Instructional Physical Activity Monitor Video in English and Spanish

Introduction

The ActiGraph activity monitor (ActiGraph; Pensacola FL) is a widely used method for assessing physical activity. Compliance with study procedures is critical. A common procedure is for the research team to meet with participants and demonstrate how and when to attach and remove the monitor and convey how many wear-days are needed. Scheduling a mutually convenient time to do this can be challenging and can have deleterious effects on the study timeline; therefore, other methods are needed. The Internet offers unique possibilities for reaching research participants. The purpose of this paper is to assess the feasibility of developing a study-specific video to communicate ActiGraph wear instructions.

Methods

The video, developed in 2010–2011, for use with children and adolescents, was filmed with the GT1M monitor, but is applicable to the newer GT3X models. The IRB at Baylor College of Medicine approved the protocol. Participants (aged 14–17 years) were recruited from the USDA/ARS Children’s Nutrition Research Center (CNRC) recruitment database; they provided written parental consent and assent prior to participation. Youth were not eligible if they had previously worn an activity monitor.

Video Description

In the video, a research coordinator briefly describes the activity monitor and its purpose, discusses when and how to wear it, and demonstrates how to attach and remove it as a 9-year-old Hispanic girl and a 14-year-old Asian/African-American boy follow her instructions. The video ends with a summary graphic reiterating the main points. English-language (3:07) and Spanish-language (3:37) versions of the video were developed.

Development Procedure

An outline of key points was developed by the authors and reviewed by a physical activity expert. A script was written and translated into Spanish. The video was filmed at the CNRC on digital media by a visual communication specialist.

To assess content, an international panel of behavioral science researchers reviewed the initial draft of the video. They also commented on setting and music and identified needed changes. To assess comprehension, youth viewed the video and then participated in a brief interview. In the interview, youth were asked the purpose of the activity monitor, when to wear it, and whether the video was easy to understand. They were then given an activity monitor, and a checklist was completed as they attached and detached the monitor around their waist, unassisted.

To assess protocol adherence, the video was tested in a pilot study. A monitor and written instructions were sent to adolescents via paid courier. They were also e-mailed a link to the online video. Participants were asked to wear the monitor continuously for 7 days. Adolescents and/or their parents communicated with a research coordinator via email and phone as needed. Data were collected in 10-second epochs. Valid day criteria included ≥600 minutes of wear time between 6:00AM and 12MN; 30 minutes of continuous 0’s indicated nonwear.

Results

The expert panel (n=12) provided favorable comments regarding setting and content. Suggested changes included adding graphics and modifying music. Interviews/observations with adolescents (n=10; four female, six male; three black, two white, five Hispanic) indicated that most (n=8) correctly identified the purpose of the monitor and rated the video very easy (n=8) or a little easy (n=2) to understand. All (n=10) correctly attached and detached the monitor without assistance and accurately described when to wear it. Using this feedback, graphics and a summary were added, and the music was modified. Comparison of the final English- and Spanish-language videos indicated content equivalence.

In the pilot study, 15 adolescents provided accelerometer data (eight female; seven male; six white, five black, four Hispanic). Thirteen viewed the video. Of these (n=13), all wore the monitor for ≥7 days; nearly all (n=12) met the minimum wear criterion (600 minutes/day) for 7 days. One participant met the criterion for 6 days and nearly met it on the 7th day (valid wear time = 548.17 minutes). This exceeds nationally representative 7-day data for those aged 12–19 years (16.8% met the wear criterion). A limitation of this study is that it did not compare the video with other forms of instruction (in-person, print).

Discussion

Evidence suggests that the online video is a feasible and effective method for conveying how to wear an activity monitor. Using widely available technology, such as the Internet, can enhance the research process by providing a convenient means of instruction on how to attach the monitor, and it also ensures consistency in instruction. The videos can be viewed online in English and Spanish at www.ajpmonline.org (doi:10.1016/j.amepre.2011.10.024).
To the Editor: Koepsell, Zatzick, and Rivara\(^1\) raise valuable points about extrapolating potential population impact from RCTs. Their suggestions should aid grant reviewers and decision makers in making such estimates and be of use to bodies such as the U.S. Preventive Services and Community Preventive Services Task Forces. Their point about external validity being a function of a study, and not an intervention, is well taken.

Two other issues are less clear: First, I disagree with their conclusion that “reach is a function of an intervention.”\(^2\) I view reach as a complex function of multiple factors including the intervention, recruitment methods, alternatives available, local context, and experimental design. Research results are always embedded in context, and in an RCT, this includes experimental design and comparison(s) studied. This is illustrated by a study on diabetes self-management\(^3\) that used a hybrid preference design in which potential participants from a diabetes registry were randomly assigned. They received either “choice” to select their preference of in-person or mailed DVD intervention, or standard randomization recruitment. Significantly more patients participated under choice than randomization conditions, and four times as many patients chose the DVD than in-person condition (39% vs 9%). If reach had been calculated from the typical RCT recruitment condition (22%), this would have drastically underestimated the reach of the DVD intervention.

This example raises the larger question of whether traditional RCTs are good sources from which to estimate public health impact. For population impact, we want to estimate impact under real-world conditions. Estimates based on real-world electronic health records (EHR), assuming adequate quality control\(^1\) based on possibly hundreds of thousands of nonselected patients receiving treatment under real-world conditions, would likely better estimate population impact than an RCT, even using the sophisticated formulas advanced by Koepsell et al.\(^1\)

By definition, an RCT is based on intervention differences, not absolute impact; and even effectiveness RCTs exclude a large percentage of potential participants—including those who are older or have other chronic conditions, for example—in other words those who are likely to have the largest health impact and costs. The challenges of obtaining adequate RCT participation among groups characterized by health inequities are well documented.\(^4\) Then why should we rely on RCTs, which are based on highly self-selected, nonrepresentative individuals, studied under atypical implementation conditions, as the best or even sole basis to estimate population impact?

Randomized controlled trials could be used to estimate an optimistic upper bound, but why not use multiple sources of data, including increasingly available EHR data, and information from other sources (Centers for Medicare and Medicaid Services or the Veterans Administration, for example) to produce estimates of population impact? Advances in simulation modeling have made estimation much more transparent and user-friendly.