



4DMOTION

GOLF FOUNDATION
User Manual

Coach Version

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Software Manual

Adding Your License

1. Go to the **Settings screen** (⚙ icon).
2. Scroll down to **+ Add license**.
✓ **LICENSE CODE** window opens.
3. Type in license code. Press **Add**.
Capital letters are not necessary.
✓ The license appears under **ACTIVITIES/FEATURES**.

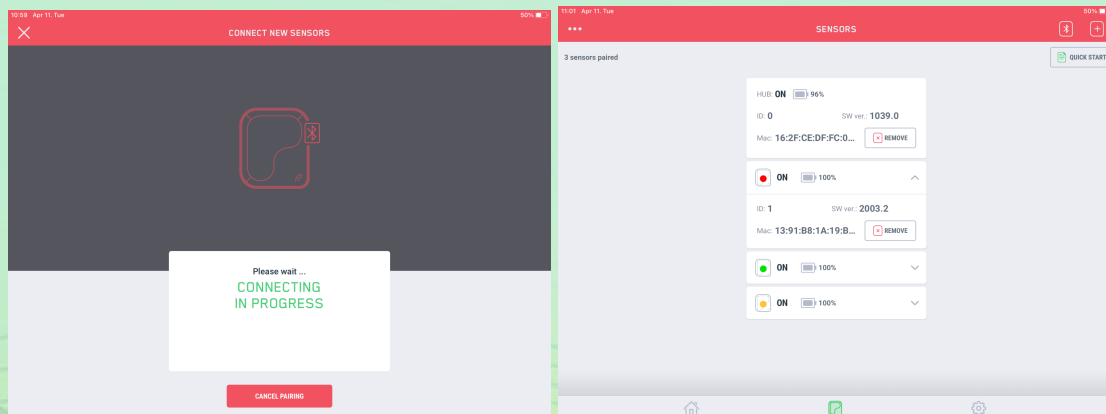
Select Your Activity

When you have multiple Activity Licenses, you'll need to select the desired Activity:

1. On the Settings Screen, under Activity, select Golf Foundation.

Pair Your Sensors

1. Switch the sensors and the hub on.
Put them in the foam and turn them upside down for 4 seconds, until they start blinking. Go to the **Sensors screen** (Sensor icon).
2. On the “4DMotion” would like to find and connect to devices on your local network” window, tap **Allow**.
3. On the “4D Motion” Wants to Join Wi-Fi Network “Nucleus ...” window, tap on **Join**.
4. Tap the **+** icon.
5. Tap the **START CONNECTING** button.
Tap **CANCEL PAIRING** to stop the process.



6. On the **Sensors Paired screen**, tap **CONFIRM**.
✓ On the **Sensors** screen, the hub and all sensors are listed.
✓ When you tap on the arrow next to each sensor, the window expands.

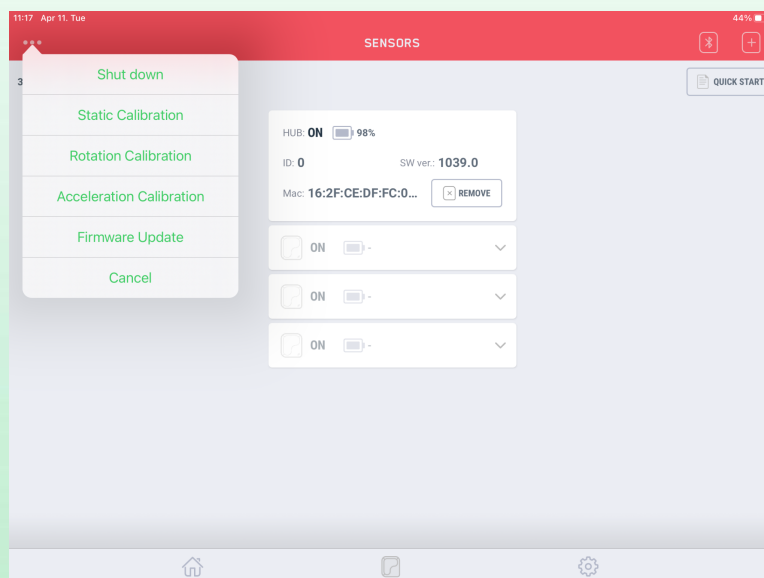
Connect to the Sensors

Once you've paired the sensors, you can connect to them on the Sensor list screen:

1. Make sure your sensors and the hub are blinking.
2. Tap the Bluetooth Icon.
3. Join the Nucleus network.
 - ✓ The Sensor list screen shows the list of sensors. The windows are expandable.
 - ✓ The ... Menu items become available.

Tip: You can start the Analysis or Training flows without connected and calibrated sensors. The app will guide you through connecting to the hub's network and calibrating the sensors (if necessary).

Firmware update



We'll notify you when a firmware update is necessary. The app version you download contains the firmware, which means that 1) to run a firmware update, you need the newest app version. You can download it from the AppStore. 2) You don't need internet connection to run a firmware update.

1. Turn on the sensors and the hub.
2. On the "4D Motion" Wants to Join Wi-Fi Network "Nucleus ..." window, tap on **Join**.
 - ✓ On the **Sensors screen**, the Sensor list appears with 4 or 8 connected sensors.
3. On the **Sensors screen**, tap on the ... menu, and select **FIRMWARE UPDATE**.
4. On the **FIRMWARE UPDATE screen**, tap **START**.
5. On the **FIRMWARE UPDATE SUCCESSFUL screen**, tap **FINISH**.
6. Reset the hub after the firmware update: plug it into the charger, then unplug it.
7. Tap the Bluetooth icon on the Sensor Screen.
8. Tap the arrow next to each sensor to check the firmware version (SW verification code).

