

THERAPEUTIC HORSEBACK RIDING IN CHILDREN WITH AUTISM SPECTRUM DISORDERS

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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 \geq 40
- Aberrant Behavior Checklist-Community Irritability subscale \geq 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-walker volunteers consistent for each participant
 - Taught in small group setting (n \leq 4)
 - Led by NAHRA certified Advanced Instructor
 - Picture schedule of lesson activities presented

Measures

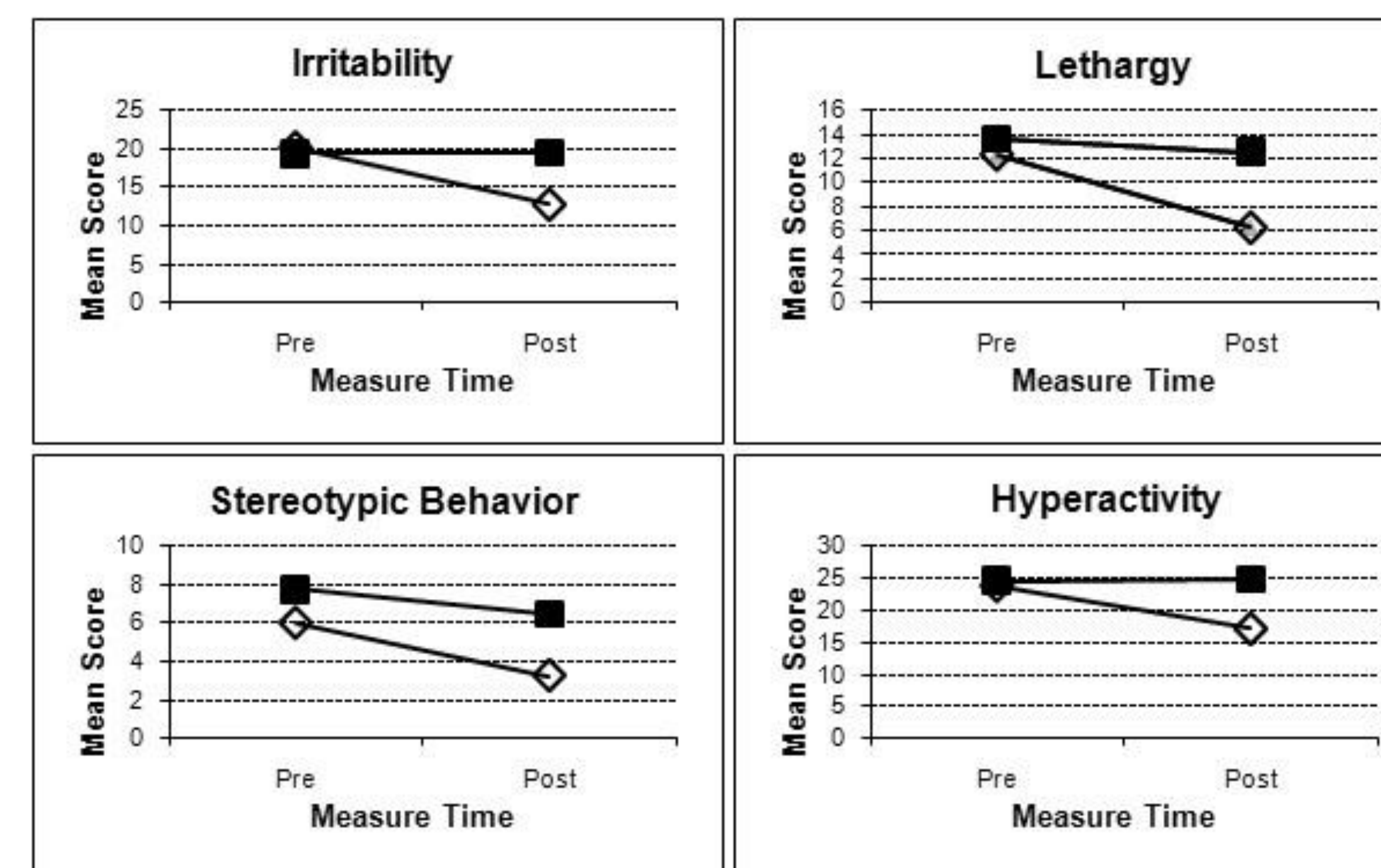
- Aberrant Behavior Checklist-Community (ABC-C) [9]
- Vineland Adaptive Behavior Scales-II (VABS-II) [10]
- Bruininks-Oseretsky Test of Motor Proficiency (BOT-II) [11]
- Sensory Integration and Praxis Test (SIPT) [12]

Subject Characteristics

Characteristic	(n = 41)
Mean Age	8.7 (6 - 16 years)
Gender	Male: 35; Female: 6
Comorbid Psychiatric Diagnoses	Yes: 15; No: 26
Psychoactive Medications	Yes: 13; No: 28
Mean nonverbal IQ	95 (44 – 139)
ASD Diagnosis	Autism: 23; Asperger's: 18
Seizures	Yes: 2; No: 39

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)



ABC-C subscales with significant results on ANCOVA analysis. Open markers represent data from the THR treatment and filled markers represent data from the wait-list treatment.

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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