Objective Physical Activity and
Sleep/Wake Monitoring Solutions

ActiGraph™


ActiGraph™
Health research
Clinical trials
Epidemiological studies
Chronic disease management
Sleep research
Clinical sleep medicine
Corporate wellness
Sports medicine
actigraphcorp.com

Innovative objective monitoring solutions

ActiGraph is a leading provider of objective physical activity and sleep/wake monitoring solutions for the global research community. Our innovative and extensively validated accelerometry hardware and software system delivers accurate, measurable insight into the real world physiological behaviors of subjects involved in a variety of research and clinical projects.

Validated technology delivers data you can trust

ActiGraph is widely regarded as the "Gold Standard" in objective ambulatory measurement technology. Backed by more than a decade of independent scientific validation, ActiGraph solutions have been used in hundreds of complex, large scale, multi-site research studies around the world to capture and deliver accurate and reliable objective physical activity and sleep/wake data. Our trusted measurement technology is supported by a variety of advance wireless mobile and cloud communication tools to increase project flexibility and accommodate a wide range of study designs and protocol requirements.

Customizable solutions, seamless implementation

ActiGraph hardware devices are supported by an adaptable suite of technology solutions designed to meet the specific needs and complexities of your project. Our powerful ActiLife software, suite of mobile apps, Study Admin web portal, and API can be custom configured to achieve your data collection objectives while streamlining workflow and helping to ensure that studies are completed on time and on budget.

ActiGraph monitoring solutions can be easily implemented within your research project or clinical trial to deliver high quality objective physiological measures, thereby improving the integrity of your study data and eliminating issues associated with subjective data collection methods and unreliable measurement tools.

Health Research Solutions

The 'Gold Standard' in physical activity measurement

ActiGraph's ambulatory monitoring devices have been used for more than a decade in thousands of human research projects and hundreds of large scale population studies involving physical activity, energy expenditure and their relationships to chronic health conditions such as obesity, diabetes, cardiovascular disease, cancer, and sleep disorders.

Advantages

- Most scientifically validated objective activity monitoring technology available.
- Powerful research-driven software platform delivers advanced, highly customizable metrics.
- Innovative mobile and web-based tools accommodate a broad range of study designs and interventional protocols.
- Widespread global implementation guarantees data comparability with thousands of published studies.

Clinical Trial Solutions

Optimize trial data quality, safety and cost effectiveness

Objective information about real world patient behavior is a valuable resource to researchers and physicians involved in phase I-IV clinical trials. Endpoints related to subjects' daily activity and sleep behaviors provide vital, measurable insight into the therapeutic value of an investigational treatment and may help identify possible adverse events during intervention.

Advantages

- Continuous objective physiological measures augment patient reported outcome data to increase contextual meaning and enhance overall data quality.
- Real time remote data reporting improves participant care, safety and compliance monitoring.
- Two-way site to subject messaging enhances interaction between the research team and study participants.

Sleep Assessment Solutions

Reliable in-home sleep/wake measurement

ActiGraph delivers objective information about a patient's real world sleep behavior and rest-activity rhythms, helping physicians make appropriate diagnostic and treatment decisions and providing measurable endpoints to research professionals investigating a wide range of influential factors.

Advantages

- In-home actigraphy monitoring provides a validated, minimally invasive, and cost-effective alternative to lab based sleep studies
- Capture objective 24 hour data with one simple device to obtain valuable insight into the relationship between daytime activity and sleep/wake behavior.
- Advanced software platform delivers highly customizable sleep/wake analytics, robust clinical data reporting options and a variety of mobile and web-based tools to streamline project workflow.

