THERAPEUTIC HORSEBACK RIDING IN CHILDREN WITH AUTISM SPECTRUM DISORDERS

*Agnew, John A.; Gabriels, Robin L.; Pan, Zhaoxing; Holt, Katherine; Martin, Sydney; Clayton, Gerald H.; Ruzzano, Selga; Bosler, Heather; Howard, Rebecca and Mesilov, Gary

*University of Colorado at Denver/The Children’s Hospital, Departments of Psychiatry and Pediatrics, Aurora, CO

Background

• For over 40 years in the U.S. and Canada, therapeutic horseback riding (THR) has been used to enhance physical, psychosocial and cognitive functioning.

• In 1970 North American Riding for the Handicapped Association (NARHA) established and developed accreditation standards for riding programs and instructors.

• There are few studies to guide consumers even though NAHRA reports THR is conducted with individuals with an ASD more than any other disability.

• Results from the few studies with ASD children suggest that 8 – 12 weeks of THR improve motor coordination and planning, mood and emotion regulation, sensory abnormalities, adaptive and social behaviors, and awareness in individuals with ASD [1-6].

• The basis for THR improvement in ASDs has yet to be examined thoroughly.

Objectives

Evaluate effects of 10 weekly one-hour THR lessons on:

1) Self-regulation behaviors
2) Adaptive daily living skills
3) Motor coordination, organization and planning

Methods

Participants

• ASD Children and adolescents (ages 6 – 16 years)
• ASD diagnoses confirmed by ADOS [7] and Social Communication Questionnaire (SCQ) [8]
• IQ ≥ 40
• Aberrant Behavior Checklist-Community Irritability subscale ≥ 11
• THR group n = 25; Waitlist group n = 16

Procedures

• Diagnostic and IQ screening evaluations
• Screened at Colorado Therapeutic Riding Center (CTRC) to
  • Assess horsemanship skills and level of functioning
  • Assign to appropriate THR group based on level of functioning
  • Exclude based on inability to interact with horse
• Evaluated by OT and research assistants
• Caregivers completed ABC-C pre- and post-10-weeks of THR
• Sixteen subjects participated in 10 week waitlist control group before entering THR study and were evaluated prior to waitlist control period
• Pre- and post-THR evaluation within one month prior to and following participation in ten weeks of THR lessons to assess motor and adaptive skills
• THR Weekly Intervention
  • Followed skill progression and objectives
  • Horse and side-walk volunteers consistent for each participant
  • Taught in small group setting (n ≤ 4)
  • Led by NAHRA certified Advanced Instructor
• Picture schedule of lesson activities presented

Measures

• Aberrant Behavior Checklist-Community (ABC-C) [9]
• Vineland Adaptive Behavior Scales-II (VABS-II) [10]
• Bruininks-Oseretsky Test of Motor Proficiency (BOT-II) [11]
• Sensory Integration and Praxis Test (SIPT) [12]

Subject Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>(n = 41)</th>
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<tbody>
<tr>
<td>Mean Age</td>
<td>8.7 (6 - 16 years)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male: 35; Female: 6</td>
</tr>
<tr>
<td>Comorbid Psychiatric Diagnoses</td>
<td>Yes: 15; No: 26</td>
</tr>
<tr>
<td>Psychoactive Medications</td>
<td>Yes: 13; No: 28</td>
</tr>
<tr>
<td>Mean nonverbal IQ</td>
<td>95 (44 – 139)</td>
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<tr>
<td>ASD Diagnosis</td>
<td>Autism: 23; Asperger’s: 18</td>
</tr>
<tr>
<td>Seizures</td>
<td>Yes: 2; No: 39</td>
</tr>
</tbody>
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Results

• Significant improvements in ABC-C subscale scores for irritability, hyperactivity, lethargy, stereotypy, inappropriate speech (p < 0.01)
• Mixed effects ANOVA found ABC-C improvements significant after three weeks for Irritability, Hyperactivity, Lethargy and Stereotypy
• Significant improvement (p<0.01) in BOT-II and SIPT Verbal Praxis
• Significant improvement (p<0.01) in VABS-II communication raw score and total adaptive score

• VABS-II communication improvements significant for expressive language (pre: 82.7; post: 89.4; p < 0.01), but not receptive language (p = 0.06, n.s.)
• ANCOVA compared waitlist control to THR and found significant improvement in ABC-C Irritability, Hyperactivity, Lethargy and Stereotypy subscales (p<0.01)

Discussion

• Ten-week THR program effects significant improvement in behavioral and physical parameters in individuals with ASD
• Adaptive skills, motor coordination and planning and aberrant behaviors improved
• Improvements in ABC-C subscales compared with waitlist control may be due to THR therapy, not developmental changes over time

Future Directions

• Address questions such as length and specificity of THR effects
• Institute specific control intervention group to determine if the horse is a significant factor in changes noted by this study.
• Further examine THR effects on communication and quality of life (QOL) issues.
• Include objective and blinded pre-post intervention evaluators.

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References


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