Research in Developmental Disabilities 73 (2018) 115–125

Contents lists available at ScienceDirect

Research in Developmental Disabilities

journal homepage: www.elsevier.com/locate/redevdis

Increasing physical activity for adults with autism spectrum disorder: Comparing in-person and technology delivered praise

Melissa N. Savage[a,*], Teresa Taber-Doughty[b], Matthew T. Brodhead[c], Emily C. Bouck[d]

[a] Frank Porter Graham Child Development Institute, University of North Carolina at Chapel Hill, 517 S. Greensboro St., CB# 8040, Chapel Hill, NC 27599-8040, United States
[b] University of Texas at Arlington, College of Education Box 19227, 701 Planetarium Place, Arlington, TX 76019-0227, United States
[c] Department of Counseling, Educational Psychology and Special Education, Michigan State University, 620 Farm Lane, 342 Erickson Hall, East Lansing, MI 48824, United States
[d] Department of Counseling, Educational Psychology and Special Education, Michigan State University, 620 Farm Lane, 349A Erickson Hall, East Lansing, MI 48824, United States

ARTICLE INFO

Keywords:
Autism spectrum disorder
Intellectual disability
Physical activity
Praise
Technology

ABSTRACT

Background/aims/methods: While there are many benefits to regular engagement in physical activity, individuals with autism spectrum disorder often do not engage in healthy levels of physical activity. The purpose of this study was to compare praise delivered through multiple means on increasing engagement in physical activity for individuals with autism spectrum disorder. A single-case alternating treatment design was used to compare two conditions for delivering praise statements, in-person and through technology, for three young adults with autism spectrum disorder and accompanying intellectual disability.
Procedures/outcomes: The study consisted of training; baseline, comparison, best-treatment, thinning, and generalization phases; and social validity interviews. For each session, data were collected on the number of laps completed, duration, and resting/ending heart rates.
Results/conclusions: The number of laps completed increased for all participants during intervention, however, results were mixed regarding the more effective and preferred condition. Participants who excelled in the technology condition also maintained performance levels when praise statements were thinned and generalized performance to a new setting.
Implications: Praise statements can be used to increase levels of physical activity in young adults with autism spectrum disorder and intellectual disability. Exposing individuals to multiple conditions can impact their preferred method for receiving support.

What this paper adds?

This paper adds to the limited literature on adults with autism spectrum disorder as well as the need to research strategies to promote increased physical activity levels in this population. While positive reinforcement is an evidence-based practice for individuals with autism spectrum disorder, additional research like this study is needed to demonstrate different delivery options for providing positive reinforcement such as praise. Using technology to deliver support has the potential to increase independence and responsibility by having participants self-operate the technology, decreasing reliance on personnel.

* Corresponding author.
E-mail addresses: savagemn@email.unc.edu (M.N. Savage), teresa.doughty@uta.edu (T. Taber-Doughty), mtb@msu.edu (M.T. Brodhead), ecb@msu.edu (E.C. Bouck).

https://doi.org/10.1016/j.ridd.2017.12.019
Received 1 August 2017; Received in revised form 19 November 2017; Accepted 19 December 2017

1. Introduction

Engagement in physical activity is an important component for establishing healthy habits. The *2008 Physical Activity Guidelines for Americans* recommends children aged 6 through 17 engage in a total of 60-min of daily physical activity in the areas of aerobics, muscle strengthening, and bone strengthening and that adults participate in at least 150-min of moderate-intensity aerobic physical activity each week along with muscle-strengthening activities. For moderate-intensity, such as a brisk walk, people should notice their heart beating faster and harder breathing. Despite the benefits of regular physical activity (e.g., decreased risk for diabetes), children and adults are not engaging in recommended levels of physical activity (US Department of Health and Human Services: Physical Activity Guidelines for Americans, 2008).

