

## Improving Cognitive Performance in Elderly Subjects Using Computerized Cognitive Training

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### Background >

Using the NexAde assessment with elderly subjects, it has been shown that computerized training with CogniFit is more effective than playing widely available standard computer games. Cognitive gains were observed in attention, memory, executive functions and mental flexibility for subjects who trained with CogniFit as well as for those who played the computer games.

However, cognitive gains from training with CogniFit were generally significantly higher than those obtained from playing the computer games.

### Aim >

The study sought to demonstrate, in the same subjects, additional training effects using the validated Neuropsychological Examination - CogniFit (NEM) (Haimov, Hanuka & Horowitz, 2008).



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### Method >

155 volunteers were randomly assigned to practice at home (3 months, 3 times a week for 20 minutes each session), with CogniFit or with widely available computer games. Cognitive abilities were assessed at baseline and again three months later on the NEM. Linear models were used to evaluate the differences in NEM scores between and within groups.

The NEM Baseline Evaluation consists of 17 tasks, similar to those used in standard neurocognitive tests.

The CogniFit Program builds a 24- session personalized training regimen. Each individual then 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 is 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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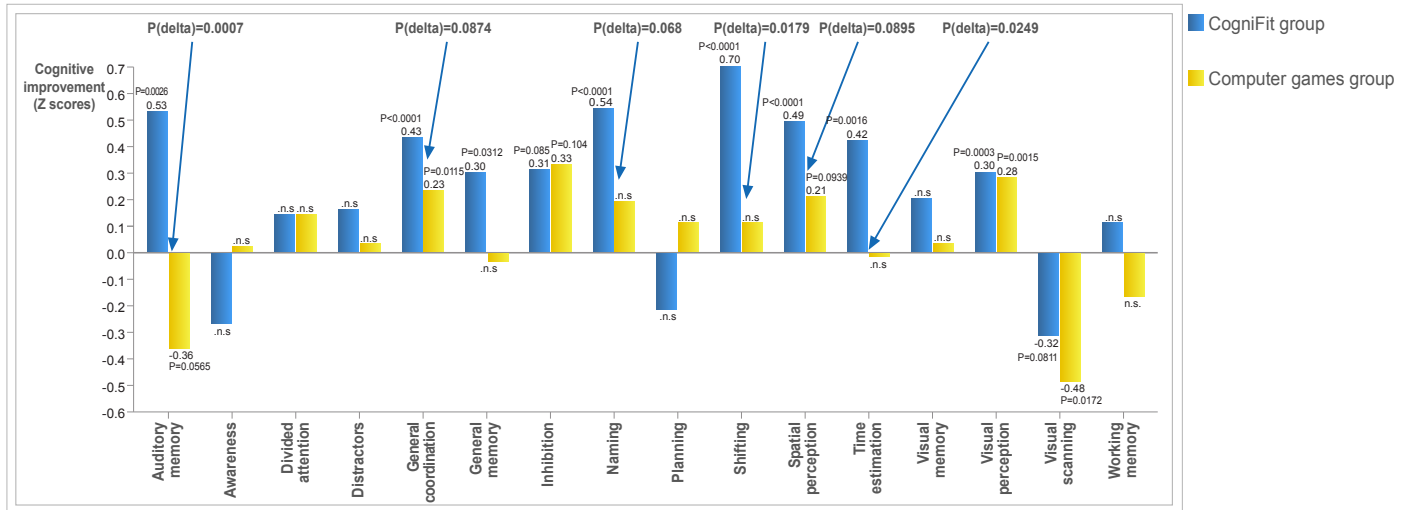
### Results >

66 participants (42% of total sample) progressed in their training but did not complete it and, therefore, did not take the final assessment. 89 people, 48 in the CogniFit group and 41 in the computer games group, completed the training and the two assessments.

The CogniFit program practice group improved significantly in 8 abilities (Auditory Short Term Memory, Eye-Hand Coordination, General Memory, Naming, Shifting, Spatial Perception Time Estimation, Visual Perception) while the computer games-group improved significantly in 2 abilities (General Eye-Hand Coordination, Visual Perception). Both groups decreased significantly in Visual Scanning.

The amount of change with the CogniFit program was significantly different from that of the games group in auditory memory, shifting and time estimation with an improvement in scores in the CogniFit group but no improvement in the games group.

Summary of the training effects for 16 cognitive abilities



### Conclusion >

These findings replicate those of the Nex-Ade assessment. In addition, despite the slowness of the training progress, the results show that systematic, individually tailored training can improve several important functions such as shifting, time estimation and naming which were not assessed in the first study and attest to the difficulty inherent in the measurement of the nature and scope of cognitive gains using one single tool.