

Experimental Protocol

Setup

1. Check the electronics. Make sure every wire is securely connected
2. If a static test will be ran, make sure to connect the battery wires
3. Attach goniometer on patient
4. Connect the Arduino to the computer
5. Open the virtual instrument (*20200306_DynamicAndStatic_Final.vi*) and make sure the correct Com port is selected for the Arduino. If using the same cable, it is COM4.

The rest of the procedures are with the assumption the set-up steps were followed.

Dry Run

This test is meant to verify the sensors capability to send serial data and have their values read by the virtual instrument. For this reason, you should run a dry run for each test (one for static and one from dynamic), since they each use different sensors.

Static Test

Pretest:

- Change test configuration and setup
 - Mount device of vice with load cell holder
 - Make sure Futek load cell is connect
 - Make sure batteries are connected
- If not stated before, quickly summarize what the static test is about
 - Test left hand and right hand
 - No weights involved, since device is fixed
- Tell patient about the beeps
 - (1) Start of test. From resting position, go towards device and start pulling without stopping
 - (2) Stop pulling and return arm back to resting position
 - (3) Ignore. This is an extra beep for the dynamic test (might change)

Test:

1. Run the virtual instrument.
2. Modify the File Path (if necessary)
3. Calibrate the system
4. Select "Static Test" in the Test Case pull down
5. Select "0" in the Weight Applied pull down
6. Select "Right" or "Left" in the Hand in Test pull down
7. Enter a trial number
8. Enter the group ID
9. Enter the Patient ID
10. Start collecting data

11. Monitor data, make sure data seems reasonable. If not, investigate and restart
12. Stop collecting data
13. Ask patient if they need a break or would like to continue

Dynamic Test

Beeps (0 – Not Started, 1 – Lift, 2 – Hold, 3 – Put Down)

Pretest:

- Change test configuration and setup
 - Attach empty weight compartment to device
 - Set aside weights
- If not stated before, quickly summarize what the static test is about
 - Test left hand and right hand
 - Test with no load and 450g
 - Device will not be fixed
- Tell patient about the beeps
 - (1) Start of test. From resting position, go towards device and start lifting. Aim for a 90 degree elbow position
 - (2) Hold device at 90 degrees
 - (3) Lower device back on table and return arm to resting position

Test:

1. Run the virtual instrument.
2. Modify the File Path (if necessary)
3. Calibrate the system
4. Select “Dynamic Test” in the Test Case pull down
5. Select “0” or “450” in the Weight Applied pull down
6. Select “Right” or “Left” in the Hand in Test pull down
7. Enter a trial number
8. Enter the group ID
9. Enter the Patient ID
10. Start collecting data
11. Monitor data, make sure data seems reasonable. If not, investigate and restart
12. Stop collecting data
13. Ask patient if they need a break or would like to continue