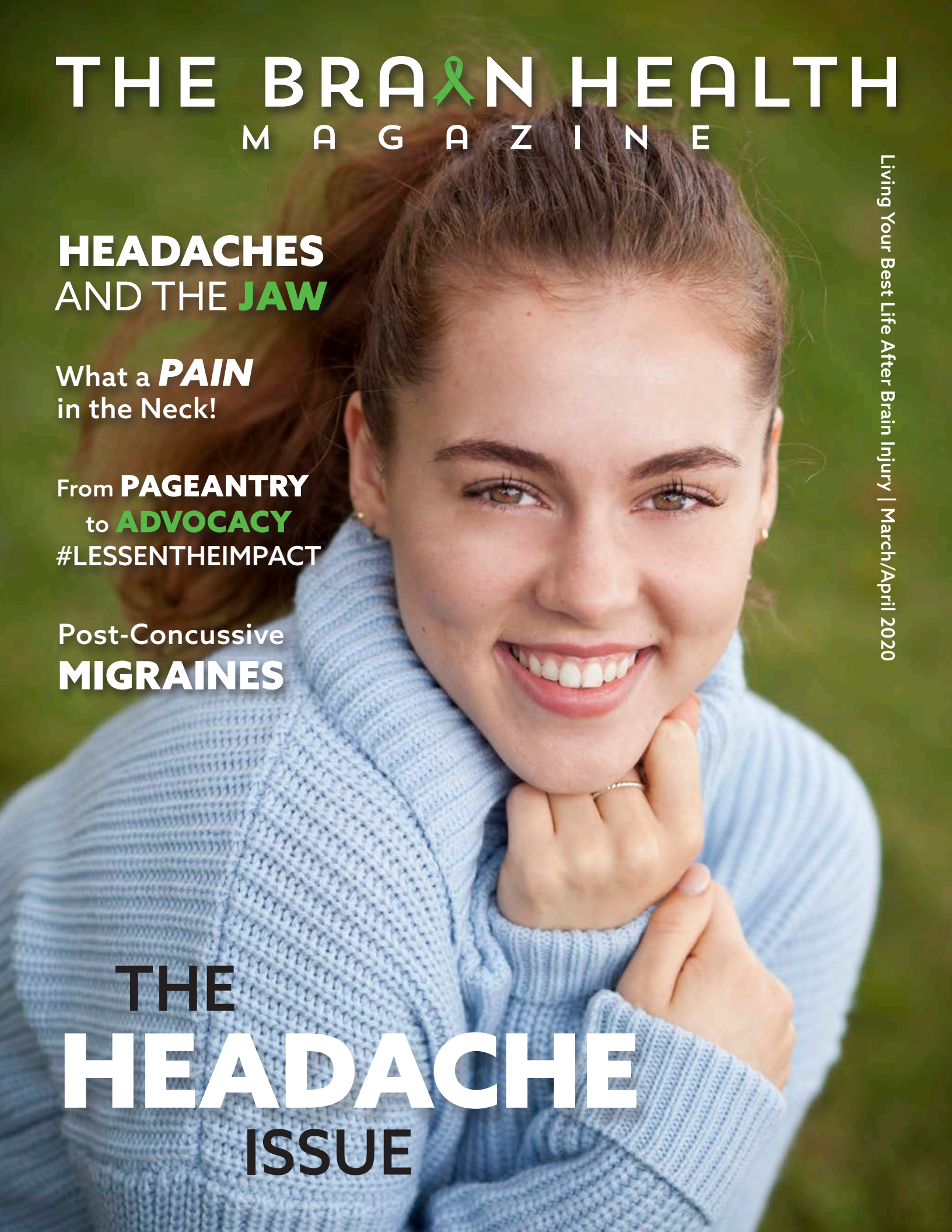
THE BRAIN HEALTH MAGAZINE

Living Your Best Life After Brain Injury | March/April 2020



HEADACHES AND THE JAW

What a *PAIN* in the Neck!

From PAGEANTRY to ADVOCACY #LESSENTHEIMPACT

Post-Concussive MIGRAINES

THE HEADACHE ISSUE

THE BRAIN HEALTH MAGAZINE

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March Is Brain Injury Awareness Month

Amy Zellmer | Editor-in-Chief

March is my favorite month of the year. Not only is it Brain Injury Awareness Month, it is also my birthday month.

When I fell in February 2014, my 40th birthday was just a few weeks away. I had to cancel my birthday party due to my injuries and, as crazy as it sounds, I still don't feel like I'm in my 40s. The entire first year of my recovery is a bit of a blur, with a lot of missing information that I still haven't recovered, so when I actually turned 40 it's like my brain didn't even register it.

Don't confuse this with not wanting to admit I'm 40, it's literally like that year was erased from my consciousness and never returned … I'm sure many of you reading this will understand.

Fortunately, my memory and cognition, as well as my dizziness and headaches, have greatly improved over the years with the right treatment. However, I fell down the stairs a few months ago and jarred my neck and my headaches flared again. While I didn't hit my head (and we all know you don't have to hit your head to sustain a concussion) I did notice my aphasia and cognitive delay creep back in on top of the headaches.

Headaches can often be debilitating. Mine will last an entire day or two if I am not able to get on top of them before they flare. Mine typically come from an incredibly tight neck, so I usually have warning when it is starting to tighten up. I am lucky that I now have the tools I need and can pull them out when I have a recurrence. I try to pull out my yoga poses to release the neck, and follow that with ice (ice is your friend, people!) and peppermint essential oils. I also use a topical gel, ProloGel that penetrates deep to relieve nerve pain, and OptiMag Neuro, a fantastic magnesium supplement. Magnesium is known to help with headaches as well as muscle tension.

