

## CogniFit Program Improves Cognitive Abilities Among Older Adults

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### Background >

Taking part in certain leisure activities such as reading, playing board games and playing musical instruments is associated with slower rates of cognitive decline, especially in terms of episodic memory (Verghese et al., 2003).

Recent research indicates that not only can regularly scheduled cognitive exercise improve cognitive functioning, but it also reduces the risk of Alzheimer's disease (Wilson et al., 2002).

The benefits of cognitive stimulation can come from either explicit mental stimulation or nonspecific mental stimulation (Ball et al., 2002, Moore et al., 2001).

### Aim >

To examine the effectiveness of cognitive stimulation among older adults. Specifically, this study sought to answer the question of what is more effective - individualized cognitive training or general stimulation using computer games?





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### Method >

750 individuals, all of whom had volunteered to be assessed as to their risk of developing Alzheimer's, stroke, or falls in the future, were, a year later, offered the possibility to enroll in the cognitive training study. 155 agreed and were found to be eligible. Among those, 34 (21.9%) dropped out of the study. The remaining 121 subjects (mean age = 67; range 50-81 years) completed the study.

Subjects were allocated randomly into a training group (N=66) and an active comparator group (N=55). Both groups took the NexAde assessment at the beginning and at the end of the study. The training group was given CogniFit, and trained for 24 sessions (a session of 20 min. every 2 to 3 days) for approximately 3 months.

The control group was given a CD with selected computer games, and played the games at approximately the same frequency and duration as the training group.

**The NexAde Assessment** is software from Neurological Examination Technologies Ltd. for early detection of Alzheimer's disease. It is standardized and has validity and reliability (Korczyn & Aharonson, 2006). The following cognitive abilities are assessed by NexAde: Focused Attention, Sustained Attention, Memory Recognition, Memory Recall, Visuo-Spatial Learning, Spatial Short Term Memory, Executive Functions and Mental Flexibility.

**The CogniFit Program** is a computerized personal "mental gym," to improve cognitive abilities. Based on the results of an initial evaluation phase, the program builds a personalized training program. The baseline evaluation consists of 17 tasks, similar to those used in standard neurocognitive tests. Each individual trains three sessions a week for a period of 20 minutes each time.

The training program varies from one individual to the other in the selection of tasks, the frequency with which each training task is used, and in the level of difficulty determined by the results of the baseline evaluation. As the individual trains and achieves higher scores, the tasks become harder.

**The CD with Computer Games** included 12 popular computer games (Mathematical triangle, Labyrinth, X-O, Tangram, Tennis, Memory - Simon, Memory - Pairs, Numbers, Tetris, Puzzles, Target practice, Snake) which were selected to constitute the placebo intervention.

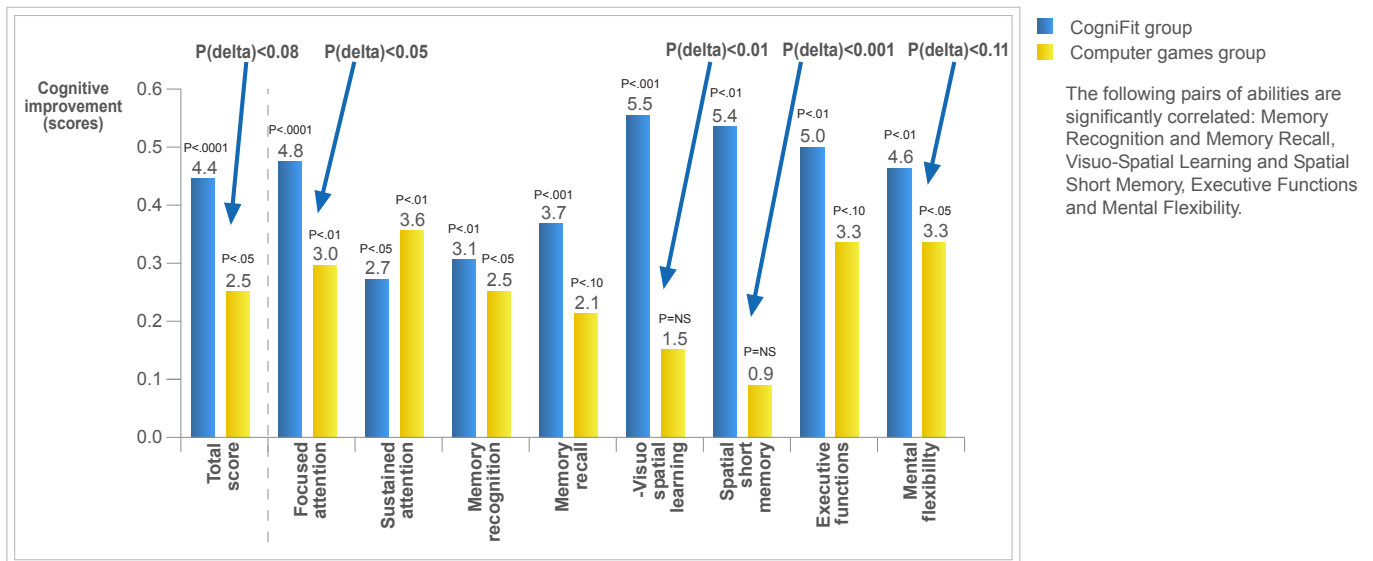
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### Results >

A comparison of the NexAde pre-test and post-test scores reveals that both groups improved on most measures. The CogniFit group improved significantly on all NexAde cognitive variables. The CogniFit group showed significantly more improvement than the computer games group on 4 NexAde variables (Focused Attention, Visuo-spatial Learning, Spatial Short Term Memory, Mental Flexibility).

There is a trend toward significance on the total score ( $p < 0.08$ ).

Regression analysis for baseline and post-test scores for both groups shows that when the initial score was lower, the gain from CogniFit over computer games was higher. The difference was more dramatic for the low baseline scores.



### Conclusion >

People who played computer games showed an improvement in performance, but for people who used CogniFit, the improvement was significantly greater. Thus, it appears that a systematic training program which adjusts the training regimen to the individual's baseline capabilities might be more effective than a wide selection of games.

Cognitive training was most effective among subjects who started with low cognitive abilities, thus suggesting that cognitive training may be indicated for individuals who experience cognitive decline.