MyConfig Training

PN 27123 Rev 2

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What is MyConfig?

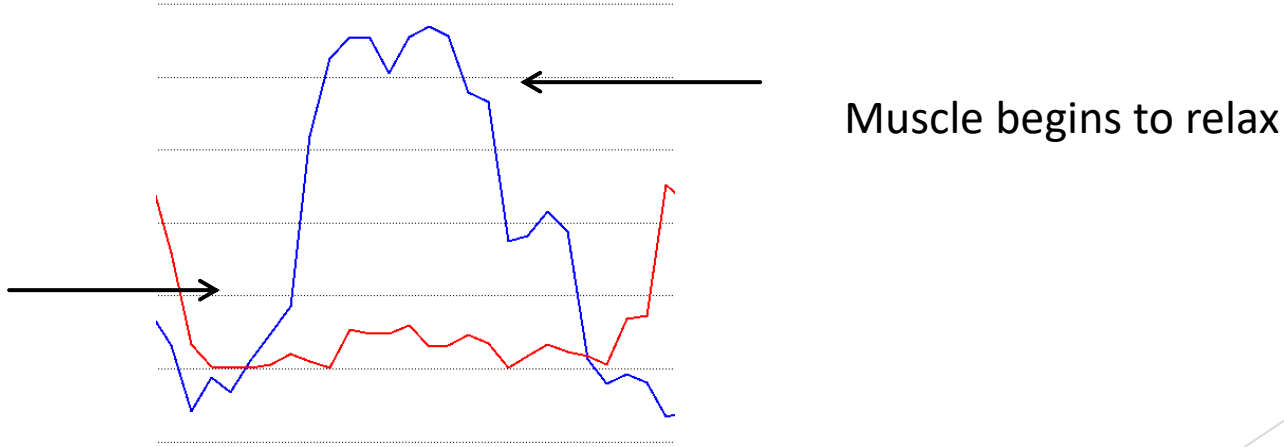
A desktop application that connects to a MyoPro via Bluetooth and enables clinicians to:

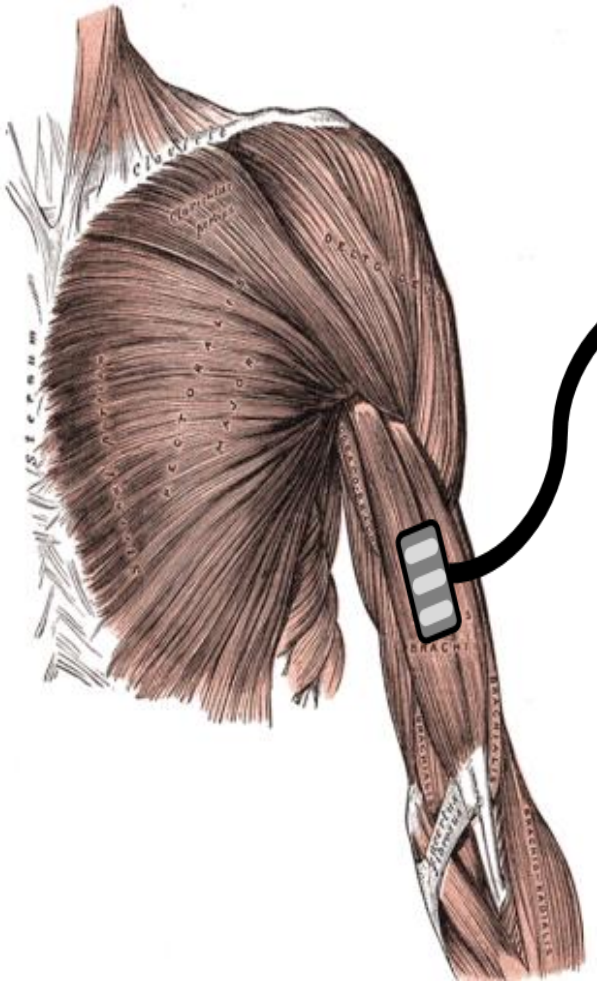
- ✓ Customize the MyoPro's sensitivity
- ✓ See the user's real-time EMG signal/muscle activity
- ✓ Track changes in EMG signal over time
- ✓ Trouble-shoot issues
- ✓ Provide visual feedback of muscle activity to help motivate the user throughout training

MyConfig is available on users provided laptops and can be downloaded from www.myomo.com

EMG Basics

- As a muscle contracts, it emits an electromyographic (EMG) signal. MyoPro sensors detect EMG at the skin surface.
- A weak muscle = a small EMG signal
- A strong muscle = a larger EMG signal
- MyConfig allows us to magnify weak signals/muscles so even weak users can power the MyoPro.



