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Case Study Focusing on ASD, Improving Accuracy in Sports with SDT and Video Modeling

Cassandra Mcmillen
mcmillencassandra@gmail.com

David Adams
dha13@humboldt.edu

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Case Study Focusing on ASD, Improving Accuracy in Sports with SDT and Video Modeling

Introduction

The purpose of this study is to evaluate the impact of a teacher selected video model on the performance of the golf putt for two students with autism spectrum disorder. The researcher believes a systematic approach of instruction will improve skill development for both participants. Children and adolescents have increasingly demonstrated poor levels of health-related physical fitness which has been reported as a predictor of early mortality and morbidity in adulthood (Sun et al., 2022). Individuals with a disability often have lower physical activity (PA) levels than their typically developing peers, and for that reason increasing their daily PA levels is crucial to improving quality of life for these individuals (Sun et al., 2022). A study conducted by Patricia D'Ateno showed that video modeling resulted in rapid acquisition of verbal and motor responses for all play sequences in young students with ASD (D'Ateno et al., 2003) Self-determination theory (SDT) allows individuals to increase motivation through setting their own goals (i.e., autonomy; Szulawski, 2021). SDT is a meta-theory of motivation, personality and emotion relating to motivated behaviors throughout life (Standage, 2023). Supporting the need for competence should result in better intrinsic motivation, and higher motivation should lead to higher performance (Szulawski, 2021). Physical activity of adolescents with ASD can be improved with the use of SDT structure (Pan, 2010).

Method

Participant A: Participant A is a 14-year-old female in ninth grade with a primary diagnosis of autism spectrum disorder and is hard of hearing. Sometimes this participant needs verbal reminders of how to complete a skill, such as 'feet shoulder width apart'. Participant A always comes to class and willingly participates. Participant A demonstrates fundamental locomotor skills in the areas of running, skipping, hopping, jumping, sliding, galloping, and can dribble a basketball while walking, catch a ball from 15 feet away and throw overhand up to 25 feet.

Participant B: Participant B is a 15-year-old male in ninth grade diagnosed with autism spectrum disorder. The participant has a difficult time retaining information with just verbal cues and needs positive reinforcement and a reward system. In addition to verbal reminders, the student needs physical and visual prompting such as poly spots for foot placement and physical hand placement. Participant B often struggles with undiagnosed joint pain, and fatigues easily in vigorous or strenuous activities. The student is able to run, jump, hop, skip and leap, he can dribble a basketball, catch a ball from 8 feet away and throw overhand up to 20 feet.

Setting

There are four students in a natural setting inside of a gym. The gymnasium has a raised ceiling and no windows. Occasionally students are distracted by the level of sound carried through the gym. It is a big open space with wrestling on the mats the line the entire floor except for a three foot section on each side of the wall. To increase success rates, I have set the putting area up near a wall between where the mat ends and the hardwood floor meets the wall so there is essentially a bumper that is a 3 foot wide area. There is one foot of open space on each side of the target cones the students try to hit between.

Cassandra McMillen BA Kinesiology
David Adams PhD.

Cal Poly
Humboldt.

Method Continued

Research Design

For this single subject study a changing criterion design was used. Overall, a changing criterion study provides a structured and adaptive approach to skill development, fostering progressive improvement, motivation, and the transfer of learning, all of which contribute to increased accuracy and technique on the skill of putting.

Baseline Phase

Within the baseline phase participants began the session with a 5 min warm-up that consisted of a number of different exercises that are designed to get the student to increase flexibility and endurance. Students are using a putting club and a 3" foam ball. The goal is to hit the ball with the putter from 12 feet away to a target (bleach jug that has been cut for the ball to roll into) between two cones spaced one foot apart. Students will receive 1 point for hitting between the cones and 5 points for making it into the jug if they use all three techniques in their putt.

