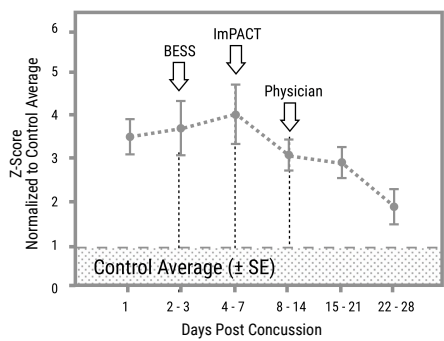


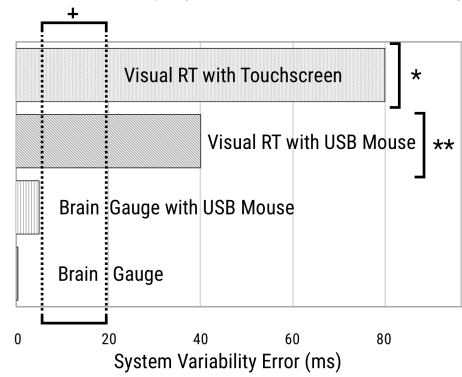
HOW DOES BRAIN GAUGE COMPARE TO OTHER METHODS?

Brain Gauge measures deficits after concussed patients are cleared by other tests. Note points of clearance by BESS, ImPACT and physician.



ACCURACY MATTERS

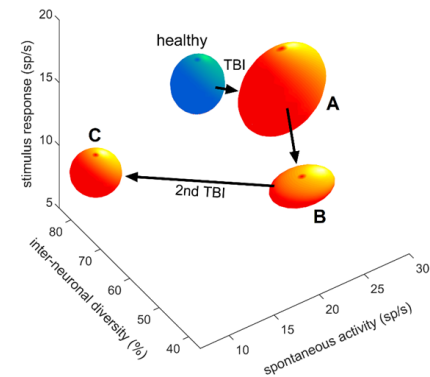
With a temporal resolution of 0.3 ms, the Brain Gauge is the only commercially available technology with the accuracy required to measure reaction time variability (*Holden et al., 2019*).



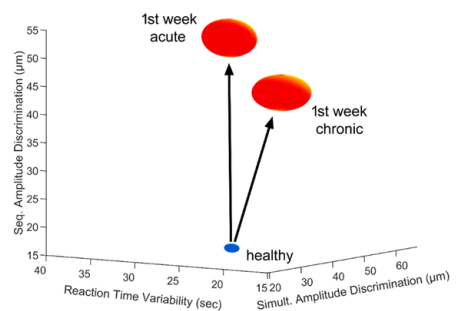
* e.g., DANA; **e.g., ANAM
+ human normative variability range 5 - 20 ms

NEUROPHYSIOLOGICAL AND NEURAL NETWORK MODELS

Brain Gauge data is tightly coupled to CNS mechanisms that can be validated neurophysiologically in animal models. Neurophysiological data is used to train neural network models to guide interpretation.



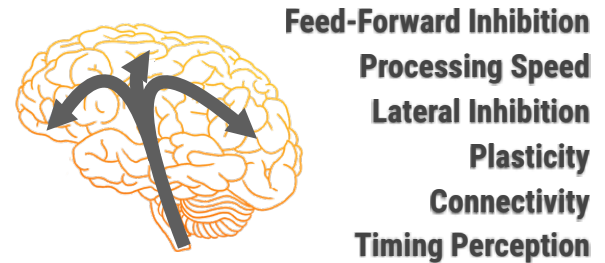
Results from animal model (above) predict differences in Brain Gauge results for short vs. long term recovery.



Training of analytical model with animal data yields significant differences in Brain Gauge outcome measures for short vs. long term recovery.

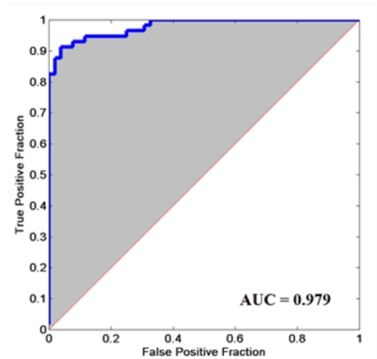
HOW DOES BRAIN GAUGE WORK?

