

# Your **HEXOSKIN** Userguide

**EN** User Guide

www.hexoskin.com Hexoskin, © Copyright 2019











# YOUR HEXOSKIN USER GUIDE

Congratulations on your Hexoskin purchase! We hope you will enjoy using this cutting edge intelligent garment as much as we enjoyed creating it. See inside all the information you need to get started.





SCAN WITH
YOUR PHONE TO VISIT THE
HEXOSKIN SUPPORT
COMMUNITY

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Heart Rate



Heart Rate Recovery



Heart Rate Variability



Breathing Rate



VO2max



Minute Ventilation



Acceleration



Calories



Cadence





### Hexoskin Classic

12H± Hours of Battery Life

### Hexoskin SMART

30H± Hours of Battery Life

iOS 9.0+, Android 4.3+, MacOS 10.10+, WatchOS 4.0+













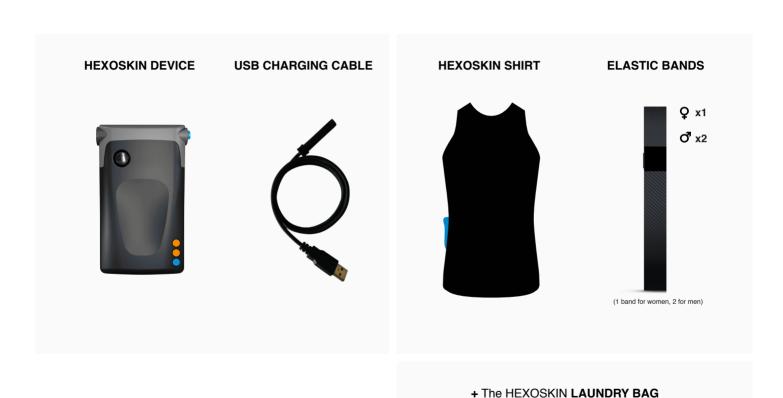






### **INSIDE THE BOX**





<sup>\*</sup> Junior shirts do not require elastic bands

### **CHARGE YOUR HEXOSKIN DEVICE**



Before you can start using your Hexoskin, you need to charge your Hexoskin Device for about 2 hours.

If you have a Hexoskin Smart Device, the battery life is 30 hours while for a Classic device, the battery life is 12 hours.

Use the enclosed USB cable to connect the device directly to your computer (avoid using a USB hub). Insert the Hexoskin Connector into the Hexoskin Device.

- The top orange LED is the battery indicator blinks while charging when connected to the shirt or when the battery is running low. The light stays on when fully charged.
- The middle orange LED is the recording light turns on when connected to the shirt and when recording.
- The lower blue LED is the Bluetooth light blinks to indicate a Bluetooth connection with a smartphone or tablet.



### CREATE YOUR HEXOSKIN ACCOUNT - ON PC/MAC WEB BROWSER

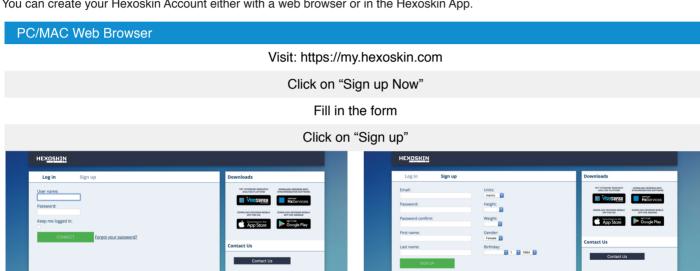
While your Hexoskin Device is charging, you can take this opportunity to create your account. Your account will allow you to register vour device, record, and synchronize your data.

You can create your Hexoskin Account either with a web browser or in the Hexoskin App.

Support Community

Have a question? Check out Hexoskin's support

enter for articles and Q&A's.



Once your account has been created, you will have access to the HxServices software, Hexoskin App, and the Hexoskin Dashboard.

Hexoskin Store

Discover our new collection of new

Smart Garments for Women, Men, and

Hexoskin News

Visit our blog to read the latest news

Support Community

center for articles and Q&A's.

