**Title**: Effectiveness of a Structured Motor Program on the Motor, Social communication Skills, and executive functioning of Autistic Children

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**Introduction:** Autism is a lifelong neurodevelopmental condition characterized by difficulty with social communication and the presence of highly restrictive, repetitive behaviors. Although motor skills are not considered a core feature in the diagnosis of autism, difficulty performing age-appropriate motor skills (e.g., balancing and ball skills) affects up to 83% of students with autism (Ruggeri et al., 2019). Researchers have established clear links among social, communication, motor skills (Cheung et al., 2021), and executive functioning (Kopp, 2012). However, little is known about motor interventions to support these skills. The purpose of this study was to determine the effectiveness of structured motor program: the *CHildren in Action: Motor Program for PreschoolerS with Autism (CHAMPPS-A) program.* CHAMPPS-A includes foundational motor skills (i.e., motor imitation, visual tracking, body awareness) and fundamental motor skills (i.e., walking/running, balance/jumping, catching, throwing, striking, and kicking) through motor play activities, music videos, and home components (Favazza et al., 2023). The research question was: Are there significant differences in changes in motor skills, social communication skills, and executive functioning before and after the intervention?

**Method:** Six autistic children (aged 9 or under) participated in the CHAMPPS-A program. Among the 6 children with autism, three of them are boys, two of them are girls, and one is nonbinary. The average age is 5.83 years (range: 4-9 years). Participants completed 75 mins per day, 3 days per week for 4 weeks. Data were gathered using pre and post assessments to measure the effectiveness of the CHAMPPS-A program. Measures included: The Bruininks-Oseretsky Test of Motor Proficiency™, Third Edition (BOT™-3), The Social Responsiveness Scale-2nd Edition (SRS), The Vineland Adaptive Behavior Scale (VABS-3, adaptive behavior), and Nonverbal Stroop Card Sorting Test (NSCST). Regarding analyses, paired t-tests were conducted to determine the effectiveness of the CHAMPPS-A program.

**Results**: Participants showed increased bilateral coordination, balance, strength, and dynamic movement pre- and post-intervention. Among these four domains, there is statistically significant on the bilateral coordination. Regarding executive functioning, participants showed improved on Nonverbal Stroop Card Sorting Test, but there is not statistically significant between pre- and post-intervention. Additionally, participants showed no significant differences on relating to others, playing and using leisure time, adapting, and socialization.

**Discussion:** This pilot study successfully demonstrated the effectiveness of a structured motor intervention for improving skills in autistic children. Through this pilot study, two limitations were identified including the sample size and duration of the intervention. Four weeks of intervention may not be long enough to make progress on social communication skills. The sample size (n=6) was too small for the statistical significance between pre- and post-intervention. Based on the preliminary results of this study, further research should focus on two phases of intervention. The first phase is to facilitate motor skills by using the CHAMPPS-A for autistic children only. The second phase is to focus on social communicative skills by including typically developing children and the same autistic children who complete the phase 1 into the treatment group to participate the CHAMPPS-A. As such, autistic children are already familiar with the motor skills in CHAMPPS-A, which may reduce the barriers for them to engage with their typically developing peers.

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