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Brain activation during sensorimotor tasks in patients with stroke

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Siyang Luan

The motor functions of individuals poststroke can be affected due to sensory impairments, even if their muscle strength remains unaffected. Thus, understanding cortical activation associated with sensorimotor functions is critical for stroke recovery. This study aims to discover brain activation associated with sensorimotor functions poststroke using functional near-infrared spectroscopy (fNIRS). fNIRS is a useful neuroimaging tool to assess brain activation by observing blood hemoglobin levels. Up to 30 individuals with hemiparesis poststroke will be recruited if they can tolerate the study protocol. fNIRS assessments will occur near admission and will collect three tasks: 1) somatosensory stimulation of the ankle, 2) passive ankle flexion, and 3) active ankle flexion. Primary objectives include hemispheres asymmetry and hemoglobin differences between tasks. Secondary objective includes comparing clinical outcome measures to cortical activation. We anticipate changes in all objectives; however, the direction of change is unknown.