



KineMotion

Instructions for Use

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1 Introduction

1.1 Copyright

Copyright © 2025 Kiso ehf.

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ICELAND

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1.2 Disclaimer and Limitation of Liability

Kiso Inc. assumes no responsibility for any damage or loss resulting from the use or not-use of the manual, the hardware, the software, nor any other equipment. Kiso Inc. assumes no responsibility for any loss of claims by third parties, which may arise through the use of this software. Kiso Inc. assumes no responsibility for any damage to personal computer, data storage equipment nor loss of data or information.

1.3 Revision

V001 - May 2025

V002 - July 2025

1.4 Declaration of Conformity

Manufacturer Name:

Kiso ehf.

Manufacturer Address:

Hátún 12.
105 Reykjavík
Iceland

Device Name:

KineMotion

Model Number:

K01

Product Code:

HCC

Regulation Number:

882.4100

Device Classification:

Class II

510(k) Status:

510(k)-Exempt (per FDA classification under [Regulation Number])

1.5 Intended Use

The device enables researchers and clinicians to acquire measurements of human movement and muscle activity from the skin's surface via Electromyography (EMG) and an Inertial Measurement Unit (IMU) sensor to measure human movement.

The device allows professionals in academic, clinical, and fitness settings to objectively measure movement and muscle activity and review the acquired data to gain insight and understanding about physiological signals and movement in human participants. The measured data is stored in a cloud that can be managed by the device's software application for further review and interpretation by the professional user. A qualified individual must interpret the EMG and the supporting signals. The device is not intended to provide diagnostic information.

1.6 Technical Service and Support

For information and assistance please visit our website:
<https://www.kisoinc.com/>

Or contact us directly by email at:
kisoinc@kisoinc.com.

1.7 Symbols



Manufacturer:
Kiso Inc.
Hátún 12
105 Reykjavík, Iceland



Consult the accompanying electronic Instructions
for Use for detailed instructions



Serial Number (appears on device or package label)



Batch Identifier (appears on package label)



Catalog Number (appears on package label)



Keep dry. Do not submerge in any liquid.



Handle with care



Operational Temperature Range: Use the system in an environment within a temperature interval from -5 degrees Celsius to +30 degrees Celsius



Single Use Only (Only applies to the electrodes)



The KineMotion sensor contains a Lithium battery.



Dispose of the sensors according to local rules.

1.8 Warnings

Warnings:

- Do not immerse the KineMotion sensors in any water or liquid.
- Dropping the KineMotion sensors may cause damage to them.
- KineMotion system produces results that are informative, not diagnostic. Qualified individuals must interpret the results.
- Do not modify the KineMotion sensor without authorization from the manufacturer.
- Handling the KineMotion sensor can, in very rare cases, cause mild allergic reactions.

Attention:

- KineMotion is for professional use only.
- Instructions for Use are to be provided in electronic form unless specifically requested. Should the user like to obtain a hard copy of these Instructions, please contact the manufacturer.
- KineMotion system can only be used while the smart device is in contact with the internet

2 KineMotion Overview

The KineMotion system comprises multiple combined EMG IMU sensors in one device, hereafter called sensor, and the KineMotion Application software that runs on smart devices. The communication is via Bluetooth, the distance should be less than 10 meters, but it depends on the circumstances.

The sensors are attached to the body to acquire the signals. When acting as an EMG unit, the placement is typically on larger superficial muscles according to the built-in electrode placement guide. When acting as IMU, the units are often placed on bony areas without muscles. The user is not limited to the built-in placement guide, but following it makes the result more consistent when compared to previous measurements or normalized measurements.

The application software acquires the data from the sensors and presents it to the user. The data can be shown in real-time, e.g., for biofeedback and training. The user can choose to record the data and save it in the built-in cloud-based data storage. Recorded data is stored in a hierarchy imitating the clinical working habit. On the top level is the clinician's client. For each client, there can be multiple training plans, each focusing on a physiological parameter. Each training plan can have multiple sessions that correspond to a visit to a clinic. Each session can have multiple recordings, e.g., one for the left and one for the right side.

The data can be viewed as raw time series traces. Another way to present recordings is through dashboards - standardized processing and presentation of data based on data content. There are dashboards for single recordings, for multiple recordings in a session, e.g., left vs right side comparison, and there are dashboards for treatment sessions that can depict progress through sessions contained by the training plan.

The software has built-in protocols, a standardized way to perform an exercise. When following a protocol, the system knows more about the procedure, and that allows for more options in producing dashboards. The dashboard takes the data just recorded and displays it in an easy-to-understand way, in graphs and tables.

In Free Measurement, the user can experiment at their own will. The data can be presented in real-time as graphs or columns. The graphs and columns can scale automatically to the signal strength, or the scaling can be locked. Also, the scaling between channels can be interlocked so that all signals have the same scaling. This makes a comparison of strength between channels easier. When the scale is not locked, the scale can be reset, increasing the

sensitivity to see smaller signals. In free measurement, it is possible to set upper and lower limits for EMG. The clinician can, by this method, give the client goals to train up or relax different muscles. When a recording has been made with limits, a dashboard can be made that gives statistics based on the performance in relation to the limits. The IMU signals can be presented as orientation or impact. Orientation is for measuring joint angle, impact is to relate events in the EMG to mechanical impacts like landing after a jump.

The App info section contains information about the current version of the application.

The software application has a support page where the user can find contact information for Kiso as well as get basic information about the system.

One can also get to the support page through the profile page. The profile page includes a Forum, a Getting Started section, application settings, a privacy policy, and terms of service. Here, the user can edit her or his profile, reset the password, change the associated email address, and log out.

The lower left or upper right corner has the home buttons that will bring the user to the home screen.

2.1 KineMotion Sensor



Figure 1: KineMotion Sensor

The sensor has one button. To turn on the sensor, press the button for 3 seconds. The button will light up and indicate it is ready for connection (see LED behavior 2.1.2 for detailed description) by flashing a blue light. If the battery charge is low at this point, it will light a constant red light instead. To turn the sensor off, hold the button for 3 seconds. During the press, the sensor will blink green to indicate the press. If the button is pressed for a full 3 seconds, the sensor will turn off, and the light will turn off. For more

information, see 2.1.2.

During connection to the sensor via the KineMotion app, the sensor will blink blue with a faster phase. This process typically takes about 3 seconds. When full connection has been made, the sensor will have a constant unique color given by the app to identify the sensor. These colors are, red, green, blue, cyan, magenta and yellow. In the software the connected sensors are shown with their corresponding unique color. The system can accept guaranteed up to 5 sensors, but if all sensors are not required for a measurement they do not all have to be used. In the connect sensors screen in the app, the sensor can be disconnected. When disconnecting from the sensor, in the app, the sensor will first blink blue and red intermittently, indicating that the disconnection process. When disconnected, the sensor will go back to the mode where it is ready to be connected, or blinking a blue light.

The sensor can be charged in its charging dock. When charging and the battery level is low, the LED will be red. When the battery charge is sufficient for use, the LED will turn yellow. When the battery is fully charged, the LED will be green. The charging indication will appear about 3 seconds after being set to charge.

The sensor is attached to the body via single-use triode electrodes. The electrodes are snapped into the sensor, the protective sheet is removed, and the sensor is placed on the body.

Often, no skin preparation is needed. It can be beneficial to let the sensor stay on the skin for about 2 minutes before recording EMG so that the sweat will create better contact. It may be necessary to prepare the skin by shaving in case of considerable hair growth.

2.1.1 Technical specifications

Table 1: Technical specification of the KineMotion system

Item	Value
Number of sensors per system	Guaranteed 5, possible up to 7
EMG gain error	<5%
EMG signal range	-2 to 2 mV
EMG noise	<5 μ Vrms
EMG Sampling frequency	1600 Hz
Orientation range	0 to 180deg
Orientation static error	<5 %
Orientation on-body error	<10%
Impact range	-8 to 8 g
Impact error	<5%
Radio communication type	> Bluetooth 5.0
Radio communication range	> 5 m
Battery type	lithium
Full charge battery endurance	4 hours
Operating system	Android, iOS

2.1.2 LED Behaviour and Description

Table 2: LED behaviour of the KineMotion sensor

Lights	Purpose
Turning on and off	
Blinking blue, green, and red once each	The sensor is turning on
Rapid blinking yellow	The sensor is turning off
Connecting and disconnecting	
Slow blue blinking	The sensor is turned on but not connected
Rapid blue blinking	The sensor is connecting
Rapid blue and red blinking	The sensor is disconnecting
Connected and recording	
Constant color	The sensor is connected, and each sensor gets its own color
Slow sensor, color and white blinking	The sensor is sending data/recording
Rapid sensor color and white blinking	There is an error in sending data
Battery level and charging	
Slow red blinking	The sensor needs to be charged
Constant red	The sensor is charging and has less than 30% charge
Constant yellow	The sensor is charging and has a medium charge
Constant green	The sensor is fully charged

2.2 KineMotion Software

2.2.1 Software Specification

The software the KineMotion app has been tested on can be seen at:

<https://www.kisoinc.com/kinemotion-supported-os>

2.2.2 Software Security

KineMotion software follows the HIPPA rules and FDA recommendation for software security.

3 Getting Started

3.1 Installation

KineMotion systems delivered with a tablet have the application preloaded.

Navigate to the Play Store for Android-based smart devices and App Store for iOS-based smart devices, and search for KineMotion and download it.

3.2 Signing up

Open the app and press Sign up.