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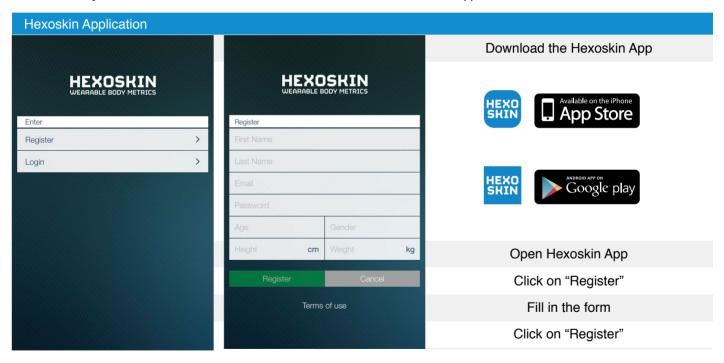
Hexoskin News

Visit our blog to read the latest news

### CREATE YOUR HEXOSKIN ACCOUNT - ON THE HEXOSKIN APP

While your Hexoskin Device is charging, you can take this opportunity to create your account. Your account will allow you to register your device, record, and synchronize your data.

You can create your Hexoskin Account either with a web browser or in the Hexoskin App.



Once your account has been created, you will have access to the HxServices software, Hexoskin App, and the Hexoskin Dashboard.

### ASSIGN A USER TO THE HEXOSKIN DEVICE WITH HXSERVICES

To complete the set up of your account, you need to assign the Hexoskin Device to a user. To do so:

- Download HxServices (if not done yet, visit hexoskin.com/pages/downloads, section "SYNC SOFTWARE")
- 2. Open HxServices
- 3. Sign in with your Hexoskin Account
- 4. Connect your Hexoskin Device to your computer with the provided USB cable
- 5. Click on the tab "Hexoskins"
- 6. Select your device from the list (serial number behind your device SN: HSKIN120000 XXXX)
- 7. Click on "Assign" at the right top corner
- 8. Select your name from the right column, then drag and drop it on your device in the left column.

Your device is now assigned to your account, and your name should now appear under your device serial number.

You can assign many devices to an account. Visit our Hexoskin Support Community online at <a href="mailto:support.hexoskin.com">support.hexoskin.com</a> to learn about managing multiple users.

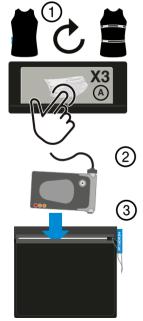


**HxServices View -** Before Device Assignation

HxServices View - Device Assignation

**HxServices View -** After Device Assignation





### PAIR THE HEXOSKIN TO YOUR SMARTPHONE/TABLET

If you want to use the Hexoskin App, you need to download it from the App Store or Google Play (if not done yet). Then, you need to pair your device to your smartphone or tablet. To do this:

- 1. Go to Settings > Bluetooth on your smartphone or tablet.

  Make sure that the Bluetooth is turned on
- 2. Set the Hexoskin Device in pairing mode by holding the button for 5 seconds straight until the blue LED turns on.
- 3. Select your Hexoskin Device in the Bluetooth devices list and wait until you see a confirmation that the device is paired. If you can't pair or connect your Hexoskin Device, repeat Steps 1-3 again.

To start using your Hexoskin App, please refer to section "EXPLORE THE HEXOSKIN APP"

### SET UP THE HEXOSKIN SHIRT

Your Hexoskin Shirt is an intelligent garment. Here are a few tips to wear it and improve the quality of the data it collects.

- 1. Turn your shirt inside out (1) and gently moisten the three textile electrodes conductive gel, or glycerin-based cream (A). Turn the shirt right side out and put it on carefully without stretching it too much. See the online videos for instructions on putting on and taking off the Hexoskin Shirt at hexoskin.com/pages/start. For better results, use the included elastic band(s) to adjust the shirt at the thoracic and navel level.
- 2. Your Hexoskin Device will start recording automatically as soon as you plug it to the shirt connector. The recording LED (the middle orange LED) will stay on for the duration of the recording. Place the Hexoskin Device horizontally into the side pocket with the wire upward and the light outward.
- 3. When you are done, unplug the device from your shirt. Once disconnected, the data recording will stop and the device will automatically shut down after 60 seconds. To recharge your device and synchronize your data, refer to section "SYNC YOUR DATA TO THE HEXOSKIN DASHBOARD".

