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

Deonna C. Hughes, B.S.,1 Adrienne Andrew, M.A.,2 Tamara Denning, B.S.,2 Philip Hurvitz, M.F.R.,3 Jonathan Lester, M.S.,4 Shirley Beresford, Ph.D.,1 Gaetano Borriello, Ph.D.,2 Barbara Bruemmer, Ph.D., R.D.,1 Anne Vernez Moudon, Dr.Sc.,3 and Glen E. Duncan, Ph.D., R.C.E.P.SM1

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.

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