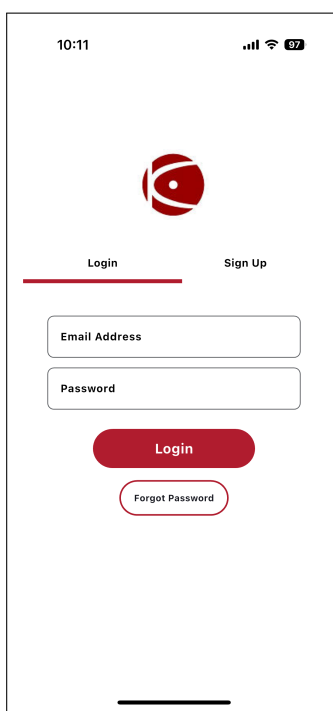


Figure 2: Log in screen

Fill in the field for email, password, and the confirmation of the password. Once done, press the Sign Up button.

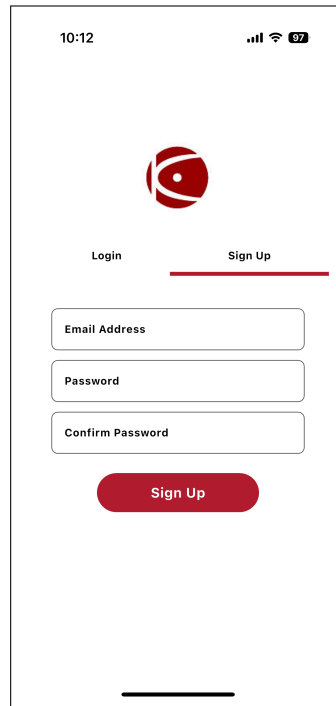


Figure 3: Sign up screen

Check your email for the verification code. Note that sometimes it can go to the junk mail. If you don't receive the code, press Resend.

Now enter your verification code and then press Verify. Now your profile is ready.

3.3 Charging the sensors

Place the sensors in the charging dock and plug in the charging dock and plug the charging dock to the wall outlet via the usb charger and usb cable. The LED behaviour while charging can be seen in chapter 2.

3.4 Turning the sensors On

Press the button on top of the sensor and hold until a light turns on.

4 Using KineMotion

4.1 Sensor Placement

Snap the sensor to the electrodes. Orient the sensor so that the charging port turns towards the flap on the electrodes, and remove the protective sheet and attach it to the skin. The electrodes are single-use.

When placing sensors for measuring EMG, orient the charging port parallel to the direction of the muscle fibers. For recommended placements of the sensor, see photos 43 and 44, or under Instructions on the home page of the app.

Unlike measurements in EMG mode, when measuring in the IMU mode, the orientation is not important, it can be placed in any direction. When measuring orientation, it is important to place the sensor so that it does not turn during the exercise, as that will affect the orientation measurement. Ideally, place it on a bone to reduce the possibility of rotation.

How to activate and deactivate different signal modes (EMG and/or IMU) can be seen in 4.2.1.

4.2 Functions

After logging in, the Home Page appears

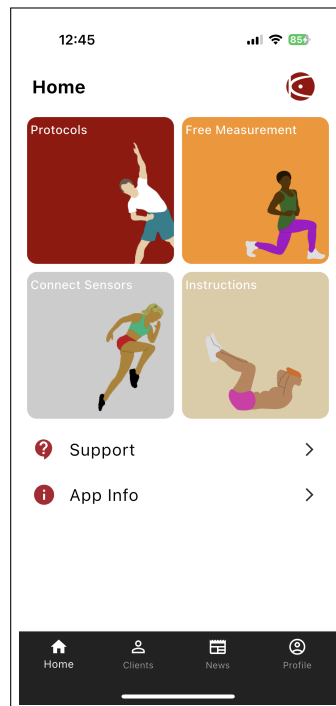


Figure 4: Home page of the app

From the Home page, it is possible to choose the following:

- **Connect Sensors:** to manage connections
- **Free measurement:** for feedback and recordings
- **Protocols:** to conduct a standardized measurement
- **Instructions:** for electrode placement map
- **Support:** for information about usage of the app
- **App Info:** to identify the version of the app currently being used
- **Home:** (this is the home page, typically used from other pages) The Kine Logo in the top right corner also brings the user to this home page.
- **Clients:** to manage clients or to look at recordings already conducted
- **News:** for new information regarding the product
- **Profile:** to adjust profile information and application settings

4.2.1 Connect Sensors

The Connect Sensors page can be accessed directly from the home page. It also appears in the Free measurement and protocol pages. Before connection, all available sensors are shown in a list. One can connect and disconnect to each sensor individually or to all at once using the Connect all button.

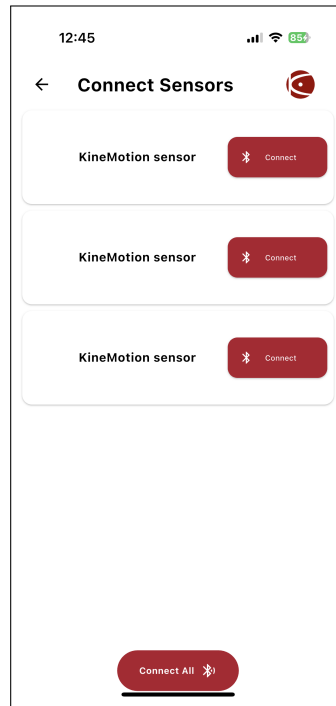


Figure 5: Connect Sensors screen with the sensor not connected

When the sensors have been connected, they will automatically be assigned an identifying color.

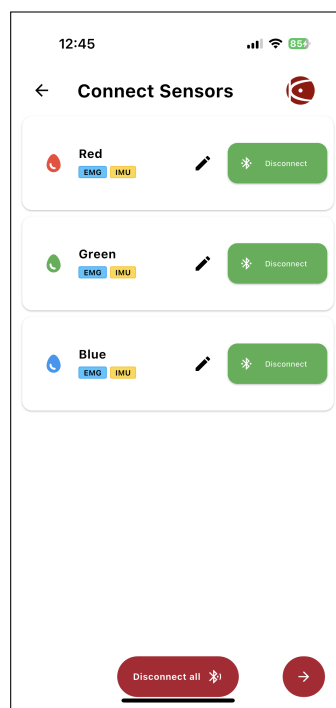


Figure 6: All the sensor connected on the connect sensor screen

By pressing the drop indicating the color, it is possible to change the identify-

ing color of that sensor or can be put as Off, the sensor is still connected but is not sending data and will therefore not record data.

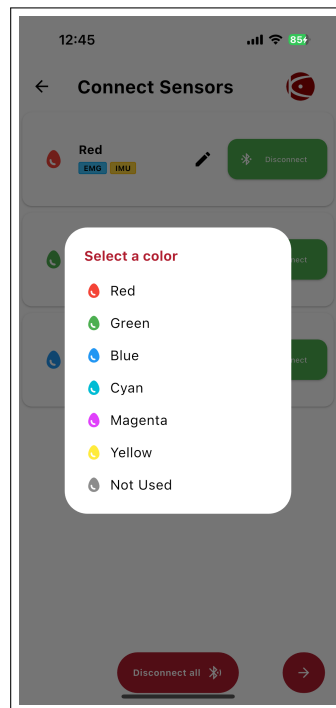


Figure 7: The choices for indicating color for the sensors

Each sensor can be configured by pressing the pen symbol.

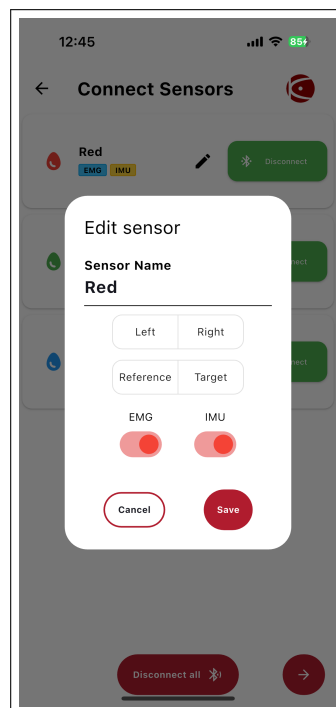


Figure 8: The configuration that can be made for the sensors.

When following a protocol, it will automatically adjust these parameters appropriately.

In Free Measurement, it can be handy to be able to manually set the parameters.

Here the default name is “Red”, this can be changed to something else, e.g. muscle name.

Left and right indicate which side is being measured. Targeted and Reference sides are used, e.g., when a specific targeted muscle is to be compared to the contralateral muscle.

The sensor can be set to produce EMG, IMU, or both signals.

4.2.2 Free Measurement

After connecting to a sensor, the Free measurement screen can be accessed. There, the data can be viewed as a graph or a bar chart.

Graph view:

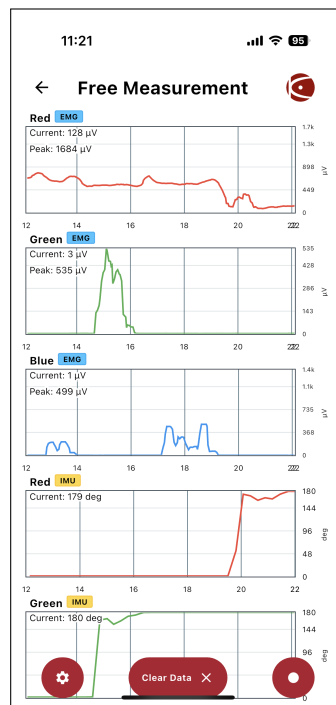


Figure 9: Graph view of free measurement

The EMG channels are displayed at the top, then the IMU channels (if both types are turned on). To see all the channels it may be necessary to scroll

down.

The EMG signals pane has time on the X-axis and Root Mean Square (RMS) of the raw EMG signal on the Y-axis. The amplitude is measured in microvolts (μV). The pane shows the current amplitude as text.

The pane shows up to 10 seconds of data, this allows for monitoring whether a modification of an exercise will give more or less amplitude. This is useful because a frequent task is to activate a muscle and evaluating what exercise will give the highest amplitude. For the same purpose, the Peak value in the EMG pane gives the last peak. This number stands until the next peak is made so even if the peak is no longer visible on the screen, the peak value remains.