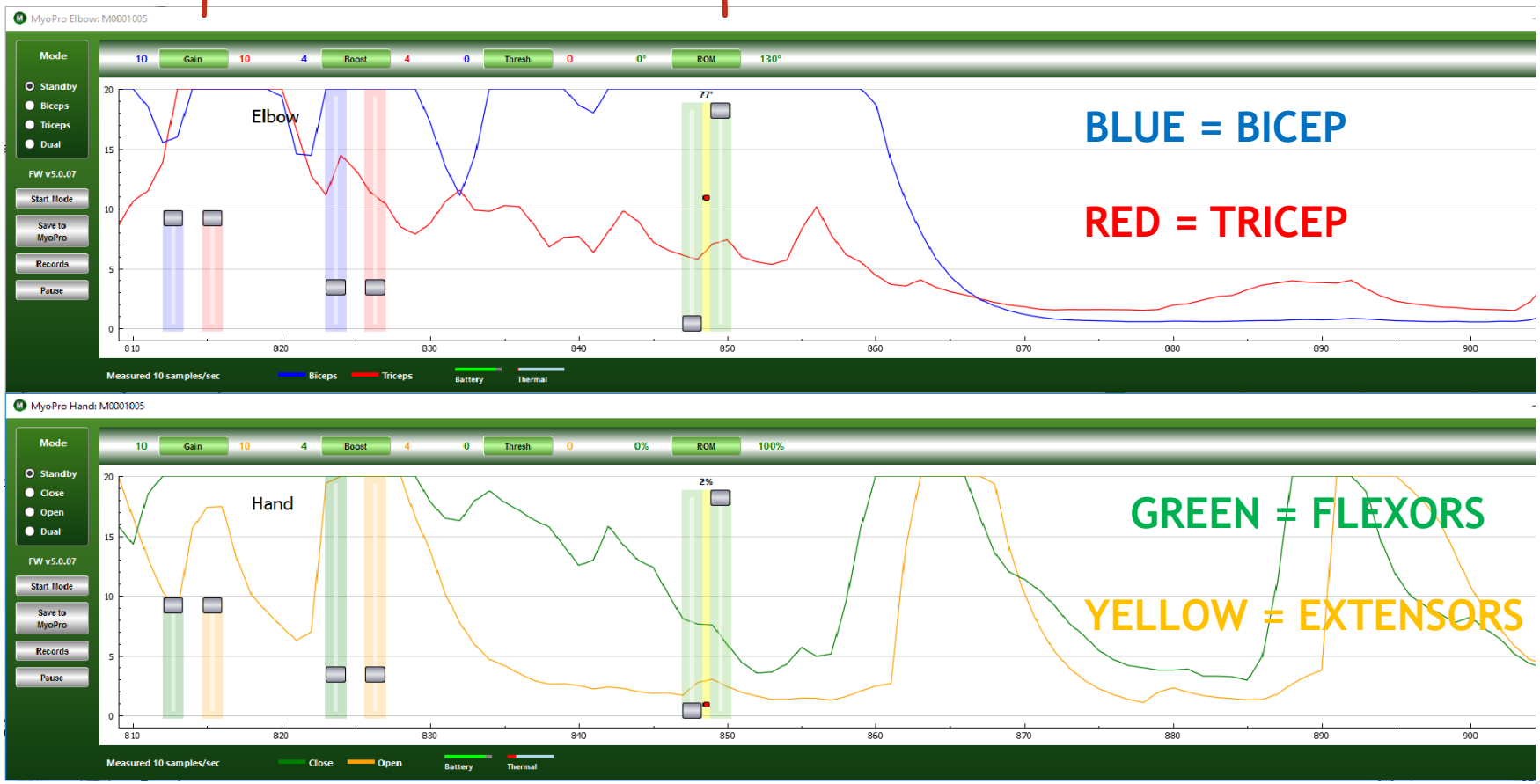



Mode
Standby
Bicep
Tricep
Dual
FW v4.2.00
Start Mode
Save to MyoPro
Records
Pause
Gain
Boost
Thresh
ROM
Measured 10 samples/sec
Tricep
Bicep

MyConfig (Motion G screen)

Modes

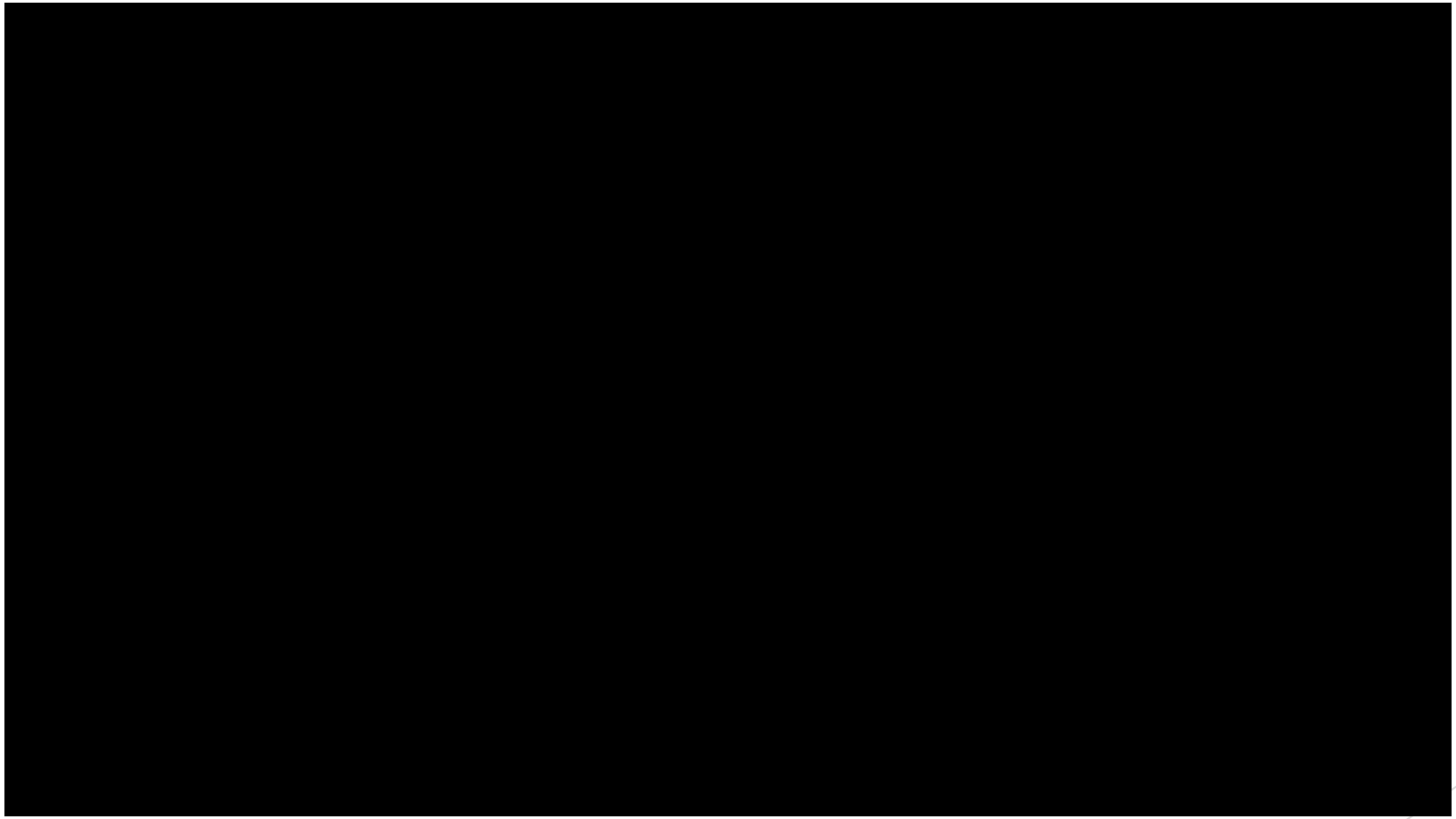
Settings



MyConfig (Motion E or W screen)

