

## Cogmed

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### Statement of the Problem

Many students have difficulty in maintaining information in working memory (WM) long enough and with adequate clarity to make productive use of it. They may also struggle to sustain attention to tasks sufficient to complete them readily.

### Proposed Solution/ Intervention

Cogmed is a computer-based WM training program to stimulate cognitive change, especially addressing working memory and attention. The program involves 8 different tasks designed to be enjoyable that train and test individuals' (age 7 and above) working memory. The program incorporates incremental increases in item difficulty according to the level of success. It usually involves 25 daily sessions of about 30 minutes carried out over 5 to 7 weeks. Training via computer offers an attractive non-intrusive vehicle for those in need.

### The theoretical rationale – how does it work?

It is recognised that there is an established relationship between WM and higher order cognition. WM is seen as a pre-condition. Thus, the notion that training on WM might influence higher cognition is worthy of investigation. The Cogmed approach is predicated upon practice at increasingly challenging WM tasks causing generalized improvements in concentration, endurance, impulse control, and emotional regulation that will be evident also on other tasks and in other settings. It is hypothesised that such practice takes advantage of the brain's neuroplasticity, such that the stimulation caused by the repeated practice produces beneficial changes in the brain's neural structure and function.

### What does the research say? What is the evidence for its efficacy?

The working memory training programs have been shown to improve working memory on tasks similar to those taught, but the benefits have not been demonstrated to generalise to academic learning, or to be maintained over long periods. Even positive results have been inconsistent within and across studies. Unfortunately, the quality of research has been generally low to date, and the few studies with positive findings have been criticized on a number of grounds, including measurement instrument difficulties, a lack of control groups (especially active controls), small sample sizes, and insufficient studies employing random assignment. There is also a concern that the proposed mechanism for producing improvement has not been clearly demonstrated to be the cause of any improvement. Alternative explanations could include motivational change through increased interest and attention to one's performance. There is a significant amount of continuing research, some of it focused upon specific groups, such as those with ADHD, learning disabilities, cochlear implants, those born pre-term, and those with brain injury or dementia.

### Conclusions

Not enough supportive research on this intervention currently meets the scientific standards that would justify claims of effectiveness. More definitive conclusions should be reachable in the next few years as study quality and quantity improves.

**The MUSEC verdict**  
Not recommended

**Key references may be found at:**  
[http://www.musec.mq.edu.au/co\\_brief.aspx](http://www.musec.mq.edu.au/co_brief.aspx)

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