

Participant Guide

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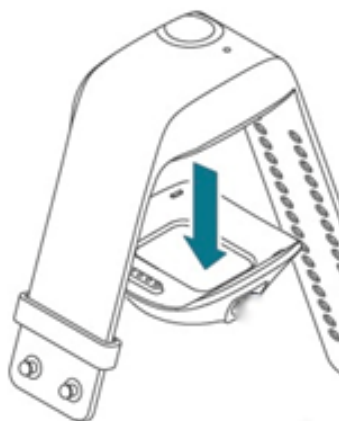
1 Using the Empatica E4

The Empatica E4 is a medical wristband that measures your level of sweating, blood volume pulse, acceleration, heart rate and skin temperature. Combining these biosignals with your schedule of activities enables the us to measure the effect of your environment on your body.

1.1 How to use the Empatica E4

1.1.1 Wear the E4:

Step 1: Unclip the plastic case on the back of the wristband (Picture 1). Wear it to your non-dominant hand like a regular watch. The bracelet is well adjusted if the wristband stays in contact with your skin when you gently shake your hand. In any case, you should not feel squeezed.



1

Step 2: Press the big button on top of the wristband until the blue light switches on. The blue light then blinks for 45 seconds. This indicates that the wristband is switching on. When the diode shines red, the recording has started: You are good to go! The diode will switch off after 1 minute.

1.1.2 Take off the E4:

Step 1: Switch the wristband off by pressing the top button for 3 seconds, until the light switches off.

Step 2: Take the wristband off.

Step 3: Clip the protection case.

You are good to go!

1.2 When should I wear the Empatica E4?

You should wear the Empatica E4 during the whole day from you wake up until bedtime. However, you can take the wristband off if you undertake an activity that could damage it, like taking a shower. The Empatica E4 is splash-proof but still vulnerable to water. Washing hands with the wristband is permitted but not plunging it into water. The Empatica E4 is vulnerable to severe impact. Running and biking are allowed but playing handball, football or basketball might cause damage.

1.3 How can I check that Empatica E4 is correctly working at any moment?

Briefly press the big button on top of the Empatica E4, for up to 1 second). If the diode briefly emits red light, the E4 is correctly working. If the diode emits no light, the E4 has run out of battery.

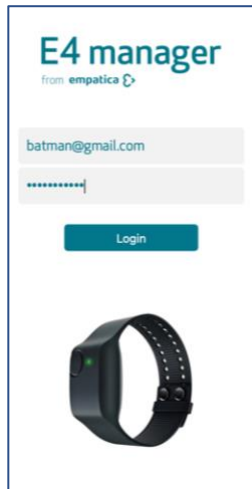
1.4 How do I send my records?

Your records are sent to the research team via the internet, by uploading it on your computer using the E4 Manager software. This task is to be performed every other day. When you meet with us for the on-boarding of the data collection, we will help you with the installation of Empatica E4. If you need to reinstall again you can follow this instruction or contact us for help.

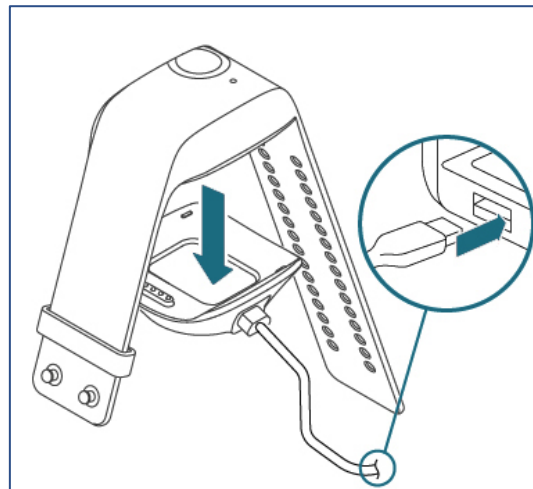
Step 1: On your computer, download E4 manager

- For Windows: <https://support.empatica.com/hc/en-us/articles/206373545-Download-and-install-the-E4-manager-on-your-Windows-computer>
- For Mac OS (12.0.1 and above): <https://support.empatica.com/hc/en-us/articles/4417181873553-Download-and-install-E4-manager-on-your-macOS-Monterey-computer-macOS-12-0-1-and-higher->
- For Mac OS: <https://support.empatica.com/hc/en-us/articles/205672539-Download-and-install-the-E4-manager-on-your-macOS-computer>

Open the application and enter the participant e-mail and password that you received during the presurvey meeting (Picture 2).



