

App Guide **Lumbar Angle Feedback**

SageMotion
Wearable Biofeedback System



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Components



Hub



Nodes(8x)



Battery



Node Straps *Medium (8x), Short (4x), Long (2x)*



Cable A(10x)

-Connect Hub to Battery
-Charge Nodes & Battery



Cable B(optional use)

-Connect Hub to Computer



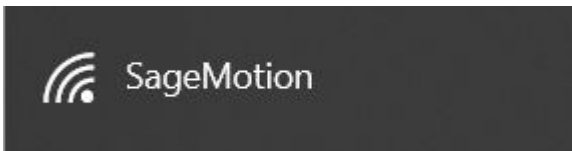
Node Charging Station

Connect to Computer or Cellphone

1) Connect Cable A to Battery and to Hub



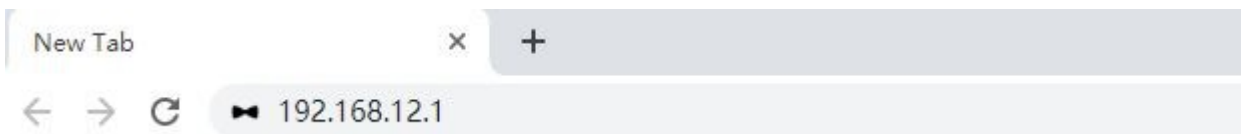
2) On Computer/Cellphone, Connect to Wi-Fi: "SageMotion"



Note 1: Need to wait for up to 1 minute for "SageMotion" to appear in Wi-Fi list. If it doesn't appear, try turning the Wi-Fi off and then on again on the computer/cellphone.

Note 2: Hub is connected after clicking "Connect" even if in Windows it shows "Connecting" or "No internet, open".

3) On Computer/Cellphone, in Chrome Address Bar, Go To <http://192.168.12.1>



[Note] If Computer Doesn't Have Wi-Fi: plug in Cable B to the Hub and to the ethernet port of your computer, then in chrome address bar, go to **<http://192.168.137.1>**

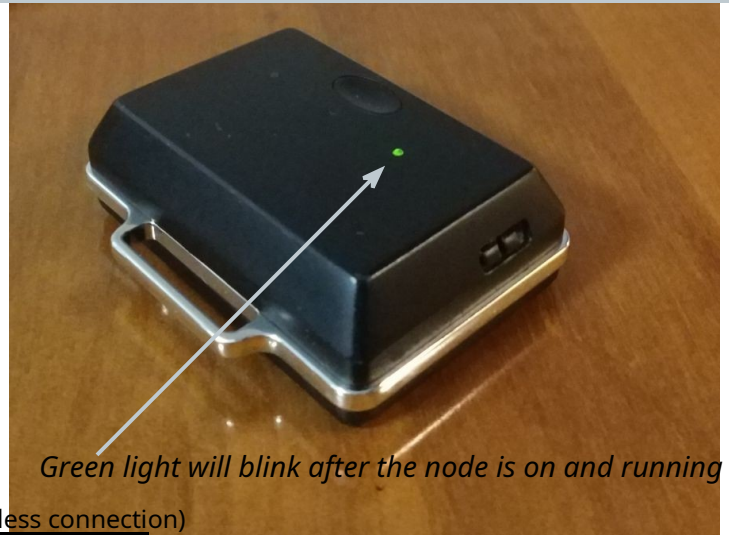
Lumbar Angle Feedback

The purpose of the Lumbar Angle Feedback is to train lumbar flexion.

1) Turn on 2 Nodes



Slide switch toward middle to turn node on



Green light will blink after the node is on and running

Green LED (power and wireless connection)

-**ON:** Power on, wirelessly *connected* to hub

-**OFF:** Power off

-**Blinking:** Power on, wirelessly *disconnected* to hub

Red LED (visual interface)

-**ON:** Sync failure, switch node off then on again

-**OFF:** Normal operation

-**3 Blinks:** Triggered from blink button in interface

-**1-4 Blinks on start:** Battery: 1=0-25%, 2=25-50%, 3=50-75%, 4=75-100%

Yellow LED (battery)

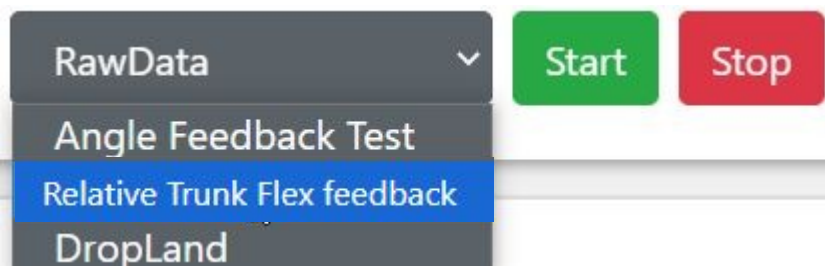
-**ON:** Battery is charging

-**OFF:** Battery is full (cable plugged in) or charging cable is unplugged

-**Blinking:** Battery malfunctioning



2) Select "Lumbar Angle Feedback"



3) Click the magnifying glass to search



Lumbar Angle Feedback (cont.)

4) Order the nodes as needed by dragging nodes to types and positions

Node List ?  

