



Physilog®5

User manual

Thank you for purchasing Physilog®5, the Swiss quality movement sensor. This manual introduces how to use the different features of the sensor.

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1. Physilog®5 elements



2. Charging

The Physilog®5 is charged via the microUSB port. Plug the microUSB connector of the cable delivered with the Physilog®5 to the Physilog®. Plug the USB connector to a Computer or charger (see voltage specifications below). Physilog®5 must be turned off for charging. Do not charge Physilog® when room temperature is outside of range 0°C to 45°C.



Warning: Be careful to plug the microUSB cable in the correct orientation into the Physilog®, forcing the connector may permanently damage the Physilog® and compromise its waterproofing.

Low battery level is indicated by orange (red and green LED on) blinking during measurement or if the Physilog® blinks rapidly 3 times red when starting and doesn't start the recording (see LED indications below). A battery level estimation is available in the mobile application (free to download from www.gaitup.com/support). When the Physilog® is discharged, plug it for charging for at least 30 minutes before use.

It is recommended to avoid complete discharging of the Physilog®5, therefore check that the Physilog® sensors are off when you store them. After a long period without using the Physilog®, plug it for charging for at least 30 minutes before use. It may happen that the LED doesn't blink orange at the beginning of charging after the battery was very low, to see the charging ongoing shortly push the main button or disconnect and reconnect after some charging time.

Supply Voltage specifications

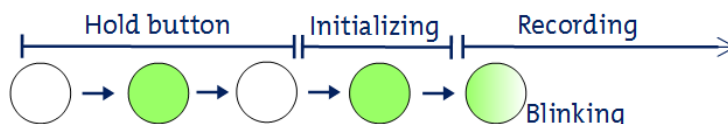
The Physilog® 5 should be charged using USB at 4.2V, 100mA. For charging, the ambient temperature must lie between 0°C and 45°C.

3. Recording with Physilog®5

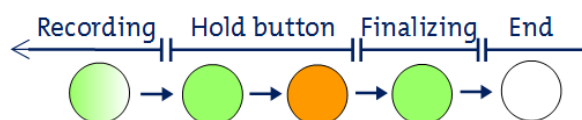
There are two ways to start and stop a measurement with the Physilog®5:

3.1 Standalone measurement

Press on the main button (for about 2 secs, until the green light turns off) to start the measurement. During measurement, the Physilog®5 blinks green.



Hold the main button for 3 seconds, until the light turns orange to stop the measurement. When the measurement has been concluded, the LED shortly blinks green three times.



3.1.1 Standalone synchronous measurement with multiple Physilog®5

Starting from firmware version 1.1.0 (June 2017):

The Physilog®5 sensors synchronize regularly during the measurement. A network includes one single master sensor and several slave sensors (from one to as many as wished). Multiple sensor networks can be created by selecting a different radio channels. The network configuration is done via the Research ToolKit Desktop software (see RTK user manual for details) and saved in the conf.bin file on each Physilog®5.

To perform a measurement with synchronized Physilog®5, turn all sensors of the network on with the main button (like for standalone measurement above) with short time intervals (all must be started within one minute). No precise order of starting the sensors is necessary. Each sensor starts recording data from start and once it is synchronized with the master sensor it will blink green synchronously with the master sensor. To stop the measurement, push the main button of the sensors until the LED turns orange, you can turn off the sensors in any order.

Firmware before v1.1.0:

The Physilog®5 sensors synchronize automatically at start when they are correctly configured. Slave sensors contain a file named “slave.txt”, the Master sensor doesn't have such a file. You can create and delete the “slave.txt” file as you need for your sensor network configuration. A sensor network can contain as many slave sensors as wished, but there must be a single Master sensor.

Multiple sensor networks can be created by selecting a different radio channels, therefore create a file called “radio.txt” and write a number between 2 and 80 (which sets the radio channel) and copy-paste it on all Physilog® (also the Master) that are part of a network. Each network should have a different radio channel in order to exclude cross-talk and one and only one Master per network must be defined.

