Assessments Available at Holistic Child/Adult Psychiatry

Quantitative EEG *- A Quantitative Electroencephalogram (QEEG), also known as a Brainmap is a assessment technique that has benefits for Neurofeedback. Compared to an MRI, it's less expensive and provides much more specific information about cortical timing. The brain is incredibly fast, and even minuscule differences in timing in a brain area can have profound functional implications. qEEG is a procedure where EEG (brainwave) data is gathered and then compared to an age-matched normative database. Information from a QEEG can then be used to see what areas of the brain may be functioning inefficiently, aid in developing individualized and comprehensive Neurofeedback protocols, or even assist a physician in determining the best medications or supplements to recommend for various mental health issues. A QEEG can also be performed at the end of a course of sessions to measure and visualize how much improvement has been gained.*

Brain waves are the rhythmic electrical impulses generated when the millions and millions of neurons inside your head communicate with each other. Brain waves can reveal important information about your overall brain function, including stress levels, thought patterns, and emotions. A qEEG can reveal brain wave patterns that are associated with impulsivity, cognitive inflexibility, anxiety, and other symptoms.

There are 5 types of brain wave patterns:

• Delta brain waves (1 to 4 cycles per second): very slow brain waves, occurring mostly during sleep
• Theta brain waves (5 to 7 cycles per second): slow brain waves, occurring during daydreaming, relaxation, and twilight states
• Alpha brain waves (8 to 12 cycles per second): brain waves occurring during relaxed states
• SMR (sensorimotor rhythm) brain waves (12 to 15 cycles per second): brain waves occurring during states of focused relaxation
• Beta brain waves (13 to 24 cycles per second): fast brain waves occurring during concentration or mental work states

HOW QEEG CAN HELP

A qEEG is a very valuable component of a comprehensive evaluation. It helps understand the cortical electrical activity in the brain. It can show if activity in the brain is too high or too low, and it can reveal how your brain cells are communicating with each other. It can be helpful in many ways, including:

• Identifying cognitive and psychiatric problems
• Showing how your brain wave patterns can be improved
• Predicting medication response, such as how you are likely to respond to antidepressant medication
• Providing valuable information in creating a personalized treatment plan (which may include biofeedback techniques such as Neurofeedback) to help balance your brain
• Tracking your progress with different therapies and treatments
• Providing objective information used to create your personalized Neurofeedback program or other guide other therapies, such as Transcranial Magnetic Stimulation (TMS), Frequency Specific Microcurrent or Photobiomodulation/Low Level Laser, to strengthen your brain.

qEEG gives additional information about how your brain functions and can be used for baseline information as well as to track progress with treatment. We can use the information from qEEG as a guide to determine the most effective solutions to help you change your brain and improve your memory, boost focus and attention, reduce depression, minimize anxiety, and enhance overall performance.

WHO CAN BENEFIT FROM QEEG?

A qEEG can be performed on people of all ages—adults, adolescents, children, and even babies - as well as patients who are pregnant or who are concerned about radiation exposure for any other reason. qEEGs can be used to help identify brain wave patterns associated with a variety of conditions, including:

• ADHD
• Depression
• Anxiety
• Panic disorder
• TBI
• PTSD
• Schizophrenia
• Obsessive-compulsive disorder
• Dementia
• Sleep problems

People struggling with mental health symptoms may benefit from an evaluation that includes qEEG testing.

WHAT RESEARCH SHOWS ABOUT QEEG

There are literally thousands of research studies on qEEG for a wide variety of clinical indications, including memory problems, anxiety, depression, traumatic brain injury (TBI), ADD/ADHD, and processing issues in autism spectrum disorder (ASD). For example:

• A distinctive brain wave pattern is associated with depression.

• Researchers have used qEEG to distinguish depression from other conditions, such as dementia, schizophrenia, and alcoholism.