Sensor Calibration

The sensors need to be calibrated before use.

You can calibrate them before starting a capture flow. If you have not calibrated them for over 24 hours and start a capture flow, the app will force the calibration.

If you reset the sensors, the app will force the second calibration (Static).

Before calibrating, place the sensors in the foam, with the LED lights up and facing the same direction.

Tip: If you calibrate fewer than 8 sensors, you can leave gaps in the foam.

Go to the Sensor list screen to start the calibration.

1. Tap on the ... **menu**.
2. In the **menu list**, tap on Sensor calibration.

Sensor calibration consists of 2 parts. All instructions are displayed on-screen.

First Calibration

3. On the **ROTATION CALIBRATION** screen, tap on **FIND SENSORS**.
4. On the **FOUND 3 sensors** screen, tap **NEXT**.
 - ✓ When the countdown finishes, you are redirected to the calibration screen.
5. Rotate the foam 360° at the horizontal axis.
6. Turn the foam 90° clockwise. Pause for a second.
7. Rotate the foam slowly 360° at the horizontal axis.
8. On the **SUCCESSFULLY CALIBRATED** screen, tap **DONE**.

Tips:

- Each 360° rotation should last 2-3 seconds.
- If you can't complete calibration after a few rotations, move to an area away from any metal or machines and restart from the Sensors screen.

Second Calibration

1. On the **STATIC CALIBRATION** screen, tap **FIND SENSORS**.
2. On the **FOUND sensors screen**, tap on the **NEXT** button.
 - a. Tap **STOP** to terminate calibration.
3. On the **SUCCESSFULLY CALIBRATED** screen, tap the **DONE** button.


Tips and Recommendations for Calibrating your Sensors

First calibration	Make sure that the sensors are at least 4 feet away from (e.g. steel chairs, tables, other furniture) or magnetic (e.g. speakers) objects.
Charging	If the sensors are charged between measurements, the second calibration should be redone after unplugging them from the charger.
Restarting sensors	The calibration values are saved on the sensors, restarting them does not necessitate recalibration.

Acceleration Calibration

Repeat this calibration in the following cases:

- The avatar's movement is incorrect even after sensor calibration.
- You can't complete sensor calibration.

	If the sensors are used to measure high impact movement, e.g. hitting or pitching, run an Acceleration Calibration at the start of each day.
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Prepare the Sensors

1. Put the sensors in the foam with LED sides up, and facing the same direction.
2. The sensors should be sticking out of the foam evenly.
3. Start with sensors in the foam on a flat, steady surface.

Run the Acceleration Calibration

1. On the **Sensors screen**, tap the **... menu**.
2. On the **ACCELEROMETER CALIBRATION screen**, tap **NEXT**.
3. On the **ACCELEROMETER CALIBRATION screen**, tap **FIND SENSORS**.
4. On the **FOUND 3 SENSORS screen**, tap **NEXT**.
5. On the **CALIBRATION screen**, follow the on-screen instructions, and tap **NEXT**.
6. Repeat 5 times.
7. On the **SUCCESSFULLY CALIBRATED screen**, tap **DONE**.

Tip: If you start a capture 24 hours after the last Static Calibration or right after sensor reset, the app will guide you through the calibration without having to stop the capture flow.

1. On the **Sensors screen**, tap on the **... menu**.
2. On the **menu list**, tap on **Static Calibration**.
3. On the **STATIC CALIBRATION screen**, tap **FIND SENSORS**.
4. On the **FOUND 8 sensors screen**, tap on the **NEXT** button.
 - a. Tap **STOP** to terminate calibration.
5. On the **SUCCESSFULLY CALIBRATED screen**, tap the **DONE** button.

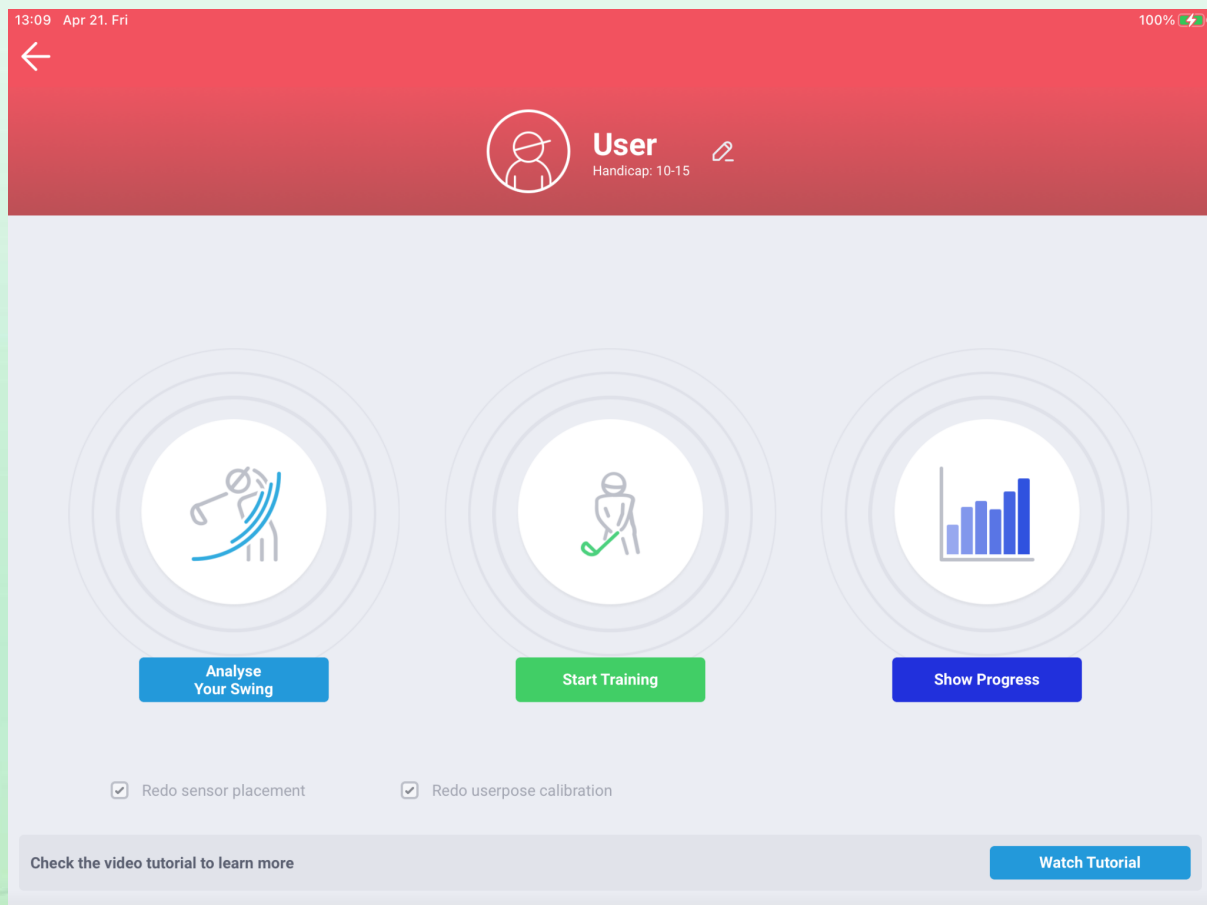
Tip: If you calibrate fewer than 8 sensors, you can leave gaps.

