**Virtual reality as an add on rehabilitation therapy in patients after ischemic stroke**

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**INTRODUCTION / HYPOTHESIS**

Stroke is the leading cause of functional disability in adults. Muscular weakness of hemicorp is the most prevalent functional consequence for the post-stroke patient.[1] Neuroimaging studies show that post-stroke patients with motor symptoms have a decrease in motor connectivity and reduction in the number of functional brain networks, affecting their independence, daily living activities, quality of life and behavior.[2] Thus, the treatment for these patients is multidisciplinary and global, seeking their return to functionality and restoration of their autonomy. The Virtual Rehabilitation (VR) demonstrates promising results as an add on to conventional rehabilitation, allowing the perfomance of natural movement patterns in varied environments and enabling activation of neural networks.[3] In our experience through a research project with 4 post-stroke patients with conventional physiotherapy plus VR during 4 weeks, improvements were observed in quality of life, Fugl-Meyer Assessment and Time Up and Go Test before and after intervention when compared to a control group of 4 subjects with similar characteristics only with conventional physiotherapy.[4] Our hypothesis is that patients who respond positively to functional recovery after a VR program show distinct patterns of functional connectivity observed in magnetic resonance imaging (MRI).

**OBJECTIVE**

The main aim of this study is to analyze the effects of Virtual Rehabilitation in post-ischemic stroke patients, besides to the conventional physiotherapy.

**METHOD**

Thirty post-stroke symptomatic patients will be included in the study, randomized in control and experimental group. Patients will be evaluated before and after intervention by a blinded evaluator. Structural and functional MRI will be acquired before and after intervention. All patients will receive conventional physiotherapy protocol twice weekly for six weeks, and the experimental group will receive the VR at the same frequency. The clinical data obtained will be tabulated and the differences will be analyzed using the ANOVA and a value of P ≤ 0.05 will be adopted as significant. MRI will be analyzed with SPM12. We hope to identify a positive influence on the application of VR and establishment of neural connectivity patterns – a prove of its effectiveness from the data obtained.

**RELEVANCE**

This research assists in the diffusion of knowledge about the performance of VR in symptomatic patients post chronic stroke, enabling the later implementation of this appliance in the functional recovery of these patients if its efficacy is proven as an add-on therapy for rehabilitation.

**References:** [1] Silva JM et al., Rev Neurocienc 2015;23(1):48-54; [2] Almeida S et al., J Neuroimaging 2016;27(1):65-70; [3] Lee SJ et al., Archive of Physical Medicine and Rehabilitation 2014;95(3):431-8; [4] Camargo AFB et al., presented in III Encontro Científico do Curso de Fisioterapia da Universidade de Sorocaba 2016.