• Memory issues typically show up as too much theta or too much delta activity

• Children and adults with ADD/ADHD tend to have high theta and delta brain wave activity, and kids and adolescents with ADD/ADHD tend to have lower beta brain wave activity compared those who don't have the condition.

Dr. Joel Lubar (my mentor) at the University of Tennessee has conducted a lot of research on brain wave underactivity in children with ADD/ADHD. In published research using qEEG, Dr. Lubar demonstrated that children with ADD/ADHD had excessive slow brain wave activity in the front part of their brain, which worsened when they tried to concentrate.

Dr. Lubar also demonstrated that many children can develop more normal brain wave patterns—and therefore improved focus and behavior—through brain wave biofeedback called Neurofeedback. Neurofeedback has been found to enhance memory, focus, and mental clarity; decrease impulsivity and anxiety; improve moods; boost academic performance, and lead to more restful sleep.

An elastic cap with 19 sensors is placed on the head so that the brainwave activity can be measured. There is no piercing of the skin. Brainwaves are then recorded with eyes closed and again with eyes open. This data is then compared to one or more normative databases; Holistic Child/Adult Psychiatry uses the Neuroguide by Applied Neurosciences Inc. This results in a series of tables and graphs which indicate which areas have brainwave abnormalities, the degree of abnormality, and the brainwave frequencies that are involved. This makes it possible to develop specific Neurofeedback protocols, unique to the individual.

Brainmaps guide efficient and effective Neurofeedback by guiding where the sensors should be placed and what frequencies and/or connectivity issues should be addressed in training. Brainmaps provide a great deal of additional information in a variety of tables and graphs. In addition to measures of the power of the EEG at various speeds, the Connectivity measures give information about but about how well one part of the brain is communicating with another part of the brain. The qEEG report could show brain areas where there is too much or too little EEG activity compared to the norm. It could also show which areas are not communicating well with other areas. Excessive EEG activity or poor communication typically correlate with lower brain efficiency.

Neurofeedback training is done through swLORETA Neurofeedback, again using Neuroguide by ANI.

Bio-Impedence Analysis (BIA) *- using a very small amount of electrical current that passes through the body by attaching small clips to sticky pads placed on the wrist and ankle, this tool quickly measures a person's hydration status, including the amount of intra- and extra-cellular water, Lean Body Weight, Fat Body Weight, Body Mass Index, Basal Metabolic Rate.*

Resistance and reactance, the two components of impedance, are measured directly from the body. Using regression analysis, the analyzer computes:

	Resistance (R) Reactance (X) **Body Cell Mass (BCM)** contains all the metabolically active tissues (living cells) of the body, including muscle cells, organ cells, blood cells, and immune cells. BCM includes the "living" portion of fat cells, but not the stored fat lipids. BCM also includes water inside living cells. This water is called **Intracellular Water (ICW)**. The main electrolyte of intracellular water is potassium. **Extracellular Mass (ECM)** contains all the metabolically inactive (non-living) parts of the body, such as bone minerals and blood plasma. ECM includes water contained outside living cells. This water is called **Extracellular Water (ECW)**. The main electrolyte of extracellular water is sodium. Fat-Free Mass (or Lean Body Weight) Fat Mass (or Fat Body Weight) Body Mass Index (BMI) Basal Metabolic Rate (BMR) Total Body Water (TBW) TBW/Body Weight TBW/Fat-Free Mass

Research has shown that body composition correlates directly to a continuum of health, ranging from mortality and morbidity to immunity, longevity, high function, and athletic performance. The purpose of body composition analysis is to monitor and improve function. For healthy patients, analysis of fat-free mass and body cell mass compartments can help maintain function, productivity, immunity, physical performance, and longevity.