Tips and Recommendations for Calibrating your Sensors

First calibration	Make sure that the sensors are at least 4 feet away from (e.g. steel chairs, tables, other furniture) or magnetic (e.g. speakers) objects.
Charging	If the sensors are charged between measurements, the Static Calibration should be redone after unplugging them from the charger.
Restarting sensors	The calibration values are saved on the sensors, restarting them does not necessitate recalibration.

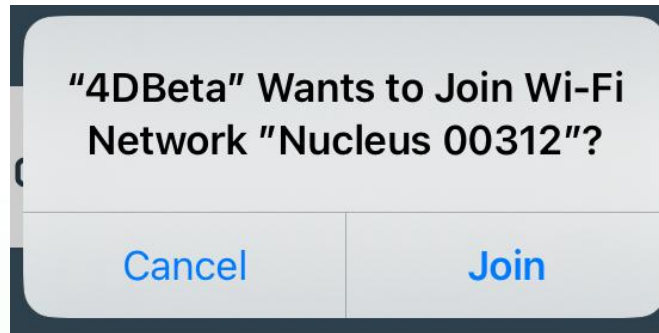
Analyse Your Swing

Start the Analysis Flow



1. On the **Home screen**, tap the **Analyse Your Swing** button.
2. Connect to the sensors and tap Next.
Tip: If you aren't connected to the hub's network, on the **"4DMotion" Wants to Join**

Wi-Fi Network "Nucleus ..." window, tap on **Join**.

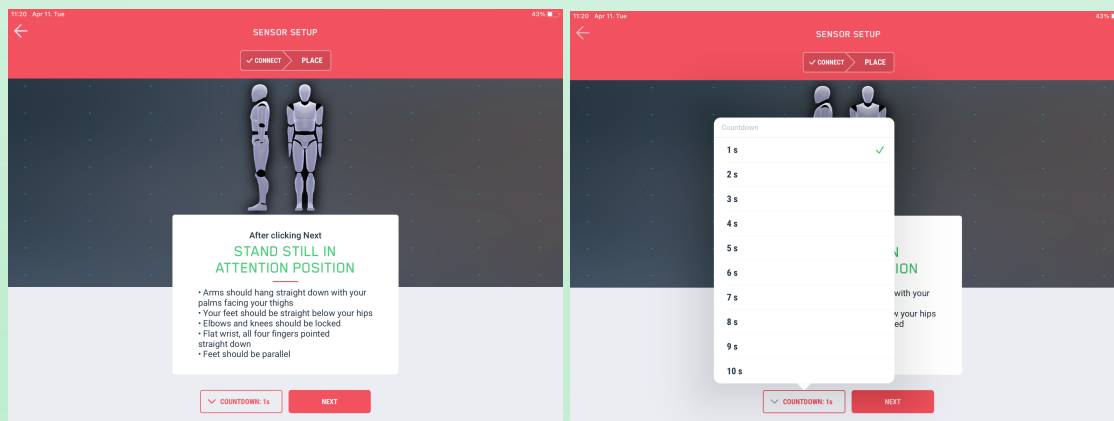


- Optional step: The app may guide you through Sensor calibration if you haven't performed them within 24 hours yet. Follow the on-screen instructions. For more information check [Sensor Calibration](#) above.

