Online Cognitive Training Improves Cognitive Performance

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ABSTRACT

Objective: Several studies of healthy individuals have found that training can improve cognitive performance in several areas of mental functioning. In this study, we analyzed the performance of 85 members of an online cognitive training website after 500 completed exercises.

Methods: HAPPYneuron (www.happy-neuron.com) supplied forty separate exercises focused on five cognitive areas: Memory, Attention, Language, Executive Function and Visuo-Spatial. Developed by a team of neurologists, neuropsychologists and cognitive psychologists, these exercises were designed for healthy subjects living independently without overt cognitive pathology. They were initially tested and validated by students at the Université Tous Ages in Lyon, France. The performances of 85 online users were analyzed from the 75th (T75) through the 500th (T500) completed exercise. For each exercise, various cognitive parameters, including response time and accuracy, contribute to summary scores for each of the five cognitive domains. In a pre-test, post-test design, results were analyzed by repeated measures ANOVA, using Fisher protected t-tests for post hoc evaluation of changes in the five domain summary scores. Analyses of covariance examined the contributions of age, gender and education.

Results: The average age of the participants is 53.5 years ± 14.8. Thirty-six percent (36%) of participants are over 60 and 14% are over 70. The sample is nearly evenly divided between women (58%) and men (42%). In terms of education, the group divided into three groups: those with a secondary school degree, those with an unfinished bachelor’s degree and those with a university degree (55%, 61% for men against 51% women). At T75, the score for Executive Function is significantly higher than the other 4 scores [F (4,420) = 3.44, p = 0.009, post hoc Fischer test]. At T500, performance shows considerable improvement from the 75th (T75) to the 500th (T500) exercise.

The Selection Process

All 85 users were chosen according to the following criteria:

- over age 20;
- training period longer than a month;
- at least 5% of exercises in each cognitive domain;
- no more than 50% of exercises in one domain.

In order to skip the stage of initial familiarization with the program, the performance of the 85 users were analyzed from the 75th (T75) to the 500th (T500) exercise.

Exercise examples

These are examples of games in the Happy Neuron program.