MaxPulse *- a 3 minute computerized test that is painless. Using a clip (similar to that used to measure oxygen saturation) on the left index finger, the health and function of the blood vessel (endothelial) lining as well as Heart Rate Variability is assessed in order to determine:*

- Overall cardiovascular health
- Heart Rate Variability and Mean Heart Rate

- Overall elasticity of large, small and peripheral arteries (arterial stiness)
- Arteriosclerosis progress
- Blood circulation and remaining blood in the vessels after the systolic contraction of the heart •
- Left ventricular ejection, contraction power
- Mental stress, physical stress, and resistance to stress

Heart Disease is the #1 cause of death in the United States for both men and women. Just this year close to 1 million Americans will have a heart attack; early half of them will have no prior symptoms or warning signs. ½ of the victims of sudden cardiac death are under the age of 65!

2 of 3 people with Diabetes die from either heart disease or stroke, and are 2-4 times more likely to have hear disease or suffer a stroke than though people without diabetes, and at a younger age. Heart disease and stroke are the. #1 causes of death and disability among people with diabetes

Schedule your 3 minute Cardiovascular and stress evaluation with the Max Pulse today!

RightEye *- Holistic Child Psychiatry has recently introduced the Right Eye system. Using advanced, eye-tracking technology, the RightEye system uncovers issues that an observation-only exam cannot. This advancement is game-changing: it's now possible to pinpoint functional vision and brain health issues, identify the root cause of reading problems and improve athletic performance. All from a five-minute test.*

Why does eye movement behavior matter?

Involuntary eye movements — typically not apparent to the naked eye — indicate visual performance and health concerns. By measuring and analyzing these otherwise imperceptible patterns, doctors can identify and offer treatment to correct a host of vision and health issues as well as increase visual performance. Remember: vision is not the same as eyesight. A person with 20/20 eyesight may still exhibit weak eye movement behaviors.
Eye-tracking technology, which is both objective and non-invasive, captures pictures of eye movements (30-250) times a second. The data produced is quantitative—meaning, it allows physicians to identify vision and health issues in a measurable way. It can assess, and improve, the experiences of athletes. And it can track recovery and identify improvements.

In the United States alone, 1 in 5 children are diagnosed with learning and attention issues each year.

That's an astonishing statistic, and one that causes frustration and distress for children who end up feeling shame, fear and anxiety related to school and schoolwork as a result. Their parents,

too, become desperate for answers and help as they try to understand why their smart, curious student withdraws from schoolwork or acts up in the classroom.

What's more astonishing, however, is how many children are misdiagnosed from the start.

When Vision Problems Get Missed

Vision and learning are intimately related. In fact, there are 17 individual visual skills that are vitally important for reading and learning – from acuity to focusing, tracking, teaming and perception.

But most vision screenings in schools or even in pediatrician's offices only test for distance vision, so students who test at or near 20/20 are checked off the list as 'normal' and sent on their way.

For those who need help seeing the chalkboard or reading books because of simple refractive errors, glasses or contact lenses are an effective corrective measure. But those common conditions can also mask deeper vision struggles that make otherwise bright, engaged children seem as though they're having trouble comprehending the material or paying attention in class.

As many as 1 in 4 children have a vision problem that affects learning, and yet because many of them have never had a comprehensive exam outside of school, their symptoms are attributed to disorders like ADHD or dyslexia. Those symptoms, however, can overlap a great deal with those that indicate a vision problem, including:

- Headaches
- Eyestrain
- Fatigue
- Difficulty concentrating
- Rereading or skipping lines of text
- Difficulty recognizing words
- Poor handwriting

Worse, many children are needlessly medicated for what appear to be behavioral or attention-related disorders when vision challenges are at the root of their struggles in the classroom.

As adults, we often don't understand how the world looks through kids' eyes.

When they struggle to see properly, they'll lean into coping mechanisms – avoiding work, goofing off, acting out – because they don't know or can't articulate that they're having a hard

time seeing their schoolwork. And those coping mechanisms can look a lot like the behavioral issues that are currently so prevalent in school-aged kids.