This issue of the magazine on headaches is deeply personal. I have struggled with headaches my entire life, which were compounded after my brain injury. As I said earlier, they can be completely debilitating. Fortunately, there are doctors who understand the root causes of most headaches and how to treat them more holistically, non-invasively, and without pharmaceuticals.

Medications can work for some patients but trying a more natural route that doesn't involve pumping chemicals into my still-healing brain is always going to be *my* first choice. A neurologist originally suggested Botox injections for my neck to relieve the tightness but I wanted to solve the root issue, not just put a Band-Aid on it.

I am fortunate to have found Functional Neurology. After struggling with headaches, Dr. Schmoe was able to help relieve them, as well as decrease their frequency. Through the use of ArpWave, laser therapy, manual muscle work, clavicle adjustments, vestibular rehab, and eye exercises, my headaches lessened significantly.

I truly hope you are enjoying the magazine, and wish you all a fabulous Brain Injury Awareness Month!

Peace & Glitter,

3 Key Signs That Your Chronic Headache Is Coming From Your Neck

BY JONATHAN CHUNG, DC

Persistent headache is the most common problem patients experience after suffering a concussion. A headache after a concussion usually resolves itself as the brain restores normal physiology within 10 days after the concussion occurs. When a headache persists beyond this window, there is a strong possibility that the pain generator is coming from somewhere in the neck.

Research has shown that whiplash injuries are extremely common in patients who suffer a concussion. The upper neck, in particular, has many muscles, ligaments, and nerve tissues that are susceptible to injury from a blow to the head. Injuries to these tissues often mimic the same symptoms as the concussion itself, especially when it comes to headaches. It's also been shown that patients who suffer both a concussion and a neck injury tend to have worse outcomes and experience longer recovery times than patients who suffer a concussion but no injury to the neck.

Despite these research findings, the neck is often overlooked when it comes to treating patients with persistent post-concussive symptoms. Many neck injuries can be treated effectively, with good outcomes, after proper examination of the cervical spine but too often it's ignored.

The easiest and most common way to determine if a headache is related to the neck is if the patient also experiences simultaneous neck/shoulder pain with loss of range of motion. However, many headache patients get significant relief from neck treatments even without neck pain as a complaint. Some common features of patients with headache of cervical origin include:

1. **Occipital Nerve Pain Patterns** — Patients can experience a severe headache that feels like a migraine, but is actually triggered by a problem called occipital neuralgia. Occipital neuralgia is a disorder where there is irritation or damage to the nerves at the top of the neck. It's characterized by a pattern of pain that stems from the back of the

head and can radiate over the top of the head or behind the eyes.

2 **Neck Tenderness That Triggers Headache Pain —** Patients sometimes have tender neck joints but not realize it until someone touches a sore spot. While the sore spot may be in the neck, pressing on this point may trigger or exacerbate a headache instead of neck pain. Patients with this type of pattern often tend to feel worse when getting a deep tissue massage of the neck because the pain receptors in the head and neck share a common origin in the brainstem. This allows injury in the head and face to cause a neck pain pattern and vice versa.

3 **Weak Endurance of Neck Muscles —** Patients with cervicogenic headache have been shown to have reduced endurance of their deep neck flexor muscles. The deep muscles of the neck play an important role in maintaining normal neck movement and alignment patterns. This strength is frequently lost after a neck injury.

Patients who have reduced endurance in these neck muscles tend to have a tight and tender **sternocleidomastoid muscle (SCM)** in addition to showing a postural pattern where the chin juts forward.

You can test your neck endurance by lying down on your back and holding your head about an inch off the ground. You should be able to hold this position with the chin tucked and neck flexed for about 30-40 seconds, but patients with neck problems will struggle with this task.

Many more factors are important to consider in a post-traumatic headache patient. The patient should be evaluated by a medical professional, physical therapist with concussion specialty, or specific chiropractors with expertise in the cervical spine. Neck exercises, manual therapies, and specific upper cervical techniques can bring tremendous relief to patients, but a thorough exam must be performed to rule out ligament instability and other neurological conditions where exercises and certain techniques and therapies may be contraindicated for a head injury patient.

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.

"You can test your neck endurance by lying down on your back and holding your head about an inch off the ground."

SPONSOR SPOTLIGHT

HEADACHES AND THE JAW:

Vagus Nerve and Trigeminal Nerve

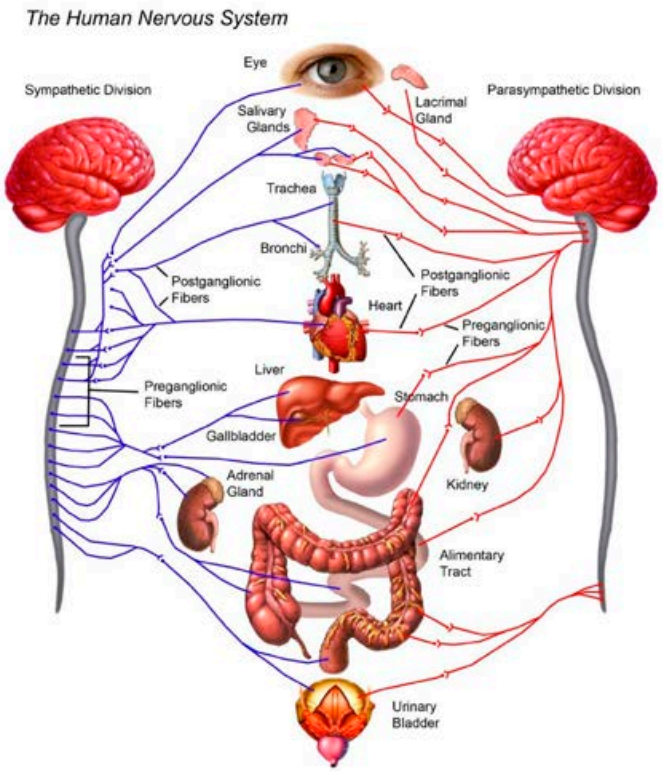
BY SHARIK PECK

Persistent debilitating headaches are a frequent complaint from those who have experienced a brain injury or concussion. The fastest way to turn off a headache is by balancing the brain.

