Age-related decline of gait variability in children with attention-deficit/hyperactivity disorder: support for the maturational delay hypothesis in gait

Olivia Manicolo, Alexander Grob, Sakari Lemola, Priska Hagmann-von Arx

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Abstract

**Background**
Previous findings showed a tendency toward higher gait variability in children with attention-deficit/hyperactivity disorder (ADHD) compared to controls. This study examined whether gait variability in children with ADHD eventually approaches normality with increasing age (delay hypothesis) or whether these gait alterations represent a persistent deviation from typical development (deviation hypothesis).

**Method**
This cross-sectional study compared 30 children with ADHD (25 boys; Mage = 10 years 11 months, range 8–13 years; n = 21 off medication, n = 9 without medication) to 28 controls (25 boys; Mage = 10 years 10 months, range 8–13 years). Gait parameters (i.e. velocity and variability in stride length and stride time) were assessed using an electronic walkway system (GAITRite) while children walked at their own pace.

**Results**
Children with ADHD walked with significantly higher variability in stride time compared to controls. Age was negatively associated with gait variability in children with ADHD such that children with higher age walked with lower variability, whereas in controls there was no such association.

**Conclusions**
Children with ADHD displayed a less regular gait pattern than controls, indicated by their higher variability in stride time. The age-dependent decrease of gait variability in children with ADHD showed that gait performance became more regular with age and converged toward that of typically developing children. These results may reflect a maturational delay rather than a persistent deviation of gait regularity among children with ADHD compared to typically developing children.