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# The Effects of Exercise on Adults with Intellectual and Developmental Disabilities

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# SENIOR THESIS APPROVAL

This Honors thesis entitled

“The Effects of Exercise on Adults with Intellectual and Developmental Disabilities”

written by

Addison Bates

and submitted in partial fulfillment of  
the requirements for completion of  
the Carl Goodson Honors Program  
meets the criteria for acceptance  
and has been approved by the undersigned readers.

Dr. Amber Chelette , thesis director

Dr. Allyson Phillips , second reader

Dr. Brenda Trigg , third reader

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April 16, 2021

**The Effects of Exercise on Adults with Intellectual and Developmental Disabilities**

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## **Abstract**

Exercise is essential for a healthy life and many people are unable to participate due to barriers. One population that seems to be extremely impacted by these barriers are persons with disabilities. People with disabilities are more likely to become obese and suffer from serious, chronic illnesses. There is a need for exercise programs catered to this population. There is a lack of exercise programs focused on people with disabilities, so through this research we are interested to see the impact of a 12-week exercise program and what results might occur from this lifestyle change. With the 12-week virtual program we developed, we were able to keep participants active and moving even through isolation in the height of COVID-19. After conducting pre-test, the exercise program, and post-test, it was determined that the results of the pre and post-test had been incorrectly gathered and were no longer reliable. Through this study it was determined that in the future it is important to assess work being done by outside help multiple times instead of just assuming everyone followed the directions. Overall the hypothesis that a significant change would be observed in the overall fitness of participants is unable to be supported due to lack of data.

## **Introduction**

There are several populations of people that are often left unreached when it comes to exercise programs and with a lack of resources or knowledge comes an increased risk for chronic disease, obesity, and overall poorer quality of life. Persons with disabilities (PWD) are often overlooked when it comes to exercise because most people believe it is not their job and this group of people that could benefit the most are now suffering the consequences. Research has proven that there is a significant difference between PWD muscular strength, muscular endurance, cardiovascular health, flexibility, and body composition compared to their peers without disabilities. The majority of these differences are due to the barriers PWD experience that hinder them from participating in physical activity.

There are several barriers such as environment, cost, attitudes, and lack of training that restricts PWD from experiencing the same activities, recreation programs, and equipment that is available to the rest of the population. A prominent researcher in the field described 10 categories of barriers PWD experience. It has been determined that 56% of adults with disabilities do not engage in any leisure time physical activity which is significantly higher than the 36% of adults without disabilities. The major barriers participants in this study often encounter are environmental barriers in local gyms and the exercise equipment itself along with availability of resources and access to professionals in the field who have experience working with this population (Rimmer et al., 2004).

Multiple studies have been done to evaluate the best type of program for success in helping PWD exercise in a fun and effective way. There is a program called

*HealthMatters* that specifically caters to adults with disabilities because this population suffers greatly from cardiovascular disease and high obesity rates. With cardiovascular disease being one of the leading causes of death they created a program and training model to help educate participants about how to live a healthy lifestyle such as eating habits and water intake, as well as helping them stick to a 12-week exercise plan. They saw participants 3 times a week for an hour and this continued for 12 weeks. They covered all the major components of fitness. At the end of the study their results were very promising because they saw an improvement in flexibility, increased confidence, and lower cholesterol and fasting blood glucose (Marks, Sisirak, & Chang, 2013).

Another article that supports the need for the essential use of exercise for adults with intellectual and developmental disabilities was written by Kristina Janicias (2014) as a commentary piece where she analyzes the complex issues individuals with disabilities have a higher chance of experiencing such as a higher risk of chronic illness and mental illness, which is why exercise is essential in maintaining a healthy lifestyle especially within this population. She also explains that exercise can be used as a treatment in some cases and reduce the risk of overmedicating and improve overall quality of life both physically and mentally. Exercise has been seen to be just as effective as antidepressant medication or therapy in treating mild to moderate cases of depression. It has also been proven that individuals with autism spectrum disorder demonstrated improvements in academics, physical fitness, behavior, and task-oriented behavior when participating in exercise (Janicas, 2014).

It is evident that overall exercise is important in the life of everyone but especially in the lives of individuals with disabilities. They often encounter additional health issues and increased risk for serious illnesses due to their preexisting conditions. It is essential for there to be professionals educated on this topic and this population in order to best serve them and limit the barriers that often block PWD's ability to exercise effectively.

## **Methods**

The study had 11 virtual participants in the exercise program, average age of 48 and (6 males and 5 females). Subjects were recruited through Group Living in Arkadelphia based on their participation in the previous FIT5 exercise program and interest in the study. Each participant was required to provide informed consent and in cases when the participant was unable to act as their own guardian, the guardian also signed the form. Before the program started participants also had to perform a fitness assessment that was conducted by Group Living employees covering muscular strength, muscular endurance, cardiovascular health, flexibility, and body composition. This assessment was designed by Special Olympics specifically for people with developmental and intellectual disabilities. These tests included a 3-minute step test, push-ups, curl-ups, right leg stance, left leg stance, and one leg sit and reach.

