ABSTRACT

After a stroke abnormal joint coordination of the arm may limit functional movement and recovery. To aid in training inter-joint movement coordination a haptic guidance method for functional driven rehabilitation after stroke called Time Independent Functional Training (TIFT) has been developed for the ARMin III robot. The mode helps retraining inter-joint coordination during functional movements, such as putting an object on a shelf, pouring from a pitcher, and sorting objects into bins. A single chronic stroke subject was tested for validation of the modality. The subject was given 1.5 hrs of robotic therapy twice a week for 4 weeks. The therapy and the results of training the single stroke subject are discussed. The subject showed a decrease in training joint error for the sorting task across training sessions and increased self-selected movement time in training. In kinematic reaching analysis the subject showed improvements in range of motion and joint coordination in a reaching task, as well as improvements in supination-pronation range of motion at the wrist.

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