Wellness Solutions

Motivating healthy lifestyle choices

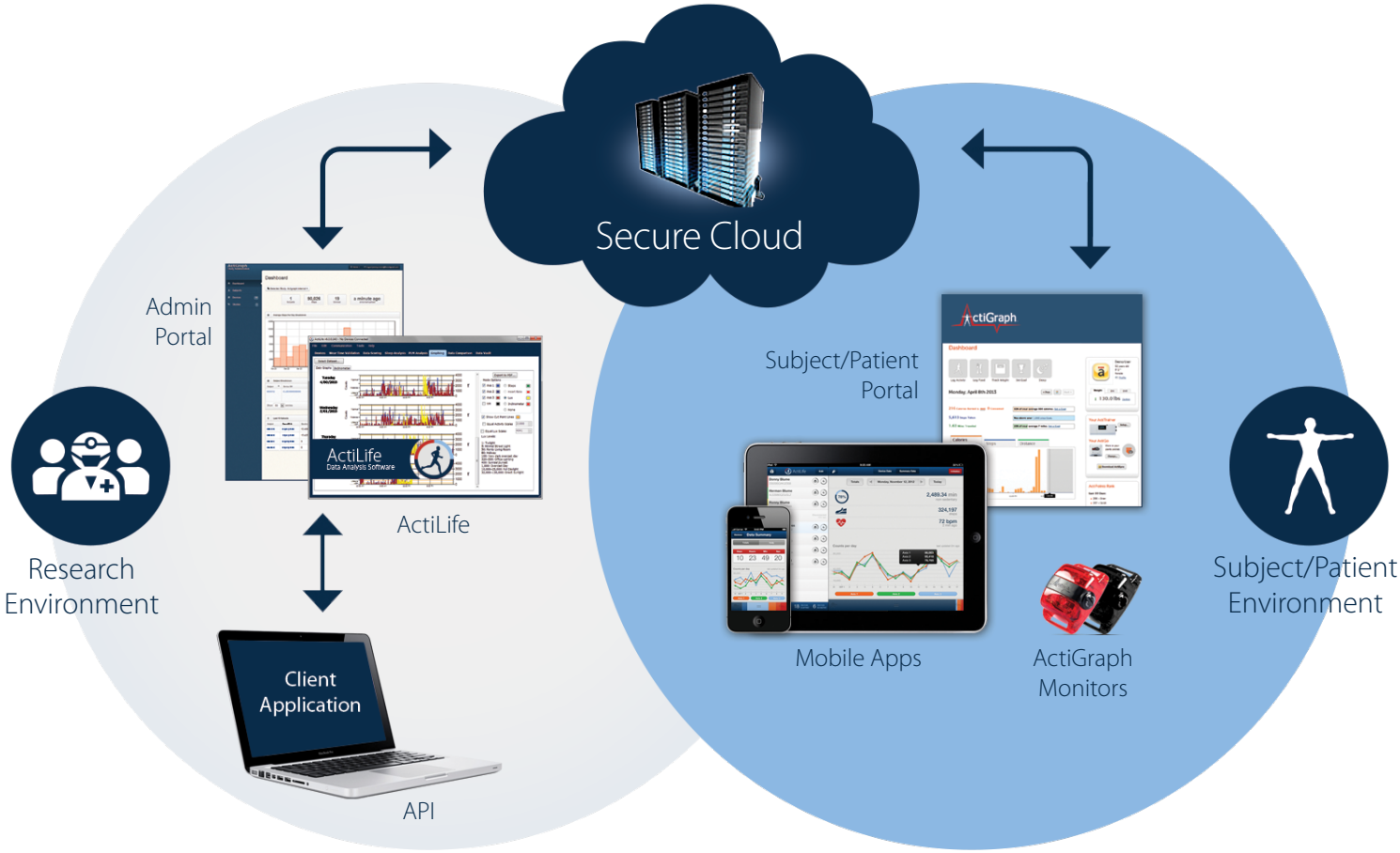
Implementation of objective physical activity monitoring within a corporate wellness or health promotion program is a powerful way to engage and motivate participants to adopt healthier behaviors, while delivering measurable results on participation and outcomes.

Advantages

- Obtain measurable insight on participant behaviors, health status, and wellness program adherence and success.
- Foster participant engagement through real-time mobile feedback and access to an interactive web portal, resulting in long term program adherence and improved health outcomes.
- Real-time remote data reporting allows program administrators to monitor participants and implement personalized coaching as needed.

Integrated Monitoring Solutions

At ActiGraph, we understand that a one size fits all approach to objective patient monitoring fails to take into account the diverse needs of each project based protocol, endpoints, subject populations, and other factors. Our innovative hardware and software solutions platform offers a complete suite of integrated mobile and web-based tools that can be configured to achieve the unique communication, reporting and analysis requirements of your study.



Hardware Solutions

Backed by more than a decade of independent scientific validation, ActiGraph physical activity and sleep/wake monitors are the most accurate and widely used devices of their kind. Our newest Bluetooth® Smart wireless monitoring devices combine ActiGraph's trusted measurement technology with a host of innovative features and real-time communication options to unlock the potential of your research or clinical project.

Setting the Standard for 24 Hour Monitoring

ActiGraph's all new wGT3X-BT and wActiSleep-BT monitors, in conjunction with our innovative software platform, deliver objective 24 hour physical activity and sleep/wake measurements including:

- Raw acceleration
- Energy expenditure
- MET rates
- Steps taken
- Physical activity intensity
- Heart rate R-R intervals*
- Body position
- Ambient light
- Sleep latency
- Total sleep time
- Wake after sleep onset
- Sleep efficiency

ActiGraph Device Features

Wireless Communication with ActiLife

Initialize devices, view summary data and operating status and stream live data wirelessly using the ActiLife analysis software.

