THE BRAIN HEALTH MAGAZINE

A BRAIN *that went* TO WAR AND BACK

3 WAYS to Support Memory

Transcranial Magnetic Stimulation

THE MEMORY ISSUE

Living Your Best Life After Brain Injury | Mar/Apr 2021

THE BRAIN HEALTH MAGAZINE

MAR/APR 2021
VOLUME 3 | ISSUE 2

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The Brain Health Magazine© (ISSN 2688-6065) is a bi-monthly publication with 6 issues each year. To order a subscription, visit www.thebrainhealthmagazine.com. For address changes or advertising information, please email: hello@thebrainhealthmagazine.com.

2000 Forest Street | Hastings, MN 55033 | www.thebrainhealthmagazine.com

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FROM THE EDITOR

AMY ZELLMER,
EDITOR-IN-CHIEF

As I sat down to write this issue's "From the Editor" section, I took some time to reflect back on my own journey, and how my memory was so severely impacted by my injury.

In the early days of my recovery, my memory deficits were apparent right away. I remember the doctor telling me I had to take two weeks off from work, and pretty-much life. It was the busy season for my photography studio at the time, and I had about a dozen orders to get online for clients. So I decided to crank them out quickly before I took my "break" from reality.

I sat down at my desk and began to upload the photos, then clicked to the next screen to enter the client's name, but when I got to the next screen, I couldn't remember whose photos I had just uploaded.

I had been the type of person who had not only memorized all my friends' phone numbers (even though I had a cellphone) but also my credit card numbers and driver's license and passport numbers. Now, just seconds later, I couldn't even remember a name. It hit me hard and scared me to realize the extent of my memory impairment.

I told my neurologist who completely blew it off, but eventually sent me to a neuropsychologist where I endured a four-hour neuropsych exam, only to be told that I was "average" for my age and educational level, but that my memory was worse than a dementia patient's so I clearly had not tried hard enough on the test.

WHAT?
WHAT??
WHAT???

I was so caught off guard by her casual remarks about my efforts that I didn't even know what to say. "I just don't think you tried hard enough; you didn't give it your best effort." Those words I still remember.

Later, I took a similar exam at a different center, with very similar findings, but this time they explained to me that I clearly had memory impairment and that memory problems were quite common after TBI. They also explained that the exam has built-in features that allow them to tell if someone isn't trying or is faking . . . and mine clearly showed that I had deficits.

"Validation can be half the battle in finding our voice and reclaiming our lives."

I continued to struggle with memory problems, but developed coping mechanisms such as using Post-it Notes and to-do lists. Two and a half years into my recovery I finally found functional neurology, and once we cleared up some of my other issues (dizziness, eye tracking, balance, etc.) my memory started working better again.

I liken it to my computer . . . when too many programs are open at the same time, they all run super slow. But as I shut down different programs, the remaining open ones can run faster. My brain needed to shut down a bunch of programs before it was finally able to function at a normal speed again.

If you are still struggling with memory issues after your injury, please reach out to any of the wonderful providers in this issue. You really don't have to suffer, there is hope at any stage of your recovery!

Peace and glitter,

THREE WAYS *to Support Memory*

BY DR. SHANE STEADMAN, DC, DACNB, DCBCN, CNS

As we age, becoming forgetful and losing memory is a major fear for most people. When we watch family members and friends struggle with remembering events, names, and places, it can cause anxiety about the future. There are different aspects of memory and different areas of the brain responsible for memory. The big question that most people have is: what can be done to preserve our memory and, if it's getting worse, what can be done about it?

There are seven different types of memory, which can then be further broken down into subcategories. Understanding memory is very complex and research is constantly evolving. In this article, three main memory types will be reviewed: short-term, long-term, and sensory memory. Sensory memory is very short (less than a second) and is involved with sensing what a person heard, observed, tasted, or felt. The information goes through the thalamus and into the sensory areas of the brain. For example, hearing a bird overhead, seeing an image that flashes in front of a person, feeling cold when getting something out of the freezer, or smelling a brief fragrance when walking by a coffee shop are all part of sensory memory.

Short-term memory, also called active memory, is involved in holding a small amount of information. It relies on the function of the prefrontal cortex and a person can hold about seven to nine pieces of information. If not rehearsed, short-term memory will last about 20 to 30 seconds and possibly up to a minute. Examples of short-term memory are remembering a phone number, a person's name, or items on a list.

Long-term memory is information that is stored over days, months, and years and involves the area of the brain called the hippocampus. One function of the hippocampus is converting short-term memories into long-term memories. The hippocampus is an extension of the temporal lobe and is vulnerable to stress, hormonal changes, neurochemical changes, and vascular changes, which helps to explain why people become forgetful under times of stress, certain medical conditions, or inflammation. Knowing a little more, we can discuss three different ways to support memory.

#1 Diet and Nutrition

The first way to support memory, and often a simple way, is through diet and nutrition. Incorporating diet and nutrition is a necessity when working to improve memory. The brain is made mostly of fat and uses healthy fats for nerve signals and transmission. Foods rich in essential fatty acids, including fish, nuts, seeds, and certain plant oils are easy to incorporate into one's diet. Other foods such as blueberries, turmeric, avocadoes, and even dark chocolate can also be beneficial for memory, due to their anti-inflammatory properties, as well as the role they play as antioxidants.

Stabilizing and maintaining healthy glucose levels also supports memory and brain function. More information is coming out on the relationship between diabetes and Alzheimer's, but blood sugar stability is crucial in preserving memory. Research is being done on the link between Alzheimer's and blood glucose, because of the role blood glucose has on the brain and memory. Insulin resistance, diabetes, and hypoglycemia not only affects memory but can lead to further inflammation and alter hippocampal function. Consuming healthy fats and quality protein, and reducing refined carbohydrates, are important in maintaining proper blood sugar levels and keeping inflammation low.

#2 Supplementation

Studies have shown that a few supplements can be helpful with improving memory. Each herb or nutrient has different mechanisms of action in supporting memory. B12, for example, can help support myelin for nerve transmission while phosphatidyl serine is shown to help

with hippocampal function. It is important to work with a health care provider who understands not only memory issues, but also supplements. Below is a list of supplements that have been researched regarding their importance with memory:

- *Huperzine A*
- *DHA*
- *Acetyl-L Carnitine*
- *Phosphatidyl Serine*
- *Turmeric*
- *B12*

#3 Brain Exercises

When working to improve memory, build neuroplasticity in the frontal lobe, or support the hippocampus, brain-based exercises are essential to add to daily activities. When incorporating brain-based exercises it is important to first identify the weakness and work toward making it function better. For example, if short-term memory is a struggle, exercises or tasks that focus on using short-term memory are the types of exercises to do. Playing the old game of memory with a deck of cards or memorizing short lists can improve the neuropathways for short-term memory. With advancements in technology, apps and programs have made it easier to work on different aspects of memory. Programs such as Lumosity and Scientific Brain Training provide web-based and app-based systems that can be used daily to work on brain function and memory.

Thinking about memory and what the future holds can feel scary and create anxiety. There are knowledgeable practitioners and cognitive testing that can be done to measure a person's current memory issues. Having this knowledge can help a person understand what their next steps should be, and being proactive early could be a key to preserving memory. Take steps to maintain a healthy diet, minimize stress, reduce inflammation, and use your memory whenever possible. Treat the memory areas of your brain like a muscle and keep it strong.

Dr. Shane Steadman, DC, DACNB, DCBCN, CNS *is the owner and clinic director of Integrated Brain Centers. To learn more about how they can help with concussions, stroke, and TBIs, please visit* ***www.integratedbraincenters*****.com.**
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The Vestibular System and Memory Loss:

A HIDDEN CONNECTION

BY JONATHAN CHUNG, DC

When we think about disorders of the vestibular system we are usually concerned with inner-ear disorders leading to problems with vertigo or imbalance. While the vestibular system is a critical part of our sense of balance, there is a deeper and more fundamental purpose for these tiny little organs in our inner ear. A major purpose of the vestibular system is to help our body know where we are in space.

In a way, the vestibular system acts as a part of the GPS navigation system for your brain. As we move about our world, your vestibular system tells you where you are and which way you are going, while your eyes confirm your movement with different landmarks. We often take this sense for granted because it's not something we have to think about.