The IMU signal can display its volume as an impact measured in m/s^2 or as orientation measured in degrees. One can choose the desired output by pressing the settings wheel in the left corner of the screen.

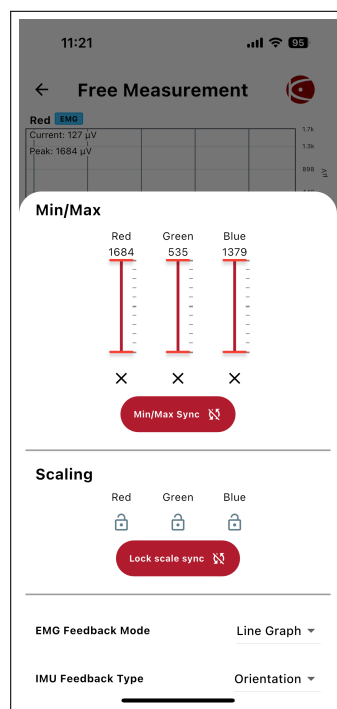


Figure 10: Free measurement settings when in graph view

The settings are:

- Set upper and lower (Min/Max) values for EMG signals with the sliders. The sliders can be locked to have the same value by the Min/Max Sync button.
- Each EMG channel's scale can be individually locked by the padlock

symbols.

- All the scales for EMG can be interlocked to the highest level by the Lock scale sync button.
- All these scaling locks only apply to the EMG signals.
- EMG feedback mode can be selected as a Line or bar graph.
- IMU feedback can be selected as Impact or Orientation.

Bar view:

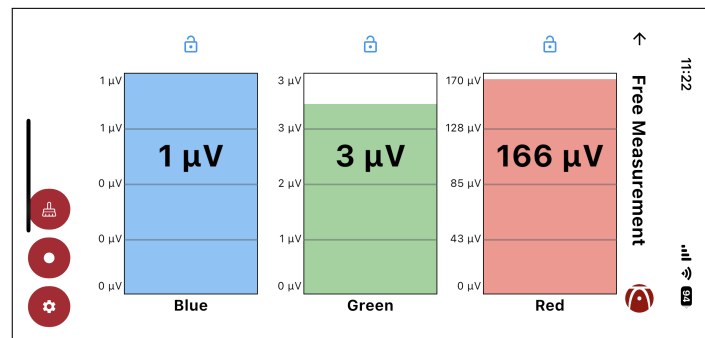


Figure 11: Bar view of free measurement

When set to bar view, only the EMG channels can be seen; however, if the IMU is turned on, it is still recorded. Here, each EMG channel is represented as a column, and this view is good when comparing the amplitude between muscles. The y-axis is the amplitude measured in μV , and the text on each column is the current amplitude.

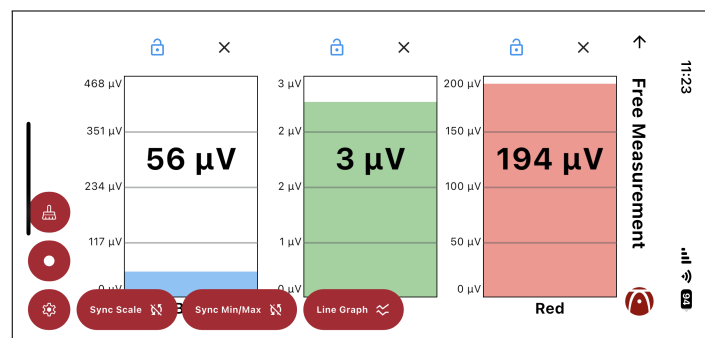


Figure 12: Free measurement settings when in bar view

The settings inside the bar view display the options as buttons at the bottom of the screen; the options are the same for EMG as they are in the graph view. The brush button is to clear data, works the same as the Clear Data button in graph view. Upper and lower limits can be set by touching the columns. Simply press on the column where you want the upper limit or lower limit, and a dotted line appears on the column where the limit was set.

4.2.2.1 Starting a recording

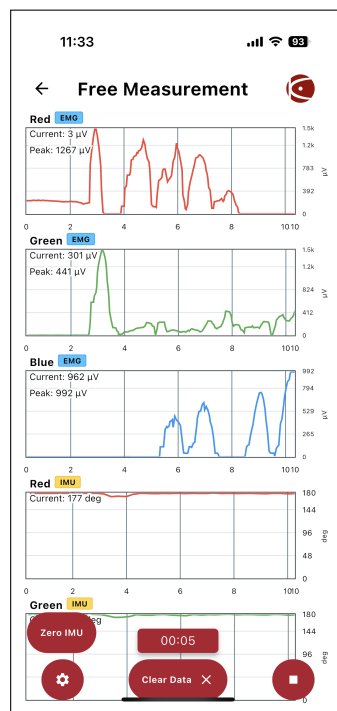


Figure 13: Recording

In both Line Graph and Bar Graph free measurement pages, the round button with the dot is the recording button. When recording, the recording timer becomes visible.

4.2.2.2 Ending a recording

A recording is terminated by pressing the button with the square in it, see in picture 13 above. Now the raw signal traces will be displayed, this time grouped by devices and not signal type as in the feedback. Purpose of reviewing the data is to evaluate it before saving.??

If the user has chosen a side (left or right) and state (Reference or Targeted) on the connection page, in the following example, this is indicated as the red channel in the picture below (Reference, Targeted).

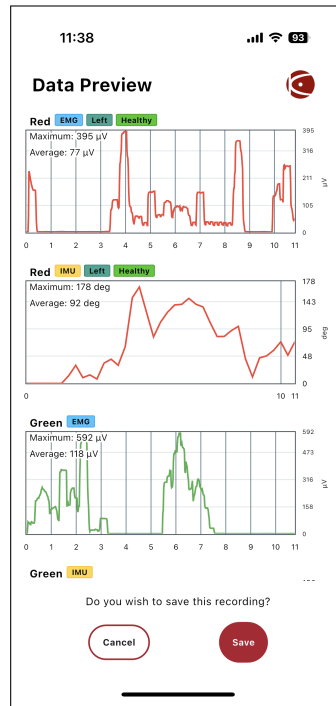


Figure 14: Data Preview screen

4.2.2.3 Saving a recording

After a recording, one has the option to save it by pressing the Save button. Now, a storage place needs to be selected.

Here, it is possible to select a client to save the measurement to or create a new one by pressing the Add Client. For more information about how to create a client, see 4.2.4.1. If a client has not been established, the client must first be created.

The recording can be given a name, and it can be commented on, but this is not mandatory - a default name will be created, which is the date and time of the recording if no name is given.

After a client has been chosen to save the recording under, then, for the selected client, a training plan (or no plan) to place the recording shall be chosen.

If no plan has been created for the client in question, or if a new one is needed, this must be done next. Press Create Plan, then the name of the training plan, description of that plan, and the rounds can be added. The name field is the only mandatory one, the others are optional. Press create, and then the recording can be saved under that new training plan.

When a training plan has been selected, and the save button in the corner is pressed, a warning will show up if no name has been set for the recording.

It is possible to continue; then a default name (date and time of the recording) will be set. Next comes a summary of where the recording will be saved.

If the location is correct, press Confirm otherwise, press cancel and change the location where to save the recording.

When an EMG recording is saved, a Basic EMG dashboard will appear automatically. For more information about different dashboards, see 4.2.5.

Dashboards can be exported as a PDF file and sent to the client or other stakeholders by pressing the Export button in the corner of any dashboard.

Then the report can be reviewed, and by pressing Download PDF, the report can be sent or downloaded.

4.2.3 Protocols

Protocols are tools to help guide through the measurements where certain things are set, for example, the muscle to place the sensor and the type of exercise.

When following a protocol, a protocol has to be selected first, the screen can be scrolled to view all the protocols in the list. There are five categories of protocols: EMG, EMG and IMU, ROM, sensor placement, and demonstration.

EMG - Uses up to five sensors with only EMG turned on. It takes you through the placement of the sensors, normalization of the muscles, getting the muscles rest level, gives information on how to perform the exercise, and finally gives you a dashboard with the data recorded.

EMG and IMU - Uses up to five sensors with both IMU and EMG; the number of each can differ between protocols. It has the same steps as the EMG protocols, but more information is given in the dashboards with the addition of the IMU.

ROM - Predefined exercise for different ROMs. It gives information about how to perform the ROM, either active or passive, placement of the sensors, and then the exercise is recorded.

Sensor placement - Takes the user through sensor placement of muscles part of certain body parts, for example shoulder. After the sensor has been placed, the free measurement screen shows up (see Chapter 4.2.2), where anything can be recorded.

Demonstration - Goes through the EMG protocol, but no sensors are needed

to go through it. This is so that the user can explore the procedure and see if it is of interest.

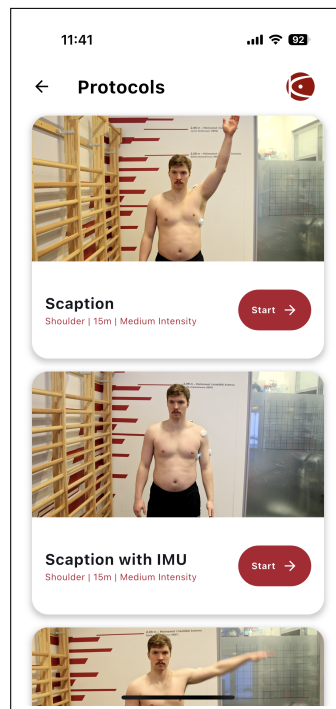


Figure 15: List of the protocols available

Press the Start button to select a protocol.