MyConfig – connecting to the MyoPro

Once the MyoPro has been connected to MyConfig, the orthosis will be in STANDBY mode

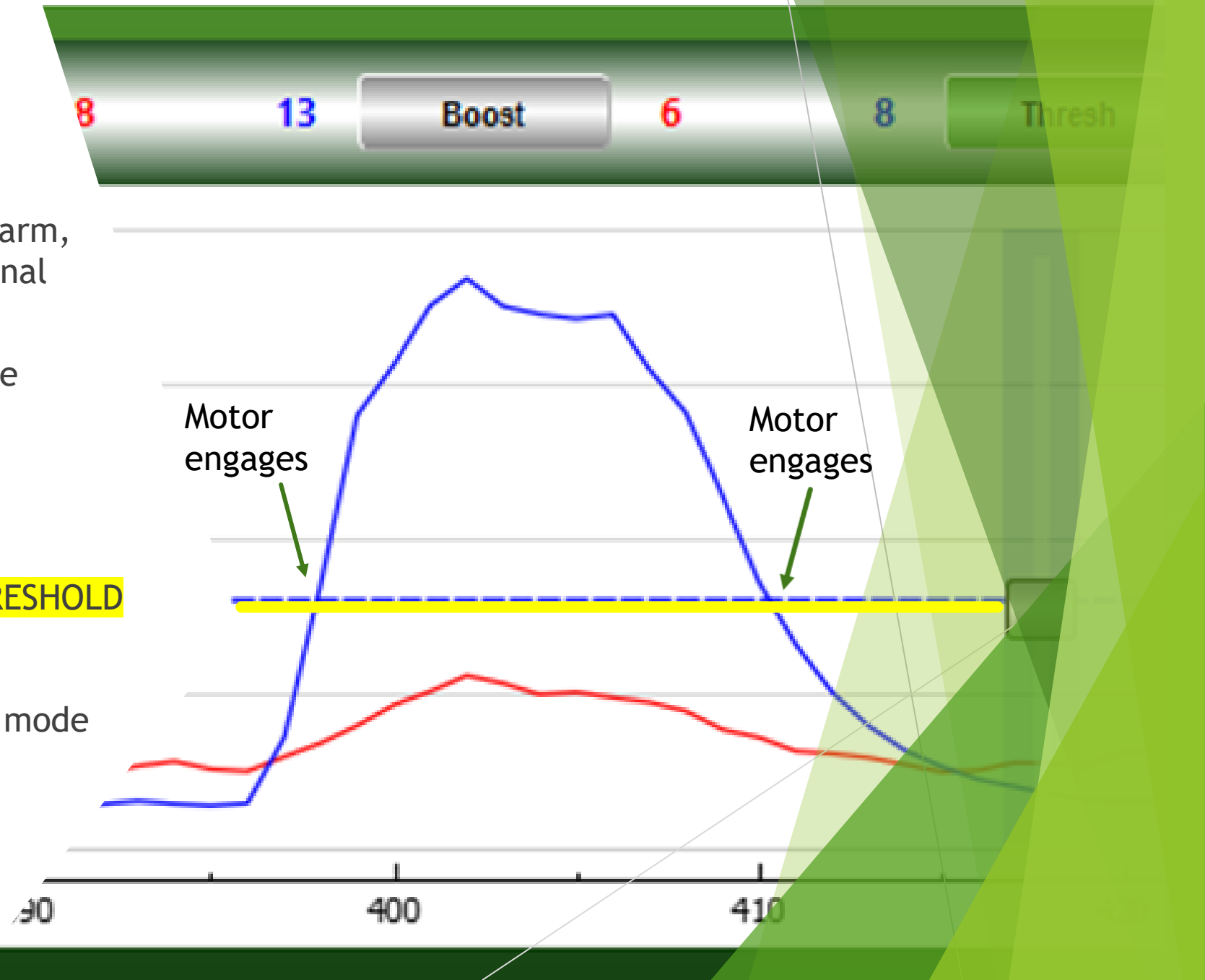


NOTE: There is NO motor activation in this mode.

In order to make the MyoPro move an arm, the user needs to generate an EMG signal strong enough to cross a THRESHOLD.

If the EMG never touches or crosses the threshold, no movement will occur.