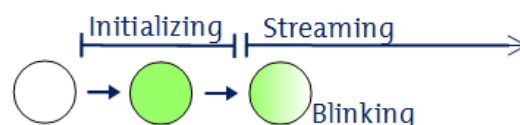
To perform a measurement with synchronized Physilog®5 follow the steps below:

- 1) Start the sensors with the main button (like for standalone measurement above). One of the sensors (Master) will start to blink green, the others (Slaves) shine green and don't record until they receive the synchronization signal from the Master sensor.
 - 2) Once the sensors are synchronized, they blink green synchronously with the Master sensor and record.
 - 3) To stop the measurement, press the main button of the Slave sensors. They shine green until they have received the final synchronization information from the Master. The Master must be turned off as last, after all the Slave sensors have turned off the green LED.
- To start a Slave sensor without receiving the signal from the Master, shortly press the main button when it is shining green, the sensor will start the measurement without being synchronized to other sensors. To stop slave sensors without waiting for Master synchronization, shortly press the main button again when the LED is shining green after turning off the recording.

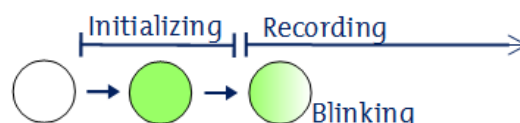
3.2 Start measurement from tablet

The companion Android application allows to start Physilog®5. Two modes are available in the application, for details refer to the user manual of the Android application. There is no need to pair your Physilog® with the tablet prior to Bluetooth communication, just select the Physilog® from the list in the app. If the sensor is not detected by the tablet, shortly press the main button to enter detection mode. If the sensor can still not be connected, check that it has enough battery and plug and unplug the sensor to a computer.

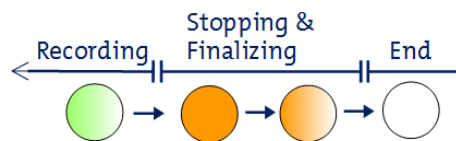
Briefly, the first mode one is called “**Signals Visualizer**”, it can be used to check if the sensor's data looks as expected. Up to 4 sensors can be connected to the application at the same time for this mode. The “**Signals Visualizer**” starts displaying data from connected sensors automatically (no start button). It does not store the data, neither on the tablet nor on the Physilog®. During the measurement, the Physilog®5 blinks green where each blink is made of two short flashes. To stop data streaming either disconnect the sensor or exit this part of the application.



The second mode is called “**File Transfer**” and allows to start and stop data recording of the Physilog® of up to two sensors at the same time. When pushing the “Start measurement” button, the connected Physilog start recording and sending the data file to the tablet. When launching two Physilog®5 at the same time using the tablet application they can be synchronized in post-processing in Matlab.



The data is streamed to the tablet during the measurement, for high sampling frequencies (over 64Hz) and multiple Physilog® the data transfer encounters some delay and remaining data is transferred after the end of the measurement. Data saved on the tablet only contains accelerometer and gyroscope data, even if the barometer was turned on. The original data with all sensors is saved on the Physilog®. During the measurement, the Physilog®5 blinks green where each blink is made of two short flashes. To stop the measurement, click on the “Stop measurement” button in the application. In case the sensors have not sent all data to the tablet during the measurement, they twinkle orange to show that data transfer is still ongoing. The tablet application shows the percentage of the file already transferred.



Note: Bluetooth 4.0 or higher is required on the mobile device to be able to communicate with Physilog®5.

4. Data Analysis

Physilog® always saves raw data on its internal memory, except when streaming the data live via Bluetooth in the “Data visualizer” part of the app. Users have access to the raw data through companion software called Research ToolKit (RTK). The RTK is available for computer (PC and Mac). Functions to read raw data inside MATLAB® are also available. Please refer to the RTK user manual for more details.

USB data transfer

Data saved on the SD card inside the Physilog® can be accessed using USB data transfer. Therefore, plug the USB cable to the Physilog® and a computer. The Physilog®5 connects to the computer almost instantaneously and files can be accessed. One file for each measurement is created and files are stored in folders depending on creation date. The file name is composed of a file number (increasing from 001 to 999), the body location (as defined in the configuration, f.ex. 'LF') and the sensor serial number. Copy-paste the files to your computer for analysis. From here you can also rename folders and files or delete the files from Physilog®'s memory.

