

Introduction

Physical education has three main objectives: (1) improving physical health and well-being through regular exercise; (2) fostering good social skills and behavior; and (3) providing an opportunity to gain a greater understanding and appreciation of physical activity for individuals with disabilities. (Clarke, 1962). The Centers for Disease Control and Prevention (CDC) recommend that all individuals engage in 150 minutes of exercise/play per week and people with disabilities should aim for 30-40 minutes of moderately intense activity or 20 minutes of strenuous activity every day to maximize their health benefits (Harvey, 2018). Self-determination theory is an organismic-dialectical framework of motivation that views humans as actively seeking out challenging and enriching experiences (Deci, 1985). The purpose is that individuals are motivated to pursue different goals, and it identifies three types of motivation: intrinsic, extrinsic, and motivation to explain why people engage in activities (Deci, 1985). This theory holds that individuals strive to achieve optimal experiences and to integrate them into their lives. (Deci, 1985). Autonomy can be defined as one's need to experience a sense of willingness in one's actions (Vasconcellos, 2020). Competence is the desire to feel capable and in control when interacting with the environment, whereas relatedness is the need to feel connected to important people, be content in social settings, and be accepted. (Deci, 2017). Relatedness support involves teachers taking the time to express enjoyment in their interactions with students, displaying genuine affection, displaying an understanding of the students, being reliable and dependable, and dedicating resources such as time and energy to the students. (Vasconcellos, 2020).

Method

Purpose

The purpose of this research was to evaluate the effects of applying self-determination theory. A structured exercise program on exercise performance in adults with disabilities.

Participant

The participant is one white 27-year-old male, he is a volunteer at a local neurology office. He participates in physical activity during school five times a week. The student is from middle to low-income class and lives by himself in an apartment. He frequently enjoys interacting with other people and has expressed interest in football and baseball.

Setting

In the Student Recreation Center, the participant undertook a series of 6 exercises alongside other Cal Poly students not enrolled in the study. An indoor turf area was used to measure the participant's walking distance in 6 minutes, and modified push-ups and sit-ups were performed for one minute each.

Dependent Variable

The dependent variables for this study were the number of laps of self-paced walking for 6 minutes of 100 yards, the number of wall push-ups completed in 1 minute, and the number of sit-ups completed in 1 minute.

Independent Variable

Using the Self-Determination Theory, the participant was invited to set their own goals and list their preferred exercises for completion inside the gym.

Design

A changing criterion design was used to assess the effects of gradually increasing the goal for each assessment. Each week, a criteria of performance was established based on the baseline data.

Baseline

Baseline data was collected on the first meeting day of Humboldt Fit. On the first day of the activity the student completed 6 ½ laps at 100 yards per lap, 54 sit ups, and 27 push-ups.

The Intervention

Baseline data was collected throughout the intervention process and the goals were discussed and set on the first day after the initial completion of the 6-minute lap, one minute push-up and 1 minute sit-up. The participant was reminded of their goals before starting each activity to reach the end goal set together. Positive praise was used to keep the student motivated, and peers were present throughout the intervention. Other Cal Poly students were also present.

Data Collection.

Data was collected using observation after each activity was finished. A pen and paper were used to record the data, and cones were placed every 10 feet to mark the length of each lap. The participant laid down on their back and used a white line to indicate the completion of a full sit-up. Modified push-ups were performed and a full down-up motion was marked as one push-up. Data was collected for 8 weeks every Friday night from 5-7pm.

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 individual exercise goals for total distance walked as well as the number of push-ups and curl-ups completed by the end of the program. Below is a demonstration of the participant's performance across the 5-week time frame in meeting those goals.

Participant 1

The participant is a 27-year-old white male who volunteers at a local neurology office. He is from a middle to low-income background and lives alone in an apartment. He engages in physical activity five times a week during school and enjoys interacting with others. He has expressed interest in football and baseball.

