User manual and Outcome parameters

PhysiGait Lab

Thank you for purchasing our PhysiGait Lab, the easy-to-use system to accurately measure spatio-temporal gait performances. Physilog®5 sensors measure the movement in the field and the dedicated software on a USB key computes relevant information with in-lab precision. This manual introduces how to use the sensors and software on USB key to perform gait analysis.

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1. PhysiGait Lab elements

Transport/storage case
2x USB-microUSB cable
2x Physilog®5 sensor
2x Rubber clip for sensor attachment
or 2x foot attachment strap

Contact card
Quick start guide for Physilog®5
Gait Up software, License on USB key

2. Gait recording with Physilog®5 - Basics

Attach	**Start**	**Walk**
Fix the sensors on the feet/ shoes using the rubber clips or foot attachment straps.	Start the recording by pushing the main button for 2 seconds, the LED becomes green and turns off when the sensor is starting. Hold button	Wait until the two sensors blink green synchronously and ask the subject to walk according to your protocol.

Stop	**Plug**	**Save to PC**
Stop the sensors* by pushing the main button for 3 seconds until the LED turns orange. The LED blinks green 3 times when the sensor is correctly stopped. Hold button Finalizing End	Connect the Physilog® to the computer via the USB-micro USB cable	Copy-paste the .BIN files from the Physilog® to the computer for analysis

* See section 5.2 for early firmware versions

3. Gait recording detailed description

3.1   Attachment

The PhysiGait Lab is delivered with 2 rubber clips as default accessory. Elastic foot straps can be bought from the web-shop (shop.gaitup.com) if needed, for example to measure barefoot gait.
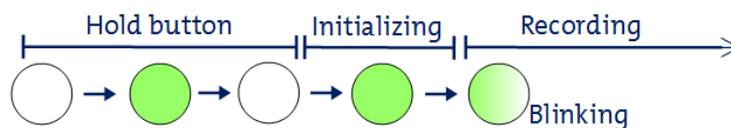
To insert the Physilog®5 into the rubber clip, slide the sensor into the clip on one side then carefully pull the rubber of the opposite side to cover the edge of the Physilog®. The USB entry of the Physilog® should be oriented in front of the clip opening, so that the sensor can be charged without removing the clip.

For gait measurement the sensor can be fixed in any orientation on the foot, either in the shoelaces or on the outer side of the shoe (on the inner side there is a risk of disturbing the gait). The computed gait parameters will not be influenced by the sensor position. Fix the sensor such that it doesn't move with respect to the foot / shoe.

3.2   Start the recording from the sensors

To start the sensor, push the main button for about 3 seconds. The LED becomes green and stops again, at this moment you can release the button. It doesn't matter which Physilog® you turn on first.

For **firmware version 1.0.4**, the "master" sensor will start to blink green immediately, the slave sensor shows a continuous green light until it has obtained the synchronisation signal which starts its recording ("Initializing" in the illustration above).

For **later firmware** versions (v1.1.0 upwards, released June 2017), both sensors start to blink from the start, when they are synchronized the blinking is simultaneous. To better see if they are synchronized it is recommended to start the sensors with a short lag between the starts.
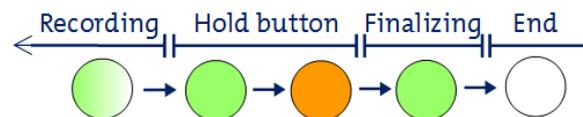
In all cases wait until the two sensors blink green simultaneously before starting the movement. The best practice is to start the sensors when they are already attached to the foot. Otherwise turn them on just before fixing on the subject and ask the subject to stand still for 5 seconds with the Physilog® on the feet to allow proper auto-calibration of the system.

3.3 Walk

Gait Up's PhysiGait Lab system can be used to measure various walking tests, the system is designed for logged gait tests of various length and protocol such as 20m gait test, 6min walk test or a figure-of-eight test. When measuring several different protocols or conditions it is recommended to generate one sensor file for each, that is: start and stop the recording for each test or refer to heel strike times.

3.4 Stop the recording

To stop the recording push the main button of the sensors for about 3 seconds.