But what happens when our vestibular system breaks? When asked, many patients with a persistent vestibular disorder will often say they feel like they can't think clearly, or that their minds often feel lost in space. This ultimately leads to feelings of anxiety, which worsens our ability to think straight. This sense of knowing where we are in space is really important for driving higher levels of cognition. In order for people to think about things on a higher level, the brain has to know that the body is safe, and knowing where we are in space is a part of being safe.

So what does this have to do with memory? Scientists have known for decades that injuring the vestibular system in rats leads to poor performance in mazes. What they also noticed is that injuring the vestibular system also disrupts the ability of rats to remember the placement of food and treats, as well as navigating to their own laboratory homes. Not only is the vestibular system important for real-time spatial awareness, but it also compromises spatial memory.

What about humans?

Humans have more developed brains than rats, and we have the ability to use higher level cognitive functions and other senses to help navigate space. This ensures that a vestibular injury isn't immediately catastrophic for us if we lose the function of both inner-ear systems. Someone with a double vestibular injury will be very off balance, but their ability to think and retain memories remains mostly intact.

However, there are known associations between vestibular loss and future risk of dementia. Patients with vestibular nerve injury have been shown to have a higher risk of Alzheimer's disease. There is even some debate as to whether the form of Alzheimer's where patients will wander and get lost may be unique to patients with prolonged vestibular dysfunction. In a way, it's not so different from the rats that lost their spatial memory, but the process took much longer.

While we don't know the full reasons why this occurs, we believe that it happens because the vestibular nerves from the inner ear have rich connections to an area of the brain called the hippocampus. The hippocampus is a critical part of the brain, responsible for forming new memories, and it is also an area that is heavily implicated in Alzheimer's and other forms of dementia. Specific neurons in the hippocampus are activated by the vestibular system that helps with spatial intelligence and spatial memory. When we lose this fundamental sense of balance in space, then we also lose stimulation to the area of the brain that tells us where we are, or where we have been.

Brain Injury and The Vestibular System

So what does this mean for the patient with traumatic brain injury? We know that a large portion of patients suffering a concussion will have vestibular symptoms, and some may even have a vestibular injury. We also know that vestibular rehabilitation appears to make a big difference in outcomes for patients with post-concussion symptoms.

In the short-term, we know that having a balance or vestibular disorder is likely to interfere with cognition. In the long-term, we don't have good answers yet, but it seems reasonable that the vestibular problems after a concussion can worsen problems with cognition and memory.

More studies need to be done, but improving vestibular function in our clinic as part of a multimodal rehabilitation program appears to improve aspects of spatial processing and cognition. This effect can be magnified when aspects of vestibular rehabilitation are combined with cognitive-type exercises.

It's difficult to say if it will help improve memory, but I know for sure that if your brain can't process information accurately because of a persistent vestibular symptom, it has no chance of being able to store it and retrieve it when it's time to put the memory system into use.

Jonathan Chung, DC *is the founder and upper cervical chiropractor at Keystone Chiropractic and Neuroplasticity in Wellington, Florida. Learn more about their cervical vestibular rehabilitation program at* ***www.chiropractickeystone.com***

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FacesofTBI by Amy Zellmer

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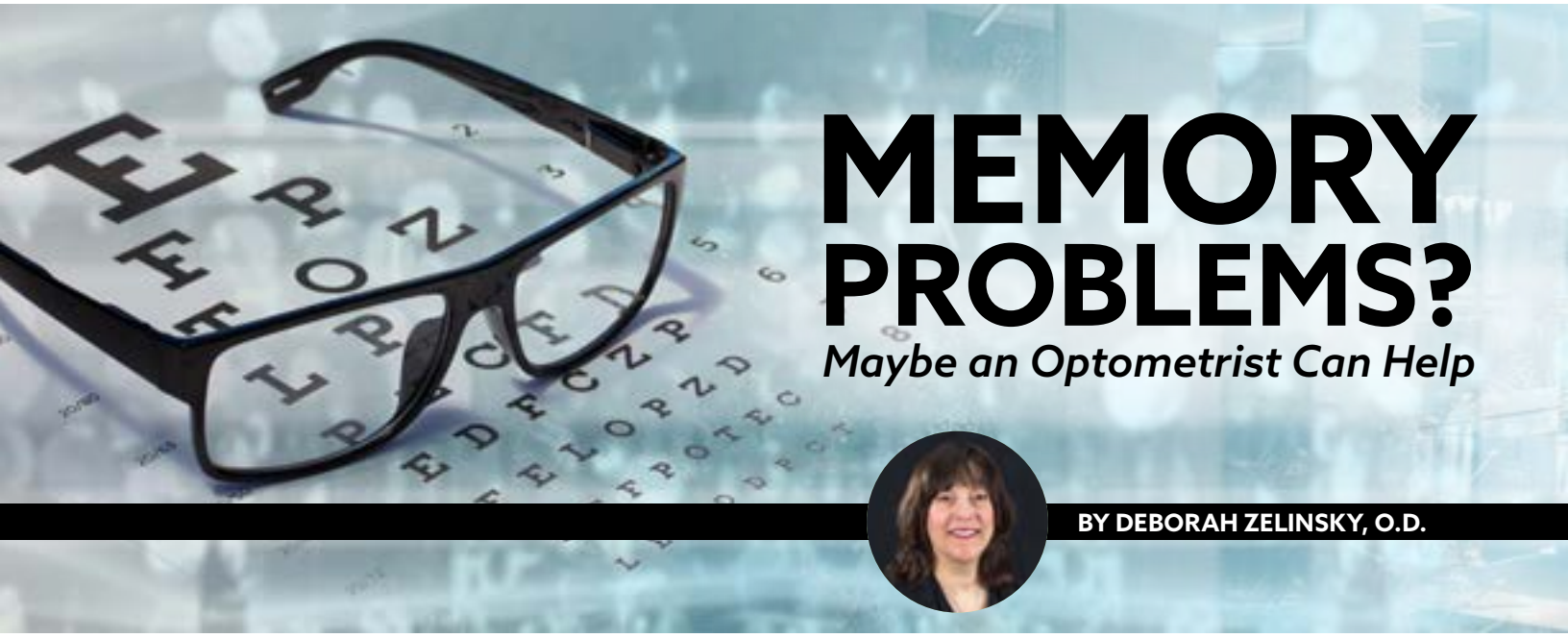

MEMORY PROBLEMS?

Maybe an Optometrist Can Help

BY DEBORAH ZELINSKY, O.D.

Why would someone visit an optometrist for memory problems? Because memories are built on our ability to "visualize" and "process" what we are seeing, feeling, smelling, touching, hearing, and thinking.

Visual processing is what enables us to respond appropriately to changes in the environment. That environment can include aromas, facial expressions, gestures, words heard, traffic patterns, and even sports strategies. We make decisions and predictions on the basis of our understanding, and understanding comes from the visualization process, which involves using new experiences to compare and contrast with previous ones; in other words — memory.

When brain circuitry is disrupted due to injury or neurological disorders like post-traumatic stress disorder, people can become confused and exhibit inappropriate reactions and responses to movement, sounds, and light. People with learning problems often have not solidly developed patterns of signal processing, making it difficult for them to adapt to sudden changes in their environment, or to remain logical rather than becoming emotional. Their many visual systems are not always working properly.

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So, how does all of this involve optometry?

At the Mind-Eye Institute, a multitude of visual pathways are tested in addition to eyesight, eye movement, and eye health. Then an individualized program is designed (using therapeutic eyeglasses and other advanced optometric tools and methods) to help redevelop — or initially develop — visual processing capabilities. Often, as processing changes, so do symptoms of brain injuries and learning problems.

"Why would someone visit an optometrist for memory problems? Because memories are built on our ability to 'visualize' and 'process' what we are seeing, feeling, smelling, touching, hearing, and thinking."

"Brainwear™" glasses, used in Mind-Eye assessments, bend light in different ways across the retina, which is made out of brain tissue. Light can be bent in a manner that selectively targets specific groups of receptors. These receptors, when activated, convert light into chemical signals, eventually triggering electrical signals that propagate through nerves. Those electrical signals can constrict musculature surrounding blood vessels, impacting ocular blood flow in a process called neuro-vascular coupling. Ocular blood flow is related to brain blood flow in the larger blood vessels. Basically, brainwear glasses can regulate brain function through blood flow changes.