Baseline Phase

All baseline data was collected on the first day of the program. For the 6-min walk the participant completed 215 yards. Additionally, the participant completed 27 push-ups and 54 curl-ups within the 1-min time frame for each exercise. During the exercise portion of the baseline phase, the participant's heart rate (HR) was at a resting level of 60 and a peak level of 165 beats per min. Finally, the participant remained at a moderate HR level for 5 of the 90 total min of the program.

Criterion Phase 1

During the criterion phase 1 the participant completed 215 yards within the 6-min walking test. Additionally, the participant completed 32 push-ups and 71 curl-ups within the 1-min time frame. During the exercise portion of criterion phase 1, the participant's HR was not tracked due to technical difficulties.

Criterion Phase 2

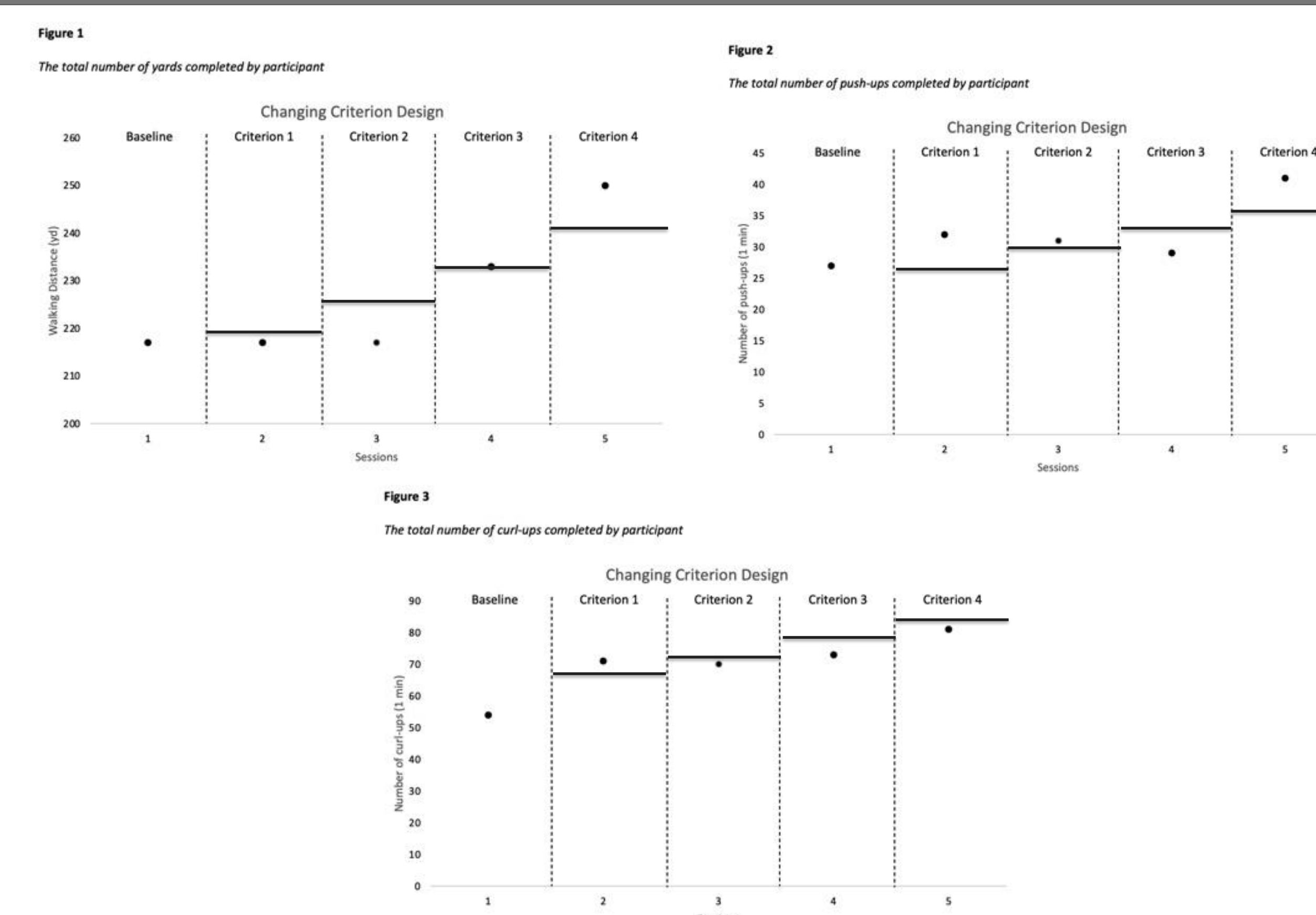
During the criterion phase 2 the participant completed 215 yards within the 6-min walking test. Additionally, the participant completed 31 push-ups and 71 number of curl-ups within the 1-min time frame. During the exercise portion of the baseline phase, the participant's heart rate (HR) was at a resting level of 59 and a peak level of 132 beats per min. Finally, the participant remained at a moderate HR level for 2 of the 90 total min of the program.

