



Guidebook

AioCare – mobile spirometry



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AioCare (aiocare.com)



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Release date: 11.01.2019
Version: 1.0.0

Requirements

iPhone 5s or newer, the system
iOS (9.0 or newer), system
Android (5.0 or newer).



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Start panel

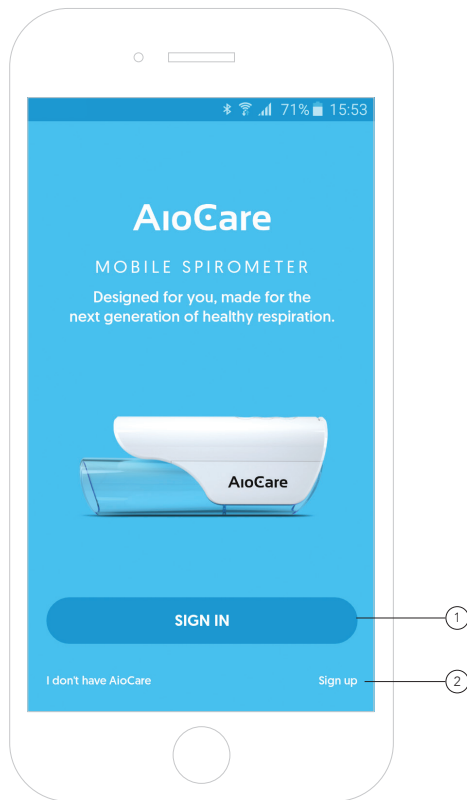


AioCare - Designed for you,
Made for the next generation
of healthy respiration.

Start panel

To create a new patient account, click the „**Sign in**“ button. ①

If you already have an account, just click the “**Sign up**” text and log in with your email and password. ②



< JOIN AioCare

Your email

Password

Repeat password

By clicking Sign up you agree with the [terms of use](#) and AioCare's [privacy policy](#)

SIGN UP

Registration

- New patient account

To register a new account, please enter your email address. ①

Note:

- An automatic email will be sent to this address for verification and confirmation of the willingness to create a new account.
- The provided email address will also be used to possibly contact the patient regarding usage of and technical problems with the AioCare app and device.

The password should contain a minimum of 8 characters, including at least: ②

- One uppercase and lowercase letter
- One special character and
- One number.

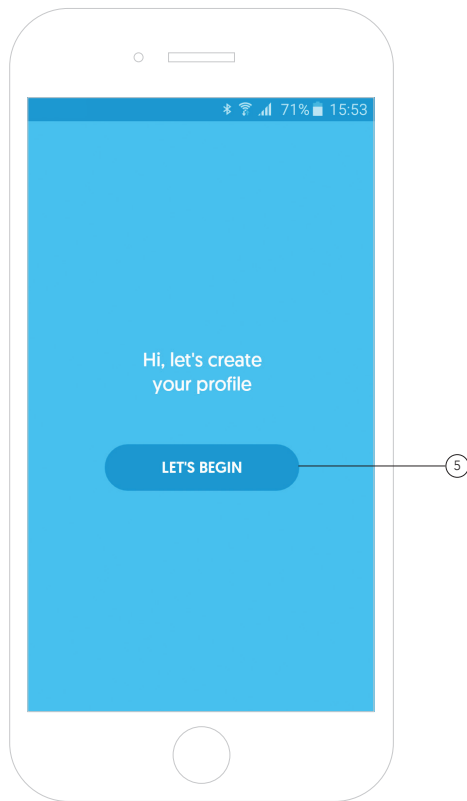
By clicking "**AioCare's terms of use**" or "**Privacy policy**" you can familiarize yourself with these documents in detail. ③

To complete the registration, click „**Sign up**“. ④

Registration

- New patient account

After clicking „**Let's begin**“, the app will take the user to the wizard that should be completed step by step. ⑤



Registration

- New patient account

In the next step, the app will ask you for your first and last name. ^⑥

In order to enter your first and last name, click on the appropriate inscription.

After filling in the data, click „**Next**“. ^⑦

Alright, tell us more about you.
What is your full name?

First name

Last name

NEXT

Registration

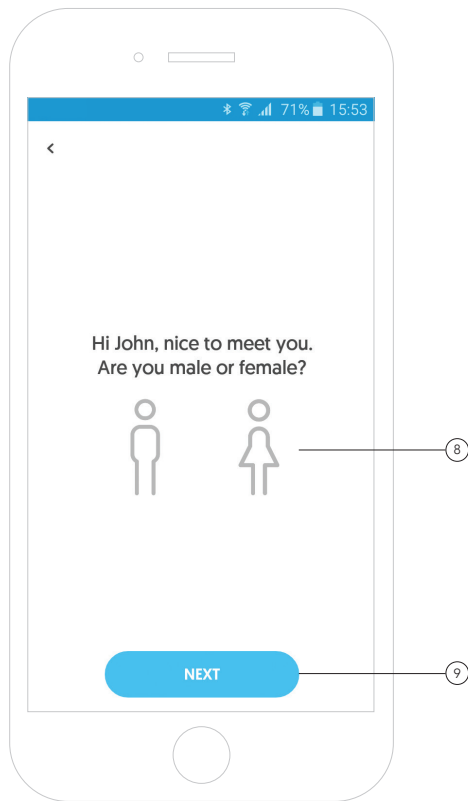
- New patient account

Then the application will ask you to state your sex. ⑧

The data is used for calculating spirometric parameters and for internal statistics.

In order to choose a gender, click on the icon of a woman or a man.

After filling in the data, click **"Next"**. ⑨



Registration

- New patient account

In the next step, the app will ask you for your date of birth. ⁽¹⁰⁾


In order to choose your date of birth, enter the day, month and year in the right place ⁽¹¹⁾

or use the calendar by clicking the calendar icon. ⁽¹²⁾

The data is used for calculating spirometric parameters and for internal statistics.

After filling in the data, click **"Next"**. ⁽¹³⁾

Okay, what is your date of birth? ⁽¹⁰⁾



⁽¹¹⁾ ⁽¹²⁾

NEXT ⁽¹³⁾

Registration

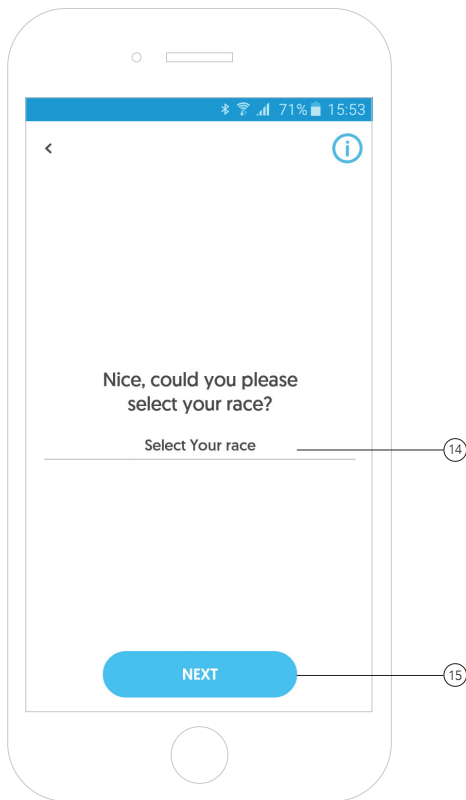
- New patient account

Next, the app will ask for your race.

In order to select a race, click
"Select Your race" inscription. ⁽¹⁴⁾

The data is used for calculating spirometric parameters and for internal statistics.

After filling in the data, click **"Next"**. ⁽¹⁵⁾



Registration

- New patient account

In the next step, the app will ask you to provide your height and weight.

In order to enter your height or weight, click on the appropriate inscription. ⁽¹⁶⁾

The data is used for calculating spirometric parameters and for internal statistics.

After filling in the data, click **"Next"**. ⁽¹⁷⁾

Great, we're almost done.
What is your height and weight?

Body height [cm]

Body weight [kg]

NEXT

Registration

- New patient account

In the penultimate step, the app will ask you for a telephone number.

This step is not mandatory. ⁽¹⁸⁾

The provided telephone number will be used for contacting you in case of technical problems with the app or the AioCare device.

After filling in the data, click **"Next"**. ⁽¹⁹⁾

Perfect.
Would you like to add your phone
number?
[Optional]

(+00) Phone number

NEXT

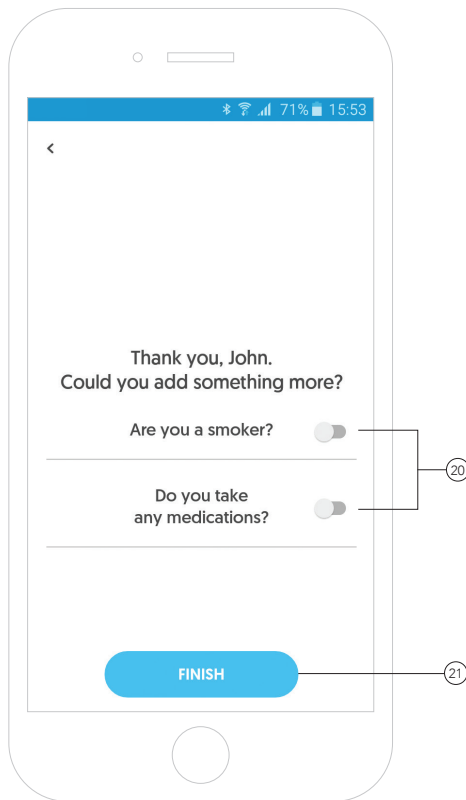
Registration

- New patient account

In the last step, the app will ask you for additional information regarding smoking and the medicine you take. ⁽²⁰⁾

The data is used for internal statistics.

After filling in the data, click „**Finish**“. ⁽²¹⁾



Registration

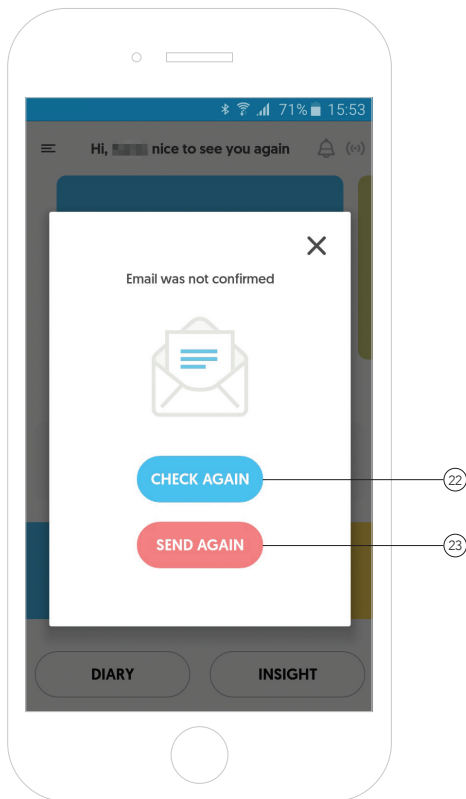
- New patient account

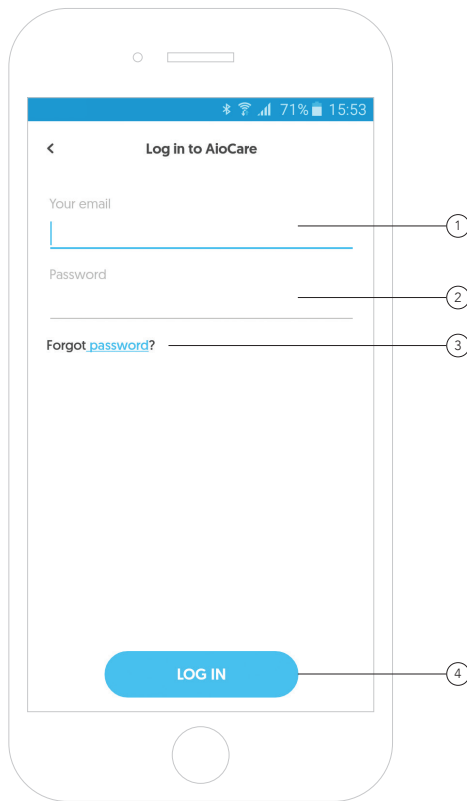
After registering a new account, an automatic message will be sent to the provided email address in order to verify and activate your New Account. (22)

Note!