Place the Sensors on the Body

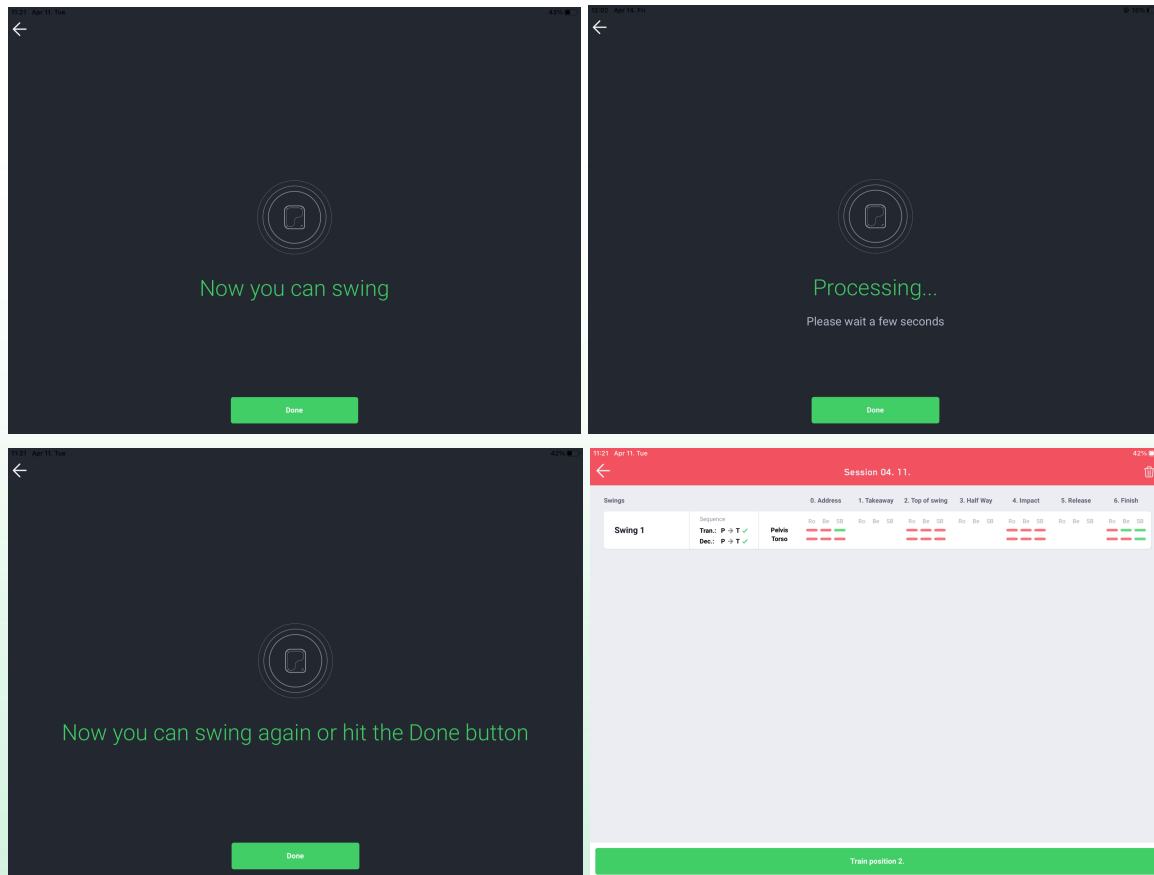
- Place the sensors on the hip, chest and left lower arm according to the instructions on-screen.
Tip: Make sure that there's no metal (e.g. belt buckle, watch) near the sensors, as these can interfere with the sensors.
- Place the hub on the left side of the body.
Tip: Tick the Do not show again box if you don't want to see this instruction next time.

Run the User Pose Calibration



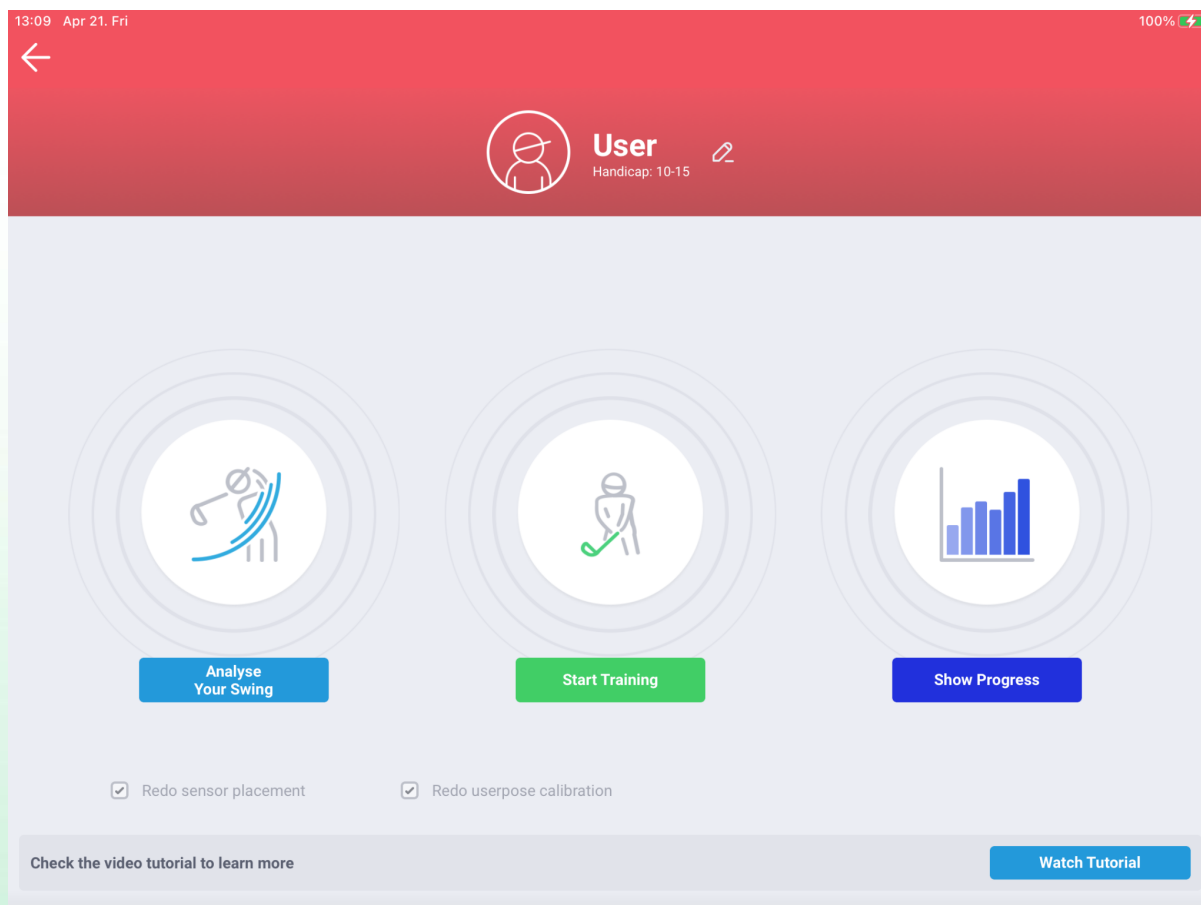
- On the **Stand Still in Attention Position**, read the instructions on the correct position.
- Select the length of the countdown, tap **Next**, and stand still in attention pose until the User Pose Calibration is finished.

