Cogmed Working Memory Training

Overview

What is Cogmed Working Memory Training?

It is a computer-based training program that was developed by Dr. Torkel Klingberg and colleagues at the Karolinska Institute in Sweden. It has been extensively studied and published in numerous peer-reviewed journals, including *Science* and *Nature Neuroscience*.

Cogmed training is designed to expand working memory capacity by taking advantage of the brain's ability to repair, rebuild, and strengthen cells and systems when a specific skill is trained. The program uses exercises designed to challenge and expand different types of working memory, customized for individual needs using a complex ongoing-adjustment algorithm designed to keep the trainee working at the edge of his or her ability.

Efficacy has been independently verified under a variety of conditions by researchers at Duke University, Harvard, University of York, New York University, and the University of Notre Dame.

Further studies are underway at the Karolinska Institute, Temple University, Ohio State, Indiana University School of Medicine, and the Faculty of Biology and Medicine of Lausanne, Switzerland.

Who is Cogmed Working Memory Training for?

It is for adults and children whose deficits in working memory are having a negative impact on their lives. This is most likely true for people with:

-**ADHD** (working memory deficits are often a core symptom in ADHD)

-**Age-related decline in working memory**

-**Brain injury or stroke** (often affects working memory)

-**Cancer** (loss of working memory is often seen among cancer survivors)

-**Primary deficits in working memory** (often seen with learning disabilities)

-**Schoolchildren with low working memory** (regardless of cause)

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There are also studies showing that people without working memory deficits can improve their working memory.

- **Young adults *with normal working memory***
- **Preschool students *with normal working memory*** (this group showed improvement on inhibition testing as well)

Cogmed Working Memory Training has been shown to result in statistically significant improvements in working memory in each of these groups.

Only people who are strongly motivated to increase their working memory should participate. **Cogmed** training requires a significant commitment in time, energy and money. Each trial of each exercise is set by the system to challenge the person's working memory. The program will not be effective if the person performing the exercise is not committed to doing his or her best.

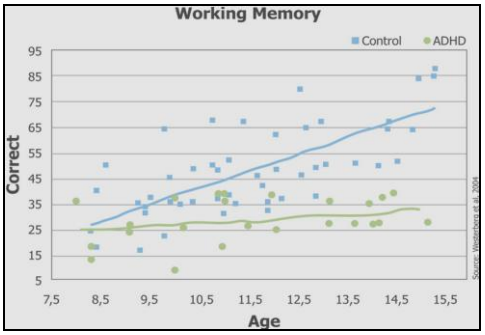
What is working memory? – Condensed from Klingberg's "Training of Working Memory" (April 2008)

"Working memory is the ability to keep information online for a brief period of time, which is essential for many complex cognitive tasks such as reading comprehension, problem solving and control of attention…

"Verbal working memory is necessary for comprehending long sentences; and… predicts performance on reading comprehension in the scholastic aptitude test (SAT). Working memory is also important for control of attention, and to maintain task-relevant information during problem solving… *Working memory has been suggested to be the single most important factor in determining general intellectual ability*.

"There is a strong link between working memory capacity and the ability to resist distractions and irrelevant information… Low working memory is related to being "off-task" …daydreaming, (and) forgetting what to do in the few seconds of walking from one room to the another…"

Working Memory Deficits and ADHD



ADHD is characterized by a failure to obtain normal age-related gains in working memory. This graph shows the growing discrepancy between students with ADHD and their peers. This failure to achieve maturational gains is thought to be one of the major reasons ADHD students have progressively greater difficulty compensating for the disorder.

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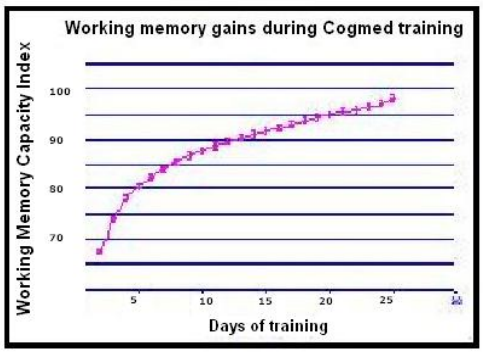
Cogmed Working Memory Training has repeatedly been shown to result in statistically significant improvements in working memory with subsequent gains in other executive functions, behavioral measures and academic performance.



AVERAGE IMPROVEMENT IN WORKING MEMORY FOR 450 CHILDREN ACROSS 25 DAYS OF COGMED WORKING MEMORY TRAINING

2) Schoolchildren with poor working memory

Children with poor working memory commonly struggle to keep up with the academic challenges of school. Many of these children have diagnosed learning disabilities. A recent study showed that children who tested in the bottom 15% on working memory assessments were able to largely normalize their working memory capacity after five weeks of Cogmed training. Six months later, these students were showing significant improvements in math. Improving working memory provides the foundation that is necessary for the acquisition of more complex information and skills.