The features related to conducting examinations will be inactive until the account is activated.

To generate a new email to activate your account, please click „**Send again**“. (23)





Logging in - Existing patient account

To log in to an existing account, use the email address that was used during registration. (1)

You must use the password that you entered when you registered your account. (2)

The password should contain a minimum of 8 characters, Including at least:

- One uppercase and lowercase letter
- One special character and
- One number.

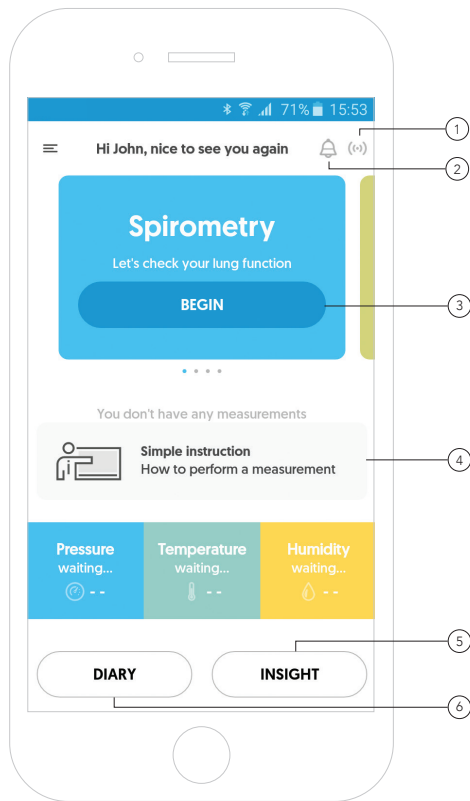
If you forget your password, the app will allow you to reset it and create a new one. To do this, click "**Forgot password?**". (3)

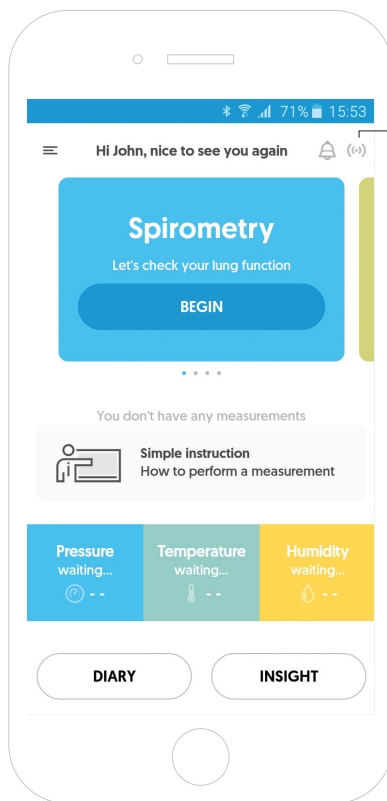
After entering the email address and password, click "**Log in**". (4)

AioCare's app main panel

The following sections can be found in the main panel of the application:

- Pair the device with a phone ①
- Notifications centre ②
- Examination selection ③
- Instructions for conducting examinations / latest results ④
- Examinations diary ⑤
- Insight ⑥



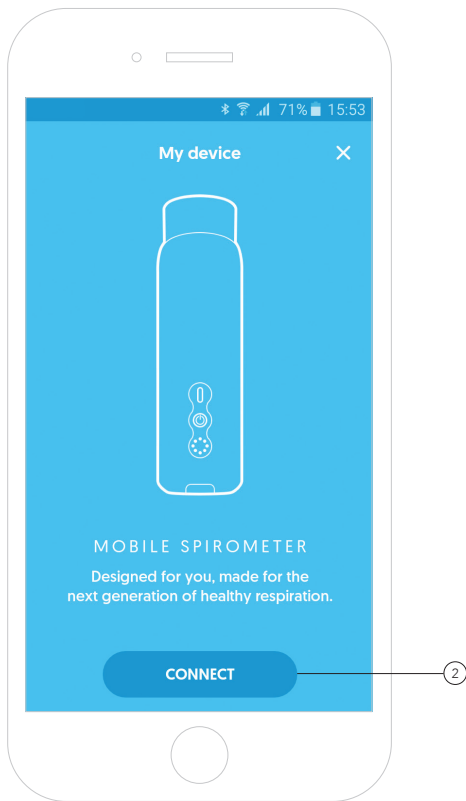


Pairing the phone with the AioCare device

To pair a phone with the device, press the pairing icon. ①

Pairing the phone with the AioCare device

To pair the phone with the AioCare device, click the **"Connect"** button. ②



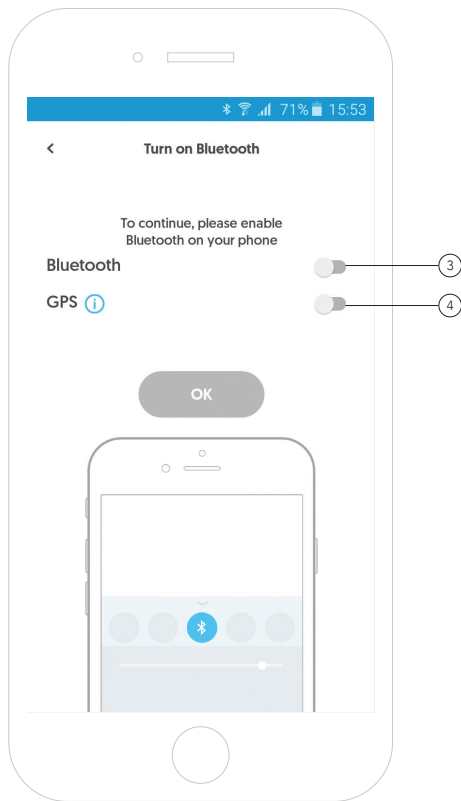
Pairing the phone with the AioCare device

To pair a phone with the device, the phone's Bluetooth module must be on.

If the Bluetooth module is turned off, turn it on by moving the slider in the app. The telephone's Bluetooth module will turn on automatically. (3)

We also recommend turning on the GPS module to increase the likelihood of correctly pairing the devices. (4)

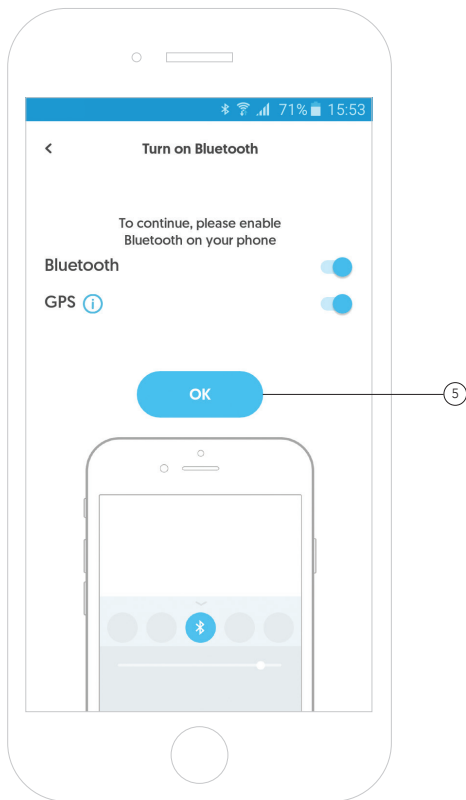
After moving the slider, the app will display a system window where you will be able to enable the GPS module. Once the module is on, please return to the AioCare app.



Pairing the phone with the AioCare device

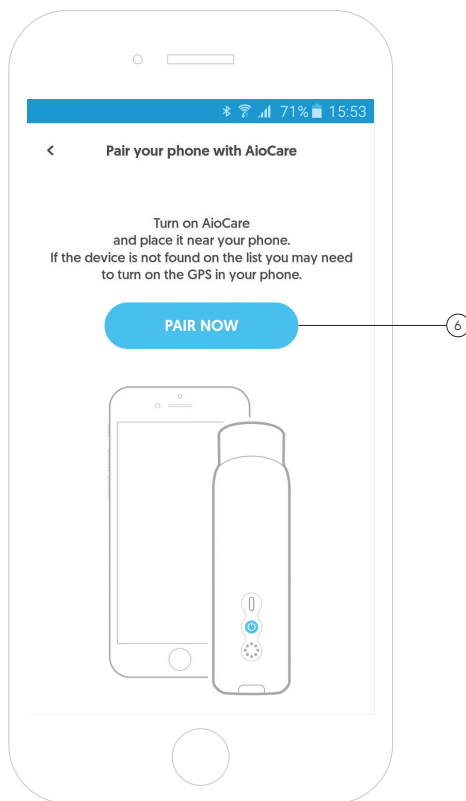
After your telephone's Bluetooth module is on, the app will allow you to proceed to the next step of the process of pairing the phone with the device. ⑤

The GPS module is not required for pairing the phone with the AioCare device, but in order to increase the probability of a proper pairing between the AioCare device and a mobile device, we recommend you to turn the GPS module on.



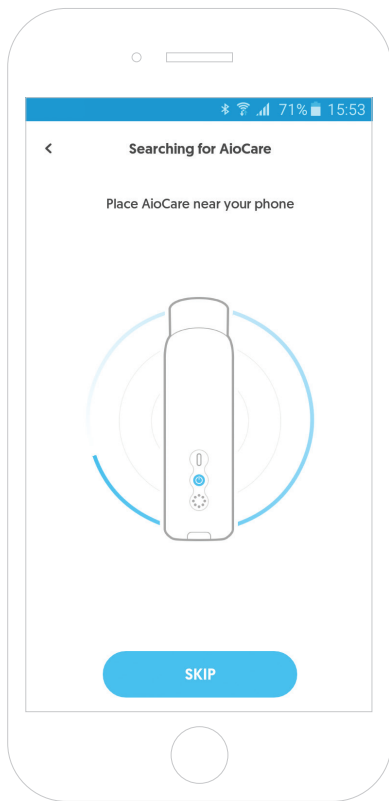
Pairing the phone with the AioCare device

Next, turn on the AioCare device, place it near the phone, and click „**Pair now**“. ⁶



Pairing the phone with the AioCare device

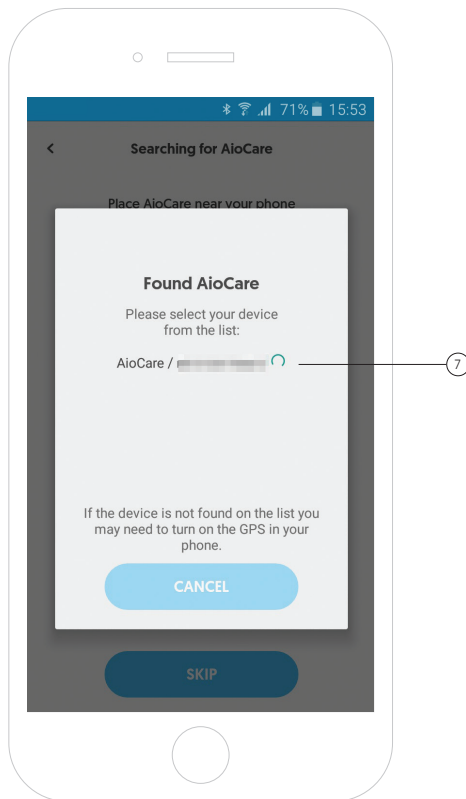
The app will start searching for the device.