What does that mean? First, you need to understand a few basics about the nervous system, such as how pain and anxiety work in the body. Once these key concepts are understood, you can minimize pain, shut down fear responses, and decrease inflammation. The complex interaction between the vagus and trigeminal nerves is becoming clearer because of extensive research highlighting their connections. The connection between the vagus and trigeminal nerves affects pain and unhealthy emotions associated with headaches such as anger, fear, anxiety, and inflammation. Let's start by looking at the vagus nerve.

Major Roles of the Vagus Nerve

The vagus nerve is responsible for many things, including heart rate, gastrointestinal function, sweat, many muscle movements in the mouth, and speech (via the recurrent laryngeal branch of the vagus nerve). When the vagus nerve is functioning properly, the gag reflex is diminished and the stomach, heart rate, and breathing are calm. In addition to monitoring/regulating heart functions, the vagus nerve plays a major role in decreasing inflammation and stimulating secretion of calming neurotransmitters, a key element in calming your heart and your headache.



Major Roles of the Trigeminal Nerve

According to *Gray's Anatomy* (the prestigious anatomy reference book, not to be mistaken with "Grey's Anatomy" the television drama), the trigeminal nerve is the largest cranial nerve. It carries sensory input from the face, the greater part of the scalp, the teeth, the mouth, and the nose. It is the motor supply to the masticatory and other facial muscles. It contains proprioceptive nerve fibers from the chewing muscles and eye muscles and contains connections to the vagus nerve through the main sensory nucleus. Here is where it gets fun. Chewing and clenching reflexes, managed by the trigeminal nerve

system, play a major role in firing up the "fight or flight," or sympathetic state of the nervous system — the stress state of the body! Hence, the trigeminal nerve is a major contributor to headaches, shutting down the many health benefits of the vagus nerve.

Here is the question: What if you could "tune out" by calming down the *trigeminal* nerve and enhancing the functioning of the *vagus* nerve, thus decreasing pain and inflammation, as well as those unhealthy emotions associated with headaches?

You can calm down the trigeminal fight-or-flight response with direct application of resonance (carefully calibrated vibration) to key points on the head and face. This is possible through the interaction of the cranial nerves, especially the trigeminal and vagus nerves with their strong roles in the central nervous system. In other words, vibration on key points calms the nervous system and turns off headaches while helping the nervous system balance the "fight or flight" and the "rest and digest" functions of the brain.

Three simple techniques have been shown to reduce jaw tension by 50 percent in just three minutes. To magnify that effect and teach your brain how to easily find that calm state, directly engage the vagus nerve by applying resonance.

How do you do that? After much research, design, and development, we invented the Ressimax Tuner Pro to deliver precise resonance that will calm the trigeminal nerve and enhance the benefits of the vagus nerve.

Recently, an individual suffering from cluster headaches sent me this message: "It's been five days so far that my cluster headaches have been gone. God bless you guys! Since I got the Rezzimax Pain Tuner Pro, I have not had a single cluster headache. I was absolutely debilitated for the past three weeks and didn't know where to turn. I am so grateful I found you guys. Thank you so much!"

It is all possible because of the miracle of resonance and its effects on the vagus and trigeminal nerves.

*Receive 30% off your Rezzimax Pain Tuner Pro with discount code: **TBI**.*
www.rezzimax.com

Sharik is the CEO of Rezzimax, LLC. He suffered his first major TBI at the age of 17, suffering a sports-related hemorrhagic stroke. He later received a bachelor's degree in physical therapy from the University of Utah and a master's degree in counseling from Utah State University. He is passionate about pain relief and determining how the nervous system works, as well as humanitarian efforts to relieve suffering.

ATTENTION MAGAZINE READERS

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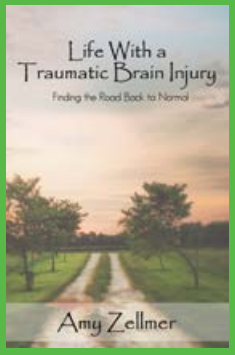
"Amy is a prime example of how powerful and life-changing combining personal experience, passion, and advocacy can be."

— Ben Utecht, 2006 Super Bowl Champion and Author

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



IS BOTOX WORTH THE BENEFIT?

BY KELLY HARRIGAN

More and more people are turning to Botox for migraine and headache relief. Botox has been popular in the cosmetic arena as the magic wand for wrinkles but, in 2010, following years of clinical research, Botox was approved by the FDA for treatment of migraines or headaches that occur fifteen or more days a month.

Botox is a highly diluted strain of botulinum toxin that is purified and then injected into nerve trigger sites. Botox blocks a chemical release in muscle cells that tell your muscles to contract. Temporarily relaxing the muscles so the nerve isn't compressed prevents muscle contractions that set off migraines and headaches. The injections are often done in the forehead, temples, back of the head, and sometimes in the neck and shoulders.

Seems like a slam dunk. Do I get a shot? Ohhh, because needles ... yes, needles are involved, unfortunately. If you have a needle aversion use this time to practice some guided meditation or deep breathing.

Your physician will use antiseptic wipes to clean the injection sites before using a fine needle for the injections. You may feel tiny pinpricks but the good news is that it's over within a few minutes. Although not instantaneous, some improvement may occur during your first session but most gains are felt in the second or third treatments with relief lasting about three months. The number of injections, specific sites, and the number of months between treatments will depend upon your unique situation and how well your pain responds to treatment.

