

Updated Systematic Review: Effectiveness of CIMT and mCIMT in Patients With Upper-Extremity Dysfunction After Stroke

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Introduction

This systematic review updated findings from a review by Shi and colleagues (2011) comparing the effectiveness of traditional constraint-induced movement therapy (CIMT) and modified CIMT (mCIMT) for improving post-stroke motor dysfunction in the upper extremity. The current systematic review included articles published between 2011 and July 2023 and identified changes in health care practice and novel variations of CIMT.

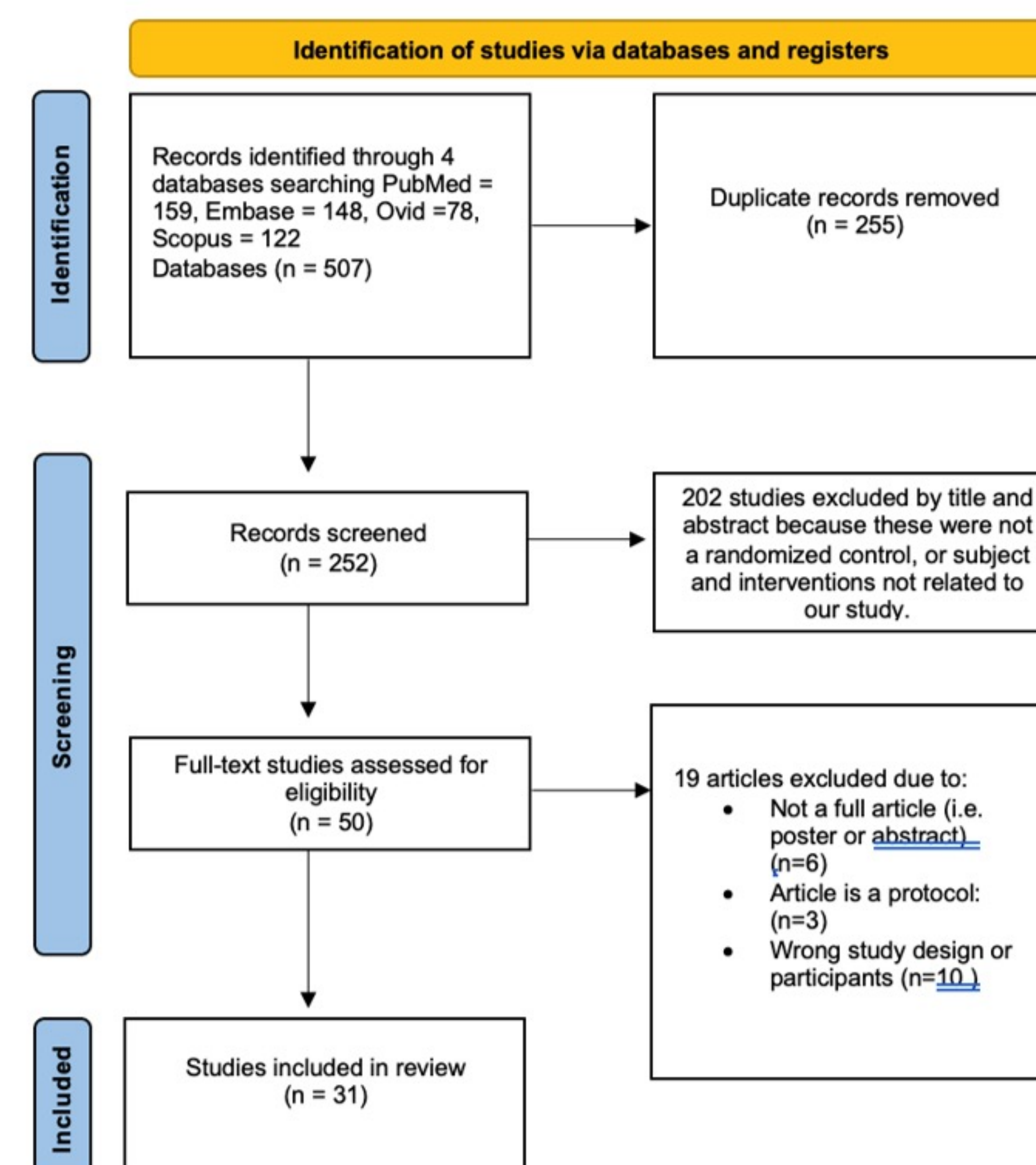
Methods

The systematic review used a series of strategic search terms, inclusion and exclusion criteria, and an extensive screening process. A screening program, Covidence, and full-text screening by all six authors resulted in 31 eligible articles, which underwent methodological quality appraisal. (See the Preferred Reporting Items for Systematic Review and Meta-Analysis flow diagram at right.) Each article was evaluated for methodological quality using a table format adapted from Sterne et al., 2019.

Results

All studies included in the review (n = 31) had a level 1B study design.

- 14 (48.39%) had a low risk of bias
- 14 (48.39%) had a moderate risk of bias
- One (3.22%) had a high risk of bias
- Seven evaluated the effectiveness of traditional CIMT



Results (continued)

- 24 articles evaluated the effectiveness of mCIMT
- No studies specifically compared traditional CIMT to mCIMT
- An improvement in various motor function measurements and reukts from self-report questionnaires was observed

Discussion

Traditional CIMT (traditional CIMT vs traditional CIMT; traditional CIMT vs nontraditional therapies)

- Earlier intervention may produce better outcomes.
- Improvement related to characteristics of treatment
- Intensity, not constraint portion
- CIMT was not superior to some therapies (e.g., robotic therapy).
- Future research should analyze the superiority of CIMT compared to other therapies.

mCIMT

- The high dosage and intensity of CIMT may exclude a large population of stroke patients, and many studies included in this review used mCIMT.
- Group mCIMT was more effective than one-on-one delivery.
- mCIMT combined with other therapies appears to be the most clinically effective option. However, mCIMT treatment longer than 3.5 hours often led to fatigue that may have offset possible improvements.

Conclusions

Various forms of CIMT and mCIMT are effective treatments for upper extremity dysfunction following a stroke and help individuals increase engagement in daily occupations.

References

- Shi, Y. X., Tian, J. H., Yang, K. H., & Zhao, Y. (2011). Modified constraint-induced movement therapy versus traditional rehabilitation in patients with upper-extremity dysfunction after stroke: a systematic review and meta-analysis. *Archives of Physical Medicine and Rehabilitation*, 92(6), 972–982.
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