

G. Cavallo, M. Tombini, G. Di Pino, G. Curcio, P.M. Rossini, E. Guglielmelli. *Brain training softwares: is their efficacy real and influenced by age? A preliminary report. Gerontechnology 2008; 7(2):87.* Neurological diseases and disorders implying a decline of cognitive capabilities such as Alzheimer and other age-related pathologies didn't find a definite solution in pharmacological or rehabilitation treatments. Recently Kawashima et al.¹ proposed the Learning Therapy as a possible approach to the treatment of people with dementia. In particular Kawashima argued in a recent study that a treatment based on simple mathematical calculations and on reading aloud increases the FAB (Frontal Assessment Battery) score and keeps at a constant level the MMSE (Mini-Mental Status Examination) score which normally tends to decrease in elderly people. Other research²⁻⁵ showed the importance of memory trainings in treatments for dementia. Based on these evidences, a new frontier for the therapy of such neurological cognitive diseases is rapidly growing, the brain-training. It consists of the integration into technological platforms of devices allowing the patient to perform particular cognitive tasks based on the neuroscientific results described above. A brain-training device is composed by a software module with a series of game-like tests aiming at involving patient's memory, attention, orientation, recognition, language, calculation and executive functions. The system can track the patient's progresses and can compare them to the standard milestones of the rehabilitation process, quantifying the effectiveness of the treatment. Often the therapist personalizes the rehabilitation by choosing among different recovery profiles according to the patient's disease and initial conditions. This paper presents an ongoing study, still in its preliminary phase, aiming at a rigorous comparative evaluation of three different commercially available softwares for the training of mental cognitive capabilities. After an in-depth examination of the state of the art of commercially available systems and the related scientific literature, we chose three software products for our study: Captain's Log®, Nintendo Brain Training® and Brain-Train®. These software are specifically designed to train a wide range of abilities such as visual search, time estimation, naming, categorization, visual short term memory, auditory short term memory, location memory, spatial orientation, planning, ability to inhibit planned action, speed of reaction and hand-eye coordination. In general their aim is to speed up, improve accuracy and strengthen recording of brain functions. A total of 15 healthy elderly subjects between 55 and 75 years old are expected to be enrolled in the experimental protocol. They are divided in three homogeneous groups so that one single group is associated with one of the three selected systems. The duration of the study is one month, three sessions per week, each session composed by 45 minutes of training, 15 minutes break and then another 45 minutes of training. Executive, logical, linguistic and memory skills will be evaluated with a specific clinical evaluation adopted since long time in clinical practice in our institution. The efficacy of the brain training software will be estimated by comparing the outcomes of the clinical evaluation, submitted to the subjects before and after the training month. We report the experimental results of these trials and a comparative analysis with a parallel study consisting of a group of five young voluntary subjects between 20 and 35 years old to enlighten the influence of ageing in on the efficacy of the brain training software.

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