



Dr. Jason Mazzarella
Whiplash & Chronic Pain Expert
Accredited CE by Leading Medical, Chiropractic, and Allied Health Institutions



UB Jacobs School of Medicine
and Biomedical Sciences
University at Buffalo



CONCUSSION ISN'T "INVISIBLE" — IT'S FUNCTIONAL.

WHY MANY PATIENTS SUFFER LONG-TERM SYMPTOMS EVEN WHEN SCANS LOOK "NORMAL."

COMMON CONCUSSION SYMPTOMS

- Brain Fog
- Memory & Forgetfulness
- Persistent Headaches
- Dizziness & Balance Problems
- Light / Noise Sensitivity
- Mood Changes / Fatigue

Many patients don't look "sick" on routine scans — but functionally the brain is dysregulated.

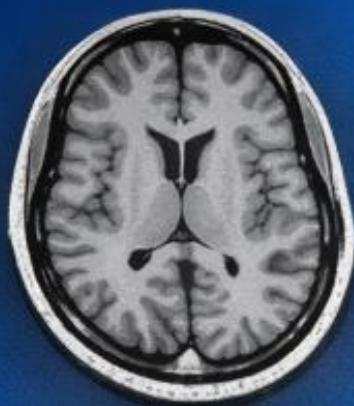


Why Standard Medicine Sometimes Misses Concussion.

Why Standard Medicine **Misses Concussion**

Normal CT / MRI Scan

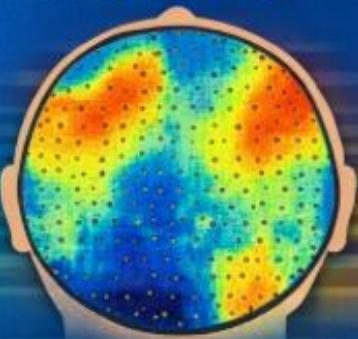
Shows **STRUCTURE**



Looks "Normal"

Functional Brain Activity

Shows **DYSFUNCTION**



Scans \neq
Brain **FUNCTION**

Hidden Issues:

- Abnormal Brain Waves
- Network Imbalance

Patients are often told "Everything looks fine" ... Yet they still suffer.

This is why some patients are told "everything looks fine" yet they still suffer.

CT & MRI show
structure **NOT**
function

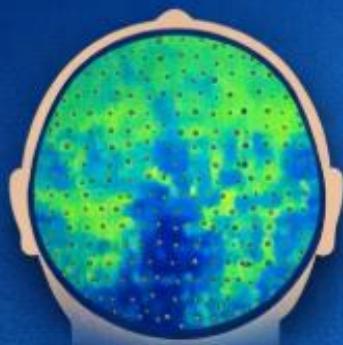
Tests like ImPACT
assess performance
but can miss subtle
dysfunction

Standard scans often
read "normal"
despite symptoms

QEEG: THE FUNCTIONAL BRAIN SCAN SOLUTION

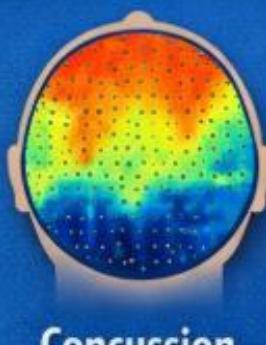
qEEG: The Functional Brain Scan Solution

Normal qEEG



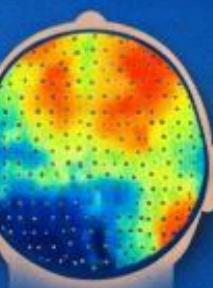
Balanced Activity

Abnormal qEEG



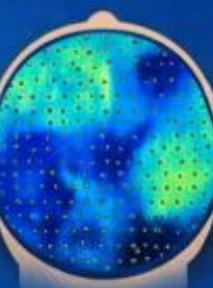
Concussion

Dysregulated Rhythms



Chronic Pain

Increased Activity



Depression

Underactive Frontal Lobe

qEEG uncovers patterns standard imaging can't especially in persistent post-concussion symptoms (PPCS).