Intervention Phase

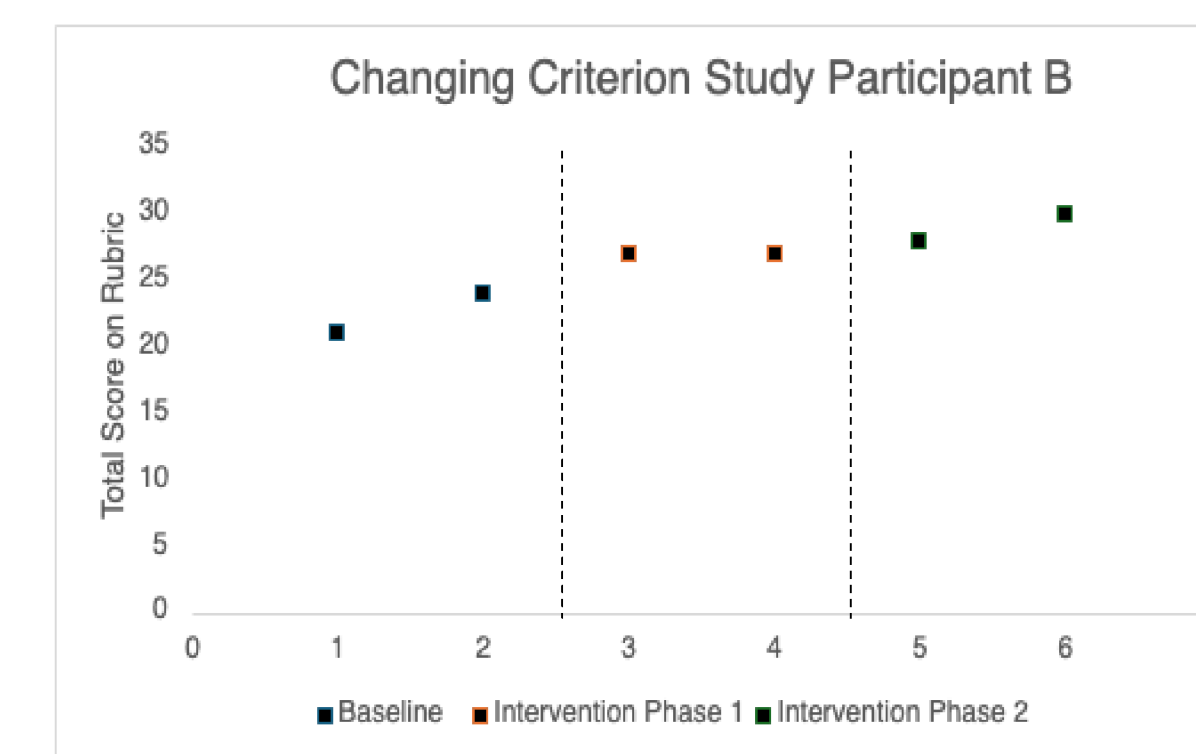
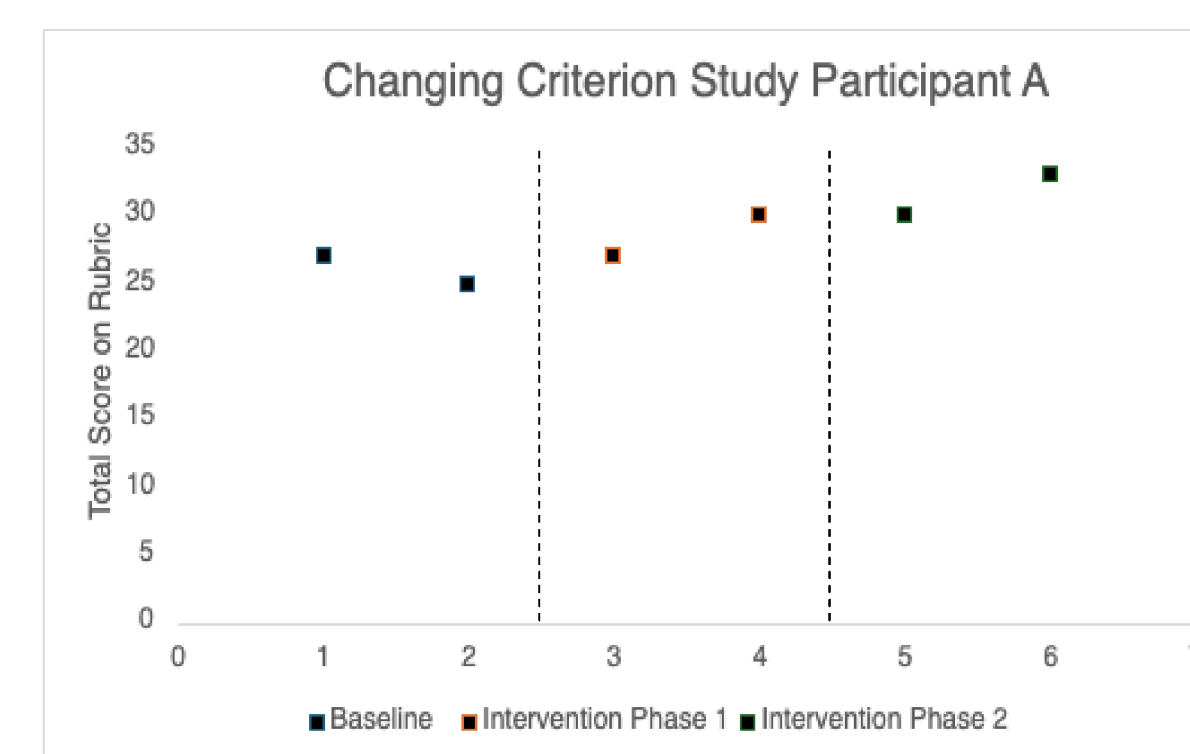
Within the intervention phase both participants view the putting video after the warm-up and prior to beginning the putting session. Before the students begin, they set a goal on how many putts they are hoping to make. Once they meet their goal, they set a new goal. During the intervention, if a participant missed the target for two consecutive putts, the researcher replays the video for the participants.

