

# CSRS ELECTRICAL STIMULATION LE LAB

**Equipment/Device:** Empi Continuum (old)/  
Chattanooga Continuum (new)

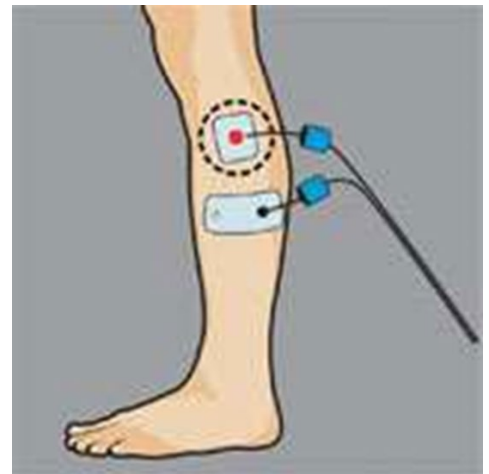
**Uses :** TENS, NMES (1 ch.; 2 ch.)

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## ELECTRICAL STIMULATION PROTOCOL FOR DORSIFLEXION

Waveform: asymmetric, biphasic

- Pulse Width or Duration: (time span of single pulse): 200- 250  $\mu$ s most commonly used in neurorehabilitation. Higher than 450  $\mu$ s commonly results in pain.
- Frequency: 20-50 Hz commonly used but up to 100 Hz is not uncommon in neurorehabilitation. Use the lowest frequency that results in a smooth tetanic contraction should be used.
- Ramp up: should not be used during gait training so DFs are stimulated quickly. Possible ramp down for eccentric lowering of DF
- Duty cycle (on/off period): OFF time 3 times longer than ON time (e.g. 5:15). Can also use trigger switch to manually control/coordinate within gait cycle.
- Alternating channels would be best for gait (e.g. DF than PF)
- Intensity: Can vary between 0-140mA.
- Location of electrodes: The positive electrode must be fixed precisely on the motor point of the muscle.





# CSRS ELECTRICAL STIMULATION LE LAB

**Manufacturer:** Chattanooga, Inc.

**Distributors:**

Chattanooga Continuum:

[www.chattanoogarehab.com/us/chattanooga-continuumtm-2600-dev](http://www.chattanoogarehab.com/us/chattanooga-continuumtm-2600-dev)) (\$342.72)

Empi Devices:

[www.healthproductsforyou.com](http://www.healthproductsforyou.com) (\$419.00 w. hand switch;  
\$730.30 w. heel switch)

[www.rehab-store.com](http://www.rehab-store.com) (\$419.00 w. hand switch; \$730.30 w. heel  
switch)

# CSRS ELECTRICAL STIMULATION UE LAB

**Equipment/Device:** Empi Continuum (old)/  
Chattanooga Continuum (new)

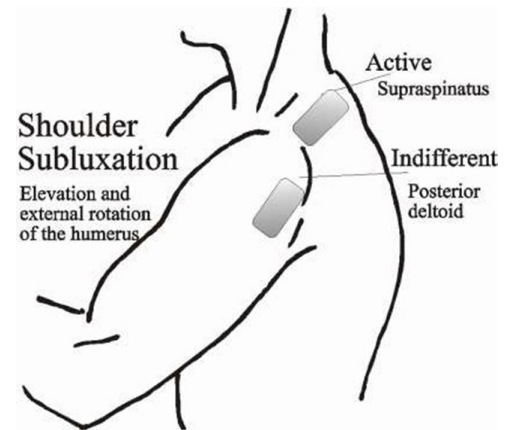
**Uses :** TENS, NMES (1 ch.; 2 ch.)