Quantitative EEG
(qEEG)



Maps electrical activity
of the brain



Reveals dysregulated
rhythms linked to
symptoms



Helps tailor targeted
treatment

SIDNEY CROSBY: A REAL-WORLD EXAMPLE

- Sidney Crosby suffered a prolonged concussion in 2011 and struggled with ongoing symptoms that **standard medical care did not fully resolve**.
- After months of limited progress with conventional care, Crosby sought treatment with Dr. Ted Carrick, a specialist in chiropractic neurology and functional approaches
- He made **substantial progress**, particularly with motion and balance training, under this functional neurology care and was able to return to professional hockey at a very high level.



Sidney Crosby's recovery to include more treatment from chiropractor

The Canadian Press | Jan 16, 2012 | Partner

Sidney Crosby's recovery to include more treatment from chiropractor

CONCUSSION REHABILITATION: STRUCTURE VS FUNCTION

Concussion Structure Approach

Standard Medical

1. Structural imaging
2. Symptom management (Medications)
3. Rest & return protocols

Concussion Functional Approach

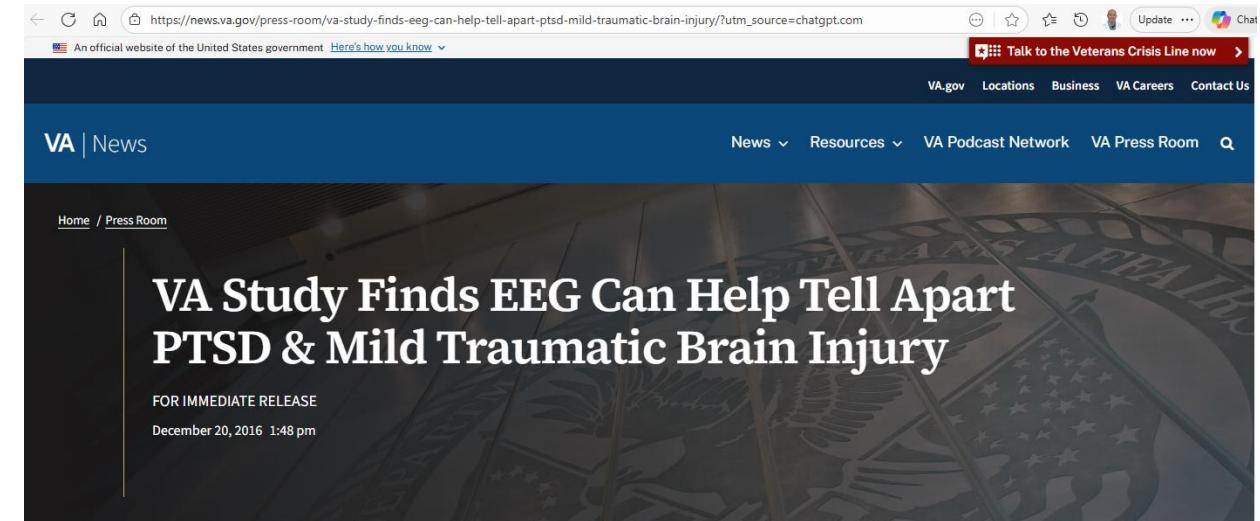
Functional Chiropractic Neurology

1. Functional brain mapping (qEEG)
2. Targeted brain network rehabilitation
3. Neuroplasticity-driven therapies

STEP 1: ADVANCED DIAGNOSIS

Functional Evaluation Includes:

- ✓ qEEG brain wave mapping
- ✓ Vestibular / balance testing
- ✓ Oculomotor (eye movement) assessment
- ✓ Autonomic nervous system evaluation