Let's ask the most important question: will I get sick from botulism? Remember, the toxin has been highly diluted and purified before it is injected. Most people tolerate treatment well. Ironically, though, you might have a slight head or neckache after the injections. An ice pack often provides relief for the discomfort.

One note of caution: less is more in this case. The skinny on this is that fewer injections mean it is less likely that an occurrence of Weebles-wobble head, flu-like symptoms, or other side effects will be noticed, allowing you to see any improvement without the interference of side effects, especially if you are sensitive to medication. You should discuss all potential side effects with your doctor before treatment and pay close attention to how you feel in the weeks following treatment. Report any side effects to your physician immediately.

Pain free is worth any price ... Let's chat about what this means to your wallet. Your total may be a few hundred to a few thousand dollars, as the recommended FDA dosage may cost between $300-600, and the number of units you need will depend on your individual treatment. In this case, you don't want the year-end clearance sale, you want a doctor with experience using Botox, whether that doctor is a neurologist or another kind of physician, so shop around and be choosy. You're worth it.

Botox may be considered a non-standard treatment, and although it's becoming more mainstream, it may or may not be covered by insurance, so bite the bullet, make the time to call your insurance company to see if they cover Botox, and what pre-authorization or referrals are needed. There may be so many other hoops to jump through you may think it's March Madness, so have a detailed conversation with your insurance company to be sure you understand what you need to do before your Botox treatments.

Return on Investment Time

After doing your research, assessing the frequency and intensity of your headaches, determining insurance coverage and out of pocket expenses, finding an experienced physician, you can do your own cost-benefit analysis to see if Botox is right for you.

Kelly is a single mum, veteran, and TBI survivor with a girl child and a frenchie. With oolong tea and humor on hand, she lives in Annapolis, Maryland.

The Magic of Magnesium

BY KATI WINTER

Enzymes make a lot of magic happen in the human body, so mindfulness around daily intake is important. Vitamins and minerals are critical nutrient co-factors for enzyme production, with magnesium being of particular interest. It's involved in more than 300 different enzymatic reactions including energy production, muscle function, cell signaling, brain health, and much more. Unfortunately, many of us do not consume adequate amounts of magnesium, and that deficiency can impact our brain health, including short- and long-term memory, our quality of sleep, and our moods and anxiety levels.

Magnesium L-threonate, which goes by its patented name, Magtein, is a unique compound discovered by scientists at the Massachusetts Institute of Technology (MIT). It provides a specific form of magnesium that is naturally and preferentially taken up by the brain. By targeting where the magnesium goes researchers have been able to look at how magnesium in the brain may affect brain health as we age.

Neuroplasticity describes the ability of the brain to change and adapt as a result of new experiences. Think of it as similar to walking in a field of tall grass. The first attempt at crossing the field is difficult. The grass gets in the way and it's uncomfortable, scratchy and provides a lot of resistance. After a few passes on the same path, however, the grass gets trampled and the path becomes easier to walk. Neuroplasticity describes a type of re-wiring of the brains circuitry similar to creating a new path.

Some scientists believe that the human brain begins shrinking after age 25 and those structural changes can lead to rapid decline in cognitive health. The solution to preventing the brain from shrinking is unclear; however, supporting neuroplasticity may provide an important role. It may be surprising to learn that magnesium plays a big role in this process. Both human and animal studies have confirmed that Magtein has the potential to increase our capacity to promote neuroplasticity.

In a recent double-blind placebo-controlled human clinical trial (*Journal of Alzheimer's Disease*, 2016;49(4):971-90) researchers found that Magtein supplementation was effective at increasing brain performance, function, and speed on a variety of cognitive tests in adults with early cognitive impairment. An exciting feature of the study was that researchers assigned a biological age (based on a variety of different cognitive tests) to the brains of the study's participants at the beginning of the study, and then evaluated the biological age again after the 12-week study period. The average "brain age" in the Magtein supplementation group reduced by nine years!

If you miss the younger version of your brain, or if you're looking to increase your brain functioning, consider a daily dose of brain-specific magnesium.

Kati Winter is an integrative medicine consultant, exclusively serving local licensed healthcare practitioners. She is dedicated to providing scientifically validated support, education, and insights to support optimal healing.

BRAIN JOKE!

Q: What did the hippocampus say during its retirement speech?

A: "Thanks for the memories."

From Pageantry to Advocacy

Story and Photos by Amy Zellmer, Editor-in-Chief

When Brooke Mills competed in her teen first pageant, she had no idea that she would eventually use pageantry as a platform to raise awareness about the devastating effects of concussions.

About a year after her first pageant Brooke suffered a concussion in gym class. While playing team handball, she was picking up a ball just as a boy went to kick it, accidentally kicking her in the left side of her face.

She was briefly knocked unconscious. While one boy helped her get up, another went to find the teacher, who didn't see the accident happen. Brooke then tried to make her way to the nurse's office, but ended up in the bathroom because she couldn't remember where the nurse's office was. She still has very little memory of that day in March of 2014, or the following week. She admits that her memory for most of the next year is a little unreliable.

Once she finally found the nurse's office, the nurse did the SCAT test and called Brooke's mother, Stephanie Mills, a Doctor of Chiropractic. Stephanie took Brooke to her office to examine her and give her a spinal adjustment. Then, after lunch, Brooke felt considerably better and insisted on going back to school, but fell asleep in English class. As a straight "A" student, she knew that something wasn't right; she had never fallen asleep in class before.

She missed almost an entire month of school because all she could do was sleep. When she began her "return to learn" protocol, she went to half of a class and then the nurse's office for the other half for the rest of the school year. Most of her teachers were accommodating and understanding.

