Increased Anterior Pelvic Angle Characterizes the Gait of Children with Attention Deficit/Hyperactivity Disorder (ADHD).


Abstract

BACKGROUND:
Children with attention deficit/hyperactivity disorder (ADHD) frequently have motor problems. Previous studies have reported that the characteristic gait in children with ADHD is immature and that subjects demonstrate higher levels of variability in gait characteristics for the lower extremities than healthy controls. However, little is known about body movement during gait in children with ADHD. The purpose of this study was to identify the characteristic body movements associated with ADHD symptoms in children with ADHD.

METHODS:
Using a three-dimensional motion analysis system, we compared gait variables in boys with ADHD (n = 19; mean age, 9.58 years) and boys with typical development (TD) (n = 21; mean age, 10.71 years) to determine the specific gait characteristics related to ADHD symptoms. We assessed spatiotemporal gait variables (i.e. speed, stride length, and cadence), and kinematic gait variables (i.e. the angle of the pelvis, hip, knee, and ankle) to measure body movement when walking at a self-selected pace.

RESULTS:
In comparison with the TD group, the ADHD group demonstrated significantly higher values in cadence (t = 3.33, p = 0.002) and anterior pelvic angle (t = 3.08, p = 0.004). In multiple regression analysis, anterior pelvic angle was associated with the ADHD rating scale hyperactive/impulsive scores (β = 0.62, t = 2.58, p = 0.025), but not other psychiatric symptoms in the ADHD group.

CONCLUSIONS:
Our results suggest that anterior pelvic angle represents a specific gait variable related to ADHD symptoms. Our kinematic findings could have potential implications for evaluating the body movement in boys with ADHD.