Warning: Do not remove the conf.bin file which contains the configuration information, otherwise the Physilog® will not record any data. If this happens, recreate a configuration using the Research ToolKit or contact Gait Up support.

5. Practical Considerations

5.1 Fixation

The Physilog®5 comes with a fixation clip as default attachment accessory. Additional clips and elastic straps with Velcro patches to stick onto the Physilog® can be purchased from Gait Up's online shop (shop.gaitup.com).

5.2 Handling / Maintenance

Physilog®5 should be handled carefully. In particular, it should not receive shocks, such as fall, crushing, being hit etc. Do not press too hard on the on/off button, this can damage the button.



Warning: Do not use or charge the Physilog® if the sensor or its case is damaged. Contact Gait Up about what further action is needed when the case is damaged. In case the battery is damaged immediately move the device away from flammable materials and contact Gait Up's customer support.

- To benefit from the maximal battery life, fully charge Physilog® sensors before doing measurements (LED shines green when connected to computer or charger, you can also check with the App).
- Copy trial recordings to your computer: Physilog® is not the best place to keep important data.
- Physilog®5 can be used outside. But do not use Physilog®5 to measure water-sport activities without additional waterproofing.
- Do not introduce pointy objects into the small hole besides the USB entry, this irreversibly damages the waterproofing of the sensor.
- Storage: Store in a cool (0°C – 30°C) and dry place. The provided box is the perfect place for your sensor.
- Cleaning: Sensors can be cleaned gently using alcohol wipes. Before you clean the device make sure it is turned off and disconnect all cables. Alcohol used in excess may damage the sensor's waterproofing. Make sure to use wipes and not put liquid alcohol directly on the sensor.
- Sensors do not need yearly recalibration.
- Do not throw Physilog® sensors in the normal trash, dispose of it properly considering local laws and rules about electronic waste and batteries. Contact Gait Up's customer support for more information about elimination of Physilog®.
- Make sure to know which Physilog® file corresponds to which trial for your analysis – First digits of file name are automatically incremented for each day of measurement (exceeding 999 and firmware update resets the increment back to 001). Note that date of file generation (recorded between one start and stop of the Physilog®) is visible in the XLS or CSV file and the Matlab structure “header”. If you wish to adapt internal date and time of the Physilog®, read section below.
- Do not remove the “conf.bin” file from the Physilog, otherwise it will create empty files (no sensor activated). If this happens, recreate a configuration in the Research ToolKit software or contact Gait Up's customer support.

Safety information

- Physilog®5 includes a lithium battery. This battery may only be charged over a limited temperature range. Never attempt to dock or charge your Physilog® when the temperature is outside of the range of 0 to 45°C.

Physilog®5 should be charged through USB connection with a computer. An external charger may be used; note that no charger is provided by Gait Up. Gait Up declines any responsibility due to charger usage.

Supply voltage should be as follows: DC, 4.2V. Current consumption is 100mA. All external circuits connected to the Physilog®5 should be «Safety Extra Low Voltage» and «limited Power Sources» circuits as described in the following standards: IEC60950-1:2005+/A1:2010 & EN60950-1:2006+/A11:2009+/A1:2010+/A12:2011

Warnhinweise:

- Physilog®5 enthält eine Lithium Batterie. Die Batterie soll nur in einer definierten Temperaturspanne aufgeladen werden. Versuchen Sie nie Ihren Physilog® an den Computer anzuschliessen oder aufzuladen, wenn die Aussentemperatur nicht zwischen 0°C und 45°C ist.

Sensoren sollen durch eine USB Verbindung mit einem Computer aufgeladen werden. Ein externes Ladegerät kann benutzt werden; Gait Up empfiehlt und liefert aber kein externes Ladegerät. Gait Up übernimmt keine Haftung falls ein Ladegerät gebraucht wird.

Die erlaubte Netzspannung ist: DC, 4.2V. Stromaufnahme beträgt 100mA. Alle an den Physilog®5 angeschlossenen externe Stromkreise sollen die «Sicherheitskleinspannung» und «mit begrenzter Leistung» Regeln erfüllen, die in den folgenden Normen beschrieben sind: IEC60950-1:2005+/A1:2010 und EN60950-1:2006+/A11:2009+/A1:2010+/A12:2011

Informations relatives à la sécurité:

- Physilog®5 contient une batterie au lithium. La batterie ne doit être chargée que si la température extérieure est dans les limites définies. N'essayez jamais de connecter ou charger votre Physilog®5 si la température ambiante est en dehors des limites de 0 à 45°C.

