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Therapy accompanying use of VR-glasses in hemiparetic children and adolescents

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Statement of the Problem: Hemiparetic untreated children are particularly affected by a developmental disorder, some of them never learn to walk by their own. Hemiparesis as a result of an ischemic stroke in children and adolescents under 16 years of age is reported in the literature with an incidence of approximately 3-5 and 1, 6:100.000, respectively. The theoretical basis for the study of the therapeutic use of VR in children and adolescents with hemiparesis is based on the success of mirror therapy. Similar to mirror therapy, a situation, a movement sequence is presented to the brain in the therapy-accompanying treatment with the virtual reality spectacles (VR glasses) in such a way that the patient believes that his affected limb would be actively involved, thus causing the corresponding brain area of the affected side. By the mirroring of the non-affected extremity, important motor areas are activated in the affected hemisphere, which could otherwise only be activated by voluntary movements of the affected limb itself. The purpose of this study is to describe the effect of using VR glasses for improving movements by hemiparetic children.



Figure 1: VR- glasses, Gear VR, Samsung

Methodology & Theoretical Orientation: The design of the pilot study corresponds to a 12-week prospective cohort study with simple blinded evaluation. The children and adolescents are examined with the assessments: Nine Hole Peg Test, Box and Block Test, Hand ability test Movement-ABC-2, Timed-up & go Test, Ten Meters Walking Test, Goal Attainment Scale and Six Minute Walking Test. The measurement times are before the study, after 6 weeks, after 12 weeks and after 6 months. Studies in adults have shown that it is possible to learn motor movements in the virtual reality and implement them in the real world.

References

1. Holden M K (2005) Virtual Environments for Motor Rehabilitation: Review. *Cyber Psychology & Behavior*; 8: 187-219.
2. Lewis G N, Rosie J A (2012) Virtual reality games for movement rehabilitation in neurological conditions: how do we meet the needs and expectations of the users? *Disability and Rehabilitation*; 34: 1880-1886.
3. Michielsen M, Selles R, van der Geest J, Eckhardt M, Yavuzer G, Stam H, Smits M, Ribbers G, Bussmann J (2011) Motor Recovery and Cortical Reorganization after Mirror Therapy in Chronic Stroke Patients: A Phase II Randomized Controlled Trial. *Neurorehabilitation & Neural Repair*; 25: 223-233.

Biography

Jennifer Höning has her expertise in sportphysiotherapy and passion in improving athletes. Her pilot study based on responsive constructivists creates new pathways for improving healthcare. She has built this study after years of experience in research, evaluation, teaching both in hospital and education institutions. This approach is responsive to all stakeholders and has a different way of focusing.

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