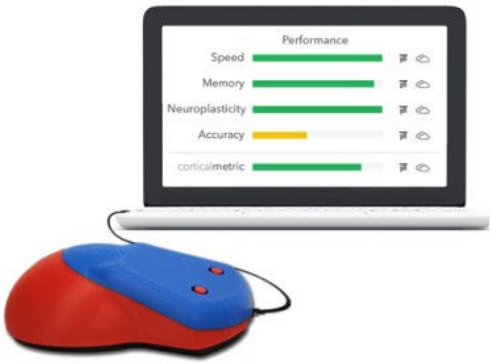
The Brain Gauge

Provides New Ways to Measure Brain Health
by Detecting Changes in Brain Function with Neurosensory Technology

Science Made Simple

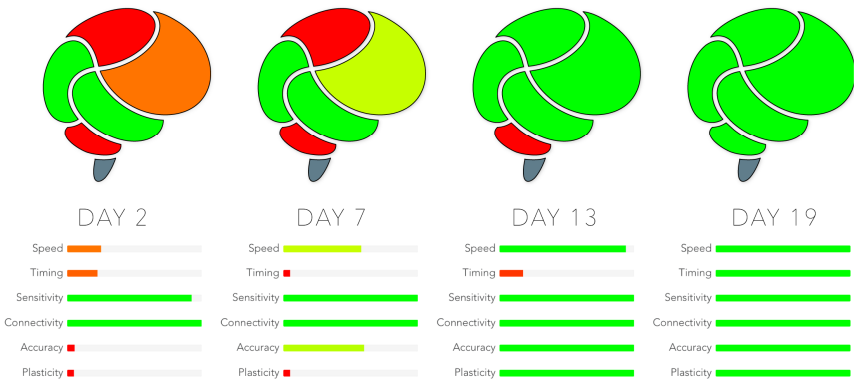
The Brain Gauge, developed by the Department of Biomedical Engineering at the University of North Carolina, Chapel Hill, is a scientific breakthrough, which uses the sense of touch to understand brain function. The Brain Gauge is the world's first high precision tactile biofeedback interface. It takes multiple measures of neural network connectivity and simplifies the results into a simple performance standard that can be easily tracked over time.
The Brain Gauge sends specific pulses your fingertips, which stimulates regions in your brain to become active and talk to each other in a very specific manner. The Brain Gauge system measures this communication by asking a few simple questions — similar to the way you would read an eye chart.



This technology is now in use around the world, helping researchers study:

- **Concussion**
- **Autism**
- **Stroke**
- **Aging**
- **Migraine**
- **ADHD**
- **Chronic Pain**
- **Fibromyalgia**
- **TBI**
- **Alzheimer's/Dementia**
- **Alcoholism**
- **Anxiety**
- **Carpal Tunnel**
- **Parkinson's**
- **Epilepsy**

How Can the Brain Gauge Track the Effects of Treatment?



The patient from the data above was impacted in the cerebellar region

For decades, computers have sent information to you only with sight and sound. The Brain Gauge system uses the sense of touch to engage your brain and test its performance. The high precision and high fidelity of the mechanical pulses that the Brain Gauge delivers is what is ultimately responsible for objective and quantitative metrics of brain performance.

Each of the Corticalmetrics tests targets a different neural pathway and/or mechanism. Many factors contribute to the performance of an individual post-trauma on a test battery, and one of those is the impact site and/or orientation of the impact of the trauma. Other factors on test results include force of impact of the trauma, trauma history, medication, alcohol use and sleep/fatigue.

How Does the Brain Gauge Work?

One of the underlying principles of the science behind the Brain Gauge is that the nerves in adjacent fingertips project to specific and unique adjacent regions in the brain. The Brain Gauge sends gentle vibrations to your fingertips to precisely activate these nerves and areas in the brain. When adjacent regions are activated, they interact with each other in predictable patterns that affect your perception of how the vibrations feel. By changing the vibrations in specific ways and then asking questions about what you feel, we can measure the percept created by the interactions and predict how well the mechanisms behind these interactions are working.

Development of cortical metrics – sensory based perceptual measures that were designed from observations of dynamic cortical-cortical interactions from neurophysiological studies. Comparison of results from cortical metrics studies to neurophysiological studies yielded 98% or better correlations.

Improvements in Brain Gauge performance parallel mTBI recovery

Cortical Metrics Insights Issue 2
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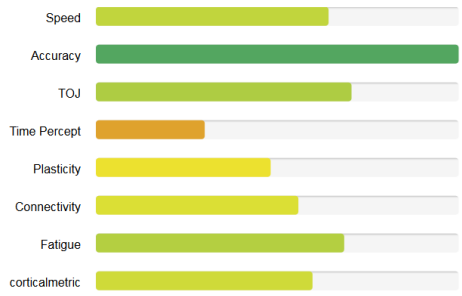
by Dr. Mark Tommerdahl, Associate Professor, Department of Biomedical Engineering, University of North Carolina, Chapel Hill

Dr. George Roth has consistently provided reports that demonstrate patient improvement in corticalmetrics post-treatment. A 40 year old patient suffered direct left parietal head trauma from a motor vehicle collision, and 8 months post-trauma, the patient continued to suffer from cognitive, visual, and vestibular disorders. Patient was also sensitive to light and noise, reported neck pain, and was unable to continue in her post-graduate program. The patient had sustained one previous concussion in 2005.



Pre-Treatment

Post-Treatment

Cortical Metrics tests showed diminished function in multiple metrics. After a single treatment using Matrix Repatterning focusing on C1-C3 and the occipital, temporal, parietal, and sphenoid regions, the patient reported improved cognitive function and reduced sensitivity to light and noise. Cortical Metrics results from one day post-treatment demonstrate greatly improved function in all areas. Objective findings post treatment also revealed improvements in visual tracking and pupillary response and a disappearance of the Babinski response. The patient was able to return to their graduate program.

Acknowledgment: Thanks to Dr. George Roth for his contribution.