Physilog®5 doit être chargé par une connexion USB avec un ordinateur. Un chargeur externe peut être utilisé; mais Gait Up ne livre et ne recommande pas de chargeur. Gait Up refuse toute responsabilité liée à l'utilisation d'un chargeur externe.

La tension de réseau devrait être: DC, 4.2V. La consommation de courant est de 100mA. Tout circuits connectés à Physilog®5 doivent être «très basse tension de protection» et «source à tension limité» comme décrit dans les normes suivantes: IEC60950-1:2005+/A1:2010 et EN60950-1:2006+/A11:2009+/A1:2010+/A12:2011

5.3 How to update Date and Time of the Physilog®5

Via computer:

- Create a new text file on the Desktop of your computer or directly on the Physilog® sensor (right click, new>text file)
- Leave it empty and rename it to TIME.txt
- Copy-paste the file to the Physilog® if you created it on the Desktop
- Disconnect the Physilog® from the computer to update the time and date to the hour when the file has been created

Create a new text file each time you update the date, do not just rename or modify an existing TIME.txt file (TIME.txt file previously created will update to the date it was created, so in the past).

The TIME.txt file will disappear from Physilog's memory when disconnecting the Physilog® from the computer, therefore it is normal to not find it the next time you open the Physilog® on the computer.

Via Android application:

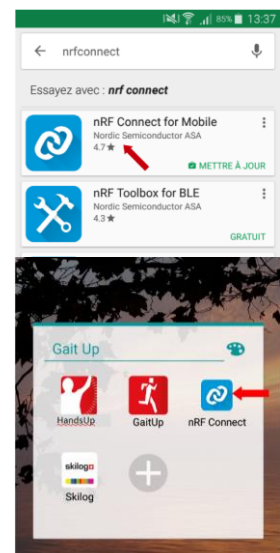
Connect the Physilog® to the Android companion application inside the “Data Visualizer” mode. For each Physilog® quit the app completely and reopen it, then connect one Physilog®.