The FIT5 exercise program was conducted for one hour a week for 12 weeks. The program was done through the video platform, Zoom, where clients logged in, watched live, and performed the exercises with the two student leaders from Ouachita Baptist University. These exercises consisted of a full body workout covering all areas of fitness and would switch each week to keep participants engaged and focused. The Ouachita Baptist University Kinesiology Department also allowed Group Living to borrow dumbbells and other exercise equipment needed for the program.

Exercises each week alternated between two different exercise plans. For the first plan exercises were done twice in row with 1 minute on and 30 seconds of rest. These exercises were marching with arm swings, dumbbell shrugs, jogging in place, side arm



raises, jumping jacks, biceps curls, chair squats, quick air punches seated, curl ups, butterfly stretch, deltoid stretch. The second set of exercises were executed twice in a row with 1 minute on and 30 seconds off as in the previous exercise plan. The exercises in this plan were quick air punches standing, dumbbell shrugs, overhead shoulder press, bicep curl, forward arm raises, side arm raises, right and left single leg stand, chair squats, straight leg raises, seated shoulder rotation stretch, seated rotation stretch, seated side stretch, and seated chest stretch.

In order to be inclusive and make sure each participant was getting the most out of each exercise, some modifications were made for those that might have difficulty performing the exercise in a certain way. Some of the modifications that were used included side steps instead of jumping jacks, chair squats instead of body weight squats, high knees instead of jogging in place, and balancing using a chair to stabilize instead of doing it with no assistance. Attention was paid to participants who needed accommodations and they were still able to exercise by watching one of the student leaders who was performing the modification.

At the end of the 12 weeks, Group Living employees then conducted a post-test using the same test and resources as the pre-test developed by Special Olympics. All results were then turned in to Dr. Chelette where we then analyzed the results and impact of the exercise program.

## Results

Due to COVID-19 and various safety precautions that were set in place, we were unable to perform the pre-test and post-test ourselves. We had to rely on willing Group Living employees to do the assessments for us. Unfortunately we were unable to receive accurate and reliable data due to there being discrepancies in the data. While in general we were able to see an increase in several areas of fitness we can not statistically determine if there was a relationship between the virtual exercise program and participants' health.

There seemed to have been a miscommunication on how to record results and there are various differences between the tests conducted on clients and how they were done. These differences are especially seen in the one leg sit and reach test where it was supposed to be measured by which body part they were able to reach but in some cases they used numbers that had no relevance to the test itself. There were also various ways employees measured the 3-minute step test. Some recorded the number of steps they took, how many laps they were able to complete, or in some cases all the results say were "completed".

Unfortunately, due to there being no usable data, we are unable to produce any sort of results that we can analyze. We are still able to learn from this experience and apply our knowledge to future research. While it was disappointing to produce no results we still learned a lot through this process.

## Discussion

There is an obvious need for exercise programs catered towards individuals with disabilities due to the barriers that inhibit their ability to participate and their higher risk of developing serious chronic illness. During the unprecedented circumstances surrounding the COVID-19 pandemic everyone has learned to adapt, and this research project had to as well. The exercise program was originally a 12-week in-person program, yet it shifted to a virtual program in order to be more accessible and reduce the risk of infection.

A lot can be learned and gained from this experience in order to make virtual exercise programs more effective in the future. As the program shifted to a virtual format the pre-test and post-test had to be conducted by individuals who did not know exactly how the fitness testing process works. While we provided them with instructions and supplies needed there was still room for error because we were unable to train them in person and explain how testing should be conducted. It is important for training to be done in order to insure accurate testing and usable results. In the past semester when the program was in person, students in Ouachita Baptist University's Kinesiology program helped conduct assessments, and due to their training and previous knowledge on the topic, there were rarely any data recording mistakes. In the future it is essential to have thorough instructions and training available to those helping assess participants.

Another idea this study discovered is the importance of exercise for people with disabilities. While there are countless studies that have indicated the same importance, during a time of social isolation keeping active is even more important. Through this

research participants were able to remain active every week and it gave them something to look forward to. They were able to feel like they were part of something important even if it was over Zoom. Our clients were separated into two groups based on their role at Group Living in order to prevent a major COVID-19 breakout from happening across the facility and they Zoomed from those groups. They were separated by whether they worked at the Beehive consignment store or those who stayed in the Group Living building across the street to insure their safety and health. During these Zoom sessions they were able to see friends in the other building whom they had not been able to interact with due to the pandemic. It helped aid in their motivation as well as their social development.

While more research needs to be done on exercise programs for adults with disabilities, there needs to be a focus on virtual programs. With access to virtual exercise programs individuals are able to participate in programs that are specifically designed for their needs and there are very few, if any, that currently focus on PWD. The use of technology and video meetings are the new normal in many different fields such as teletherapy, online classes, and even a way to interact with friends and family. The development of more virtual programs catered to individuals with disabilities would reduce some of the environmental and financial barriers they often experience with an average gym or exercise class.

While this study was unable to produce any data or results, there are still several ideas that can be taken away from the research. With technology becoming a part of everything people do daily, it is important for professionals to adapt and develop new

ways to reach their intended population. While a virtual program was not as effective as previous in person programs in improving participants overall fitness, in the future others will be able to build off current knowledge and develop a more effective way to virtually conduct a fitness program for adults with disabilities.

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