

BALANCE (Bioengineering Approaches for Lifestyle Activity and Nutrition Continuous Engagement): Developing New Technology for Monitoring Energy Balance in Real Time

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Abstract

Methods that measure energy balance accurately in real time represent promising avenues to address the obesity epidemic. We developed an electronic food diary on a mobile phone that includes an energy balance visualization and computes and displays the difference between energy intake from food entries and energy expenditure from a multiple-sensor device that provides objective estimates of energy expenditure in real time. A geographic information system dataset containing locations associated with activity and eating episodes is integrated with an ArcPad mapping application on the phone to provide users with a visual display of food sources and locations associated with physical activity within their proximal environment. This innovative tool captures peoples' movement through space and time under free-living conditions and could potentially have many health-related applications in the future.

J Diabetes Sci Technol 2010;4(2)429-434

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Abbreviations: (BALANCE) Bioengineering Approaches for Lifestyle Activity and Nutrition Continuous Engagement, (GIS) geographic information system, (GPS) global positioning system, (MSB) multisensor board, (USDA) United States Department of Agriculture

Keywords: activity, energy balance, food diary, real-time assessment, self-monitoring

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