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## ELECTRICAL STIMULATION PROTOCOL FOR SUBLUXATION

Waveform: asymmetric, biphasic

- Pulse Width or Duration: (time span of single pulse): Moderate pulse duration 150-200  $\mu$ s.
- Frequency: >30 pps (no more than 50 pps) Use the lowest frequency that results in a smooth tetanic contraction should be used.
- Ramp up: 5 second ramp
- Duty cycle (on/off period): 15 seconds on, 45 seconds off (Progress to 30 seconds on 2 seconds off)
- Location of electrodes: Positive electrode on supraspinatus. Negative electrode on posterior deltoid
- 30 minutes initially, increase to 6-8 hours per day. Continue until realignment persists without stimulation



ALTERNATIVE ELECTRODE LOCATIONS: Posterior Deltoid; Teres Minor



# CSRS ELECTRICAL STIMULATION UE LAB

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Empi Devices:

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\$730.30 w. heel switch)

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## ELECTRICAL STIMULATION PROTOCOL FOR DORSIFLEXION

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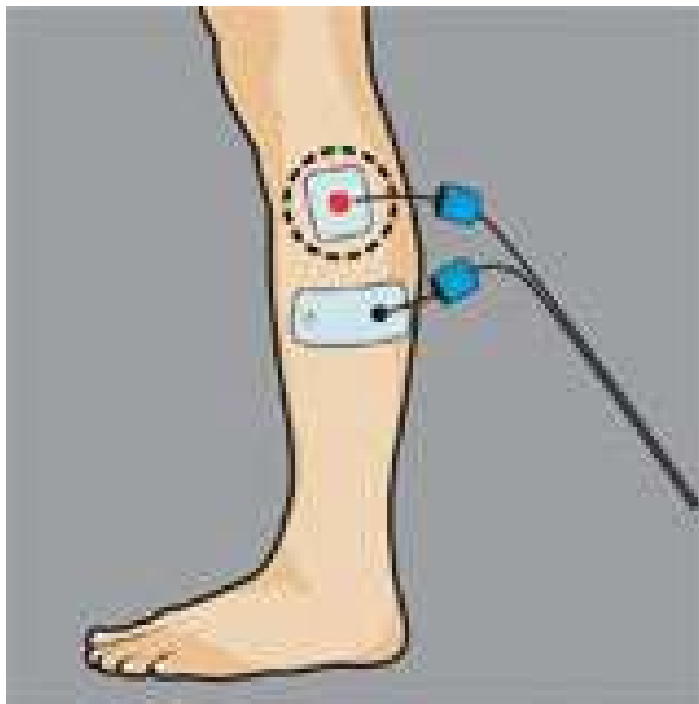
**Ramp up** should not be used during gait training so DFs are stimulated quickly. Possible ramp down for eccentric lowering of DF

**Duty cycle** (on/off period): OFF time 3 times longer than ON time (e.g. 5:15)

**Alternating** channels would be best for gait (e.g. DF than PF)

**Intensity** Can vary between 0-140mA

**Location** of electrodes: The positive electrode must be fixed precisely on the motor point of the muscle



## ELECTRICAL STIMULATION PROTOCOL FOR SUBLUXATION

**Waveform** a symmetric, biphasic PC

**Pulse Width or Duration** (time span of single pulse): Moderate pulse duration 150-200  $\mu$ s.

**Frequency** >30 pps (no more than 50 pps) Use the lowest frequency that results in a smooth tetanic contraction should be used.