### **EXPLORE THE HEXOSKIN APP**

With the Hexoskin App, it is possible to visualize some of your data in real time during a recording. To do so:

- 1. Download and install the Hexoskin App from the App Store or Google Play (if not done yet)
- 2. Open the Hexoskin App
- 3. Sign in with your Hexoskin Account
- 4. Tap on your device serial number (SN: HSKIN120000 XXXX)\*
- 5. Tap on "Assign" in the pop-up window\*
- 6. You are now on the Homepage
- 8. Use the toolbar of your Hexoskin Application.

## You are now on the Home Page, if you tap on:

**Go!** you can start a Fitness Test, an Activity or a preset Workout routine (the *Go!* button is also accessible from the Homepage) (see next page).

Name, access your Fitness Status, your Timeline, your Profile Info and your Account Settings.

**Sensors**, displays in real time the ECG waveform, the thoracic and abdominal breathing, and the 3-Axis accelerometer data. (see next page).

**Timeline**, displays the history of all the activities performed.

**Devices**, displays the details about the linked device. This section gives you the current battery life, the recording status, and the device serial number in use.

Home, displays your Fitness Status, your Timeline, your Live Metrics, and the Go! button.

Profile, access your Fitness Status, your Timeline, your Profile Info and your Account Settings.



Homepage View

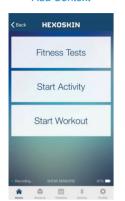


Menu View

<sup>\*</sup>Required steps only the first time you log in the Hexoskin App.

### **EXPLORE THE HEXOSKIN APP**

### Add Context



Tap on the **Go!** Button. A menu will give you a choice to start a *Fitness Test* (to assess your level of physical fitness and to calculate your cardiorespiratory metrics), an *Activity* (to add context to the recorded data) or a preset *Workout* routine.



Sleep Activity View

### Choose Activity



Tap on **Start Activity**, you can choose from the list the activity of your choice from the list.

### Visualize you Data



Tap on **Sensors**, then on *Heart*, you can visualize your ECG Waveform in real time.



Tap on **Sensors**, then on *Breathing*, you can visualize the thoracic (light blue) and abdominal (yellow) breathing signals in real time.



Tap on **Sensors**, then on *Accelerometer*, you can visualize your three Axis Acceleration (X, Y, Z).

# **Start an Activity**

If you tap on the **Go!** button, then on Start Activity, you can choose to start a Sleep activity, or any other activities.

The Hexoskin App will display the elapsed time, and the relevant metrics for the nature of the activity chosen. Please note that not all activities will display the same metrics and more metrics will be displayed after synchronizing your data on HxServices (refer to the section "SYNC YOUR DATA IN THE HEXOSKIN DASHBOARD").

You can swipe down anywhere on your screen (A) to add an annotation that will appear on the charts of your Hexoskin Dashboard (my.hexoskin.com).

When you are done, do not forget to End the activity and Save the recording.

### SYNC YOUR DATA TO THE HEXOSKIN DASHBOARD

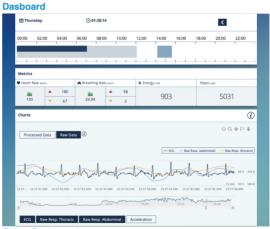
To visualize your raw and processed data on the Hexoskin Dashboard online, you need to synchronize your records with the HxServices software. Please note that your device can record up to 600 hours of biometric raw data. Past this time limit, the next record will overwrite the oldest one stored.

After a recording session, you should:

- 1. Open HxServices
- 2. Sign in with your Hexoskin Account
- 3. Connect your Hexoskin Device to your computer with the provided USB cable
- 4. Select your Hexoskin Device
- 5. Click on "Sync"
- 6. As soon as the sync is completed, your data will be available online for review on your Hexoskin Dashboard (my.hexoskin.com) and on your Hexoskin App.

