A systematic review of the effectiveness of strength-training programs for people with cerebral palsy.

Dodd KJ, Taylor NF, Damiano DL.

School of Physiotherapy, La Trobe University, Bundoora, Victoria, Australia. k.dodd@latrobe.edu.au

OBJECTIVE: To determine whether strength training is beneficial for people with cerebral palsy (CP).

DATA SOURCES: We used electronic databases to find trials conducted from 1966 though 2000; key words used in our search were cerebral palsy combined with exercise, strength, and physical training. We supplemented this search with citation tracking.

STUDY SELECTION: To be selected for detailed review, reports found in the initial search were assessed by 2 independent reviewers and had to meet the following criteria: (1) population (people with CP), (2) intervention (strength training or a progressive resistance exercise program), and (3) outcomes (changes in strength, activity, or participation). Of 989 articles initially identified, 23 were selected for detailed review.

DATA EXTRACTION: Empirical studies were rated for methodologic rigor with the PEDro Scale, and studies with a PEDro score of less than 3 were excluded. Review articles were evaluated for quality with the National Health Service Centre for Reviews and Dissemination form.

DATA SYNTHESIS: Of the 23 selected articles, 11 studies (10 empirical, 1 review) met the criteria for quality and were included. Only 1 randomized controlled trial was identified. With respect to impairment, 8 of the 10 empirical studies reported strength increases as a result of a strength-training program, with effect sizes ranging from d equal to 1.16 (95% confidence interval,.11-2.21) to d equal to 5.27 (95% CI, 4.69-5.05). Two studies reported improvements in activity, and 1 study reported improvement in self-perception. No negative effects, such as reduced range of motion or spasticity, were reported. There was insufficient evidence from which to draw conclusions about the effects of environmental and personal contextual factors.

CONCLUSIONS: The trials suggest that training can increase strength and may improve motor activity in people with CP without adverse effects. More rigorous studies are needed that have a greater focus on changes in activity and participation and that consider contextual factors.