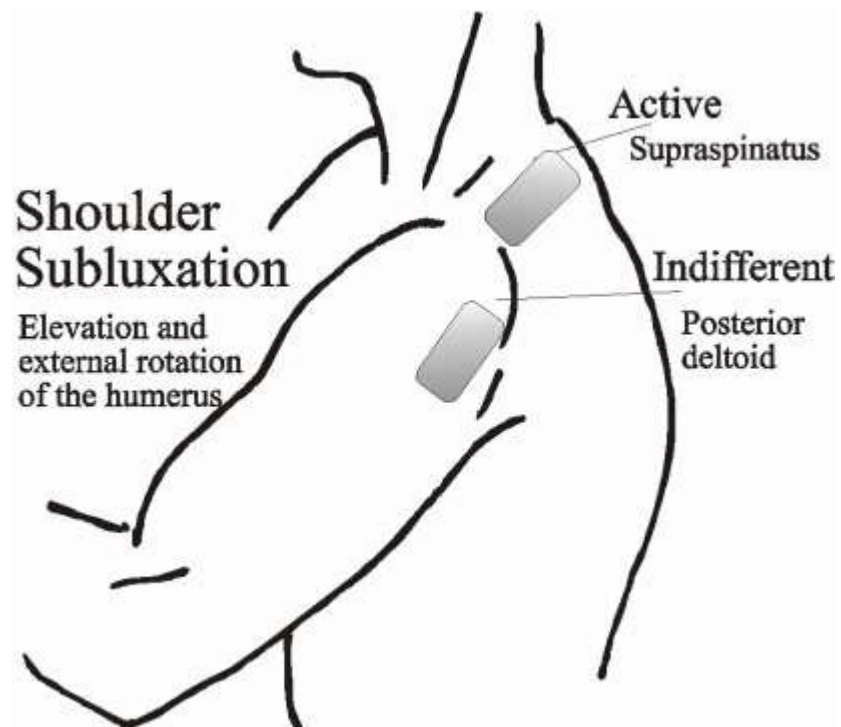
**Ramp up** 5 second ramp

**Duty cycle** (on/off period): 15 seconds on, 45 seconds off (Progress to 30 seconds on 2 seconds off)

**Location** of electrodes: Positive electrode on supraspinatus. Negative electrode on posterior deltoid

**30 minutes initially, increase to 6-8 hours per day**

**Continue until realignment persists without stimulation**



# CSRS ELECTRICAL STIMULATION LAB

**Equipment/Device:** MyoTrac

**Use:** EMG biofeedback/threshold training of a single muscle (Ideal for flaccid patients; does NOT provide stimulation). Also useful for quick detection of EMG activity in a targeted muscle.



## Directions:

- CAREFULLY snap ONE electrode onto the sensor head. Remove the backing paper on the electrode.
- Place the electrode on the belly of the targeted muscle.
- Turn the volume control all the way to the right (clockwise) (earbuds are also available with the device but not used in today's lab).
- OFF/CONT/THR: Set switch to "THR" (Threshold feedback). By switching to threshold, you can establish a threshold that the client has to attain with their EMG to receive stimulation to the muscle.
- GAIN: Turn to +100 (far right). From a resting position, encourage the patient to attempt to contract the affected muscle in order to move the LED indicator on the device to the far right/yellow.

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**Manufacturer:** Thought Technology, LTD

**Distributor:** Medi-Stim

**Cost:** \$562.00 (Medi-Stim.com)  
Carry pouch comes with device, 3 electrodes, extra 9-volt battery, earbuds, and instructions

# CSRS ELECTRICAL STIMULATION LAB

**Equipment/Device:** iReliev TENS/NMES

**Use:** Cyclic, suprathreshold stimulation of a single muscle

TENS (subthreshold stimulation for pain relief, edema)



## Directions:

- Apply electrode pad to the belly of the targeted muscle (NOTE: large (approx 3" by 3").
- Click the receiver pod on to the electrode that is situated on the muscle belly.
- To turn on the receiver pod(s), press and hold the power button for 3 seconds.
- Turn on the remote by holding the power button for 3 seconds.
- Hold the ON/+ and OFF/- buttons for 8 seconds to access the channel pairing screen. While in pairing screen, press the CH button to navigate to desired channel (CH1, CH2, CH3, CH4). Once you have selected the channel, then press SET button.
- At this time, the remote and pod should pair. The blue backlight of the receiver pods will blink two times when it receives the signal from the remote. Wireless symbol will appear next to "CH" on remote when successfully paired. Exit the pairing screen by clicking the OFF/- button to return to the standby screen.
- Select "EMS" mode on the remote.
- Select **EMS therapy program** (EMS 1 - 6) and then the number of **treatment minutes** (5 min increments up to 60 mins)
- While flashing, press the ON/+ button (to increase) or the OFF/- button (to decrease) repeatedly until the **desired intensity level** flashes on the display. Once desired intensity level is selected, then press SET.