Criterion Phase 3

During the criterion phase 4 the participant completed 235 yards within the 6-min walking test. Additionally, the participant completed 29 push-ups and 73 curl-ups within the 1-min time frame. During the exercise portion of criterion phase 4 the participants HR was not tracked due to technical difficulties.

Criterion Phase 4

During the criterion phase 5 the participant completed within the 6-min walking test. Additionally, the participant completed 41 push-ups and 81 curl-ups within the 1-min time frame.. During the exercise portion of the baseline phase, the participant's heart rate (HR) was at a resting level of 58 and a peak level of 153 beats per min. Finally, the participant remained at a moderate HR level for 7 of the 90 total min of the program. Below is an illustration of the participants performances across the 6-min walking test, push-up test, and curl-up test.



Discussion

The purpose of the aim of this study was to investigate the impact of a self-determination theory-based exercise program on exercise performance in adults with disabilities. We believe structured exercise programs improve self-efficacy by allowing the participant to monitor his own goals and progress, by taking responsibility for his own behavior. Additionally, the researcher believes the participant was able to recognize the importance of setting realistic goals and striving to reach them. Doing this, increased the participants self-efficacy, as he was able to acknowledge his own accomplishments and strive to do better in the future. Moreover, providing autonomy of goal setting The participant also improved his autonomy by developing and understanding the established goals. Overall, the participant was able to increase his self-efficacy and autonomy over time through the use of SDT. The researcher believes these results are due to the fact that SDT emphasizes the importance of personal choice and control, which can be empowering for individuals with disabilities. This expression of motivation is congruent with other research on exercise and motivation factors for individuals with disabilities, which has revealed that most parents observed that their child was motivated to participate in physical activities primarily for social reasons, such as to be with peers with or without individuals with disabilities, and that, without such motivation, their child would likely choose sedentary activities (Menear, 2007).

Limitations

The limitations of the study were as follows: First, due to the limited number of sessions within this study there is limited data to support the efficacy of this program. In Second, the total duration of the study (5 weeks) limited the researcher's ability to demonstrate a functional relationship between the intervention and the outcome goals.. Finally, these results are limited to one participant which does not allow the researcher to generalize these results to other individuals with similar characteristics. Despite these limitations, the researcher attempted to structure the program in a consistent manner that allowed the participant to develop the skills needed to complete these same exercises outside of the program. Additionally, the researcher worked closely with the individual within all of the exercises in an effort to support the participants performances across each session of the program.

Future Research

Future researchers looking to expand on this study could increase the number of sessions. This will allow for more data collection which means functional relationships. Also, Increasing the number of participants will make the study results more generalizable because it will provide more detailed and accurate data about the population being studied. Conducting this with more parent involvement will allow