"I was really scared. Although I was active in ballet, I had never played any sports so I didn't fully know what a concussion was or what to expect. Kids at school told me I'd feel better in a few days — but I didn't. It took two months to fully get back into school. I lost a lot of friends and was bullied because I'd changed so much. I couldn't do physical activity or walk more than a quarter mile without having to sit down," Brooke said.

Stephanie added that in chiropractic school in the late 90s they had learned that most concussions should resolve themselves in 7-10 days. Most medical professionals at the time saw concussions as mild injuries that would self-resolve and didn't require any treatment plan. Stephanie felt helpless as she watched her daughter struggle with headaches, sleep problems, dizziness, eye sensitivity, moodiness, and was just not her usual self.

She had been referred to a "concussion specialist," a physiatrist, but there was a long waiting list to see him. When they were finally sitting in his waiting room, they became concerned when they saw several teenagers leave his office with glazed-over, overly medicated looks on their faces. They were not surprised when the doctor only wanted to prescribe depression medication, pain killers, Adderall, and an experimental Alzheimer's drug for Brooke. They left his office, never to return, or fill the prescriptions.

Stephanie and Brooke sought help from naturopaths, hyperbaric oxygen therapy (HBOT), and other alternative therapies. "It was really hard to see my daughter suffering. When you have kids, you'd much rather have the illness or injury yourself than watch your kids go through it. It

was heart-wrenching, all-consuming at times, and really expensive" Stephanie said.

In the fall and winter of 2014, Stephanie took Brooke to the Carrick Brain Center in Florida. "I knew about Dr. Carrick through the chiropractic profession. Once I knew Brooke wasn't healing and needed more help, it was the first place I thought to go" Stephanie said.

Brooke's sophomore year of school was challenging. Her grades were passing, but barely. Stephanie encouraged her to get back into jazz and ballet dancing, but she just couldn't do it. Prior to her concussion, Brooke had been dancing 14 hours a week.

By the summer of 2015 Brooke could go on longer walks. She was enjoying reading again, and getting more physical activity. Additionally, her memory was improving. She was hopeful that her junior year would be better … and it was. She graduated in June 2016 after her Junior year, at age 17 and went on to graduate from New Hampshire Technical Institute with an associate's degree in health science. She then spent one year at the University of New Hampshire before enrolling at Sherman College of Chiropractic in South Carolina.

She is thrilled to be starting chiropractic school and follow in her mother's footsteps. Her goal is to be able to help others who have suffered a concussion.

Advocacy and Pageantry

About two months after her concussion Brooke started a blog titled "Finding my way." People reached out to share their stories and tell her how much her story had helped them. The Brain Injury Association of New Hampshire asked her to be a peer-to-peer speaker. She wanted a way to share additional resources with the people she reached so she started #LESSENTHEIMPACT for education and awareness, as well as to be able to fundraise.

In November of 2015, Brooke and Stephanie started Concussion Awareness Day in New Hampshire. They emailed the governor's office, requesting a proclamation and explained why it was important. After their success in New Hampshire they decided to do National Concussion Awareness Day (NCAD). They chose the third Friday of September because they felt it was far enough away from March's National Brain Injury Awareness Day and because September is considered the start of many sports in high schools and colleges. They chose a Friday because they thought that schools would be more likely to hold an event on a Friday afternoon, and also so that it would never end up on a weekend if it were a set date.

They registered a trademark for National Concussion Awareness Day (NCAD) and approached the Brain Injury Association of America to partner with them to raise more awareness. On September 16, 2016, they had their first successful NCAD. In 2019, NCAD was recognized federally with a senate resolution. "I am shocked at how many people follow and are involved in NCAD, sharing their stories with the hashtag #nationalconcussionawarenessday," Brooke said.

Her ultimate goal is for people to better understand concussion symptoms and how long concussions can take to heal. Students like herself are often bullied by classmates and adults have difficulty taking time off of work. "I want people to be more sympathetic and to start a national conversation. I hope to make NCAD bigger each year," she added.

Brooke explained that pageant contestants have to have a social initiative. She is passionate about concussions and she knew she had a pretty unique story since she was still experiencing symptoms three years after that kick to her head in gym class.

Pageants also have a talent competition but since she can no longer dance she took voice lessons so she could compete by singing. The hardest part of the competition is the interview, Brooke says. "[The judges] have a list of things about me, but I didn't actually remember most of them. I had to make a photo book of things I had done to help me remember them."

The summer after high school, in 2016, Brooke was crowned Miss Weirs Beach (New Hampshire). In 2017 she was named Miss Merrimack, where she won the interview section of the pageant, and she was Miss Winnipesaukee (New Hampshire) in 2018. In January 2020 she was crowned Miss Inman (South Carolina) and will be competing for Miss South Carolina in June.

Learn More:

www.nationalconcussionawarenessday.com
www.lessentheimpact.org

Brooke as a newly crowned Miss Inman. (Submitted photo)

Whiplash and Post-Concussion HEADACHES

BY DR. ERIK REIS, DC, DACNB, CBIS

For a majority of the population, daily headaches, neck pain, and migraines are merely a theoretical event that comes up in conversations with family and friends. But for the nearly 21.2% of the US population who currently suffer from these debilitating conditions, life can consist of multiple nights of lost sleep, repeated visits to the doctor, and an endless pursuit of solutions to these life-altering problems.

The last six years of clinical practice have significantly shaped and changed the way I assess, diagnose, and treat these crippling conditions, which are individually unique to the patient who experiences them. As any provider will tell you, patients rarely (if ever) walk into our offices and willingly tell us *exactly* what symptoms they are experiencing, which is why it is up to the provider to be highly educated, but more importantly, possess the ability to critically think through their patient's situation. Regardless of the medical designation and/or philosophy, doctors *must* possess the ability to challenge their own biases to critically think through each case, as if starting from scratch with each patient who walks into their treatment room.

