

RESEARCH PRESENTATIONS

CLINICAL

Thomas Buckley

Roxana Burciu

Matthew Cohen

Jennifer Semrau

Concussion & Repetitive Head Impacts

Thomas Buckley, Assoc Prof, KAAP

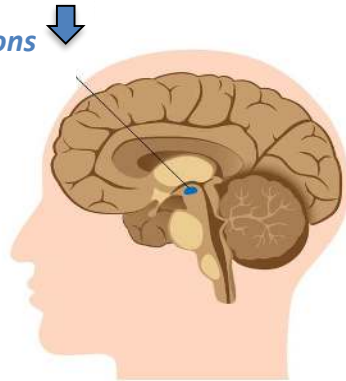
- Concussion & Postural Control (NIH NINDS R03, NCAA/DoD CARE (Co-Site PI, Kaminski)
 - Subsequent musculoskeletal injury (Collaborators: Swanik, UK, Harvard/BCH)
 - Future: Rehabilitation & Injury Prevention Programs
- Repetitive Head Impacts (RHI) &
 - Neuroimaging (MRI, fMRI, DTI, MRS, MRE) with Curtis Johnson (ONR)
 - Clinical Neurological Screening & instrumented postural control
 - Future: Blood & Saliva Biomarkers (Hudson)
- Age of First Exposure to RHI (NCAA/DoD CARE)
 - Cognitive function, Clinical Neurological Screening, instrumented postural control
 - Future: Prospective, Longitudinal
- Desired Collaborators: Neuropsychology & Cognitive Assessment



Human motor control and its disruption in movement disorders

PARKINSON'S DISEASE

Substantia Nigra
Dopaminergic Neurons



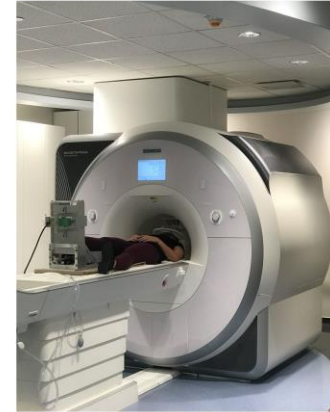
What?

How?

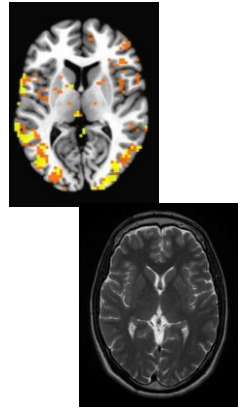
Upper Limb
Force Measurement



FUNCTIONAL & STRUCTURAL MRI



Lower Limb
Force Measurement



- Understanding **how movement-related brain circuits change** in Parkinson's disease to give rise to motor symptoms.
- **Identifying neuroimaging signatures** that can aid distinguishing clinical subtypes.
- Neural and behavioral **markers of the prodromal stage**.



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Dept. of Communication Sciences & Disorders | Center for Health Assessment Research & Translation



B.A.



Ph.D.



JOHNS HOPKINS
MEDICINE

Residency



Postdoc



Faculty

Clinical neuropsychologist

- =clinical psychologist who specializes in the behavioral assessment of cognition, emotion, and behavior, especially assessment of individuals with neurological conditions (AD, PD, stroke, TBI)

Work I lead

- Development and dissemination/implementation of patient-reported outcome measures for adults with cognitive/communication disorders, particularly for speech-language therapy applications
- Mixed-methods approaches to understanding the appraisal processes underlying perception of health and well-being

Work I support

- Psychometric/clinical evaluation of the NIH Toolbox – Cognitive Battery in neurological rehabilitation populations (PI: Tulsky, CHART)
- Assessment of cognitive variables that may mediate response to post-stroke gait rehabilitation (PI: Reisman, Dept. of PT)
- Assessment of cognitive response to lifestyle interventions (PI: Johnson, Dept. of BME)(PI: Martens, Dept. of KAAP)
- Community-based memory screening for Delaware seniors (collaboration with Christiana Care's Swank Memory Disorders Clinic)



Sensorimotor Control and Robotic Rehabilitation Lab

Director: Jennifer Semrau, PhD

We care about...

- Sensorimotor impairment and learning after stroke
 - 1) Relationship of eye movements and proprioception of the limb
 - 2) Multi-modal learning after stroke (motor, proprioceptive, visual)
 - 3) Implementing assessment-based robotic rehabilitation

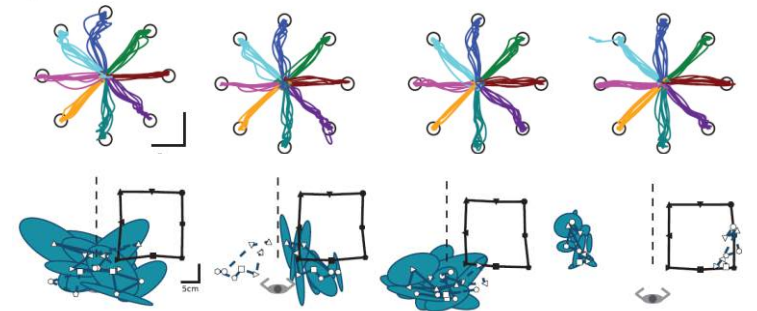


ROBOTIC ASSESSMENTS

STRUCTURAL AND FUNCTIONAL IMAGING

TARGETED ROBOTIC REHABILITATION PARADIGMS

Subject 1



Subject 2