Individuals with autism spectrum disorder (ASD) are no exception to this statistic. Not only are individuals with ASD engaging in lower than recommended levels of physical activity, they are engaging in even lower levels compared to typically developing children and adults (Sowa & Muelenbroek, 2012). Due to typically lower levels of sedentary behavior, individuals with ASD were identified as a special risk group for health challenges such as obesity and secondary conditions (e.g., depression, diabetes; Hildebrandt, Chorus, & Stubbe, 2010). Barriers to physical activity for individuals with ASD further intensify the challenge of lowering risk for secondary conditions through increasing rates of engagement in physical activity (Sorensen & Zarrett, 2014). Motor impairments, social skill deficits, and behavioral challenges (e.g., repetitive behaviors) can limit success in physical activities (LaLonde, 2015).

Promising intervention strategies for promoting physical activity for individuals with ASD include prompting, modeling, praise, structured teaching, and goal setting (Sorensen & Zarrett, 2014). These strategies are similar to interventions to promote physical activity for individuals without disabilities (e.g., goal setting, reinforcement; Kurti & Dallery, 2013). In-person verbal supports (i.e., provided directly by personnel) such as prompts and praise were used with individuals with ASD to increase engagement in physical activity (LaLonde, 2015; Todd & Reid, 2006). LaLonde (2015) used an intervention package of goal setting with reinforcers and social praise to increase activity levels of young adults with ASD and intellectual disability (ID). In addition to goal-setting and praise, Todd and Reid (2006) used verbal prompting and edible reinforcers as part of their intervention package to increase time spent walking, jogging, and snowshoeing (Todd & Reid, 2006). The process of thinning reinforcers used in Todd and Reid (2006) included a systematic process that started with participants receiving reinforcers four times during a session. Reinforcers were thinned to one reinforcer per session, with removal during the final four sessions.

While in-person verbal supports are promising for increasing engagement in physical activity for individuals with ASD, receiving verbal supports through technology (e.g., prompts, performance feedback) is another delivery option. Although verbal supports provided through technology (e.g., an iPod) were not used to increase engagement in physical activity for individuals with ASD specifically, they were used with individuals with ASD to increase independence in self-care skills (Mays & Heflin, 2011) and vocational skills (Bennett, Ramasamy, & Honsberger, 2013; Taber-Doughty, 2005) as well as decrease off-task behavior in classroom and vocational settings (Taber, Seltzer, Heflin, & Alberto, 1999).

With technology use in physical activity becoming commonplace, it is important to determine its advantages or disadvantages to provide needed support over more traditional (non-technology) forms of support. The purpose of this study was to compare praise delivered through multiple means on increasing engagement in physical activity for individuals with ASD. Specific research questions included: (a) under which condition do participants engage in aerobic activity for a longer distance when comparing in-person praise statements to technology-delivered praise statements? (b) Can levels of engagement in aerobic activity be maintained when praise statements are systematically thinned? (c) Can levels of engagement in aerobic activity be generalized to a new setting? And, (d) what are participant and teacher perspectives of physical activity as well as the interventions and materials used in the study?

2. Method

2.1. Participants

Three young adults with ASD participated in this study. Participation in the study was open to any student in the secondary life skills program who: (a) had a diagnosis of ASD as determined by the classification and services received in high school (Individuals with Disabilities Education Improvement Act, 2004); (b) was in adequate health to partake in the physical activity (i.e., no medical restriction(s) in place for physical activity participation verified by signed forms from each participant's parent(s) and classroom teacher); (c) had the gross motor function to run or walk and sufficient fine motor ability to operate the technology; (d) was able to follow one-step verbal instructions; and (e) needed support to remain engaged in physical activity such as prompting (i.e., did not engage in physical activity independently). Assessment information for each participant was collected from school records; no additional assessment was given by the research team.

2.1.1. Mason

Mason was a 20-year-old Caucasian male with ASD and ID. He had a reported IQ of 46 as determined by the Wechsler Intelligence Scale for Children-IV (WISC-IV). The Adaptive Behavior Assessment System® Second Edition (ABAS-2) was administered and his General Adaptive Composite (GAC) score was 48. The Gilliam Autism Rating Scale (GARS) was also administered and Mason's results fell into the highly/probable range. In addition to engaging in physical activity during adapted physical education class, Mason also participated on his high school's Unified track team.