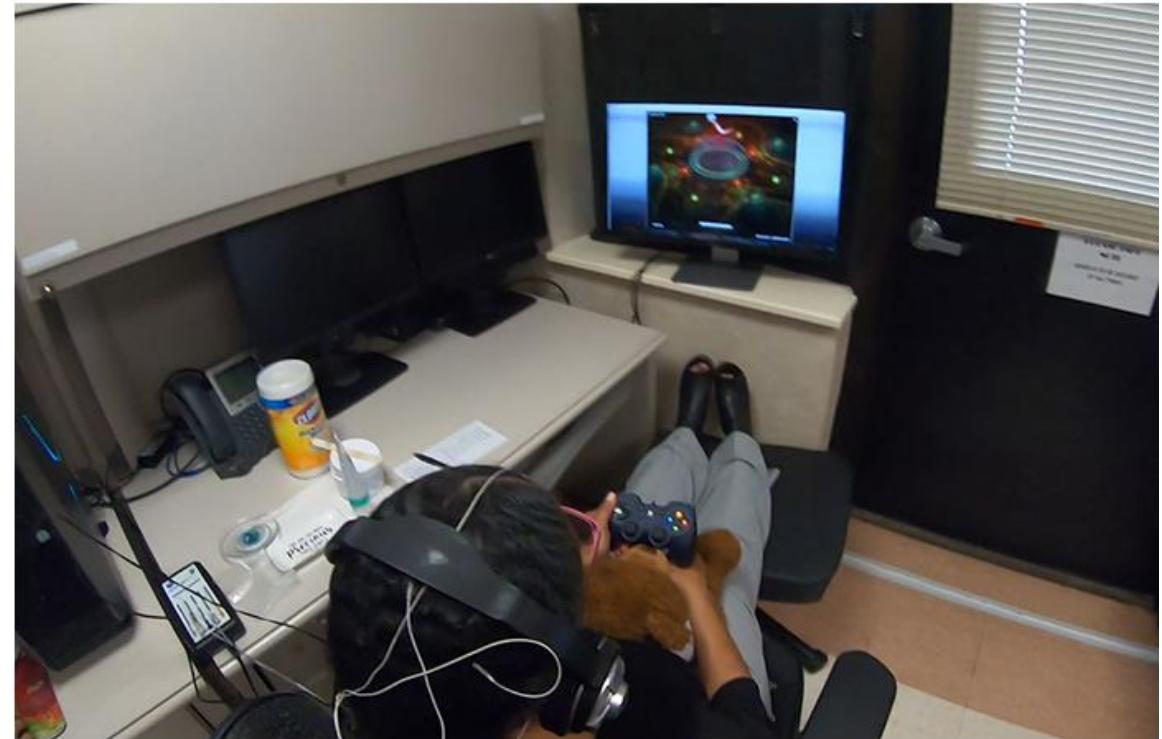
The screenshot shows a news article from the VA News website. The URL in the address bar is https://news.va.gov/press-room/va-study-finds-eeg-can-help-tell-apart-ptsd-mild-traumatic-brain-injury/?utm_source=chatgpt.com. The page title is "VA Study Finds EEG Can Help Tell Apart PTSD & Mild Traumatic Brain Injury". The text below the title reads: "FOR IMMEDIATE RELEASE December 20, 2016 1:48 pm". The background of the page features a circular graphic with the text "VETERANS AFFAIRS" and an American flag.

“That’s the holy grail,” said Franke. “We want to use the EEG to differentiate the problems, but also to predict recovery and be able to measure how people are doing in a more biological way than just measuring symptoms, although those are still relevant. But symptoms are also problematic because they’re influenced by so many things that aren’t the disease that we’re interested in.”

→ Precision diagnostics reveal where the brain isn't communicating properly, which allows for guiding treatment.

STEP 2: TARGETED TREATMENT MODALITIES

- **Neurofeedback:**
- Re-programs brainwave patterns through real-time feedback.
- Research shows protocols like ILF neurofeedback can improve post-concussion symptoms vs standard care alone.



Specialized equipment translates brainwaves into sensory input the brain can use to self-regulate.
(Photo by Judy Carlson)

Individualized neurofeedback relieves concussion symptoms

STEP 2: TARGETED TREATMENT MODALITIES



Low-Level Laser / Photobiomodulation

Helps reduce neuroinflammation & support cellular energy/metabolism

REVIEW article

Front. Neurol., 13 May 2025
Sec. Neurotrauma
Volume 16 - 2025 | <https://doi.org/10.3389/fneur.2025.1560777>

Non-invasive therapeutics for neurotrauma: a mechanistic overview

STEP 2: TARGETED TREATMENT MODALITIES



Vagus Nerve Stimulation (VNS)

Modulates brain network communication and autonomic balance.

Clinical reports link non-invasive VNS with symptom improvement in post-concussion patients.