As recent neuroscience has shown, chronic pain can be multifaceted and affected by a magnitude of variables such as trauma (physical, emotional, mental), diet/nutrition, sleep, psychological (BPS) factors, family history, and various environmental influences. As students, we were taught that pain is usually a poor indicator of function, due to the fact that people may move well and still be in pain, with the opposite being just as true.

Since pain is a significant driver of functionality and quality of life, it makes sense for us to dig into various reasons why a patient may experience different types of pain, specifically in those cases that occur in the offices of doctors who primarily treat structural and neurologically based conditions such as whiplash and post-concussion syndrome. Regardless of the profession, we all carry inherent biases toward therapies and treatments for treating chronic head and neck pain, so it is imperative that providers continue to challenge their beliefs and thought processes surrounding various forms of therapies and modalities used to treat these conditions.

For this reason, it is important to start with a thorough history during a new patient examination, along with

performing an array of metabolic, structural, and neurological testing to truly determine the origin of a patient's symptoms in order to eventually create an individualized treatment program designed specifically for the patient. These steps are *crucial* for proper diagnosis and treatment, as they allow us to truly dig deep enough to find solutions to individual problems while also respecting the fact that the patient seated in front of us is a complete human being with an amazing nervous system that controls nearly every part of their physiology.

For centuries, doctors have understood the importance of the spine and its surrounding structures, which is why we have so many therapies and treatments based on the neck. But as we have seen in the past, structure doesn't always dictate function, and a majority of the time patients who come in with a clean MRI/CT still have some sort of resultant structural issue that needs to be properly assessed and treated. An even bigger issue is the fact that there are far more similarities than differences

"Regardless of the profession, we all carry **inherent biases** toward therapies and treatments for treating chronic head and neck pain, so it is imperative that providers continue to **challenge their beliefs**."

between whiplash and post-concussion symptoms, creating a dialogue that should alarm providers to realize the minimal differences between a concussion and a whiplash, which is why we should treat every patient as if they have both conditions and give them the treatment they deserve.

The common denominator is the fact that no matter how the spine is affected, the brain is also being affected in a similar way inside the skull, creating the classic coup-countrecoup movement that can cause damage to both structural and neurological tissues. We now realize an individual doesn't need to hit their head or lose consciousness in order to acquire a concussion or whiplash, and a majority of the time, they both occur simultaneously.

First and foremost, an in-depth bedside neurological and orthopedic examination must be performed to properly assess the cervical spine and it's structure. We need to rule out any specific issues that may be alleviated with manual therapy, soft tissue modalities, and/or referrals to other providers for specific services. This is where most people stop. They assume that since they've cleared the neck, everything is fine and as good as it can get. But what about those who still have symptoms?

The rest of the story lies in how the spine and neck muscles are influenced by both the eyes and the environment around them.

To give you a clearer picture, let's do a quick exercise: Place both of your hands on the back of your head, right at the base of the skull. Keeping your head perfectly still, try moving your eyes around in all directions as fast as you can for 15-20 seconds. Did you feel your neck muscles contract/relax? I know it sounds crazy, but your eyes can have a significant impact on the tone of your neck muscles, specifically your suboccipital muscles where most people report having tension-style headaches.

I see providers have missed these simple signs and symptoms all the time when their patients make their way into our office for treatment. Your eyes are a *huge* window into your brain function and have become so important to neurological rehabilitation that nearly every neurological examination involves some sort of eye movement assessment.

Another significant component involves an individualized assessment and treatment of the inner ear system, which is the first system in your body to completely mature, even before you are out of the womb. The inner ear system helps us orient ourselves in space in relation to gravity and is primarily the reason why you feel motion and movement in an elevator or during takeoff or landing in a plane. The inner ear system, paired with the eyes and neck, can have profound effects on your ability to balance, perform coordinated head-neck movements, and can even affect cognitive processing due to its connections with the hippocampus and frontal lobes.

These systems are *highly* important for proper brain function, as they are the bedrock for higher processes in the brain that allow us to perform amazing tasks throughout our lifetime.

If you are someone who currently struggles with chronic neck pain, headaches, and/or migraines, reach out to our office for a consultation so we can get to the bottom of your symptoms!

Dr. Erik Reis is a Chiropractic Physician and board-certified Chiropractic Neurologist at The Functional Neurology Center in Minnetonka, MN. He holds a diplomate in neurology from the American Chiropractic Neurology Board and is a certified brain injury specialist (CBIS) with the Brain Injury Association of America. He has completed numerous hours of additional post-graduate coursework utilizing clinical applications and therapeutic interventions in the neurological and nutritional rehabilitation of traumatic brain injuries.

Determining the Cause of Your Post-Traumatic Headache

BY KELLIE POKRIFKA

Headache is the most common symptom following a brain injury. In those with moderate to severe brain injury, over half of the population will suffer from headache. Interestingly, rates are even higher in populations of those with mild TBI. Over 70% of those with concussion will experience post-traumatic headache.

However, determining the type of headache that occurs after a brain injury can be difficult. All of the subtypes of headache following TBI are considered post-traumatic headache (PTH, PTHA.) Know that PTH is simply a symptom, not a diagnosis. This term states that there is some sort of headache following brain injury, but the term fails to define what is causing the headache and what treatments will be appropriate.

Determining the actual cause of your headache will help guide you to the proper treatments. Common types of PTH involves issues with migraine, cervicogenic (neck), tension, neuritic (nerves), musculoskeletal (muscles), TMJD (jaw joint), and myofascial (soft tissue.) Headaches can also result from medications. Although extremely rare, the possibility of spinal leaks, aneurysms, and brain bleeds need to be considered as they can also result from brain injuries and present as headaches. Note that a patient can have multiple causes of headaches, and that each of them can exacerbate the others.

The mnemonic **COLDER** can be utilized to help determine the type of headache.

