Postural instability in children with ADHD is improved by methylphenidate

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The aim of this study was to examine postural control in children with ADHD and explore the effect of methylphenidate (MPH), using spatial and temporal analyses of the center of pressure (CoP). Thirty-eight children with ADHD (mean age 9.82 ± 0.37 years) and thirty-eight sex- age- and IQ-matched children with normal development were examined. Postural stability was evaluated using the Multitest Equilibre machine (Framiral®) at inclusion and after one month of MPH in children with ADHD. Postural stability was assessed by recording under several conditions: with eyes open and fixed on a target, with eyes closed and with vision perturbed by optokinetic stimulation, on stable and unstable platforms. At inclusion, we observed poor spatial and temporal postural stability in children with ADHD. The spectral power index was higher in children with ADHD than in controls. Cancelling time was shorter at low and medium frequencies of oscillation and longer at higher frequencies in children with ADHD. After one month of MPH, the surface area and mean velocity of the CoP decreased significantly under the most complex conditions (unstable platform in the absence of proprioceptive and visual inputs). The spectral power index decreased significantly after MPH while the cancelling time did not change. Poor postural control in children with ADHD reinforces the hypothesis of cerebellar dysfunction in this disorder. Postural control could be improved by a more efficient processing of sensory inputs (a high-level process), as suggested by the decrease in spectral power index after MPH without changes in the cancelling time (a low-level process).