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Metabolic Analyzer for Weight Loss, Physical Training, and Capnography

AzTE Case # M11-113

Inventors

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Invention Description

Physical activity monitoring devices, such as accelerometers, are useful aids to athletes and those exercising to lose weight. However, such devices cannot monitor rest energy expenditures, which is over 75% of daily energy usage. For those seeking to lose weight and especially those who cannot exercise, there is a need for a device that can accurately measure energy usage while at rest.

Researchers at the Biodesign Institute of Arizona State University have developed a metabolic analyzer that uses indirect calorimetry to evaluate a person's energy expenditures, based on simultaneous detection of the rates of oxygen consumed and carbon dioxide produced. This device also has ketone (acetone) detection capability to discriminate fat and carbohydrate metabolism.

The energy expenditure together with ketone detection capability makes this a potentially valuable tool for optimizing physical training, and for personalizing a weight loss regimen. The device can be used as an accessory to a smart phone, providing added convenience and lower cost.

Potential Applications

- optimizing physical training
- personalizing a weight loss regimen
- capnography (monitoring of the concentration of expired CO_2), which has applications in the diagnosis and management of respiratory diseases such as asthma, chronic obstructive pulmonary disease (COPD), and cystic fibrosis.

Benefits and Advantages

- gives accurate measurement of rest energy expenditures
- able to also measure expired ketones, a measure of fat vs. carbohydrate metabolism
- more selective than infrared detection technology, and none of the lifetime issues common to electrochemical detection technology
- can be used as an accessory to a smart phone

Intellectual Property Status:

Patent Pending

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