Note: there is no threshold in standby mode



MyConfig

For users with UE weakness, we can use MyConfig to:

- ✓ Amplify their EMG signal so that it reaches the threshold (increase gain and/or boost)
- ✓ Adjust the location of threshold line (so it can easily be reached)
- ✓ Both

Settings: Gain

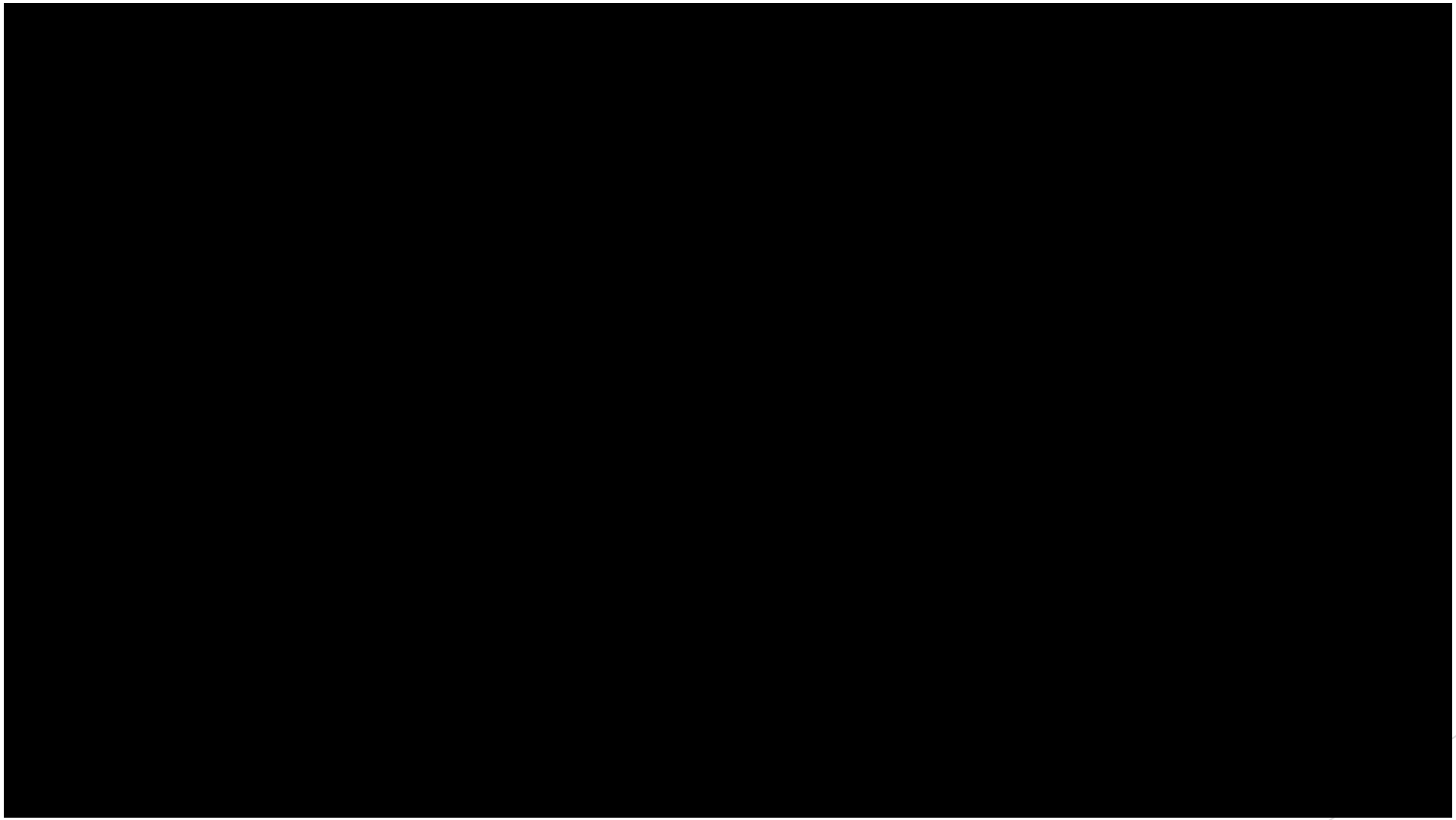
Gain refers to amplification of EMG signal that takes place through the hardware (i.e. sensors)

The higher the gain, the more the EMG signal is amplified.

Gain scale is 0 – 10.

Do not lower past 4.

Adjusting the Gain



Settings: Boost

Boost refers to the amplification of the EMG signal that takes place through the software. It does the same thing as the gain, but is used for weaker users who need *additional* amplification beyond gain.

The higher the boost, the more the EMG is amplified.

Boost scale is 0 – 20. Do not lower boost past 4.

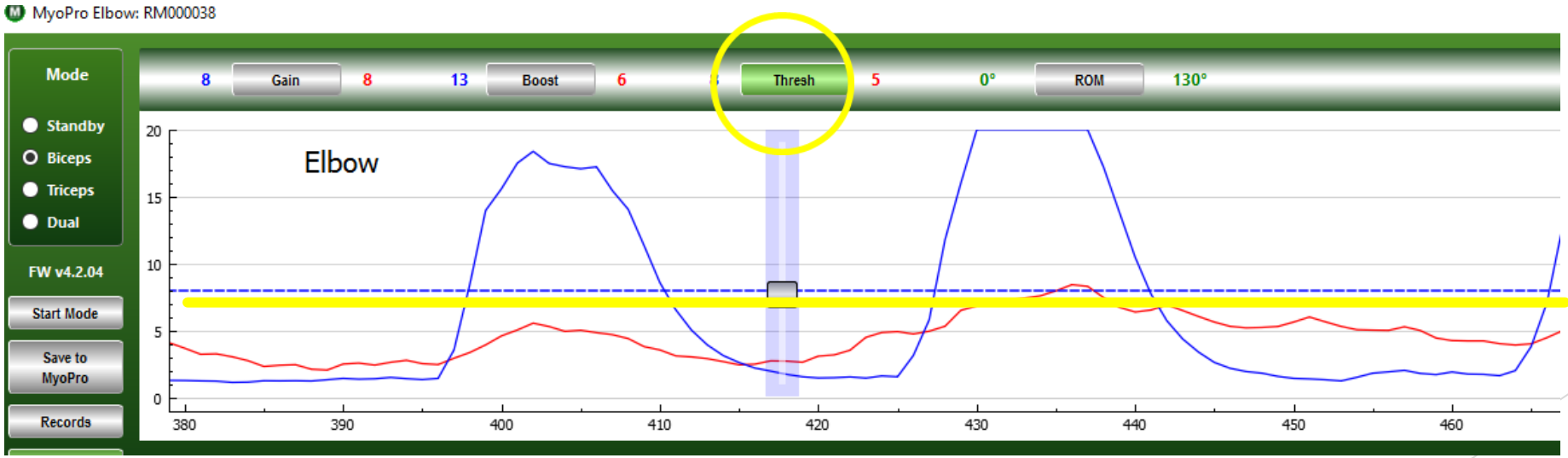
Adjusting the Boost

Settings: Threshold

EMG signal must cross the threshold to trigger the motor.

