Development of the SmartPad System for Energy Expenditure Detection
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Background

Energy Expenditure (measured in kcal/day) is the energy organisms utilize to carry out their cognitive and physical actions. A mismatch between energy expenditure, energy storage, or energy intake can lead to a variety of diseases such as obesity. An individual’s energy expenditure is a dynamic parameter that fluctuates depending on the activities an individual undertakes, and it can also be influenced by external factors such as stress, sleep, medications, and exposure to chemical pollutants. Therefore, energy expenditure must be measured frequently to optimize weight management.

Our Solution

Engineering Hypothesis

It is feasible for the SmartPad system to be developed and validated for automatic, non-intrusive, continuous, and reliable assessment of body total EE under free-living conditions without the disruption of the subject’s life.

Findings

• Preliminary tests of the SmartPad are promising as results have shown that the SmartPad is 100% accurate in having an error less than 10% of a reference instrument’s reading in a 95% confidence interval
• Further testing needs to be done to optimize the design parameters of the system

References


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