### **HxServices View** HEXOSKIN **HxServices** Device HXSKIN21000 XXXX (Connect HYSMAR Hardware: Default User: Romain Lafarque Hexoskins Sessions on device Preferences CANCEL S John Doe Support May 3 2019 at 10:20 AM @ 00:59:44 (6.254 MB) About John Doe May 3, 2019 at 9:56 AM © 00:02:39 (0.279 MB) John Doe May 2, 2019 at 6:18 PM □ 00:00:35 /0 061 MRI

Data Sychronization Software



Online Dashboard

### **Hexoskin App View**



Mobile Application



On your App

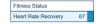
**Heart Rate:** This metric represents the number of heartbeats per minute. With the Hexoskin, the value of the heart rate is updated every second. For each recording and/or activity, the maximal heart rate (highest detected), minimal (lowest detected), and average are calculated.

135 BPM

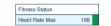
Heart rate

Unit: BPM = Beats per minute

Heart Rate Recovery (HRR): This metric estimates the decrease of the heart rate in one minute following a peak intensity exercise. A high HRR is associated with good cardiovascular function. Regular aerobic training can help you increase your HRR. You can measure your HRR by performing the fitness test "400m Maximal Sprint Test".



Maximal Heart Rate (HRmax): Indicates the highest heart rate achieved during a maximal effort. The value depends mainly on age, genetics, exercise type, and medication. By identifying your HRmax, you can determine your appropriate training zone. You can measure your HRmax by performing the fitness test "400m Maximal Sprint Test".



Resting Heart Rate: Reports the lowest heart rate value measured awake, lying down, fully relaxed, and undistracted. This metric is affected by the fitness level, age, and genetic background. It is possible to lower your resting heart rate (HRrest) with cardiovascular training. Endurance athletes can have a resting heart rate as low as 30 BPM. You can measure your (HRrest) by performing the fitness test "5 minutes Rest Test".



Range: 72-80BPM for women and 64-72 for men.





On your App

Heart Rate Variability (HRV): This metric measures the variation in the time interval between heartbeats. Hexoskin measures heart rate (HR) and its natural variances from beat to beat. HRV depends on external or internal stimuli such as emotions, heat, respiration, sleep, and physical exertion. Hexoskin provides HRV data during rest and sleep. The higher HRV, the better your body tolerates stress and/or recovers from it.



Unit: ms = miliseconds



### **BREATHING**

On your App

Breathing Rate (Br. Rate): This measure counts the number of full-breathing cycles (inspiration and expiration) per minute. With the Hexoskin, the value of the breathing rate is updated every second. For each recording and/or activity, the maximal (highest detected), minimal (lowest detected), and average breathing rate are calculated.

Breathing Rate

35
RPM

Range: as low as 6 RPM during sleep, 12-16 RPM at rest and up to 70 RPM during high intensity exercises Unit: RPM = Respirations per minute

VO<sub>2max</sub>: This measure reports the rate of oxygen consumption during a maximal aerobic exercise (where energy production depends mainly on oxygen availability) involving a large part of total muscle mass (e.g. biking or running). VO<sub>2max</sub> is considered one of the best indicators of cardiorespiratory fitness and endurance capacity. Hexoskin VO<sub>2max</sub> value is calculated by performing the fitness test 12 minutes Run Fitness Test (Available on the Hexoskin App that is equivalent to the Cooper test. The Cooper test provides an estimate of the VO<sub>2max</sub> based on the distance traveled.



Unit: ml/Kg\*min = mililiters per Kilograms per minute



On your App

**Breathing Volume:** Breathing volume (also called Minute Ventilation, Br. Volume or MV): Refers to the total volume of air inhaled during a minute.

Range: ms = miliseconds
Unit: LPM = Liters per minute

♥ BV (lpm)

73
LPM



On your App

Cadence: Counts the number of steps per minute. A fast cadence reduces loading forces on the body, possibly eliminating or minimizing common running-associated pain, including pain in the knees, in the achilles tendon, in the plantar fascia, in the lateral hips, in the lower back or in the shin splints.

Cad. (SPM)

Range: ideal cadence for jogging or running is 175-185 SPM

Unit: SPM = Steps per minute

Calories (Also known as Energy): Estimates the total number of calories (amount of energy) you burned during an activity. To maintain your current weight, you need to burn the same amount of calories as your daily caloric intake.

