MRT-PILOT STUDY FOR IDENTIFYING THE BEST EXERCISES AND TECHNIQUES THAT CAN BE INTEGRATED IN REHABILITATION PROGRAMS USING RELIVE MECHATRONIC SYSTEM

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Introduction: RELIVE is a mechatronic system in experimental model phase developed in a Romanian financed research project for rehabilitation of patients with ambulation disabilities generated by neurological disorders. It is an overground gait rehabilitation system that allows patients to move on a three-dimensional trajectory, within an ambulatory environment, with partial suspension of body weight and fall prevention capabilities.
Purpose: The objective of this study is to design optimal neurological rehabilitation programs using RELIVE. The system provides overground gait training sessions in real-life like situations. Patients will undergo physical training and attention and space orientation training through goal-oriented tasks. This way, the system will help patients recover in a much faster, more efficient and enjoyable way, increasing the compliance rate and optimizing the time spent in therapy sessions.
Method: The study will be conducted in two stages. Firstly, the usability of the system will be assessed and improved in a pilot study with a group of persons without ambulation disorders and secondly, the adequacy of the movements and exercises will be verified and validated using a group of persons with single motor deficits of the locomotor system.
Results: The expected results are the improvement of the system's degree of usability and the development of a series of neurorehabilitation programs, by implementing a variety of exercises (balance, posture exercises, transfer, walking, coordination exercises, exercises to stimulate attention, cognition, exercises involving execution of multiple tasks requiring voluntary involvement, perception, cognitive processing and decisional aspects).
Conclusions: This study will identify the best exercises and techniques to be implemented in neurorehabilitation programs. It will set the premises for a new study which will test these programs on patients with ambulation disabilities generated by neurological disorders. It could also set new research directions that may consider the implementation of more functions, which will require multidisciplinary work.