Pairing the phone with the AioCare device

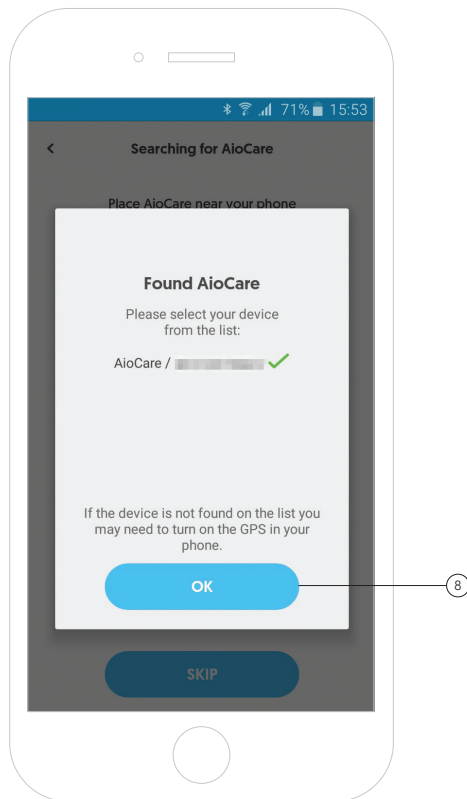
When the app finds the device and displays a list of found devices, confirm the selection by clicking the serial number corresponding to the number on the spirometer that you wish to pair the phone with. ⑦

If the device doesn't appear in the list of devices, we recommend turning on the GPS module in the mobile device.



Pairing the phone with the AioCare device

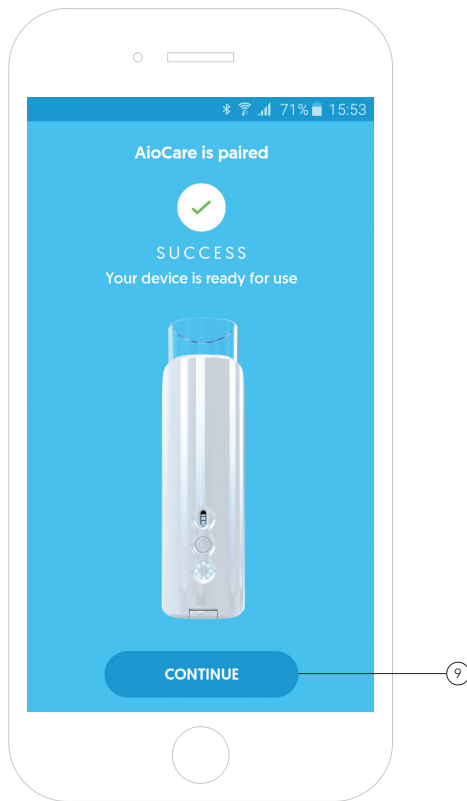
Once the phone has been paired with the device, click the „OK“ button. ⑧



Pairing the phone with the AioCare device

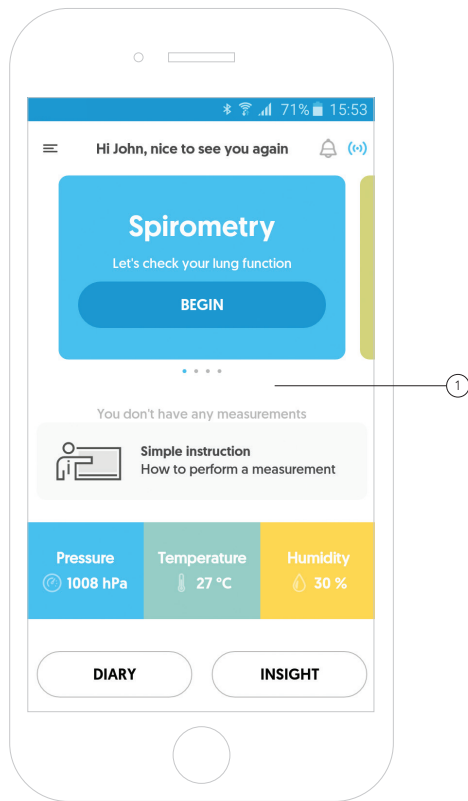
When the app connects to the device, a screen confirming the connection will be displayed.

To go to the app's main screen, press **„Continue“**. ⑨



AioCare's app main panel

The view of the app's main panel
when connected to the device. ①



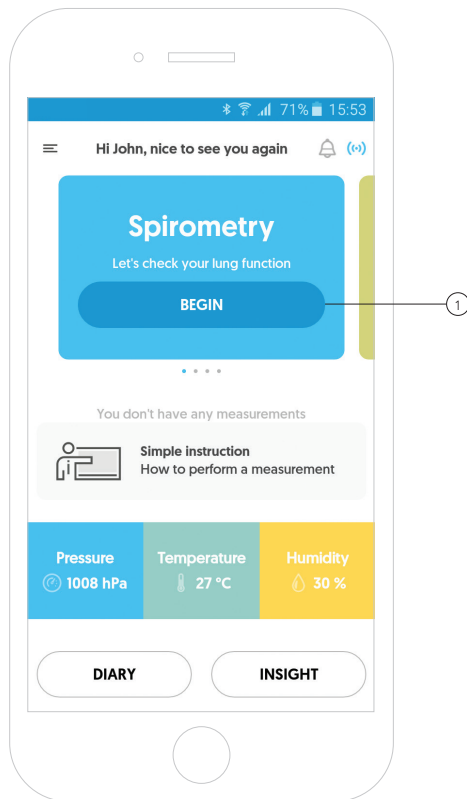


Conducting a spirometry examination



Spirometry measurement

To perform a spirometry measurement, press the „**Begin**” button on the „**Spirometry**” tile. ①



Spirometry measurement

Remember, to take the measurement you must be connected to the device.

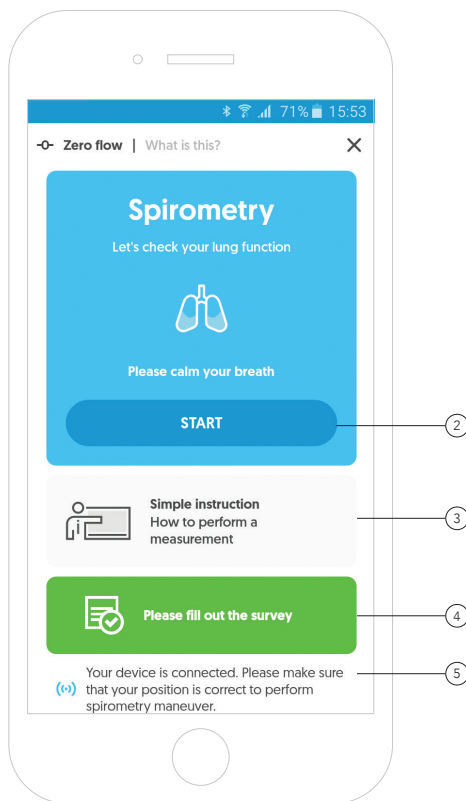
To start the examination, click the **"Start"** button. ②

The app gives you the ability to watch a short video presenting the correct way of using the AioCare device. ③

To complete the survey before starting the examination, click the green field of the survey. ④

The connection between the app and the device is marked with a colour: ⑤

- Grey means that the device is not connected.
- Blue means it is connected.

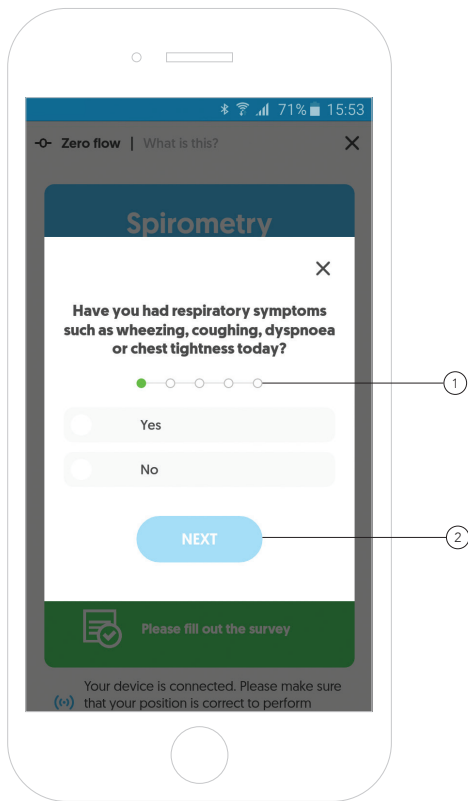


Spirometry measurement – Survey

Before starting the examination, the app will display a brief survey consisting of five questions. ①

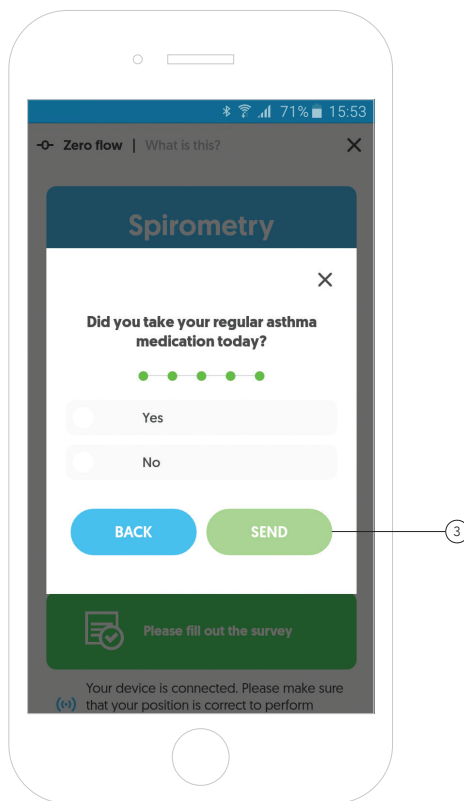
1. Have you had respiratory symptoms such as wheezing, coughing, dyspnoea or chest tightness today?
2. Have you had any signs or symptoms at night or in the morning?
3. Did the severity of the symptoms reduce your daily activity?
4. Did a wheezing, cough, dyspnea or chest tightness force you to take the medications?
5. Did you take your regular asthma medication today?

After selecting the appropriate answer, click „Next“. ②



Spirometry measurement – Survey

To finish the survey and proceed to the examination, select the appropriate answers, and click the **"Send"** button. ③

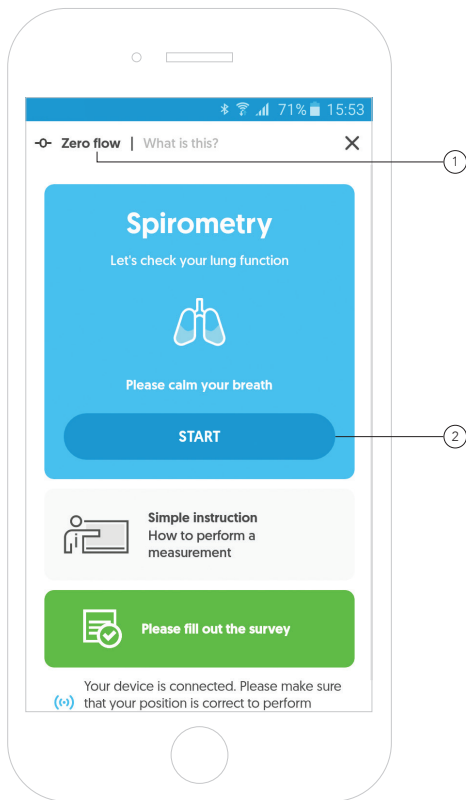


Spirometry measurement - Zero flow

Always perform flow zeroing before starting to take the measurement.