To help stem this tide, it's increasingly important to dig into vision as a core part of learning, and work with students and their families to incorporate thorough vision screening as a standard part of pediatric healthcare.

Education is a big part of the solution; only 7% of children have ever had an eye exam from an eye doctor before they enter first grade. Professionals and clinicians have a key role to play in working with educators, parents, and other healthcare providers to help them understand the vital role that eye health plays in a child's early development and acclimation to school and learning.

Today, eye tracking technologies exist to help practitioners test these functions quickly, comprehensively, and in an objective way and the resulting reports can provide immense reassurance and comfort to parents and students alike while also offering insight into the treatments – from basic vision correction to more in-depth vision therapy – that can help not only alleviate symptoms but reverse these vision issues entirely.

Advancements in eye skill assessment can also help bridge an important gap in today's learning; more and more students are doing work on screens and with printed materials, and traditional vision evaluations aren't centered on digital learning. Using modern eye-tracking technologies for evaluation can help determine how well students can move and team their eyes while reading text on screens or following motion-based content like video. This will help many students and families catch deficiencies far earlier – and more accurately – so that kids can spend less time struggling with their confidence and school performance, and more time learning and growing.

And for parents, the comfort and reassurance of having a healthcare professional in their corner – a professional empowered with the information and tools that can make profound changes in the lives of their kids – means they can spend less time worrying and avoid unnecessary treatments for misdiagnosed learning disabilities, and more time and effort helping their kids get the vision correction and treatment they need to thrive in school.

School can be a demoralizing, difficult time for kids who struggle to learn, and for the parents and families who so desperately want to help them. With the right intervention, diagnosis and treatment, optometry professionals can help correctly assess when vision challenges are at the heart of learning difficulties, and help kids and parents alike rediscover the joy and excitement of learning.

Recent Research regarding concussions:
1. In a study of 92 subjects with and without concussions, automated, objective eye tracking was a reliable way to identify concussions, and to differentiate concussion severity.

2. Visual dysfunction is much more common among people who have suffered mild traumatic brain injury (mTBI) than among controls who haven't had a TBI. For example, 60% of those with TBI have impaired pursuits, compared to none of the controls, and 55% (vs. 5% of controls) have convergence insufficiency.
3. Children who experience visual dysfunction after a concussion take nearly one month longer to recover. Girls were twice as likely as boys to have visual dysfunction.

Various forms of assessments possible using the Right Eye System:

Functional Vision Screening - Acuity is just one of the vision skills necessary for a safe and productive lifestyle. The American Optometry Association also recommends that doctors evaluate eye focusing, eye teaming and eye movement as part of a comprehensive exam.

RightEye Brain Health EyeQ™ uncovers functional vision issues and automatically recommends computer-based exercises for patients to do at home.

Reading Assessment - One in four children has a vision problem that aects learning–a vision problem that is often misinterpreted as disinterest, sleepiness, dyslexia or ADHD. Reading EyeQ™ tests enable you to easily uncover vision problems that are frequently misidentified as learning disabilities. RightEye precisely records how the child is reading and delivers the information in a clear, easy-to-read format you can share with parents.

Sports Vision Assessment - Almost 80% of perceptual input is visual. But even 20/20 vision does not mean athletes are performing at their peak. Just because they can see clearly doesn't mean they can ascertain where an object is in space, how fast it's traveling or if it's changing direction. Sports Vision EyeQ™ identifies opportunities to strengthen performance-related aspects of vision.

Computer-Based Vision Exercises - When a RightEye EyeQ evaluation uncovers abnormalities, it recommends computer-based EyeQ Trainer exercises for the patient to do at home. Patients then return for follow-up visits for you to re-test with RightEye.