C — Character. What does the headache feel like? Dull and aching or sharp and stabbing?

O — Onset. What triggers the headache? Does it start during intense exercise or does it wake you up in the middle of your sleep?

L — Location. Where exactly does the headache start? Does it stay in one place, or does it continue to spread around your head?

D — Duration. How long does the headache last? Does it come in short bursts or can it last for hours or days?

E — Exacerbation. What makes your headache worse? Is it affected by bright lights? Does exercising cause even greater pain?

R — Relief. What helps your headache, even just slightly? Dark rooms? Caffeine? If your doctor has prescribed medication(s) for your headache, be able to explain the degree of relief and/or the side effects you experience while taking these medications.

While listing your COLDER description to your doctor, be as thorough as possible. Seemingly minor clues can be instrumental to receiving a proper diagnosis. Whether you get relief from a heating pad or from ice, or whether exercise helps ease or spike symptoms can provide your doctor with greater insight into the underlying problem.

We all know that brain injury recovery can be frustratingly complicated. Determining the cause of your headache can be just as much of an uphill battle as finding the proper treatments for your headache. Until we have more thorough research, trial and error is almost always essential to recovery. Be sure that your doctor(s) is truly willing to work with you through this process. Brain injury recovery is far less of a burden when our doctors work alongside us as teammates.

Kellie Pokrifka is a TBI survivor and works as an intermediary between the experts and the patients with brain injuries.

3 Selenite Superpowers

BY KRISTEN BROWN

The struggle is real. We are constantly being stimulated by sounds, sights, tastes, smells, and feelings. This nonstop sensory overload can create toxic responses like brain fog, indecision, nausea, and other health challenges. Enter selenite!

This powerful but gentle crystal is the perfect antidote to the sensory stimulation and environmental toxins that we live with daily. Even though it's a "soft" stone on the Mohs hardness scale used in geology, it's energetic powers are solid.

Selenite is a general purpose crystal for clearing a clogged up energy system and is a double-whammy of awesome because it also clears the crown chakra located at the top of the head. This is a perfect combination for helping with headaches and other head and brain-based symptoms.

Three specific selenite superpowers are:

1. **Memory booster —** The strength of selenite can help focus your brain to create better memory.

2. **Headache soother —** Selenite's turbo-energy can soothe headaches and refocus thinking.

3. **Aura clearer —** Run a selenite wand around your body to clear your aura of toxic energy.

Selenite can be used multiple times a day to clear any cobwebs and clarify your thinking. I recommend getting a selenite wand and waving it around your body at least once per day (I do it 2-5x/day) to keep energy flowing and open. Keeping a few smaller pieces on your desk, in your car, and in your purse are also great ways to keep your energy protected from the sensory overload of today's world.

Selenite is truly superpowered!

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

Yoga: Lunge Pose

AMY ZELLMER, EDITOR-IN-CHIEF | HEALTHY LIVING

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 to accommodate *anyone*.

An important aspect of yoga is the breath. Connecting the 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, letting anxiety and distracting thoughts drift away.

Lunge Pose (anjaneyasana) stretches the hips, thighs, gluteus muscles, and quadriceps, and opens the chest while improving balance, concentration, and core awareness. Sanskrit: Anjaneya — Lord Hanuman, divine entity of spiritual significance; Asana — pose.

This pose is gentle and relaxing, but as with any pose, if it hurts or causes major discomfort, do not continue.

Instructions:

1. From standing: on an exhale, step your right foot toward the front of your mat. Stack your right knee over your right ankle. Lower your left knee to the floor. Keeping the right knee fixed in place, slide the left leg back until you feel a comfortable stretch in the front thigh and groin.
2. Inhale and reach your arms overhead, lift your torso upright. Face your palms toward one another and soften your shoulder blades down.
3. Draw your tailbone down toward the ground, lengthening your lower back and engaging your core.
4. Stay here for a few breaths.
5. To release, place your hands down on the mat, step your right leg back and gently come back to standing. Repeat on other side.

Modifications:

- For more stability, use blocks to help lift you higher (pictured) instead of reaching your arms up.
- Place a soft foam block or pillow under your back knee for cushioning.
- Be mindful of your neck and low back. Keep your gaze forward with your neck in neutral. Allow yourself a slight backbend if your low back will tolerate it.

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

Essential Oils: Lemon and Lemon Vitality

AMY ZELLMER, EDITOR-IN-CHIEF | HEALTHY LIVING

Essential oils are complementary tools that can help you achieve a healthy lifestyle. They are easy to use, smell great, and you can use them in a variety of ways.

Please know that all oils are not created equally. Young Living is the only brand I personally trust, as I know they have complete control over their product from seed to seal. Oils sold at health food stores can be misleading. Without FDA regulation, the bottle may say they are 100% therapeutic grade oils but you must look closely at the labels. If the ingredients list anything other than the plant stated, or if it says things like "external use only," "for aromatic use only," and "dilute properly," these are red flags that the oil inside that bottle is not 100%, and likely has been cut with other oils, synthetics, or chemicals.

Lemon: Lemon essential oil has a broad range of uses, from fighting exhaustion and the blues, to killing

harmful viruses and bacteria, reducing inflammation, and clearing your skin.

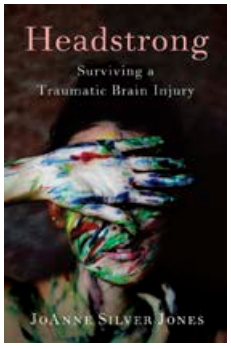
Lemon (*Citrus limon*) essential oil is cold-pressed from the rinds of lemons, giving its aroma all the brightness of the freshly picked fruit. Cheerful, sweet, and nostalgic, Lemon oil can eliminate odors and infuse your whole home with its clean lemon-drop scent when diffused.

