

Recent Advances in Free-Living Physical Activity Monitoring: A Review

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Abstract

It has become clear recently that the epidemic of type 2 diabetes sweeping the globe is associated with decreased levels of physical activity and an increase in obesity. Incorporating appropriate and sufficient physical activity into one's life is an essential component of achieving and maintaining a healthy weight and overall health, especially for those with type II diabetes mellitus. Regular physical activity can have a positive impact by lowering blood glucose, helping the body to be more efficient at using insulin. There are other substantial benefits for patients with diabetes, including prevention of cardiovascular disease, hyperlipidemia, hypertension, and obesity. Several complications of utilizing a self-care treatment methodology involving exercise include (1) patients may not know how much activity that they engage in and (2) health-care providers do not have objective measurements of how much activity their patients perform. However, several technological advances have brought a variety of activity monitoring devices to the market that can address these concerns. Ranging from simple pedometers to multisensor devices, the different technologies offer varying levels of accuracy, comfort, and reliability. The key notion is that by providing feedback to the patient, motivation can be increased and targets can be set and aimed toward. Although these devices are not specific to the treatment of diabetes, the importance of physical activity in treating the disease makes an understanding of these devices important. This article reviews these physical activity monitors and describes the advantages and disadvantages of each.

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Abbreviations: (DLW) doubly labeled water, (GPS) global positioning system, (HR) heart rate, (SWA) SenseWear armband, (TEE) total energy expenditure

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