Mobile App Support

ActiGraph's suite of mobile apps allows you to communicate with active devices in the field while providing subjects with real-time feedback and the opportunity to interact with members of your study team.

Capacitive Touch Sensor

An integrated capacitive touch sensor on the back of the device senses whether the device is on or off, allowing for foolproof wear time detection.

Proximity Detection

Detect and log other devices within range, providing valuable information about social interaction among subjects. Stationary devices can be placed throughout the subject environment to monitor behavior in various predetermined locations.

* Requires compatible wireless heart rate monitor
† Wireless disabled, 30 Hz sample rate

Specifications	wGT3X-BT	wActiSleep-BT
Dimensions	4.6 x 3.3 x 1.5 cm	
Weight	19 grams	
Sample rate	30-100 Hertz	
Dynamic range	+/- 8G	
Battery life	31 days †	
Data storage	120 days/2 GB	
Communication	USB, Bluetooth LE	
Water resistance	1 meter, 30 min.	
Wear location	Wrist, waist, ankle, thigh	
Warranty	1 year	

Data Analysis Features

Wear time compliance	✓	✓
Daytime activity	✓	✓
Basic sleep scoring	✓	✓
Inclinometer graphing	✓	✓
Bed time auto detection	✗	✓
Advanced PLM scoring	✗	✓
Actogram data chart	✗	✓
Clinical data report	✗	✓
Data Vault access	✓	✓

The wGT3X-BT is an FDA cleared Class II medical device within the United States and a Class I medical device within the European Union that abides by the regulatory requirements listed below:

ActiGraph is compliant with IEC standards for "Type BF Applied Part"

EN60601-1-Medical Device General Safety Requirements

Part 15.109 (US) – Radiated Emission Limits of Unintentional Radiators
Part 15.249 (US) – Radiated Emission Limits of Intentional Radiators

All ActiGraph products are manufactured Lead Free and are RoHS Compliant

ICES-003 (Canada) – Interference Causing Equipment Standards for a Digital Apparatus.

The wGT3X-BT is water resistant in accordance with IEC 60529 IPX7, or immersion in one (1) meter of water for up to 30 minutes.

Software Solutions

The ActiLife desktop software is ActiGraph's premier actigraphy data analysis and management platform. Trusted by researchers and healthcare providers around the world, ActiLife is used to prepare ActiGraph devices for data collection and to process, score and securely manage study data. ActiLife's extensive selection of customizable analysis and management tools streamline workflow and deliver accurate, reliable data reports with ease.

Data Processing & Analysis

ActiLife's robust screening and analysis toolkit allows users to process and score collected data using a comprehensive selection of independently developed and validated algorithms. Batch processing features allow users to score multiple datasets simultaneously and export them into a single consolidated CSV or Excel® report.

- Wear time validation screening
- Cut point and MVPA analysis
- Activity bout detection
- Energy expenditure (kcals and METs)
- Sedentary analysis
- Sleep scoring
- GPS file correlation
- Periodic limb movement (PLM) analysis*

ActiLife Data Vault

ActiLife's integrated Data Vault is a centralized cloud based repository that provides secure data storage and archiving and enables users to seamlessly share data across multiple sites. The ActiLife Data Vault reduces local system requirements and IT workload associated with onsite storage and management of large amounts of raw study data.

Raw Data Analytics

ActiLife provides tools which allow users to quickly view and extract portions of large, high resolution raw datasets. The ActiLife Feature Extraction tool provides a platform for extracting time and frequency domain feature sets directly from the raw data files, which can be analyzed further using statistical analytic platforms as a method for developing application specific learning or pattern recognition algorithms.

* wActiSleep-BT devices only

ActiLife Mobile Apps

ActiGraph's suite of mobile apps enhance project flexibility and support interventional protocols by giving researchers and study participants the ability to interact with active wireless devices and view objective measures in real time during data collection.

Mobile for Researchers

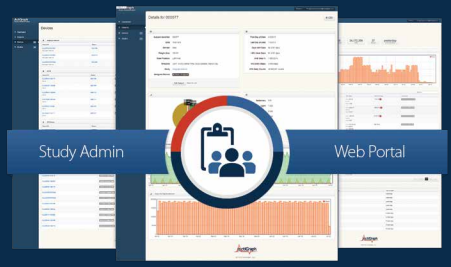
ActiLife Mobile for iPhone and iPad supports in-field device initialization and allows research team members to view real-time summary data and operating status reports.

