

Ugnh/Tgrqtvgf" J gcnvj"Uvcvwu"Rtgfkevu"Rj {ukecn"Cevkxkv {"kp"C fwnvu" y kv j "Kpvgmngewcn cpf" Fgxgnqr o gpcn" Fkucdknkvkgu

1*

2

¹UCLA School of Nursing, Los Angeles, USA

²University of New Hampshire, College of Health and Human Services, Los Angeles, USA

* Leah FitzGerald, UCLA School of Nursing, 700 Tiverton Ave., Box 951702, Los Angeles, CA 90095-1702, USA, Tel: 1-310-206-1065; E-mail: lfitzger@sonnet.ucla.edu

Jan 19, 2014,

Apr 16, 2014,

Apr 17, 2014

© 2014 Gerald and Hahn. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and rIA

Seventeen (10 male/7 female) participants with I/DD aged 18 to 59 years of age continuously wore PAM 24 hours a day for 14 days providing subject-specific individualized motion classification. Baseline assessment of factors associated with physical activity included assorted tools designed for persons with I/DD.

Findings indicate that higher ratings of self-reported health status predicted greater physical activity in adults with I/DD. Those self-reporting their health as excellent/very good or good demonstrated significantly greater physical activity measured by PAM than those self-reporting their health as good or fair. Time spent in physical activity was below the recommended guidelines for health benefits. Neither age nor body mass index correlated with activity values.

M to recent analysis, approximately 30% of adults with intellectual and developmental disabilities (I/DD) were meeting the national recommendations for physical activity compared to 49.4% of their non-disabled counterparts. Not all studies are in agreement with some researchers reporting no difference in physical activity levels between adults with I/DD and controls and others reporting activity levels similar to sedentary controls.

JNov Physiother
ISSN:2165-7025, NP, an Open Access Journal

Volume 4 • Issue 2 • 1000204

Self-reported health status is often a predictor of exercise participation among the general population and in persons with I/DD. Self-reported physical activity has been shown to be significantly related to better subjective health in adults with I/DD. Self-reported health and inactivity are both strong predictors of mortality and cardiovascular mortality in several population-based studies worldwide. Adults with I/DD are able to report their health status with males qnhealthee

between adults with I/DD and sedentary adults without I/DD, but both had significant differences when compared with physical activity of active counterparts without I/DD [2]. Few other studies have reported objective measures of physical activity in this population, particularly the use of wireless technology. Furthermore, physical activity programs developed and tailored to meet the specific needs of people with I/DD are reported as inferior [11]. Modern wireless technology now offers applications to objectively measure physical activity including wearable biosensors, and/or chronic disease monitoring devices, smart phones and tablet computers to remotely consult and monitor patients, as well as provider-patient video conferencing sessions [12].

In addition to quantifying physical activity in the I/DD population, research on the correlates of physical activity are necessary to design appropriate and targeted interventions [1,13]. In the general

questionnaire from the Exercise Health Education Self-Assessment Packet for Adults with Developmental Disabilities from the Aging Studies Program Department of Disability and Human Development University of Illinois at Chicago [16], with the nurse practitioner who read the questionnaire aloud and explained if necessary. The Exercise Health Education Self-Assessment Packet was published as part of a training packet for improving physical activity in persons with I/DD and pilot tested and found to have "Alpha reliabilities ranged from .66 to .91 and test-retest reliabilities ranged from .48 to .72" [17]. Table 1 describes the domains and the scales or measures that were used in this study. For self-reported health status the interviewer simply and directly asks the respondent to categorize his or her health into one of four levels: excellent/very good, good, fair, or poor.

Self-reported exercise

Participants completed by interview the Exercise and Activity Inventory reporting if they participated in the Special Olympics, sports activities by type, as well as other exercise activities by type and frequency per week noted as 1 = A Little (< 1 day); 2 = Some (1-2 days) or 3 = A lot (3-7 days) [16].

Personal Activity Monitor (PAM)

The PAM system is a wearable compact unobtrusive device (less than one cubic inch), different from prior technology where devices were large and cumbersome. With the use of the wireless PAM developed at the UCLA Wireless Community, we were able to capture the types of movements that can be linked to determinants of physical activity for a community-dwelling sample of adults with I/DD. These data were uploaded weekly by study team members directly from devices over standard computer USB interfaces via the Internet to the PAM Server system. The data from each device represents acceleration information in 3 cardinal directions recorded by the device. PAM samples at a rate of 40 samples per second. All of the data points are time stamped. Each sample of data is summarized/converted into a Vector Magnitude Unit ($VMU = \sqrt{x^2 + y^2 + z^2}$). Next, VMU data are then summarized with various common statistical routines to obtain averages over a minute or hours per day. These VMU data are then analyzed by pre-computed VMU thresholds corresponding to average per/minute VMU activities. There are currently two thresholds corresponding to moderate and high intensity activities providing two thresholds and corresponding three classes of activities - low, moderate and high. The data were then, summarized once again using simple statistical routines based on the classification among the three states (low, moderate and high). The low activity number tells us how much time individuals spent in a less than moderate but higher than sedentary activity state. Moderate activity number tells us how much time individuals spent performing moderate to vigorous physical activities. Sedentary is defined as any activity less than low activity, including sleeping. Study team members directly uploaded these data weekly from devices over standard computer USB interfaces via the Internet to the PAM Server system; thus, the PAM provided individual participant physical activity levels.

Procedure

Following screening participants were instructed on use of the PAM and began wearing the device continuously 24 hours a day for 14 days with the exception of water activities (bathing, water activities). Participants chose and maintained a preferred site of either the ankle

or waist for the study duration; however, they were allowed to switch the PAM from the right to left side of the body ad lib.

Data analysis

Statistical analyses were performed using a statistical package, IBM

Physical activity and self-reported health status

The majority (72%) of the participants reported their health status as excellent/very good or good. Adults who self-reported their health as excellent/very good or good is significantly greater than physical activity as measured by PAM than for adults who self-reported their health as good or fair. Adults who self-reported health as good or fair spend significantly more time sedentary as measured by PAM than adults who self-reported their health as excellent/very good. No statistical effects were noted for gender in self-reported health status or BMI (Table 2). BMI did not correlate with self-reported health status or minutes of physical activity (values not reported).

We did not observe an overall significant difference in minutes of physical activity or sedentary values between genders (Table 3). However, we observed a statistical effect within gender ($p < 0.05$) (Figure 1). Total minutes of physical activity were significantly higher in females with self-reported health status ratings of excellent/very good ($M = 62.7$, $SD = 3.3$ min/day) compared to females with self-reported health status ratings of good/fair ($M = 42.1$, $SD = 2.2$ min/day). Similarly, total minutes of physical activity were statistically greater for males with self-reported health status ratings of excellent/very good ($M = 98.4$, $SD = 10.1$ min/day) compared to males with self-reported health status ratings of fair or poor ($M = 27.6$, $SD = 11.0$ min/day, $p < 0.05$).

Figure 2 shows statistically significant lower sedentary time ($p < 0.001$) measured in females with self-reported health status ratings of excellent/very good ($M = 22.96$, $SD = 0.06$ hr/day) compared with

these percentages do not differ from non- I/DD counterparts (74%-87%) [20].

