

## Abstract

# Comparison of the Effects of Movement-Based Interventions Delivered Face-to-face Versus Via Telehealth on Restricted and Repetitive Behaviors of Children With Autism Spectrum Disorder

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## Abstract

**Background:** Autism spectrum disorder (ASD) is the most common pediatric neurodevelopmental disorder with a prevalence of 1 in every 44 children. Children with ASD exhibit social communication and behavioral impairments including poor verbal and nonverbal communication and heightened frequencies of repetitive and maladaptive behaviors (RBs).

**Objective:** Our randomized controlled trial compares face-to-face (F2F) versus telehealth-based intervention delivery for three types of interventions: two whole-body gross motor interventions and a conventional seated play (SP) intervention on RBs in children with ASD.

**Methods:** A total of 45 children with a confirmed diagnosis of ASD (aged 5-14 years) were recruited, matched on age bands and level of functioning, and randomly assigned to 1 of the 3 intervention groups, creative movement (CM), general movement (GM), or SP. Sessions were 1 to 1.5 hours long and were conducted with the child twice a week over 8 weeks by an expert clinician, adult confederate, and the caregiver. We coded videos of early and late training sessions for 3 types of RBs: sensory, stereotyped, and negative. Frequencies per standard time were calculated for RBs across early and late sessions.

**Results:** Data from a subset of 39 children suggest that there was a significant reduction in total RBs from an early to a late session in the CM group (early: mean 34.8, SE 5.0; late: mean 24.7, SE 3.9;  $P=.01$ ) but not in the GM (early: mean 34.8, SE 5.0; late: mean 24.7, SE 3.9;  $P=.01$ ) and SP groups (early: mean 14.6, SE 3.1; late: mean 15.2, SE 4.0;  $P=.79$ ). The reduction in total RBs in the CM group did not differ significantly between children seen F2F (mean 14.2, SE 4.4) versus via telehealth (mean 5.3, SE 3.8;  $P=.20$ ). The CM group specifically reduced frequencies of sensory (early: mean 10.7, SE 1.8; late: mean 6.2, SE 1.9;  $P=.03$ ) and negative (early: mean 10.7, SE 2.6; late: mean 7.4, SE 2.3;  $P=.01$ ) behaviors. Similar to the trends reported above, the reductions were not significantly different for children seen F2F and via telehealth (sensory F2F: mean 5.1, SE 1.8; sensory telehealth: mean 4.7, SE 3.7;  $P=.92$ ; negative F2F: mean 2.6, SE 1.3; negative telehealth mean 3.7, SE 2.1;  $P=.66$ ).

**Conclusions:** CM activities involving music and movement are novel contexts and lead to higher frequencies of RBs at baseline compared to conventional SP activities in children with ASD. However, training children reduced the frequencies of RBs, especially negative and sensory behaviors. No improvements were found in the GM or SP groups. Although our sample size was limited, preliminary data suggests similar trends for improvement in children seen F2F versus via telehealth. Telehealth-based training seems to be a viable mode of intervention delivery for families with difficulties accessing in-person care.

**Conflicts of Interest:** None declared.

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## KEYWORDS

autism spectrum disorder; movement intervention; repetitive behaviors

## Abbreviations

**ASD:** autism spectrum disorder  
**CM:** creative movement  
**F2F:** face to face  
**GM:** general movement  
**RB:** repetitive and maladaptive behavior  
**SP:** seated play

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