

Efficacy of a computerized cognitive training application on cognition and depressive symptomatology in a group of healthy older adults: A randomized controlled trial



José C. Millán-Calenti^{a,*}, Trinidad Lorenzo^b, Laura Núñez-Naveira^b, Ana Buján^a,
José L. Rodríguez-Villamil^a, Ana Maseda^a

^a Gerontology Research Group, Department of Medicine, Faculty of Health Sciences, Universidade da Coruña, Campus de A Coruña, E-15071 A Coruña, Spain

^b Research, Development and Innovation Department, Gerontological Complex La Milagrosa, Provincial Association of Pensioners and Retired People (UDP) from A Coruña, Avenida de Cadiz-5, E-15008 A Coruña, Spain

ARTICLE INFO

Article history:

Received 15 May 2015

Received in revised form 13 August 2015

Accepted 15 August 2015

Available online 20 August 2015

Keywords:

Randomized controlled trial

Older people

Computerized cognitive training

cognition

Depression

ABSTRACT

Objective: The purpose of this study was to evaluate the efficacy of a multimedia and interactive cognitive program on cognition and depressive symptomatology in healthy older adults.

Methods: Adults aged ≥ 65 years were randomly assigned to two groups: the experimental group in which the participants received a computerized cognitive training application; and the control group in which the participants received no intervention during the protocol. Performance on the mini-mental state examination (MMSE) and the short-form of the geriatric depression scale (GDS-SF) were analysed using a three-way repeated-measure analysis of variance.

Results: To determine cognition after the training, the cognitive program was used and the results were assessed using the MMSE, indicating that the significant time effects within the groups reflected the score for cognitive assessment that was significantly better after the intervention in the experimental group. No significant differences were observed with regard to the depressive symptomatology or between the groups according to sex or educational level on the two dimensions previously established (cognition and depressive symptomatology).

Conclusion: The development of technological applications for intervention in older adults is increasing. Based on the established objective, we can conclude that the computerized intervention may constitute a good alternative to enhance the cognitive status in older people.

© 2015 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

With ageing, there is an increased risk of experiencing a decline in cognitive abilities, which affects not only the functional dependence but also increases morbidity and mortality in the elderly population (Millán-Calenti et al., 2009). In recent years, non-pharmacological interventions for cognitive maintenance, such as stimulation or cognitive training programs, have proven to be an efficient tool as an isolated intervention and its association with several medications (Bergamaschi et al., 2013; Requena, Maestu, Campo, Fernández, & Ortiz, 2006). Because cognitive decline is evident in the group of older people, there is increased interest in the use of cognitive training programs for the geriatric population. Information and communication technologies (ICT)

may be used for cognitive training with older adults because the majority of the studies have proven that the elderly do not need to be technologically savvy to successfully complete or benefit from this training. Overall, the findings are comparable to or better than those reported in reviews of the more traditional, paper-and-pencil, cognitive training approaches, suggesting that computerized training is an effective and less labour-intensive alternative (Kueider, Parisi, Gross, & Rebok, 2012). Nevertheless, several studies have shown negative results regarding such therapies, thus concluding that learning to use a computer and browsing the Internet does not benefit healthy, community-dwelling older adults with respect to many domains of cognitive functions (Slegers, van Boxtel, & Jolles, 2009).

As a consequence of this important technological advance, several specialized memory aid software and commercial devices have been marketed (Caprani, Greaney, & Porter, 2006; Maseda, Millán-Calenti, Lorenzo-López, & Núñez-Naveira, 2013); however, few of these types of software and devices have been scientifically

* Corresponding author. Fax: +34 981167120.

E-mail address: jcmillan@udc.es (J.C. Millán-Calenti).

tested and validated (Butti, Buzzelli, Fiori, & Giaquinto, 1998; González-Abraldes et al., 2010; Shatil, Metzger, Horvitz, & Miller, 2010; Tarraga et al., 2006). Although several reviews have indicated that computerized cognitive training is modestly effective in improving cognitive performance in healthy older adults and that the efficacy varies across cognitive domains largely determined by design choices, additional research is required to enhance the efficacy of the intervention (Lampit, Hallock, & Valenzuela, 2014).

Computer-based cognitive stimulation appears to be a promising area of intervention and the limited data that are available support the hypothesis that computerized cognitive interventions can improve cognitive performance not only in older people with cognitive impairment but also in healthy older adults (Howren, Vander Weg, & Wolinsky, 2014). Cognitive exercise training in the later stage of life may also have a beneficial effect independent of earlier life experiences (Valenzuela & Sachdev, 2009). Other studies have demonstrated that cognitive stimulating activity might help to protect against cognitive decline in later life (La Rue, 2010; Maseda et al., 2013; Wilson, Scherr, Schneider, Tang, & Bennett, 2007). This protective effect is in the order of approximately 40–50%, even after simultaneous control for other risk factors, including educational level (Valenzuela, Breakspear, & Sachdev, 2007). Nevertheless, Lojo-Seoane, Facal, Guàrdia-Olmos and Juncos-Rabadán (2014) showed that variables related to the educational level (e.g., years of education, occupational attainment, reading habits and crystallized intelligence) and lifestyle are the most important factors related to cognitive reserve and a general improvement in the execution of cognitive performance tasks.

