

Test Plan for Multiple Subjects

Team SHAF

Data format:

- A terminal log of each set of reps will produce a text file.
- The text files will be named $S\#_ \{L|R\}\#_ \{W|G\}_ \{M|F\}_ \{Y|N\}_ C_ F.log$,
 - $S\#$ = subject number
 - $\{L|R\}$ = left or right arm set number
 - $\{W|G\}$ = white or grey armband
 - $\{M|F\}$ = male or female
 - $\{Y|N\}$ = does subject regularly train biceps with resistance?
 - C = observed rep count
 - F = rep number that subject reports being fatigued
- The output files will all reside in the same directory to make batch processing easier.
- Each subject should generate four text files: 2 sets of bicep curl repetitions until exhaustion for both the left and right biceps.

Equipment Required:

1. Custom-made wearable electrode garment
2. A selection of resistance bands
3. Power supply capable of +/- 5 VDC, >= 200mA
4. Muscle Sensor V3 board
5. Arduino development board
6. A laptop capable of controlling and communicating with the Arduino
7. A portable oscilloscope
8. A water bottle
9. Cotton balls
10. Spray bottle with rubbing alcohol
11. Alcohol wipes
12. Energy bars

Testing Methodology:

1. Ask the test subject their age, gender, and whether or not they regularly train their biceps with resistance. Record information on a physical log file.
2. Ask the test subject to select a resistance band to perform their bicep curls with. Inform the subject that they should be able to do 10 to 20 reps for each set. The band chosen should be the same for all four sets.
3. Ask the subject to prep their biceps and elbows with an alcohol wipe.
4. Prep the electrodes by dabbing each one with a wetted cotton ball
5. Ask the subject to don the wearable. Confirm that the ground electrode is making contact with the subject's elbow and the other two electrodes are making contact with the middle of the bicep muscle.
6. Have the subject perform one curl. (*First set only: Verify that the resistance band chosen is appropriate. Change the band if necessary*). Verify that EMG activity was detected for the curl.
7. Begin sampling voltage data from the wearable.
8. Instruct the subject to begin the current set (Left or Right, 1 or 2). Instruct the subject to perform bicep curls until they cannot perform another one.
9. Stop sampling once the subject says they cannot perform another curl.
10. Save a test output file using the information gathered in Step 1 and the observed rep count and fatigued rep.
11. Repeat Steps 3 through 9 for the opposite bicep.
12. Repeat Steps 3 through 10 to generate two more sets of data for the subject.
13. Offer the subject an energy bar as a reward for all their hard work.
14. Lightly mist the inside of the wearable with rubbing alcohol to sanitize.