In order to have the synchronisation of the sensors at the end of the measurement in **firmware v1.0.4**, you need to turn off the "slave" sensor first. This is the sensor that remained green for some time at the beginning of the recording and which has a text file called "slave.txt" on the internal memory. When pushing the main button, the LED will be green and turn orange (red and green LED on), this is the moment when you can release the button. The "slave" sensor displays the green LED on until it has received the synchronisation from the "master" ("Finalizing" on the illustration below) after which it turns off (with 3 rapid green blinks to mark successful data recording). You can then turn off the "master" sensor in the same way, push the main button until the LED becomes orange and then release the button.
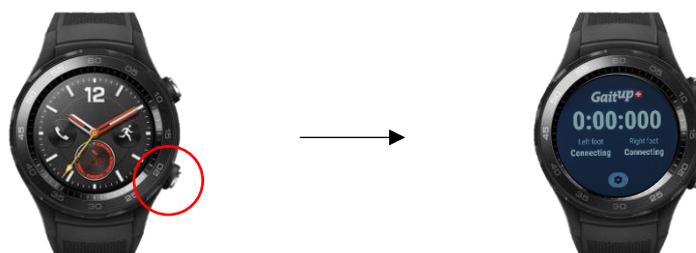

For **later firmwares** (v1.1.0 upwards, released June 2017) it is not necessary to stop the slave sensor first and wait for synchronization, the sensors can be turned off in any order. When pushing the main button, the LED will be green and turn orange (red and green LED on), this is the moment when you can release the button. The sensors turn off with 3 rapid green blinks to mark successful data recording.

Between each start and stop of recording one file is created and stored on the internal memory of the Physilog®5.

3.5 Start the recording from the smartwatch

Alternatively to the recording using the button of the sensors, it is possible to control them from the remote control smartwatch application. To open the app, press the lower right button of the included smartwatch.

When using the watch for the first time with the sensor pair, check that the correct serial numbers are entered in the settings. For this, press the gearwheel button at the bottom of the screen and control that the two set numbers correspond to the serial numbers written on the back of the sensors. To change the values, click on the number field and enter the correct serial numbers for the left and right foot sensors, then click "Done".

Briefly push the button on the sensors (1sec) to activate their Bluetooth (do not start a recording). The app shows "Connecting" then "Connected" for both sensors. Install the sensors on the feet of the subject as suggested above and get ready for the recording.

To start the sensor recording, press the lower right button of the smartwatch once. The status of the sensors will change to "Ready" and the recording has started.

When pressing the lower button of the watch again, the app stopwatch starts to run.

To stop the recording, press the lower button again, the stopwatch and sensors stop recording.

3.6   Plug the Physilog® to a computer

For both recording options, data saved on the SD card inside the Physilog® can be accessed using USB data transfer. Therefore, plug the micro-USB cable end to the Physilog® and the USB connector to a computer. The Physilog®5 connects to the computer almost instantaneously and files can be accessed like from a USB key.

3.7   Transfer

One file for each measurement is created and files are stored in folders depending on creation date (YY_MM_DD for firmware v1.2.2 upwards, DD_MM_YY for firmware v1.1.0). The file name is composed of a file number (increasing from 1 to 999), the body location (as defined in the configuration, f.ex. 'LF' for left foot) and the sensor serial number (written on the back of the sensor). Copy-paste the files to your computer for analysis, a gait measurement with two sensors generates two files (one per sensor, i.e. one per foot). Retrieve the corresponding files from the memory of each sensor and store the file pairs from the gait test in the same folder on the computer to be analysed together. From here you can also rename folders and files or delete the files from Physilog®'s memory.
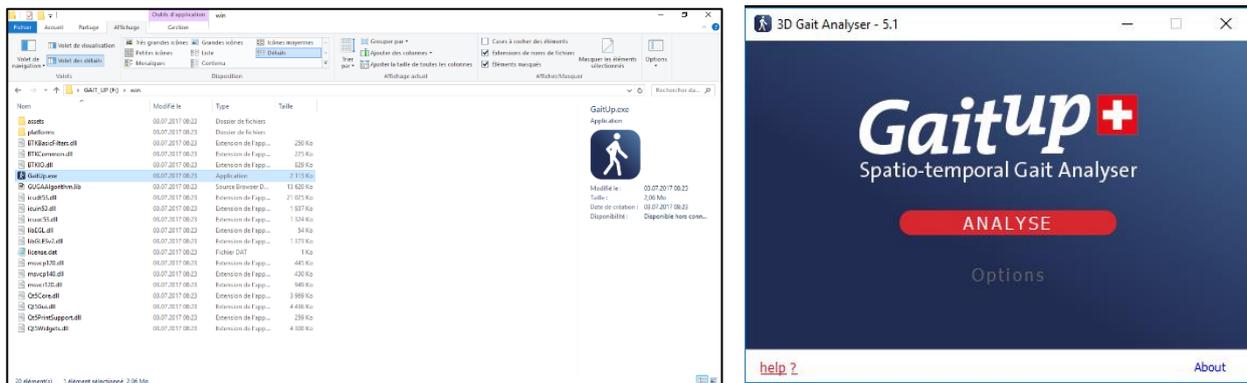
Do not remove the conf.bin file which contains the configuration information, otherwise the Physilog® will not be able to record any data. If this happens, recreate a configuration using the Research ToolKit or contact Gait Up's support (www.gaitup.com/support). If the sensors still work with firmware v1.0.4 also do not remove the "slave.txt" file without which the two sensors will not synchronise any more. For firmware v1.1.0 upwards, a default configuration based on original configuration is created to compensate the removal of the conf.bin file and the "slave.txt" file is no longer needed.

