

Measuring Physical Activity of Youth with Developmental Disabilities Participating in a Summer Camp

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Abstract. Keeping healthy weight is a balance between diet and physical activity (PA), with PA important in energy balance and other health benefits. Due to insufficient health-enhancing PA, youth with developmental disabilities (DD) have a higher prevalence of overweight and obesity when compared with their peers. The purpose of this study was to determine a method using pedometers to measure step count during daily activity in a summer program serving youth with DD. Data were collected from 52 children. Mean total number of steps per day were 3392 ± 1474 for boys and 2527 ± 915 for girls. Although mean steps fell short of recognized norms ($> 10,000$ steps), the study established a protocol for determining the activity of children with DD during summer activity.

1. Introduction

Due to insufficient health enhancing physical activity (PA), youth with developmental disabilities (DD) have a higher prevalence of overweight and obesity when compared with their peers without disabilities. How can practitioners and educators, who provide instructive and recreational programs that serve youth with DD realistically, yet objectively, determine the impact of their program on improving the PA profile of their participants? This article describes a feasible method using pedometers to measure daily step count, activity time, and activity intensity during a 9-week summer program serving youth with DD. The research was conducted at the Youth Education & Summer Socialization Program (Y.E.S.S.), a 9 week summer program serving students ages 6-18 years with DD in Kansas.

2. Methods

Pedometers were used to determine activity levels [1, 2]. The pedometer used for this study (W4L MVP, Walk4Life™) not only records the physical activity and number of steps taken, but also total activity time and total time the wearer spends at or above moderate to vigorous physical activity (MVPA, at or above 120 steps/min) [3].

Participants were randomly selected from the various classrooms at the summer camp, with each classroom

containing 6-12 students. Classroom placement depended on age: tots, 5-8 yrs; youth, 9-12 yrs; teens, 13-15 yrs; and high school, 16-18 yrs.

On arrival to the classroom in the morning, the participant was shown a pedometer attached to a belt asked for his/her approval to wear it. If the participant gave his/her consent, the pedometer was reset and placed over the participant's right iliac crest. For data collecting purposes, each pedometer was labeled with the participant's name using a permanent marker and white tape.

The participant proceeded to engage in the morning classroom, gymnasium, and playground recreation. Prior to leaving for afternoon activities, the pedometers were collected and data were recorded. If the afternoon session did not involve water related activities, the pedometer was placed on the participant and data collected until the end of the afternoon session in the same manner as the morning session. Bathroom visitations and changing clothes on water days (i.e., changing into bathing suits) required monitoring to ensure proper placement of pedometer.

3. Results

Data from 52 children (36 boys, 16 girls) were collected, ranging in frequency of 1-3 days per participant (total of 144 observations, 124 morning and 20 afternoon). Results include mean total daily steps (boys 3392 ± 1474 , girls 2527 ± 915), mean morning steps (boys 3324 ± 1488 , girls 2549 ± 934) and afternoon steps (boys 3956 ± 1269 , girls 2450 ± 891). Mean total activity time (boys 34.2 ± 14.6 min, girls 26.3 ± 9.2 min), mean total morning activity time (boys 33.5 ± 14.7 min, girls 26.3 ± 9.4 min), and mean total afternoon activity time (boys 40.5 ± 12.8 min, girls 26.1 ± 9.1 min) were collected. Mean total daily MVPA time (boys 6.7 ± 5.8 min, girls 4.3 ± 3.5 min), mean total morning MVPA time (boys 6.4 ± 5.8 min, girls 4.5 ± 3.8 min), and mean total afternoon MVPA time (boys 9.5 ± 5.3 min, girls 3.8 ± 1.7 min) are depicted in Figure 1.

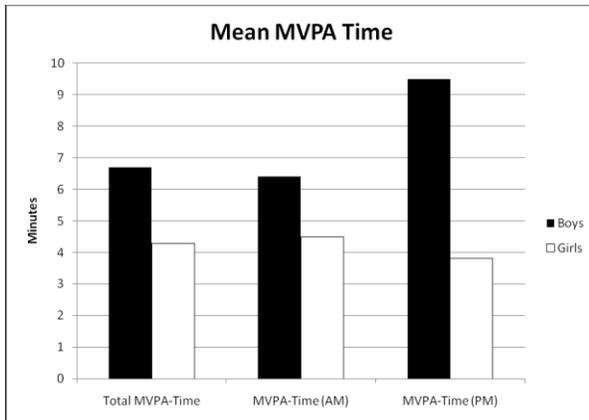


Fig. 1 Mean MVPA Total, AM, and PM Time (min) for Boys and Girls at the Y.E.S.S Camp

4. Discussion and Conclusion

Of the children approached, two chose not to participate. After placement of pedometer occurred, there were two additional requests by participants for pedometer to be removed. One belt with a pedometer was lost by a participant. Overall, the results suggest that the wearing of the pedometer in the manner described was acceptable for this group of youth with DD.

For health benefits, children and adolescents should engage in MVPA at least 60 minutes a day [4]. Although the mean MVPA for both groups fell short of these norms, the most active time for the camp participants took place during water sports, which could not be measured.

For youth with and without DD, daily physical activity is essential for promotion of health and physical development and for reducing risk factors for adult onset of cardiovascular and metabolic diseases [4]. It has been reported that youth with DD have lower levels of fitness and higher levels of adiposity compared to their peers without DD [5].

Physical activity is important in energy balance and health benefits, which aids in maintaining a healthy

weight [6]. There are many educational and activity programs across North America that could be providing health enhancing activity for their participants. Although scientific reports have shown pedometers to be valid and reliable in measuring PA in youth with DD [1], the methodologies used may seem too rigorous and, therefore, impracticable for their staff to manage. Providing “hands on” instruction in the use of pedometers will enable more information to be gathered and reported by ongoing programs, such as Y.E.S.S., that could expand the database and continue to increase daily health enhancing physical activity of youth with DD.

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