Mobile for Study Participants

A subject-facing app gives participants the ability to monitor their health data, enter subjective reports and interact with the study team from the convenience of a mobile device.

ActiLife API

An available Application Programming Interface (API) allows users to develop their own custom applications to automate device deployments and downloads by enabling programmatic control of ActiLife over a standard socket. The ActiLife API is designed to run within closed systems, ensuring regulatory compliance is not compromised during clinical trial data collection.



Study Web Admin Portal

ActiGraph's web-based Study Admin Portal combines the power of ActiLife with the simplicity and convenience of cloud computing to deliver a turnkey activity monitoring solution for clinical trials and structured case studies. The Study Admin Portal provides many of the same validated outcomes available in the ActiLife software in an easy-to-use, automated system, allowing your research team to monitor study progress and view objective physical activity measures in near real-time while offering the broad administrative support required to manage multiple complex studies simultaneously.

- Manage device inventory and deployment from multiple sites with ease.
- Perform seamless data collection – simply connect the monitor and the system walks you through setup and data uploads.
- Monitor compliance, subject data, study progress, and view analytical data reports in near real-time.
- Collect data from the patient's own smart phone or home (requires Internet-enabled PC).

Please contact the ActiGraph Sales Team for more information and pricing.

Representative Research Studies

ActiGraph monitoring solutions have been used extensively in many high profile research studies to objectively determine the physical activity profiles and sleep behavior in hundreds of thousands of research subjects around the world. We have more than a decade of proven expertise in building scalable solutions to meet the specific data collection, analysis, reporting and management requirements for projects of varying size and scope.

National Health and Nutrition Examination Survey (NHANES)

The National Health and Nutrition Examination Survey (NHANES) is an ongoing program of studies conducted by the National Center for Health Statistics responsible for producing vital health statistics for the United States. ActiGraph devices were used to collect physical activity data on 15,000 subjects in the 2003-2004 and 2005-2006 cycles of the survey. The most recent 2011-2012 cycle was the first to monitor participants for 24 hours a day, resulting in one of the largest samples of sleep data ever collected.

Women's Health study

This landmark study conducted by Brigham and Women's Hospital and Harvard Medical School began in 1993 as randomized trial of low-dose aspirin and vitamin E supplementation for cardiovascular disease and cancer prevention in nearly 40,000 female health professionals aged 45 and older. The trial concluded in 2004, and the WHS has now evolved into one of the largest and longest-running observational studies of women's health in the U.S. An ancillary study examining physical activity and health outcomes is currently underway involving approximately 30,000 women from the original trial. ActiGraph GT3X+ devices are being used to objectively measure physical activity for 7 days in study participants.

The Environmental Determinants of Diabetes in the Young Study (TEDDY)

The aim of the TEDDY study is to identify the causes of type 1 diabetes mellitus through the investigation of environmental and genetic triggers that cause high risk children to develop diabetes. A consortium of six Clinical Centers throughout the U.S. and Europe has been created to develop and carry out studies on a proposed sample of 7800 neonates with a predetermined type 1 diabetes risk.

International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE)

This collaborative study between Pennington Biomedical Research Center and the Coca-Cola Company examines the influence of behavioral, physical, social, and policy environments on weight gain in school aged children. ActiGraph GT3X+ devices are used to collect objective 24 hour activity and sleep/wake data on 6000 children in 12 countries across North America, Latin America, Europe, Eurasia, Africa and the Pacific.

PROactive COPD Project

PROactive is a European project aiming to develop new tools that will enable patients, doctors and researchers to accurately assess the improvement or deterioration of Chronic Obstructive Pulmonary Disease (COPD). After an intensive selection process, ActiGraph devices are being used to obtain a comprehensive physical activity overview in 250 COPD patients enrolled in the study.

Transdisciplinary Research on Energetics and Cancer (TREC)

Established by the National Cancer Institute (NCI) in 2005, the Transdisciplinary Research on Energetics and Cancer (TREC) initiative is a major scientific research effort aimed at reducing cancer linked with obesity, poor diet, and low levels of physical activity. ActiGraph devices are used extensively to capture objective information about physical activity and sleep behavior in adults and children in numerous studies under the TREC initiative.

Scientific Advisory Board

Established in January of 2011, the ActiGraph Scientific Advisory Board is composed of world renowned researchers and scientists from a range of disciplines, including metabolic research, exercise physiology and behavioral medicine. The ActiGraph Scientific Advisory Board's primary objective is to provide the company with guidance and expertise as it continues to enhance its current hardware and software offerings and explores emerging applications for ActiGraph products.

