Aiding the diagnosis of AD/HD in childhood: Using actigraphy and a continuous performance test to objectively quantify symptoms.

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Abstract

The current gold standard for the diagnosis of AD/HD is based on subjective reports from teachers, parents, and clinicians. These measures can be problematic as they are open to rater biases and also fail to account for the developmental nature of symptoms. The current study examined the diagnostic accuracy of two objective measures, a computer-based Continuous Performance Task and actigraphy (e.g., motion tracking device) in differentiating children with AD/HD (N=70) from healthy controls (N=70). It was predicted that task-unrelated movement (measured via actigraphy) during a CPT and CPT performance would have high classification accuracy in differentiating children with AD/HD from healthy controls and that the inclusion of age would increase this accuracy. Results indicated that total energy expenditure from the task-unrelated wrist and ankle movement during the CPT was higher in children with AD/HD than controls and that CPT performance was poorer in AD/HD than controls. Discriminant function analyses revealed that the CPT Full-Scale Response Control Quotient and wrist and ankle energy expenditure provided optimal classification accuracy - correctly classifying 86% of cases, with a sensitivity of 81.4% and specificity of 91.4%. The prediction that classification accuracy would increase with the inclusion of age was not supported by the data. When taken in conjunction with other clinical assessments, these findings suggest that actigraphy during a CPT and CPT performance may increase the probability of a correct AD/HD diagnosis.