

Actiheart® 运动能量消耗监测仪

Actiheart 运动能量消耗监测仪小巧紧凑（小于 10 克），佩戴于胸部。可记录心率，心跳间期（IBI），身体活动，及能量消耗。Actiheart 活动及能量消耗监测仪数字化心电信号（ECG）并且通过 R-R 间期判断 IBI。通过使用软件，用户可以定义设备的数据记录。在设置时可以决定要采集的数据。这些数据可以在以后下载到电脑中进行保存，观察，分析。通过心跳间期的记录，可以计算出心率与心率变异性。热量卡路里消耗(Caloric)能通过软件的算法结合心率及身体活动数据获得。Actiheart 是新的能量消耗测量的金标准，并且已经通过双标水法（doubly labeled water）得到验证。



监测仪



装有一个监测仪的数据读取装置/充电器

应用：

体育医学及运动科学：测量心率，活动，及能量消耗

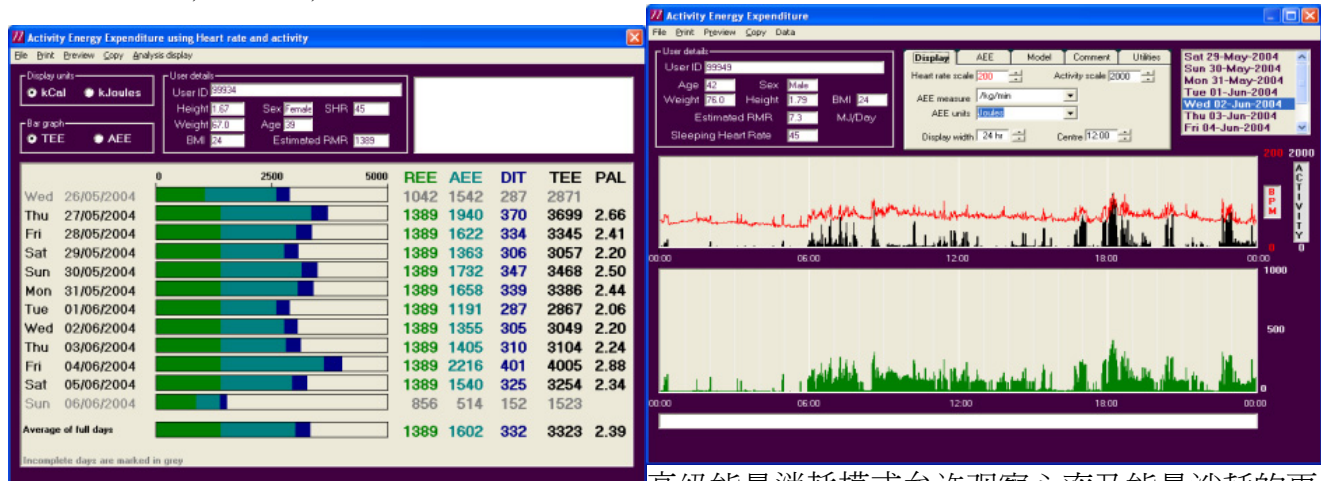
肥胖研究：测量活动及能量消耗

应激监测：在不活动时监测心率及心率变异

流行病学：长期自由活动环境下心率及能量消耗记录

能量消耗

Actiheart 活动能量消耗监测仪可方便记录身体活动及心率从而计算活动能量消耗，比如：自行车骑行，滑冰，举重等。Actiheart 活动及能量消耗监测仪同时使用活动及心率数据计算能量消耗，比以往单独使用加速仪增加了能量消耗测量的精确度。用户可以选择每日能量消耗或者高级能量消耗模式。



每日能量消耗模式显示每日能量消耗的总和

高级能量消耗模式允许观察心率及能量消耗的更多细节

Actiheart 心跳间期-心率变异记录 (IBI)

Actiheart 活动及能量消耗监测仪可使用测量短期测量模式进行心率变异记录。时间标记与心跳记录在一起，并可以与 IBI 显示在一起。最多可显示 440000 次心跳。