Calories 619

Unit: Cal = Calories

**Steps:** Reports the total number of steps recorded during an activity. The number of steps per day will depend on your lifestyle. The more steps you take, the more active you are.

Unit: Cal = Calorie

Range: sedentary lifestyle: < 5,000 steps/day; low active: 5,000-7,499 steps/day; somewhat active: 7,500-9,999 steps/day; active: 10,000-12,499 steps/day; highly active: > 12,500 steps/day

Steps 234





### **SLEEP ASSESSMENT**

On your App

Sleep Efficiency: Reports the proportion of time asleep divided by the time in bed (lying position detected). Sleep efficiency (%) = Total Sleep Time / Time in bed \* 100

Sleep Efficency

Range: The sleep efficiency is normally over 95%. A value under 85% is generally associated with a bad night. Unit: % = percentage

Sleep Position Changes: Counts the amount of sleep position changes detected during the night. The graph shows the amount of time spent in each position (Stand, Belly, Back, Right, and Left).



Sleep Stages: Reports the time spent in each sleep state.

**Time awake (wake after sleep onset):** The total time in the awake vigilance state during the sleep period, which is defined as the time between sleep onset and the last awakening.



Time in non-REM: The total time in the NREM sleep phase during the sleep period.

**Time in REM:** The total time in the REM sleep phase during the sleep period.

Time to sleep (Sleep Latency): Reports the time to fall asleep from the sleep activity start (lying position detected or sleep start annotation) to the first epoch of sleep detected.

Sleep Latency 00:08:40

**Total Sleep Time:** Reports the time spent in any sleep phase (i.e. not awake). Sleep Total Time = Time in non-REM + Time in REM

7:09:20

### **FAQ - FREQUENTLY ASKED QUESTIONS**

### Q: Why do I need to create an account?

**A:** First, without an account, you will not be able to make any recordings. Your account will give you access to the Hexoskin App to visualize your data in real time, and synchronize your data to the server with HxServices. It will also provide you access to your Hexoskin Dashboard, where you can manage your account's preferences and export all your raw data to conduct further analyses. Furthermore, some of your demographics are essential for the calculation of different metrics, such as the energy expenditure. Finally, with your account, you can also share your data with your family and friends.

### Q: What is the garment made of?

**A:** The shirt is made of 73% polyamide micro and 27% elastane. The textile is very lightweight and breathable. Every Hexoskin Shirt receives an antibacterial treatment. The Hexoskin Shirts are machine washable, and dry quickly. The garment is comfortable under the clothes and has smooth seams that will not chafe. We have different sizes available for men, women, and children (please refer to size chart hexoskin.com/pages/size-charts).

### Q: What is the weight and size of the Hexoskin Device?

A: The device weighs 40 g and measures 41x73x13 mm – 1.6x2.8x0.5 in.

### Q: What is the sensor used for breathing monitoring?

A: Our breathing sensors are based on inductive plethysmography technology.

### Q: How do I know if my device is recording?

A: Your device begins recording as soon as you plug it to the shirt connector. The middle orange LED will stay on while recording.

### Q: What happens if I lose the Bluetooth connection during a recording?

A: If you lose the Bluetooth signal, you will not lose any data. You just won't be able to visualize the data on your Hexoskin App.

### Q: Can I use Hexoskin without a smartphone or tablet?

A: You can use your Hexoskin without a smartphone or a tablet. Your Hexoskin recording device will record your activities passively. You can then transfer your data to your computer using the provided USB cable. The use of a smartphone or a tablet allows you to monitor real-time data on your heart rate, respiratory volume and rate, and your activity. You can also name the activity, time it, and add annotations on the go. As GPS data is provided by your smartphone, no location data will be recorded if you are not using Hexoskin with your phone or tablet.

### Q: Where is my data stored during a recording?

**A:** The data is recorded and stored on the device. The data needs to be synchronized with HxServices to be transferred to the Hexoskin Servers, where they will be processed.