► *Front Neurol.* 2025 Aug 26;16:1642034. doi: [10.3389/fneur.2025.1642034](https://doi.org/10.3389/fneur.2025.1642034) ↗

Non-invasive vagus nerve stimulation is associated with the reduction in persistent post-concussion symptoms: an observational study

[Michael Ament](#)¹, [Emily Leonard](#)¹, [Peter S Staats](#)², [Norianne T Ingram](#)^{3,*}

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PMCID: PMC12420837 PMID: [40937177](https://pubmed.ncbi.nlm.nih.gov/40937177/)

STEP 2: TARGETED TREATMENT MODALITIES



Light & Sound Entrainment

Shifts brain states (relaxation → focus) through rhythmic sensory stimulation and complements neurofeedback.



Ageing Research Reviews

Volume 101, November 2024, 102547



Review article

Harnessing Brainwave Entrainment: A Non-invasive Strategy To Alleviate Neurological Disorder Symptoms

Mehar Sahu ^a, Rashmi K. Ambasta ^b, Suman R. Das ^b, Manoj K. Mishra ^c, Anil Shanker ^d, Pravir Kumar ^{a,1,2}  

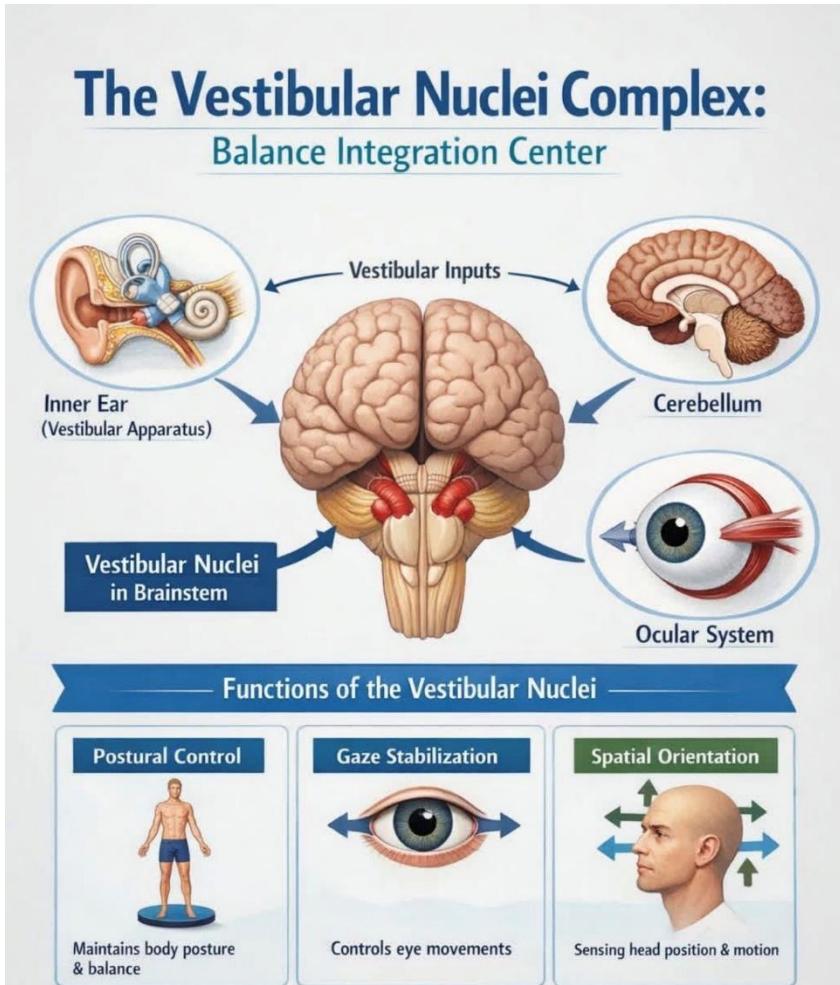
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<https://doi.org/10.1016/j.orr.2024.102547>

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STEP 2: TARGETED TREATMENT MODALITIES



Vestibular & Eye Movement Rehab

Targets balance, motion sensitivity, and visual tracking dysfunction common after concussion.

► Clin Sports Med. Author manuscript; available in PMC: 2016 Apr 1.