To start the flow zeroing process, click the **„Zero flow“** text and follow the instructions ①

or press the **“Start”** button to zero flow automatically. ②

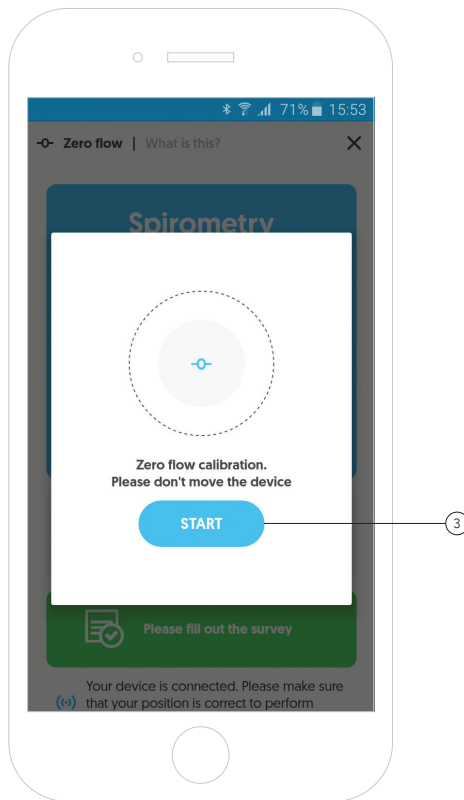


Spirometry measurement - Zero flow

The „Zero flow“ process is necessary to ensure correct results. The process takes only 5 seconds.

To start the flow zeroing process, click the **“Start”** button. ③

During the zero flow, the spirometer should remain immobile and away from sources of free air flow (e.g. an open window).

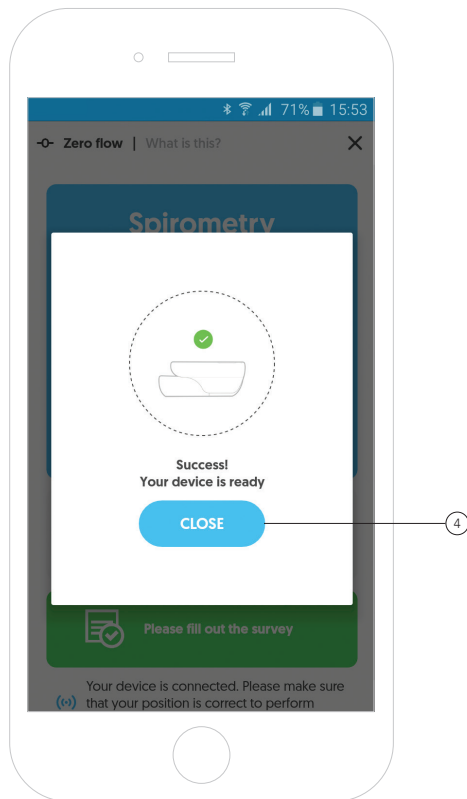


Spirometry measurement

- Zero flow

After the flow zeroing process has been completed correctly, the device is ready to carry out the first measurement.

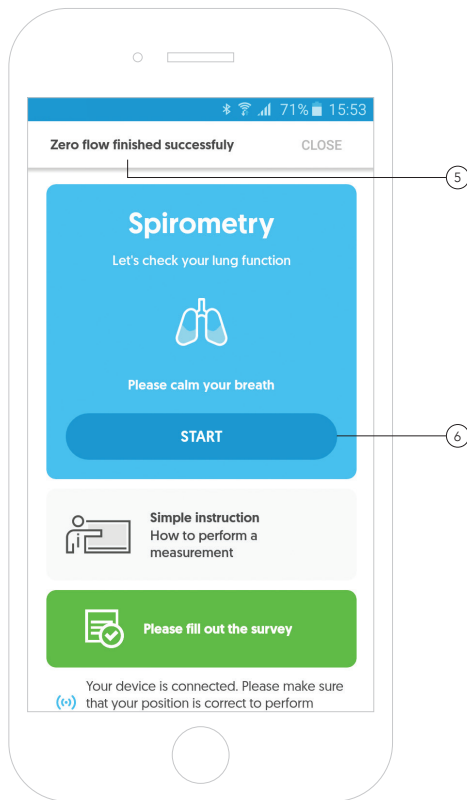
To return to the beginning of the examination, click the **"Close"** button. ④



Spirometry measurement - Zero flow

The app will inform you that the process of zeroing the flow has been completed. This makes the app and the device ready to start the examination. ^⑤

To start the examination, click the „**Start**“ button. ^⑥



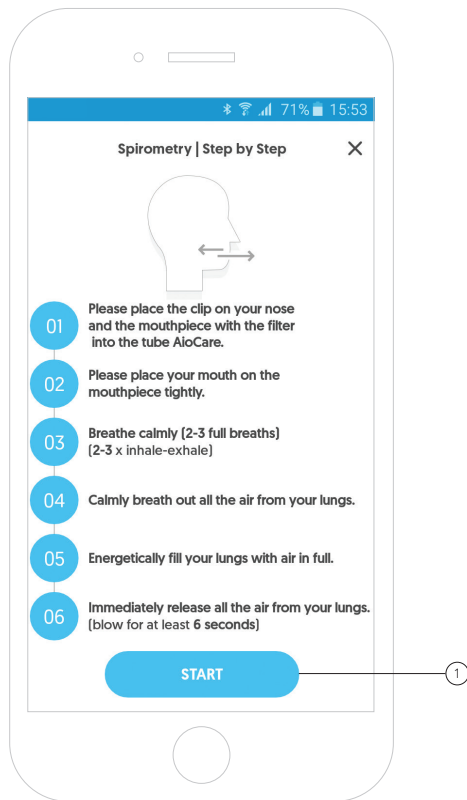
Spirometry measurement - Quick guide

The screen shows a short instruction for spirometry examination.

To go to the measurement, click **"Start"**. ①

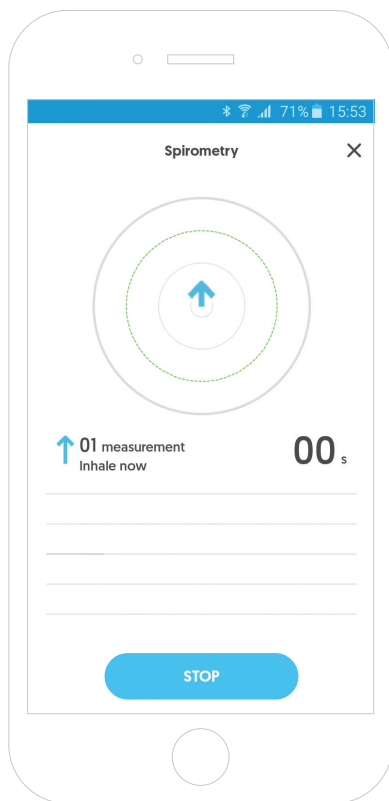
Quick guide:

1. Please place the clip on your nose and the mouthpiece with the filter into the tube AioCare.
2. Please place your mouth on the mouthpiece tightly.
3. Breathe calmly (2-3 full breaths) (2-3 x inhale-exhale)
4. Calmly breath out all the air from your lungs.
5. Energetically fill your lungs with air in full.
6. Immediately release all the air from your lungs. (blow for at least 6 seconds).



Spirometry measurement - Conducting the examination

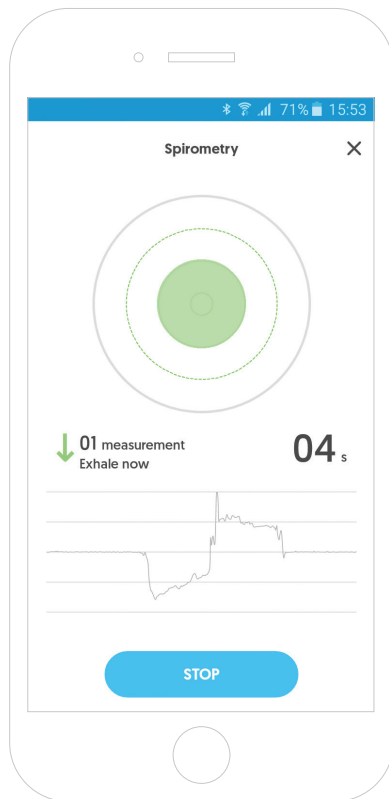
An animation showing the breath will appear on the screen.



Spirometry measurement - Conducting the examination

Two criteria must be met in order for the measurement to be carried out correctly:

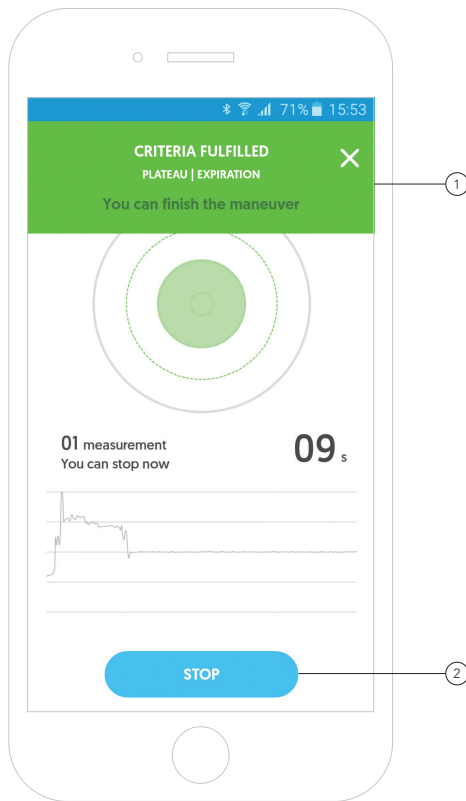
1. **The plateau criterion** (signal recorded for at least 1 second must be equal to zero) and
2. **the exhalation time criterion** (measurement must last a minimum of 6 seconds).



Spirometry measurement - Conducting the examination

After correctly performing the measurement, the app will display a message about the ability to end the measurement. ①

To end the given spirometry measurement and go to the summary, click the „**Stop**“ button. ②



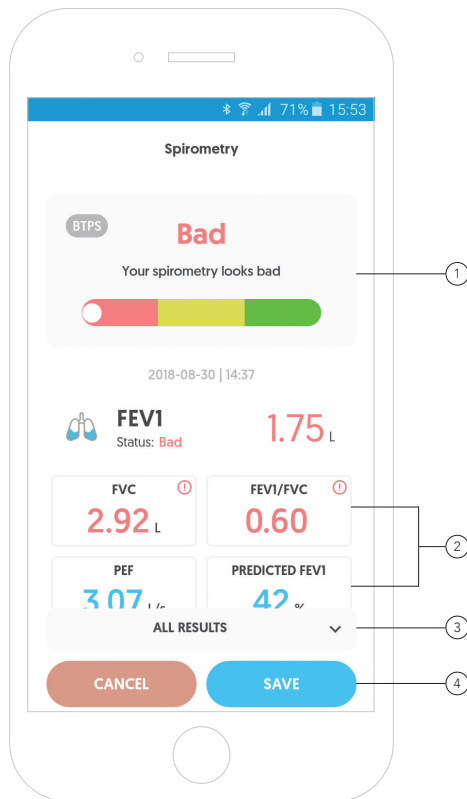
Spirometry measurement - Summary of the measurement

In the measurement's summary, the app presents a graphical representation of the spirometry results. ①

Under the graphics you will find the most important values such as FEV1, FVC, FEV1/FVC, PEF or FEF25 etc. ②

To check more parameters, scroll the screen down or click the **"All results"** button. ③

You can **"Save"** or **"Cancel"** the measurement by clicking the appropriate button. ④



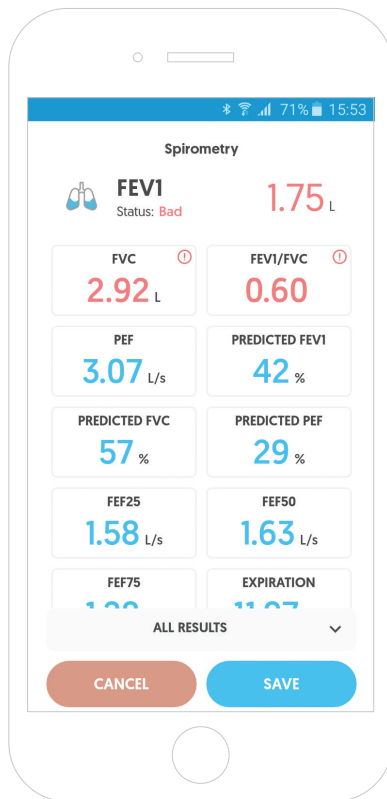
Spirometry measurement

- Summary of the measurement

A view of additional parameters displayed for a given measurement.

