

Addressing the Needs of Students with Autism



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Objectives

- Discuss existing research on strategies for children with autism
- Define functional outcomes for school based physical therapy services
- Explore strategies for successful integration of physical therapy services for children with ASD into school setting
- Offer personal perspective of both sides of the IEP table: as a mother of a child with ASD, and as a school-based PT



"Autism is a lifelong developmental disability that affects how a person communicates with, and relates to, other people. It also affects how they make sense of the world around them"

National Autistic Society

Autism Spectrum Disorder

- ASD is defined by two primary diagnostic markers:
 - Difficulties in social communication
 - Restricted or repetitive behaviors and interests
- Marked increase in numbers: 2 per 10,000 in 1990 to 1 in 68 births
- Almost 5 times more likely in boys
- May have delays in motor skill acquisition, difficulty with coordination, postural control, balance, motor planning, and eye-hand coordination
- www.nationalautismcenter.org

Students with ASD

- Difficulty with generalizing a specific skill
- Trouble following directions
- Short attention span
- Limited interest in peers
- Prefer routines
- Transitions may be difficult
- Lack of safety awareness
- Sensory processing



Common Motor Issues

- Low muscle tone
- Motor planning difficulties
- Delay in gross motor skills
- Difficulty with imitation
- Lack of coordination
- Poor body control
- Balance may be compromised
- Difficulty using sensory information for movement



Working with Children with ASD

- Difficulty understanding and using language
- Difficulty working in small groups
- Need for daily routines
- Difficulty with focus/following directions
- Unusual reactions to sensory stimuli
- Immature or challenging social behaviors
- Difficulty initiating social interactions
- Often require visual cues, demonstration
- Repetition and consistency



Common Issues at School

- Participation in PE class
- Limited play skills
 - avoid peers/group games
 - does not use playground equipment
- Clumsiness
- Lack of body/spatial awareness
- Underactive-low motivation for physical activity
- Decreased stamina/overall fitness



Assessment

- No standardized tool developed as of yet for school specific to ASD
- Teacher questionnaire
- Parent questionnaire
 - Child Preference Indicators-guide identifies child's preferences, choices, and self-determination
(Moss, J. 2006)
- Comprehensive ecological assessment
- Observations of the child on different days across settings (e.g., recess, lunch time, physical education, transitions, class time, bus, cafeteria, special settings)
- Measure generalization of skills across settings
- SFA

Functional Outcomes



- Improve participation in social play
- Facilitate acquisition of skills that enhance independent functioning in school
 - Improve coordination
 - Improve fitness and stamina

Functional Outcomes

Goals

- Must be related to participation in the school environment:
 - Classroom, playground, bus, gym, specials
- Meaningful to the student
 - Motivation and Interest
- Measureable
 - If you cannot measure it, you can not improve it.
- Data collection
 - Tools

School-Based PT

The Individuals with Disabilities Education Act

(IDEA-PL105-17) is a federal law, with state education agency oversight, that supports the provision of public education of children, 3-21 years old, who have a disability that interferes with their educational performance and their ability to benefit from their educational program.

Models of Integration

McWilliam in 1995 defined integration as activity occurring within the context of daily routines in the classroom along with classmates.

- Identified a **continuum** of 6 therapy models:

| | |
|-----------------------|----------------------|
| -Individual pull out | -Group activity |
| -Small group pull out | -Individual in class |
| -1:1 in classroom | -Collaboration |

- Elaborate on activities initiated by the child
- Address behaviors immediately useful to the child
- Act primarily as a collaborator with the child's teacher, other professionals

Systematic Review of Literature

Wong et al. **Evidence-Based Practices for Children, Youth, and Young Adults with Autism Spectrum Disorder. (2014)**

- 456 intervention articles included in evidence base
- Majority of studies involved children between the ages of 3-11
- 27 evidence based practices for children, youth and young adults with ASD

Of significance to school based physical therapist

- Exercise-** "Increase in physical exertion as a means of reducing problem behaviors or increasing appropriate behavior.
- Naturalistic Interventions-** "Intervention strategies that occur within the typical setting/activities/routines in which the learner participates."