Published in final edited form as: Clin Sports Med. 2015 Jan 24;34(2):213–231. doi: [10.1016/j.csm.2014.12.005](https://doi.org/10.1016/j.csm.2014.12.005)

Current and emerging rehabilitation for concussion: A review of the evidence

Steven P Broglie ^{1,2}, Michael W Collins ³, Richelle M Williams ¹, Anne Mucha ^{3,4}, Anthony Kontos ³

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PMCID: PMC4387881 NIHMSID: NIHMS650269 PMID: [25818710](https://pubmed.ncbi.nlm.nih.gov/25818710/)

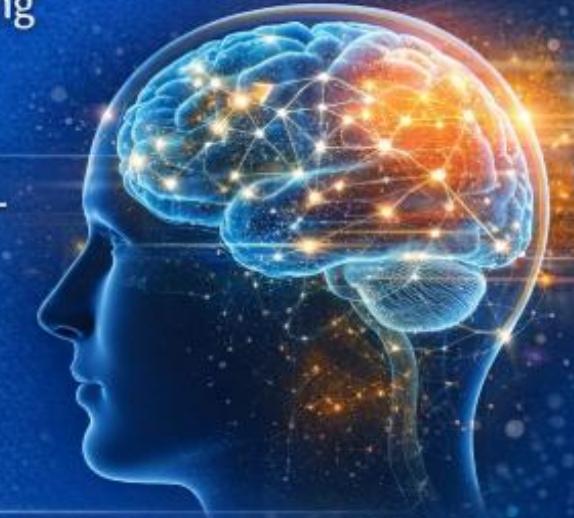
- ⚡ Concussions disrupt *brain networks* not always structure
- ⚡ Targeted therapies promote **neuroplasticity**
- ⚡ qEEG guides **personalized** treatment (not “one-size-fits-all”)



Why Functional Works

VA & DoD: Research Using EEG/qEEG to **Understand & Treat Concussion**

- ⚡ Concussions disrupt “**brain networks**” – not always structure
- ⚡ Targeted therapies promote **neuroplasticity**
- ⚡ qEEG guides “**personalized**” treatment (not “one-size-fits-all”)



Functional = **re-train and rebalance** the injured brain

WHY FUNCTIONAL WORKS

YOU DON'T HAVE TO SETTLE FOR "NORMAL SCANS, NORMAL REPORTS AND JUST REST". YOU HAVE OPTIONS!

Functional brain evaluation → Precise care → Measurable recovery!

Take control of your health!



ACCREDITED TO TEACH

Whiplash Traumatology, Neurophysiology, Pain & Treatment Seminar Series: A Multidisciplinary Approach to Care

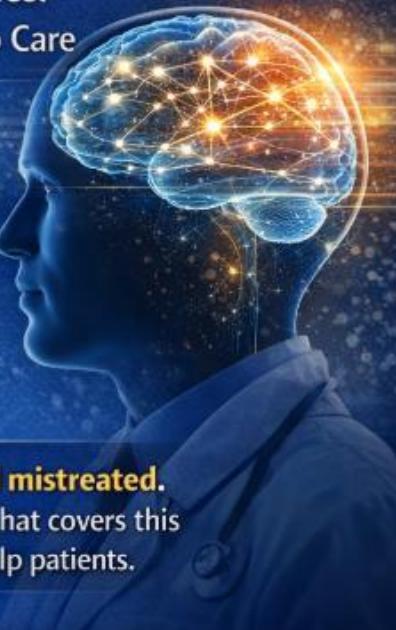
ENDORSED

McMaster University

ACCREDITED BY

MICHIGAN STATE UNIVERSITY
SCHOOL OF MEDICINE & OSTEOPATHIC MEDICINE

This injury is typically **misunderstood, misdiagnosed, and mistreated**. Medical schools recognize this, which is why my program that covers this topic was accredited to **better educate doctors** and help patients.



November 17, 2021

Dr. Jason Mazzarella
28 Finch Avenue West, Suite 212
Toronto, Ontario M2N2G7

RE: Whiplash Traumatology and Treatment: Injury Mechanisms, Neurophysiology, Pain, Special Testing and Treatment

Dear Dr. Mazzarella,

We have reviewed the application for the Whiplash Traumatology and Treatment: Injury Mechanisms, Neurophysiology, Pain, Special Testing and Treatment Program to commence as of March 5, 2022. We are pleased to inform you that this program has received endorsement for the period from December 1, 2021 – November 30, 2023.

The Whiplash Traumatology and Treatment Program meets the standards, policies and ethical guidelines outlined in the McMaster CPD Guidebook for Planning, Developing and Delivering Continuing Health Sciences Education Activities. As per the Faculty of Health Sciences Policy you can use the McMaster University/Faculty of Health Sciences name and/or logo in indicating the Office of CPD endorsement with the Whiplash Traumatology and Treatment Program.

