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Recommended Citation

Walkup, Mary K., "FUTURE Study: Physical Activity in Individuals with Intellectual Disability" (2014).
Chancellor's Honors Program Projects.
https://trace.tennessee.edu/utk_chanhonoproj/1685

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FUTURE Study

Physical Activity in
Individuals with
Intellectual Disability

Katherine Walkup

Background:

High rates of obesity and low aerobic fitness levels are related to increases in chronic disease development in the U.S. This rise in obesity is a result of a variety of factors, but one of the main one is the sedentary lifestyle that the majority of people lead, with a low percentage of Americans meeting recommended physical activity level on a daily basis. This sedentary lifestyle is especially prevalent in the special population of people with Intellectual Disability (ID). ID is a term used for an individual who shows mental limitations specifically intellectually and behaviorally (Schalock et al., 2010). Along with the mental limitations come barriers such as lack of communication and motivation that prevent these individuals from a daily active lifestyle. Therefore, many people with ID are not only at a higher risk for obesity but also at a higher risk of developing other health problems such as diabetes and cardiovascular disease.

Many individuals with ID have low self-esteem and lack personal communication skills which prevent them from participating in team activities and most sports. Rimmer, Braddock, and Marks (1995) concluded that only 24% of individuals with ID are physically active three to four days per week compared with 51% of the general population. Inadequate physical activity could also be a result of the lack of transportation available to people with ID. Most individuals with ID must rely on someone else to take them to a gym or park rather than being able to drive or walk by themselves. The third possible reason for the lack of physical activity could just be a lack of motivation to exercise. Unfortunately, many individuals with ID receive negative support from guardians and/or authority figures about their ability to participate in activities (Bodde & Seo 2009). Also, students with ID may not be educated on the benefits of exercise, so they have no motivation to participate in activity if they do not know the benefits of their actions. Individuals with ID need a lot of encouragement and reliable peers to get them

interested in activities and to make sure they are maintaining a healthy lifestyle. With a program that is led by peers and easy to maintain, individuals with ID can become more physically active and decrease their risk of becoming obese. Therefore with this study, we hope to determine if our motivation, activity awareness education, and interactive devices have a positive impact on the daily activity of students with ID

Participants:

A population from the University of Tennessee was chosen to participate in this study. This special population of 10 students included 5 males and 5 females from the FUTURE program. FUTURE is a program at the university that provides a 2 year post-secondary education to students ages 18-29 whom have an ID and live in eastern Tennessee. The goal of the program is to help empower the students and lead them to achieve employment in the community (*FUTURE*).

This program involves giving students their own personalized class schedule that fits around their needs and/or career goals; however, the students must fulfill a list of requirements before being accepted and while in the program. Some of these requirements include: basic mathematics understanding and ability to use a calculator, desire and motivation to complete an education program, and ability to function independently for a sustained time (*FUTURE*). During the day, the students also must participate in a technology class, where skills of using programs on a computer and/or other electronic devices such as an iPad are taught. Knowing the students backgrounds and along with the given requirements in mind, this population of students was the best fit for an exercise and fitness study on individuals with ID. We want these students to feel empowered to participate in more physical activities with others

in the community and to become healthier. We decided to increase motivation to participate in physical activity (i.e. walking) through the use wearing a mobile device that monitors and reports their activity progress.

I. Methods:

According to Temple (2007) the main source of exercise for those with ID comes from walking. Walking can be done independently and without any other facilities or equipment which is optimal for these individuals. Encouraging students to take more steps and just making them aware of how active they are in day/week/month can help to increase their personal motivation for daily exercise. The FITBIT Flex is a great measuring tool that is capable of measuring and displaying how much walking occurs through its use of accelerometers to measure steps taken and calories burned. Also, collecting the data from the FITBIT Flex wristbands is something that the students we chose can do themselves. Each student in the FUTURE program that participated in the study was shown how to manipulate the FITBIT Flex and interface the device with an iPad and the application software in order to retrieve their daily step count and caloric expenditure.

The participants were given FITBIT Flex wristbands that they were to wear everyday on and off campus. We used them along with the FITBIT application to track how many steps they were taking during the day and also to see at what points in the day they were the most active or when they could improve. This data is expressed in numerical and graphical form as shown in *Table 1*. The US Health Guidelines suggest adults take at least 10,000 steps a day, so that will be our number to compare activity to. The FITBIT application allowed us to

collect data that not only showed the total steps for a day but also the number of steps per hour. While tracking this data, we also informed the students of their steps and encouraged them to continue the activity each day. With the students being aware of how many steps they take per day and also with our -on-one meetings, our purpose was to motivate the students to be active and healthy.

