Effects of Aerobic Exercise on Children with Autism Spectrum Disorders

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Introduction/Background

• In U.S., 1:150 children ASD
• Neurological disorder
• Males > females
• Five recognized types under ASD:
  1. Autism
  2. PDD-NOS
  3. Asperger’s syndrome
  4. Rett’s syndrome
  5. Childhood Disintegrative Disorder
• Stereotypical behavior
• Recent push to mainstream children with ASD in the school system
WU2  Bullet the important info and talk through the rest
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WU3  may need to add more slides to this section
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Aerobic Exercise

- Health benefits
- Cognitive gains
- Mental functioning
- Social development

PICO Question

- Is aerobic exercise effective in reducing stereotypical behavior in children with Autism Spectrum Disorders?
WU4  make sure in intro you define ASD and talk about what the issues are
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### Methods

<table>
<thead>
<tr>
<th>Database</th>
<th>Keywords</th>
<th>Results Found</th>
<th>Articles Chosen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>- Sowa M., Meulenbroek R.</td>
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<td></td>
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<td></td>
<td>- Oriel KN., George CL., Peckus R., Semon A.</td>
</tr>
<tr>
<td>EBSCO Host - ERIC</td>
<td>“Autism Spectrum Disorders” &amp; “Physical Activity”</td>
<td>29</td>
<td>Bahrami F., Movahedi A., Marandi SM., Abedi A.</td>
</tr>
<tr>
<td>EBSCO Host – Academic Search Premier</td>
<td>“Autism” &amp; “Physical Activity” &amp; “Academics”</td>
<td>3</td>
<td>Nicholson H., Kehle TJ., Bray MA., Van Heest J.</td>
</tr>
</tbody>
</table>
I would put this in table form with key words and results then how you narrowed. List databases in general first.

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Research Synthesized

- For articles to be included they had to address the following topics: children with autism spectrum disorder, aerobic exercise, social behavior, stereotypic behavior.
- 1 meta-analysis
- 2 systematic reviews
- 1 randomized-controlled trial
- 1 within-subjects cross-over design
- 1 multiple baseline design

<table>
<thead>
<tr>
<th>Title</th>
<th>Year</th>
<th>Research Design</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Physical Exercises and Individuals with Autism Spectrum Disorders</td>
<td>2010</td>
<td>Systematic Review</td>
<td>18 articles were reviewed to analyze the effects of physical exercise on children with ASD. The outcomes were grouped into behavior, academics, and physical fitness.</td>
</tr>
<tr>
<td>2 Effects of Physical Exercises on Autism Spectrum Disorders</td>
<td>2011</td>
<td>Meta-Analysis</td>
<td>16 studies were reviewed to determine the effects of exercise on motor and social deficits in children with ASD. The specific exercises performed were swimming, jogging, horseback riding, cycling, weight training, and walking.</td>
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</tbody>
</table>
less text, perhaps divide to more slides
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</tr>
</thead>
<tbody>
<tr>
<td><strong>3</strong> The Effects of Aerobic Exercises on Academic Engagement in Young Children with Autism Spectrum Disorder</td>
<td>2011</td>
<td>With-in subjects crossover</td>
<td>Determine whether participation in aerobic exercises before classroom activities improves academic engagement and reduces stereotypic behavior in young children with ASD.</td>
</tr>
<tr>
<td><strong>4</strong> Effects of Exercise Interventions on Stereotypic Behaviours in Children with Autism Spectrum Disorder</td>
<td>2008</td>
<td>Systematic Review</td>
<td>7 studies looked at the effectiveness of exercise interventions on stereotypic behaviors on children with ASD. Six studies looked at jogging and one looked at hydro therapy.</td>
</tr>
<tr>
<td><strong>5</strong> The Effects of Antecedent Physical Activity on the Academic Engagement of Children with Autism Spectrum Disorder</td>
<td>2001</td>
<td>Multiple baseline design</td>
<td>This study analyzed the effectiveness of a jogging exercise program to increase academic engagement. The subjects in this study were four nine-year old boys, and the exercise was preform prior to their time in the classroom.</td>
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<tr>
<td><strong>6</strong> Kata Techniques Training Consistently Decreases Stereotypy in Children with Autism Spectrum Disorder</td>
<td>2012</td>
<td>Randomized-Controlled Trial</td>
<td>To determine if exercise in the form of karate would decrease stereotypic behavior in children with ASD. Short-term and long-term effects were also addressed.</td>
</tr>
</tbody>
</table>
Results

• All studies reviewed showed positive results in the outcomes they were measuring.

• Overall all studies found that stereotypical behaviors decreased after participation in a wide variety of aerobic exercises in children with ASD.

Results

• High intensity exercise, such as jogging, proved to be the most effective.

• Academic engagement and on-task behavior also showed improvements with implementation of structured exercise.
anything on what might be most effective or situations in which one might be more effective than another?

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Discussion

- Possible explanations
  - Neurotransmitters
  - Fatigue
  - Similar movement patterns
  - Improved synchrony

Discussion

- Limitations
  - Small sample size
  - Differences between subjects
  - Methodology
divide this to several slides.
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Areas for Future Research

• Aerobic vs. Non-Aerobic
• High intensity vs. Low intensity exercise
• Individual vs. Group exercise
• Short-term vs. Long-term effects

Questions??
References