Computerized Neuropsychological Screening

CNS-Vital Signs *- Computerized testing that takes between 20-45 minutes (depending on what is being tested). Tests include visual and verbal memory, cognitive flexibility, executive function, simple and complex attention, working memory, and much more. This testing can be helpful in assessing and monitoring progress in conditions such as dementia (and progress in dementia treatment), Traumatic Brain Injury/Concussion, ADHD, Executive Functioning as well as various mental health/emotional conditions using both interactive testing as well as medical and health rating scales.*

CNS Vital Signs in-office neurocognitive testing procedure is a non-invasive clinical procedure to efficiently and objectively assess a broad spectrum of brain function performance or domains under challenge (cognition stress test) and 50+ computerized clinical and quality rating instruments e.g., PQRS to enable the measuring of important clinical symptoms, behaviors, and comorbidities to ...

- **Detect and track** even slight (millisecond precision) cognitive impairments that can assist clinicians in the evaluation and management of neurodegenerative, neuropsychiatric, neurotraumatic and neurodevelopmental disorders providing immediate clinical insight into a patient's current status and level of impairment
- **Help evaluate the possibility of secondary gain** e.g., academic accommodation, drug or disability seeking, malingering, symptom feigning etc. with embedded cognitive performance validity indicators
- **Give patients, family members and caregivers knowledge of cognitive domains** that underpin the ability to conduct activities of daily living
- **Automate the collection of guideline recommended clinical and quality measures** e.g., PQRS, recommended by professional societies and payers
- **Establish a neurocognitive baseline** in each patient to use in later treatment decisions
- **Longitudinally track clinical endpoints** to aid in the monitoring and management of many clinical conditions and treatments e.g., measure the response to treatment like AD/HD medication, rehabilitation efforts, cognitive behavioral therapy - CBT, etc. and used to measure clinical outcomes
- **Help identify domains needing additional or full neuropsychological evaluations**

CNS Vital Signs has taken a LIFESPAN approach ... collecting a large neurocognitive normative reference group from ages 8 to 89. The normative comparison helps clinicians grade the level of neurocognitive impairment that can help rule-in or rule-out certain clinical conditions and/or determine the level of impairment.

Cambridge Brain Sciences

The Cambridge Brain Sciences suite of neurocognitive tasks are derived from traditional pen and paper tests, and accurately measure core elements of cognition like short-term memory, reasoning, attention and verbal ability with norms from ages 10 and up. They are trusted by leading healthcare clinics and cognition researchers, and have been validated by decades of scientific research.

Tasks include:
Digit Span - measures verbal short-term memory, defined as the system that allows for temporary storage of information, and is crucial in everyday tasks such as remembering a telephone number or understanding long sentences. Digit Span involves numbers, but performance is indicative of verbal short-term memory, because it requires dealing with items in a specific order, as opposed to spatial short-term memory.
Double trouble (based upon the Stroop task) assesses response inhibition, which is the ability to concentrate on relevant information to make an appropriate response, even when distracting information or interference is present. It is a key component of concentration.
Feature Match - A task measuring attention—the ability to muster mental resources to focus and monitor for a specific stimulus or difference. Identifying similarities and differences is an important real-life skill that is put to the test in this difficult version of "spot the difference."
Grammatical Reasoning - Verbal reasoning is the ability to quickly understand and make valid conclusions about concepts expressed in words. While language comes naturally to most people, understanding complex sentences with multiple negative statements is consistently challenging.
Monkey ladder - assesses visuospatial working memory, which is the ability to not only hold information in memory, but manipulate or update it based on changing circumstances. Monkey Ladder requires storing numbers and their locations, then translating that memory into a series of movements in space.
Odd One Out - assesses deductive reasoning, which is the core cognitive ability to apply rules to information in order to arrive at a logical conclusion. Odd One Out requires reasoning about the features of several shapes to deduce the one shape that does not fit in with the rest.
Paired Associates - Episodic memory is the ability to remember and recall specific events, paired with the context in which they occured. Our Paired Associates assesses episodic memory by asking patients to remember which objects they previously saw, along with the location where they were seen.
Polygons - assesses Visuospatial processing, which is the ability to effectively interpret visual information, such as complex visual stimuli and relationships between objects. Polygons challenges the patient's proficiency in picking out subtle differences between shapes.
Rotations - Mental rotation is a function of visual representation in the brain. Effectively manipulating mental representations of objects allows people to make valid conclusions about what objects are and where they belong.
Spatial Planning - Planning is a fundamental property of intelligent behaviour. Spatial Planning assesses the patient's ability to act with forethought and sequence behaviour in an orderly fashion to reach specific goals.
Spatial Span- Spatial short-term memory is the cognitive system allowing for temporary storage of spatial information. Spatial Span challenges the patient's ability to remember the relationships between objects in space, as opposed to verbally rehearsing items in specific order, which relies on verbal short-term memory.

