

# BRAIN GAUGE



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The Brain Gauge technology was first conceived by two members of the medical school faculty at the University of North Carolina, Bob Dennis and Mark Tommerdahl. It is our goal to develop a technology that will allow not only scientists but also individuals to have an affordable and accurate way of investigating brain health. It is our belief that individuals should be able to assess their own brain health much like they are able to evaluate heart rate and blood pressure.

## Why is the Brain Gauge based on the sense of touch?

The somatosensory system is well suited for testing the central nervous system (CNS) because it is organized so that adjacent regions on the skin project to adjacent cortical regions. Tactile stimuli can be precisely controlled and delivered to these regions and it is easy to control for distractions (as compared to controlling for distracting visual or auditory input).

More than 50 years of neuroscience research have yielded a great deal of information about the nature of the interactions within and between the adjacent cortical regions as they are activated by tactile stimuli. This includes three decades of our own work, which has helped to build the foundation for understanding certain aspects of brain function and how to test for it.

While medical imaging is a useful tool for identifying whether relatively large areas of the brain are injured, cortical metrics are very good at identifying subtle changes in brain function. For example, the sedative that many people are given to reduce anxiety before being scanned would have a significant impact on cortical metrics but no impact on the medical image.

## 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.

# What is the status of your brain health?

- ▶ Every 3 seconds someone gets diagnosed with Alzheimer's or dementia
- ▶ Dementia starts in the brain 30 to 50 years before symptoms appear
- ▶ Alzheimer's disease is the 6th leading cause of death
- ▶ The average burden on families dealing with late-stage dementia is \$300,000
- ▶ 46+ million people are losing their minds (this will double every 20 years)
- ▶ The "silent epidemic" of early-onset dementia is on the rise

***The Brain Gauge is a cognitive assessment tool that uses touch-based sensory testing to directly measure your brain health.***

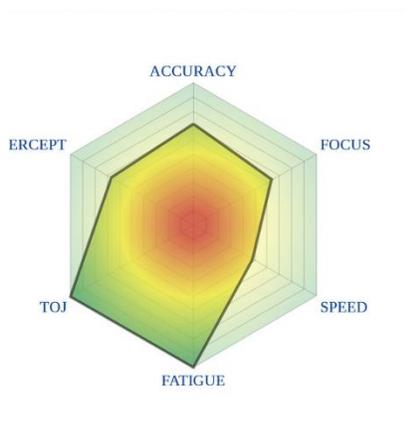


The Brain Gauge MD has been listed under the FDA Code of Federal Regulations 21 as a Computerized Cognitive Assessment Aid (21 CFR 882.1470).

**Research Partners:** Office of Naval Research, University of NC, MIT, Duke University, Cornell, Harvard, University of Michigan, Johns Hopkins, Mount Sinai School of Medicine, Arizona State University and many more!

The Brain Gauge is a cognitive assessment tool that uses touch-based sensory testing to directly measure your brain health. The device interacts with our ProTools (or RxTools) web application to deliver a series of sensory perception tests which have been designed to test a diverse range of brain functions. The Brain Gauge is a tool that can be used to monitor the progression of neurodegenerative diseases such as Neuroinflammation, Parkinson's, and Alzheimer's. Our tests and metrics can help patients and their physicians track symptoms, and results may be used to see how well a person is responding to different treatments.

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The Brain Gauge uses the same principals as an eye test: we steadily increase the difficulty of questions in order to determine how well you can differentiate between two things. However, instead of using letters or shapes directed at your eyes, we use precise vibrations that 'buzz' your fingertips.

The Brain Gauge is a two-point vibrotactile stimulator that can be used as a computerized cognitive assessment aid. The device connects to your computer and interacts with the RxTools web application. The application takes patients through a series of cognitive tasks in which the vibrating tips deliver various tactile stimuli.

The Brain Gauge measures more than just touch sensitivity; when stimulated, the nerves in your fingertips activate specific regions of the brain, and each test is designed to assess the interactions between and within these critical regions.

We've got decades of research and clinical studies that demonstrate this connection and have correlated our test scores with a wide variety of neurological conditions. The Brain Gauge has been used to identify and monitor concussions, traumatic brain injuries, autism spectrum disorders, ADHD, and numerous other brain function irregularities.

By stimulating your fingertips in a series of precise vibrations, and then asking questions about your corresponding perceptions, we can directly measure the activity between different regions of the brain.

**What does Brain Gauge test?** Our tests let you measure 8 essential components of brain health: **Speed, Focus, Fatigue, Accuracy, Sequencing, Timing Perception, Plasticity, and Connectivity.** You'll also get a **comprehensive mental fitness score that we call your corticalmetric.**

Unlike other cognitive assessments, we deliver cognitive assessments through a dedicated hardware device. This ensures that the tests aren't interrupted by other applications running on your computer. It also means that the accuracy of our tests does not depend on the precision of third-party hardware (such as computer mice, speakers, or monitors) which can introduce random delays that would invalidate results.

For more information or to schedule a Brain Gauge Test contact:

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