Sensory stimuli are used to probe specific brain functions. This strategy takes advantage of physiological and anatomical organization with a biological interface. Stimulus delivery targets functional neurological mechanisms of information processing such as:



ROC ANALYSIS SHOWS SENSITIVITY TO MTBI

Combining metrics improves accuracy and delivers a comprehensive CNS profile. (*Favorov et al., 2019*)



BRAIN GAUGE

Concussion Assessment Tool

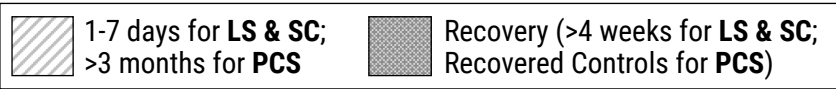
Points of Contact:
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UNC-Chapel Hill & Cortical Metrics
Dr Laila Zai
Lucent Research
Dr. Tim Waliko
Applied Research Associates



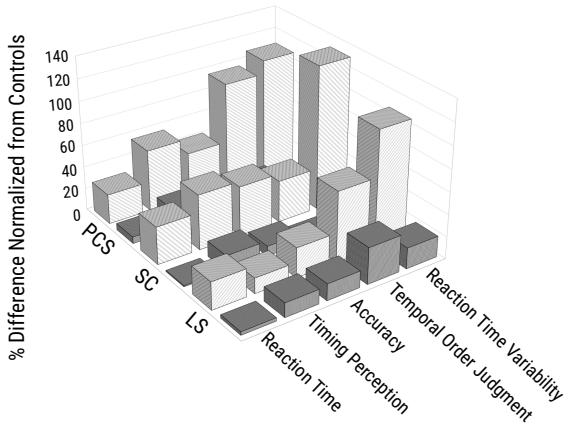
SAMPLE DATA DEMONSTRATES SENSITIVITY TO mTBI

MULTIPLE METRICS DEMONSTRATE SENSITIVITY TO mTBI

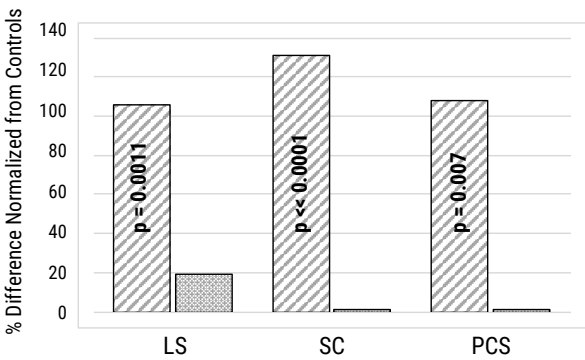
Data in plots below was obtained from one of three Brain Gauge studies. The three studies are a sports concussion study (**SC**; subset has been reported in Favorov et al., 2019), an mTBI study at Landstuhl (**LS**), and a recently reported post-concussion syndrome study (**PCS**; Pearce et al., 2019; data in the PCS study was collected at least three months post-concussion).



