

# 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 similar to 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 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.<sup>1</sup>, under the direct supervision of the Cochrane Stroke Group. This Cochrane Corner is produced in agreement with *NeuroRehabilitation* by Cochrane Rehabilitation.

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## 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

<sup>1</sup>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](http://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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34 it across several tasks, to maintain it over time or to  
35 be alert and responsive may be affected. Stroke sur-  
36 vivors affected can present with poor concentration,  
37 distractibility and fatigability. Importantly, reduced  
38 attention may impair higher cognitive function, and  
39 limit an individual's ability to engage with and benefit  
40 from rehabilitation for other post-stroke impairments.

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

### 46 **Cognitive rehabilitation for attention deficits fol- 47 lowing stroke**

48 (Tobias Loetscher, Kristy-Jane Potter, Dana Wong,  
49 Roshan das Nair, 2019)

## 50 **2. Objective**

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

## 55 **3. What was studied and methods**

56 The population addressed was individuals with  
57 attentional impairments following stroke. To be  
58 included, studies had to identify attentional deficits  
59 by use of attention-specific tests or by self-report.  
60 The interventions studied were any form of cognitive  
61 rehabilitation expressly addressing attentional abili-  
62 ties that consisted of more than one treatment session.  
63 Interventions such as meditation, tai-chi, yoga, listen-  
64 ing to music, and pharmacological treatments were  
65 not considered in this review. The outcomes studied  
66 were global attention (primary outcome), attentional  
67 domains (alertness/arousal, and selective, sustained  
68 and divided attention), functional ability in activi-  
69 ties of daily living, mood and quality of life. This  
70 Cochrane review was an update of a review originated  
71 in 2000 and updated in 2013.

## 72 **4. Search methodology and up-to-dateness of 73 the Cochrane Review**

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

## 77 **5. Results**

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

86 The review suggests that:

- 87 • Cognitive rehabilitation does not have an effect  
88 on general attentional abilities, both imme-  
89 diately after treatment cessation (standardised  
90 mean difference (SMD) 0.53, 95% confidence  
91 interval (CI)  $-0.03$  to  $1.08$ ;  $P=0.06$ ) and on  
92 follow-up at 3–6 months (SMD 0.16, 95% CI  
93  $-0.23$  to  $0.56$ ;  $P=0.41$ ), based on very low qual-  
94 ity evidence.
- 95 • Cognitive rehabilitation improved the ability to  
96 divide attention (SMD 0.67, 95% CI 0.35 to 0.98;  
97  $P<0.0001$ ) but this was only apparent imme-  
98 diately after treatment, and the effect was not  
99 sustained (SMD 0.36, 95% CI  $-0.04$  to  $0.76$ ;  
100  $P=0.08$ ). However, there was no effect on other  
101 attentional skills including selective attention,  
102 sustained attention and alertness. This method-  
103 ological quality of the evidence ranged from very  
104 low to moderate.
- 105 • Cognitive rehabilitation had no effect on wider  
106 measures of post-stroke outcome, comprising  
107 functional ability in activities of daily living,  
108 mood or quality of life, based on very low to  
109 low quality evidence.

## 110 **6. Conclusions:**

111 The authors found very limited evidence relat-  
112 ing to the effectiveness of cognitive rehabilitation  
113 for attention deficits after stroke. They noted poor  
114 methodological quality, and recommended future tri-  
115 als to be adequately powered, including measures of  
116 functional ability and fully report their methods.

117 Implications for practice in neurorehabilitation:

118 This review provides little guidance for stroke  
119 rehabilitation clinicians in relation to the effective-  
120 ness of cognitive rehabilitation for attention deficits,  
121 nor the relative value of restorative or compensatory  
122 approaches. In the absence of a strong evidence  
123 base, clinicians must choose therapy based on their

124 training, incorporating non-RCT evidence, and with  
125 frequent assessment of effectiveness for individual  
126 patients. The limited, poor quality nature of the  
127 evidence means that it is very likely that review  
128 conclusions will alter with the inclusion of further  
129 studies.

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

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## Conflict of interest

The author declares no conflicts of interest.

## References

- Loetscher, T., Potter, K. J., Wong, D., & das Nair, R. (2019).  
Cognitive rehabilitation for attention deficits following stroke.  
*Cochrane Database of Systematic Reviews*, (11), Art. No.:  
CD002842. DOI: 10.1002/14651858.CD002842
- Pollock, A., George, B. S., Fenton, M., & Firkins, L. (2012). Top  
ten research priorities relating to life after stroke. *The Lancet  
Neurology*, 11(3), 209.

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