GAIT AND CLINICAL CHARACTERISTICS OF YOUTH WITH AND WITHOUT VESTIBULAR DYSFUNCTION-PRELIMINARY FINDINGS

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Background: 3-D gait performance, a biomarker for in-Community participation, has yet to be characterized in youth with vestibular dysfunction (VESTDYS), creating greater threat for increased health disparity.

Purpose: Biomechanically characterize gait in youth with VESTDYS from a 3-D perspective.

Methods: This ongoing study has enrolled 6/15 participants; 3 have completed cross-sectional, single-blinded pilot. Self-paced and brisk gait performance and blinded classification clinical testing are being conducted on controls and those with VESTDYS.

Results: 3 similar females (mean age 9.67 yrs, ht 1.38 m, wt 37.17 kg, BMI 19.2) completed the study. All had similar self-paced gait speed and stride width, but one specific participant demonstrated increased time in double support (by 0.10s). Specifically, during brisk walking, the same participant demonstrated slower walking speed (by 10-20%), larger stride width (by 0.06 m), and longer time in double support (30%). During static standing with eyes open, this person had 300mm^2 greater Center of Pressure 95% area of (postural) sway. During static standing with eyes closed, this individual over 1300mm^2 greater Center of Pressure 95% area of (postural) sway. This same participant showed a vestibular weakness affecting the vestibular-ocular reflex as measured using the video head impulse test (vHIT), and with a visual preference as measured by the Romberg.

Conclusion: Gait instability is noted in a child with suspected VESTDYS as she demonstrated slower walking speed, stride width, and greater time in double support, most notably in brisk walking. Once the visual input was eliminated during static stand testing, the same participant suspected of VESTDYS demonstrated considerably increased postural sway. All of these tests are indicators for all biomechanical biomarkers of for those “at risk”. Added study data should confirm these preliminary results.

Relevance to Allied Health: Results will inform clinical decision-making and lead to innovative therapies for vestibular dysfunction to allow children greater in-Community participation.