Using light to stimulate the retina not only affects neurovascular coupling, but it also leads to the creation of new brain signaling pathways supporting memory formation. For instance, people with Alzheimer's disease struggle with memory. Recent studies indicate that these patients have altered vasculature, which can sometimes be detected by examining the blood vessels and nerves in the back of the eye.

"[B]rainwear glasses can regulate brain function through blood flow changes."

Because the retina is part of the central nervous system, signals exiting it are linked to many brain pathways, including those leading to and from three memory-related structures — the hippocampus, prefrontal cortex, and amygdala. This circuitry is necessary for the various stages of memory, including information encoding, storage, and later retrieval.

Memories are also encoded with emotions and other sensory experiences and can be recalled when a person is exposed to certain sounds or sights. For example, a song heard on the radio may prompt one person to remember the music played at a wedding, another person to have thoughts of a past party, and yet a third to recall an event such as ice-skating to music. Brain circuitry is at work when a sound triggers a memory that activates visualization (one of the many internal visual systems). The same can happen with a visual trigger. The sight of an old doll might prompt a memory from elementary school. Eye and ear memories are linked. Sights can trigger recall of sounds and vice-versa.

Being able to visualize also is linked to the ability to dream. In one recent case, a patient whose visual processing had been disrupted by a traumatic brain injury had been unable to dream for almost seven years until receiving help from the team at the Mind-Eye Institute. That patient lacked the visualization skills required to form the mental imagery needed for dreams.

Other skills, such as reading, also rely on visualization — the creation of mental imagery for later recall when learning. Reading uses visual memories to recognize words and auditory memories to remember and decode the sounds of those words. If auditory and visual memories are not in sync, reading becomes difficult to learn.

Mind-Eye patients often relate how disruptions in their visual processing have left them "emotionless, simply blank," many times affecting their memory skills. They report difficulties retrieving proper words or remembering peoples' names.

The brain is plastic, meaning it is readily able to change at the cellular level. Because of this elasticity, this adaptability, we can help patients develop new informational pathways in their brain, thereby building — or rebuilding — memory skills. Visual learning games can help rehearse the new skills until they become habits.

"The brain is plastic, meaning it is readily able to change at the cellular level. Because of this elasticity, this adaptability, we can help patients develop new informational pathways in their brain, thereby building — or rebuilding — memory skills."

People do not realize that eyes are not simply for exploring the surrounding environment; many, many other visual skills are linked to retinal processing. Optometry is a profession currently being updated to address some of the processing problems people face today.

Deborah Zelinsky O.D. *is a Chicago optometrist who founded the Mind-Eye Connection, now known as the Mind-Eye Institute. She is a clinician and brain researcher with a mission to build better brains by changing the concept of eye examinations into brain evaluations. For the past three decades, her research has been dedicated to interactions between the eyes and ears, bringing 21st-Century research into optometry, thus bridging the gap between neuroscience and eye care.*

"I Finally Feel Normal Again"

BrainWear™ Glasses Are Playing A Critical Role in TBI Recovery

Kevin Pearce Professional Snowboarder Recovers From Brain Injury with Mind Eye Institute

"Ghost In My Brain" Author Clark Elliott Recovers Thanks To "Brain Glasses"

BrainWear Glasses Play Critical Role in TBI Recovery

Brain' Glasses Help Shooting Victim Read, Write Again

Mind-Eye Helps Head-Injured Marine 'Return to Person I Was'

Utah Patient 'Blown Away' by What Eyeglasses Do for His Injured Brain

If you or someone you love has experienced a brain injury or feel like "something is different," please take our free online "Brain Quiz" or speak with one of our New Patient Advocates and come in for a Mind-Eye exam today by contacting our office at 847-750-4616 or visiting us at https://mindeye.com/tbiquiz

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A BRAIN *that went* TO WAR AND BACK

BY AMY ZELLMER
EDITOR-IN-CHIEF

Andrew Marr was an athlete his entire life. Having played all-conference football in college, he was used to performing at a high level. "I was never classified as having a concussion, but I probably had hundreds of them, but with no known issues. This was before we understood the consequences of banging your head over and over," Andrew said.

We now understand that both physical and non-physical trauma can lead to inflammation and disrupt the chemistry of the brain, which can manifest as neurodegenerative and cognitive disorders. Andrew was repeatedly exposed to environments that are conducive to an inflammatory state.

As a high-performing athlete in great physical and mental health, it was only natural that Andrew would go on to be a member of Military Special Forces — individuals who are specifically selected based on physical performance, mental intelligence, and resilience in extremely stressful and difficult situations.

During his military career, he served in combat in 2009, 2010, 2011, 2012, and 2013. He was in constant situations involving gunfire, air blasts, and high-impact activities such as jumping out of airplanes. Add in being sleep deprived and not getting proper nutrition … it was, in his words, "a breeding ground for disaster."

In his entire life he had only been knocked unconscious once, from an explosion during combat. One minute it was daylight, and the next everything was dark and he couldn't understand what had happened. He thought maybe there

had been an earthquake; however, the sound of bullets and rocket grenades quickly brought him back to reality.

He didn't think much about it afterwards. He was alive — he hadn't been shot and wasn't bleeding. He was assessed for a traumatic brain injury and laid low for a few days and then was back in operation for the remainder of that deployment, about three months, constantly firing weapons and in close proximity to explosions.

Six months after returning from that deployment, his entire world started to deteriorate. The first thing he noticed was that he had lost his libido. At first he brushed it off, thinking that it was just his body's way of acclimating to being home after being in combat. But then he started experiencing a complete zapping of his energy and life force. Where before he had abundant amounts of energy and was used to performing at a high level on numerous tests, everyday things became exhausting, and he had difficulty making it through the day.

Then Andrew began to have panic attacks. "I had always thought only psychologically weak people had those. It didn't matter where I was — safe at home, a doctor's waiting room, in public at a store — it didn't matter. It would just come on out of nowhere and trigger something in me that caused me to cry uncontrollably, and I couldn't stop."

Next came extreme headaches that would come on suddenly, lead to blurry and double vision, and throw off his balance. Then depression started to settle in. "That was when I began to think I was going insane. I didn't have a scratch on me, and I was physically fit, but I felt heaviness, like my entire family had been murdered. But I had no reason to be depressed."

His anxiety became so intolerable that he didn't know how to cope, so he turned to alcohol. Drinking became a daily routine, and eventually he was drinking from the moment he woke up until he went to bed. He found himself drinking and driving, understanding how completely out of character it was for him and that it was a poor decision that put other people at risk.

At that point, he went to Command and told them what was going on … begging for help. He wanted to get better. This led him through the gate into the military medical system.

He was put on 13 psychiatric drugs for anxiety, depression, migraine, pills to help him sleep, and Adderrall to help him stay awake. He slowly became a zombie. The pills were masking his symptoms but weren't identifying or healing the actual problem.

He struggled with decision-making, correctly interpreting information, his short-term memory, and learning new things. "I couldn't focus, I couldn't read a book or a web page. I couldn't follow a conversation or concentrate. I was only 32 years old."

He was deemed 100% disabled by the V.A. and was forced to medically retire. He was labeled with over 30 disabilities, and he feared not knowing what the future entailed or how he would provide for his family. The V.A. acknowledged that he had had a TBI but stated that he was now suffering from "psychological distress."

"I knew in my mind there were solutions for this. I vowed I would spend the rest of my life helping others in the exact same situation as me."

Finding the Right Doctors.

In November of 2014, Andrew found his way to a functional neurology clinic in Texas. At the end of his second day in a two-week intensive treatment program, he was finally able to sleep through the night, which was a huge win for him. Treatment helped resolve his migraines and vision issues, as well as his balance. He was grateful for those advancements, but wondered if he was as good as he was going to get.

During his two weeks at the clinic, Forbes Magazine was doing a feature story on the clinic, and documented Andrew's intensive treatment. When the issue came out, another doctor in California read the article and knew he could help Andrew take his recovery further.

"Dr. Mark Gordon reached out to me. I was skeptical at first, but it ended up being the hope I was looking for," Andrew said.

"Andrew came to me in 2015. He was depressed, on medications, and suicidal. He had previously been a high-performing special-ops Green Beret. The real issue here was that he was inflamed. If we get rid of inflammation, we see improvement. Using my nutraceutical protocol, we typically see great improvement. The bottom line is that we treat the cause — inflammation," Dr. Gordon explained.

After working with Dr. Gordon, Andrew was able to get off all of his medications, and has been symptom-free since.

