MEASURING THE EFFECTS OF THERAPEUTIC HORSEBACK RIDING IN CHILDREN WITH AUTISM SPECTRUM DISORDERS

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Background

- Therapeutic Horseback Riding (THR) aims to enhance physical, psychosocial and cognitive functioning for individuals with disabilities
- THR is widely used despite lack of efficacy studies
- NARHA accredits riding programs and instructors
- NARHA reports THR is conducted with individuals with autism spectrum disorders (ASD) more than any other disability
- Results ASD studies suggest that 8 – 12 weeks of THR improve motor coordination and planning, mood or emotion regulation, and adaptive and social behaviors and awareness in individuals with ASD [1-6]
- Basis for improvement has yet to be examined thoroughly using a systematic THR intervention protocol

Objectives

Evaluate effects of ten 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 – 17 years)
- ASD diagnoses confirmed by ADOS [7] and Social Communication Questionnaire (SCQ) [8]
- IQ ≥ 40
- Aberrant Behavior Checklist-Community Irritability subscale ≥ 11

Procedures
- Diagnostic and IQ screening evaluations
- Screened by NARHA-certified Advanced Instructor 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 ride/approach horse
- Pre- and post-THR evaluation by occupational therapist and research assistant within one month prior to and following participation in 10 weeks of THR lesson to assess motor and adaptive skills
- Caregivers completed ABC-C pre- and post-THR
- THR weekly intervention:
  - Followed specific skill progression and objectives
  - Horse and side-walker volunteers consistent for each participant
  - Taught in small group setting of no more than 4 participants
  - Led by NAHRA certified Advanced Instructor
  - Picture schedule of lesson activities presented

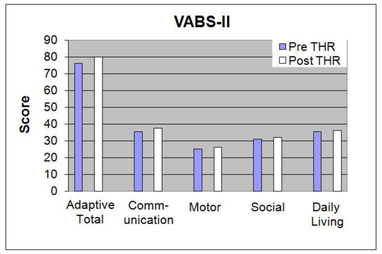
Measures
- Aberrant Behavior Checklist-Community (ABC-C) [9]
- Vineland Adaptive Behavior Scales-II (VABS-II) [10]
- Bruininks-Oseretsky Test of Motor Proficiency (BOT-II) [11]
- Sensory Integration and Praxis Test (SIPT) [12]

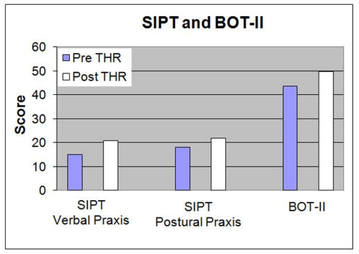
Subject Characteristics

Characteristic	(n = 26)
Mean Age	8.6 (5.3 – 16.1 years)
Gender	Male: 21; Female: 5
Comorbid Psychiatric Diagnoses	Yes: 15; No: 11
Psychoactive Medications	Yes: 11; No: 15
Mean nonverbal IQ	98 (52 – 139)
Mean VABS II Communication Total SS Score	81.9 (61 – 110)
ASD Diagnosis	Autism: 18; Asperger's: 8
Seizures	Yes: 2; No: 24

Results

- No significant changes in outside treatment were noted by caregivers during the THR sessions
- Post intervention changes in VABS-II subscale scores were significant for the communication raw score ($p=0.0457$) and total adaptive score ($p<0.0001$)
- BOT-II short form scores improved significantly ($p=0.0006$)
- Improvement in SIPT scores were noted for both verbal praxis ($p<0.0001$) and postural praxis ($p=0.014$)
- When rated by parents, improvements in ABC-C subscale scores for irritability, hyperactivity, lethargy and stereotypy were found to be significant ($p < 0.01$) but changes in the inappropriate speech subscale were not significant





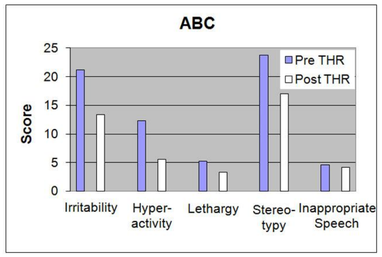


Figure 1: Graphs depicting changes in adaptive behaviors, motor function and aberrant behaviors from before to after ten weeks of Therapeutic Horseback Riding

Discussion

- Participation in a well-defined THR program of 10 weeks duration with ASD children and adolescents indicates improvement in behavioral and physical parameters
- Measures of adaptive skills, motor coordination and planning and aberrant behaviors improved statistically over the course of THR

Future Directions

- Additional data and wait-list control data will be obtained to corroborate significant changes noted and validate or disprove noted trends
- Future work is planned to address questions such as length and specificity of THR effects
- Future studies of THR should focus on motor proficiency and quality of life (QOL) issues in ASD that impact child's ability to function in home and school environments
- QOL issues are often reasons families seek medication intervention trials that are not always successful and sometimes further complicate the child's behavioral presentation

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