Actiheart 记录时间

Actiheart 活动及能量消耗监测仪可用于短期及长期监测条件。以下表格显示不同记录模式的最大记录时间

Epoch 时间点	15 seconds 秒	30 seconds 秒	1 minute 分
HR+Act 心率+运动量	21 days 天	21 days 天	21 days 天
HR+Act +IBI 心跳间期 Max-Min	10 days 天	20 days 天	21 days 天
IBI 心跳间期(Beats 心搏)	440,000	N/A	N/A

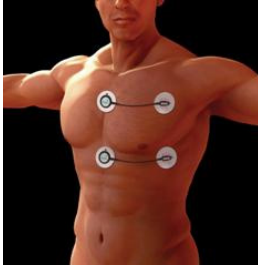
Actiheart 的佩戴

装置可以固定在标准的心电电极片上，如图所示可以安置于两个位置之一。记录器体积小并且兼容标准心电电极，从而保证了监测的可靠性及佩戴的舒适性。设备佩戴的正确与否可以通过闪动的心率信号 LED 进行确认。

除了标准的心电电极佩戴之外，现在还可以通过胸带固定。这可以提供在一个在潮湿的或出汗的高强度活动佩戴选择，胸带可以保证记录器与胸部的稳定连接。（对于平常的每日活动，心电电极佩戴法可以获得更好的结果）

产地：英国

35 Weaver Street, Scarsdale, New York 10583. U.S.A.



Actiheart 数据读取装置/充电器

Actiheart活动能量消耗监测仪与计算机的连接是通过读取装置/充电器。记录器放置于读取装置/充电器上，通过计算机的USB接口连接读取装置/充电器，通过计算机可设置记录器并且给记录器充电。读取装置/充电器上有3个充电位置，可同时为3个Actiheart记录器充电。多色LED可以显示充电状态及充满状态。

功能及参数

记录仪：

心电信号处理活动高精度稳定心率信号

活动加速仪采样频率 32Hz

15秒间隔采样最长 21天记录时间。

通过标准心电电极贴片固定于胸部

无创技术

紧凑轻便，重量小于 10 克

防水（泼溅）设计

掉电保存记录内存

适合各种年龄组

软件：

定义/设置记录器

从记录器中下载数据

同时观察活动及心率波形

打印波形数据

输出ASCII数据

独特的经过验证的能量消耗算法

计算每日能量消耗

计算机要求：

Windows XP, Vista and 7 兼容

内存 512 MB

CD-ROM 驱动器

USB 接口

Actiheart®

Main Features

- Recording of physical activity by means of an accelerometer
- Recording of heart rate synchronously with activity
- Displaying time domain variability of the R-R Interbeat Interval (IBI)
- Frequency domain analysis of the IBI data
- Calculation of energy intensity during physical activity
- Derivation of individual HR-V02 relationship using built in Step Test or utilisation of externally derived calibration data
- Calculation of energy expenditure in daily living (validated against doubly labelled water)
- Data is stored in a database and is fully exportable for manipulation in third party programs



The Actiheart is the first truly lightweight (10gm) and waterproof self contained logging device which allows physical activity to be recorded synchronously with heart rate.

The Actiheart is worn on the chest. It consists of two electrodes connected by a short lead which simply clip onto two standard ECG pads. Being self contained, it is comfortable to wear for ambulatory activity and heart rate recording.

The Actiheart contains a battery which is recharged via a purpose built USB interface. Power can be taken from the PC or from an external power supply which is provided. This interface also allows data transfer to the PC for setting up the Actiheart and analysing the data using custom software.

The raw data is held in a database and can be edited with full traceability without compromising the integrity of the original data. Data can also be exported for manipulation in third party programs.

Energy Expenditure

The analysis software contains a model for calculating energy expenditure using differentially weighted activity and heart rate data.

Validation

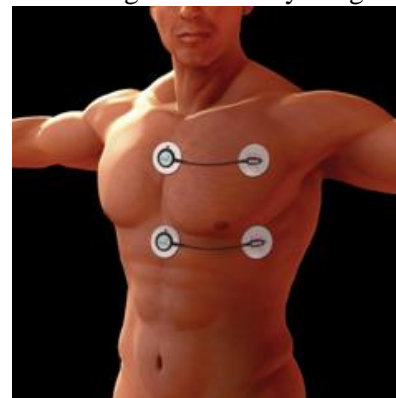
The reliability and validity of the product for recording activity and heart rate as well as the measurement of energy expenditure have been scientifically validated.

