Stroke

COCHRANE CORNER

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Trunk Training Following Stroke

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Trunk training literature suggests beneficial effects for improving motor and functional outcome after stroke but the summarized effect on independence in activities of daily living (ADL) is unclear. In this Cochrane review, we provided an updated overview on the effectiveness of trunk training on ADL compared with both nondose-matched (trials with more training duration in the experimental compared with the control intervention) and dose-matched control groups (trials with equal training duration in the experimental and control intervention).

SEARCH METHODS

We searched the Cochrane Stroke Group Trials Register, CENTRAL, MEDLINE, Embase, and 5 other databases to October 25, 2021.

SELECTION CRITERIA

We selected randomized controlled trials comparing trunk training versus nondose-matched or dose-matched control therapy including adults (18 years or older) with either ischemic or hemorrhagic stroke. Primary outcome measure was ADL and secondary outcomes included trunk function, arm-hand function and activity, standing balance, leg function, walking ability, and quality of life.

RESULTS

In total, we evaluated 17191 search results, and we included 68 trials with 2585 participants. For nondose-matched trials, we found that trunk training improved ADL (Figure [A]; standardized mean difference=0.96 [95% CI, 0.69–1.24]; $P<0.001$; 5 trials, 283 participants, very low-certainty evidence). There was also a positive effect in favor of training for trunk function (14 trials, 466 participants), arm-hand function (2 trials, 74 participants), arm-hand activity (1 trial, 30 participants), standing balance (11 trials, 410 participants), leg function (1 trial, 64 participants), walking ability (11 trials, 383 participants), and quality of life (2 trials, 108 participants).

When pooling dose-matched trials, we found no effect of trunk training on ADL (Figure [B]; standardized mean difference=0.10 [95% CI, −0.17 to 0.37]; $P=0.48$; 9 trials; 229 participants; very low-certainty evidence). Trunk training ameliorated trunk function (36 trials, 1217 participants), standing balance (22 trials, 917 participants), leg function (4 trials, 254 participants), walking ability (19 trials, 535 participants), and quality of life (2 trials, 111 participants).

DISCUSSION

This review[1] suggests that trunk training improves basic ADL, trunk function, standing balance, walking ability, upper and lower limb function, and quality of life. Notably for the primary outcome, we found a beneficial effect in nondose-matched trials which was absent in dose-matched trials. The role of nondose versus dose-matched in the design of clinical trials is an important finding, which deserves further study and consideration in systematic reviews and meta-analyses. Overall, the certainty of evidence was low to very low, mainly due to

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methodological limitations of studies and small sample sizes. This field would certainly benefit from a high-quality phase III randomized controlled trial with ADL as primary outcome measure, including a follow-up measurement and reporting adverse events. Several trunk training approaches were identified. Trunk training on an unstable surface provided positive outcomes for ADL, trunk function, standing balance, and walking ability. The results of this review support the regular inclusion of trunk training as part of rehabilitation in clinical practice when training people with stroke in both the sub-acute and chronic phase after stroke.

ARTICLE INFORMATION

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Disclosures

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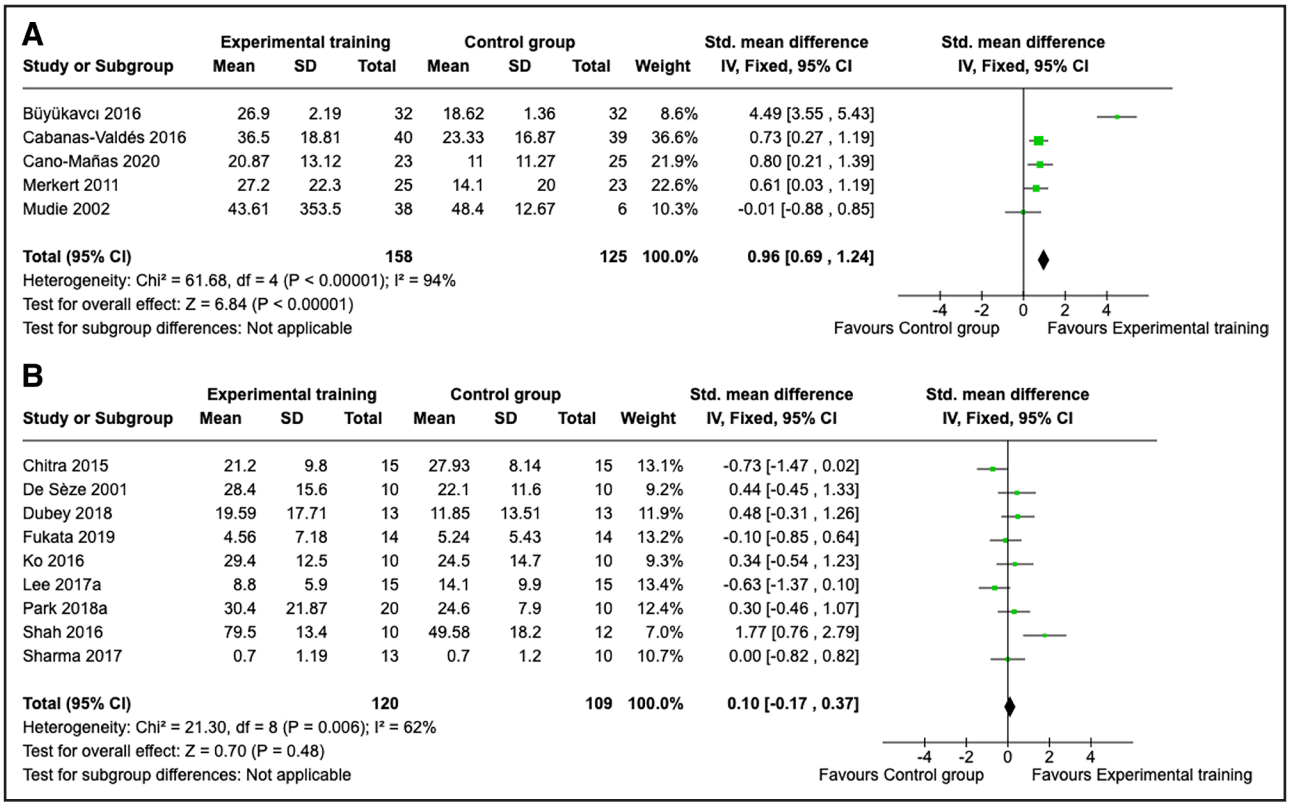

Figure. Effect of trunk training after stroke on activities of daily living.
Results and pooled analysis for nondose-matched comparisons (**A**) and dose-matched comparisons (**B**). df indicates degrees of freedom; and I^2, heterogeneity; and IV, inverse variance.