Self-Determination Theory in Autism Spectrum Disorder

Juliana Jamison Espinoza
Cal Poly Humboldt
Kinesiology Department

Introduction

Exercise is an important part of human health; exercise improves mood, cardiovascular health, bone health, and muscle growth (Centers for Disease Control and Prevention, 2022). Individuals, including those with disabilities, should engage in 150 minutes of exercise per week (CDC, 2023). Unfortunately, individuals who have disabilities may have a hard time meeting this recommendation due to a lack of resources (e.g., transportation, funding negative perceptions, and motivation) or knowledge about what exercises they can do (Rimmer & Marques, 2012). Self-determination theory consists of these three psychological needs; autonomy, competence, and relatedness (Ryan & Deci, 2000). Autonomy refers to an individual's control over what choices they make, it also has been reported to support their willingness to make choices (Ryan & Deci, 2000). Competence refers to people's mastery or ability to advance in a skill or activity. Relatedness refers to an individual feeling connected and belonging with others (Ryan & Deci, 2000). The coaches in Humboldt Fit work individually with participants to establish goals and create community, we hope to motivate and help get participants to move their bodies in a fun and comfortable way actively.

Methods

The purpose of this study was to determine the impact of the implementation of self-determination theory and a structured exercise program to increase exercise performance for an adult with a disability.

Subject

The participant is a 16-year-old male who was diagnosed with autism spectrum disorder. This participant had limited verbal communication. The participant attends a K-12 school with his younger brother. The participant would participate in physical activity 0-2 days a week, but his favorite form of exercise is swimming.

Setting

The setting of this study was conducted in the Student Recreation Center (SRC) in the field house and in the gym at Cal Poly Humboldt. In the field house, there were cones set up every 10 ft (3 yards) on the turf. The participant would use the wall for wall push-ups and sit on the turf for sit-ups. In the gym, there were various cable machines, workout machines, and treadmills that the participant used.

Dependent Variable

The dependent variable was the number of laps of self-paced walking for 6 minutes of 100 feet. The number of wall push-ups completed in 1 minute and the number of sit-ups completed in 1 minute.

Independent variable

The independent variable was using the self-determination theory to allow the participant to make their own goals and what type of exercise plan they wanted to follow in the gym.

Design

A changing criterion design was used to evaluate the effects of the gradual increase of the goal for each assessment. Each week a criterion of performance was established based on the baseline data.

Baseline

Baseline data were collected on the first meeting day with the participant, baseline data was collected and recorded as week 0. Baseline data consisted of the participant completing a 6-minute walk between cones spread out 100 feet apart, modified wall push-ups, and sit-ups.

The intervention

During the intervention baseline data was taken on the first day of Humboldt Fit and goals were set. In the following meetings before starting the exercise a goal for that exercise was told to the participant such as “Our goal today is to do 6 laps” or “Our goal today is to complete 2 pushups”. During the intervention words of encouragement were used to help motivate the participant during their exercises. Often the participant had to be redirected by using verbal cues or physical prompts to continue to complete the exercise. Modeling was also used during the exercise to show the participant how to do the exercise. Assessments were done at the beginning of each meeting along with peers over the course of 6 weeks.

Data Collection

Data was written down and recorded after each assessment. The document used to record data was a paper document with a table of columns with the current week and a column with the criteria of performance for the week and another column listing the completed laps, push-ups, or sit-ups completed. Each week had new criteria of performance which would be adjusted based on the previous week's completed sores.

Results

This study utilized a changing criterion design over the course of 6 weeks. Following the SDT the participant was provided the opportunity to establish their exercise goals. Below is a demonstration of the participant’s performance across the 6-week time frame in meeting those goals.

Baseline Phase

All baseline data were collected on the first day of the program. For the 6-min walk, the participant completed 6 laps (walked 600 feet). Additionally, the participant was unable to complete any push-ups and curl-ups within the 1-min time frame.

Criterion Phase 1

During criterion phase 1 the participant completed a number 7.8 of laps within the 6-minute walking test, Additionally, the participant was unable to complete any push-ups and curl-ups within the 1-min time frame.

Criterion Phase 2

During criterion phase 2 the participant was not available to participate in the activity in which no data was collected.

Criterion Phase 3

During criterion phase 1 the participant completed a number 9 of laps within the 6-minute walking test, Additionally, the participant was unable to complete any push-ups and curl-ups within the 1-min time frame.

Criterion Phase 4

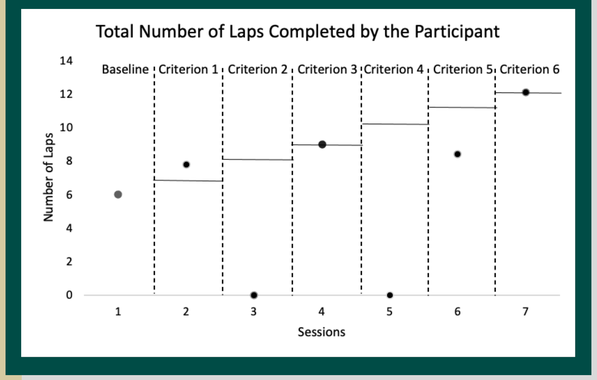
During criterion phase 4 the participant was not available to participate in the activity in which no data was collected.

Criterion Phase 5

During criterion phase 5 the participant completed a number 8.4 of laps within the 6-minute walking test, Additionally, the participant was unable to complete any push-ups and curl-ups within the 1-min time frame.

Criterion Phase 6

During criterion phase 5 the participant completed a number 12.1 of laps within the 6-minute walking test, Additionally, the participant was unable to complete any push-ups and curl-ups within the 1-min time frame.



Discussion

The purpose of this study was to determine the impact of the implementation of self-determination theory and a structured exercise program to increase exercise performance for an adult with a disability. By the end of the 6-weel study the participant was able to complete his goal of 12 laps for the 6-minute walk. For the push-up and sit-ups, the participant was not able to complete his goal of 1 push-up and sit-up by the end of the 6 weeks. Although the goals for the push-up and sit-ups were not able to be met, each week the participant was able to work towards positioning himself into the form for the push-ups and sit-ups.

Limitations

The limitations of this study composed of only being able to meet with the participant 1 time a week. Despite only being able to meet 1 time a week we were able to follow a structured schedule of doing a group warm-up, followed by the assessment of walking, push-ups, and sit-ups. Once the assessment was completed the participant would then follow a workout schedule in the gym. The length of the study was also a limitation, although the participant was unable to complete a push-up or sit-up during the 6-weeks, slowly each week the participant was able to make progress towards completing a push-up or sit-up by doing the steps leading up to the exercise. A limited number of participants from this study was also another limitation. Although the sample size was small there is substantial evidence that supports SDT across individuals including individuals with disabilities. Self-determination theory has been shown to enhance health promotion in adults with ASD (Hamm & Yun, 2018).

Future Research in this Area

Future research in this area should consider a larger number of participants, increasing the number of session and using a control group. Future researchers should follow a model similar to Hamm and Yun (2018) where a survey is given to participant gain a understanding of what their motivation process is when engaging in physical activity based on SDT. While in this research we were able to implement SDT in one individual with ASD, individuals on the Autism Spectrum all have different experiences and levels on the spectrum which is why it is important to have a larger population size. Based on the survey, Hamm and Yun (2018) where able to have a larger sample size in which they were able to establish what phycological needs (autonomy, competence, and relatedness) of SDT were most utilized when the individual was interacting in physical activity. Through the available research about Self Determination Theory in individuals with disabilities, we can determine that individuals with disabilities can utilize the components of SDT when engaging in physical activity.

References

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