4. Analyse the data

The software of the PhysiGait Lab version is stored on a USB key. Its license is linked to the USB key hardware and therefore it is only possible to start the software from the USB key. This USB key does not require you to install the software on a computer and allows you to use the software when plugged to any compatible computer.

To start the analysis, plug the USB key to your computer, either Windows or Mac, and double click on the software icon in the folder corresponding to your operating system. The software start screen is shown below.

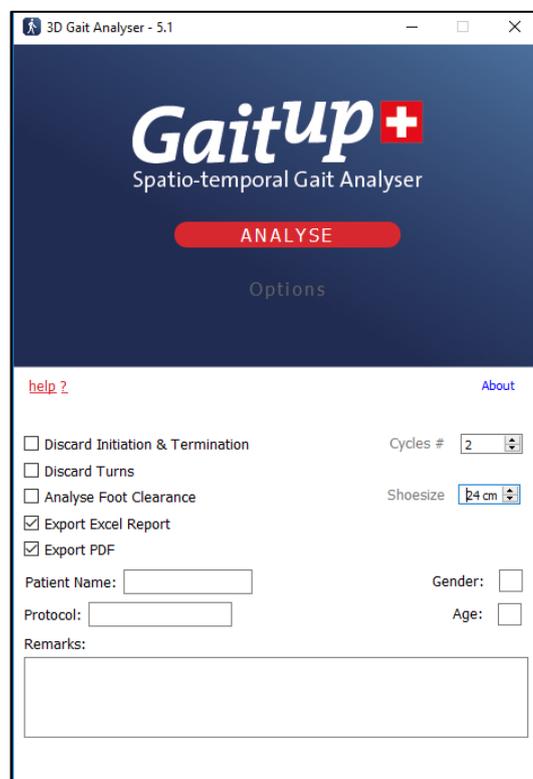Click on the "Analyse" button in order to select one or two gait files recorded with Physilog®5. When selecting two files they must come from the same trial (e.g. synchronous acquisition of left and right foot). Loading two files at the same time allows to obtain symmetry and double stance results.

The software outputs a pdf and/or Excel report (depending on the selected options) with results of 25 gait parameters.

4.1   Gait Analysis options

The "Options" button allows to expand the window to show the available options for the gait analysis which are briefly explained here.

· To analyse forward gait without extrinsic variations, you can exclude a chosen number of the **first and last cycles** and the **turns**. We recommend to discard two steps for initiation and termination (Yuancheng J. et al. 1993).

· For **foot clearance** analysis, the shoesize (from heel to tip) needs to be specified in cm. Make sure to measure this parameter if you are interested in clearance parameters.

· An **Excel file** and/or a **pdf report** can be generated by the software. The pdf gives the statistics of all the parameters and the excel file provides in addition the values per cycle.

· At the bottom part you can add information about the subject performing the gait test and additional **Remarks** appearing at the top of the pdf report.

5. Practical Considerations

5.1   Charging Physilog®5

The Physilog®5 is charged via the microUSB port. Plug the microUSB connector of the delivered cable to the Physilog®5. Plug the USB connector to a Computer or Charger (voltage specifications: 5V, 100mA). Physilog®5 must be turned off for charging. Do not charge Physilog® when room temperature is outside of range 0°C to 45°C.