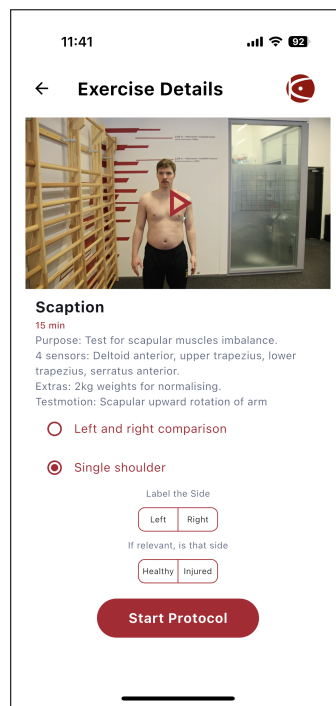


Figure 16: Front page of the protocol

When a protocol is selected, an overview page that describes what it is about, what extra equipment is needed, and how much time is estimated to take to complete the protocol.

One can measure a single side or do a double-sided measurement. Double-sided measurement presumes that one side is a reference to the other targeted side.

After pressing Start Protocol connect sensors screen is accessed, it works in the same way as mentioned above, except that the names for the sensors are set as the muscle names used in the protocol, as well as identifying color and the sensor mode (whether it is EMG or IMU). The protocol cannot be continued unless the correct number of sensors needed for the protocol are connected.

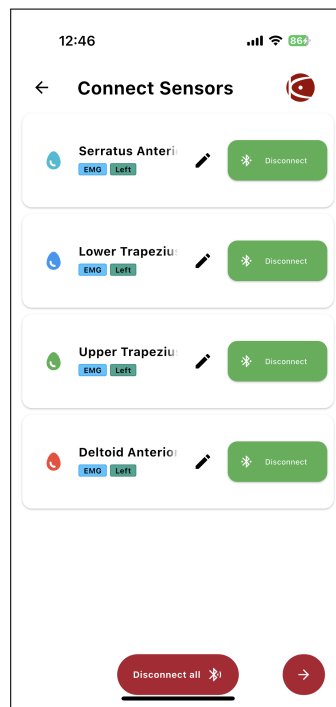


Figure 17: Connect sensors screen inside a protocol

The user will be guided through the process of placing the sensors on the body after the sensors have been connected.

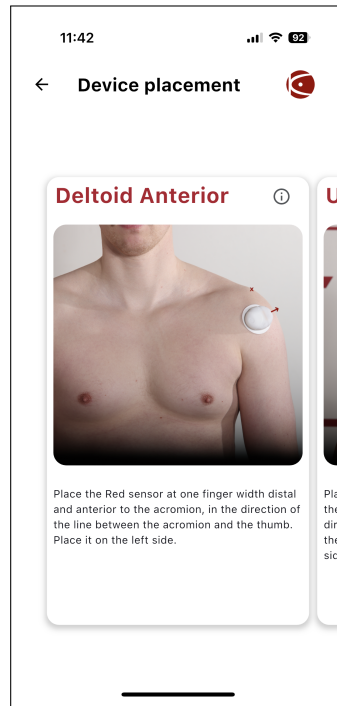


Figure 18: Sensor placement screen

Pressing the (i) button in the corner will supply more relevant information about the how to place the sensors.

The rest of the protocol is specific to each protocol. Once a protocol is finished, the process is the same for saving a file as after a free measurement recording. Once a recording is saved, a dashboard for that protocol will be automatically made; see the dashboards in chapter 4.2.5.

4.2.4 Client Page

When the client page is pressed from the home page, a list of already created clients is shown, if there are any.

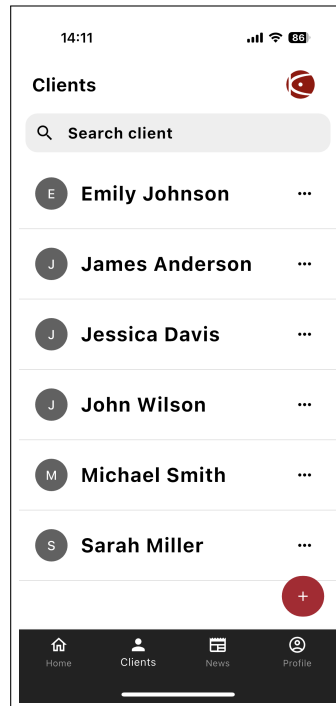


Figure 19: Client list

4.2.4.1 Creating a new client

To make a new client, press the red plus button in the corner.

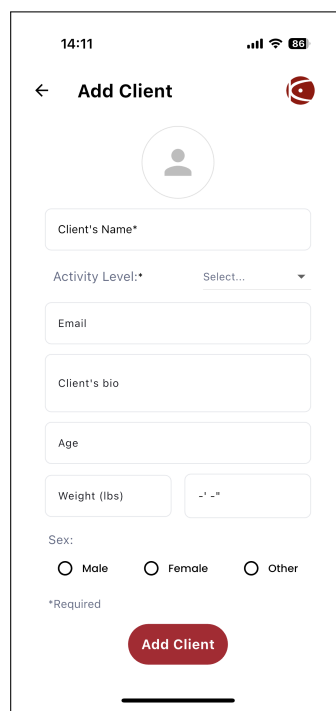


Figure 20: Add client

There are two required fields, marked with an asterisk, those being the client's

name and activity level, where four activity levels can be chosen from. Then there is the option to fill in other information like email, upload a photo of the client, age, weight and height, and sex.

After all information has been filed in, press Add Client, and a client has been created.

4.2.4.2 Review Data

To review data for a client, go to Client from the home page.

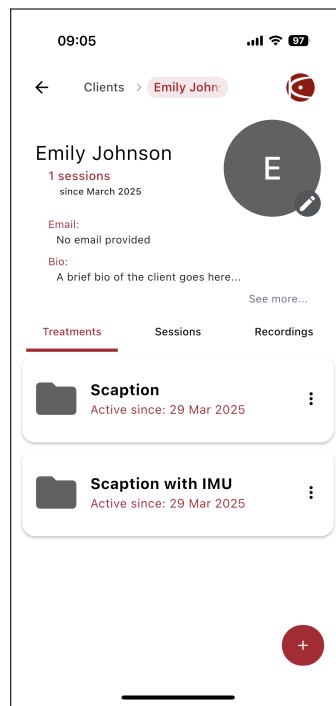


Figure 21: Client front page

On the client page it is possible to:

- Look at dashboards, sessions, and recordings under a specific training plan
- Look at all the sessions that the client has, regardless of what training plan they are part of, and all sessions that are not part of any training plan, and their dashboards under the session, and the recordings.
- Look at all the recordings for the client, regardless of what training plan or session they are part of. If a recording is saved under No Plan, it can be viewed here
- Look at the client's information by pressing "See more..."

For this client, there are two training plans (Scaption and Scaption with IMU), and it can also be seen that there is only one session (marked in red under the client's name).

If the Scaption training plan is chosen, no dashboards have been created for this training plan. This makes sense with only one session, training plan dashboards are about progress, and progress has little meaning with only one session. The session can also be reviewed, as well as all the recordings for that training plan. To see further about dashboards see chapter 4.2.5.

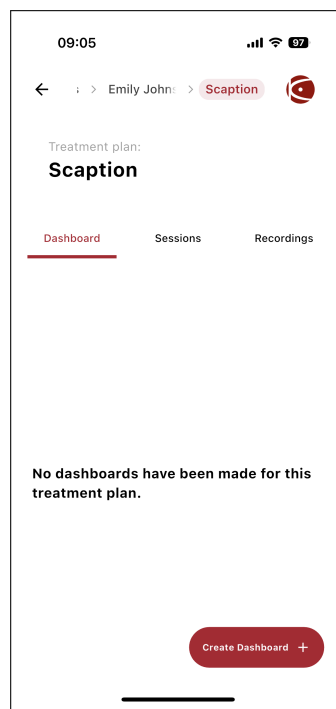


Figure 22: Scaption training plan

Pressing Create Dashboard brings this screen:

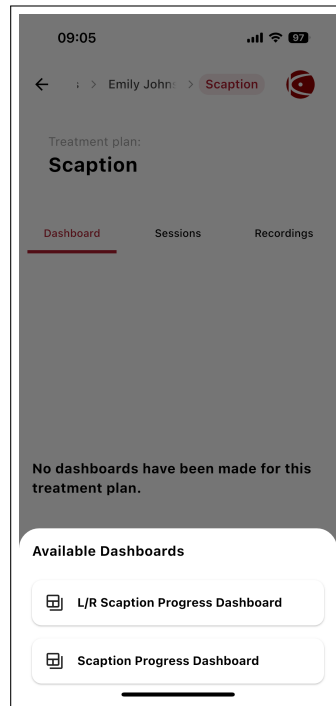


Figure 23: Available dashboards to create

The option to make the Scaption Progress dashboard and Left vs. Right Scaption Progress Dashboard shows up because the system detects files recorded with Scaption protocol on the left and right sides in a session under this training plan. But again, it does not make sense to generate a dashboard for only one session.

Selecting Sessions for this training plan reveals the only session available.

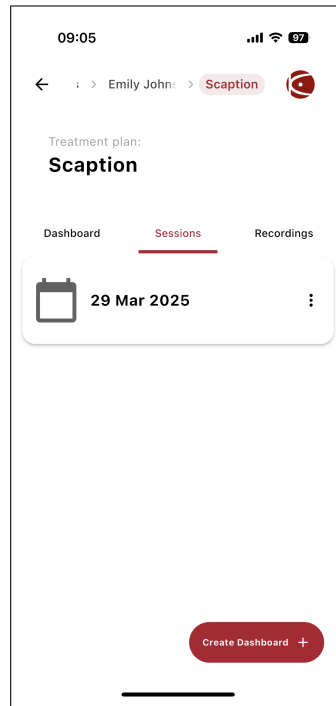


Figure 24: Sessions available under Scaption training plan

Choosing this session reveals the dashboards that have been made for this session.