5.4 How to update firmware of Physilog®5 with nRF Connect

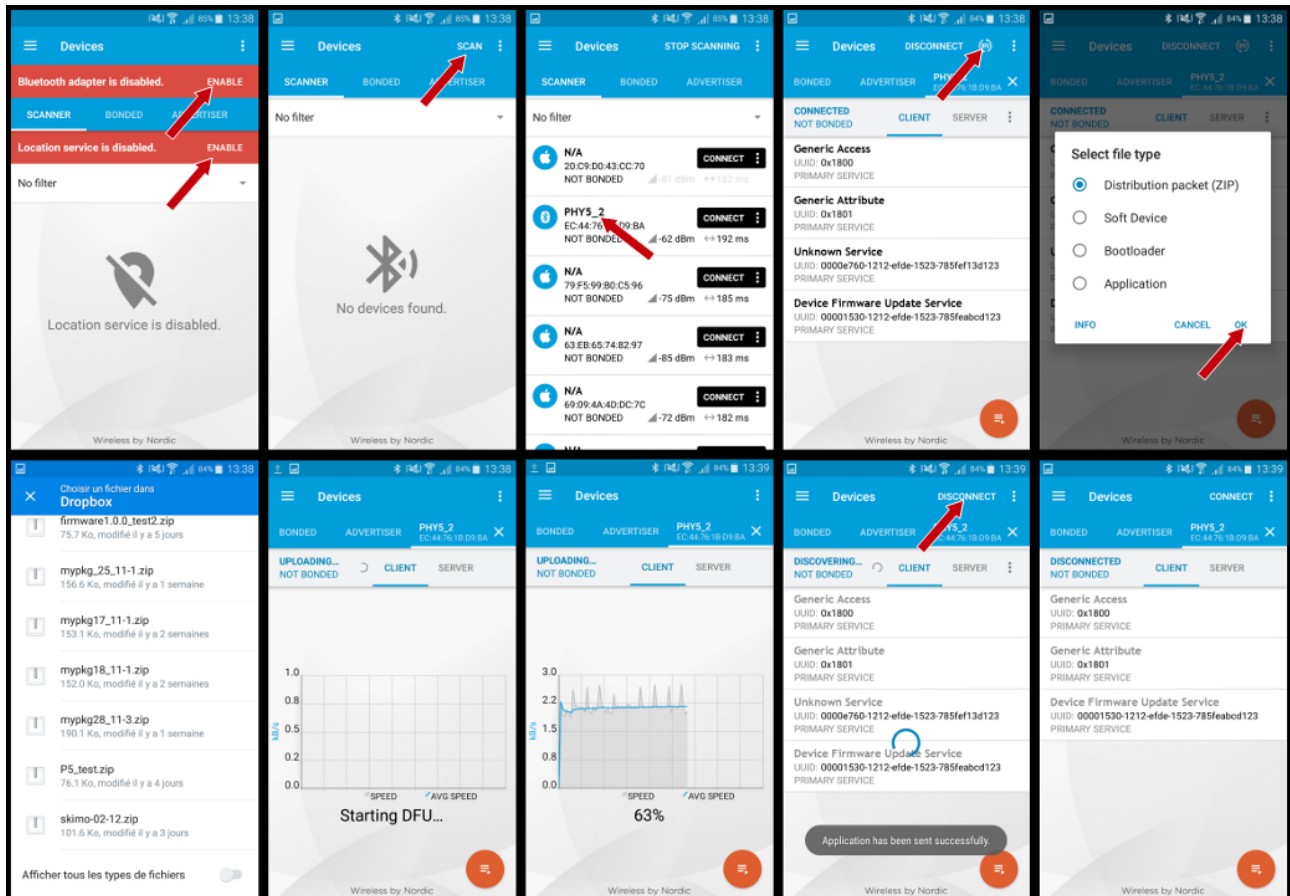
The firmware is updated via Bluetooth. Therefore, install the nRF application on a mobile or tablet (Android or iOS) and follow the steps below:

Android

- Install the “nRF Connect for Mobile” app on the Android device
- Download the latest firmware version from the email to the Android device
- Open the nRF Connect app and enable all necessary permissions (Bluetooth and Position, see pictures below)
- Go to Scanner tab and scan for surrounding Physilogs (shortly push the main button of the Physilog®5 to enter detection mode)
- Select connect of one Physilog®5 sensor in the list
- In the top right corner of the app click on the DFU button (on the right of “Disconnect”) and select “Distribution Packet (ZIP)” from the proposed options
- Get the new firmware file from where it was downloaded
- Wait until the graph in the app has shown that 100% of the firmware was transferred, this may take some minutes

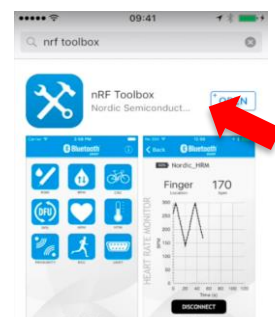


- Disconnect the Physilog® by clicking on “Disconnect” and close the tab of the Physilog®5
- Do a reset of the Physilog® (hold the main button until the LED shines orange, blinks red and then stops)
- Plug the Physilog® to the computer and update the date and time (see above)



iOS

- Install the “nRF Toolbox” on the iOS device
- Download the latest firmware version from the email to the iOS device
- Add the downloaded firmware to nRF Toolbox by connecting the iOS device to the computer
- Open iTunes and select your phone
- Select the “Apps” tab on the left and scroll down
- Under “File Sharing” select the nRF Toolbox app and add the Firmware file to the Documents list
- Click on “Done” and disconnect phone from computer
- Open the nRF Connect app on the iOS device and enable Bluetooth
- Shortly push the main button of the Physilog®5 to enter detection mode



- Open DFU option of the app
- Click on “Select File” and go to the tab “user files” where you find the firmware added to the app earlier
- Click on “Select device” button and look for surrounding Physilogs
- Select connect of one Physilog®5 sensors in the list
- Click on “Upload” and wait until the percentage has arrived at 100%, this may take some minutes
- Do a reset of the Physilog® (hold the main button until the LED shines orange, blinks red and then stops)
- Plug the Physilog® to the computer and update the date and time (see above)