Start Capturing and Review Results



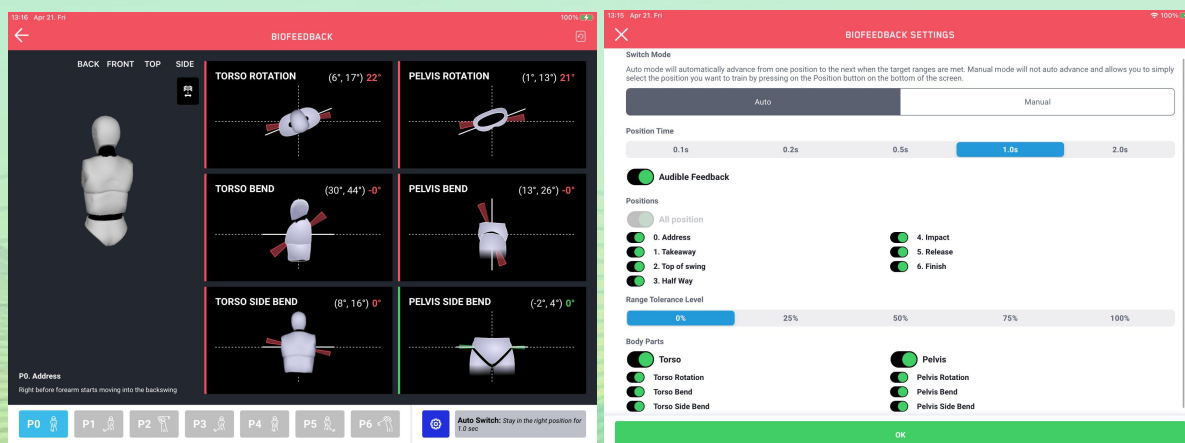
8. On the **Capture screen**, wait for the app to show the “**Now you can swing**” text to make your first swing.
9. Wait until the app processes and prompts you to make the next swing or finish the session by pressing the **Done button**.
10. Once the session is finished, you’ll see a review of all swings.
11. You can delete sessions by tapping the **Trash bin icon**.
12. You can move on to training the most problematic position by tapping the green **Train position** button.

Start the Training Flow



1. On the **Home screen**, tap **Start Training**.
2. Connect to the sensors, and tap the **Next button**.
Tip: If you aren't connected to the hub's network, on the **"4DMotion" Wants to Join Wi-Fi Network "Nucleus ..."** window, tap on **Join**.
3. The [Sensor Placement](#) and [User pose calibration](#) flows are the same as above.
Tip: If you have made a swing analysis or a training session, you don't have to go through the sensor placement and user pose calibration flows again for 1 hour.

Start Training and Edit Settings



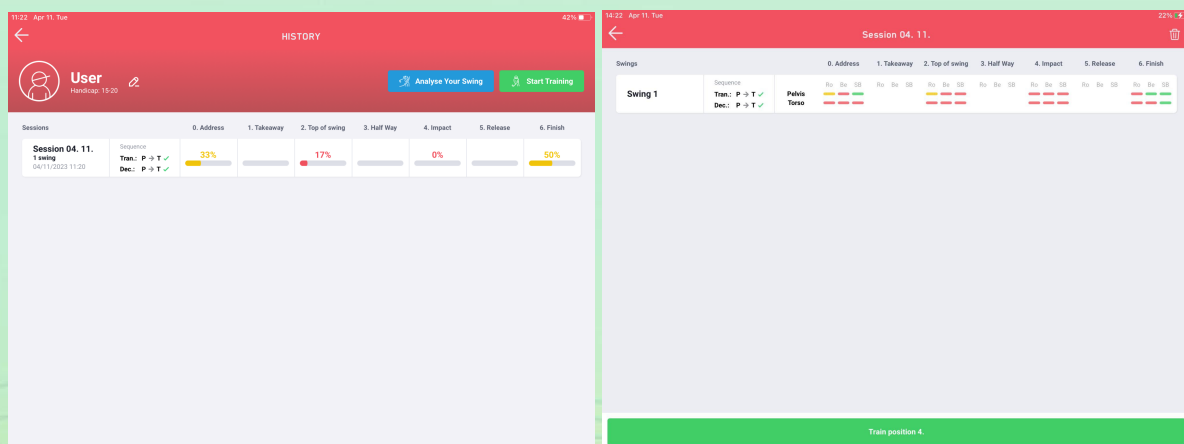
Make a swing in the proper form, and stay in each position for 1 second.

