



Neural Analytics is creating products and services to measure, diagnose, and track brain health. We apply leading edge data science with established medical technology in effort to improve the ability for first responders and clinicians to accurately assess traumatic brain injury.

Our devices will be portable, reliable, and produce precise and objective physiological measurements.

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## A Study for Concussion Detection and Monitoring with Ultrasound

Can Transcranial Doppler ultrasound be used to **evaluate concussions**?





## What is a Concussion?

### ■ Every year, an estimated 1.6 to 3.8 million Americans experience a concussion according to the CDC.

A concussion is an injury that damages or bruises the brain tissue. Concussions are typically caused by trauma, injury, or blow to the head or upper body.

### ■ Common Concussion Symptoms

- Headaches
- Nausea
- Difficulty Concentrating
- Memory Impairment
- Sleep Disturbances
- Changes in Appetite
- Irritability
- Sadness
- Low Energy
- Fatigue

### ■ Approximately 5-10% of youth, amateur and professional athletes will receive a concussion each season.

Untreated traumatic brain injury could result in long term brain health problems or, at worst, become fatal.

## Neural Analytics is studying ways to improve concussion management.

Many concussion evaluations are based on self-reported symptoms and subjective tests. These may be inaccurate because patients may not fully report their symptoms, admit they feel injured, or have unrecognized injuries.

### A reliable, objective concussion evaluation is needed.

Our study combines advanced data science with transcranial Doppler (TCD) ultrasound. This *safe, non-invasive* method is used to detect physiological changes that occur after a concussion.

This technology would enable quick and accurate concussion detection and monitoring. It would allow doctors and medical professionals to improve their concussion care.

### Become a part of this life-changing research.

Speak to your physician, athletic trainer, or contact our research coordinator at: (877) 638-7251  
info@neuralanalytics.com.

## Study Details

A safe, FDA approved TCD ultrasound headset will be fitted on your head, with one probe positioned at each temple. This will allow brain blood flow measurements to be collected. Next, you will perform simple breathing challenges to stimulate changes in blood flow. TCD measurements of these changes will be used to assess concussion.

Each study visit will be about 30 minutes. Several study visits may be requested to understand the recovery process. This will depend on your availability and symptoms.

The study can take place at several convenient locations:

- Doctor's office
- School
- Home
- Our Mobile Research Unit

## Eligibility

- Ages 9 to 85 years old
- Diagnosed with concussion
- Some health conditions may be excluded

*Healthy individuals may also participate for control measurements*

## Side Effects

There are no known side effects associated with this study.

## Compensation

Participants will be compensated up to \$50 per measurement.

For more information about concussions, visit our website at [www.neuralanalytics.com](http://www.neuralanalytics.com)