Continuing Professional Development (CPD) Office

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1280 Main Street West
Hamilton, ON, Canada L8S 4K1

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Web: [REDACTED]
www.mcmaster.ca/events/chse

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College of Osteopathic Medicine
MICHIGAN STATE UNIVERSITY

August 12, 2021

Jason Mazzarella, DC
28 Finch Avenue West, Suite 212
Toronto, Ontario M2N2G7

Dr. Mazzarella,

Your request for accreditation of the "Whiplash Traumatology and Treatment" series which begins **March 5, 2022**, has been approved by the Michigan State University College of Osteopathic Medicine Office of Continuing Medical Education, for up to **31.75 AMA PRA Category 1 Credit(s)™**.

Please use the following statement for all advertising. If you are advertising the entire series, you will use the 31.75 credit count in the statement. If you are advertising the individual modules, please change the statement to reflect the actual module hours/credits (i.e., each module is 3 hours/credits).



Tele-Health

30 min

\$125

Book Now

To ensure accessibility and convenience for all patients, comprehensive evaluations and treatment sessions for concussion, whiplash, and related pain conditions are available both in-person at our clinic and virtually.

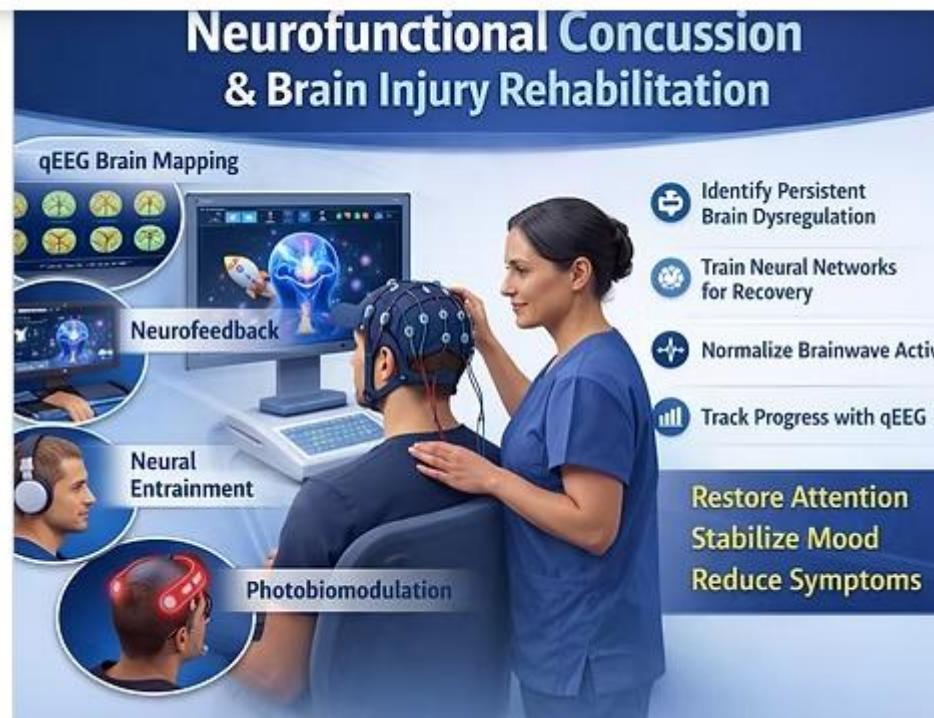
Whether you are local or remote, you can receive personalized, evidence-based care tailored to your needs from functional assessments to targeted treatment programs.

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For virtual patients, we have vendor agreements to supply you with the equipment needed at near wholesale prices. Allowing you to save thousands, while still obtained top quality care

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Neurofunctional Concussion & Brain Injury Rehabilitation

qEEG Brain Mapping

Neurofeedback

Neural Entrainment

Photobiomodulation

- Identify Persistent Brain Dysregulation
- Train Neural Networks for Recovery
- Normalize Brainwave Activity
- Track Progress with qEEG

Restore Attention
Stabilize Mood
Reduce Symptoms

Neurofunctional Concussion Rehab

1 hr

\$95

[Book Now](#)

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