ORAL: CHILDREN WITH AUTISM SPECTRUM DISORDER USE INEFFICIENT GOAL-DIRECTED WHOLE BODY MOVEMENTS COMPARED TO TYPICAL DEVELOPMENT.

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Children with Autism Spectrum Disorder (ASD) have noted differences in their motor skills. These differences begin in early childhood and persist through adulthood, often impacting the functional performance of activities of daily living. Recent advances in virtual reality have opened the door for the study of the movements of children with ASD in a highly-controlled, safe, and engaging way. Objective: The objective of the current project was to investigate differences in the spatial efficiency of goal-directed movements by children with ASD and typically-developing (TD) children. Method: We used immersive virtual reality to measure how 7- to 13-year-old children with ASD (n = 16) and TD children (n = 12) made goal-directed, whole-body movements to a static target. Results: Overall, both children with ASD and TD children were highly successful (ASD: 89.96% hit rate, TD: 88.39% hit rate) in completing the task. However, differences were evident when characterizing the nature of the movements children made to accomplish the task. Children with ASD needed more time (Wald $\chi2$ 1 = 6.98, p = .008, β = 0.24) and took less efficient paths (Wald $\chi2$ 1 = 3.89, p = .048, β = 0.23) to the target than TD children. Children with ASD also appeared to lack a consistent strategy when moving to the target. While TD children were more likely to overshoot near targets (Wald $\chi2$ 1 = 7.23, p = .007, β = 0.08) and more likely to undershoot far targets (Wald $\chi2$ 1= 6.57, p = .010, β = -0.06), children with ASD were equally likely to overshoot or undershoot targets, regardless of the target distance. Implications: By using virtual reality to measure movement differences in children with ASD and TD children, we can begin to understand the unique pattern of movement challenges experienced by children with ASD. To help improve functional outcomes and quality of life for children with ASD, researchers and clinicians need to develop interventions tailored specifically to these movement challenges.