Preliminary evidence of improved cognitive performance following vestibular rehabilitation in children with combined ADHD (cADHD) and concurrent vestibular impairment.

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Abstract

OBJECTIVE:
Balance function has been reported to be worse in ADHD children than in their normal peers. The present study hypothesised that an improvement in balance could result in better cognitive performance in children with ADHD and concurrent vestibular impairment. This study was designed to evaluate the effects of comprehensive vestibular rehabilitation therapy on the cognitive performance of children with combined ADHD and concurrent vestibular impairment.

METHODS:
Subject were 54 children with combined ADHD. Those with severe vestibular impairment (n=33) were randomly assigned to two groups that were matched for age. A rehabilitation program comprising overall balance and gate, postural stability, and eye movement exercises was assigned to the intervention group. Subjects in the control group received no intervention for the same time period. The intervention was administered twice weekly for 12 weeks. Choice reaction time (CRT) and spatial working memory (SWM) subtypes of the Cambridge Neuropsychological Test Automated Battery (CANTAB) were completed pre- and post-intervention to determine the effects of vestibular rehabilitation on the cognitive performance of the subjects with ADHD and concurrent vestibular impairment. ANCOVA was used to compare the test results of the intervention and control group post-test.

RESULTS:
The percentage of correct trial scores for the CRT achieved by the intervention group post-test increased significantly compared to those of the control group (p=0.029). The CRT mean latency scores were significantly prolonged in the intervention group following the intervention (p=0.007) compared to the control group. No significant change was found in the spatial functioning of the subjects with ADHD following 12 weeks of intervention (p>0.05).

CONCLUSION:
The study highlights the effect of vestibular rehabilitation on the cognitive performance of children with combined ADHD and concurrent vestibular disorder. The findings indicate that attention can be affected by early vestibular rehabilitation, which is a basic program for improving memory function in such children. Appropriate vestibular rehabilitation programs based on the type of vestibular impairment of children can improve their cognitive ability to some extent in children with ADHD and concurrent vestibular impairment (p>0.05).