

## Circuit Class Therapy for Improving Mobility After Stroke

Coralie English, PhD; Susan Hillier, PhD; Elizabeth Lynch, PhD

Circuit class therapy (CCT) offers a rehabilitation group forum for people with stroke where they can practice tasks under supervision. The format offers increased practice time without increasing staff.

### Objectives

The objective of this review was to examine the effectiveness and safety of CCT on mobility in adults with stroke.

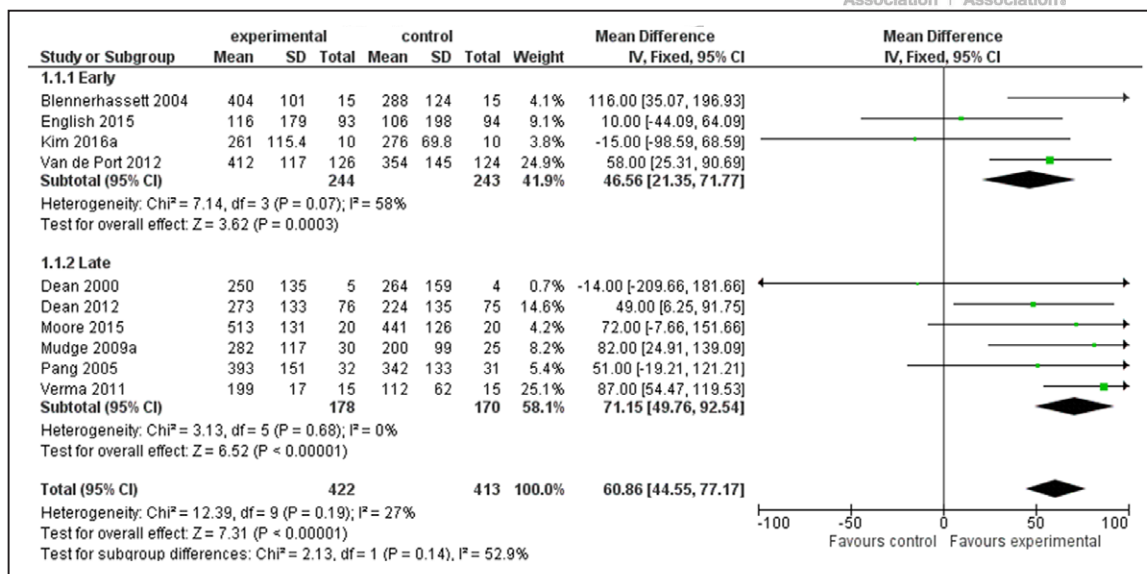
### Methods

We searched all relevant databases, trial registries, and unpublished literature from inception to January 2017. We included randomized controlled trials with participants >18 years old and with a diagnosis of stroke, of any severity, latency, and setting, and who received CCT. Our comparisons could be usual care, sham, or another form of therapy. Our primary outcome was an activity-related test of mobility: gait endurance. Secondary outcomes included other activity measures of mobility, balance, or activities of daily living, as well as impairment measures or measures of participation. We also considered length of hospital stay (for inpatient cohorts), self-reported satisfaction, locus of control, economic indicators, and adverse events (including falls and mortality).

Trial inclusion, data extraction, risk of bias, and meta-analysis were all conducted by at least 2 reviewers, according to Cochrane standards.

### Main Results

We included 17 RCTs involving 1297 stroke survivors, either living in the community and receiving outpatient rehabilitation or were still inpatients receiving within-hospital rehabilitation: most were functionally at the level of walking 10 m or more. We could combine 10 studies (835 participants) with a common measure of walking capacity (distance walked in 6 minutes) with a fixed-effects meta-analysis showing that CCT was superior to the comparison intervention (mean difference, 60.86 m; 95% confidence intervals, 44.5–77.17; Figure). Similarly gait speed was significantly improved in favor of CCT (mean difference, 0.15 m; 95% confidence intervals, 0.10–0.19). Both of these effects are considered clinically meaningful. Two further mobility measures demonstrated superior effects from CCT for other aspects of walking and balance (Timed Up and Go Test and Activities of Balance Confidence); however, two others failed to show superior effects (Berg Balance Scale and the Step Test). Reduced length of stay



**Figure.** Forest plot comparing changes in gait endurance (6-min walk test) from circuit class therapy (CCT) versus control interventions for stroke survivors: early (within 12 months of stroke) and late (≥12 months after stroke). CI indicates confidence interval.

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(for inpatient studies) and increased adverse events (falls) showed a nonsignificant effect of CCT compared with other interventions.

Exploring factors associated with the studies showed that interestingly, the time post stroke did not influence the results—stroke survivors >12 months after stroke were as likely to gain clinically significant benefits from CCT as those who were <12 months. Quality or size of trial did not influence the positive findings. Heterogeneity was generally low, and risk of bias was variable across the studies.

### Conclusions

Applying GRADE (Grading of Recommendations Assessment, Development and Evaluation) to interpret the strength of our findings, we ascribed a moderate confidence in these results showing that CCT is effective in improving the mobility of people after stroke—they may be able to walk further, faster, and with more confidence and independence.

### Implications for Clinical Practice and Future Research

People with stroke can gain clinically meaningful benefits from CCT, even after 12 months poststroke. Further

high-quality research is required to monitor the potential for increased risk of falls, the possibility that length of hospital stay can be reduced and the potential for cost benefits.

### Acknowledgments

This article is based on a Cochrane review published in the Cochrane Library 2017, issue 6 (see [www.thecochranelibrary.com](http://www.thecochranelibrary.com) for information). Cochrane reviews are regularly updated as new evidence emerges and in response to feedback, and the Cochrane Library should be consulted for the most recent version of the review.<sup>1</sup>

### Disclosures

Drs English and Hillier were trialists in one included study. All review activities for this trial were performed by other reviewers/assistants. Dr Lynch reports no conflicts.

### Reference

1. English C, Hillier SL, Lynch EA. Circuit class therapy for improving mobility after stroke (Review: updated from 2010). *Cochrane Database Syst Rev* 2017;6:CD007513. doi: 10.1002/14651858.CD007513.

KEY WORDS: circuit class therapy ■ length of stay ■ rehabilitation ■ stroke ■ task-specific therapy



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