

The Science Behind the HealthSLEEVE

The **HealthSLEEVE** is the most accurate device on the market today for measuring and interpreting calorie expenditure and lifestyle activity.

It utilizes a patented process for interpreting calorie expenditure/burn called “sensor fusion”. This process involves collecting a range of body-data using multiple physiological sensors instead of a single sensor, which is what other calorie estimation devices such as pedometers and heart rate monitors rely on. It’s this multi-sensor approach that enables the **HealthSLEEVE** to “see” what the wearer is doing (*whether they are sitting, sleeping, jogging, walking, etc.*) that makes the **HealthSLEEVE** such a reliably accurate device for calorie expenditure and lifestyle activity estimation.

The Physiological Sensors

Here is a list of the sensors in the **HealthSLEEVE** followed by a short description of how they contribute to energy expenditure estimation.



1. Accelerometer – The accelerometer in the **HealthSLEEVE** is a two-axis micro-electro-mechanical sensor (MEMS) device that measures motion. This motion can be mapped to forces (g-force) exerted on the body. By taking gravity and motion into account along with the other sensor data, the wearer’s body context and true level of physical exertion can be accurately predicted.



2. Heat Flux – The **HealthSLEEVE** also contains a proprietary heat flux sensor located on the side that measures the amount of heat being dissipated by the body via a thermally resistant material. In short, this sensor measure how much heat the wearer’s body is giving off. Heat flux is an important parameter because the body tends to heat up the faster it burns calories.

3. Galvanic Skin Response – Better known as GSR, this sensor is comprised of two “hypo-allergenic” stainless steel electrodes on the back of the armband that measure skin conductivity. Skin conductivity is how much an electrical current can pass between two points on the surface of the skin and is affected by sweat due to physical exertion as well as emotional stimuli such as psychological stress.

4. Skin Temperature – Skin temperature is measured by using a highly accurate thermistor-based sensor located on the back of the **HealthSLEEVE**. Looking at continuous measurement of skin temperature in conjunction with data collected from the other sensors can reveal the body’s core temperature trends which are affected by the level of a person’s physical exertion or lack thereof.

The data these 4 sensors collect, in conjunction with the wearer’s specific body parameters (age, gender, height, weight) enable the most accurate estimation of energy expenditure on the market today outside of a clinical setting.