

# NEUROLOGY, NEUROSURGERY AND THERAPEUTICS

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## Cognitive stimulation through Oroí Cognitive, a virtual reality app for older people

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**Statement of the Problem:** As we well know, age is a risk factor for the appearance of multiple diseases associated with cognitive impairment, such as dementia. Longitudinal studies suggest that around 10 years before dementia a subtle cognitive impairment begins, which is why it is interesting to carry out an early intervention with this group. The objective of this research is to evaluate the efficacy of cognitive stimulation through the Oroí Cognitive application in older people, as well its acceptance and appeal to them.

**Methodology & Theoretical Orientation:** The research was carried out with 31 participants with a number two or three in the global deterioration scale (GDS). 15 of these participants were part of the control group, and 16 of the experimental group. The intervention through virtual reality, with exercises more similar to day-to-day activities, allows working on attention, language, memory, orientation, visuospatial skills and executive functions. It was carried out in 12 sessions, 3 times a week, lasting 25 minutes each one, individually. Both groups were evaluated using the MINI-MENTAL Cognitive Examination and some subtest of the Wechsler Intelligence Scale for Adults (WAIS-IV).

**Findings:** Regarding to the effectiveness of the stimulation, the results show significant improvements in vocabulary and information in those with GDS2, in the experimental group. No statistical improvements were found in the rest of the areas. Regarding to the assessment of the tool, 69% of the participants rated it as quite useful and interesting. According to the qualitative data collected by the therapists, the users were happier and more animated during and after the intervention. **Conclusion & Significance:** From the observed results, we can say that cognitive stimulation through Oroí Cognitive reduces cognitive deterioration in older people, and improves it in the areas related to language. In addition, being an attractive and entertaining intervention for this group.

*Pretest and posttest measures in people with GDS2*

	Control group		Experimental group		N	p	Eta <sup>2</sup>			
	Pretest	Posttest	Pretest	Posttest						
<b>WAIS-IV</b>										
<b>Subtests</b>	<b>Average±SD</b>	<b>N</b>	<b>Average±SD</b>	<b>N</b>	<b>Average±SD</b>	<b>N</b>	<b>p</b>	<b>Eta<sup>2</sup></b>		
Vocabulary	8.33±0.57	3	4.67±2.51	3	5.38±5.82	8	8.13±5.35	8	.048	.368*
Information	8.67±2.51	3	8.67±2.51	3	7.62±4.65	8	7.88±3.94	8	.860	.004
Cubes	6.67±1.52	3	6.00±3.00	3	5.13±4.05	8	7.00±1.19	8	.365	.092
Symbol search	6.67±1.52	3	7.67±1.15	3	6.75±3.57	8	5.63±1.84	8	.373	.089

*Note: SD = typical deviation, n = number of participants, p = probability level, \* p < .05, Eta<sup>2</sup> = eta square value*

### Recent Publications:

1. Amaya A., Woolf, C., Devane, N., Galliers, J., Talbot, R., Wilson, S., Marshall, J. (2018). Receiving aphasia intervention in a virtual environment: the participant's perspective. *Aphasiology*, 32(5): 538-558.
2. Cipresso, P., Chicchi, I.A., Alcañiz, M., Riva, G. (2018). The past, present and future of virtual and augmented reality research: a network cluster analysis of the literature. *Frontiers in Psychology*, 9: 2086.

### Biography

Adriana studied psychology and has a master's degree in general health psychology and in clinical neuropsychology. She has her expertise in cognitive stimulation and wellbeing in adults and older adults. Her model of cognitive stimulation is based on working every cognitive function in a similar way as we use it in day-to-day activities. She has been working designing virtual reality applications for people with mild cognitive impairment.

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