

Title:

Applying basic science principles of motor control and motor learning to enhancing upper limb motor recovery after stroke

Abstract

Our work focuses on the translation of motor control and motor learning concepts to the understanding of sensorimotor deficits and the potential for motor recovery following stroke. This has led to the description of models of disordered motor control which may explain the presence of spasticity, abnormal muscle activation patterns and disordered interjoint and intersegmental coordination of the limb or limbs during functional activities. Maximizing motor recovery equally depends on the translation of motor control and motor learning principles to provide guidelines for rehabilitation approaches. How such principles have been applied to training programs aimed at maximizing upper limb recovery in individuals with chronic stroke will be illustrated.

Learning objectives:

To support the attainment of knowledge, competence, and performance, the learner should be able to achieve the following objectives:

1. Identify how motor control concepts can be incorporated into rehabilitation approaches;
2. Understand the relationship between motor control factors and factors related to the individual in motor learning;
3. Describe how basic science concepts about motor learning and motor control can be integrated into training programs to enhance motor recovery.