Hope For Others.

In early 2016 Andrew's younger brother, Adam, suggested that they document his story. He felt it could help other individuals going through the same things Andrew had. He described it as a potential roadmap to navigate your own circumstance. "It was all Adam's idea," Andrew said, "If it had been left up to me, I probably wouldn't have done it. But I knew we had a responsibility to help others."

Andrew sent the manuscript to his editor, Beth, who sent it to Emmy-award-winning director/producer, Jerri Sher. Jerri receives books all the time from people who think their story is worthy of a documentary. But once she read Andrew's book, she knew she had to tell the story. Andrew said, "We were moving ahead with the movie before the book was even published. It's funny how life ends up. If it was up to me, I wouldn't want to be in the middle of any of this, but my wife and I understand that this is our new purpose in life. Adam and I were adamant that the movie needed to be educational, and that's exactly where Jerri was coming from. It seemed like these things were meant to happen."

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"The stories I am supposed to tell find me. I knew I was supposed to tell this story and bring it to the world," Jerri said. Because TBI affects millions of Americans, she knew she wanted the documentary to represent more than just military members, that it also had to include athletes and civilians. Her biggest hope was to create awareness about TBI and PTS (post-traumatic stress) and let people know that there is a way to heal, even if traditional doctors aren't helping them.

The first thing she did before meeting with Andrew and Dr. Gordon was an internet search — she wanted to read everything they'd ever done or been featured in. She found out that Andrew and Dr. Gordon had been on the Joe Rogan podcast back in 2015. She immediately knew that was going to be a key part of the documentary, and was able to get the rights to use the podcast footage.

She then proceeded to find the rest of the remarkable cast:

- **Joe Rogan:** *an American comedian and podcast host, is a huge supporter of veterans and wounded warriors.*

- **Dr. Daniel G. Amen:** *founder of Amen Clinics. Double board-certified psychiatrist, neuroscientist, and ten-time New York Times best-selling author.*

- **Kristen Willeumier, PhD:** *neuroscientist.*

- **Scott Sherr, M.D.:** *director of integrative hyperbaric medicine and health optimization at Hyperbaric Medical Solutions in California.*

- **Robert Sammons, M.D.:** *chief medical director for TMS Solutions, trained in TMS at the Harvard School of Medicine.*

- **Alan P. Sherr, D.C.:** *founder and director of the Northport Wellness Center.*

- **Andrew Marr:** *Sergeant First Class and Special Forces Green Beret, retired. Co-author of Tales From the Blast Factory.*

- **Alan Sher:** *suffered brain impairment from being in an 8-hour surgery for quadruple bypass after a severe heart attack.*

- **Anthony Davis:** *former USC running back and NFL player.*

- **Mark Rypien:** *former quarterback of the Washington Redskins and winner of Super Bowl XXVI MVP.*

- **Ben Driebergen:** *American Marine Corps veteran and reality television personality best known for winning season 35 of CBS's reality show, "Survivor."*

- **Shawn Dollar:** *champion surfer and two-time Guinness World Records winner for highest wave ever surfed, 61 feet.*

- **Annie Nicholson:** *Naval Academy cadet who was sexually assaulted twice while attending the Academy and suffered severe PTSD. She was told she was mentally ill and was thrown out of the Navy.*

- **Sebastian "Sebby" Raspanti:** *a 9/11 first responder firefighter in NYC.*

- **Kevin Flike:** *special forces engineer assigned to the 1st special forces group.*

- **Julianna Harpine:** *competitive gymnast and student at Belmont University studying to be a doctor of physical therapy.*

- **Adam Marr:** *Aviation Commander, flying apache helicopters, retired. Co-author of Tales From the Blast Factory.*

The film, "Quiet Explosions: Healing the Brain" was released in November 2020 and is available for rental on Amazon and VIMEO. It won the Lilac award at the Spokane International Film Festival (SpiFF) in Spokane, Washington, as well as best documentary feature at the NoHo North Hollywood CineFest film festival. Additionally, it is entered in the Director's Guild of America (DGA) for best documentary.

What's Next?

Andrew and Adam began Warrior Angels Foundation in 2015 and are currently putting 100 military members through Dr. Gordon's protocols to observe what happens over the next year when they return back to their communities. The hope is to reduce the rate of suicide among returning military members.

Special Operations issued a new study last year that shows special ops have a 30% higher suicide rate than even the army. They found this surprising because of the extensive selection process. But it's not surprising to Andrew, who knows that these individuals are chronically exposed to blast waves and no one is looking at their inflammatory or neurologic functions. He wants to see that change and hopes their study will be an integral part of that change.

Additionally, they hope to expand beyond the military population and include the homeless and incarcerated populations, which are known to have high rates of TBIs. "It's a societal issue. We want to make sure people know there is a choice and give them the information so they can have control over their lives," Andrew said.

MEET THE CAST!

SAVE THE DATE!

March 16, 2021 • 10am-4pm CST

Virtual brain injury awareness day event, including a Q&A with the cast of "Quiet Explosions" at ***1pm CST***

Be sure to rent the movie on Amazon prior to the live event so that you can ask the cast your questions!

REGISTER: ***www.facesoftbi.com/event***

#NOTINVISIBLE

Additionally, **SUBSCRIBE to Faces of TBI** on iTunes or your favorite streaming platform so you don't miss any of the upcoming interviews with the cast.

ADDITIONAL RESOURCES AVAILABLE

- ***www.quietexplosions.com***
- ***www.warriorangelsfoundation.org***
- ***www.tbihelpnow.org***
- ***www.jerrisher.com***

Images ©Quiet Explosions/Cinema Libre Studio

THE MEMORY OF AN EGO:

Transforming Memory and Identity with a TBI

BY SAM BLACK

Memory is something that I did not give much thought to in my "before the accident" life. I relied on it in my career as a social worker. I cherished it in my pastime of creating Scrapbooks and journaling. I mastered it as a busy mom of five. And yet consciously, it never occurred to me that in the blink of an eye, it would not be there.

There are two particular moments that come to me about how damaged my memory was, after my TBI, and how my abilities to access memories were directly related to the identity that I had created for myself. They are two moments of many where I have felt robbed and as though I did not quite know myself at all, two among many moments that inspired me to heal.

Moment #1:

"Very nice, Sam, now can you count backwards by 7s from 100?"

Of course, I can … I am a certified teacher, I have taught my grade one's to do this exact thing. "Starting from where?" I asked.

"100. Count by 7s backwards from 100. Just do your very best."

"100 … 100 … 100 … " With each repetition, my mind becoming blank, the lump in my throat growing, and tears in my eyes welling up, getting ready to burst, I said, "I do know how to do this. I am a certified teacher. I did this with my grade one's."

But why can't I do it … this is so easy … what is wrong with me?

My very well-meaning friend, who had driven me to the appointment, smiled and said that she could not do it either.

But I can do it … or at least I could do it … before.

My ego was bruised that day. My identity as a well-educated, honor-roll student, professional in the community … that representation that I had manufactured no longer applied … . That Sam no longer existed, at least not consciously.

Moment #2:

Another chilly winter day, my memory, or lack of it, provided a good laugh for my family; however, I felt the Earth shattering. My mind has let it go; however, emotional journal entries allow me insight of that time. I must have been looking through our photos and saw a picture of my oldest son blowing out his birthday candles. I knew that it was after the accident had taken place, because the accident happened on his 16th birthday. He was in Toronto at the time. I was delighted that someone had taken the time to get him a cake and make him feel special, even though I was unconscious much of that time.

"Babe! I love this! I love that you guys still celebrated Tristan's birthday and we have this picture! Who took it so that I can thank them?"

"Sam, you took the picture. You got me to run out and get a cake because you weren't able to bake. You took that picture."

Nothing. Aside from the photo, there is nothing. No memory. Nothing for me to access on my own. Even now,

years later, if not for the photo on Facebook and a journal entry, I remember nothing of that day. I am left to wonder, is it like the tree question—if an event happens and you don't remember it, did it really happen?

And just like that, I felt I had failed again, only this time it cut deeper into my ego. This was about my baby boy, about me being a mom. What kind of mom forgets her son's birthday?

