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The impact of functional strength training in children with spastic Cerebral palsy: a systematic review and meta-analysis

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THE IMPACT OF FUNCTIONAL STRENGTH TRAINING IN CHILDREN WITH SPASTIC CEREBRAL PALSY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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ABSTRACT

Objective: To investigate the existing literature on functional strength training (FST) and its effect on gross motor performance in children with spastic Cerebral palsy (CP).

Data sources: The databases PubMed, Cochrane, PEDro, OVID, Scopus, Web of Science, Science Direct, and ProQuest were searched until March 2021.

Review methods: This study was conducted as per the PRISMA guidelines. Studies that focused on FST and assessed its impact on various motor domains such as strength, mobility, and balance were selected. A detailed quality check was done using the Downs and Black guidelines, and the randomized control trials (RCT) were assessed using the Cochrane Risk of Bias Tool. Relevant data was then extracted, categorized, and analyzed.

Results: Out of 1989 studies screened, 13 interventional studies with 322 participants were selected. The intervention frequency ranged from 1 to 3 days/week for an average of 9 weeks, primarily targeting the trunk and lower limbs. The studies were of moderate to high-level evidence; ten of them were RCTs, while the others were non-randomized. Clinical heterogeneity between the studies was low, thereby meriting a meta-analysis. Functional strength training was found to have a medium to large, non-statistically significant effect on muscle strength and functional mobility. Notable changes were also observed in the domains of balance and endurance.

Conclusion: Functional strength training may positively effect strength, mobility, balance, and endurance among children with CP to varying extent. These gains are reflected in the child's activity participation and performance. Further, high-quality studies on the impact of FST on the upper limbs are warranted.