II. Data Collection

All 10 of the students were given a FITBIT Flex wristband, and each had planned on participating for the duration of the study. Data collections using the wristbands, however, ended up only coming from two students. We focused on one male and one female during the main extent of our program due to some early complications that will later be discussed.

The male subject had a very high understanding of the FITBIT Flex device and how physical activity should be a main part of a healthy lifestyle. As we tracked his steps, we found that he was very excited about the program. He enjoyed seeing how many steps he took each morning and also how the calories added up very quickly. It appears his participation may have been driven by the fact that he knew how important activity is important in preventing health risks. He wore the bracelet very throughout the entire week at school and the weekend. While tracking his steps, we actually found out that he has a job on the weekends that allows him to get a good amount of physical activity. After about 4 days, his walk patterns also seemed to increase. There was a time period of about 5 days in a row when he walked at least 10,000 steps each day, which is the recommended amount for adults. The FITBIT Flex band and application worked well in illustrating to this student how easy it is to obtain adequate amounts of physical activity.

The female subject had a little bit of a harder time remembering to wear the FITBIT Flex. She struggled possibly due to the fact she had more limitations with her ID. Providing her encouragement and just making her aware of walking as a way to meet physical activity recommendations was our main goal. With her, there was not as much walking on the weekends as on the weekdays, which we assume it's because she is not on campus. This information shows where improvement can be made not only in her life but also with others whom are just active on campus. Just like the male, she had one or two days a week that showed higher amounts of steps which she told us was when she worked at a grocery store. Having a job, especially one that requires walking and stocking shelves is a great way for this population to be active.

Discussion:

Physical activity should be a very important part of everyone's lives. A lifestyle with a good amount of daily activity is the best way to prevent obesity and many other health risks associated with sedentary behaviors. Individuals with ID, however, have a very hard time in maintaining such a lifestyle because of the barriers they take on during their life. This is why knowing the barriers and methods of overcoming these barriers may help them to become motivated about physical activity and fitness. This study allowed us to implement our FITBIT Flex tracking program and motivational meetings.

The FITBIT Flex program was great in illustrating physical activity and when used properly, it helped show our male subject's progress each day. However, even with the high amount of pros that come with using the FITBIT, there were a few problems that came we came across in our study with this special population. The wristbands were complicated to get on and

off for students with ID, and they also were not very comfortable for them. We actually had two people lose them within the first three days because they took them off somewhere without us knowing and didn't put them back on. We also had devices with water damage because they were submerged during bathing. Therefore, to insure complete participation in this type of program it is necessary for the device to be comfortable to wear and able to resist water in case of accidents.

This device is very accurate in tracking this population's activity if that is a main goal, but I don't believe it is the best tool when trying to improve their activity. We found that the best tool was just motivating them to be active and to continue with their jobs outside of school. This was done by meeting with the students one-on-one, and discussing with them their daily activities and walking habits. The students actually taught us that having even a part time job is a great way for individuals with ID to prevent having a completely sedentary lifestyle. With this information, I believe that the best option in impacting physical activity would be for the FUTURE program to add more general course(s) about the benefits of physical activity and fitness through lifespan, and also continue to give them confidence to take on a careers in the community.

Table 1: FITBIT Flex Interface

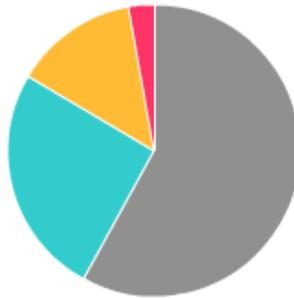
Activity ◀ **Sep 27** ▶ Select ▼

9291 steps taken
4.66 miles traveled

Today's activity breakdown (excluding sleep)

sedentary
8hrs 34min

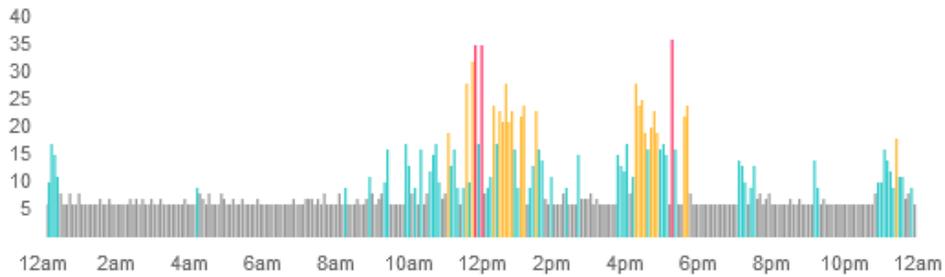
lightly active
3hrs 46min



fairly active
2hrs 1min

very active
25min

Calories burned **Steps taken** every 5 minutes



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