

**TITLE:**

Provocation and Modulation of Resting Tremor in Parkinson's Disease

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**RESEARCH PROJECT DESCRIPTION**

Among the cardinal symptoms of Parkinson's disease (PD), resting tremor stands alone in that it does not progress together or correlate in severity with the other symptoms of bradykinesia, rigidity, and postural instability. Thus it is often considered to have a pathophysiologically separate mechanism. In an individual patient, tremor can resolve over time or develop later in the disease, and can temporarily disappear or worsen. Few studies have focused on the motor and cognitive processes that influence resting tremor in PD. My lab is studying the specific cognitive and motor activities that provoke and modulate tremor in PD patients. By identifying these activities and the underlying cortical areas involved, we hope to identify areas of the cortex that may be candidates for neuromodulation with transcranial stimulation. Students will gain experience in clinical testing of patients with PD, neurophysiologic tremor analysis using surface electromyography and accelerometry, and methods of neuromodulation including transcranial direct current (tDCS) and transcranial magnetic (TMS) stimulation.

CW Hess and SL Pullman. Tremor: clinical phenomenology and assessment techniques. *Tremor and other hyperkinetic movements (NY)*; pii: tre-02-65-365-1. 2012. PMID: 23439931

Hallett M. Tremor: pathophysiology. *Parkinsonism Relat Disord* 2014;20 Suppl 1:S118-22. 2014. PMID: 24262161