Motor will respond to either an active muscle signal or a relaxing muscle signal, depending on which mode is being used.

Threshold line can be raised or lowered depending on the needs of the user and desired goals. Minimum threshold = 5.



Adjusting the Threshold

Settings: Range of Motion (ROM)

Customize ROM limits for each user depending on his/her passive ROM or the environmental set-up/task. Elbow and hand ROM set separately.

Extension limit and extension column

Flexion limit and flexion column

“Adequate” EMG signal

“Good” resting EMG signal

NOTE: Raising gain/boost will elevate the resting signal
High resting signal can be problematic for finding an appropriate threshold location.
Ensure there is no external pressure on sensors and user is relaxed.

MyConfig Tips

- When MyoPro users start therapy, their MyoPro will already have been programmed with starting settings. Therapists can make adjustments as needed throughout their training.
- The user should exert a moderate effort when trying to move their arm (and generating an EMG signal). Provide enough gain/boost to limit compensatory strategies and fatigue.
- The EMG curve should fill as much of the screen as possible, but not go off the graph. This is overamplification.
- For weaker users, or those who are struggling to make their MyoPro move, amplify the signal first, then adjust threshold line if needed.
- The threshold should always be set above resting baseline EMG.

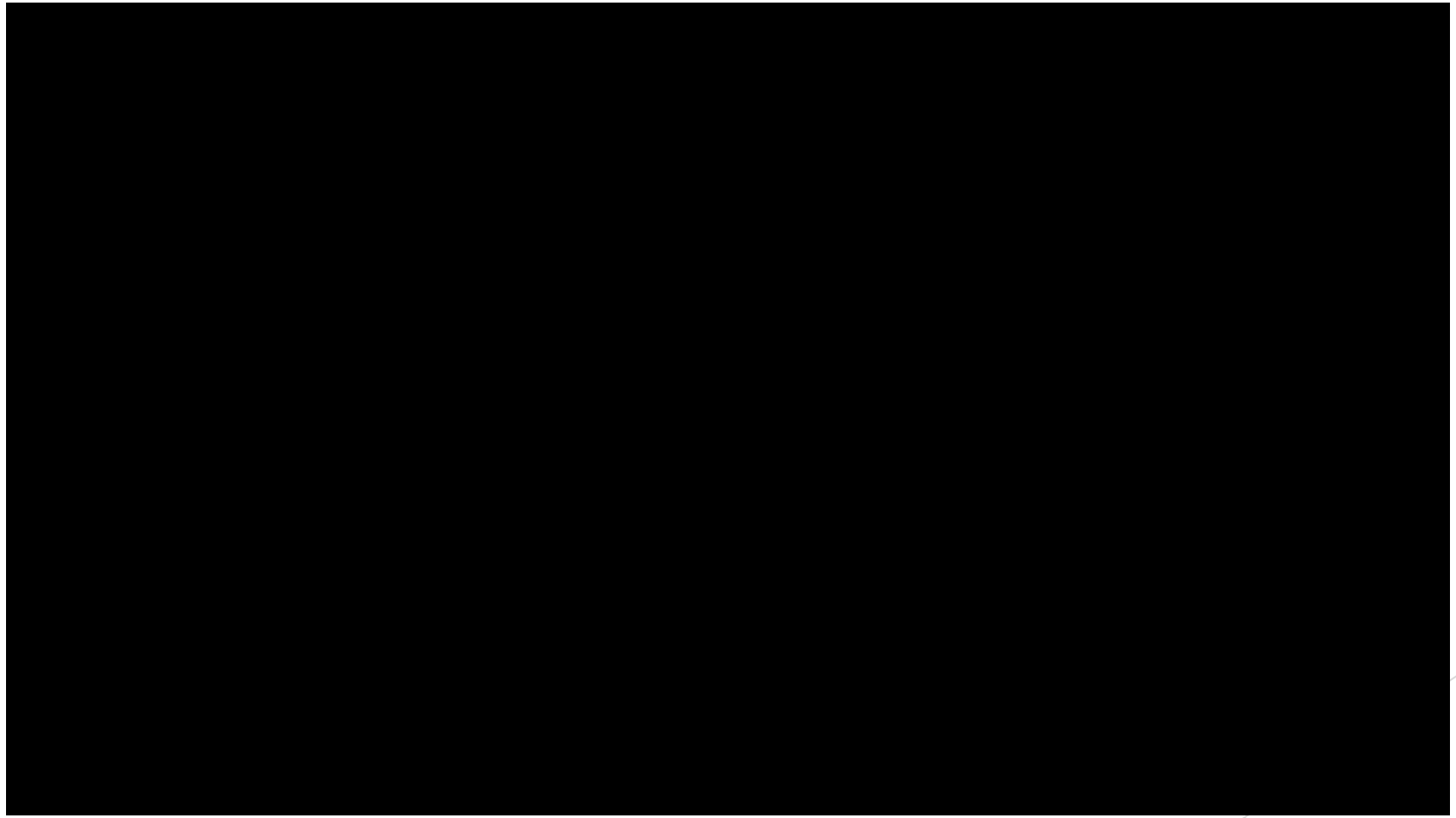
MyConfig Tips

- The clinician can make changes to Gain/Boost/Threshold as many times as they want, and they won't override programmed settings.
- Once you have the settings adjusted for the user, click "Save to MyoPro" to program the MyoPro. See troubleshooting section for instructions.
- Users receiving Botox may need to have their settings adjusted more frequently.
- Clinicians may choose to adjust settings to facilitate different goals in therapy e.g. strengthening vs functional task practice vs tone management.
- Keep in mind external factors that might effect EMG: arm position (gravity minimized vs against gravity, standing vs sitting etc) When Motion G users first start controlling hand and elbow, EMG might change.