3) Normal Aging

For adults, normal aging is associated with a 5 to 10% decline in working memory every decade. Cogmed training has been shown to improve working memory and to result in improved self-reported cognitive functioning.

CHANGES IN WORKING MEMORY CAPACITY OVER A LIFETIME.

Cogmed training has been shown to improve working memory in older adults ages 60 to 70 years, and decreased self-reported cognitive problems.

4) Stroke

Significant decreases in working memory are common following stroke and are correlated not only with memory and attention problems, but have been shown to predict the extent of recovery of motor function. **Cogmed** training has been show to significantly increase working memory and attention, and to decrease cognitive problems.

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Is Cogmed Working Memory Training appropriate for children?

Even preschool children may benefit from increasing their working memory via **Cogmed** training. For children, **Cogmed** training requires a family effort. Children, especially children with ADHD, must be supervised by adults committed to the program and willing to establish a detailed short-term and long-term reward program to maintain motivation.

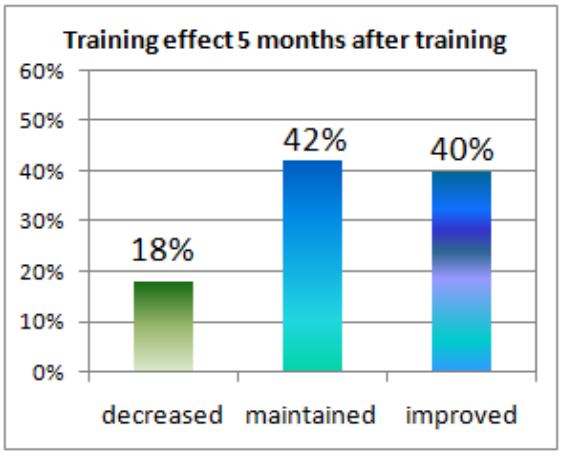
8 out of 10 children show measurable improvement

- Improved ability to sustain attention
- Improved impulse control
- Better complex reasoning skills
- Better academic performance

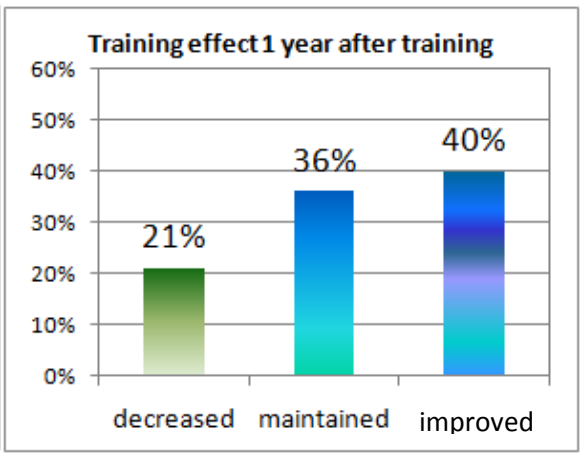
How do I know the benefits will last?

A one-year follow-up analysis of trainees confirms that results are well maintained.

Of the 80% who have benefited from training:



After 5 months, 82% reported maintained or improved benefits



After 1 year, 76% reported maintained or improved benefits

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How much does Cogmed Working Memory Training cost?

Individual adults or children - $1750

- $250 will be refunded to trainees (or their parents) who
  - Complete all 25 sessions of the program within six weeks of the first training day
  - Complete both the before and after on-line questionnaires
  - Schedule and attend the wrap-up session three to four weeks after the last training day

- **Cogmed** training is not covered by insurance

Cogmed Working Memory Training is not intended to be a substitute for a health care provider's consultation or a substitute for medication that a doctor may have prescribed. Results may vary. Effects or results in the individual can never be guaranteed.

Where can I learn more about working memory and Cogmed Working Memory Training?

www.cogmed.com References specific to Cogmed Working Memory Training can be found at this site. Full copies of many of the references are available on request.

www.aboutworkingmemory.com

http://research.aboutkidshealth.ca/teachadhd/abc/chapter3

www.chapelhillpa.com

REFERENCES

Rather than provide a list of article titles and citations that contain little real information, CHPA refers the interested reader to http://www.chapelhillpa.com/Cogmed.htm where the full abstracts for these and other relevant articles can be reviewed.

For more information, or to schedule an appointment to begin training

Contact Dr. Tracy Ware, at voicemail 919-338-2940

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