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TRENDS IN REHABILITATION AND DIAGNOSIS OF GAIT AND BALANCE DISFUNCTIONALITIES BASED ON REVIEW OF EXISTING SYSTEMS

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Rehabilitation of balance maintaining and gait is a long-lasting process, requiring strict cooperation between rehabilitator and/or physiotherapist, and the patient. Procedure of restoring balance maintaining and gait is usually monotonous, requires a lot of dedication and is just boring for patients, while rehabilitators and physiotherapists can usually assess progress of the process qualitatively only, not being able to objectively evaluate if any improvement has been achieved or changes in rehabilitation program must be made.

One of possible solutions that would be relatively easy to introduce is use of entertaining systems that would allow patients to perform rehabilitative exercises in comfortable conditions of their own homes. Such systems can make use of virtual reality (VR) technology, which is becoming more and more available technology, and can be used on smartphones, which are getting progressively more common piece of equipment. Virtual reality technology can be relatively easily coupled with other measuring devices, such as pressure measuring platforms, pressure mapping platforms or rehabilitational treadmills. Patients are fond of using VR technology, because it allows them to move to a different, entertaining world in which rehabilitation process they would otherwise struggle with, becomes an easy and fun task. They can forget about struggles of everyday life by entering a different, entertaining world in which their impairment or disease is not that much of a burden. Properly made application also allows patients to immediately see results of their exercises, giving them information on how are they advancing with regaining their balance maintaining and gait abilities, while providing therapists valuable, objective quantitative information on progression of rehabilitation process. These features influence patient's morale and increase hopes for improvement, both of these being problematic when it comes to regular, classic rehabilitation, since progress with regaining abilities of maintaining balance and gait can remain unnoticed for a very long time.

This paper aims to review how many personalized systems for rehabilitation of balance maintaining and gait make use of VR technology for enhancing rehabilitation process.