Systematic Review of Literature

Petrus et al. **Effects of Exercise Interventions on Stereotypic Behaviours in Children with ASD (2008)**

- Age range 4-15
- Of 7 studies, 6 used jogging, 1 used swimming
- All studies noted a decrease in self-stimulatory behavior
- Short intervals of intense bouts were most effective
- Variability in length of after-effect

Research

Oriel, George, Peckus, Semon. **The effects of aerobic exercise on academic engagement in young children with autism spectrum disorder. (2011)**

- Nine students between the ages of three and six
- Aerobic exercise prior to classroom activities may improve academic response in young children with ASD

Sowa M, Meulenbrock R. **Effects of physical exercise on autism spectrum disorder: a meta-analysis. (2012)**

- 6 studies: assessed the impact of physical exercise on children and adults with ASD
- Total of 133 participants using physical activity interventions such as walking, running, swimming, horseback riding, bike riding, and strength training.
- Significant impact on motor and social skills

Research

Nicholson, Bray, Heest, Van. **The effects of antecedent physical activity on the academic engagement of children with autism spectrum disorder (2011)**

- Four 3rd grade boys diagnosed with ASD; completed with same age students
- Simple aerobic exercise, (running for 12 minutes with 5 minute cooldown, 3 times per week), may be efficacious in promoting academic achievement for students diagnosed with ASD

Magnusson, Cobham, McLeod. **Beneficial Effects of Clinical Exercise Rehabilitation for Children and Adolescents with Autism Spectrum Disorder (2012)**

- Individualized high intensity exercise program is effective in reducing negative behaviors and improving health and fitness.
- Four males, 2 females aged 9-15, participated in an exercise program twice per week for 8-12 weeks, one hour sessions

Research

Srinivasan S, Pescatello L, Bhat A. **Current perspectives on physical activity and exercise recommendations for children and adolescents with ASD (2014)**

| Component of exercise | Initial prescription | Progression |
|-----------------------|---|--------------------------------------|
| Frequency | 3 days/week | 5 -7 days/week |
| Intensity | Moderate Physical Activity | Vigorous Physical Activity |
| Time | 20-30 min/day accumulated over short bouts | 45-60 min/day accumulated over bouts |
| Type | Jogging, walk/run, interval training, cycling, swimming  | |

Research

Rowland J, Fragala-Pinkham M, Miles C, O'Neil M. **The scope of pediatric physical therapy practice in health promotion and fitness for youth with disabilities (2015)**

Youth with ASD

| Exercise Parameters | Precautions/Considerations |
|--|---|
| Strength training: use guidelines from 2009 NSCA | Screen for cardiac or pulmonary conditions |
| Aerobic training: evidence suggests that moderate to vigorous physical activity may reduce stereotypical behaviors | Higher incidence of seizures and sensory issues may require modifications. Behavioral issues/ability to follow supervised PRE program |

Case Study

Student: "G" **Age:** 6 y 4 mo **Diagnosis:** ASD

Self-contained AU classroom: 6:1+1

Prior school Physical Therapy Services: Preschool and Kindergarten: 2x/week for 30 minutes; Individual service in separate location

Annual Goal: 1. In one year, given therapeutic exercises designed to maximize age appropriate gross motor skills, G will tandem walk across an 8 foot balance beam without a LOB in order to improve his ability to perform in school activities.

STOs:

1. Within 3 months, G will be able to tandem walk across an 8 foot balance beam with contact guard 1/3 trials for 6 consecutive PT sessions as measured by physical therapist.
2. Within 6 months, G will be able to tandem walk across an 8 foot balance beam with occasional contact guard in 2/3 trials for 6 consecutive PT sessions as measured by physical therapist.

Case Study

Annual Goal: 2. Given focused exercises designed to improve coordination and balance, G will be able to kick a stationary ball 10 feet maturely, using opposing arm and leg movement to a target, in order to promote age appropriate gross motor skills.

STOs:

1. In 3 months, G will kick a stationary ball 5 feet maturely at a target using opposing arm and leg movements in 1/3 trials for 6 consecutive PT sessions as measured by physical therapist.
2. In 6 months, G will kick a stationary ball 10 feet maturely at a target using opposing arm and leg movements in 2/3 trials for 6 consecutive PT sessions as measured by physical therapist.

Service Delivery: 2x/week for 30 minutes, individual, separate location

Present Level of Performance:

G was observed in his classroom, in the hallways, in PE class, the cafeteria, and outside on the playground in his new school:

Independent with walking, running, and playing on the playground. Walked and ran on all surfaces outdoors including grass, hills, woodchips. Able to leap as he ran to clear playground buildup of 6 inches. No LOB, tripping, or falling noted. Stepped up and down 6" buildups and 4" curbs independently. Walked on 4" buildup, step-over step for 4 steps at a time before stepping off. Able to keep pace in line with peers in hallway when walking. In PE, G demonstrated smooth running at a fast pace, with ease in stopping, starting, and changing direction. He was able to jump at least 10 times in a row, and stood on his left leg for 3 seconds. G was able to walk up and down stairs reciprocally without a rail. He had little interest in playing with a ball, though he did kick a slowly rolling ball with his left foot 15 feet.