Token Search - Working memory is the ability to temporarily hold information in memory, and manipulate it based on changing circumstances or demands. In Token Search, patients need to maintain and update an ongoing representation of previous searches in a self-directed task.

ZYTO Select

What Is It Like to Get a ZYTO Scan?

Getting a ZYTO biocommunication scan is a simple and painless process. Simply place your hand on the ZYTO Hand Cradle while a scan is run. During the scan, subtle energetic impulses are introduced to your body. Your body will naturally respond to this communication and the ZYTO software records each response. Although a few people may be able to sense this energetic communication, most are unaware that the scan is taking place.
The length of the scan can be as little as 3 minutes; more detailed scans can take from 15-30 minutes..

What is a ZYTO Scan?

ZYTO scans are organized into what are called bio-surveys. You've probably filled out a survey before: a series of questions that you provide answers to. A bio-survey is essentially the same thing, only you don't answer the "questions" consciously—your body answers them directly.

With ZYTO bio-communication, the "question" is the Virtual Item, The answer, a change in the electrical properties of your skin, is recorded and analyzed by the ZYTO software.

A bio-survey can be as varied and versatile as any other survey. Some bio-surveys are general in nature and include Virtual Items concerned with overall wellness, while others include Virtual Items relating to specific areas of the body or body systems. There are also bio-surveys that deal with environmental factors. The core of ZYTO technology is bio-communication scanning. By measuring your body for galvanic skin response, a ZYTO scan can determine which nutritional supplements, foods, oils, or services your body is most biologically coherent with. The more primitive form of this technology is referred to as electrodermal screening (EDS), but bio-communication scanning has advanced EDS by providing more accurate measurements, an expansive list of items to scan for, and advanced scanning options, among other things. What it all adds up to is a more personalized experience for you when you get a scan from a practitioner or other wellness advocate. These individualized results will help you make decisions that can positively impact your physical health. And with ZYTO Remote, your practitioner or advocate can scan you from the comfort of your own home via Internet connection, making the consultation process more convenient than ever.

Is It Safe?

There are no known contraindications for properly administered ZYTO scanning. The amount of energy used in a scan is so low that it is safe for infants, children, and adults of all ages, including people with pacemakers and pregnant women.

Why get one?

ZYTO products help you make better decisions about your health and wellness. That's why ZYTO technology is referred to as wellness decision support technology. It's important to note that ZYTO scans are not intended to treat or diagnose.

Personal wellness areas

Along with helping you put together the pieces of your personal wellness puzzle, ZYTO technology can help you keep that puzzle intact. Our solutions are designed to assist you in improving and maintaining all areas so you can be your best self and live the way you want to live. Common areas that our bio-communication scanning and perception reframing sessions can help you with include the following:

- Energy
- Lifestyle
- Gut Health
- Detoxification
- Relationships
- Weight Loss
- Environmental Factors
- Nutrition
- Performance
- Anti-Aging

How often should I be scanned?

Regular ZYTO scanning will provide you with up-to-date bio-communication information as your body changes. Your practitioner will guide you with the specific scan schedule best for you.