



ECTemp™

Status

Title: Estimation of Human Core Temperature Based on Heart Rate System and Method

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**Available
For
Licensing**

A simple real-time algorithm to estimate core body temperature from measures of heart rate, the Army seeks partners to license this technology for their respective heart rate monitors.

The Need

The health and fitness industry strives to provide customers with the best technologies and features available to help athletes train in the right zone and duration for best results. Core body temperature is a factor in this analysis, but has been largely unavailable due to the invasiveness of accurate sensors and the variation between skin temperature and core body temperature. An accurate estimate of core body temperature is also valuable for occupations where heat stress and heat illness are risk factors. Because of the difficulty in directly measuring core body temperature, a practical alternative was developed.



The Technology

In most applications, a person's initial core body temperature can be assumed as 98.6°F at the person's resting heart rate. From that or an alternative starting point, ECTemp™ utilizes a mathematical process to calculate the change in core body temperature based on heart rate time series data. No temperature sensor is needed. Field testing has demonstrated accurate temperature estimates using ECTemp™ even when operated 24/7 for several days. With this new capability, an athlete or worker can be alerted if and when a predicted core body temperature exceeds a predetermined threshold, thus avoiding potential heat illness or undue stress that would impact future performance.

Benefits

- Easy to implement algorithm can be incorporated in commercial heart rate monitors to provide a value added feature in the otherwise crowded market
- Provides valuable data to help athletes, coaches, workers, and supervisors optimize performance and better manage work-rest cycles.
- Core body temperature can be displayed in real time on many devices, such as wrist worn displays, smartphones, or heads up displays.
- Can be used during activity for real-time data and/or post activity for analysis.

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