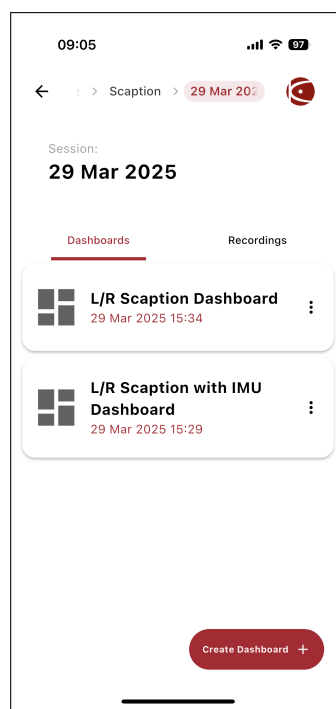


Figure 25: Dashboards available under a session

At the top of the screen, it is possible to track where in the hierarchy we are.

The recordings part of this session can be viewed by pressing Recordings

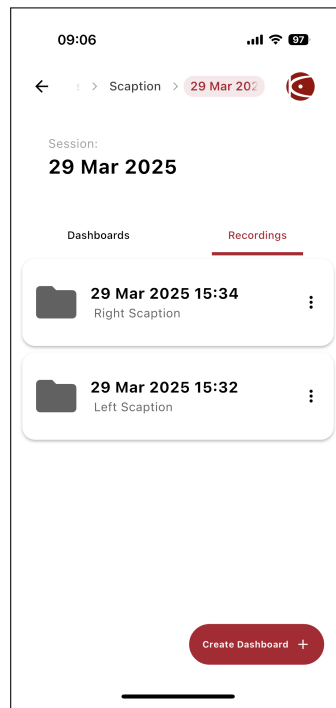


Figure 26: Recording part of a session

4.2.5 Dashboards

There are a couple of types of dashboards and different scenarios depending on when they can be made. There are:

- A dashboard that appears automatically after either a protocol or free measurement recording. These dashboards can, always be made again for the client.
- A Progress Dashboard that can only be made on the training plan level
- Left vs right dashboard can only be made at session level, but they also appear automatically after saving.

Dashboards can be made by pressing the "Create Dashboard" button that appears at plan, session and recording levels. Different dashboard options appear depending on level and data

4.2.5.1 Automatic Dashboards

After finishing a protocol, a dashboard appears automatically, they are:

- ROM Dashboard
- Scaption with IMU Dashboard

- L/R Scaption with IMU Dashboard
- Scaption Dashboard
- L/R Scaption Dashboard

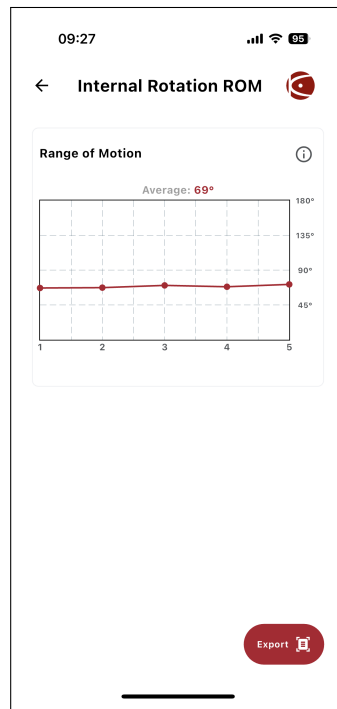


Figure 27: Range of Motion Dashboard

For the ROM Dashboard, the Range of Motion for each rep can be seen in the graph, and then the average Range of Motion is shown above in text. The ROM dashboard is the same for all types of ROM exercises available. For all dashboards, the i-button can be pressed to get an explanation of the graphs.

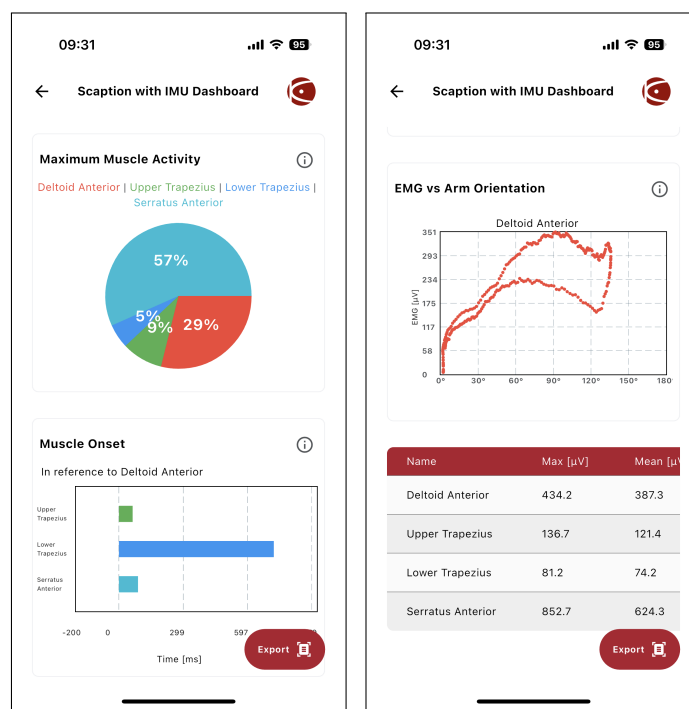


Figure 28: Scaption with IMU Dashboard

For Scaption with IMU, the maximum muscle activity for each muscle can be seen as the percentage of the combined activity. When each muscle turns on, called Muscle Onset, for example, the muscle sequence for the example above, Deltoid activates first, then Upper Trapezius and Serratus Anterior, and finally the Lower Trapezius. Scrolling down on the screen (photo on the right above) shows the muscle activity for each muscle at a given angle during the exercise, EMG vs Arm Orientation; to see the other muscle, scroll to the left on the graph. Finally, at the bottom, values like maximum and mean muscle activity, muscle delay, the angle the muscle turns on, and at what angle the maximum muscle activity occurs can be seen in the table. Again, to see the rest of the values, scroll to the left.

Scaption with IMU dashboard can also be made on the recording level.

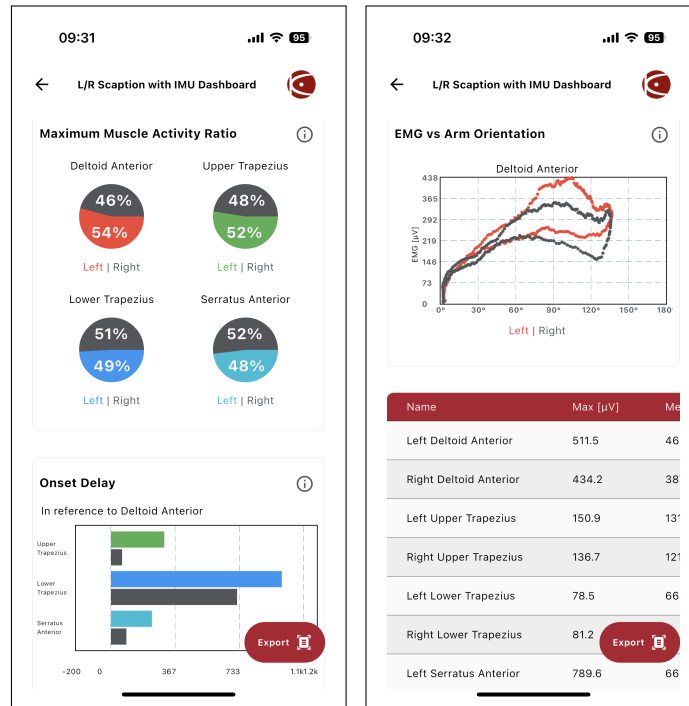


Figure 29: L/R Scaption with IMU Dashboard

The L/R Scaption with IMU is the same as for Scaption with IMU, but now it compares the left side to the right. The left side is always marked in color and the right side in gray.

L/R Scaption with IMU dashboard can also be made on a session level.

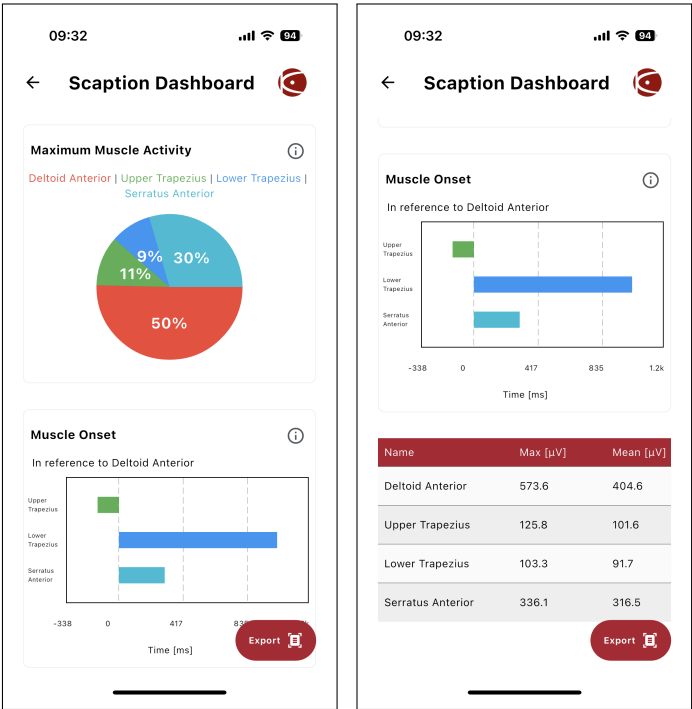


Figure 30: Scaption Dashboard

For the Scaption Dashboard, the maximum muscle activity for each muscle can be seen as the percentage of the combined activity and when each muscle turns on (Muscle Onset). After scrolling down on the screen, a table at the bottom (figure on the right above) can be seen, which includes the maximum and mean muscle activity value, and the delay of each muscle can be seen.

Scapation Dashbaord can also be made on the recording level.