Low battery level is indicated by orange blinking during measurement or if the Physilog® blinks rapidly 3 times red when starting and doesn't start the recording. When the Physilog® is discharged, plug it for charging for at least 30 minutes before use. An estimation of the battery level of the Physilog®5 can be obtained inside the Android companion application (free to download from www.gaitup.com/support).

5.2   Physilog®5 configuration for gait measurements

The configuration of Physilog®5 can be modified using the Research ToolKit software or the companion Android Application. This allows to optimise the sensor settings for different applications. For gait measurements the configuration must be set to the values indicated

below, otherwise the software cannot analyse the data.

Sensor	Sampling rate	Sensor range
Accelerometer	128Hz	+/-4 g or +/- 8 g
Gyroscope	128Hz	+/- 1000 deg/s
Barometer	0-64Hz (any sampling rate)	-

The two sensors must also be synchronised together, therefore one of the sensors should store an empty text file called "slave.txt" which indicates that it is the "slave" sensor, the second sensor does not have such a file and is thus the "master" sensor. The correct configuration is pre-installed when you order a PhysiGait Lab, so you don't need to modify the configuration of the Physilog®5.

5.3   How to update the software on USB key

The software on the USB key can be updated to the latest version using the "Gait Analyser Updater" which can be downloaded for free from www.gaitup.com/support. Install the updater software on your computer, start the updater software and plug your USB key with PhysiGait Lab software. By following the instructions provided by the software, your USB key will automatically be updated with the latest software version. The computer needs to be connected to the internet to download the new version. Free updates are included in the first year after purchase, for later updates an extension can be purchased. If the update doesn't work, please contact Gait Up's customer service (via contact form on www.gaitup.com/support or via email: contact@gaitup.com).

5.4   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 forcefully 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.

·   Sensors can be placed on the foot in any orientation, it will not influence gait measurements
·   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 the battery level with the Physilog®5 companion Android Application available on www.gaitup.com/support).

- Copy trial recordings to your computer: Physilog® is not the best place to keep and save important data. Gait Up cannot be hold responsible if data stored on the sensor are lost.
- Physilog®5 can be used outside. Do not use Physilog®5 to measure water-sport activities without additional waterproofing.
- 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. Do not clean the USB entry with alcohol.
- Each sensor is individually calibrated by Gait Up and they do not need yearly recalibration for gait measurements.
- 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 (exceeding 999 and new date resets the increment back to 1). Note that date of file generation (recorded between one start and stop of the Physilog®) is visible in the XLS file and the Matlab structure "header". If you wish to adapt internal date and time of the Physilog®, read the corresponding section of the user manual of Physilog®5.
- 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. For firmware v1.1.0 upwards, a default configuration based on original configuration is created to compensate the removal of the conf.bin file and the "slave.txt" file is no longer needed.
- Do not introduce pointy objects into the small hole besides the USB entry, this irreversibly damages the waterproofing of the sensor.

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, 5V. 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, 5V. 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, 5V. 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

5.5 Troubleshoot

Soft reset

The soft reset is the first 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 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.

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

Gaitup

make sense of motion

6. Gait Parameter Overview

Below you can find the description of the spatio-temporal output parameters of the PhysiGait Lab system.

6.1 Essentials

The report directly accessible after the gait test from the tablet contains 3 essential gait parameters with a colour-bar situating the result with respect to reference data. The values are based on the result of the right foot of the patient.

Speed [m/s], the walking stride velocity is the mean speed of forward walking, calculated in meters per second.

Variability [%] is the coefficient of variation of cycle duration in percent. It is calculated as SD/mean and is only computed when 10 gait cycles or more are analysed.

Asymmetry [%] is the ratio of swing which compares the time in the air for the two feet, in percent. A perfect symmetry outputs a value of 0%. The asymmetry is calculated as: $SI = \frac{Swing_l - Swing_r}{0.5*(Swing_l + Swing_r)} * 100\%$

6.2 Temporal Analysis

Cycle time [s] is the absolute recording time when the heel strikes the ground. If you are recording a trial with several exercises of particular duration (30s, 1min, …), it can help you find the moment where the patient changes exercise within the entire trial. It is however still recommended to create one file per trial as mentioned in section 3.3.

Cycle duration [s] is the duration of one cycle (from heel strike to heel strike of the same side).