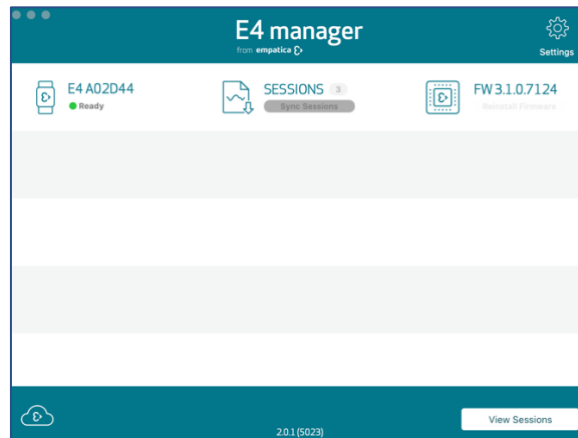
2



3

Step 2: Switch off the wristband by pressing the big button until the red light goes out. Take it off.

Step 3: Clip the plastic case on the back of the wristband and connect your wristband to your computer by USB (Picture 3). The E4 manager ought to automatically detect the wristband. If it is not the case, please refer to Section 3.4 below.



4

Step 4: Click on "Sync Sessions" (Picture 4).

Step 5: Once the records have been sent to the us, you can view your records at clicking on "View Sessions". If night has not started to fall, wear the E4 again and turn it on.

1.5 When should I send my records?

You should send your records every two days as a minimum or if the wristband blinks yellow or red. We recommend you do it daily as part of your routine, so we prevent losing your data.

2 Using X-ing

2.1 Set up X-ing

Notice that the X-ing app may use a bit more of your phone's battery. Your phone may need to be charged a bit more frequently.

On your smartphone, install X-ing. The application is available on App Store and Play Store. In App Store search for "Mobile Market Monitor" to find X-ing. In X-ing, enter the access code ECDTU and create an account. Then, X-ing asks you basic questions to help inferring information about your trips and activities.

You may skip "Often visited places" to fill out later.

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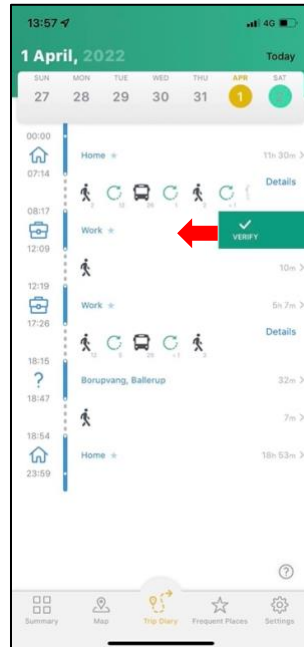
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2.2 How to use X-ing?

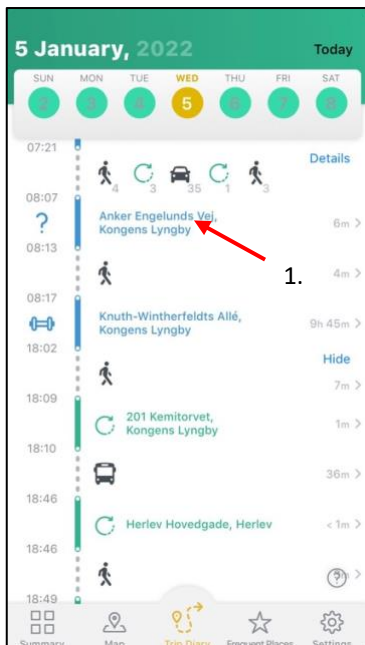
At the end of the day, when you take off the wristband E4, check the planning of activities guessed by X-ing in **Trip Diary**.

If an item of your schedule is right, swap it from right to left to indicate it is correct as in Picture 8.