Strengths and Weaknesses: Impact on Education:

G has demonstrated independence with mobility at school. He is able to easily access all school grounds independently. He has demonstrated functional strength, balance, and gross motor skills for school access. He participates in play on the playground safely, and in his PE class, he is safe and independent. There has been no impact on his education due to lack of physical abilities. He needs assistance only for following directions, and supervision only for safety at school.

CASE STUDY

Student: "A"

Age: 4y 6mo

Diagnosis: Developmental Delay/Sensory Processing Disorder

Typical Preschool: 15:2

Prior School Physical Therapy Services: 1x30/Week, Individual services in separate location

- **Annual Goal:** A will demonstrate improved balance and coordination in order to step up and down from a 4-6 inch height, independently, without putting his hands down, 2/3 opportunities.
- **STO:** 1. A will run 50' without stopping and will start, stop, and change direction without a loss of balance on uneven surfaces, 2/3 observations.
- 2. A will step up a 4-6 inch height independently without putting his hands down, 2/3 observations.
- 3. A will jump down from a 4-6 inch step independently, 2/3 observations.

Present Level of Performance

A is a 4 year old boy who shows delays in his gross motor skills, balance, and coordination. His skills are scattered between 23-30 months, with highest skills being ball handling, according to the PDMS 2. He is able to stand on his tiptoes with arms over head for three seconds, but cannot stand on one foot without support. He is able to walk on a line with one foot on and one foot off. He can walk backwards, on tiptoes, and sideways for 8-10 feet. He is able to run, with trunk and extremity rotation emerging; however, he runs slower than average peers. A is able to gallop with his left foot leading, jump up off the floor 1-2", but is not jumping down from a height or over objects on the floor. A walks up and down stairs with support in a non-reciprocal pattern. He is able to throw a ball overhand 5', but could not hit a target, and is able to toss a ball underhand with demonstration. A only used the slide on the playground once, with encouragement and prompting.

Strengths and Weaknesses: Impact on Education

Strengths: Cooperative and pleasant, willing to attempt new activities

Has demonstrated significant progress in his gross motor skill development in the past year
Independent in the classroom

Weaknesses: Decreased strength for functional running, jumping, and stair climbing

Gravitational insecurity, as noted by his lack of using playground equipment
Decreased coordination

Functional versus Nonfunctional Goals

| Student | Nonfunctional Goal | Problem with goal | Functional Goal |
|---------|-------------------------------|--|-------------------------|
| G | Tandem walk on a balance beam | Not educationally relevant-low motivation/interest | Walk in line with peers |
| | | | |

Activities Within Classroom Setting



Follow through daily
 No removal from peers
 Curriculum based
 Address strengthening, balance, cardiovascular

What makes a successful class?

- Teacher buy-in
- Multiple staff training (teacher, assistants, other therapists)
- Persistence
- Accommodations/Modifications
- Integration with curriculum/classroom/therapy goals

| Original Problems | Solutions | Additional Benefits |
|--|---|--|
| Lack of Motivation from Student | Student Eager to Participate | Peer encouragement, Self esteem building Behavior improvements Tools for improving anxiety |
| Not Fully Integrated with classroom Activities (Taking away time with peers) | Became classroom Activity for entire class Push-In Model Efficiency - able to address student's needs in same setting along with classmates | Reinforcement of educational curriculum Teacher uses throughout week-consistency and motor learning Students not on PT caseload benefited (general clumsiness and students with obesity) |
| Teacher unaware of PT role | All staff participate/assist with class | Teachers/assistants reported helpful to them as well |
| Lack of time for communication with team | Being present in classroom for PT allowed for ongoing collaboration | Collaboration improved communication |
| PT unaware of challenges presented in classroom | Naturally occurring obstacles were able to be addressed | Student had decreased behaviors and less forced transition |

Physical Activity Breaks in Classroom

- Brain Breaks
- Gonoodle.com
- Energizers

<http://www.eatsmartmovemorenc.com/Energizers/EnergizersForSchools.html>

Strategies addressing Gross Motor and Play

| Teacher Concern | Strategies |
|---|--|
| Lacks coordination | Provide opportunities for repeated practice of specific movements during circle time, recess, activity breaks. Use visual modeling, (pictures, sequence schedule, videotape class or student performance for home practice); practice in clearly defined steps; identify local resources for parents |
| Difficulty with visual motor/ eye-hand coordination | Use ball catching, rolling, bouncing during greeting, circle time; beanbag pass or toss for counting or higher math problems, |
| Difficulty at recess joining peers and group games | Review rules and expectations of games individually-use visual imagery, explicit instructions; practice game with group on playground; gradually add on steps of game, peer coaching. |
| Bumps into classmates, furniture | Use visual boundaries-colored tape-practice line walking using hoops around body. Arrange clear pathways in classroom |
| Lack of stamina | Power walks with identifying safety signs, scheduled exercise breaks with class, relay races with academic objectives, tag at recess |