Memory is something that allows us to recall information. Short-term, long-term, consciously or unconsciously. Memories are like little gifts, some on display and some up in the attic, hidden away for a special moment or when they are needed. It works much like a jigsaw puzzle, linking to other pieces to give explanation to who we are, what we know, who we love and more. And because no two brain injuries are identical, we all experience TBI differently. For me, memory loss was among the most traumatic. It felt so personal, as though I did something wrong or I was simply not doing enough to access it. Because I could recall some events and not others, it was also a challenge to express to others what I was going through with this invisible injury.

And yet, I found healing … and I found myself waiting patiently behind the negative self-talk and the limits that I had put on myself in efforts to protect my ego.

1. **I kept a picture of a brain in my journal:** *When I felt frustration and betrayal by not remembering, I looked at the picture and, at times, took out our body atlas. My brain is healing. My prefrontal cortex is healing. My hippocampus is healing. I am healing. Thank you for healing, I told my brain. This allowed me to move into the present. Into a state of kindness and understanding.*

2. **I took a little extra time in the shower each morning:** *I used soapsuds from my shampoo and wrote on the shower wall "100 … 93 … 86 … 79 … 72 … 65 … 58 … 51 … 44 … 37 … 30 … 23 … 16 … 9 … 2 … every morning I practiced . . . and every morning I retrained by brain to recognize the sequence.*

3. **Reframing negative self-talk:** *Being unable to recall what feels important is difficult . . . trying to recall while verbally beating yourself up is a setup for failure. What started as "What kind of Mom forgets her son's birthday?" shifted to "I am healing. My brain is healing. Even though I do not remember this, I do remember how much I deeply love my children."*

4. **Communication with those around me was a lifesaver:** *The things that my family struggled with most (and still do at times) was that I repeated myself often, that I had Post-it notes everywhere and that I "nagged." Being able to express that I was afraid that I would forget and that was the purpose of the nagging and the Post-it notes, helped them to remind me that they heard me and have understanding that it was important to me. Aside from a few "Dory" jokes now and then, they are much more compassionate about the repetition and I am more gentle with myself and them, when things get missed.*

5. **Be kind:** *You are healing. Your loved ones are healing. You are still you. Our memories are a gift. We too, all of us, are gifts.* 🎗

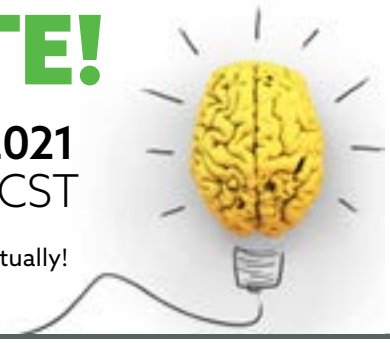
Sam Black *is an International Psychic Medium and Master Coach, with a passion for helping others find the gems inside them so that they can shine them to the world!* ***www.samblack.ca***

SAVE THE DATE!

#NOTINVISIBLE
Virtual Event

March 16, 2021
10am-4pm CST

Celebrating ***Brain Injury Awareness Day*** – virtually!
REGISTER: ***www.facesoftbi.com/event***



FacesofTBI

Want to learn more about Amy's journey? Purchase her books on Amazon!

"Amy is a prime example of how powerful and life-changing combining personal experience, passion, and advocacy can be."
— **Ben Utecht**, *2006 Super Bowl Champion and Author*

MEMORY *and* TBI

LEGAL CORNER

BY JAMES A. HEUER, PA

After suffering a TBI it is common to experience trouble with your memory. Whether your TBI was moderate or severe, you will have difficulty remembering things, finding the right words when speaking, and getting organized. These brain functions are all types of cognition. Symptoms including anger, stress, and fear (that occur after a TBI) have an impact on the brain's cognition as well. These symptoms slow down your thinking more and, therefore, slow down cognition. Do not be discouraged as there are ways to improve these cognition problems. It is important to identify which types of problems are common after the changes in the brain occur from the TBI.

Since a TBI can affect the way your brain takes in and stores information, it can also cause your thinking process to slow down overall, which makes it more difficult to stay focused. The most common type of memory loss after a traumatic brain injury is short-term memory loss. TBIs affect short-term memory more than long-term memory. This means you may have trouble learning and remembering new information, recent events, or what's happening day to day.

Most commonly, short-term memory problems mean:

- *forgetting important details of conversations, such as remembering to relay a message to another person;*
- *forgetting where you left items such as keys or your planner or cellphone;*
- *feeling uncertain of what you said in the morning, the day before, or the week before, resulting in asking the same questions repeatedly;*
- *forgetting what day it is or losing track of the time;*
- *being unable to retrace a route you previously took earlier in the week;*
- *forgetting what you just read in a book or what you just viewed in a movie.*

Along with short-term memory problems, it is also common for people to not remember the injury itself. This is called post-traumatic amnesia. It means that people may not have stored the injury as a memory. Afterwards, it leaves people confused and unable to store any more memories that occur after the injury. This can last from a few minutes to months depending on how serious your TBI is. If you are unable to remember the events of your TBI in a series of memories, it is simply because your brain never stored them. It is important to ask your medical providers, family members, or friends who have solid information about how you were injured to help you.

Since struggling to remember things is so common with a TBI there has been quite extensive research on how to restore the brain's ability to learn and remember naturally. Specialists who work with recovery programs have found tactics that help treat cognition problems and there is also a lot a person can do on their own to help their brain function. Since the brain is a muscle, there are ways to improve it and to keep it active through exercise.

The following are examples of ways to help:

- *Work on crossword puzzles.*
- *Write things down in a planner or cellphone, such as lists of tasks that need to be done throughout the week, groceries to be bought, and chores to do around the house.*
- *Keep all important personal items like your wallet and keys in a special spot at home by the door.*
- *Use checklists to keep track of what you have done or what you need to do, with due dates.*
- *Give yourself extra time to practice, repeat, or rehearse information you must remember.*
- *Get good rest. Fatigue can make cognition worse.*
- *Learn ways to reduce stress such as deep breathing and exercising.*

Memory problems and other symptoms of a TBI usually improve over time with the help of medical providers and perseverance.

James A. Heuer, PA *is a personal injury attorney helping individuals with TBI after suffering one himself. He is located in Minneapolis, Minnesota.*
www.heuerfischer.com

Are you living with a TBI caused by someone else's mistake?

James A. Heuer
Attorney

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BY SHAUNA HAHN

Transcranial magnetic stimulation, or TMS, is an FDA-approved medical therapy for hard-to-treat depression and OCD, but did you know that it is really useful for memory problems following TBI, too? Let me explain how.

TMS utilizes an MRI-strength magnet that we place directly on the heads of individuals with depression, anxiety, trauma, and brain injury (and occasionally, other neurological conditions). So, how does this treatment help memory?

All of these conditions negatively impact the memory centers of our brains, the hippocampi. Many medical studies have confirmed this and, of course, most brain injury survivors will tell you themselves that they struggle with finding words, forgetfulness, and short-term memory loss, along with other symptoms like mental fatigue, poor concentration, poor attention, and a general loss of mental stamina. And, as if that news couldn't be any worse, at least one study demonstrated that anxiety actually accelerates the process of shrinking our memory centers after a brain injury. What a vicious circle! Many of you are probably thinking: "I am anxious because I cannot think, balance, and am always tired, and being unable to do those things makes my anxiety much worse!"

"[M]ost brain injury survivors will tell you themselves that they struggle with finding words, forgetfulness, and short-term memory loss, along with other symptoms like mental fatigue, poor concentration, poor attention, and a general loss of mental stamina."

Well, there is some good news. At our clinic (Northwest Functional Neurology), we have been performing transcranial magnetic stimulation in conjunction with functional neurology treatment and have treated over 200 patients with this effective integrated model. The welcome news is that, for most patients, the typical treatment site for depression is also very useful for treating anxiety and symptoms of brain injury. That treatment site is called the left dorsolateral prefrontal cortex (l DLPFC). That prefrontal cortex is part of our executive center, but more importantly, when we stimulate that specific area, it fires down into a number of areas that are important for the treatment of memory (and anxiety). Stimulating that area excites the hippocampi. The hippocampi are critical for learning, for short-term memory (so we consolidate memories in the long term) and for spatial memory (which is an extra problem for brain injury survivors).

Some very positive studies looked at the memory benefits of TMS. One of the earliest studies regarding TMS and hippocampal regeneration demonstrated cell proliferation, improved memory, increased a substance called brain-derived neurotropic factor (BDNF), a growth and stimulatory factor for the brain, and increased the density of cholinergic neurons. All of this led to improvement of learning and memory.