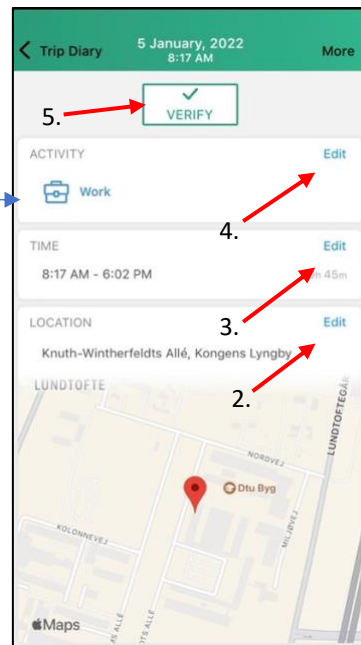


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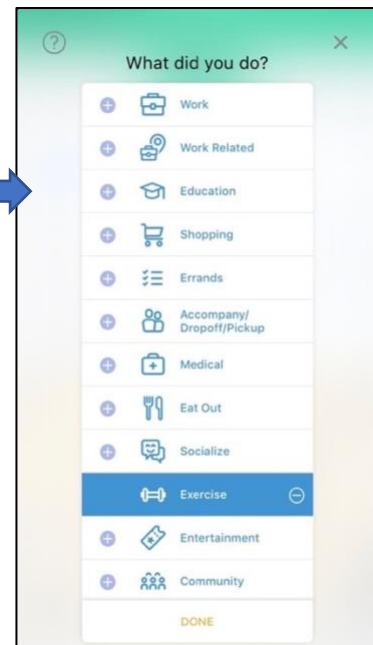
If the suggestions are wrong, correct the purpose, time, or location of your activity as in Pictures 9, 10 and 11.



9



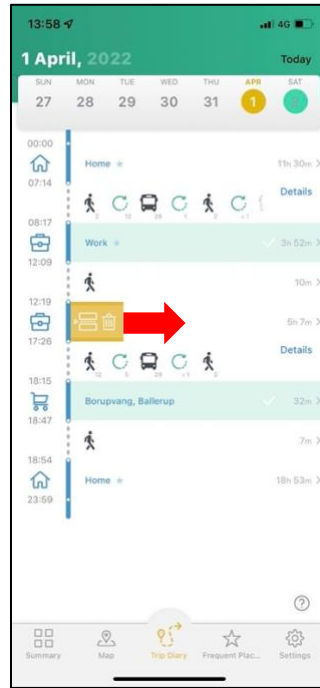
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2.3 X-ing misses a trip or activity

Sometimes, X-ing fails to identify one of your trips or activities. To insert a trip or an activity after an item, swap the item from left to right as in Picture 12 and select "Insert". Then, describe the missing activity as in Picture 10 and 11.



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2.4 X-ing added a trip or an activity by error

If you want to erase an item, swap this item from left to right as in Picture 12 and select "Delete".

2.5 Morning, afternoon, and evening surveys

Every morning (8 am – 11.30), afternoon (12 pm-5.30 pm) and evening (between 6 pm – 10 pm) you will receive surveys about your current well-being.

10:27
Safari

Your morning survey

At this moment, I feel...
(Indicate how you are feeling for each 6-point scale below)

Unwell 1 2 3 4 5 6 Well

Discontent 1 2 3 4 5 6 Content

Agitated 1 2 3 4 5 6 Calm

Tense 1 2 3 4 5 6 Relaxed

Tired 1 2 3 4 5 6 Awake

DONE

10:27
Safari

Your morning survey

Why do you feel this way?
(optional)

At this moment, I am:
Select all that apply

- Interacting in person with someone else
- Interacting with another person through technology (e.g. email, social media, SMS, telephone, video, etc.)
- Not interacting with anyone

How was your previous night's sleep?

- Very good
- Fairly good
- Fairly bad
- Very bad

DONE

2.6 Retrospective survey about trips and activities

When you are verifying your trips and activities a retrospective survey will sometimes show

11:44

About your travel...

August 3, 2023
12:33 PM - 12:39 PM

3 During this trip, I was feeling...
(Indicate how you were feeling for each 6-point scale below)

Unwell 1 2 3 4 5 6 Well

Discontent 1 2 3 4 5 6 Content

Agitated 1 2 3 4 5 6 Calm

Tense 1 2 3 4 5 6 Relaxed

Tired 1 2 3 4 5 6 Awake

← NEXT →

11:45

About your travel...

August 3, 2023
12:33 PM - 12:39 PM

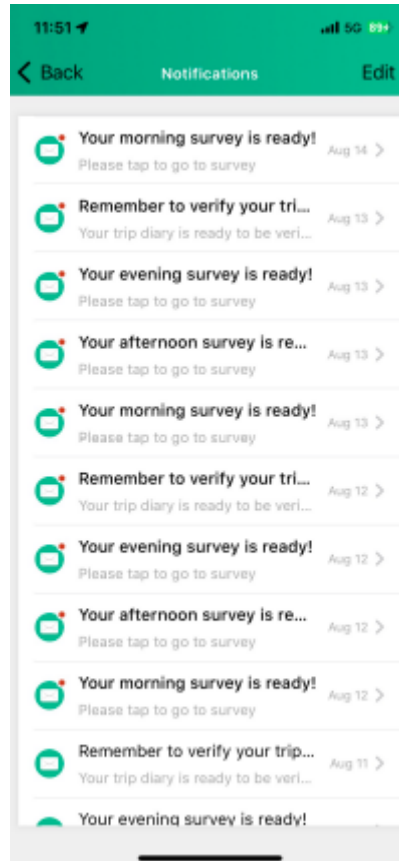
7 What didn't go as expected?
(Select all that apply)

- My departure time changed
- My arrival time changed
- I took a different route
- I used a different transport mode
- I went to a different destination
- Other (please specify)

← NEXT →

2.7 Notifications

In “Notifications” in your app you can get an overview of trips needing to be verified or surveys needing answering.