4. Tap the **Settings button** (⚙ icon) to change the settings.
 - a. **Auto vs Manual**: change between automatic movement detection to manual. On the Manual setting, you have to press the Next button to move on to the next position.
 - b. **Position time**: choose the length of time you need to hold the position for. Only relevant with Auto movement detection.
 - c. **Audible feedback**: select if you'd like to hear audible feedback.
 - d. **Positions**: select which positions should be captured.
 - e. **Range tolerance level**: select the range tolerance.
 - f. **Body parts**: select which body parts should be captured.
5. Tap the **Back button** to finish Training.

Key Points 0-6

- P0: Address (right before the forearm starts moving into the backswing).
- P1: Mid backswing (forearm is below horizontal, at 45° to the ground from frontal point of view).
- P2: Top of swing (forearm transition).
- P3: Mid downswing (forearm is below horizontal, at 45° to the ground from frontal point of view).
- P4: Impact (forearm is vertical, pointing to the ground).
- P5: Follow through (forearm is below horizontal, at -45° to the ground from frontal point of view).
- P6: Finish (chest direction change).

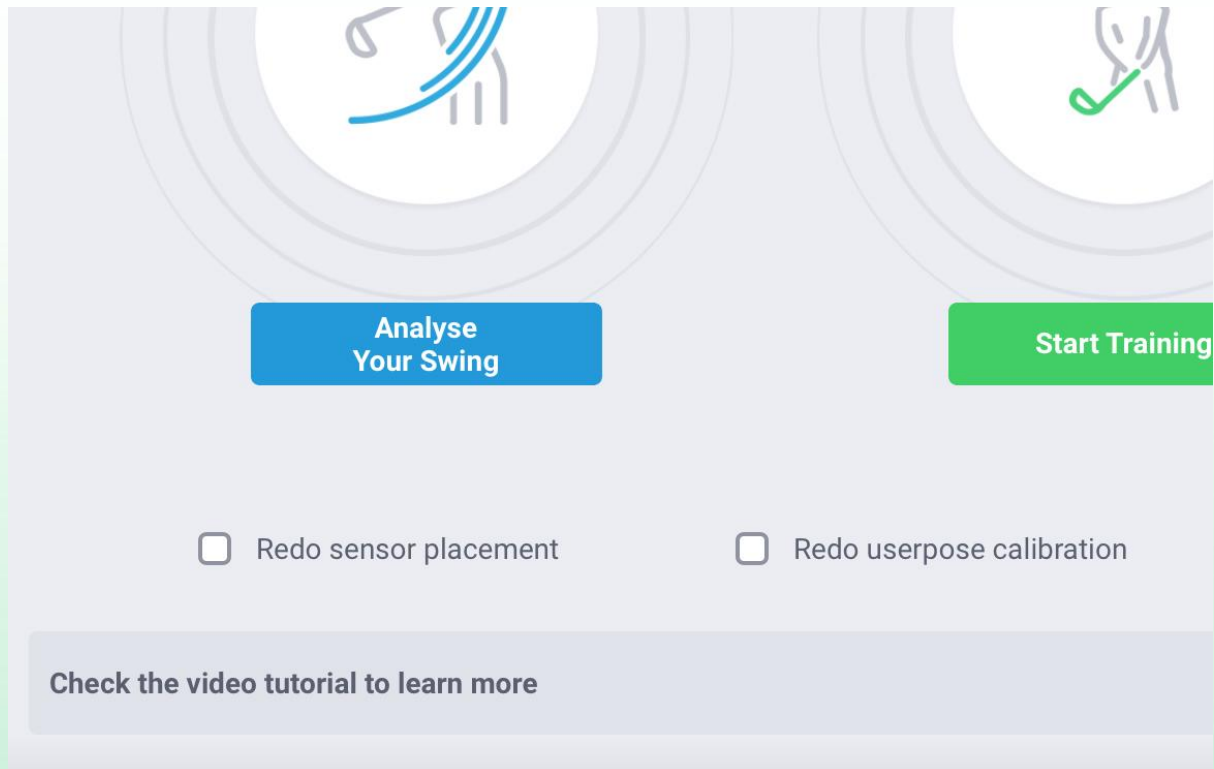
Show Progress Screen



1. On the **Home Screen**, tap **Show Progress**.
2. On the **History screen**, you'll find a list of previous sessions and results.
3. Select a session by tapping and see the results of each individual swing.
4. Train the most problematic position by tapping on the green **Train Position** at the bottom of the screen.

5. Delete sessions by tapping the **Trash bin icon**.
6. Jump on the Analysis flow by tapping on the blue **Analyse your Swing button**.
7. Jump on the Training flow by tapping on the green **Start Training button**.

Repeat User Pose



If your sensors have shifted in the straps, you should repeat the user pose calibration to ensure accurate captures.

To repeat the User Pose calibration (Attention Pose calibration) on the **Home screen**

1. Tick in the **Redo userpose calibration** checkbox.
2. Select **Analysis** or **Training**.
3. Complete the **User Pose calibration**.

To repeat the user pose calibration during **Training**:

1. Tap the **Sensor icon** at the top right corner of the **Training screen**.
2. Stand in the attention pose during the 3 sec countdown.
✓The user pose has been reset.

Repeat Sensor Placement

Once you put on the sensors and run a User Pose calibration, you don't have to repeat the process again within the same session, even if moving from analysis to training, or vice versa.

If you want to repeat sensor placement, go to the **Home screen**.

1. Tick in the **Redo sensor placement** checkbox.
2. Select **Analysis** or **Training**.
3. Go through the sensor placement flow and the **User pose calibration**.