5.5 Sensor specifications

Component	Manufacturer	Remarks
Inertial Sensors	STMicroelectronics	3D Accelerometer up to 16g 3D Gyroscope up to 2000°/s
Ambient Sensor	STMicroelectronics	Barometric altitude from 260 to 1260 hPa Temperature sensor accuracy of +/-1.5°C
Radio Chip	Nordic Semiconductors	Multi-standard: Bluetooth Low Energy (BLE), Ant+, and Near field communication (NFC)
Internal Memory	Apacer	Class 10 microSD Card, 8Gb
Microcontroller	Nordic Semiconductors	ARM® Cortex® M4 with floating-point for on-board processing
Micro-usb interface	Amphenol FCI & Microchip	Waterproof IP67, with dedicated chip for fast data transfer. High-speed USB 2.0
Battery	Renata	Lithium Ion Polymer Accumulators 3.7V 140mAh
Plastic Enclosure	ABS Polylac® PA-757	Biocompatible with bi-color LED and 8mm button
Operating Temperature		From -20° to 45°C
Assembly	Locatis Electronics SA (CH)	Weight 11 grams Dimensions 26,5 x 47,5 x 10 mm
Extension Board (optional)	Ublox Melexis	Low-power GPS/GNSS module High-quality 3D Magnetometer

Component Manufacturer Remarks

3D orientation

3D orientation of the sensor is calculated on-board during the measurement when in streaming mode (sensor started through “Data Visualizer”). A 3D model of the Physilog®5 which indicates its orientation can be displayed for illustration purposes. The Matlab function to read the .BIN file has the option to output the quaternions and Euler angles.

5.6 Battery autonomy estimations

Measuring channels			Radio settings	Firmware version	Approx. Autonomy *
3D Accelerometer	3D Gyroscope	Barometric pressure	Master / slave / no radio	Version (release date)	Hours
256Hz	256Hz	64Hz	-	1.0.2 (02.03.2017)	18h
128Hz	128Hz	64Hz	Master / slave pairs / no radio	1.1.0 (14.06.2017)	20h
128Hz	128Hz	64Hz	Slave without master	1.1.0 (14.06.2017)	10h
256Hz	256Hz	64Hz	Master / slave pairs / no radio	1.1.0 (14.06.2017)	18h
256Hz	256Hz	64Hz	Slave without master	1.1.0 (14.06.2017)	10h
512Hz	512Hz	64Hz	Master / slave pairs / no radio	1.1.0 (14.06.2017)	15h
512Hz	512Hz	64Hz	Slave without master	1.1.0 (14.06.2017)	10h

*Autonomy measured at room temperature

5.7 Troubleshoot

Soft reset

The soft reset is the manipulation which can be done if the Physilog® is not working properly. To do a soft reset, hold the main button for 15 seconds. The LED shines red/orange and then stops. If the problem persists, fill out the contact form on the support page (www.gaitup.com/support) or write an email to: contact@gaitup.com. Please indicate Physilog® serial number and describe the problem in as much detail as possible (number of red blinks, last manipulation etc.).

LED indications

Situation	Description	Meaning
Connected via USB	Green continuous	Fully charged
	Orange blinking	Charging
	Multicolor blinking	Data transfer
	Red continuous	Error 1
During standalone measurement	Green blinking	Measuring
	Green continuous	Waiting for synchronization
	Orange blinking	Low battery
During measurement started from application	Green blinking (2 flashes per blink)	Measuring and sending data to application
	Orange blinking (2 flashes per blink)	Measuring, connection to application to send data lost
	Green/orange blinking (1 green, 1 orange flash per blink)	Measuring and sending data to application with low battery
Error indications	2 rapid red blinks, pause – repeated 3 times in total	Error 2
	3 rapid red blinks, pause – repeated 3 times in total	Error 3
	4 rapid red blinks, pause – repeated 3 times in total	Error 4
	5 rapid red blinks, pause – repeated 3 times in total	Error 5
	6 rapid red blinks, pause – repeated 3 times in total	Error 6