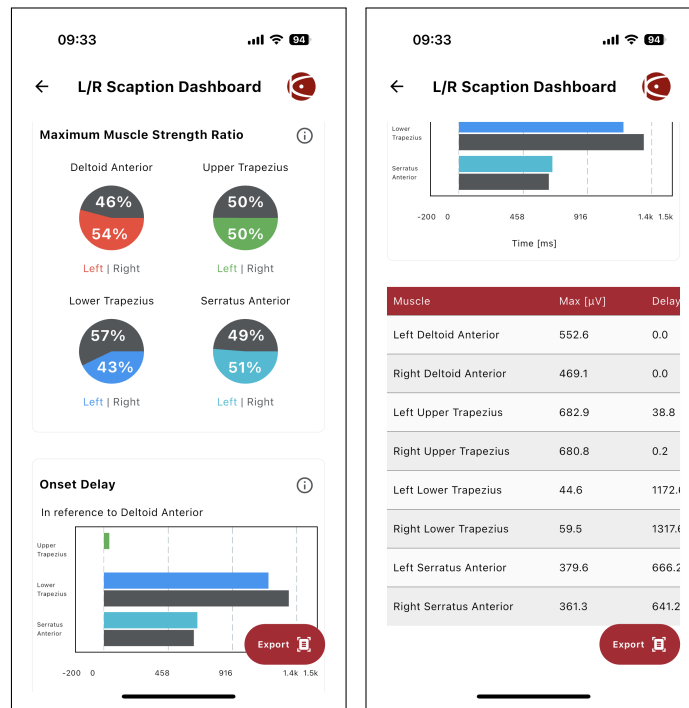


Figure 31: Left vs Right Scaption Dashboard

For the L/R Scaption Dashboard are the same graphs as for the Scaption Dashboard, but here the left side is compared to the right side. The left is always marked in color on the graphs, but the right side is marked with gray.

The L/R Scaption and L/R Scaption with IMU dashboards can also be made under session for the client and the Scaption and Scaption with IMU dashboards can be made under Recordins for the client.

After recording has been saved after free measurement, an automatic dashboard appears in these scenarios:

- Only EMG recorded - Basic EMG Dashboard
- EMG and calibrated orientation data - Basic EMG with Orientation Dashboard
- EMG with upper and lower limit set - Basic EMG with Threshold Dashboard
- EMG with upper and lower limit set with calibrated orientation - Basic EMG with Orientation and Threshold Dashboard.

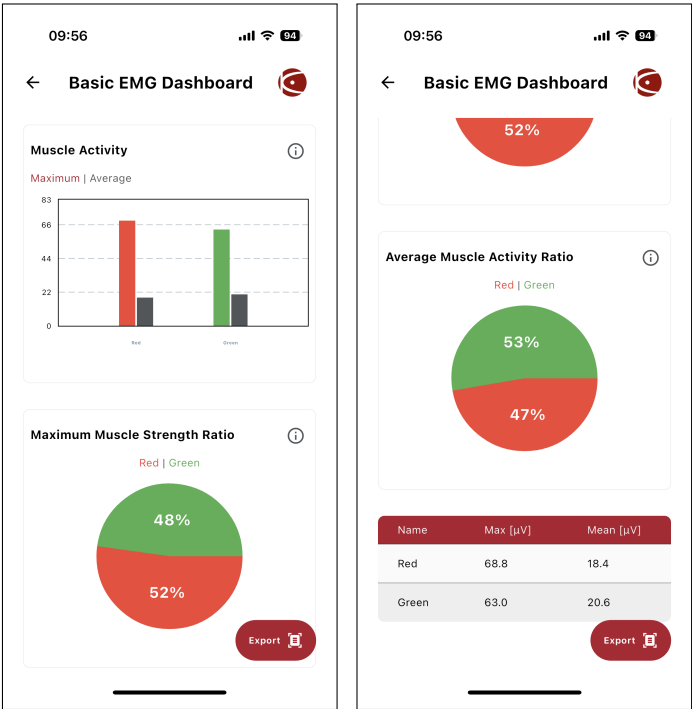


Figure 32: Basic EMG Dashboard

The basic EMG Dashboard includes graphs to show the difference between the maximum and average muscle activity and the maximum and average muscle activity as a ratio. At the bottom the table with the maximum and mean muscle activity value can be seen.

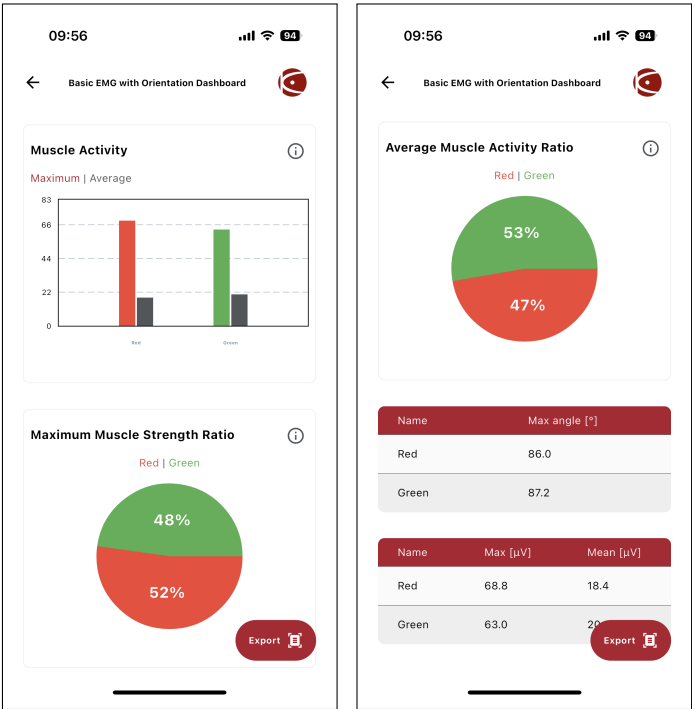


Figure 33: Basic EMG with Orientation Dashboard

When there is a calibrated orientation, the Basic EMG with Orientation Dashboard appears, it has the same graphs as in Basic EMG Dashboard, with the addition of a table with the maximum angle recorded for each sensor.

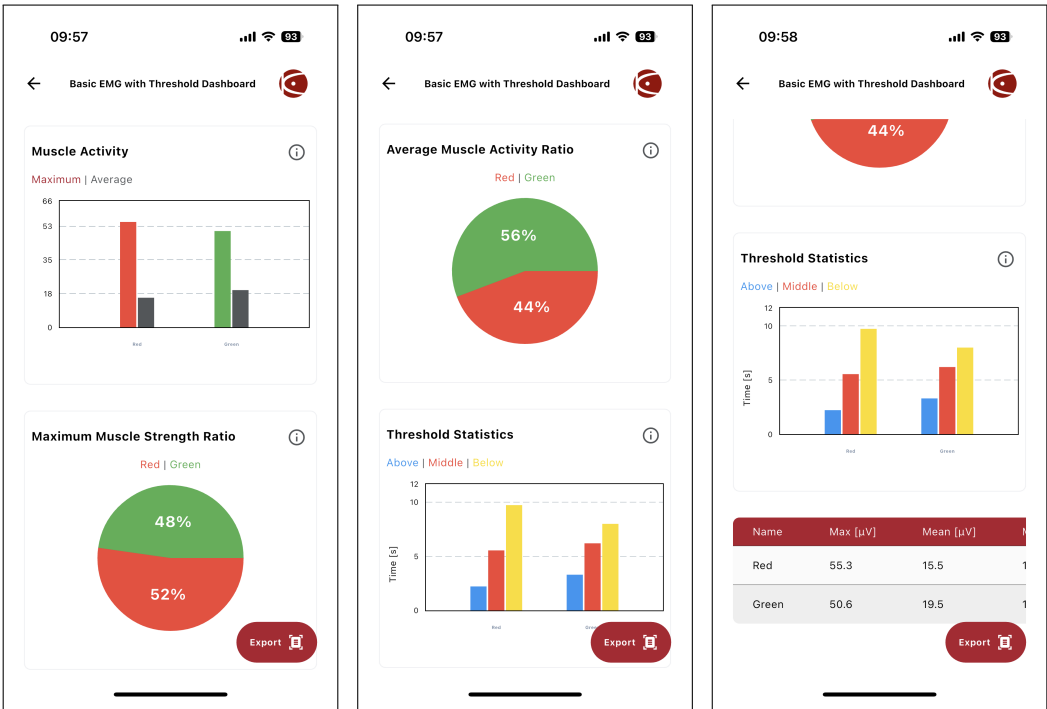


Figure 34: Basic EMG with Threshold Dashboard

When either the upper or lower limit or both are set on an EMG recording, the same graphs as in the Basic EMG Dashboard show up, with the addition of a graph that shows the seconds spent in each limit. If both upper and lower are added, then the time spent in the middle is shown, but if just either level is set, then there is just the time spent above and below that limit.