You might be wondering how it applies to brain injuries? Many studies have tried to look at the treatment of brain-injured individuals with TMS and, unfortunately, because brain injury survivors have so much going on, coupled with memory and organization problems, most of the studies often ended up failing because the patients had a hard time following up. Interestingly, even those brain injury survivors who did not feel better with their depression all reported cognitive improvement! After all, we are not just stimulating the executive center (prefrontal cortex) directly, we are also indirectly stimulating the hippocampi, which improves memory. Additionally, the magnet helps stimulate the hypothalamus, which is part of what is called the HPA (hypothalamus-pituitary-adrenal) Axis, which is part of the stress response and is disrupted in depression, anxiety, trauma, and brain injury. It helps stimulate our anterior cingulate gyrus (ACG), a brain area responsible for emotional regulation. So, overall, our frontal lobes work better, our memory centers work better, and we have less anxiety and depression to interfere with our functioning.

Most of our patients report having improved mood and feeling more mentally sharp, and it has helped many of them return to school or to work. Please feel free to reach out to us for a 30-minute Zoom consultation, or contact your nearby TMS center.

Shauna Hahn *specializes in the treatment of post-brain injury psychiatric disorders and often lectures on this topic. Shauna is excited to bring her expertise on TMS at her beautiful destination clinic, Framework Functional Psychiatry and TMS, in Lake Oswego, Oregon.* ***www.frameworktms.com***

Mindful + *Movement*

BY KELLY HARRIGAN

Treatments for concussions and head injuries are reaching new heights of awareness in recent years. Traditional medical standard of care has been a "wait and see" approach, which isn't helpful for those who are afflicted. Traumatic brain injury (TBI) and post-concussive syndrome (PCS) often includes the many systems within the body, including musculoskeletal, nervous, circulatory, digestive, and visceral, with wide-ranging symptoms involving headaches and neck pain, which can cause tinnitus, vision problems, fatigue, anxiety, depression, irritability, cognitive issues pertaining to memory and concentration, as well as personality changes, all of which require a focus on a full-body approach to treatment.

Interest and investigation of manual therapies addressing the neurological tissues of the brain has increased in recent years as treatment for persons with TBI and PCS are currently stepping into the spotlight.

Why is this important?

It's important because the brain continually seeks feedback from the body in order to maintain homeostasis. There are more than twice the number of sensory nerves than motor nerves within your body and your body relies on your senses more than movement to self-correct. Many sensors are located in the derma and subcutaneous layers (think skin), ligaments, joints, muscles, and also the fascia surrounding muscle fiber. The sensory nerves within the fascia contribute to delayed onset of muscle soreness.

At the same time, TBI and PCS can affect glial cells within the nervous system. The glial matrix forms the supportive structure of the brain, which is similar to fascial tissue. Manual therapies are thought to not only improve connectivity and communication of the glial network but that of the fascial network as well.

Continued …

… continued from previous page.

The writer and WinstonGeorge in a virtual session with Mainsail Wellness.

Can I get a connection?

The body's systems are enveloped in fascia: interactive, interdependent, and interconnective tissues forming a complex network used in force transmission, sensory functions, and wound regulation, yet also enabling optimal functioning and resiliency, allowing the body to repair stress, illness, injury, and physical and emotional trauma. You could say everything in your body that isn't a cell is fascia, with fascia providing the structure for your cells.

Our bodies respond to disruptions by creating tension points deep within the fascial network that our bodies are then forced to maneuver around. These shortcuts become imbalances within the fascial system and are seen in fascial shortening, dehydration, or thickening, thus impairing muscle function and mobility throughout the body.

We experience these functional and structural issues as pain, decreased flexibility, impaired movement, or various diseases. In fact, increased proprioceptive communication and connectivity is often stunted after a TBI.

I took the road less traveled...

But my body took the left turn at Albuquerque. (Only in COVID times, could you find a Robert Frost reference on the same road as Bugs Bunny …) Whatever and wherever the tension point, the body will take the path of least resistance. If you are experiencing stiffness, pain, or decreased mobility, the body will shift within itself, resulting in an altered axis of movement. In other words, your body is picking up bad habits, which explains why a person's pain may be far removed from the initial site of symptoms.

Manual therapies assist and boost the body's healing forces by easing tensions and restrictions along your fascial system, allowing your body to readily adapt to its environment. By treating one area you facilitate change and improvement in other areas. Like what improvements? Well, decreased depression, head pain, brain fog, and cervicogenic pain, increased cervical motion, improved sleep and quality of life, and even better mental clarity or focus. These manual therapeutics are non-invasive with positive results and almost no side effects.

Manual therapy is beneficial years after the original injury and maximizes the potential for full recovery when used in conjunction with other treatments. People may see benefits in only a few sessions, although lasting efficacy may need more frequent sessions.

The intriguing part of all of this is how mindfulness relates to movement and why we need to train our muscles to connect with our mind to remember the proper movements for optimal recovery. I was lucky enough to grab a quick interview and a short session with Kristi Erin, CEO of Mainsail Wellness and Performance (with our dogs, WinstonGeorge and Ella). Mainsail offers a multidisciplinary approach to TBI/PCS clients. The following is a snapshot of our chat.

What led you to mindful movement?

Growing up, movement was always incorporated in my everyday life. It brought me joy, confidence, and where I felt most like myself. In a sense, movement was my home. My love for movement, combined with my desire for challenge, ultimately led me to a lifetime of elite athletics. My parents were smart, directing my energy to gymnastics where I spent six years competing with USA gymnastics, and later spent three years competing with USA diving. Being involved with these sports while being trained by some of the best coaches in the world taught me the power mental focus has on physical performance.

Just as I was reaching new levels athletically, life threw a curve ball (as many of our readers can relate to). During my freshman year of college, I was diagnosed with a debilitating case of Lyme disease that went misdiagnosed for years. Days that were once filled with training were now filled with rest. My experience with Lyme disease was truly life-changing. For seven years I felt like a stranger in my body. I lived in a state where I was depleted of energy, lacked mental focus and the ability to sleep for any length of time because of pain. I knew that was not the life I wanted to live.

In order to make progress, I knew I had to apply the same dedication and mental focus I used in athletics to recovery. Each day I took one small step forward, followed by another small step. Over seven years those small steps were made up of visualization, breathing, and micromovements to re-establish a mind-body connection. Even though progress was slow, eventually I started feeling like myself again.

My road back to optimal health introduced me to the world of integrative approaches in medicine. Specifically,

mind-body interventions through Pilates, yoga, fascial movement, and meditation. I quickly learned that traditional allopathic approaches could only take me so far, and I needed to incorporate outside support to bridge the gap back to full health. Once well enough, I decided to take another small step in participating in the STOTT Pilates teacher-training education. That small step launched me into a career as an international mind-body educator.

Most recently, I founded Mainsail Wellness and Performance, which evolved from my experiences and the desire to provide others with an integrative mind-body approach to well-being through mindful movement and coaching.

Would you describe what you mean by mindful movement?

Mindful movement, when broken down into its most simplistic form, is the combination of mindfulness plus movement. **Mindfulness** means to be aware, and **movement**, in this sense, refers to physical training. Mindfulness is a method utilized to train our attention, and therefore is a tool to help train our brain. In recent years, research has grown exponentially in the field of neuroscience. The growth has expanded our understanding of brain physiology and brain behavior in response to mindfulness. Promising research dedicated to supporting people living with TBI report improvements in mental clarity, concentration, mood, and overall health. Mindfulness acts as a powerful driver to help shape our brain, and when combined directly with movement allows individuals to gain a greater sense of their own needs while rebuilding physical strength.

At Mainsail, we support clients in cultivating mindfulness directly through movement. Every movement completed is done with proprioceptive awareness and direct feedback. We acknowledge the critical role the brain plays in orchestrating physical functioning, as well as the fluctuation that occurs on the road to recovery. In order to best meet the needs of our clients, we build individually tailored movement programs guided by modern principles of rehabilitation. It is our goal to have a place where individuals can practice safely, effectively, and build a greater sense of confidence in their own ability.

Why is this beneficial to people dealing with PCS and TBI?