# CSRS ELECTRICAL STIMULATION LAB

## Device Parameters:

Six, preset, NMES programs

Waveform Type – Symmetrical Biphasic

Maximum amplitude/intensity: 80mA (can be adjusted on all programs)

Ramp Up/Down – 2-3 sec\*\*

Off time – 2-3 seconds\*\*

Pulse Width – 200-300uS\*\*

Total Treatment Time – up to 60 min (adjustable)

Frequency (Pulse Rate) – 35Hz \*\*

\*\*depends on program that is selected

Learn more about NMES parameters for this device at:

<https://ireliev.com/wp-content/uploads/2018/11/Instruction-Manual-RevC18.pdf>

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**Manufacturer:** iRelieve, Inc

**Cost:** \$179.00 (ireliev.com)/\$189.00 (amazon.com)

**Comes with:** Wireless TENS + EMS Muscle Stimulator Hand Control; (2) Wireless TENS + EMS Pods (Paired as Channel 1); (1) Dual USB Plug Adapter; (1) Dual USB Charging Wires; (2) 3" x 5" Electrode Pads; Hard Carrying Case; (4) Pod Decals (2-CH2, CH3 and CH4); Instruction Manual; Quick Start Guide

**Order at:** <https://ireliev.com/product/therapeutic-wearable-system/?type=buynow>

# CSRS ELECTRICAL STIMULATION LE LAB

**Equipment/Device:** SaeboStim One

**Use:** Cyclic, suprathreshold stimulation of a single muscle



## Directions:

- CAREFULLY remove a pair of gel pads (they are very sticky!).
- Apply one gel pad to each of the blue “wings” of the device.
- Apply the wings proximally and distally to the belly of the muscle. The control unit (white) should be placed over the peroneal nerve.
- After applying the device, press and hold the “Saebo” logo until the blue light illuminates.
- Press on the top of the white control unit to increase amplitude until you attain a full muscle contraction within a safe range of motion limits.
- Once you select the ideal amplitude, the device will begin a regular cycle of stimulation until the time that you turn the device off.
- To turn the device off, again press and hold the “Saebo” logo on the control unit.

**Device Parameters:** Parameters are NOT adjustable on this device

Waveform Type – Symmetrical Biphasic

Maximum amplitude/intensity: 110mA

Ramp Up/Down – 2 sec

Off time – 8 seconds

Pulse Width – 300uS

Total Treatment Time – 60 min

Frequency (Pulse Rate) – 35Hz

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**Manufacturer:** Saebo, Inc

**Cost:** \$119.00 (Saebo.com) Comes with device, 3 pairs of refill gel pads, charger, and instructions

# CSRS ELECTRICAL STIMULATION UE LAB

**Equipment/Device:** SaeboStim One

**Use:** Cyclic, suprathreshold stimulation of a single muscle



## Directions:

- CAREFULLY remove a pair of gel pads (they are very sticky!).
- Apply one gel pad to each of the blue “wings” of the device.
- Apply the wings proximally and distally to the belly of the muscle. The control unit (white) should be placed over the belly of the middle deltoid. ALTERNATIVE LOCATIONS: Posterior Deltoid; Supraspinatus
- After applying the device, press and hold the “Saebo” logo until the blue light illuminates.
- Press on the top of the white control unit to increase amplitude until you attain a full muscle contraction within safe range of motion limits.
- Once you select the ideal amplitude, the device will begin a regular cycle of stimulation until the time that you turn the device off.
- To turn the device off, again press and hold the “Saebo” logo on the control unit.

**Device Parameters:** Parameters are NOT adjustable on this device

Waveform Type – Symmetrical Biphasic

Maximum amplitude/intensity: 110mA

Ramp Up/Down – 2 sec

Pulse Width – 300uS

Frequency (Pulse Rate) – 35Hz

Off time – 8 seconds

Total Treatment Time – 60 min

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**Manufacturer:** Saebo, Inc

**Cost:** \$119.00 (Saebo.com) Comes with device, 3 pairs of refill gel pads, charger, and instructions

# CSRS ELECTRICAL STIMULATION LAB

**Equipment/Device:** UE/LE Remote Trigger Switches

**Use:** Triggering of electrical stimulation to targeted muscles

## Directions:

- Plug the switch into the auxiliary port of device.
- When the button is depressed/heel switch is engaged, muscle will be activated to the preset amplitude.




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**Distributor:** Medi-Stim

**Cost:** \$55.00 For Hand Switch;  
\$150.00 for Heel Switch (Medi-Stim.com) Plastic bag comes with switches and instructions