Case Example 1 – High Tone User

- EMG often “jagged”, high amplitude, difficult to relax

- place threshold in upper 2/3 of signal to encourage faster relaxation (as this is the first step in the therapy program)



Case Example 2 – Dual Mode

Adjustments can be made to gain, boost and threshold for both muscle groups. 2 threshold lines mean the user can stop mid-range without needing to sustain a muscle contraction

Sample Starting Settings

In the event a clinician needs or wants to program the MyoPro with fresh settings, they can begin with:

GAIN = 10

BOOST = 4

THRESHOLD = 5

Make adjustments accordingly after observing the user attempt a few repetitions.

For example: raise the threshold if the user has trouble relaxing their EMG

raise the boost if the user struggles to move and their EMG needs more amplification

decrease the gain if their EMG is already overamplified

Troubleshooting

EMG signals should match and support your knowledge of the user:

Do they already have some AROM? You should not have trouble finding an EMG signal.

Flaccid arm or trace MMT? Expect these signals will need to be magnified.

Spasticity? EMG signals may be jagged/erratic and relaxation will be slow and difficult/inconsistent.

Fatigues quickly? EMG may need to be magnified to help the user work a little longer/do more reps.

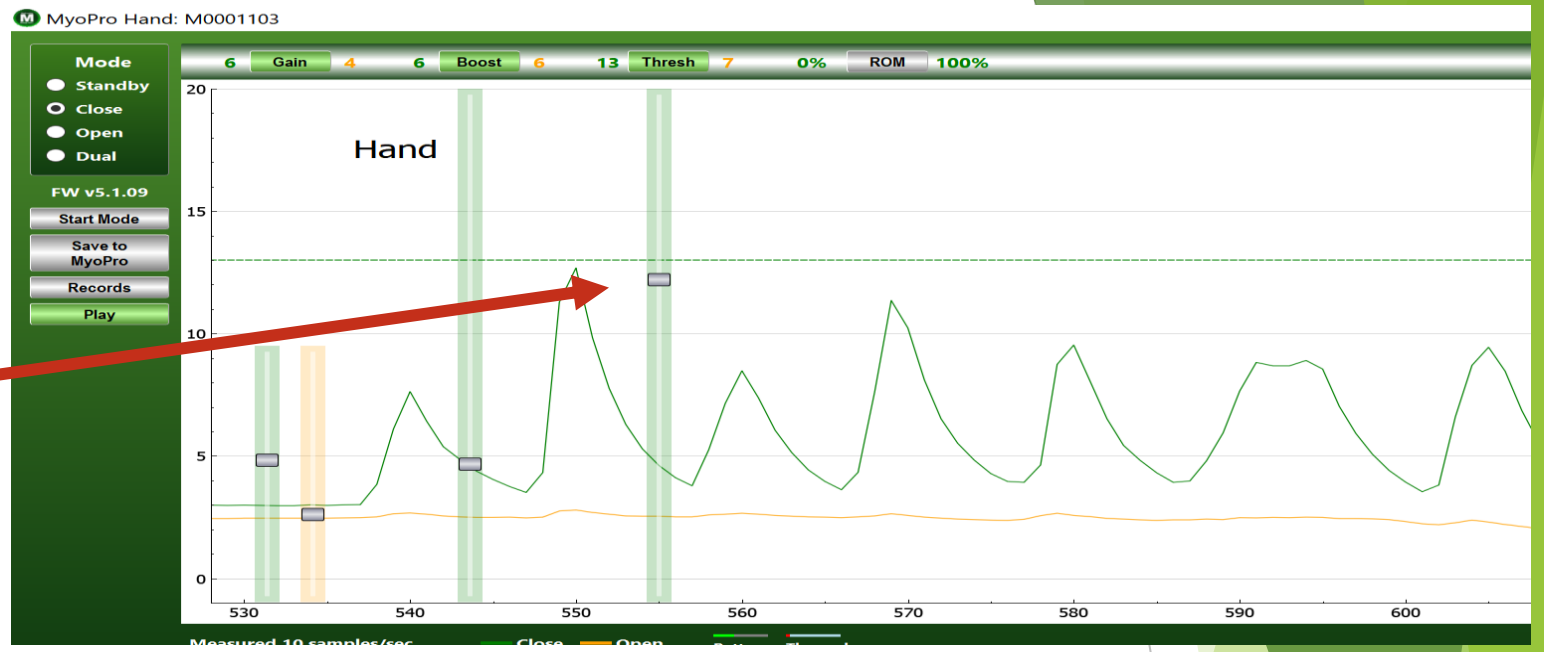
Poorly fitting MyoPro? If the sensors lose contact with the skin or if the MyoPro is too loose or misaligned on the arm, the EMG signal may be erratic.

Troubleshooting

Why isn't the MyoPro moving?