Type	Position	MAC		
sensor	l1_sensor	18:04:ED:EB:48:96		
sensor	s1_sensor	18:04:ED:E7:83:15		
feedback	feedback	18:04:ED:EB:20:64		

Number of Nodes Required = 3

Drag node MAC to swap node positions

Note: 12-digit node ID will match the number in the MAC column

5) Click the chain icon button to connect

Node List ?  

Connect Nodes

Type	Position	MAC
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6) "Ready to collect data" Will Appear after Node Connection Complete

Relative Trunk Flex feedba 





 **Ready to collect data**

7) Click "Blink" or "Vibrate" to Test Connection.

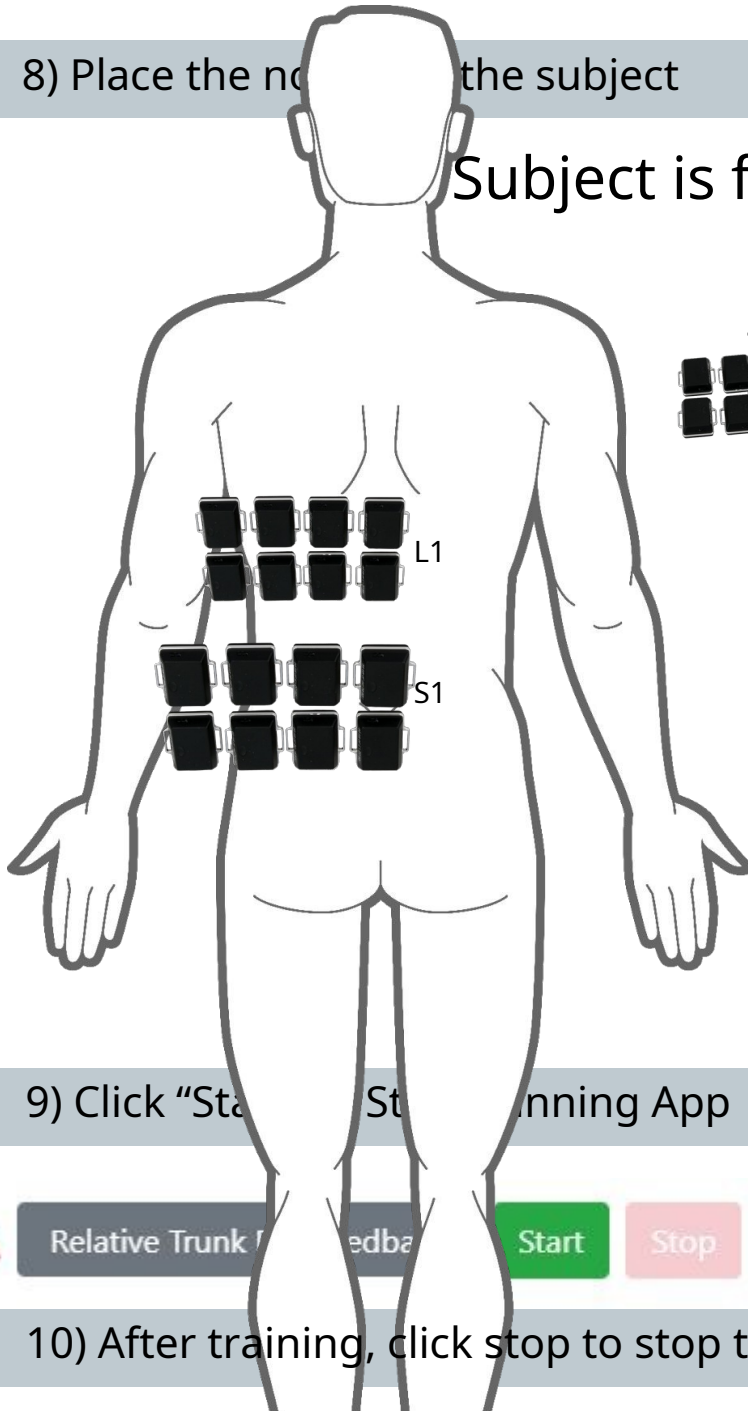
Node List ?  

Type	Position	MAC				
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Lumbar Angle Feedback (cont.)

8) Place the nodes on the subject

Subject is facing away from the viewer



The S1 node provides vibration feedback

Sensor nodes should be placed so that their switches are pointed superiorly (up towards the head).

9) Click "Start" to start the app



10) After training, click stop to stop the app



Lumbar Angle Feedback *(cont.)*

Description of Data in Downloaded File

time (sec): time since trial start

lumbar_angle (deg): Lumbar angle

lumbar_angle_percentage (%): Lumbar angle in calibrated range

feedback_threshold (%): Threshold for feedback

feedback_enabled: Whether feedback is enabled (1) or disabled (0)

feedback_state: Whether feedback is provided (1) or not (0)

SensorIndex_1/2: index of raw sensor data

AccelX/Y/Z_1/2 (m/s²): raw acceleration data

GyroX/Y/Z_1/2 (deg/s): raw gyroscope data

MagX/Y/Z_1/2 (μT): raw magnetometer data

Quat1/2/3/4_1/2: quaternion data

Sampletime_1/2: timestamp of each sensor

Package_1/2: package number of each sensor