Troubleshoot for error indications

Error Type*	Troubleshoot
Error 1	Disconnect and replug the Physilog®
Error 2	Contact Gait Up
Error 3	Charge the Physilog®
Error 4	Contact Gait Up
Error 5	Contact Gait Up
Error 6	Empty the memory card

*see LED indication above

6. Limited Warranty & Support Policy

Warranty:

Gait Up offers 12 months parts and labour on Physilog® starting from the date of delivery. If within one year from the date of delivery to the customer the equipment does not comply with the foregoing Limited warranty, Gait Up will at Gait Up's option, repair, replace or refund the purchase price of the defective equipment free of charge to the customer. Customers requesting repair, replacement or refund are required to ship, the Physilog® to Gait Up. As a condition of this warranty, customers must contact Gait Up's customer service for instructions on and approval of shipment prior to returning any defective Physilog®. The warranty shall not apply to any product or component thereof which has been repaired or altered by anyone other than Gait Up in any manner so as, in Gait Up's judgement, to affect its service ability, or any product been subject to alteration, accident, misuse, abuse, neglect or abnormal wear. Gait up warrants solely to the original purchaser (customer). Only the terms expressed in this warranty shall apply and no distributor, corporation or individual is authorized to amend, modify or extend this warranty in any way.

Gait Up shall have no liability for any consequential, incidental or special damages by reason of any act or omission or arising out of or in connection with the equipment or its rental, delivery, installation, maintenance, operation, performance or use, including without limitation any loss of use, lost revenue, lost profits or a cost associated with downtime. The obligations contained in this paragraph continue beyond the term of this limited warranty.

Physilog® and Gait Analysis Software are not considered as proper Medical Devices, since they do not support directly diagnosis, but they provide data which have to be analysed and approved by medical doctors for them to make their diagnosis. Reclamations regarding medical devices will not be considered.

Support Policy:

Support does not include:

- support for 3rd party hardware, software, mailing lists or web content

- writing or debugging customer applications and deployments

- detailed explanations of the engineering principles behind our software and hardware

- support for systemic problems beyond the scope of the actual Physilog® and existing systems software (IT issues, computer operation)

- support for customers whose conduct fails to meet professional standards

Occasionally we engage in more interactive support or consulting. Interactive support is a customer courtesy and is provided at Gait Up's discretion. It does not invalidate the support policy described above. There is no guarantee of performance, timeliness, or establishment of a continuous support relationship. Consulting is subject to acceptance of a formal statement of work.

7. Certification claims

IC statement

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. This device complies with Industry Canada radiation exposure limits set forth for general population. This device must not be co-located or operating in conjunction with any other antenna or transmitter.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement. Le présent appareil est conforme aux niveaux limites d'exigences d'exposition RF pour la population globale définies par Industrie Canada. L'appareil ne doit pas être installé à proximité ou être utilisé en conjonction avec une autre antenne ou un autre émetteur.

FCC statement

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 operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures: - Reorient or relocate the receiving antenna. - Increase the separation between the equipment and receiver. - Connect the equipment into an outlet on circuit different from that to which the receiver is connected. - Consult the dealer or an experienced radio/TV technician for help.

This device complies with FCC radiation exposure limits set forth for general population. This device must not be co-located or operating in conjunction with any other antenna or transmitter.

Caution: the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Contact information

At Gait Up, we welcome your feedback and questions.

Please contact us at:

EPFL Innov' Park - C

CH-1015 Lausanne

tel: +41 21 633 7527

mail: contact@gaitup.com

web: www.gaitup.com

Document Version	Changes	Responsible	Date
1.2.0	Initial release to public	Rebekka Anker	4 jan. 2017
1.2.1	Changes related to firmware 1.0.2: - Radio channel selection - End of measurement synchronization - File name description - Firmware update – reset at end - Physilog®5 autonomy updated	Rebekka Anker	21 feb. 2017
1.2.2	Changes related to firmware 1.1.0: - Fixation clip image - Continuous synchronisation - BLE measurements - Time update with application - BLE measurement LED indications - Autonomy - Certification statements	Rebekka Anker	12 June 2017
1.2.3	Complete information for certification	Rebekka Anker	08.08.2017