Data Analysis

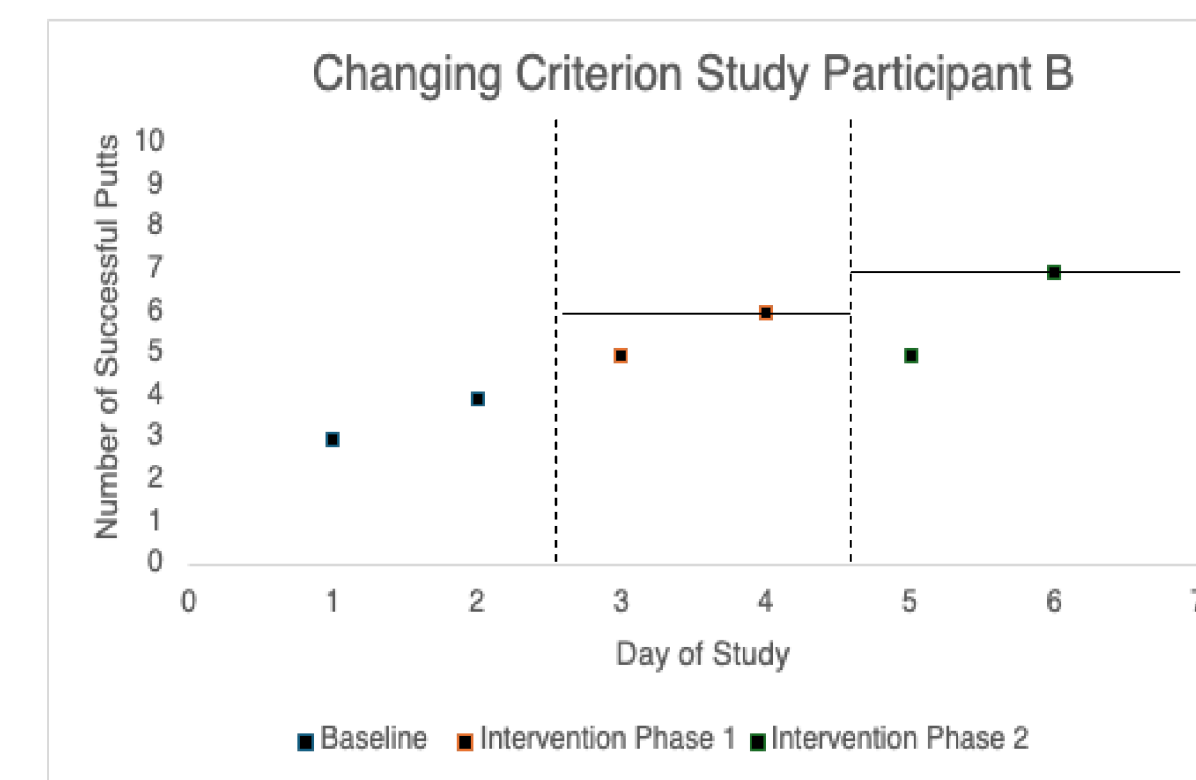
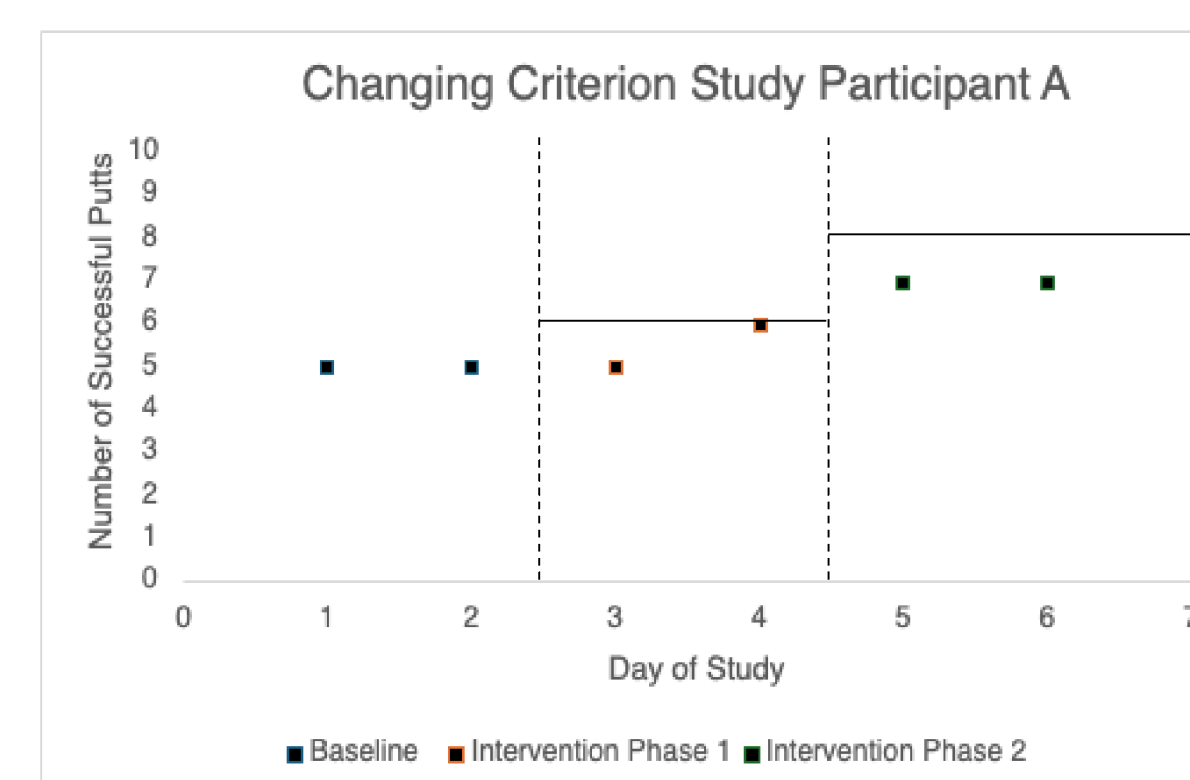
The researcher will be using a visual analysis to see if there is change tracked by the data collected during the intervention phase throughout the changing criterion study. This design is used to increase the behavior of student accuracy with putting. The data analysis involves several key components to understand the efficacy of interventions (Ledford & Gast, 2018). The focus is on evaluating accuracy and technique improvements after implementing an intervention. The researcher is utilizing video modeling during the intervention phase to allow students a visual breakdown of the skills from a professional. The participants can visually see the athlete in the video demonstrate the correct technique used to improve accuracy. By tracking the trends and variations, the researcher will assess the effectiveness and consistency of the intervention across different stages of the study.

