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# A virtual reality paradigm for the assessment and rehabilitation of executive function deficits post stroke: Feasibility study

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##### Abstract:

The ability to perform successive or simultaneous tasks is a common and necessary aspect of everyday life. This ability is often impaired in people suffering from brain lesions affecting, in particular, the frontal regions. The assessment and recovery of executive functions and dual task abilities conducted in laboratory settings do not always succeed, in part, due to the ecological and contextual nature of the abilities impaired. The present study was designed to develop and test a virtual reality based tool for the rehabilitation of shifting of attention and action planning functions using tasks reminiscent of daily life tasks. The virtual environment employed in the study is a supermarket developed using NeuroVR software. While actively exploring this environment, participants were requested to collect some items from a list while attending to different audio announcements that would modify the sequence or number of items collected. This executive function evaluation and rehabilitation procedure has been conceived as a hierarchical series of tasks, starting from a single-task condition and ending with successive multiple tasks. In this paper, we present the results of a small-scale pilot trial where we investigated the feasibility of the procedure in a healthy elderly population. These results provided important usability data for a subsequent randomized clinical trial.

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