Description of the displayed parameters:

- **FVC** - forced vital capacity
- **FEV1** - forced expiratory volume in 1 second
- **FEV1/FVC** - tiffeneau index
- **PEF** - peak expiratory flow
- **FEF** - forced expiratory flow



Spirometry measurement

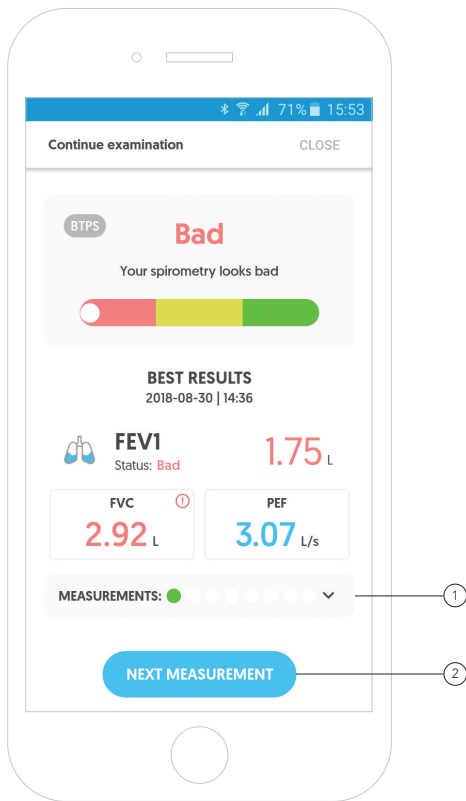
- Summary of the examination

A spirometry test can include up to 8 individual measurements. To conduct the entire examination correctly, you must meet the criterion of repeatability and the criterion of correctness.

Measurements are presented using red or green dots: ①

- Green means that the measurement has been taken correctly.
- Red means that the measurement has not been taken correctly.

To go to the summary of measurements, click the **"Next measurement"** button. ②

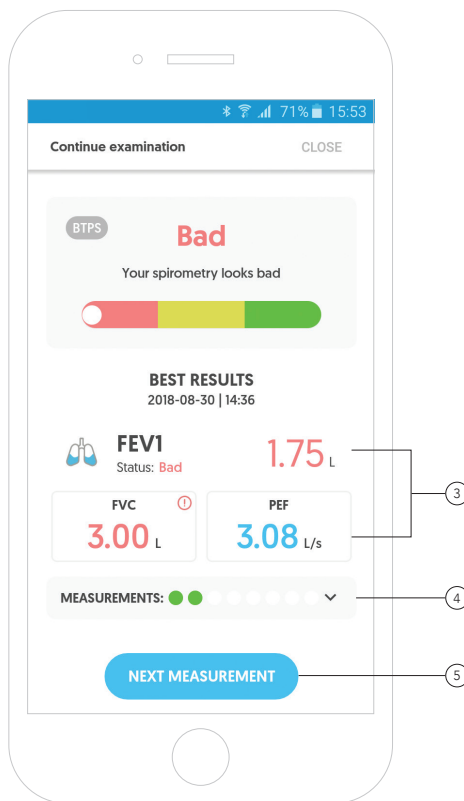


Spirometry measurement - Summary of the examination

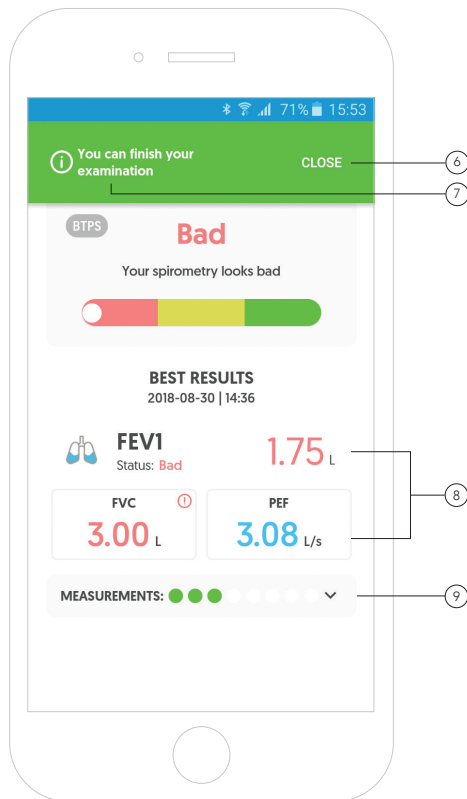
The app displays the best results for FEV1, FVC and PEF parameters from all measurements taken in a given examination. (3)

In addition, the app allows you to see all the measurements taken during a given examination. (4)

To go to the next measurement, press the **"Next measurement"** button. (5)



Spirometry measurement - Summary of the examination



To finish the examination, click „Close“, and then the “X” button. ⑥

After completing 3 correct, repeatable measurements, the app will inform you about the completed spirometry examination. ⑦

After fulfilling both criteria, the app will display the best FEV1, FVC, and PEF results from the entire examination. ⑧

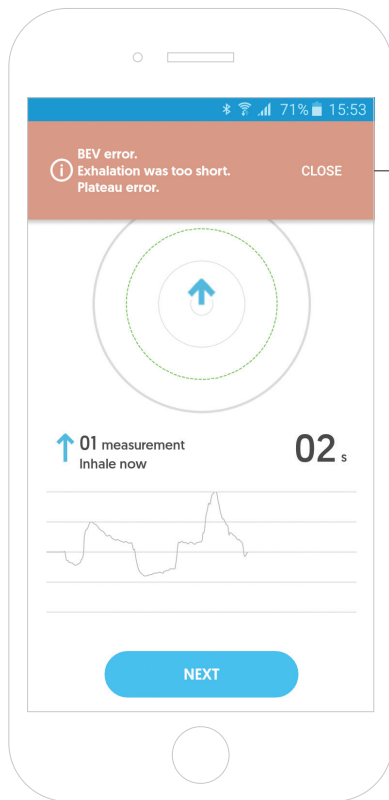
The app gives you the ability to analyse each measurement separately. To do this, click measurements. ⑨

Spirometry measurement - Errors during measurement

Errors typical for spirometry may occur during a measurement. The app will detect them and inform the user. ①

List of errors:

1. **BEV error** (Back extrapolation error) - make sure that after a deep breath you exhale all the air, do not stop the air in your lungs.
2. **Plateau error** - keep exhaling longer, make sure there is no air left in the lungs.
3. **Exhale time error** (Too short exhalation) - continue to exhale for at least 6 seconds.
4. **Cough detection** - make sure you release the air smoothly, try not to cough.
5. **Wrong data** - make sure to follow the sequence of 3 normal breaths followed by a deep inhale and a quick exhale.
6. **PEF error** (Time to PEF error) - remember to exhale quickly.



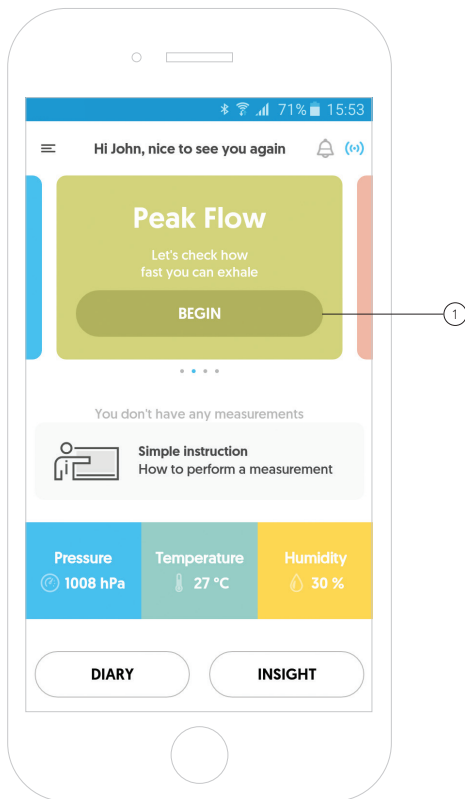


Conducting a peak flow examination



Peak flow measurement

To perform a peak flow measurement, press **"Begin"** on the **"Peak flow"** tile. ①



Peak flow measurement

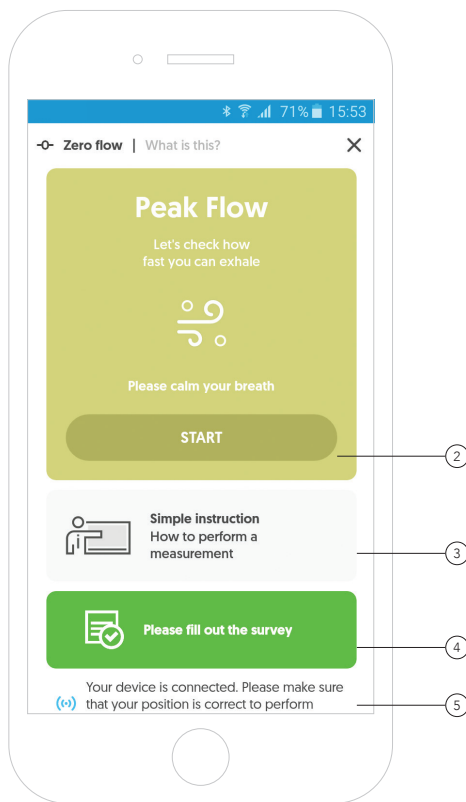
Remember, to take the measurement you must be connected to the device.

To start the examination, click the **"Start"** button. ②

The app gives you the ability to watch a short video presenting the correct way of using the AioCare device. ③

To complete the survey before starting the examination, click the green field of the survey. ④

The connection between the app and the device is marked with a colour: ⑤
- Grey means that the device is not connected.
- Blue means it is connected.

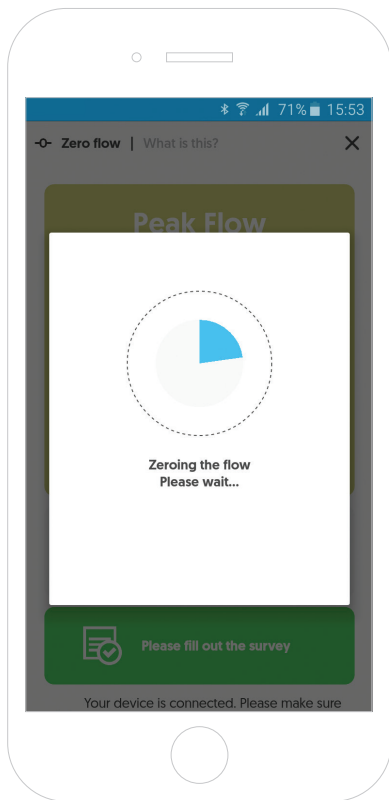


Peak flow measurement

- Zero Flow

The “flow zeroing” process is necessary to ensure correct results. The process takes only 5 seconds and works the same way as in the case of the spirometry examination.

During the zeroing of the flow, the spirometer should remain immobile and away from sources of free air flow (e.g. an open window).