Edit Profile

The screenshot shows the 'Edit Profile' screen. At the top, there is a red header bar with a close icon on the left, the word 'PROFILE' in the center, and a 'Save' button on the right. Below the header is a profile icon with a pencil icon next to it. The main content area is white and contains several form elements: 'Year of birth' with a dropdown menu showing '1985', 'Gender' with a dropdown menu showing 'Male', and 'Handicap' with a dropdown menu showing '15-20'. Below these are three sections: 'Dexterity' with two radio buttons, 'Right handed' (selected) and 'Left handed'; 'Unit' with two radio buttons, 'Imperial' and 'Metric' (selected); and 'Range Tolerance Level' with five radio buttons, 'Default', '25%', '50%' (selected), '75%', and '100%'. At the bottom of the screen, there is a red link that says 'Delete account'.

1. Go to the **Home screen**.
2. Tap on the **Pencil icon** next to your name.
3. Edit the profile data and tap **Save**.

Delete Profile

You can delete your account at any time. Account deletion removes your Personal Information from the app and our server permanently. You won't be able to log in to your account and access the activities and features of the app, as well as your past motion capture data.

To delete your account, follow these steps:

1. Go to the **Home screen**, and select your account.
2. On the **My Profile screen**, tap the **Pencil icon** next to your name.
3. On the **Profile screen**, tap **Delete account** at the bottom of the screen.

Note: You cannot delete Student profiles. Students can delete their own profiles by completing the steps above.

Hardware Manual

Charge the system

1. Plug the mini USB charger into the sensors and the hub.
2. Use a wall adapter with min. 1.5A output.
3. Estimated charging time for sensors: 1h.
4. Estimated charging time for hub: 2.5h.

Tip: If your charger produces less than 1.5A, the sensors/hub may not charge correctly.

Turn On the Sensors and the Hub

Option 1

Sensors

1. Put the sensors in the foam.
Note: The LED lights should be up, facing the same direction.
2. Turn the foam upside down for 4 seconds.
3. Turn them right side up.
✓ The sensors are blinking yellow.

Hub

1. Turn the hub upside down for 4 seconds.
2. Turn it right side up.
✓ The hub is blinking yellow.

Option 2

1. Put the sensors and the hub on the charger for 2 seconds.
✓ The sensors and the hub are blinking yellow.

Turn Off the Sensors and the Hub

When not in use, it is best to either shut off the sensors or plug them into the charger. The system switches off after 15 minutes of inactivity.


1. On the **Sensors screen**, tap the **... menu**.
2. Select **Shut down** from the list.

The Hub

The hub has its own WiFi network called “Nucleus XXXX”. Find the exact name of the network on the bottom of the hub.

Connect to the Hub’s WiFi Network

1. On the Sensors screen, tap the Bluetooth icon.
2. On the “4DMotion” Wants to Join Wi-Fi Network “Nucleus ...” window, tap on **Join**.
 - ✓ On the **Sensors screen**, the Sensor list appears with the connected sensors.

	<p>When you’re connected to the hub’s network, you aren’t connected to the internet. Switch to your Wi-Fi before you perform the following actions:</p> <ul style="list-style-type: none">● Add Licenses.● Add new students.● Watch the video tutorial. If you tap on the Watch Tutorial button, your device will automatically switch back to your WiFi network.● Log out.● Sync your captures to our server.● Send diagnostic information.
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Tips and Recommendations

Sensor Visibility	All sensors should be in the line of sight of the hub. The hub should be placed on the side of the player to ensure sensor visibility. Use the clip-on mount to attach the hub to the player’s belt or trouser.
Reset Hub	Plug in and unplug the hub in the following cases: <ul style="list-style-type: none">● The hub’s LED starts blinking red-blue-green quickly.● The hub doesn’t connect to your device. Note: Wait a few seconds before connecting to the hub’s network again.
Keep Hub in Wi-Fi range	Keep the hub in the Wi-Fi range of your device. This is typically within 30 feet, depending on the environment.

LED Coloring on the Sensors

Each sensor has an LED light at the bottom right corner. The color of this LED indicates the status of the sensor:

- Red blinking: low battery < 10%
- Pulsing green light: charging
- Green blinking: fully charged

- Yellow blinking: active sensor


Identify the Sensors

On the **Sensors screen**, tap the **Bluetooth icon** to identify the sensors.

✓ The sensors light up with identifying colors/patterns:

- 3 solid colors: red, yellow, green
- 3 blinking colors: red, yellow, green
- 2 changing colors: red-green, red-yellow

Tips and Recommendations for successful captures

	<ul style="list-style-type: none"> • Make sure that there aren't any metal objects in close vicinity to the sensors (e.g. watches, belt buckles, chairs, electronic devices). • After Static Calibration, handle the sensors with care. Don't shake or drop them. If you do, please recalibrate! • Try to minimize the time between Static Calibration and user pose calibration. • Do not put sensors in the strap and then put them down on the table. • Avoid any excessive movement before the first user pose calibration. • Avoid standing in direct air condition breeze or cross-draft. Temperature changes impact the system in a negative way (the higher the change the bigger the impact). • Run the user pose calibration in the same place where you will be taking captures!
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Troubleshooting

Error	Solutions
Sensor error during firmware update	<ul style="list-style-type: none"> • Please press "Restart" and try again. • After several failed attempts, remove and re-pair the sensors: <ol style="list-style-type: none"> a. On the Sensors screen, tap on each sensor and tap REMOVE. b. Tap on the hub and tap REMOVE. c. Tap the + icon. d. Tap the START CONNECTING button. e. On the Sensors Paired screen, tap CONFIRM. f. On the ... menu, select Firmware Update and start over.