Cognitive training studies in healthy older adults or the elderly with early-stage dementia have found that those people with better cognitive function at baseline have better post-treatment

training effects (Lam, Lui, Luk, Chau, So, & Poon, 2010; Valenzuela & Sachdev, 2009). Several clinical trials have proposed that cognitive exercises might constitute an effective strategy for delaying the onset of cognitive impairment (Ball et al., 2002) or even improving the cognitive status in older adults with and without memory impairment (Maseda et al., 2013).

In addition to cognitive function, other areas of the person, such as the depressive symptomatology, could benefit from cognitive programs. The effectiveness of non-pharmacological intervention as an adjuvant therapy for this type of symptomatology in healthy older adults or elderly with early dementia has been under-explored thus far (Lam et al., 2010), although depression has proven to be a serious illness in older adults that often goes untreated because it is frequently misdiagnosed or confused with other symptomatology patterns (Kieffer & Reese, 2002). Depression is a condition in which the patients fulfil at least five of the Diagnostic and Statistical Manual of Mental Disorder, Fifth Edition (DSM-5) (American Psychiatric Association, 2013) criteria for major depressive disorder (MDD) nearly every day during the same 2-week period. Several studies have demonstrated that depression was significantly reduced after cognitive training (Kim, Kim, & Hong, 2010), even if it was a computerized cognitive training application (González-Palau et al., 2014), in healthy older adults and people with early Alzheimer's disease (Calvo, Rodríguez Pérez, Contador, Rubio Santorum, & Ramos Campos, 2011; Lee, Yip, Yu, & Man, 2013; Wolinsky et al., 2009).

Considering all of the above information, the objective of this work was to assess the effects of using a computerized cognitive training application on cognition and depressive symptomatology in a healthy population aged ≥ 65 years. We examined and discussed how several socio-demographic factors, such as gender or educational level, would influence the efficacy of the training.

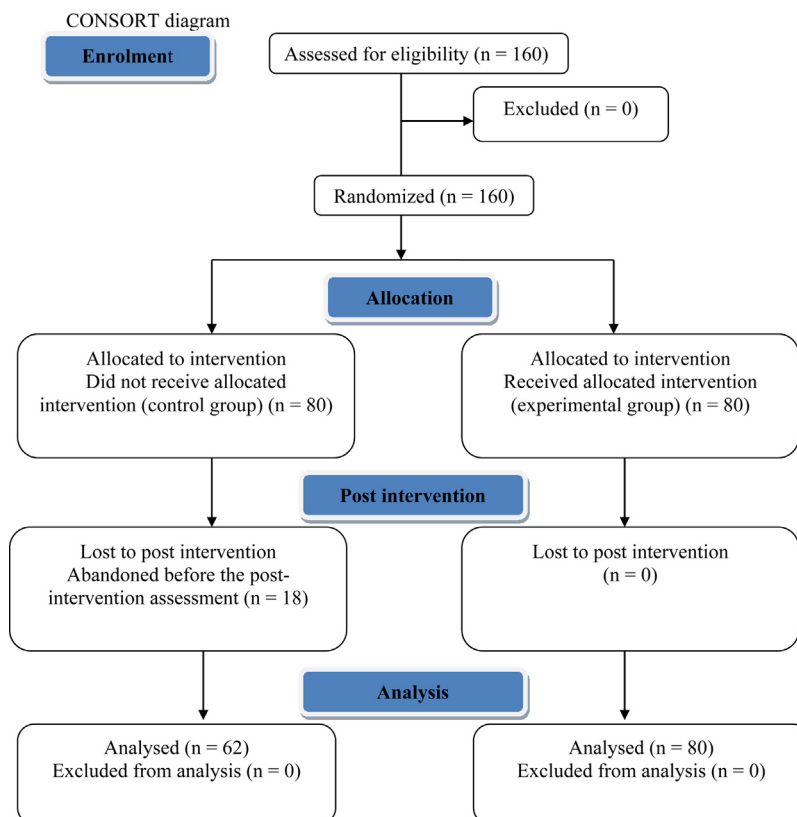


Fig. 1. CONSORT diagram.

Download English Version:

<https://daneshyari.com/en/article/8257657>

Download Persian Version:

<https://daneshyari.com/article/8257657>

[Daneshyari.com](https://daneshyari.com)