The World Health Organization (WHO) defines health as the complete combination of mental, physical, and emotional health. The integral link between the three is the way our brain perceives and sends information throughout our body. As previously mentioned, our body has twice as many sensory neurons as motor neurons. They are used to signal our brain about what is happening in our environment, so it can send a chemical response, telling our body how to physically respond. When we are functioning at our optimum, these signals are accurate and delivered efficiently. However, when we experience a situation that we perceive as stressful (even unconsciously) our body may be signaled to transition into a "fight or flight" response even when no real threat exists. TBIs are complex conditions that manifest differently in each individual. However, based on personal experience, this response can frequently trigger throughout the day, leading to muscular contraction, rapid heart rate, anxiety, and compensation patterns.

Mindfulness, especially when cultivated through breath patterns, helps transition an individual's autonomic nervous system to a neutral response, which is crucial for overall brain health. Thus, each session starts with mindfulness in order to calm the system so it can respond appropriately. The session then progresses into an individually tailored movement plan based on muscular imbalances and fascial restrictions that have resulted from unconscious compensations. Over time, we work together to restore physical functioning using a combination of yoga, Pilates, visualization, and advanced coordination.

How does mindful movement differ from craniosacral, neural, or visceral manipulation therapies?

Mindful movement is complementary to manipulation therapies. They are both used to support individual health through balancing someone's system. Manual therapies offer individuals direct hands-on support, and even provide structural manipulation. Mindful movement, on the other hand, is a more hands-off approach. It builds strength and awareness by allowing an individual to sustain proper positioning while adapting to everyday movements. Most of the focus of sessions is building proper movement patterns, starting with core support.

A panacea does not exist, so it is my recommendation that individuals stay open to trying different approaches to see which ones work best for them. Don't forget that you are allowed to pursue the ones you enjoy the most!

In the COVID era, are patients able to do virtual sessions effectively?

Overall, yes, but it is client-dependent. It was a seamless transition for clients who have established an in-person relationship. However, with an introductory session and a little trial and error, virtual sessions are opening the door to reaching people across the country. I am excited to be in the process of developing fully online and hybrid program options to help clients establish a strong mind-body connection within the comforts of their own home.

For those of you interested in contacting Kristi, please reach out to her on her website at ***mainsailwellness.com***.

Kelly Harrigan *is a veteran, a writer, a TBI survivor, and a single mum of a girl child and a Frenchie, often found with oolong tea in one hand and humor in the other. She lives near Annapolis, Maryland.*

YOGA: *WARRIOR I*

BY AMY ZELLMER, EDITOR-IN-CHIEF

Yoga is a powerful tool for recovery after brain injury. Contrary to some beliefs, everyone can do yoga — you don't need to be super flexible, have great balance, or even be able to stand up. The beauty of yoga is that every pose can be modified so anyone can be accommodated.

An important aspect of yoga is your breath. Connecting your breath to your body and flow, and getting oxygen flowing to your brain, is what makes it so powerful for recovery. Yoga is also a time to quiet the mind, to let anxiety and distracting thoughts drift away.

Warrior I Pose (Virabhadra) is a standing pose that helps build focus, power, and ability. This foundational pose stretches the front side of the body and is great for building strength in the legs, core, and back.

Some of its many physical benefits include stretching the chest, lungs, shoulders, neck, and groin. It helps strengthen the shoulders and arms, and the muscles of the back as well as the thighs, calves, and ankles.

Instructions:

1. *Stand in Mountain Pose and separate your feet 3-4 feet apart.*
2. *Turn your left foot in approximately 45 degrees, and your right foot out to 90 degrees.*
3. *Turn your torso to the right, squaring the front of your pelvis as much as possible with the front edge of your mat. As the left hip turns forward, ground the left leg and heel into the floor.*
4. *With your left heel firmly anchored to the floor, exhale and bend your right knee over the right ankle.*
5. *Reach your arms overhead, pulling your shoulder blades back and down, lifting the ribcage as you ground down through the back foot. If possible, bring your palms together.*
6. *Keep your head in a neutral position, gazing forward; or tilt back slightly to look up at your thumbs.*
7. *Release and come back up to standing on an inhale, then turn to the left and repeat.*

Adjustments and modifications:

- *Beginners may find it difficult to keep the back heel grounded and the lower back lengthened. As a short-term solution, you may raise your back heel.*
- *If it is difficult to raise your arms overhead, you may keep your hands on your hips.*
- *You can also practice Warrior I with your front thigh resting on a chair.*

If you are interested in learning more about yoga, check out ***www.loveyourbrain.com*** and their yoga programs at partner studios throughout the U.S., which are completely free to brain injury survivors and caregivers.

Diet to Help *Decrease Oxidative Stress* and *Improve Memory*

BY SIERRA FAWN GUAY MS, RDN, LDN, CBIS

The brain has many functions. Of these, memory is perhaps the most affected by oxidative stress. Oxidative stress is caused by an imbalance of free radicals and antioxidants.

Free radicals are highly reactive, unstable molecules that are formed naturally in the body, including during the use of oxygen. Free radicals are also formed in a variety of conditions including aging, smoking, exposure to pollution, excessive alcohol intake, and intake of trans fats, saturated fats, and sugar.

Normally, free radicals are managed by substances called antioxidants. Antioxidants help stabilize free radicals, thus rendering them safe. When free radical formation exceeds antioxidant stores, a state of oxidative stress occurs. In oxidative stress, free radicals can cause cell damage. The brain uses a large amount of oxygen and is, therefore, particularly vulnerable to oxidative stress. Cell damage in the brain can lead to many issues including memory loss.

To help combat oxidative stress and preserve memory, it is essential to both decrease free radical formation and increase antioxidant stores. The diet is an important tool in combating oxidative stress. Reducing dietary intake of trans fats, saturated fats, and sugar can help decrease free radical formation.

Follow these quick nutrition tips:

- *Trans fats are also called partially hydrogenated oils. Read nutrition labels and avoid foods that contain these.*
- *Saturated fats are solid at room temperature. Use liquid fats (like olive oil) in place of saturated fats whenever possible.*
- *According the American Heart Association, men should eat no more than 36 grams of added sugar per day; women no more than 25 grams. Read nutrition labels to determine how much added sugar is in your food.*

It is also essential to increase antioxidant stores in the body. To do so, eat a diet rich in foods that contain antioxidants. Common sources of antioxidants in the diet are fruits and vegetables. It is no coincidence that both the Mediterranean and Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diets emphasize adequate fruit and vegetable intake; both diets are thought to promote good brain health.

While it can be tempting to focus on intake of a single antioxidant or to take antioxidant supplements, it is ideal to obtain antioxidants through a balanced diet of real foods. The general recommendation is to eat a wide variety of fruits and vegetables each day. A recipe for one antioxidant-rich vegetable is shown below.

Sierra Fawn Guay *is a registered dietitian who works with brain injury survivors in Greenville, North Carolina.*

DID YOU KNOW?

The MIND diet recommends eating at least one serving of leafy green vegetables per day. One serving of leafy green vegetables is equal to one cup raw or ½-cup cooked.

Sautéed Bok Choy

Ingredients:

- 1 lb baby bok choy
- 1 tbsp olive oil
- 1 tsp bouillon (more to taste)
- Pepper, to taste

Instructions:

Cut the bottoms off the bok choy and discard. Separate and wash remaining pieces. Heat oil in pan. Add bok choy, bouillon, and pepper. Cook until leaves are wilted and stalks are softened. **Enjoy!**

Essential Oils: Rosemary

BY AMY ZELLMER, EDITOR-IN-CHIEF

Essential oils are a complementary tool that can help you achieve a healthy lifestyle. They are easy to use, smell great, and are versatile.

All oils are not created equal. Young Living is the only brand I personally trust because I know they have complete control over their product from seed to seal. Oils sold at health food stores can be misleading. They are not regulated by the FDA, so you must look closely at the labels. The labels may say they are 100% therapeutic-grade oils when they are not. If the ingredients list anything other than the plant stated, or if the label has statements like "For external use only," "For aromatic use only," and/or "Dilute properly," the oil inside that bottle may have been cut with other oils, synthetics, or chemicals.

Rosemary Vitality

Rosemary is a flavorful herb that is celebrated for its role in the culinary world, especially in Italian dishes. Rosemary Vitality™ essential oil lends a uniquely herbaceous taste to every dish it's featured in, making it perfect for many savory recipes.

As a dietary supplement, Rosemary Vitality is loved for its naturally occurring constituents, eucalyptol and alpha-pinene, which can help maintain overall wellness.