<p>First calibration fails</p>	<ul style="list-style-type: none"> • Don't rotate too fast. Each rotation should take approx. 3 seconds. • Move away from your current location (eg. a meter), as there could be too much magnetic disturbance where you are standing right now. The software has certain thresholds within which it tolerates disturbances. • If this calibration keeps failing even after several attempts in several locations, please run an accelerometer calibration, and try again.
<p>Hub timeout or other hub connection error</p>	<ul style="list-style-type: none"> • Reset the hub by plugging it into the charger and unplugging it. • Close and restart the 4D Motion app. • Reconnect to the hub's network, Nucleus XXXX. • Press the Bluetooth icon. Make sure that the sensors show up on the page and each one is marked with a color.
<p>Bluetooth does not connect to all paired sensors</p>	<ul style="list-style-type: none"> • Make sure you are connected to the hub's network (Nucleus XXXX), and that the sensors are awake (blinking yellow). If not, turn the sensors upside down for 4 seconds to turn them on. • Reset the hub by plugging it into the charger for a few seconds, then unplug it. • Restart the application, go to the sensors page, connect to Nucleus XXXX, and tap the Bluetooth button again.
<p>'Hub response timeout'</p>	<ul style="list-style-type: none"> • During sensor calibration: check if your device is connected to the hub's network (in iOS Settings). If the hub isn't available on the WiFi list, charge it for a minimum of 15 seconds and refresh the network list. It may take a few seconds for the hub's network to show up on the list. Go back to the app, and connect to Nucleus XXXX. • During static calibration: check if your device is connected to the hub's network (in iOS settings). If the hub isn't available on the list, charge it for a minimum of 15 seconds and refresh the network list. It may take a few seconds for the hub's network to show up on the list. Go back to the app, and connect to Nucleus XXXX. • When connecting to sensors: First start the flow again using the 'Connect' button. If it doesn't help, check in the iOS Settings menu if the device is connected to the hub's network. If the hub isn't available on the list, charge the hub for a minimum of 15 seconds, unplug it, and refresh the network list. It may take a few seconds for the hub's network to show up on the list. Go back to the app, and connect to Nucleus XXXX. • During sensor placement: Start the flow again using the Next button. If this doesn't help, please reset the hub: charge it for 5 seconds, then try again.
<p>User Pose Calibration errors</p>	<ul style="list-style-type: none"> • The hub is too far away from the user or your device. 'Cannot connect to some sensors. Please make sure that your mobile device has direct or at least partial line of sight with each sensor...' When performing a capture, the hub should be on the

	<p>student's body using the belt clip, or within a few feet if not worn using the belt clip. First try to start the flow again using the Next button. If it doesn't help, change your position so that the sensors and the hub are in the line of sight of your device.</p> <ul style="list-style-type: none"> ● Hub response timeout: Start the flow again using the Next button. If this doesn't help, please reset the hub: charge it for 5 seconds, then try again. ● Sensor error: First try to start the flow again using the Next button. If it doesn't help, change your position in front of your device so that the sensors are in the line of sight of your device.
Sensors aren't blinking	If sensors are active but not connected to the hub for more than 15 minutes, they turn off. Turn the sensor upside down to activate them again. If they don't start blinking, put them on the charger for at least 10 minutes.
Sensor's LED is stuck in a solid color (e.g. red), or sensor doesn't light up after pressing the Bluetooth icon	Reset the sensor by charging it for 5 seconds. Unplug it and press the Bluetooth icon.
Hub isn't blinking	<p>The hub is switched off (automatically or due to low battery). Your device may not be connected to the hub's network.</p> <ul style="list-style-type: none"> ● Turn the hub upside down for 4 seconds to wake it up. If that doesn't help, charge it for a few minutes. ● Connect to the Nucleus XXXXX network. ● Press the Bluetooth icon on the Sensor list screen to check if the hub can connect to your device, and to see its battery level.
'Error - No sensors found. Turn on an unpaired sensor and retry.'	<p>The message means there aren't any available, unpaired sensors nearby. This can happen if A) all of the available sensors have already been paired, or B) the unpaired sensors aren't available for the hub and the device.</p> <p>If the sensor doesn't light up, turn it upside down to activate it. If it doesn't help, put the sensor on the charger for at least 10 minutes, unplug it and try again.</p>
'Not all of your sensors are calibrated. Please calibrate before you move on to the next screen.'	<ul style="list-style-type: none"> ● Turn the sensors upside down to wake them up. ● If that doesn't help, plug in and unplug all of the sensors and the hub. ● Make sure your device is connected to the hub's network. ● Start the capture again.
The visualization is incorrect. E.g. body parts are moving in the wrong direction, or the orientation of the avatar is not right.	<ul style="list-style-type: none"> ● If the capture avatar is not moving correctly, make sure the sensors are on the right body part. If you're unsure about this, you can press "Reconnect sensors" on the Start Capture screen. This starts the sensor placement flow. ● You can adjust the sensors if needed, and run a User Pose Calibration. If you need to adjust them because the straps shifted, run a User Pose Calibration again.

	<ul style="list-style-type: none"> • If these don't resolve the issue, you may be in a magnetic environment that confuses the magnetometer in the sensors. Strong magnetic interference can cause the sensors to 'drift.' This can result in incorrect visualization, e.g. the body parts are not aligned correctly. You can perform Static Calibration to stop the drift. If you are in an environment with high magnetic interference, you may have to repeat Static Calibrations as time goes by and the sensors drift. • If you're having visualization errors even after several calibrations, please run an Accelerometer calibration.
Reporting errors and bugs	<p>In the app: go to Settings '⚙️', and tap 'send diagnostic info'. This works only when you're connected to the Internet.</p> <p>Via email: support@4dmotionsports.com. When reporting errors via email, please always write down what you did step by step, and attach a screenshot or screen recording of the error.</p>

?	<p>Do you have any questions or feedback for our team? Please visit https://shop.4dmotionsports.com/contact-us to contact us!</p>
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