A Pilot Study of the Effect of an Acute Vestibular Therapy on Postural Stability and Gaze Patterns of Children with Autism Spectrum Disorder

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Effect of an Acute Vestibular Therapy on Postural Stability of Children with Autism Spectrum Disorder and Typically Developing Children

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Study Background
- Increasing prevalence of autism spectrum disorder (ASD) [1]
- Sensory integration (SI) therapy used to:
  - Improve social behaviors and sustained attention
  - Reduce repetitive mannerisms and hypersensitivity
  - However: difficult to measure efficacy [2,3]
- Solution: quantitatively assess changes in sensory processing caused by SI
  - Measure physiological systems that require sensory interaction
- Postural stability requires complex sensory processing
  - Children with ASD have atypical balance [4]

Research Question and Hypothesis

Objective: Evaluate postural changes in children after a vestibular swing therapy and determine data trends, experimental feasibility, and data collection procedures

Hypothesis: Subjects will demonstrate increased postural stability after a SI swing therapy protocol.

Methodology
- Parent signed informed consent
- Functional Reach Test and Bilateral Coordination Test
- Pre-test: Trial 1
  - 3 minute break
  - Pre-test: Trial 2
  - 10 Minute Vestibular Swing Routine
  - Post-test: Trial 3
  - 3 minute break
  - Post-test: Trial 4
- Calculated: APRS, MLSR, MV
- Focus on eyes closed/foam pad condition due to vestibular function

Results and Discussion
- Subjects with ASD had to repeat ≈25% trials
- For the eyes closed/foam pad condition, 80% of subjects displayed a A/P sway decrease of 3.95 ± 2.4mm after therapy
- Data suggests most subjects experienced improvements in balance
  - Small in magnitude but noticeable after just 10 minutes of a single therapy session
- Subjects with ASD exhibited decreased MV while TD children exhibited increased MV
  - Potentially, SI therapy only beneficial to those with sensory processing issues

Future Work
- Explore alternative means of data collection
- Repeat study with larger sample sizes
- Examine longitudinal therapeutic effects

References
3. May-Benson, T. The Amer J of Occu Ther. 2010