Rosemary

The familiar scent of Rosemary essential oil—as well as its robust, herbaceous aroma—has made it popular in aromatic and personal care products. Rosemary essential oil uses include topical application and direct inhalation, and its complex, woodsy aroma can help create an energizing environment and promote a sense of clarity.

For more information on how to use essential oils, please visit: ***www.facesoftbi.com/eo***

The *Memory-Boosting Magic* of **Fluorite**

BY KRISTEN BROWN **HEALTHY LIVING**

In today's jam-packed world it can be difficult to retain and remember everything thrown at us. If you are under high stress, have a short- or long-term illness, or have sustained any type of bodily or brain injury, it makes memory even more complicated.

Enter fluorite — a powerful crystal that can help you with clarity of thought, retention of information, and general brainpower. It comes in a variety of shades from purple to green and you can get it in shapes from small polished pocket crystals to giant rough stones to unique spheres or wands.

Here are three specific ways Fluorite can create memory magic:

1. **Concentration:** *The brilliant translucent colors of fluorite give it a strong energy that can help you feel more focused amidst distraction and attention deficits.*
2. **Right-Left Brain Connection:** *Using Fluorite can bridge the left and right sides of the brain, helping to integrate both creative thinking and strategic thinking as you go about your work and life tasks.*
3. **Decision-Making:** *The superpowers of Fluorite give it the ability to amplify the visionary energy that helps aid you when making decisions or working through problems and plans.*

Fluorite can be kept near you when you're working on detailed projects to help you retain information and be more strategic in your planning. It is also a powerful stone to keep in your pocket, purse, or wallet during meetings and networking-type events where you may need to remember names and conversations. When it comes to memory-boosting powers, Fluorite is your go-to magical crystal friend!

Kristen Brown *is a bestselling author, keynote speaker, and energy medicine practitioner who charges up her clients by syncing their body/mind/spirit for work and life growth.* ***www.namaSync.com***

THE REAL REASON **2020** WASN'T SO MEMORABLE

BY ED ROTH

"I've learned two important lessons in life. I can't recall the first one, but the second one is that I need to start writing stuff down." – Anonymous

Your memory used to be like a steel trap, but for the past few months it seems to have magically disappeared. You can't remember easy things, like where you left your keys, your appointments, even your kids' names. Don't worry, you're (probably) not losing it. It's just another reason to hate 2020.

Blame it on COVID-19.

Recent research reveals lockdowns, or stay-at-home orders, are a big part of the problem. In recent surveys, half of the respondents indicated that their loved ones have worse memories since the onset of the pandemic. That's no surprise, given never-ending fatigue, less social interaction and day-to-day obliviousness ("What's today again?").

Add to that lack of sleep, employment worries, and loss of routine, and you have the perfect storm for forgetfulness. What's more, depression and anxiety have been known to further impair your memory.

However, there are more dynamics at play, and it all begins with understanding the impact of all these factors on the brain.

"Memory is a pretty complex function," explains Ganesh Gopalakrishna, MD, MHA, geriatric psychiatrist at Banner Health's Banner Alzheimer's Institute. "The hippocampus serves as an important relay station in the brain for memory. This seahorse-shaped structure determines which information is stored. When this is damaged, whether through physical or emotional trauma, its effectiveness to retrieve or create new memories declines."

Dr. Gopalakrishna says you see this in people with Alzheimer's disease as well. "Elderly people get hit the hardest, and the higher the risk, the more they tend to isolate. In mild cases of memory loss, we encourage social activation, like playing cards, or dancing and singing, but these are restricted due to the pandemic."

There is also growing evidence that many of those infected with COVID-19 report brain fog and memory loss months later. A recent study conducted with mice suggests the virus can go directly into the brain via an S1 "spike" protein that crosses the blood-brain barrier. It should be noted that although this research is preliminary, it offers intriguing new considerations into the understanding of this vexing virus.

Continued …

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Many parallels can be made between those who have experienced newfound memory loss and survivors of brain injury. Even before the virus spread, many needed help with basic care, including shopping, transportation, and financial decisions. Now, with the pain of increased isolation comes the frustration of decreased cognitive abilities.

"Survivors of brain injury employ a number of aids to compensate for these roadblocks," says Carrie Collins-Fadell, Executive Director, Brain Injury Alliance of Arizona (BIAAZ). "Making lists, using calendars, setting alarms, and employing virtual assistants are just some of the tools people train themselves to use in order to live their best lives. We're here to help direct people to free resources and support groups to get on this path."

Dr. Gopalakrishna agrees that it's important to recognize the symptoms of memory loss and use these aids to function at a higher level, whether or not a brain injury is involved. "Occasional lapses are common, but if they occur daily or you can't retrieve information after a while, it may indicate the presence of the protein amyloid, sometimes 20 years before the onset of symptoms.

He is encouraged by current research to determine the possibility of removing amyloid with the use of novel medications before the onset of Alzheimer's.

They say the stronger the emotion tied to an event, the more likely it will be retained. Unfortunately, staying at home and enduring repetitive tasks isn't making this any easier. Think about it: How many Zoom meetings are really that memorable?

While working at home has its advantages, the elimination of familiar cues can have a debilitating effect. Daily rituals such as commutes, scheduled breaks, and personal interaction with others normally serve as markers. Without them, there can be a feeling of being adrift.

With cancellation of holiday get-togethers, concerts, sporting events, and various celebrations (even discovering new restaurants!), we don't have as many new stories to share. We are then more likely to repeat old stories and make the same complaints about the current state of the world.

And as much as we try to compensate with online discussions, it's not the same.

Remember how the hippocampus serves as an important relay station in the brain for memory? One way to keep it stimulated while being COVID-safe is exploring new locations and routes outside of the home without relying on any of your phone's map apps. Forcing yourself to pay attention to new landmarks will enhance spatial memories and enlarge this part of the brain.

Conversely, when one is confined and routines are repetitive, this area of the brain decreases, leading to loss of memory.

Fortunately, there is hope.

There are several ways we can stimulate our hippocampus during these confining times:

- *Find a new activity at home, then tell somebody about it.*
- *Every evening, recap your day, identifying good things you want to remember.*
- *Make lists and phone alerts, then visualize yourself doing these activities, even if they're mundane.*
- *Stay physically active by exercising at least 30 minutes/day, 5 times a week*
- *Stay mentally active with puzzles, word games, and by learning new skills, like a language or musical instrument*

These tactics are well known to survivors of brain injury. How they are incorporated into daily life can be a strong indicator of temporary memory loss or something more serious.

Either way, it would be nice to forget 2020!

Ed Roth *has an excellent memory and is able to recall the names of all four of his kids. Originally from Chicago, he currently lives in sunny Scottsdale, Arizona, loves word games, and is an avid tennis player.*

Concussion Discussions
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REGISTER: www.concussiondiscussions.com

LIFE LESSONS LEARNED *From a* **TBI**

AMY ZELLMER, EDITOR-IN-CHIEF

Contact.

It seems so simple, yet it's so critical to our daily lives.

Even introverts and people with agoraphobia still need contact whether in-person, over the phone, or on a Zoom call.

Those of us living with brain injury have long been experts at self-isolation; however, it's always been on our terms. We have been able to choose when and where to go out in public. At the beginning of the pandemic, we didn't have a choice — we were told to stay home.

Now that we are almost an entire year into the chaos of a historic pandemic, many of us are craving contact — particularly in-person, face-to-face contact. But it's hard. We still have to be safe and respect the safety of others who are immunocompromised (including me as I help care for my mom, who is going through chemo).

Contact. It's something we've always taken for granted. When we needed it, we could seek out others to fill that void.

We've had to get creative. I've done more Zoom calls this past year than I did in the previous five years. But you know what? I've had some of the most meaningful conversations and built new friendships.

The silver lining of the pandemic is that it has allowed us to slow down a notch, to self-reflect and figure out what (and who) is really important to us. We've been given the chance to filter out what is no longer serving us, and really focus on that circle of people who "get" us and are there for us.

Moral of the story: When life throws you a curveball, it may sting a bit at first. But we are human and we have incredible coping and adapting capabilities. It's only natural to crave human contact and interaction with others. If you feel isolation, depression, anxiety, or panic setting it, reach out to a loved one or schedule a Zoom meetup with some friends.

Or better yet — join me and hundreds of other survivors for a **Zoom virtual brain injury awareness day on March 16th.** ***www.facesoftbi.com/event***

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