Aquatic Therapy for Children with Autism Spectrum Disorder

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Introduction/Background

• Posture is a common impairment in children with Autism Spectrum Disorder (ASD) \(^{(1)}\)
  – Abnormal posture control can limit learning opportunities. \(^{(1)}\)

• Aquatic therapy is a new area of research to assess it’s effectiveness on quality of life and impairments in children with disabilities
PICO Question

Can hydrotherapy for children with ASD help to improve their posture control in order to increase their self-efficacy and level of independence?
Methods

- Databases Searched
  - CINAHL (w/full text), Health & Psychosocial Instruments, Health Source – Consumer Edition, MEDLINE, SPORTDiscus with Full Text
# Methods

<table>
<thead>
<tr>
<th>Terms Used</th>
<th>Number of Results</th>
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<tr>
<td>Aquatic Therapy AND Postural Control AND Autism</td>
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<td>Autism Spectrum Disorder AND Aquatic Therapy</td>
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<td>Aquatic Therapy AND Autism AND Children</td>
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<tr>
<td>Autism AND Postural Control</td>
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<tr>
<td>Balance AND Autism Spectrum Disorder</td>
<td>664</td>
</tr>
<tr>
<td>Aquatic Therapy AND Clinical Applications</td>
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Methods

• Inclusion Criteria
  – Postural Control
  – Autism Spectrum Disorder
  – Aquatics (when possible)
  – Meta-Analyses (when possible)

• In order to show benefits of Aquatic Therapy in general...
  – Meta-Analyses
  – Children
  – Postural Control
Research Synthesized

• What We Found & Ended Up Using
  – 2 Meta-Analysis (Level 1)
  – 2 Quasi-Experimental (Level 3)
  – 1 Qualitative Study (Clinician Survey) (Level 6)
## Research Synthesized

<table>
<thead>
<tr>
<th>Article</th>
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<th>Level of Evidence</th>
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<tr>
<td>Postural Control Impairments in Individuals With Autism Spectrum Disorder: A Critical Review of Current Literature</td>
<td>Meta-Analysis</td>
<td>Level 1</td>
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<tr>
<td>Aquatic Therapy: Scientific Foundations and Clinical Rehabilitation Applications</td>
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<td>Decreased Static and Dynamic Postural Control in Children with Autism Spectrum Disorders</td>
<td>Quasi-Experimental</td>
<td>Level 3</td>
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<td>The effects of balance training intervention on postural control of children with autism spectrum disorder: Role of sensory information</td>
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<td>Clinicians' Perceptions of the Benefits of Aquatic Therapy for Young Children with Autism</td>
<td>Qualitative Study (Clinician Survey)</td>
<td>Level 6</td>
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Results

• Children with ASD showed 438% greater mediolateral sway and 104% greater anteroposterior sway during static stance compared to children without ASD. \(^{(5)}\)

• Balance Training Program: 3 balance sessions per week for 6 weeks with a variety of balance exercises showed decreased sway and increased postural control in anterior-posterior and medial-lateral directions. \(^{(3)}\)
Results

• Benefits of Aquatic Therapy in General
  – The buoyancy of the water can provide an antigravity environment that can improve the levels of balance and gait training. \(^{(2)}\)
  – Psychiatric effects have been noted through reduced anxiety scores, which could have an impact on social skills. \(^{(2)}\)
Results

• Based on a survey of Occupational Therapists, the majority of 18 therapists reported substantial increases in muscle strength, balance, swim skills, concentration, tolerating touch, initiating/maintaining eye contact, and demonstrating water safety. (4)

• There were no skills where the therapists reported substantially decreased from aquatic therapy. (4)
Discussion

• Children with Autism Spectrum Disorder have postural impairments (1)

• Aquatic Therapy has been shown to improve postural control in children (2)

• THEREFORE, in theory, a swimming program for children with Autism should improve postural control.

• However, children with Autism will likely need a modified swimming program that is to be developed.
Personal Experience
(aka Novice Opinion)

- Camp for Children with Disabilities in Fall of 2008
- Met once a week for 5 weeks
- Worked with a child around Level 2 on the Autism Spectrum
- **Week 1:** Child screams & runs away into the locker room.
- **Week 2:** We are able to somehow get the child into the pool but he is holding on for dear life
- **Week 3-4:** Able to acclimate child with going underwater and try some different floating/kicking exercises along with jumping into the water.
- **Week 5:** Child does not want to leave the water.
Areas for Future Research

• Impact of Aquatic Therapy on children with Autism in regards to…
  – Posture
  – Ability to learn how to swim
  – Transfer of skills from aquatics to ADLs
  – Social Skills
References