### **FAQ - FREQUENTLY ASKED QUESTIONS**

### Q: Are the data time-stamped?

A: Yes, all the data are time-stamped. Your time zone is set by the browser and is indicated on the Hexoskin Dashboard.

### Q: What is the battery charge length?

**A:** If you have a Smart device, the battery will last 30 hours while for a Classic device, the battery life is 12 hours on a full charge. It takes about 2 hours to fully charge it. Please wait until the blinking orange light becomes solid to be sure that the device has been fully charged.

### Q: Can I swim with my Hexoskin?

**A:** Your Hexoskin shirt is waterproof. While the Hexoskin Device is water-resistant, swimming with your Hexoskin can damage the device. Damages resulting from immersing the Hexoskin Device in water are not covered by the Warranty.

### Q: Can Hexoskin be used to diagnose a medical problem?

**A:** Hexoskin is meant to be used for remote monitoring, sports, activity tracking, education, and health research. It is not sold as a medical device, and should not be used for diagnostic or therapy purposes. If you suspect a medical condition, you must contact a medical professional immediately for consultation.

### **CARE INSTRUCTIONS**

The Hexoskin Shirts are machine washable but the recording devices are not! The Hexoskin Device Connector entrance is not waterproof. Before washing, remove the device and put the connector back into the zipped pocket to protect it. Use the Delicate cycle with cold water and then, hang to dry. The Hexoskin Garments do not go in the dryer. Avoid storing your Hexoskin in a plastic bag or other sealed container after wearing it to avoid odors.

For optimum performance, be sure to clean your Hexoskin Device regularly when it becomes noticeably moist or dirty. Use a soft cloth moistened with mild soap to clean the device and a dry soft cloth to dry it completely.

### **SUPPORT**

For any support inquiries please visit support.hexoskin.com or contact us at support@hexoskin.com



### WARRANTY

### **HEXOSKIN HARDWARE DEVICE**

Hexoskin warrants the Hexoskin hardware device against defects in materials and workmanship under normal use during a "Warranty Period" of one year from the date of retail purchase by the original end user/purchaser. If a hardware defect arises and a valid claim is received within the Warranty Period, Hexoskin will either:

- repair the hardware defect at no charge;
- exchange the product with a product that is new or refurbished that is equivalent to new;
- refund the purchase price of the product (See our «RETURN POLICY»).

### **HEXOSKIN GARMENT**

The Hexoskin Garment is under warranty during 14 days after delivery.

### **RETURN POLICY**

Your satisfaction with your Hexoskin product is important to us. If you are not satisfied with your order, simply return it to us in its original condition within 14 days of receiving it and we will give you an account credit for the entire amount, less shipping and handling charges. A refund will be applied once the merchandise has been received and inspected by our Support Team.

### RETURN EXCHANGE PROCEDURE

In order for your claim to be processed promptly, please follow the return directions below:

- · Contact us to obtain an RMA number.
- Return the Hexoskin device(s) and/or garment(s) in its original packaging. The RMA number must clearly appear on the packaging.
- Make sure that all hang tags, boxes, cables & straps etc. are returned with the item(s).
- Please use your local postal service to ship your return to us. Make sure to affix adequate postage. We suggest you use a traceable and insured shipping method.
- · Please include a copy of your packing slip with your return, we will need this to identify your return.

### SAFE DISPOSAL

Join us in our efforts to protect the environment! If you ever want to dispose of your Hexoskin Device, please take it to a designated electronics recycling depot. This will help to conserve natural resources and ensure that your Hexoskin Device is recycled in a manner that protects human health and the environment.

If you do not have access to a certified electronics recycling service, we invite you to return your Hexoskin Device to us. You can find our address on <a href="https://www.hexoskin.com/contact">www.hexoskin.com/contact</a>. Hexoskin will ensure that it will be disposed of in an eco-friendly manner.

### **CERTIFICATIONS & COMPLIANCE**

FCC CFR 47: 2011, Part 15, Subpart B, Class B, Radio Frequency Devices

FCC (SMART) WAP2001 / IC ID: 7922A-2001 FCC (CLASSIC) PVH0925 / IC ID: 5325A-0925

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operations.

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# **YOUR PERSONAL NOTES**







