(1) Grant title: Subacute Stroke Recovery: Bimanual Coordination Training

Funding agency: National Institute of Child Health and Human Development

Amount awarded: $145,500

Time period: 2 years

Stroke incidence in the United States has increased to 725,000 cases per year. This high incidence has led to a concomitant increase in the number of survivors who must cope with upper extremity motor disabilities. Regardless of the high prevalence of problems controlling voluntary motor actions, the mechanisms driving motor recovery are not clearly understood. However, a promising chronic stroke therapeutic approach is based on bimanual coordination principles: active neuromuscular stimulation on the impaired arm coupled with bilateral movement training on the unimpaired arm.

Extending the preliminary evidence favoring bimanual coordination theory from the chronic stroke phase to the subacute phase is intriguing given that typical rehabilitation focuses on adjusting the nervous system to single limb movements on the unimpaired side. Thus, bilateral movement training and active stimulation offers an attractive, theoretically based alternative for subacute therapy. Confirming the intensity/frequency of coupled protocols as a viable treatment for the subacute phase (3 – 6 months post) would strengthen this theoretical basis and fulfill the need to identify protocols to expedite progress toward motor recovery.

(2) Grant title: Cumulative Motor Improvements in Chronic Stroke: Longitudinal Coupled Bilateral Coordination Protocols

Funding agency: American Heart Association

Amount awarded: $264,000

Time period: 3 years

There is little empirical evidence supporting longitudinal training effects of a theoretically sound stroke rehabilitation program. A*n innovative research approach for cumulative stroke recovery based on sound motor control theory is needed to determine the effect of longitudinal training sessions.* Thus, the specific aim is to determine the long-term cumulative effects of multiple sets of coupled bilateral coordination protocols (i.e., symmetrical movements and active neuromuscular stimulation) administered over 18 months on the motor recovery of the paretic limb in chronic stroke.