Parents' Concerns

- Child's ability to be independent.
- Financial stability: treatment cost and planning for a child after the parents pass on.
- Employment status for parents due to taking time off for appointments, etc.
- ASD impacts a family's quality of life because they are more likely to eat at home, not go out to do much in the community, and spend more time on activities of daily living.
- Quality of life for their child as he becomes an adult and what will happen to him after they die.
- Health of their child with ASD

Communicating with Parents

- Active listening:
 - Should be able to restate in your own words what the parents are saying
 - Should be able to state the emotion the parents are demonstrating

Communicating with Parents

- Seek first to understand, then to be understood
- Politely help the parents understand your perspective
 - use examples and data supporting your case
- Be open to new ideas
- Ask for help from your team members
- Communicate **positive** attributes about the student
- Demonstrate that you care-be specific about what you love about their child

Local Resources

- Achilles International: <http://www.achillesinternational.org>
- Kids Enjoy Exercise Now (KEEN): <http://www.keennewyork.org>
- Metropolitan Museum of Art: <http://www.metmuseum.org/events/visitorsdisabilities>
- Mommy Poppins: <http://mommypoppins.com/newyorkcitykids/special-needs-programsand-classes-for-all-new-york-city-kids>
- New York Families for Autistic Children (NYFAC): <http://nyfac.org/programs>
- New York Metro Parents: <http://www.nymetroparents.com/article/The-Benefits-of-Sports-for-Children-with-Special-Needs>
- Local Police Athletic League
- Project HAPPY: <http://www.project-happy.org>
- Special Needs Activity for Kids (SNACK) and Friends: <http://snacknyc.com>
- Special Olympics: <http://www.specialolympicsny.org>
- Local YMCAs

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CASE STUDY # 1

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G was observed in his classroom, in the hallways, in PE class, the cafeteria, and outside on the playground in his new school:

Independent with walking, running, and playing on the playground. Walked and ran on all surfaces outdoors including grass, hills, wood chips. Able to leap as he ran to clear playground buildup of 6 inches. No LOB, tripping, or falling noted. Stepped up and down 6" buildups and 4" curbs independently. Walked on 4" buildup, step-over step for 4 steps at a time before stepping off. Able to keep pace in line with peers in hallway when walking. In PE, G demonstrated smooth running at a fast pace, with ease in stopping, starting, and changing direction. He was able to jump at least 10 times in a row, and stood on his left leg for 3 seconds. G was able to walk up and down stairs reciprocally without a rail. He had little interest in playing with a ball, though he did kick a slowly rolling ball with his left foot 15 feet.

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STOs:

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2. Within 6 months, G will be able to tandem walk across an 8 foot balance beam with occasional contact guard in 2/3 trials for 6 consecutive PT sessions as measured by physical therapist.

Annual Goal: 2. Given focused exercises designed to improve coordination and balance, G will be able to kick a stationary ball 10 feet maturely, using opposing arm and leg movement to a target, in order to promote age appropriate gross motor skills.

STOs:

1. In 3 months, G will kick a stationary ball 5 feet maturely at a target using opposing arm and leg movements in 1/3 trials for 6 consecutive PT sessions as measured by physical therapist.
2. In 6 months, G will kick a stationary ball 10 feet maturely at a target using opposing arm and leg movements in 2/3 trials for 6 consecutive PT sessions as measured by physical therapist.

CASE STUDY # 2

Student: "A"

Age: 4y 6mo

Diagnosis: Developmental Delay/Sensory Processing Disorder

Typical Preschool: 15:2

Prior School Physical Therapy Services: 1x30/Week, Individual services in separate location

Present Level of Performance:

A is a 4 year old boy who shows delays in his gross motor skills, balance, and coordination. His skills are scattered between 23-30 months, with highest skills being ball handling, according to the PDMS 2. He is able to stand on his tiptoes with arms over head for three seconds, but cannot stand on one foot without support. He is able to walk on a line with one foot on and one foot off. He can walk backwards, on tiptoes, and sideways for 8-10 feet. He is able to run, with trunk and extremity rotation emerging; however, he runs slower than average peers. A is able to gallop with his left foot leading, jump up off the floor 1-2", but is not jumping down from a height or over objects on the floor. A walks up and down stairs with support in a non-reciprocal pattern. He is able to throw a ball overhand 5', but could not hit a target, and is able to toss a ball underhand with demonstration. A only used the slide on the playground once, with encouragement and prompting.

Annual Goal: A will demonstrate improved balance and coordination in order to step up and down from a 4-6 inch height, independently, without putting his hands down, 2/3 opportunities.

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