David R. Bassett, PhD

David Bassett is a professor in the Department of Kinesiology, Recreation, & Sport Studies at the University of Tennessee, Knoxville. His primary research interest is in the objective measurement of physical activity and energy expenditure in humans. He and his colleagues have studied the validity and reliability of accelerometers, pedometers, and heart rate monitors, and they have developed new methods of assessing physical activity. Dr. Bassett has explored relationships between physical activity and body weight, blood pressure, and other cardiovascular risk factors. He collaborates with researchers in the fields of public health and transportation planning to study the relationships between active transportation and health. Dr. Bassett is a fellow in the American College of Sports Medicine, a member of the National Academy of Kinesiology, and he serves on the editorial boards of Journal of Applied Physiology, Journal of Physical Activity and Public Health, and Research Digest.

Victor KR Matsudo, MD, PhD

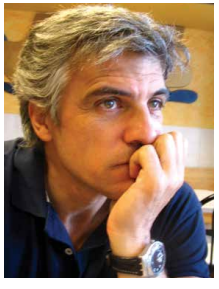
Dr. Matsudo is the Scientific Director and Past-President of the Physical Fitness Research Center of São Caetano do Sul (CELAFISCS) and a full Professor of Medicine at Gama Filho University. He is the founder of the Agita Mundo Network, an international organization dedicated to the promotion of physical activity, and the Chairman of the Agita São Paulo Program, organized by the State Secretariat of Health of São Paulo State. He is a founding member and Chairman of the Physical Activity Network of the Americas (RAFA/PANA) and a founding member of the International Society of Physical Activity and Health (ISPAH). Dr. Matsudo has authored two books, 8 book chapters and numerous research publications in the fields of physical activity and sports science.

Bonnie Spring, PhD

Dr. Spring's research program on changing unhealthy lifestyle behaviors has been funded continuously since 1976 by grants from the National Institutes of Health, the American Heart and American Cancer Societies, and the Department of Veterans Affairs. Dr. Spring is a Past President of the Society of Behavioral Medicine (SBM), an elected Fellow of the American Psychological Association, the American Psychological Society, and the Academy of Behavioral Medicine Research, and she holds the American Board of Professional Psychology's Diplomate in Clinical Health Psychology. Dr. Spring founded and Chairs the NIH-sponsored multidisciplinary Council for Training in Evidence-Based Behavioral Practice, and she is founding editor of the journal, Translational Behavioral Medicine: Practice, Policy, Research.

Patty Freedson, PhD

Dr. Freedson joined the faculty of the University of Massachusetts Amherst in 1981, where she has taught courses in Human Physiology, Exercise Physiology, Pediatric Exercise Physiology, Physical Activity and Health. Dr. Freedson's primary research focus is on the assessment of physical activity using wearable monitors, a field in which she is an internationally recognized authority. Dr. Freedson has published over 95 papers and is a former president of the New England Chapter of the American College of Sports Medicine and former vice-president of American College of Sports Medicine, as well as a fellow of the Research Consortium, American College of Sports Medicine, and the National Academy of Kinesiology.



Jorge Mota, PhD

Dr. Mota is Director of Research Centre in Physical Activity, Health and Leisure at the University of Porto and Faculty's President of General Assembly. A visiting Professor at several Brazilian institutions, Dr. Mota is adviser for the National Program for the Promotion of Physical Activity (MEXA-SE) and is involved in physical activity promotion networks including HEPA Europe and IPEN. His primary area of work is in issues relating to physical activity, its health related effects, and specifically its relationship with non-communicable diseases. Dr. Mota is also involved in the development and implementation of programmes related to physical activity and health promotion, and he has authored numerous peer reviewed publications.

Stewart G. Trost, PhD

Dr. Trost is an internationally recognized expert in the field of physical activity and obesity prevention in children. He has published 95 primary research papers and 8 book chapters and has served as a consultant on matters related to physical activity measurement and obesity prevention to organizations including the National Institutes of Health, the United States Centers for Disease Control and Prevention, the Robert Wood Johnson Foundation, and the Australian Federal Government. Dr. Trost headed the scientific committee responsible for drafting children's physical activity recommendations for Australian youth and was a member of the CDC panel to establish evidence-based guidelines for physical activity in school aged youth in the United States.

Our Mission

ActiGraph's mission is to improve world health by providing the most accurate and scientifically validated activity and sleep monitoring hardware and software solutions to leading research, pharmaceutical, healthcare and wellness organizations. ActiGraph is committed to innovation, accuracy and first-class customer service.

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