

Table S1. Light-and-motion dataloggers for human research (as of October 2022; continuation of Table 1).

N	Device (and Manufacturer)	Web Link	Studies Using the Device	Predecessor Light-and- Motion Datalogger
1	ActTrust, ActTrust 2 (Condor, Brasil)	https://condorinst.com.br/	Bellone et al., 2016 [28]; Spitschan et al., 2021 [29]; Loock et al., 2021 [30]; other (ActTrust); Krempel et al., 2022 [31] (ActTrust 2)	
2	Kronowise (Kronohealth SL, Spain)	https://www.kronohealth.com	Madrid-Navarro et al., 2019 [32]; Arguelles-Prieto et al., 2019 [33], other	
3	Actiwatch 2 (Philips Respironics, USA)	https://www.usa.philips.com/healthcare/sites/actigraphy/solutions#solutions	Danilenko, Hommes, 2014 [22] /see list of 10 selected articles in the manufacturer's "Actiwatch brochures.pdf"; see PubMed library/	Actiwatch-L [10]
4	Actiwatch spectrum Plus (or PRO) (-/-)	-/-	Esaki et al., 2019 [34] (Actiwatch spectrum Plus); Bigalke et al., 2021 [35] (Actiwatch spectrum PRO) /see PubMed library for more articles/	Actiwatch spectrum [10]
5	MotionWatch 8 (CamnTech, England)	https://www.camntech.com/motionwatch-8/	Danilenko et al., 2019 [23] /see also library on manufacturer's website/	
6	Motionlogger Micro Watch (Ambulatory Monitoring, USA)	https://www.ambulatory-monitoring.com/motionlogger-actigraphs	<u>Study</u> by Deligiannidis KM (identifier: NCT04364646 at www.clinicaltrials.gov) /see selected bibliography on manufacturer's website/	Actillum, Sleepwatch-L, Motionlogger Watch
7	GENEActiv (Activinsights Ltd, UK)	https://activinsights.com/technology/geneactiv/	Stone et al., 2020 [36] /see list of publications on manufacturer's website/	
8	ActiGraph wGT3X-BT (ActiGraph, USA)	https://actigraphcorp.com/actigraph-wgt3x-bt/	Flynn et al., 2014 [37]; Kwon et al., 2022 [38] /see PubMed library for more articles/	ActiSleep, ActiSleep+, ActiTrainer, ActiGraph GT3X+
9	Daqtometer 2.4 (Daqtix, Germany)	- /no longer in production but may be produced by request [39]/	Kantermann et al., 2007 [40]; Loock et al., 2021 [30]; Borisenkov et al., 2022 [25,26], other	
10	ActiTrac (IM Systems, US)	- /no longer in production/	Welk et al., 2003 [41]; Najar et al., 2014 [42], Canazei et al., 2017 [43]; Prayag et al., 2019 [44]; other	
11	Axivity AX3 or AX6 (Axivity Ltd, UK)	https://axivity.com/products	Tsanas, 2022 [45] /see publication portfolio on manufacturer's website/	
12	Daysimeter-D (Lighting Research Center, US)	https://www.lrc.rpi.edu/programs/ligthealth/LightandDaysimeter.asp ; https://icahn.mssm.edu/research/light-health/team	Figueiro et al., 2013 [46]; Higgins et al., 2010 [47]; Smolders et al., 2013 [48]; Te Lindert et al., 2018 [7] /see PubMed library for more articles/	Daysimeter
13	Daysimeter-S (-/-)		Figueiro et al., 2013 [46] /see PubMed library for more articles/	

N	Device (and Manufacturer)	Web Link	Studies Using the Device	Predecessor Light-and- Motion Datalogger
14	LightWatcher (Object-Tracker, Austria)	www.object-tracker.com	Sergeeva et al., 2009 [24]; Kolodyazhniy et al., 2011 [49]; Najar et al., 2014 [42]; Huss et al., 2019 [50]; Rabstein et al., 2019 [51]	
15	MRS145 (Electronics GmbH, Switzerland)	https://www.msr.ch/en/product/datalogger/	Latshang et al., 2016 [52] (MSR2005 and MSR2010, no light sensor); Medbase health project https://www.msr.ch/en/healthcare/	
16	MetaMotion MMC (Mbientlab, USA)	https://mbientlab.com/metamotionc/	Zhao et al., 2019 [53]	
17	MetaMotionS MMS (-/-)	https://mbientlab.com/metamotions/		

Table S2. Computational methods and some software tools currently available for analyzing of the raw actimetry data.

Methods	References	Short Description
Cosinor-based rhythmometry	Cornelissen, 2014 [59]	Overview of cosinor-based techniques for the analysis of time series
GZLM-gamma + Cosinor	Doyle et al., 2022 [62]	Gamma distribution (GZLM-gamma). Method improves detection of circadian rhythm, allows retention of additional patients for downstream analyses.
Multiscale adaptive analysis of circadian rhythms and intradaily variability	Witting et al., 1990 [63] Fossion et al., 2017 [64]	Methods of nonparametric analysis of day-to-day variability and ultradian rhythm fragmentation
Missing Data and Imputation Methods	Weed et al., 2022 [65]	Methods to deal with the data that contain gaps
Software tools		
CosinorPy	Moškon, 2020 [60]	Python package. Cosinor-based rhythmometry.
pyActigraphy	Hammad et al., 2021 [61]	Pyhton package. Open-source. Visualization and analysis; multiple statistical methods.
'nparACT'	Blume et al., 2016 [66]	R package. Nonparametric analysis of actimetry data.
RhythmicAlly	Abhilash, Sheeba, 2019 [67]	R package. Open Source. Interactive tool for working with actograms
CATKit	Lee Gierke, Cornelissen, 2016 [68]	R package. Open Source. Actimetry and Cosinor tools.
Chronogram / Heatogram	Oike et al., 2019 [69]	Excel, guidelines for use Excel for visualization of actimetry data

Instructions for wearing a monitor of motion and light ActTrust 2

The actimeter must be put on the arm on the day of examination No. 7 (Fri evening) and removed at the clinical investigator's appointment on the last day of examination No. 16 (Sun afternoon).

The activity and light monitor is **worn on the wrist** of the same hand for 8 days of examination *constantly* – day and night, and during water procedures (since it is waterproof). It is programmed to automatically record periods of activity, skin temperature and light levels with a summation of data for every minute in the monitor's memory.

The **timestamp button** (light-grey one) located in the middle of the front side of the monitor has to be *pressed* whenever there is a change of sleep and wakefulness:

- during going to sleep (closing the eyes); if the going to bed is repeated (after a forced awakening, for example), then the button should be pressed again;
- during the final awakening (pressing should be repeated if the awakening was not final);
- before and after the daytime naps;
- before removing the monitor from your hand.

Time markers help to clearly separate sleep and wake periods when analyzing data. When the button is pressed, an audible beep-signal is heard, certifying that the press has occurred.

The monitor also has a second peephole, larger, for measuring **illumination**. When wearing the monitor, it is preferable to wear short sleeves. The monitor should be worn with the front facing outward from the outside of the wrist, not the inside.

The monitor strap should be fastened sufficiently tight. If skin irritation is felt while wearing the monitor, the researcher should be informed.

Do not expose the monitor to low temperatures in order to conserve battery life.

It is impossible to turn off or turn on the monitor yourself – this is done using a computer.

The monitor recordings are read by the researcher into a computer after the examination is completed.

Figure S1. Instructions for wearing ActTrust 2 datalogger (used in one of the authors' study). Translated from Russian.