NeuroRehabilitation 47 (2020) 355–357
DOI:10.3233/NRE-209007
IOS Press

Cochrane Corner

Can cognitive rehabilitation improve attention deficits following stroke? - A Cochrane Review summary with commentary

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Abstract.
BACKGROUND: Disorders of attention are common following stroke, reducing quality of life and limiting rehabilitation.
OBJECTIVE: To determine if cognitive rehabilitation can improve attention and functional outcomes in stroke survivors with attentional disorders.
METHODS: A summary of the Cochrane Review update by Loetscher et al. 2019, with comments.
RESULTS: Six studies with 223 participants were included: this was the same as the previous review (in 2013). Evidence quality was very low to moderate, and results suggest a beneficial impact on divided attention immediately after training, but no effect on any other outcome either immediately or at follow up timepoints.
CONCLUSIONS: The low methodological quality and small number of studies means current evidence provides limited clinical guidance. Clearly more research is needed to inform care: researchers must improve the methodological quality of studies, plus fully consider and report the aspects of attention and function addressed in their work.

Keywords: Stroke, attention, intervention, cognitive rehabilitation, review

The aim of this commentary is to discuss in a rehabilitation perspective the published Cochrane Review "Cognitive rehabilitation for attention deficits following stroke" (Loetscher, Potter, Wong, & das Nair, 2019) by Loetscher T, Potter KJ, Wong D, das Nair R.[1], under the direct supervision of the Cochrane Stroke Group. This Cochrane Corner is produced in agreement with *NeuroRehabilitation* by Cochrane Rehabilitation.

1. Background

Disorders of attention persist in up to 50% of stroke survivors and can reduce functional ability and quality of life. The ability to focus attention, to divide it across several tasks, to maintain it over time or to

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[1]This summary is based on a Cochrane Review previously published in the Cochrane Database of Systematic Reviews 2019, Issue 11. Art. No.: CD002842, DOI: 10.1002/14651858.CD002842.pub3 (see www.cochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and Cochrane Database of Systematic Reviews should be consulted for the most recent version of the review.

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be alert and responsive may be affected. Stroke survivors affected can present with poor concentration, distractibility and fatiguability. Importantly, reduced attention may impair higher cognitive function, and limit an individual's ability to engage with and benefit from rehabilitation for other post-stroke impairments.

Cognitive rehabilitation for attention disorders can use one of two approaches: training to restore the impaired attentional abilities or teaching new strategies to compensate for the impairment. Their effectiveness has not yet been clearly established.

2. Objective

The aim of this Cochrane Review was to assess the effects of cognitive rehabilitation on attention and functional ability in stroke survivors with attentional impairments.

3. What was studied and methods

The population addressed was individuals with attentional impairments following stroke. To be included, studies had to identify attentional deficits by use of attention-specific tests or by self-report. The interventions studied were any form of cognitive rehabilitation expressly addressing attentional abilities that consisted of more than one treatment session. Interventions such as meditation, tai-chi, yoga, listening to music, and pharmacological treatments were not considered in this review. The outcomes studied were global attention (primary outcome), attentional domains (alertness/arousal, and selective, sustained or divided attention), functional ability in activities of daily living, mood and quality of life. This Cochrane Review was an update of a review originated in 2000 and updated in 2013.

4. Search methodology and up-to-dateness of the Cochrane Review

The extensive search included MEDLINE, Embase, PsycINFO, CINAHL and PsycBITE up to February 2019.

5. Results

The review included six studies (with 223 participants) that compared treatment to control. It did not add any new studies compared to the 2013 update. The intervention approaches were restorative computer-based training (4 studies), compensatory interventions teaching time pressure management (1 study) and combined restorative and compensatory interventions (1 study).

The review suggests that:

- Cognitive rehabilitation does not have an effect on general attentional abilities, both immediately after treatment cessation (standardised mean difference (SMD) 0.53, 95% confidence interval (CI) –0.03 to 1.08; $P = 0.06$) and on follow-up at 3–6 months (SMD 0.16, 95% CI –0.23 to 0.56; $P = 0.41$), based on very low quality evidence.
- Cognitive rehabilitation improved the ability to divide attention (SMD 0.67, 95% CI 0.35 to 0.98; $P < 0.0001$) but this was only apparent immediately after treatment, and the effect was not sustained (SMD 0.36, 95% CI –0.04 to 0.76; $P = 0.08$). However, there was no effect on other attentional skills including selective attention, sustained attention and alertness. This methodological quality of the evidence ranged from very low to moderate.
- Cognitive rehabilitation had no effect on wider measures of post-stroke outcome, comprising functional ability in activities of daily living, mood or quality of life, based on very low to low quality evidence.

6. Conclusions

The authors found very limited evidence relating to the effectiveness of cognitive rehabilitation for attention deficits after stroke. They noted poor methodological quality, and recommended future trials to be adequately powered, including measures of functional ability and fully report their methods.

Implications for practice in neurorehabilitation: this review provides little guidance for stroke rehabilitation clinicians in relation to the effectiveness of cognitive rehabilitation for attention deficits, nor the relative value of restorative or compensatory approaches. In the absence of a strong evidence base, clinicians must choose therapy based on their training, incorporating non-RCT evidence, and with frequent assessment of effectiveness for individual patients. The limited, poor quality nature of the evidence means that it is very likely that review conclusions will alter with the inclusion of further studies.

Finding effective treatments for attention, and other cognitive impairments, has been an identified priority for stroke survivors and clinicians since 2012 (Pollock, George, Fenton, & Firkins, 2012), so it is disappointing to find no new RCTs in this update. Future research in this area is clearly needed. In order to maximally inform the development and evaluation of interventions, researchers should clearly report the attentional deficits of their population, the skills targeted by an intervention, and the attentional outcomes measured. To inform clinical practice, they must also measure functional outcomes, to identify the daily-life impact for stroke survivors.

Acknowledgments

The author thanks Cochrane Rehabilitation and the Cochrane Stroke Group for reviewing the contents of the Cochrane Corner.

Conflict of interest

The author declares no conflicts of interest.

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