

Virtual Intelligent Techniques for Rehabilitation of Persons with Motor Disability (VIBHRA)

Introduction

VIBHRA is a virtual intelligent platform for motor rehabilitation of persons with disabilities. It combines experience from virtual reality and knowledge from machine intelligence to enhance neural reorganization that optimizes the physical rehabilitation outcomes in individuals with disability. It provides stimulating sensory feedback to promote motor learning and encompasses tools that help to understand the biology of disability. The system integrates inexpensive devices like Microsoft Kinect and Wii Balance Board to improve balance and neuromuscular functions. Quantification of motor disability is done through presenting the individuals with situations/tasks that require use of groups of muscles and body parts like an augmented rehabilitation measure such as virtual function reach test.

Returns/Benefits

- Real-time visual feedback of the executed movements allows the persons with disabilities to perceive a picture of patient's movement projected on the screen in real-time and correct compensatory postural adjustment and movement learning.
- Visual response combined with verbal instructions by the system (zero physiotherapist assistance), can ease the learning of body postures with better biomechanical arrangement while executing the tasks and activities.
- Therapy system provides intense, continuous and repetitive training to the individuals with disability, simultaneously bringing maximum engagement through fun, animated virtual environments.
- The system incorporates a novel virtual functional reach test, modified functional reach test and other clinical measures that makes daily quantification of improvement lot easier.

Applications

- The virtual rehabilitation system developed has been used on patients with spinal cord injury in an ethically approved clinical trial.



- The rehabilitation system includes therapy exercises for standing balance, sitting balance, range of motion, and strengthening exercises for both upper and lower limbs.
- The developed system engages patient in a multidimensional, multisensory virtual environment.
- Motivation and voluntary engagement of patients to perform rehabilitation through the developed system.

Status

Technology transferred to M/s Walnut Medical Pvt. Ltd, Ambala

VIBHRA

