

Effect of a 10 Month Treadmill Walking Program on Maladaptive and Self-Stimulatory Behaviors of Adolescents and Young Adults with Autism

Rebecca J. Ulrich*, Kenneth H. Pitetti, PhD

Department of Physician Assistant, College of Health Professions

Abstract. The purpose of this study was to determine the effect of a 10-month treadmill walking program (TWP) on target maladaptive behaviors (TB) in adolescents and young adults with autism. Five youth (3 males, 2 females; 16.6 ± 1.7 yrs) with a primary diagnosis of autism, participated in this study. Participants were involved in a 10-month TWP (10-25 min sessions; speed $3.3-7.0 \text{ km}\cdot\text{hr}^{-1}$, grades 0-2.5%) that was incorporated into their regular physical educational curriculum 3-5 times per week. Three significant TB were monitored 24 hours per day and each behavior was recorded using a tally system. A single-subject quasi-experimental ABÁ research design was used to determine outcomes. In this design, phase A represented 2-month baseline stage in which behavior data was collected but no treadmill walking was preformed, followed by a 10-month treadmill walking program (phase B) and another 2-month baseline stage (phase A'). Four of the five participants demonstrated a reduction in TB during phase B when compared to other phases. Results of this study indicate that the exercise program used in this study could positively affect the behavioral goals in youth with autism.

1. Introduction

Persons with autism often display distinctive maladaptive behaviors and stereotypic mannerisms [1]. Such maladaptive behaviors (e.g., aggression, self-injury, and property destruction) and stereotypic mannerisms (e.g., hand flapping, body rocking, and twirling objects) interfere with learning skills needed to succeed in less restrictive/community settings [1]. Research has indicated that acute antecedent bouts (i.e., minutes) of vigorous levels of exercise has been shown to temporarily reduce maladaptive behaviors and stereotypic mannerisms in persons with developmental disabilities including autism [2,3]. In previous studies, using several levels of exercise intensity, the effects of exercise on behavior in persons with autism were measured immediately (within minutes, for a duration of 10-30 minutes). [2,3].

To date, however, no study has measured or reported behavioral benefits associated with a long-term exercise program for persons with autism. Therefore, the purpose of this study was to determine the effects of a 10-month treadmill-walking program (TWP) on maladaptive behaviors and stereotypical mannerisms of adolescents and young adults with autism.

2. Experiment, Results, and Discussion.

Experiment. The participants were 5 adolescents/young adults (3 males, 2 females; 16.6 ± 1.7 yrs) clients of a Midwestern residential/school treatment facility for people with severe developmental disabilities, including autism. Selection of target maladaptive behaviors (TB) included those that directly impacted the participants quality of life and/or caused harm to the individual. The three TB were selected by the participants psychologist and direct care staff of the facility. Participants were under constant supervision and, therefore, were followed and data collected 24 hours each day. Observers (i.e., direct care staff) recorded, via count sheet, each time a TB occurred and were totaled and organized into monthly reports. Monthly TB were recorded and organized into three data set phases; phase A represented 2-month baseline stage in which behavior data was collected but no treadmill walking was preformed, followed by a 10-month treadmill walking program (phase B) and another 2-month baseline stage (phase A').

The treadmill protocol consisted of a) an initial frequency of 2 times per week, to a potential peak frequency of 5 times per week, b) an initial duration of 8 minutes per session, with a potential peak duration of 20 minutes per

session, and c) an initial treadmill speed (individualized based on ability) ranged from 2.4 to 3.5 mph, with a peak speed ranging from 3.7 to 4.1 mph.

A single-subject, quasi-experimental ABA' research design was used to evaluate outcomes, in that each participant had different TB, and could not be compared as a group [4]. In addition, each participant was receiving individualized therapy specific to their needs.

Results. See sample of participants individual graphs below.

Discussion. Overall, the participants tended to demonstrate lower TB during the 10 month walking program (Phase B) when compared to the two previous months (Phase A). With the exception of participant 5, the lower counts generally continued after treadmill exercise was removed from their weekly schedule (phase A').

The possibility exists that the decreases in TB could have resulted from changes in treatment, including medications. There were no treatment or medication changes throughout the study for participant 4, and decreases in medication (i.e., resperdal) occurred in participant 1. However, changes in behavior for participant 2, 3, and 5 could have been related to changes in treatment.

3. Conclusion.

The results of this study suggest that an exercise program could be incorporated into the weekly curriculum of adolescents with autism to assist in the reduction and modification of their target behaviors.

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