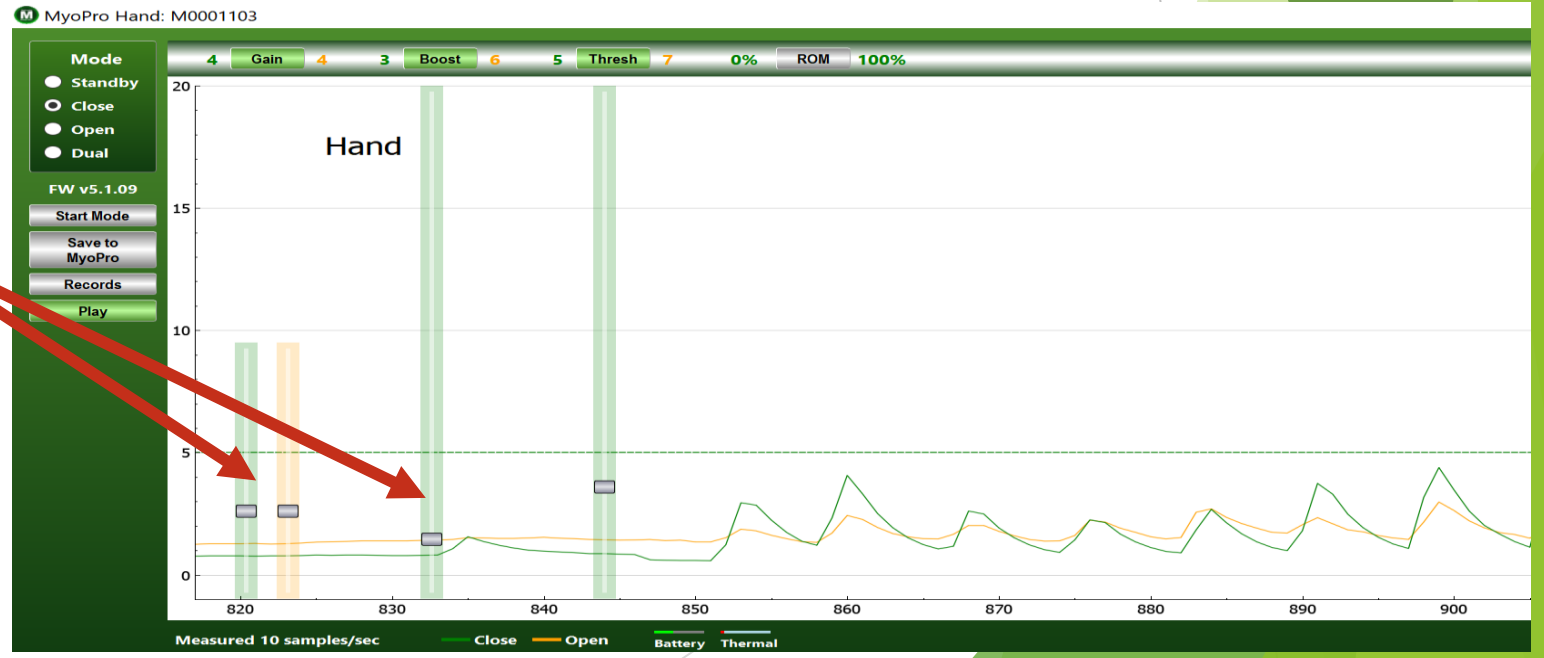
- **threshold too high**

EMG not crossing the threshold



- **not enough gain/boost**

Threshold is at the minimum/lowest level, but EMG is not strong enough to cross it



Other causes:

- standby mode
- user not trying*

Troubleshooting

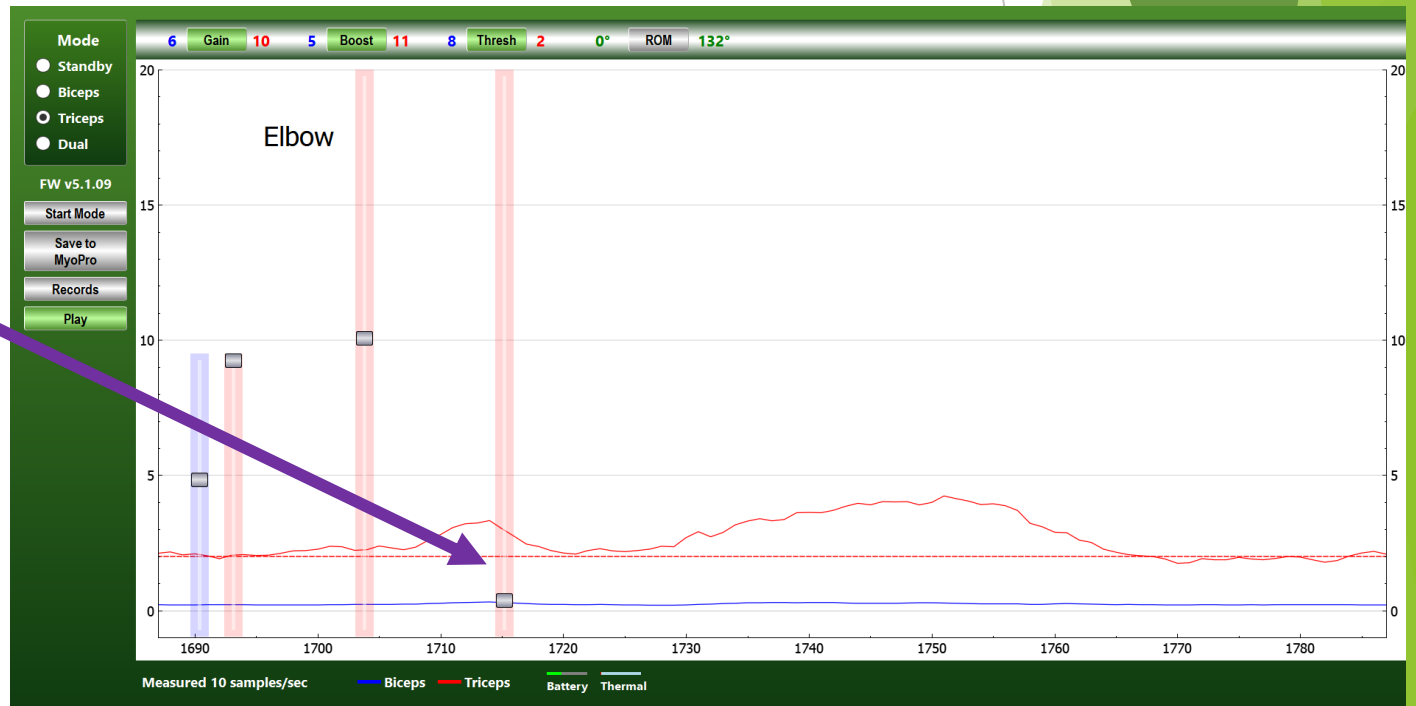
Why is the MyoPro bouncing/moving unintentionally (oscillation)?