Applications

The Actiheart is ideal for use in the field of sports and exercise science, stress, obesity and other epidemiological applications.

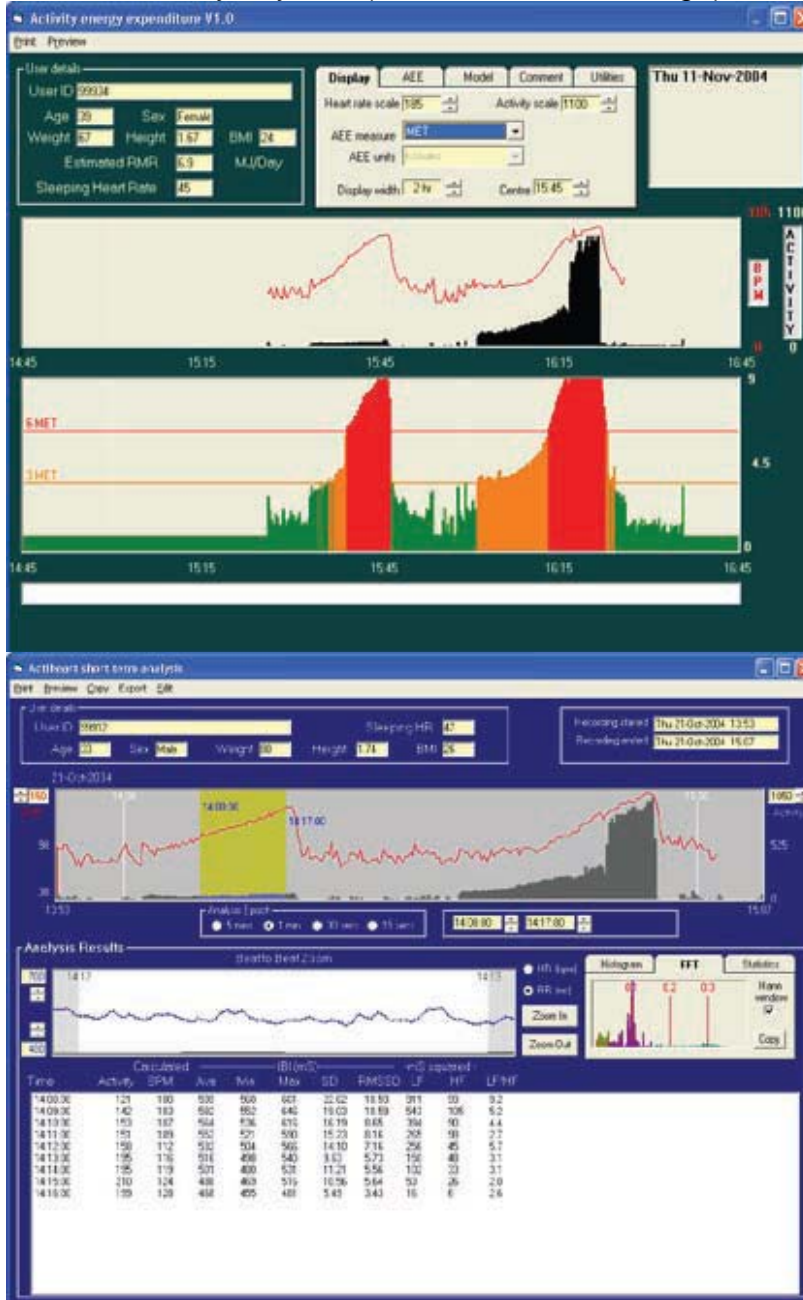
Technical Specification

- Waterproof: Yes
- Memory: 512 KB



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- Battery : Rechargeable
- Battery life: 21 days
- Weight: 10 grams
- Size: 32mm dia. 6mm depth
- Warranty: 2 years (Excludes cable damage)



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Ongoing Projects

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