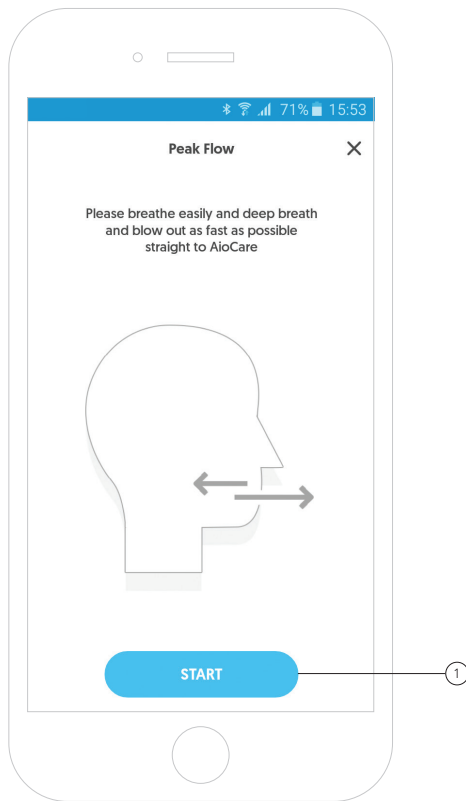
Peak flow measurement - Quick guide

The screen shows a short instruction for performing a peak flow examination.

To go to the measurement, click „**Start**“. ①

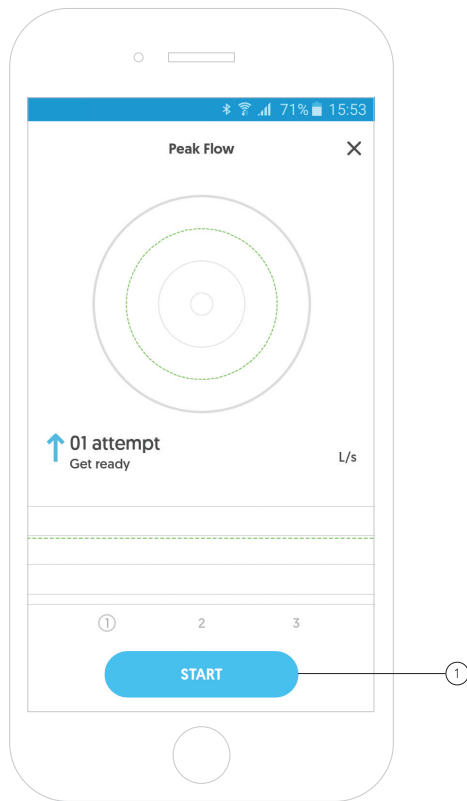
Quick guide:

1. Breathe easily
2. Take a deep breath
3. Blow out as fast as possible straight into AioCare



Peak flow measurement - Conducting the examination

To start the peak flow test, click the **"Start"** button. ①



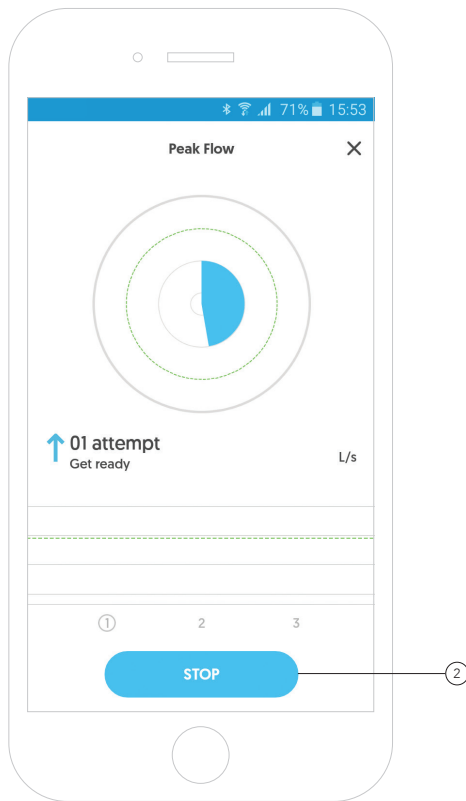
Peak flow measurement - Conducting the examination

After pressing the **"Start"** button, the centre of the circle will start filling with the colour blue. This is the time to prepare for the blow attempt.

Once the wheel is filled, blow out the air with all your might.

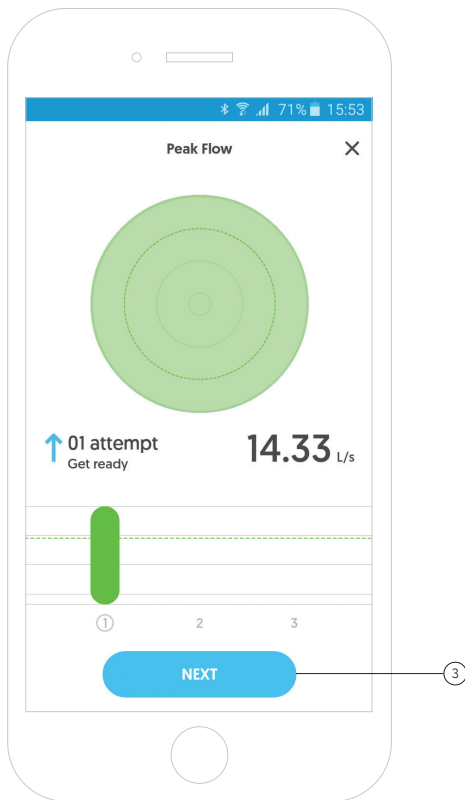
The app gives you the ability to stop the test.

To do this, click on the **"Stop"** button. ②



Peak flow measurement - Conducting the examination

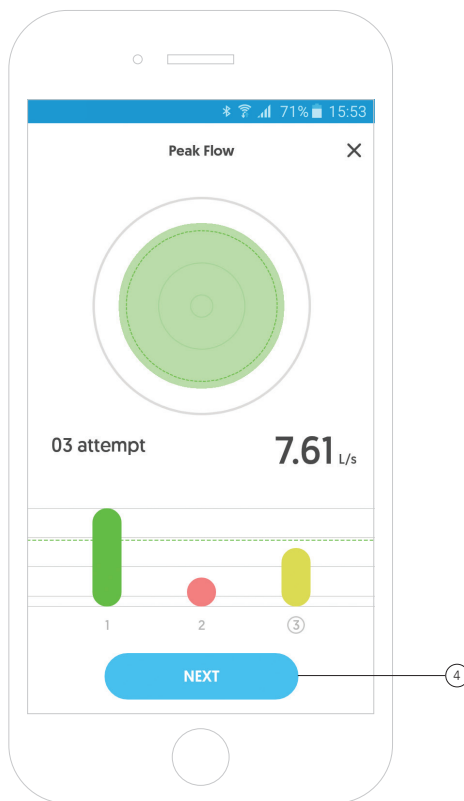
After an attempt, click **"Next"**
to go to the next measurement. ③



Peak flow measurement - Conducting the examination

After completing 3 correct measurements, the examination is complete.

To go to the summary of the peak flow examination, click the **"Next"** button. ④

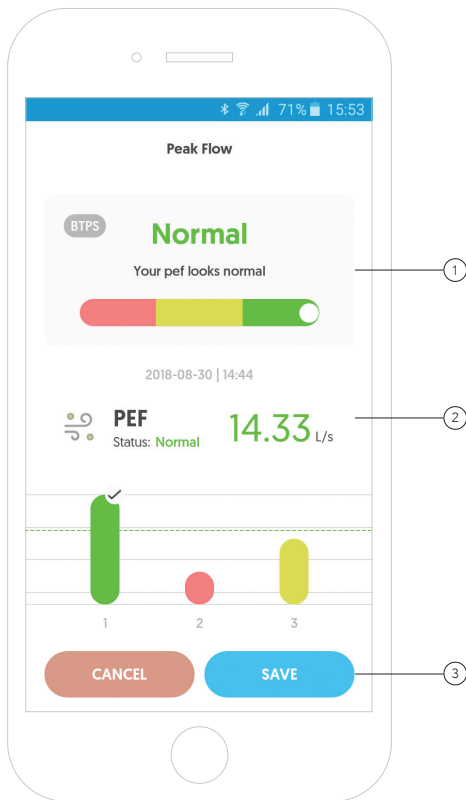


Peak flow measurement - Summary of the examination

In the measurement's summary, the app presents a graphical representation of the result of a peak flow examination. ①

The best PEF parameter from all the attempts is presented under the graphics. ②

You can **"Save"** or **"Cancel"** the measurement by clicking the appropriate button. ③



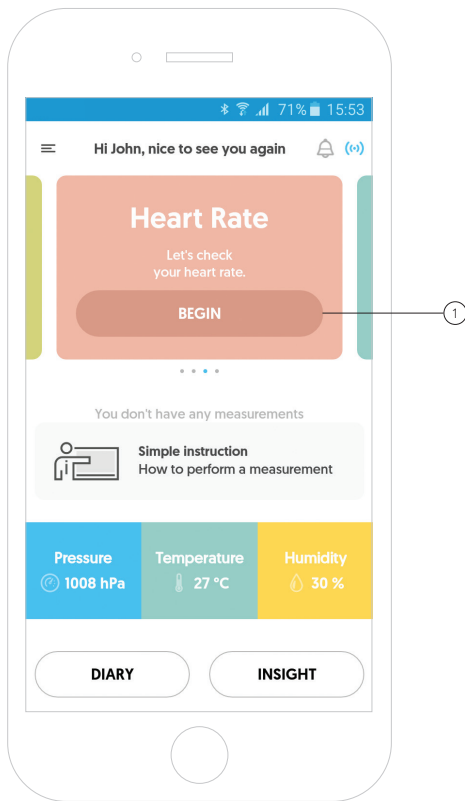


Taking a heart rate measurement



Heart rate measurement

To perform a heart rate measurement, click **"Start "** on the **"Heart rate"** tile. ①



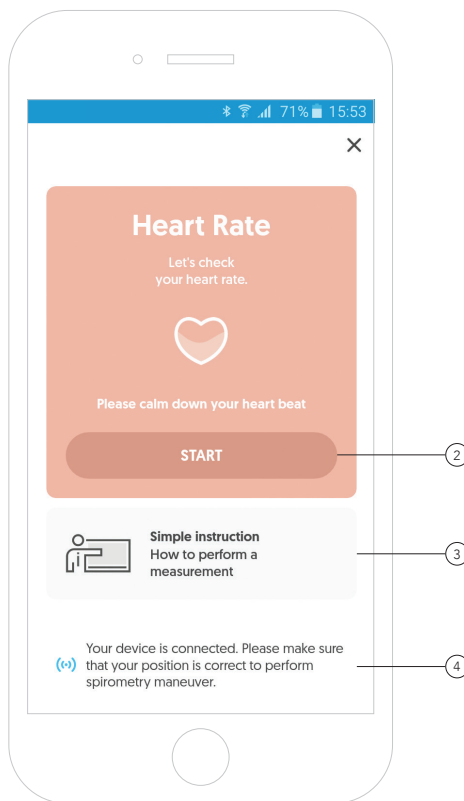
Heart rate measurement

To start the examination, click the **"Start"** button. ②

The app gives you the ability to watch a short video presenting the correct way of using the AioCare device. ③

The connection between the app and the device is marked with a colour: ④

- Grey means that the device is not connected.
- Blue means it is connected.