- **Gain/Boost too high**

EMG is overamplified, so will be difficult to control.

- **Threshold too low**

Even though EMG is relaxed, threshold is so low, the baseline signal keeps crossing it



Other causes:

- **Fit of orthosis** (sensors losing contact)
- User having a spasm or has spasticity
- Motor fighting high tone/limited PROM
- Low battery (or other technical issue)

Troubleshooting

How do I change MyConfig settings to facilitate strengthening?

To make the user work harder, would you…

Increase or decrease the boost/gain?

DECREASE

Raise or lower the threshold line?

RAISE

Troubleshooting

How do I change MyConfig settings to facilitate tone management?

In order to teach high tone users to volitionally control and relax their hypertonic muscle(s), we need to make it easy and rewarding for them to relax their EMG.

Spasticity/tone will increase the amplitude of the EMG signal, and the user will find it difficult to “switch off” that muscle group.

Would you raise or lower the threshold line?

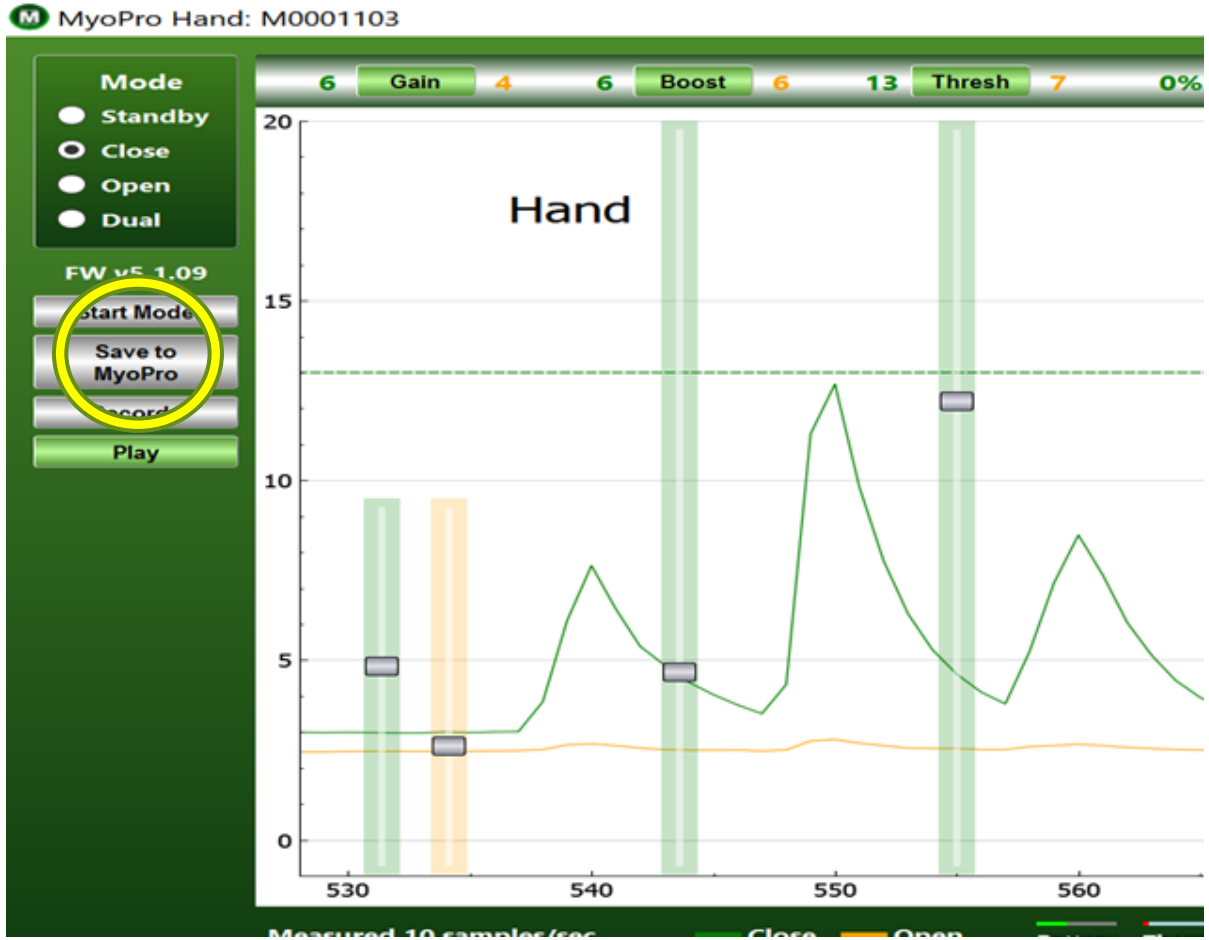
RAISE

Troubleshooting

Why has the user's EMG suddenly flatlined?

Perspiration may be the cause of this behavior. Wipe the skin and sensors down with an alcohol wipe. If perspiration is a chronic issue, use Certain-Dri.

Saving Settings



Once values for gain, boost and threshold have been decided on, click on “Save to MyoPro”.
Note: settings must be saved for each mode individually.

Generating a Usage Report

Clinicians can access a report of how frequently the user works with their MyoPro at home, and for how long. MyConfig saves information from the last 100 sessions:

Diagnosis specific issues

Stroke/Brain Injury – spasticity, fatigue, cognitive issues

SCI – spasticity, fatigue, use of tenodesis movement, wheelchair users may need ROM limits adjusted

Brachial Plexus Injury – weak and/or inconsistent EMG. Important to know surgical history e.g. intercostal nerve transfer may result in “breathing” pattern of EMG as user inhales/exhales. Threshold should be positioned above resting baseline.

Myomo Customer Support

SUPPORT@ MYOMO.COM

(f) 877 736 9666

Quiz

Quiz questions are provided in addition to this training module to enhance learning.