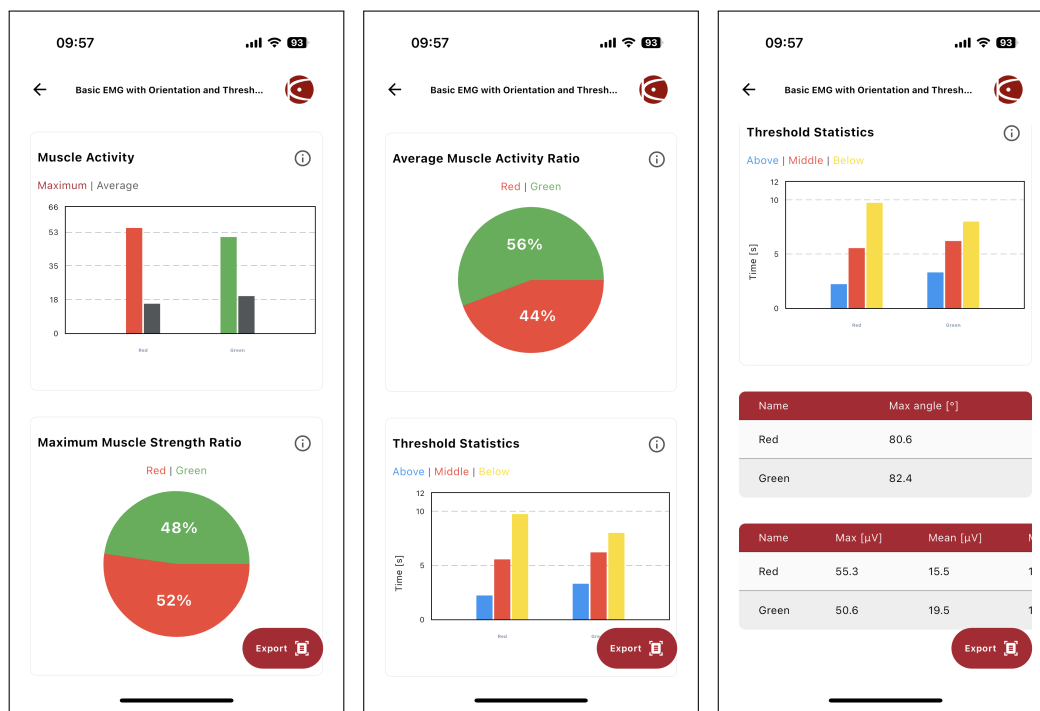


Figure 35: Basic EMG with Orientation and Threshold Dashboard

For the Basic EMG with Orientation and Threshold Dashboard, it has the same graphs as in the Basic EMG, with the table for the maximum angle in the recording and a graph that shows the seconds spent at each threshold.

All the dashboard for free measurement can also be made under Recordings for the client.

For any other cases in free measurement, for example, if the IMU is set as impact or the orientation is not calibrated, a Basic EMG Dashboard will show up. The data from the impact can be viewed in Raw Data.

4.2.5.2 Progress Dashboards

These can only be made under a training plan as they can be used to track the progress the client has had. The progress dashboards that are available are:

- ROM Progress Dashboard

- L/R Scaption Progress Dashboard
- Scaption Progress Dashboard

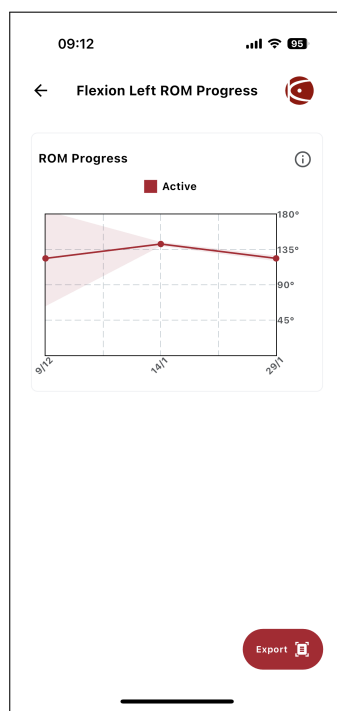


Figure 36: ROM Progress Dashboard

For ROM progress the average angle for each measurement included in the progress dashboard can be seen, and the variation of the movement, indicated in red color around the lines on the graph.

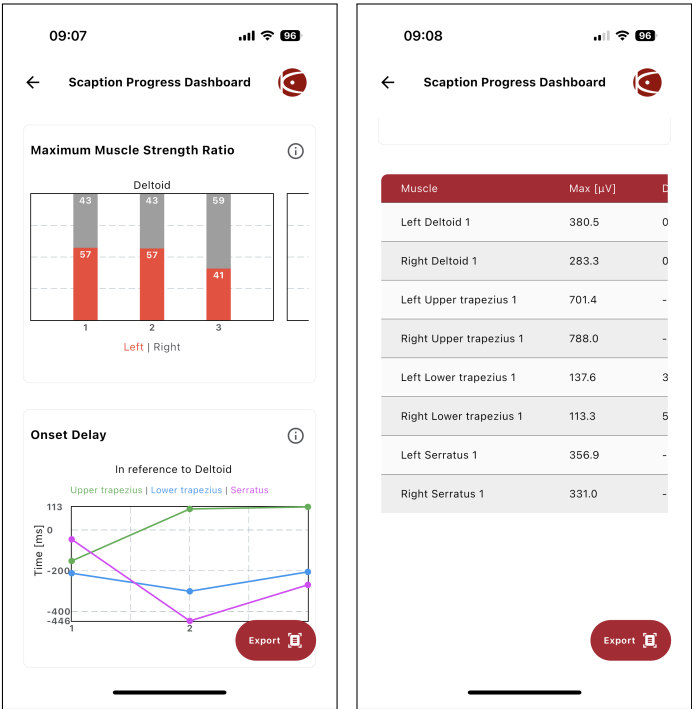


Figure 37: Left vs Right Scaption Progress Dashboard

For the L/R Scaption Progress Dashboard the progress of the maximum muscle strength ratio and the onset delay graphs can be seen. For the maximum muscle strength ratio each bar chart shows the ratio of maximum EMG values of a muscle on the left and right sides. Scroll the graph to the left to see the other muscles. For the Onset delay, each point is the difference between the two sides in delay between the onset of the muscle and the onset of the reference muscle, Deltoid Anterior. At the bottom of the dashboard maximum value and delay can be seen for each muscle in each measurement part of the progress dashboard. Scroll to the left to see other measurements.

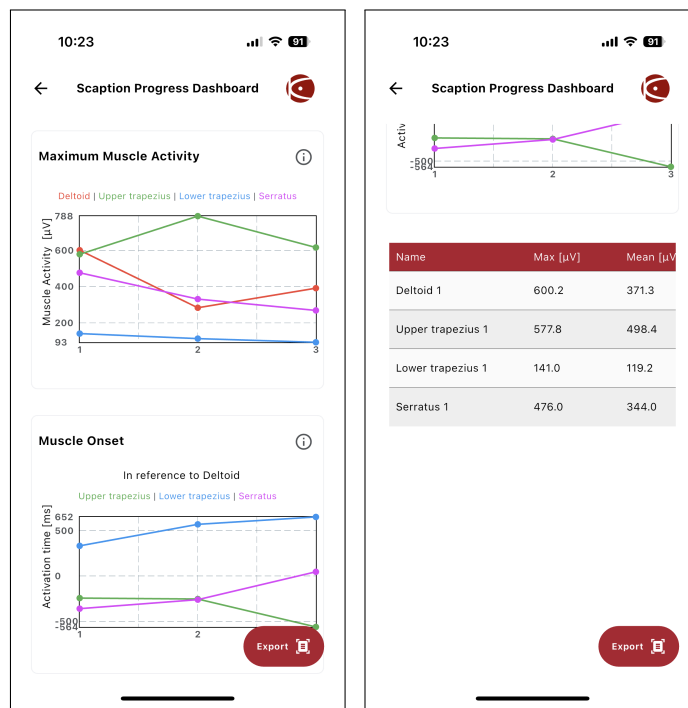


Figure 38: Scaption Progress Dashboard

For the Scaption Progress Dashboard, the maximum muscle activity for each muscle can be seen, where each dot on the graph represents the maximum EMG value of each measurement. In the muscle onset graph each point shows the average delay between the muscle activation and the reference muscle activating.

4.2.5.3 Left vs Right Dashboards

These can be made under a Session that is either part of a training plan or not. These are the same as appear automatically after a protocol after either Left vs Right Scaption or Left vs Right Scaption with IMU.

4.2.6 Profile Page

The profile page is for managing user preferences regarding the functionality of the software as well as personal information.

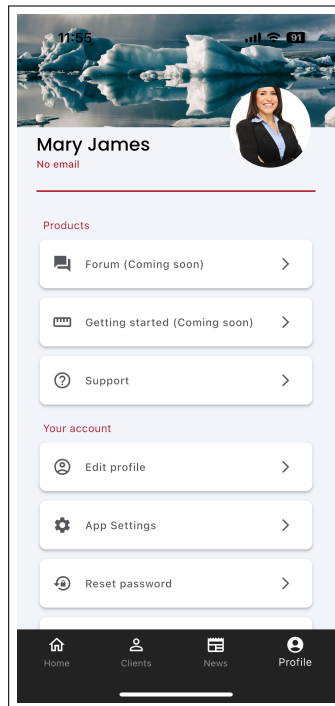


Figure 39: Profile Page

Here, it is possible to:

- Go to the Support Page
- Edit your own user profile
- Change app settings
- Reset password
- Change the associated email address
- Read Kiso's privacy policy
- Log out of the application.

In Edit Profile, it is possible to enter user information, like date of birth, workplace name, line of work, and bio.

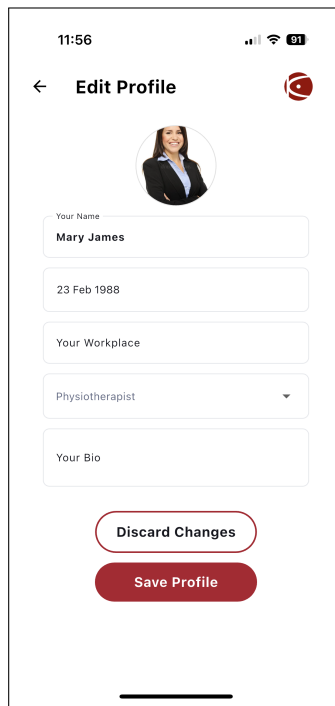


Figure 40: Edit profile

In the app settings, it is possible to:

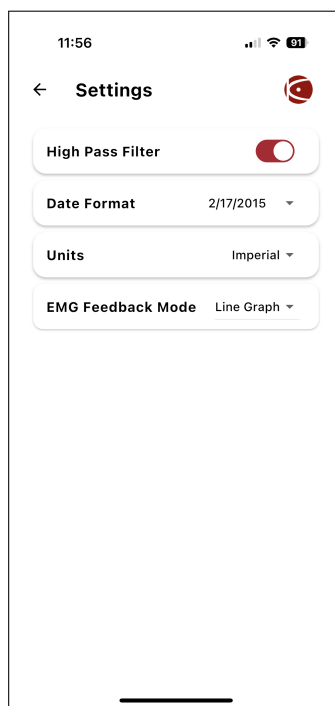


Figure 41: App Settings

- **High-Pass Filter:** Enable or disable the high-pass filter as needed. With the high-pass filter on it helps to reduce motion artifacts and heartbeats. This only works for EMG signals.

