices help”, then click “Settings”, then “Human muscle”, and then lastly click “AntagonisticMuscle”. We were then to apply 5 electrodes from our proximal to distal on our forearm of our dominant hand. After the electrodes were placed in the correct positions, we were to type our name and next to the mark button, click the record button. We were to hold a tennis ball in our hand and start squeezing it until we could no longer squeeze anymore and then stop the recording. Then we were to do the same thing but with the electrodes on the opposite forearm, and turn our results into a scatter plot graph.

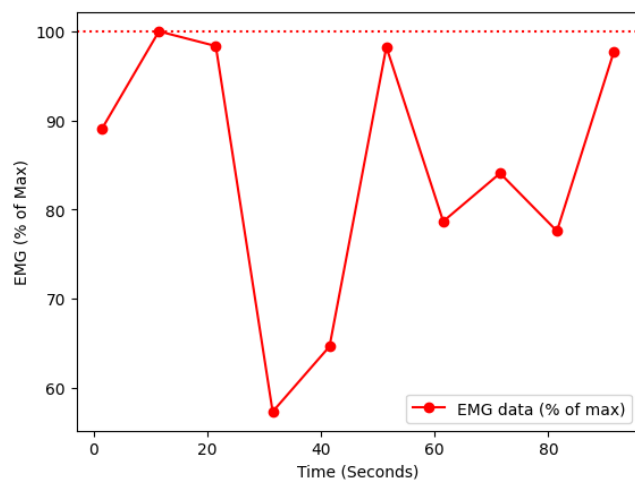
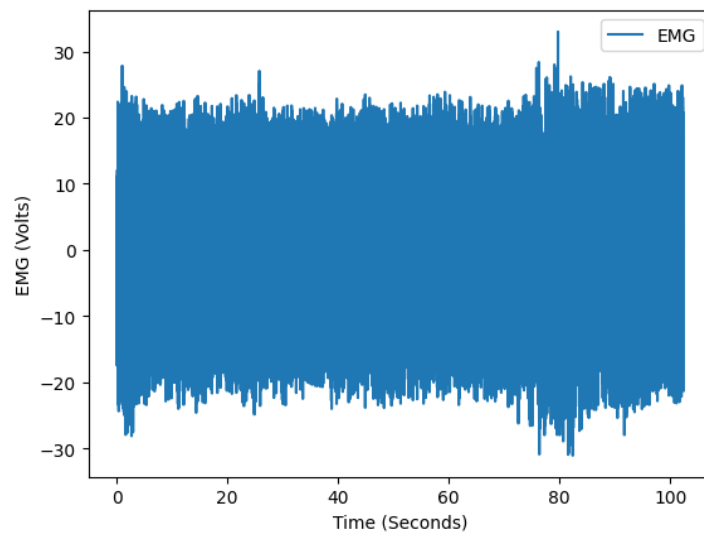
Results-

Experiment 9 results (Right Hand)

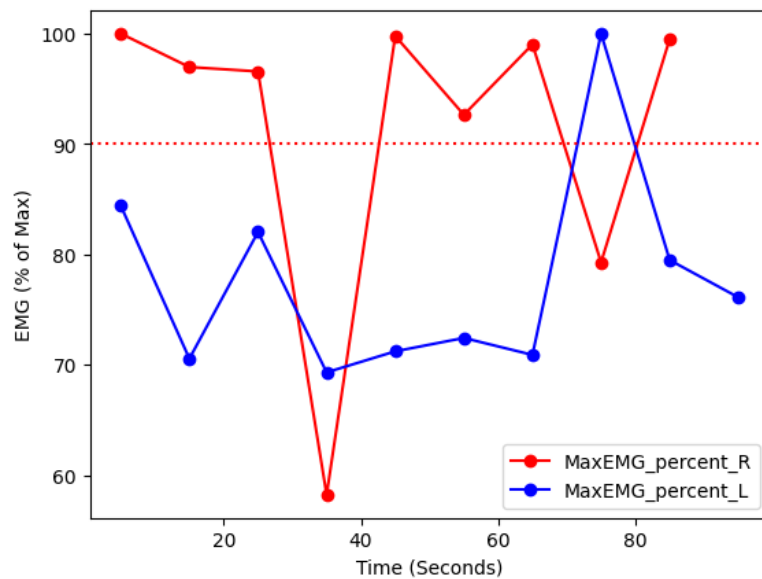
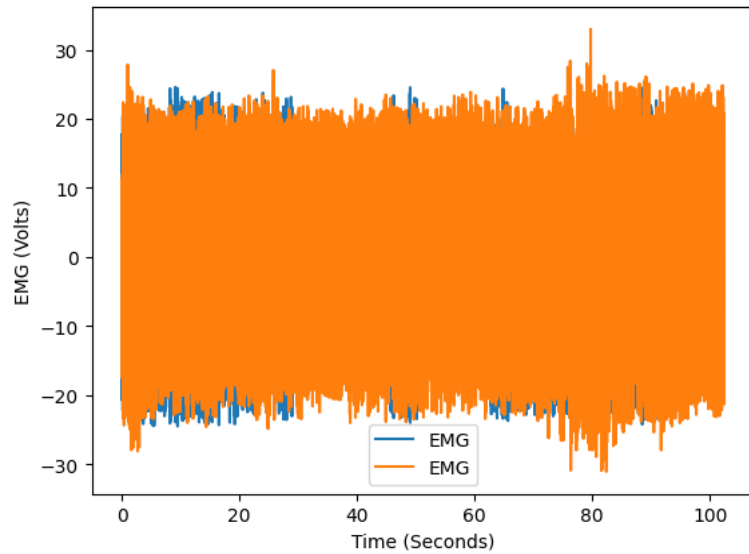




Experiment 9 results (Left Hand)



Experiment 9 results (Left&Right)



Discussion- Laboratory 9 experiment was a very interesting experiment to do, especially because I have never used an EMG machine before, it was interesting to see the different readings it gave off and to see how it worked exactly. At first it was a little confusing to work and figure out, especially when it came to the graphing part of it, but with some help I was able to get the hang of it. My independent project is going to be about the physiology of exercise and with exercise comes the movement and usage of muscles so it was interesting to learn about

the characteristics of skeletal, cardiac and smooth muscle. After viewing the results that the EMG readings gave off from squeezing the tennis ball, I could see the points as to where I stopped squeezing the ball and when I started to squeeze it again. My results also showed that in my dominant hand it was consistent in the beginning then went lower then got higher up in consistency again, but for my left hand it was consistent the whole entire time.

Conclusion- The results of laboratory 9 which was the muscle physiology experiment showed our EMG readings when we squeezed a tennis ball both with our dominant and nondominant hand. The results also allowed us to see the EMG difference of a partially contracted muscle to a fully contracted muscle. The different muscle cells are similar in their ability to depolarize and contract, but they differ in their degree of innervation, rate of contraction and duration, fatigue rate, and their response to neurotransmitters. The purpose of laboratory exercise is to allow us to investigate the different characteristics of skeletal, cardiac, and smooth muscle. In conclusion this experiment was important because it allowed us to gain more knowledge on the concepts of agonist, antagonist, and synergist muscle, and how to get EMG readings.