# Abstract: Visual Guided Training for Movement Assistance

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Neuromuscular pathologies and spinal cord injuries can reduce muscle capacity of the lower-limbs and greatly diminish the functional performance of motor-tasks. In this study, our objective is to identify which features of a visual feedback training paradigm would be most effective in training an individual to generate consistent and accurate movement characteristics. Visual guided training improves the performance and retention of motor-tasks while generating consistent muscle activation patterns. Accelerating rehabilitation through effective training to perform an optimal movement will improve recovery time and restore better functional performance of activities of daily living. Multiple visual feedback modes with varying degrees of target information were blocked and presented to each subject for training the two-legged squat maneuver. Visual feedback modes were developed both in simple and complex visual representations, depending upon the number of degrees of freedom. As well as continuous and discrete target trajectories, which vary by explicit and implicit representations of the target objective. Able-bodied subjects trained with eight different visual feedback modes over two sessions. In each session, spatial positioning of the body was displayed for visual feedback of performance while surface electromyography sensors captured activation levels of target muscle groups. Subjects were instructed to squat with and without visual feedback for assessing performance across online training and retention, respectively. We hypothesize that visual feedback modes that are more explicit and provide more dimensions of target information will have the greatest effect on increasing online performance and immediate retention. In the future, we will use these results to develop a visual feedback paradigm to better train optimal muscle activations for operating a myoelectric assistive prostheses and exoskeletons.