Cadence [steps/min] is the number of cycles in a minute. Cadence is different from speed, since a small person may have to walk with a higher cadence to have the same speed than a much taller person.

Stance [%] is the portion of the cycle during which part of the foot touches the ground. Normal stance is around 60% of gait cycle duration.

Swing [%] is the portion of the cycle during which the foot is in the air and does not touch the ground. Normal swing is about 40% of gait cycle duration.
Loading phase [%] is the portion of the stance between the heel strike and the foot being flat on the ground.

Foot-flat phase [%] is the portion of the stance where the foot is fully flat on the ground.

Pushing phase [%] is the portion of the stance between the foot being flat on the ground and the toe leaving the ground at take-off.

6.3   Spatial Analysis

Stride Length [m] describes the distance between two successive footprints on the ground, from the heel of a foot to the heel of the same foot, one cycle after.

Stride Velocity [m/s] is the forward speed of one cycle. See "**Speed**" in essentials.

Peak Angle Velocity [deg/s] is the maximum angular velocity during the swing phase, between max heel clearance and min toe clearance. Measured by the gyroscopes, this parameter is a raw sensor measure which is not subject to any calculation errors. It can be used as a robust asymmetry measure.

Maximal Swing Speed [m/s] is the maximum forward speed of the foot during swing. This speed is usually obtained around minimal toe clearance and it is usually equal to more than3 times walking speed.

Strike Angle [deg] is the angle between the foot and the ground at heel strike, on a vertical plane.

Lift off Angle [deg] is the angle of the foot at the end of the push phase, just at take-off.

Swing Width [m] is the maximal lateral excursion of the foot during swing phase. It is the maximum lateral distance between the forward path and the real path of the foot.

3D Path Length [% stride length] is the length of the real path of the foot during one cycle in 3D space, including both stride length and swing width.
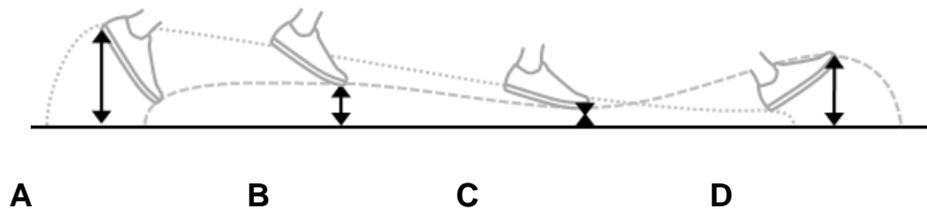
6.4   Turning Analysis

Turning Angle [deg] is the angle between two consecutive foot-flat phases of the same foot on a horizontal plane. When this parameter is above 20° for one cycle, it is considered as a turn. It can be discarded to evaluate only straight walking.

6.5   Clearance Analysis

Note that clearance parameters are accurate when shoe size (not foot size) is entered in the menu of the software prior to performing data analysis. Clearance calculation is based on a biomechanical model and may not be estimated in case of severe gait pattern alterations (shuffling etc…), See Mariani et al., 2012 and Dadashi et al., 2014.

A: Max. Heel Clearance [m] is the maximal height above the ground reached by the heel during each cycle.

B: Max. Toe Clearance 1 [m] is the maximal height above the ground reached by the toes just after heel max clearance.

C: Min. Toe Clearance [m] is the minimum height of the toes during swing phase.

D: Max. Toe Clearance 2 [m] is the maximal height above the ground reached by the toes just before heel strike.

7. 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 PhysiGait 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.

8. Certification claims for Physilog®5 sensors

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.

(a) (5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

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.

Contact information

At Gait Up, we welcome your feedback and questions.
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CH-1015 Lausanne
tel: +41 21 633 7527
mail: contact@gaitup.com
web: www.gaitup.com

Document Version	Changes	Responsible	Date
1.0.0	Initial release to public	Rebekka Anker	12 April 2017
1.1.0	Update related to firmware 1.1.0: - continuous synchronisation - How to update USB key - Added Warranty & Support policy	Rebekka Anker	31 May 2017
1.1.1	Reformat, new pictures, addition of asymmetry formula, adaptations with respect to new version (v5.1.1)	Rebekka Anker	17.10.2017
1.2.0	- Reformat - Sensor charging voltage specifications updated	Rebekka Anker	18.06.2018
1.3.0	Change name to PhysiGait Lab	Jules Gellaerts	12.12.2018