

Article

Schranz, C., Kruse, A., Belohlavek, T., Steinwender, G., Tilp, M., Pieber, T., & Svehlik, M. (2018). Does home-based progressive resistance or high-intensity circuit training improve strength, function, activity or participation in children with cerebral palsy? *Archives of physical medicine and rehabilitation*, 99(12), 2457. doi:10.1016/j.apmr.2018.06.010

Adaptive Sports/Recreation Topic Categories

- Home-based exercise.
- Cerebral palsy.

Research Question

- Does home-based progressive resistance or high-intensity circuit training improve strength, function, activity, or participation in children with cerebral palsy (CP)?

Methodology

- Randomized Controlled Trial
- Participants were between 8 and 16 years old within GMFCS Level I and II.
- They were excluded if they had orthopaedic surgery in the last 12 months or a botulinum injection within the last 6 months.
- All participants were randomly assigned either an 8-week progressive resistance training (PRT) or an 8-week high-intensity circuit training (HICT) targeting the lower extremities..
- Outcome measures: Body structure and function (strength, range of motion, spasticity, Muscle Power Sprint Test), activity (timed up and go test, 6-minWT, Energy Expenditure Index, gait profile, timed stairs test), participation (ASKp for children and PODCI for parents)

Results

- Both groups were able to improve strength compared with their baselines.
- HICT group increased more strength of knee flexors and plantar-flexors than PRT group.
- HICT group also improved more in Muscle Power Sprint Test than PRT group.

Discussion/Conclusion

- Children in both groups showed functional improvement but the strength gain was significant only in the HICT group.
- The average training time in HICT was shorter.
- Compliance was excellent in both groups.
- Home based strength training is a value addition to institutional intervention program.

Article Strengths

- First published study Investigating HICT in children with CP with outcome measures over all ICF domains.
- Affordable intervention with positive effect on all domains of ICF

Article Weaknesses

- Small sample size (22 participants in total)
- Home-based programs lack a tight control of day-to-day execution of the training program.

Take Home Messages

- This shows that children with CP can be motivated to follow exercise programs at home.
- Home-based high-intensity circuit training might be preferable and cost-effective method of strengthening intervention in highly functional and motivated children with CP.

Other Messages (training programs)

- Adapted sit to stand
- Heel rises
- Forward lunges
- Bridging exercise
- Lateral step up