- Units of Measurement: Choose between the Metric and Imperial unit systems.
- Date Format: Select from three available date format options.
- EMG Feedback Mode: Choose how EMG feedback is displayed during Free Measurement. Options include a Line Graph or a Bar Graph. This setting can also be accessed directly within the Free Measurement screen.

4.2.7 Support

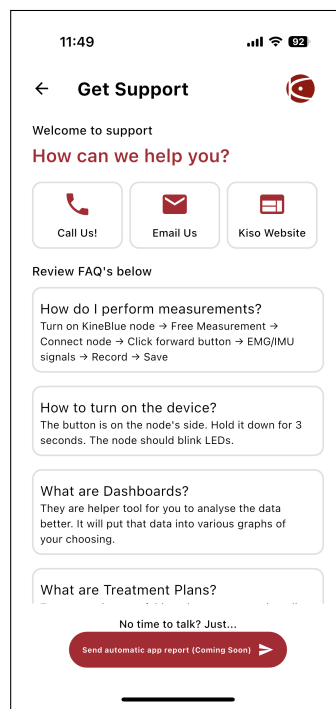


Figure 42: Support page

On the Support page, there is a shortcut to contact Kiso by phone, or email, or accessing Kiso's web page.

This page also contains answers to frequently asked questions (FAQ)

4.2.8 News

Here, news regarding the usage of the system are displayed.

4.3 Messages

All the error messages are listed in the table below and a possible solution to fix them. If the solutions do not work, go to the support page of the app or contact Kiso, see 1.6.

Table 3: Error messages inside the app

Message	Solution
Training plan, session and dashboards	
Failed to download Training plan.	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to update Training plan	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to delete Training plan	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed while creating Training plan	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to download session	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to update session	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to delete session	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to delete recording	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to save file.	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to upload file.	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to create and upload dashboard.	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.

Failed to create and upload dashboard	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to generate report	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Editing a client	
Failed to delete client.	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to pick image	Try again and then restart the app If that does not work. If not connected to the internet, connect to it.
Failed to update client	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Creating a client	
Failed to upload profile picture	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to create client	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
An error occurred while creating client	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to get recording information	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to delete dashboard	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to rename dashboard.	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Editing profile	
Failed to update profile information	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.

Failed to update profile	Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Log in and sign up screen	
Login failed, check internet connection	If not connected to the internet, connect to it.
Failed to send verification code	Make sure the email is correct. Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Failed to resend code	Make sure the email is correct. Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Sign up failed, check internet connection.	If not connected to the internet, connect to it.
Failed to send reset code. Please try again later.	Make sure the email is correct. Try again and then restart the app if that does not work. If not connected to the internet, connect to it.
Reset password failed, check internet connection.	If not connected to the internet, connect to it.

4.4 Shutting Down

Press the button on top to turn off the sensor until a yellow light stops blinking, which takes about 3 seconds.

5 Maintenance and Care

- The sensors can be easily cleaned with a damp cloth
- Handle the sensors with care; hard impacts, such as dropping the sensors on hard surfaces, may damage the sensors.
- Do not submerge the sensor in any liquid.
- KineMotion is meant to be used in an environment within a temperature interval from -5 degrees Celsius to +30 degrees Celsius.
- Store the sensors in a dry spot and in the temperature range mentioned above.
- Environmental factors that could disturb the function of KineMotion are:
 - a high number of Bluetooth connections in the area,
 - rapid temperature changes,
 - sweat or a lot of hair under the electrode,
 - humidity
 - Magnetic field
- Dispose of the KineMotion sensors in a responsible way and bear in mind that they contain Lithium-Ion batteries
- The electrodes are single-use and should be disposed of according to local regulations.

6 Appendix

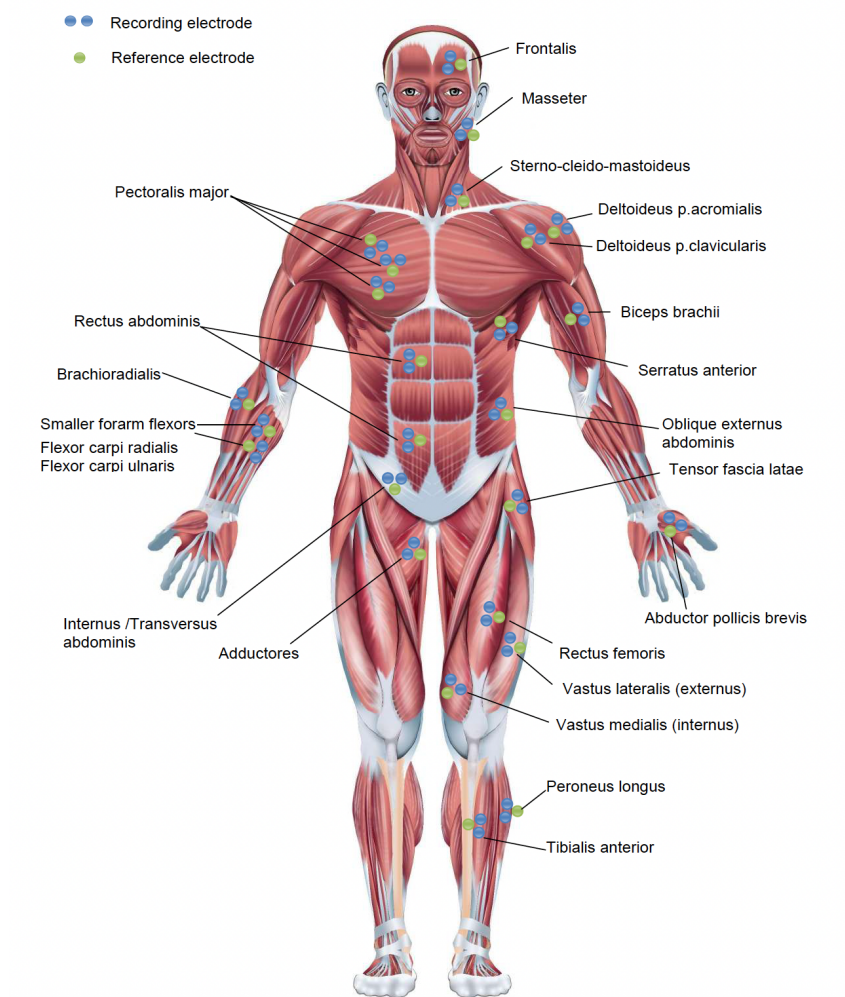


Figure 43: Anterior view of possible sensor placement

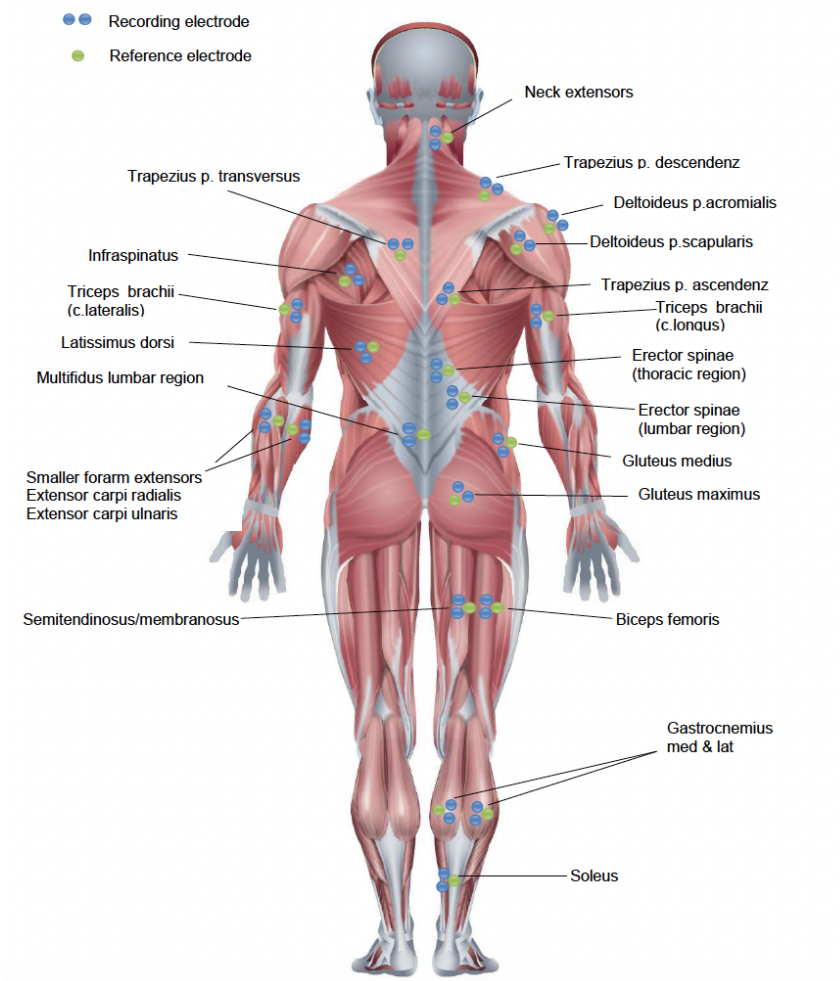


Figure 44: Posterior view of possible sensor placement