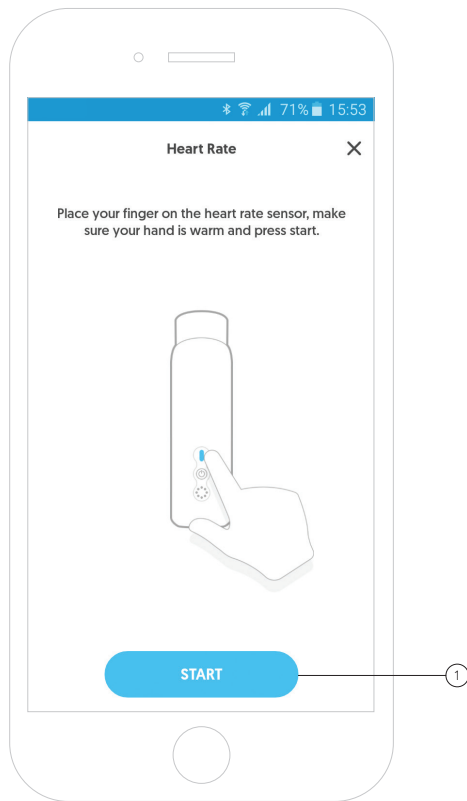
Heart rate measurement - Quick guide

The screen shows brief instructions on how to measure your heart rate.

To go to the measurement, click „**Start**“. ①

Quick guide:

1. Place your finger on the heart rate sensor.
2. Make sure your hand is warm.
3. Press start.



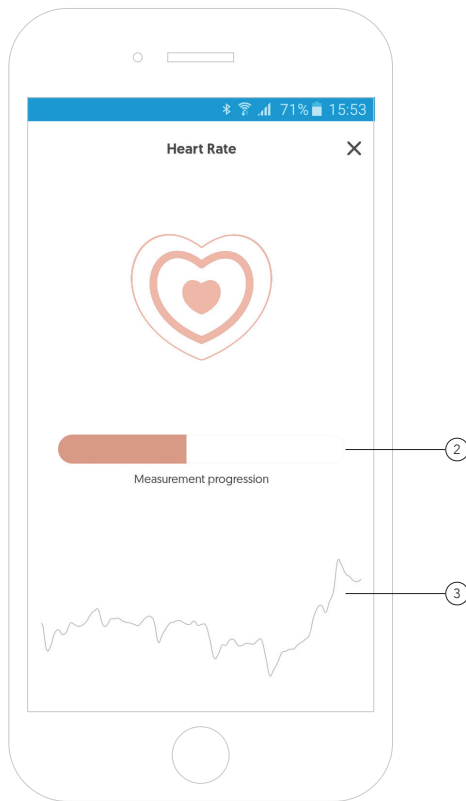
Heart rate measurement - Conducting the examination

The graphic shows the progress of collecting the signal that will be used as the basis for the heart rate analysis. ②

To complete the measurement, hold your finger on the sensor until the entire bar is filled.

Below is a graphical representation of the heart rate measured at the finger placed on the sensor. ③

The heart rate measurement takes a few seconds.



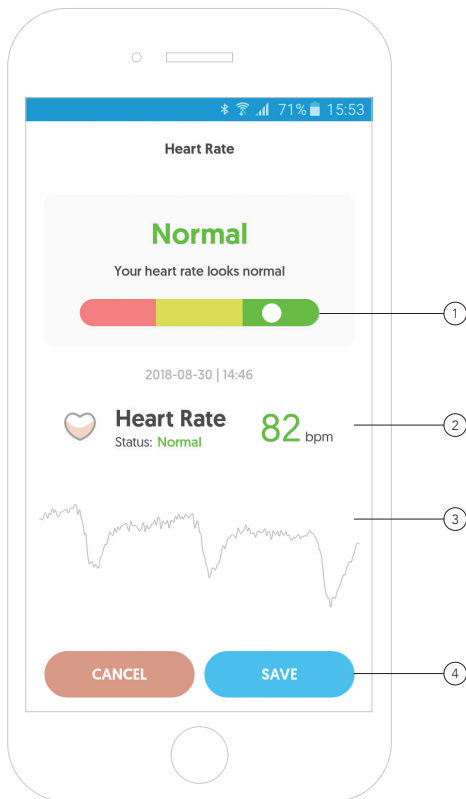
Heart rate measurement - Summary of the examination

In the measurement's summary, the app presents a graphical representation of the result of the heart rate measurement. ①

The average heart rate is presented below. ②

The app gives you the ability to see the analysed signal. ③

You can **"Save"** or **"Cancel"** the measurement by clicking the appropriate button. ④



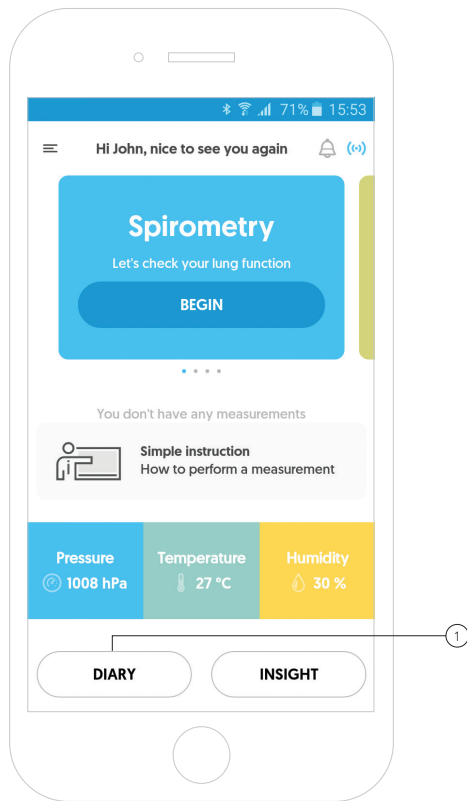


Examinations log



Patient's examination diary

To see the results of all the carried out tests, click the **"Diary"** button. ①

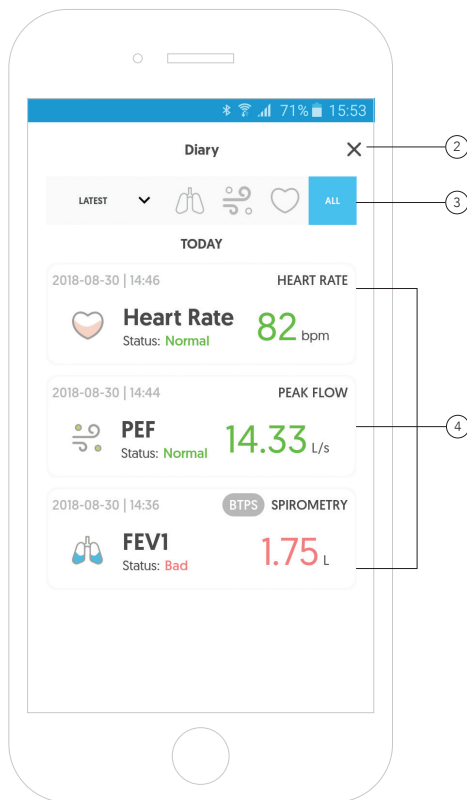


Patient's examination diary

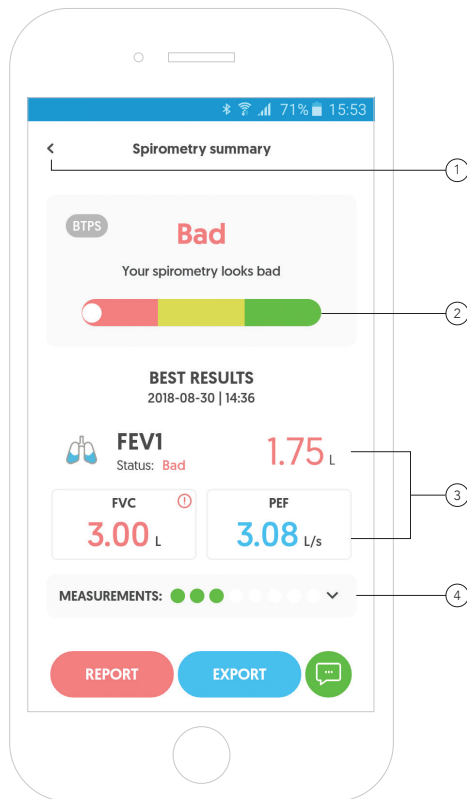
To return to the main screen, click „X“. (2)

The app gives the ability to sort the examinations by the date they were conducted as well as by the type of the examination. (3)

After clicking the selected examination, the app will display the details concerning the entire examination as well as individual measurements. (4)



Patient's examination diary - Examination details

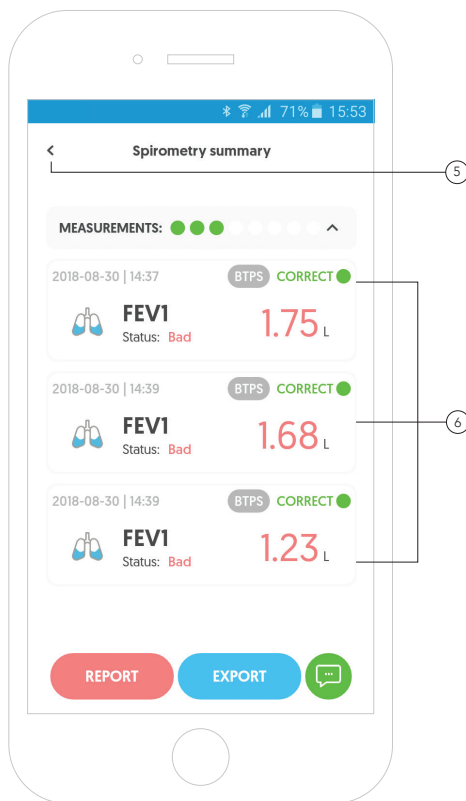


Patient's examination diary - Examination details

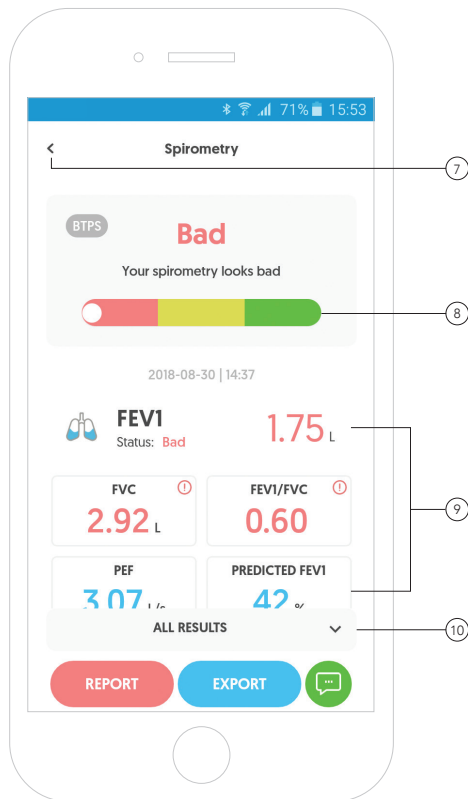
To return to the previous screen, click "<". ⑤

After expanding the measurements, the app gives you the ability to analyse individual measurements.

To do this, click the given measurement. ⑥



Patient's examination diary - Measurement details



To return to the previous screen, click "**<**". (7)

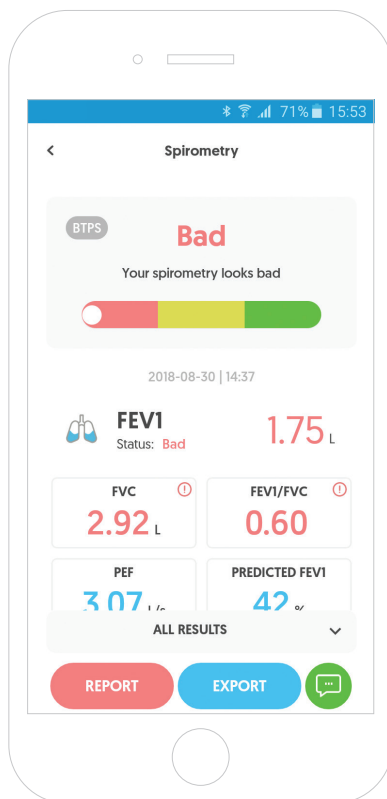
In the examination's summary, the app presents a graphical representation of the spirometry result for a single measurement. (8)

The most important values for a single measurement such as FEV1, FVC, FEV1/FVC, PEF etc are shown below. (9)

To check more parameters, scroll the screen down or click "**All results**". (10)

Patient's examination diary - Measurement details

Further details of the selected measurement.





