

Social Research Call 2020

Selected projects

Title: Structural and functional brain changes as a proxy for Virtual Reality cognitive training efficacy in Type 2 Diabetes Mellitus elderly patients

Acronym: VIRCODE

Project leader: Rafael Simó

Host organisation: Vall d'Hebron Research Institute

Main purpose of the project: 1) To determine whether cognitive training by immersive virtual reality (IVR) could arrest the progressive cognitive decline that occurs in subjects with type 2 diabetes (T2D) with mild cognitive impairment (MCI). 2) To examine whether IVR cognitive training is able to modify brain function assessed by resting state functional MRI.

Design/methodology/approach: Pilot prospective randomized (4 arms -one with IVR program) study. Follow-up: 36 weeks. At baseline, 16 weeks and at the end of follow-up the following examinations will be performed: Neuropsychological testing, quality of life measurements, Geriatric Depression Scale, tests of physical function, and structural and functional MRI.

Potential results: The expected results are that IVR training, which consists of engaging games aimed at training specific cognitive domains, will arrest cognitive decline and will be associated with structural and functional changes in MRI.

Social relevance of the research: Approximately 30% of type 2 diabetic people age 65 or older have MCI, which is around two-fold higher than observed in age matched non-diabetic population. Our proposal is tackling this significant societal issue and, if effective, may represent a useful tool to prevent cognitive decline in individuals at high risk of dementia.

Originality/value of the project: There are no randomized clinical trials testing the usefulness of IVR as a tool for arresting cognitive decline in subjects with T2D with MCI. In addition, our project could lead to a better understanding of training-induced brain plasticity in terms of neural network remodeling at specific structural domains.