

Interaction Effects of Vitamin D Supplementation and Aerobic Exercises on Balance and Physical Performance in Children with Down Syndrome

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Abstract : To investigate the interaction effects of vitamin D supplementation combined with aerobic exercises (AE) and conventional physical therapy program (CPTP) on balance and physical performance in children with Down syndrome (DS). **Methods:** A randomized controlled trial was conducted for 38 children with DS, with ages ranging from 8 to 12 years. They were divided randomly to two groups. The control group (n=19) received the CPTP, while the study group (n=19) received the CPTP, AE, and vitamin D in the form of an oral daily dose of vitamin D3 400 IU (Cholecalciferol). Evaluation of balance by using the Biodex Stability System and physical performance by using the six-minute walk test (6MWT) was performed before and after 12 weeks of the treatment program. **Findings:** All groups showed a significant improvement in balance and physical performance after treatment ($p < 0.05$). The study group showed a significant improvement in balance and physical performance compared with that of the control group ($p < 0.05$). **Conclusion:** Vitamin D supplementation combined with AE and CPTP could improve balance and physical performance in children with DS. Therefore, vitamin D and AE should be considered as adjunctive to the rehabilitation program of these children.

Keywords : aerobic exercises, balance, down syndrome, physical performance, vitamin D

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