The researcher will be recording with pen and paper while the participant is engaged in the activity. The researcher will make a tally mark on the appropriate space in the rubric after each attempt. The rubric is divided by a scoring system 1-5.

Results



No performance criteria was set for the rubric points.



Results

Baseline Phase

Participant A, successfully made 50% (5/10) of the attempted golf putts on Day 1 and scored a total of 27 points (out of 50). Similarly, on Day 2 of the Baseline Phase, Participant A made 50% of the attempted golf putts (5/10) and scored a total of 25 points (out of 50). The participant set a goal to make 7/10 of their putts during intervention phase one.

Participant B, successfully made 30% (3/10) of the attempted golf putts on Day 1 and scored a total of 21 points (out of 50) on the rubric. On Day 2 of the Baseline Phase, Participant B made 4/10 (40%) of the putts and scored a total of 24 points (out of 50). The participant set a goal to make 6/10 of their putts during intervention phase one.

Intervention Phase 1

During Intervention Phase 1, the participants were re-shown the video of a professional golfer at the beginning of each session, if they score a 3 or lower on their rubric, they were shown the video again. Participant A, successfully made 50% (5/10) of the attempted golf putts on Day 1 and scored a total of 27 points (out of 50 possible). On day two Participant A made 60% (6/10) of the attempted golf putts and scored a total of 30 points (out of 50).

During Intervention Phase 1, Participant B made 50% (5/10) of the putts on Day 1 and scored a total of 27 points (out of 50 possible). On Day Two, Participant B made 60% (6/10) of the putts and scored a total of 27 points (out of 50 possible). The participant set a goal to make 7/10 of their putts during intervention phase two.

Intervention Phase 2

During Intervention Phase 2, Participant A made 70% (7/10) of the attempted golf putts on day 1 and scored a total of 30 points (out of 50). Day Two, Participant A made 70% (7/10) of the attempted golf putts and scored a total of 33 points (out of 50). Participant A did not quite meet their criteria goal.

During Intervention Phase 2, Participant B made 50% (5/10) of the attempted golf putts on day 1 and scored a total of 28 points (out of 50). On Day Two, Participant B made 70% (7/10) of the attempted golf putts and scored a total of 30 points (out of 50). Participant B met their criteria goal.

Discussion

The study provided a structured and adaptive approach to skill development, fostering progressive improvement, motivation, and the transfer of learning, all of which can provide insights into the effectiveness of interventions for individuals with ASD. Results indicate that there was a gradual upward trend in both participants' successfully attempted putts. Conversely, both participants scored lower, based on the scoring rubric in the area of form/technique and not making the ball into the target and higher on form/making the ball into the target. The researcher believes this occurred because both participants have struggled with multi-step directions in the past; giving them 3 techniques to remember and a target to hit may be over stimulating and too much information at once. Additionally, both participants showed a gradual upward trend in both their total scores on the scoring rubric and successful puts by the completion of the study when compared to baseline data. Video modeling is an effective practice in teaching children with ASD (Wong et. al. 2015). Other researchers have demonstrated the ability to maintain and generalize skills they had learned from video modeling (Marino et. al., 2015).

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