

Abstract

Effects of a Whole-Body General Movement Intervention on Motor Performance, Agility, and Locomotor Skills of Children With Autism Spectrum Disorder: Results From a Comparison Between Face-to-face and Telehealth-Based Intervention Delivery

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Abstract

Background: Children with autism spectrum disorder (ASD) demonstrate significant motor impairments in visuomotor and body coordination, agility, and strength. Around 87% of children with ASD are at risk for motor impairments. However, only about 31% of these children receive rehabilitation services to address their motor needs.

Objective: Our randomized clinical trial assessed the effects of a general movement (GM) intervention compared to a standard-of-care seated play (SP) intervention delivered to children via face-to-face (F2F) and telehealth (TH)-based modes of intervention delivery on motor performance, agility, and locomotor skills in children with ASD.

Methods: Thirty 5- to 14-year-old children were matched on age, gender, and level of functioning and randomly assigned to the GM or SP groups. Children participated in the study for 10 weeks with pretests and posttests conducted during the first and last weeks and training in the interim 8 weeks with 2 sessions conducted per week. The strength and running speed and agility subtests of Bruininks-Oseretsky Test of Motor Proficiency (BOT-2) and the locomotor subtest of the Test of Gross-motor development (TGMD) were administered at pretest and posttest. In addition, in the GM group, task-specific games involving locomotor skills were assessed during early and late training sessions for changes in movement form or accuracy and the amount of prompting required to complete the actions.

Results: We found significant improvements in standard scores of the TGMD from pretest to posttest in the GM group (pretest mean 6.1, SE 1.0; posttest mean 8.1, SE 0.9; $P < .001$) but not the SP group. Within the GM group, there were no significant differences in the rates of improvement for children seen F2F versus via TH (F2F mean 1.8, SE 0.8; TH mean 2.0, SE 1.7; $P = .87$). On the BOT-2, the GM (pretest mean 36.1, SE 2.6; posttest mean 40.9, SE 3.1; $P < .001$) but not SP group showed improvements in standard scores on the strength and agility composite. Similar to the trends reported above, there were no differences in the magnitude of improvement for children seen F2F versus via TH (F2F mean 3.7, SD 1.3; TH mean 5.6, SD 1.5; $P = .37$). On the training-specific test of locomotor skills, children in the GM group improved their movement accuracy (pretest mean 74.4, SE 6.2; posttest mean 86.5, SE 4.7; $P < .001$) and reduced prompting (pretest mean 22.5, SE 3.5; posttest mean 16.9, SE 4.2; $P = .02$) required to complete the movements. Both children seen F2F as well as via TH showed similar trends, with no significant differences between the intervention delivery modes.

Conclusions: Our data suggest that TH is an effective mode of delivery of gross motor interventions and can be used to promote agility and motor coordination in children with ASD.

Conflicts of Interest: None declared.

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KEYWORDS

autism spectrum disorder; children; motor skills; movement interventions; agility; locomotor skills; endurance; exercise

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