2.8 Application Settings

The Settings within the app has two features under User Experience that might be of interest or relevance to you.

The first is Sync. You may change the settings so that the app only synchronizes when you are connected to WiFi. In this way, the app will not use your data to sync.

The second is Battery Limit. We really need X-ing to always be turned on. Nonetheless, you can set X-ing to close automatically when your battery falls under a certain threshold. To do so, click "battery limit" in the application settings.

3 Frequently Asked Questions

3.1 Can I clean the Empatica E4?

The Empatica E4 is vulnerable to water. You can clean the E4 with a cotton pad soaked with (medical) alcohol if needed.

3.2 If I feel uncomfortable, can I take the wristband off for little a moment?

If your discomfort comes from:

- Your activity: If your activity risks damaging the wristband, please take it off. If the wristband hinders your movement, you can take it off.
- The tight of the bracelet: You have probably tightened too much the bracelet. Remember that the bracelet is well adjusted if the wristband remains in contact with your skin when you balance your arm.
- A surge of anxiety: Your discomfort is likely to be a symptom of stress. Please try to keep the wristband as much as you can. We are interested in how your body reacts to a stressful situation.

In any case, switch the Empatica E4 off at first, before taking it off.

3.3 Can I have access to my record after sending them?

Yes, by connecting with the participant e-mail and password that you received during the presurvey meeting at <https://www.empatica.com/connect/login.php>, you can view, download, and even delete your records. However, deleting records compromises the experiment. Please contact us doing it.

3.4 What to do if Empatica Manager does not detect my E4? (only Windows)

Your computer probably denied the automatic installation of the E4 drivers that enable communication between the E4 wristband and your computer.
Follow one of the next methods for installing the drivers:

3.4.1 Method 1 (recommended):

Step 1: Close E4 Manager.

Step 2: Download the drivers at the bottom of this page: <https://support.empatica.com/hc/en-us/articles/206373545-Download-and-install-the-E4-manager-on-your-Windows-computer#:~:text=E4%20USB%20Drivers%20not%20installed>.

Step 3: Locate the folder on your computer (usually in Downloads). Right click on it and extract all files.

Step 4: Install the drivers manually by double clicking the unzipped file.

Step 5: Reopen E4 Manager.

3.4.2 Method 2 (if method 1 does not work):

Step 1: Uninstall E4 Manager

Step 2: Deactivate your antivirus.

Step 3: Download E4 Manager from the links above (Section 1.4)

Step 4: Install E4 Manager.



Step 5: Reactivate your antivirus.


If you need help, please contact us through the phone number at the end of this document.

3.5 What is the meaning of the light in the wristband E4


Most of the time, the device will not flash any lights. It is only in a few cases that you may encounter different LED light colours that signal different messages.


When turning the device on:

  A blinking blue light is displayed when E4 is turning on


 Steady red - Data recording has started. This light will turn off after some time to save battery.


Potential error signals:

 Blinking red - the memory is full: Please upload your records. Please contact us if the blinking red continues after this.

 Blinking yellow - The battery level is low. Please charge the device soon.

When connected via USB:

 Alternating blue and yellow - The battery is charging. The yellow LED will stop as soon as the device is fully charged. The blue light will disappear once the device is disconnected from the USB port.

 Alternating purple and yellow - Data transfer in progress (when connecting the wristband to the E4 manager via USB)

For more information, please visit [E4 Led Guide \(FW 3.0.1.6612 and higher\) – Empatica Support](#)

4 How can I contact you?

We really value your comments and feedback. For this, please either:

- 1) Send us an email at emotionalcities@man.dtu.dk
- 2) Send us a text or call us at telephone + 45 40 60 47 34

5 For more information on the data collection, experimental design, and overall project

Research shows that green spaces improve well-being, and that living in the city is associated with poorer mental health. To invent urban spaces that foster well-being, scientists need objective data on an individual level. Data, that will reveal the complex relationship between environments and emotional states only at the micro level.

You may read more about the eMotional Cities-project here :

<https://emotionalcities-h2020.eu/denmark/>