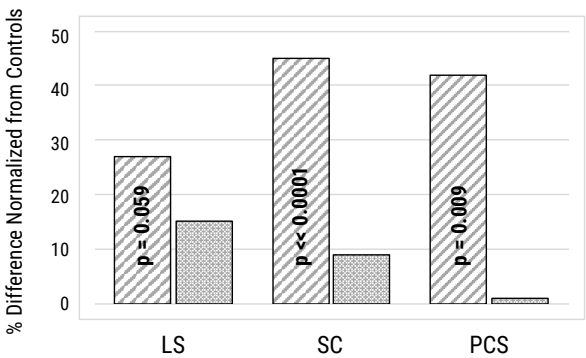
MULTIPLE METRICS, MULTIPLE STUDIES



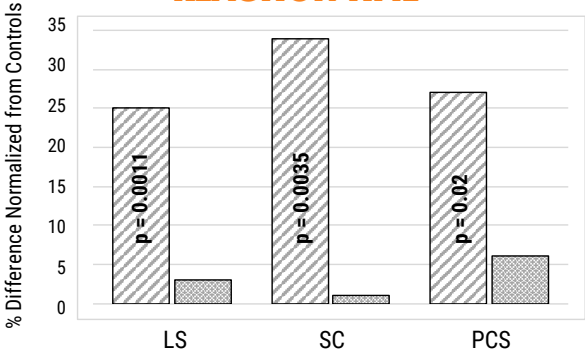
REACTION TIME VARIABILITY



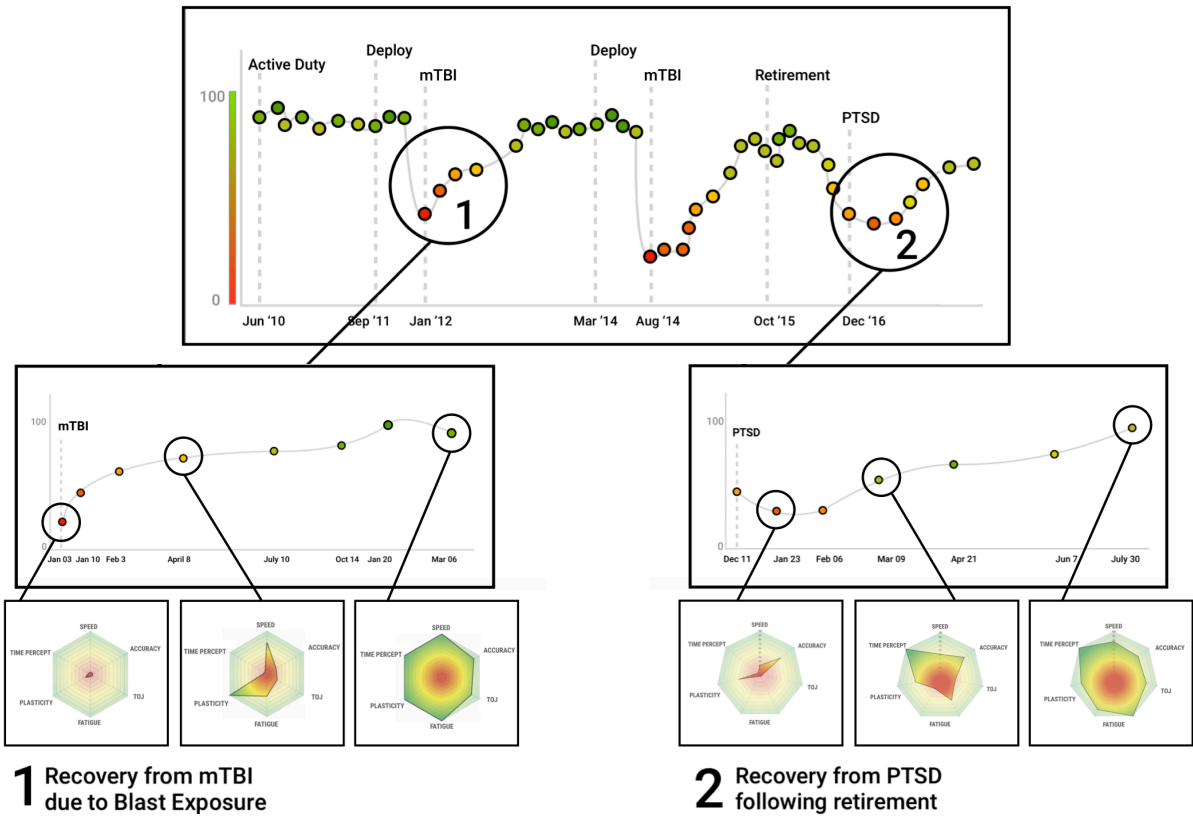
ACCURACY



REACTION TIME



TRACKING BRAIN HEALTH WITH BRAIN GAUGE



The Brain Gauge is a proven and effective concussion assessment tool that can be used to track brain health history from training through deployment. In the timeline above (simulated from independent mTBI and PTSD studies), the first highlighted region (noted with a 1) represents a service member's first exposure to blast and their ensuing recovery. Note that numerically small, red colored data points correlate to poor performance on tests while numerically large, green colored data points indicate strong performance. Partially filled radar plots indicate poor performance while filled radar plots indicate strong performance.