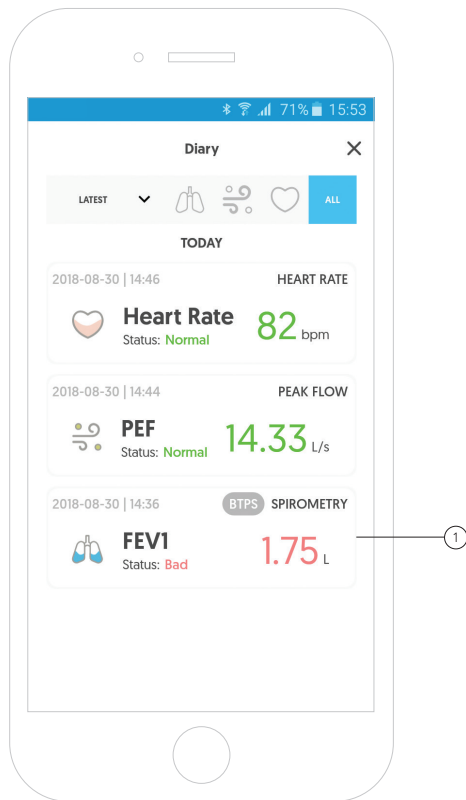
Reports



Report - Exporting data

To open or export a report from the entire examination or one measurement, go to the examinations log and find the appropriate examination.

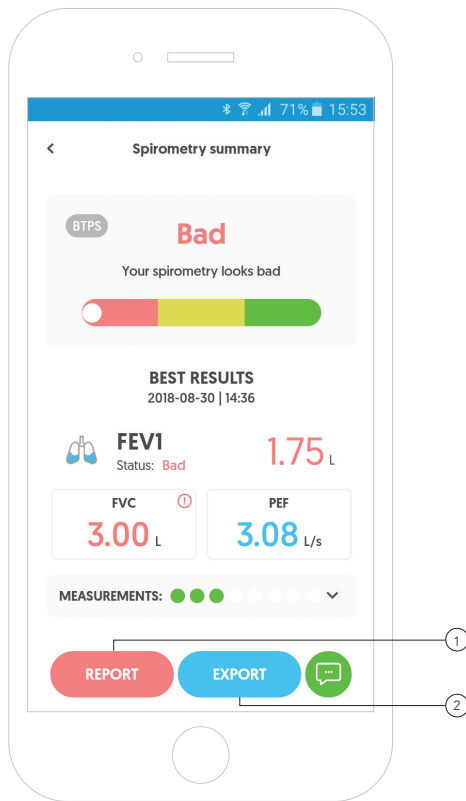
By clicking the selected examination, you will receive detailed information about the given examination. ①



Report - Exporting data from the entire examination

To open a report from the entire examination, click the red **"Report"** button. ①

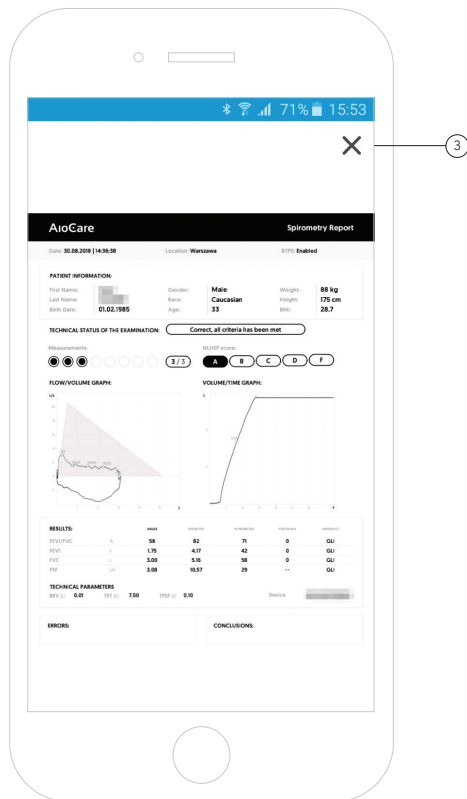
To export the report and send it to the email, click the blue **"Export"** button. ②



Report - View the report from the entire examination

After clicking the red button, the app will open the report from a spirometry examination.

To return to the previous screen, click **"X"** in the upper right corner of the screen. ③



Report - Exporting data from the entire examination

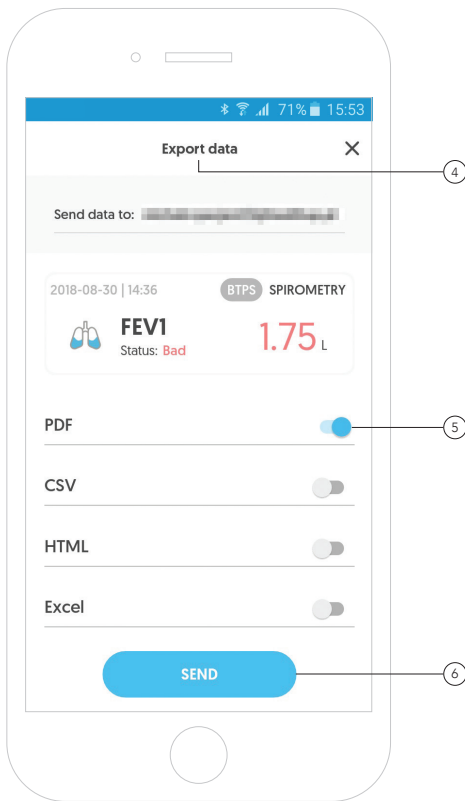
In order to send a report from a spirometry examination (export data), first enter the appropriate email address to which the data will be sent. (4)

Note:

The default e-mail address is the address that was used to log in to the application.

Next, select the format in which the data should be presented by moving the appropriate slider. (5)

To export the report and send it to the email, click the blue **"Send"** button. (6)

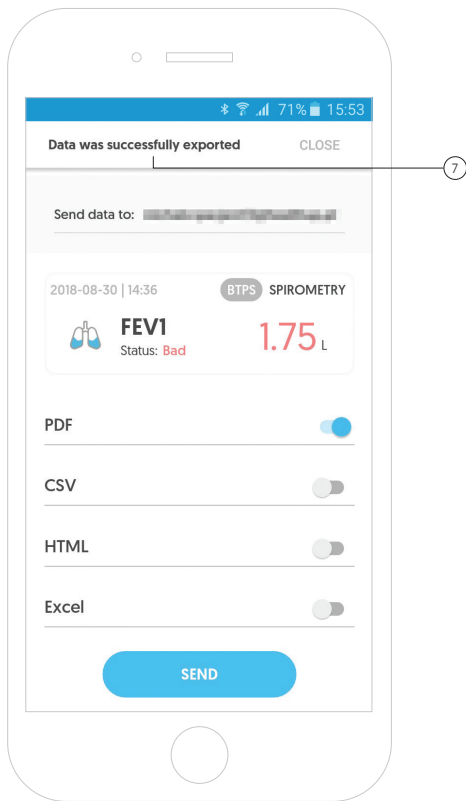


Report - Exporting data from the entire examination

After correctly exporting the data (report), the appropriate message will appear at the top of the screen. ⑦

Note:

To export data (generate a report) it is necessary to connect the mobile device to the internet.

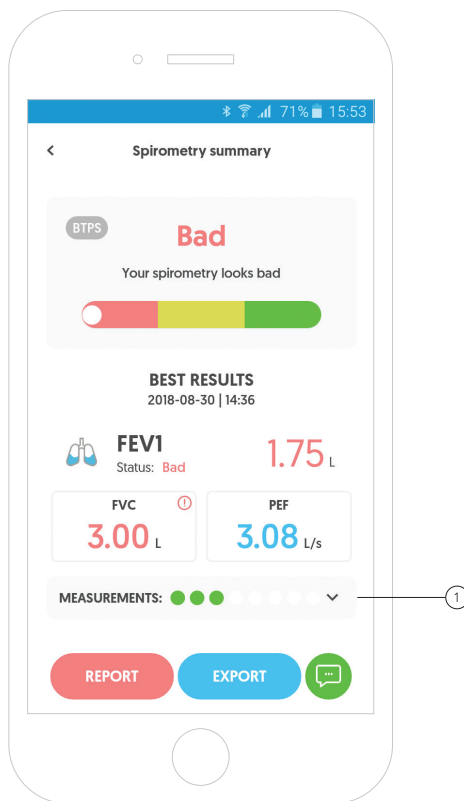


Report - Exporting data from a single measurement

The process of exporting data (generating a report) from a single measurement is similar to exporting data from the whole examination.

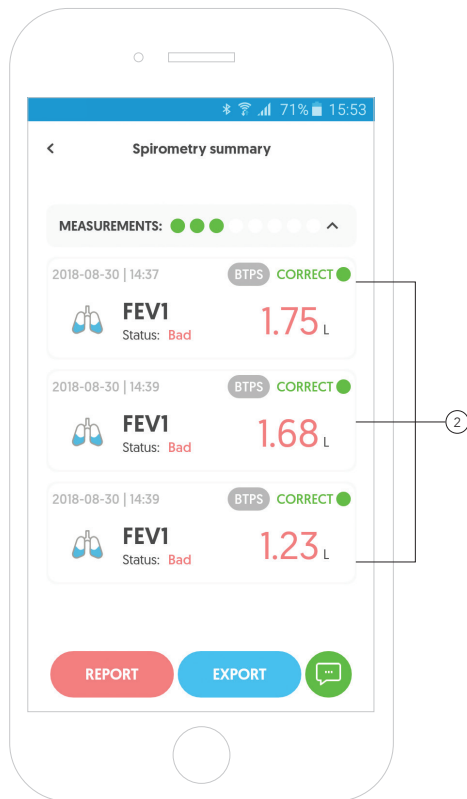
To do this, go to the examination summary in the examinations diary and click measurements. ①

The app will display detailed information about measurements taken in this examination.



Report - Exporting data from a single measurement

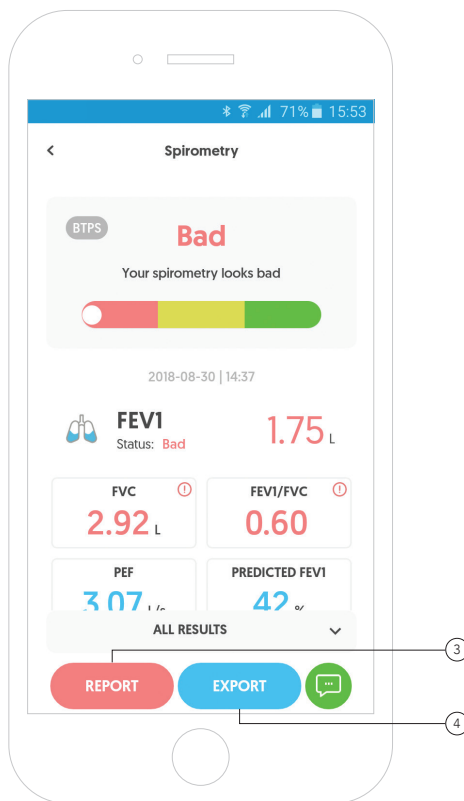
By clicking a given measurement, you will receive detailed information about the given measurement. ②



Report - Exporting data from a single measurement

To open a report from a single measurement, click the red **"Report"** button. ③

To export the report and send it to the email, click the blue **"Export"** button and proceed in the same way as in the case of exporting data for the entire examination. ④



AioCare
Thank you!

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