Autism Fitness® Standardized Exercise Prescription for Children with Autism Spectrum Disorder: A Case Report

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Introduction

- Autism Spectrum Disorder (ASD) is a multisystem developmental disorder that affects cognitive, neurodevelopmental, social, and communication skills.1
- Currently is one of the fastest growing developmental disabilities in the United States; affects 1 in 59 children and 4x more common to appear in boys.2
- Children on the spectrum exhibit motor impairments: deficits in visual-motor and bilateral coordination, hypotonia, motor apraxia, toe walking, and/or gross motor delays.2
- Children with ASD have a high incidence of obesity (30.5%) due to the sedentary lifestyle they engage in.1
- Less physically active due to movement difficulties leading them to not participate in physical activity.
- Physical activity for children on the spectrum pose a challenge due to poor motor functioning; low motivation, inability to understand complex motor skills, and trouble engaging in a team environment.
- Despite research that has shown physical activity to decrease social, behavioral, cognitive, motor impairments, and stereotypical behaviors in children with ASD, there is a lack of consensus on a standardized fitness model.

Clinical Impression

- Autism Fitness® has been studied over the past two decades as the most effective intervention strategy for those on the spectrum as it targets strength, stability, and motor planning.
- Autism Fitness® is largely dependent upon the complexities and individual differences that are common to autism and allows carryover and generalization to other situations.
- Applied Behavioral Analysis (ABA) tactics utilized through use of the PAC profile (physical, adaptive, cognitive)
- Physical: the level to which the athlete can perform each exercise; progressions and regressions
- Adaptive: athlete’s ability to tolerate new activities, delay secondary reinforcers, and engage in a challenging task
- Increased and immediate positive reinforcement, appropriate break times, and prompting/ cuing
- Behavior Specific Praise should be delivered immediately following the behavior that emphasizes what the athlete did correctly as focusing on what the athlete did incorrectly (while natural instincts) will result in confusion and increase the likelihood that the athlete will repeat the incorrect response
- All behavior serves a function and often the function of the behavior is different from what the behavior looks like
- Cognitive: learning styles (visuals, demonstration/kinesthetic cuing, daily set of written exercises), receptive language deficits, and short-term memory.
- End goal is to allow the athlete to require less extrinsic feedback/bpeaking the prompt as the program progresses to independent mastery
- Autism Fitness® was applied over a course 7-weeks for 60-minute sessions held either on Saturday or Sunday in the athlete’s home
- Equipment used included: hurdle steps, weighted medicine balls, spot markers, colored cones, sandbells, and resistance bands seen below

Outcomes

- Autism Fitness® provided a standardized program across all four athletes and gave a baseline for most appropriate programming.
- Throughout the 7-weeks, all athletes demonstrated improvements in physical fitness and an overall decrease in maladaptive behavior.
- All athletes performed exercises with less prompting (physical, adaptive, cognitive) and/or demonstration.
- The structure of Autism Fitness® programming with 12 core exercises gave the athletes time to master the exercise which led to faster skill acquisition.
- Each athlete presented differently and progressed on a separate timeline, even when following a standardized protocol.
- Feedback forms were given to the parents following the cessation of 7-weeks improvements noted within the athletes since the start of the program.
- Athletes looking forward to fitness, being excited to perform more of the exercises, and having a greater desire to work out each week leading up to fitness sessions.
- Athletes understanding of fitness as a part of everyday life: Athletes talking about weights, walking, hiking, and fitness, and wanting to go jogging following session.
- Parent improvements/recommendations for conducting with future athletes included: More structure, physical guidance, and a lot of follow through with energy and focus; breaking down tasks with the right amount of challenge enjoyed having you, traveling to us was huge.

Patient History/Systems Review

- Four children, referred to as athletes, participated in Autism Fitness® sessions over a course of 7-weeks.

Examination

- Parents’ reasons for having children participate in fitness was for them to become stronger, more coordinated, and to improve his athletic ability.
- During week 1, each athlete underwent a PAC Profile Initial Assessment to determine baseline ability.
- Each assessment exercise was scored: Correct with modeling; correct with physical prompt; incorrect with physical prompt; incorrect with adaptive and prompt

Athlete | Age | Ethnicity | Language | Prior Activity Level | Other Services | # of sessions total
---|---|---|---|---|---|---
SS | 8 | American Indian | English | High | OT | 7
AN | 10 | Caucasian | English | Mod | OT | 7
JF | 8 | Caucasian | English | Mod, OT, music | Vision | 8
TR | 13 | Hispanic | English & Spanish | Mod, SLP | OT | 8

Autism Fitness Experiences

Stand on Spot Markers/ Circles: Athlete will stand on a colored spot marker or circle for the allotted amount of time set by the fitness professional. (10 seconds -1 minute)

Hurdle Steps: Athlete will step over hurdles making sure to allow proper hip flexion and hip internal rotation and circulation

Cones Taps: Cones will be placed hip distance apart and the athlete will bend the knees and perform a hinge movement to touch the cones with both hands

Dynamax Push Throw: Athlete will stand in a colored circle or next to a colored cone. Athlete will hold medicine ball with elbows tucked in and perform a chest push with the weighted medicine ball to fitness professional standing across

Dynamax Overhead Throw: Athlete will stand in a colored circle or next to a colored cone. Athlete will hold medicine ball overhead, perform a tucks extension and upon release of tucks extension throw the ball to the fitness professional standing across

Dynamax Scoop Throw: Athlete should stand in a colored circle or next to a colored cone. Athlete will perform a mini squat, move the medicine ball in between the legs and up and throw the ball to the fitness professional standing across

Squat: Athlete will perform a squat to a knee keeping the chest and head forward and feet hip distance apart

Sandbell Overhead Press: Athlete will hold a sandbell with both hands and perform a shoulder press and then slowly lower to hip level

Band Pull-Downs: Athlete will hold a resistance band shoulder width apart and pull down with elbows tucked into the side with the fitness professional also holding onto the band applying resistance

Sandbell Slams: Athlete will raise sandbell overhead with full arm extension and forcefully throw the sandbell to the ground

Standing Band Rows: Athlete will hold onto resistance band with both hands (thumbs pointing up), tuck in elbows, and pull hand posteriorly keeping chest upright

Clinical Implications

- While Autism Fitness® produced gains in physical and behavioral components, there is limitations in generalizing this to all children diagnosed with ASD
- Professionals need to learn of specific qualities of the athlete and understand a tactic for one child, may not work for the next.
- An athlete high on the spectrum and verbal was able to follow directions easier than a child lower on the spectrum.
- Greater progress could have been made if the program was carried out for a period of time set by the fitness professional.
- Other factors that impacted outcomes:
  - Age, fitness ability, and weight
  - Prior activity level and interest in fitness
  - Concurrent occupational and/or speech therapy services
  - Open vs. closed environment of fitness sessions
  - Participation in other gym/PE sessions
  - Sickness/cancellations
- Further research is needed to:
  - Further support the need of fitness for the autism spectrum population
  - Determine a set frequency, intensity, and duration of fitness services
  - Compare Autism Fitness® to other standardized fitness protocols

References: See Handout with Reference List