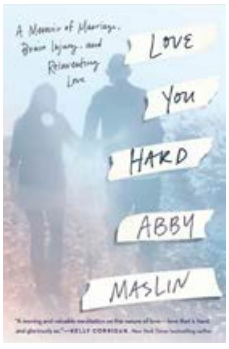
With its bright and joyful aroma, Lemon oil benefits skin and hair as much as its aroma benefits your environment. Your teens can add a drop to their evening moisturizer to reduce the appearance of blemishes, and you can add it to your conditioner for an aromatic treat that smoothes and shines the look of your hair. Because some citrus oils like lemon can cause photosensitivity, avoid applying to exposed skin before spending time outside.

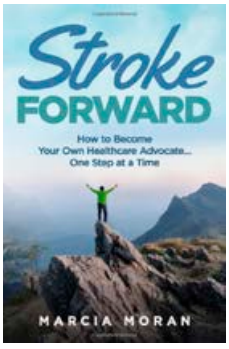
Lemon Vitality: Young Living's Lemon Vitality essential oil can add a bright, dynamic flavor to many dishes. Its versatility in sweet and savory recipes is what makes this fruit a popular item in kitchens around the world. Use it to add flavor to savory foods like fish and chicken or sweet foods like pastries and cakes.

Lemon Vitality oil has a bright taste you'll want to keep on hand for almost anything you whip up. Instead of zesting or juicing, use Lemon Vitality for a convenient way to use this great flavor. Start small with a single drop of oil.

Suggested Reading







Join Amy's TBI Book Club: www.thebrainhealthmagazine.com

Magnesium to Prevent and Treat Headaches

HEALTHY LIVING

BY SIERRA FAWN GUAY, MS, RDN, LDN, CBIS

Magnesium is involved in hundreds of reactions in our bodies and may play a role in preventing and treating headaches.

While severe magnesium deficiencies are rare, it is likely that most people consume inadequate amounts of this important mineral. According to the World Health Organization, food processing has led to a progressive decline in magnesium intake over the past century.

Research suggests that magnesium deficiency can lead to more frequent headaches since magnesium is involved in several processes such as neurotransmitter release and dilation of the blood vessels.

While the exact mechanism of magnesium in preventing and treating headaches remains unclear, there is growing evidence that adequate magnesium intake and/or supplemental magnesium may be used as a safe and affordable treatment for both tension-type headaches and migraines.

Consuming foods that are high in magnesium is essential. These foods include leafy greens (such as spinach, Swiss chard, and kale), legumes, nuts, and whole grains. On average, one cup of cooked chard contains more than 150 mg of magnesium. The recommended dietary allowance (RDA) of magnesium is 400-420 mg per day for adult males and 310-320 mg per day for adult females.

In addition to consuming foods that are high in magnesium, it may be appropriate to use magnesium supplements. While generally regarded as safe, it is

important to discuss magnesium supplementation with your doctor because magnesium may interact with medications or cause unwanted symptoms such as diarrhea. Certain types of magnesium (such as magnesium citrate) are utilized more effectively by the body than other types. Magnesium supplements should be taken in divided doses (small doses multiple times per day), which should be increased gradually as tolerated.

To get started on increasing your magnesium intake, try the following magnesium-rich recipe.

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

SAUTÉED SWISS CHARD WITH GINGER AND ONIONS

Ingredients:

½ cup wild rice, uncooked and rinsed
1 ¼ cups water
2 tbsp olive oil
1 tbsp fresh ginger root, peeled and minced
1 medium onion, peeled and sliced
1 bunch Swiss chard (preferably locally-grown), washed and chopped into bite-sized pieces
Salt and pepper to taste
Red pepper flakes to taste

Instructions:

1. In a small saucepan, add water and rice. Bring to a boil and stir once. Cover and reduce heat. Simmer for 35 minutes or to desired consistency. Remove from heat and let stand for 10 minutes.
2. While rice is standing, heat oil in a pan. Add onion and sauté over medium heat until onion is translucent or to desired doneness. Add ginger and sauté for two minutes. Add chard and cook until wilted, about three minutes.
3. Season with salt, pepper, and red pepper flakes.
4. Mix rice and chard together. Serve hot as a main or side dish.

Looking to connect with other TBI Survivors?

JOIN "AMY'S TBI TRIBE" ON FACEBOOK!

SURVIVING YOUR HEADACHE

BY JAMES A. HEUER, PA

Our law firmhelps numerous individuals who have been injured in car crashes or involved in a slip and fall resulting in a head injury.

I meet with all of our clients, and I meet with the majority of them when they first come to the office so I can get a full history of their symptoms.

It is not at all uncommon for someone to come with a headache that started moments after they were struck by a car. In reviewing their symptoms with them, I start at the top of their head and go all the way down so we do not miss a body part. Since the focus initially is on the head, I ask about any problems they have with concussion-type symptoms.

Many people I meet with show visible signs of stress that I attribute to a headache. In my interview, I ask "Do you have a headache?" They usually respond in the affirmative and I explain that I could tell by seeing at the tension in their face.

We then spend some time going through the concussion symptoms to find out if the individual struck their head or not. Often, individuals do not strike their heads but still have concussions as a result of being hit by a car.

Then I ask about the headaches. We talk about blurred vision, hearing issues, jaw pain, and other symptoms that are common in those that have been hit from behind or crashed into by another vehicle.

The following discussion focuses on some headache locations. It is not a medical diagnosis but rather a discussion in layman's terms about the types of headaches and what they are usually called.

I hope this information and the other information you find in this magazine are helpful on your journey to healing.

There are many types of headaches and for the purpose of this article we will focus on the top six, defining the type, location, and the accompanying symptomatology.

1. **TMJ (Temporomandibular Joint)** — The muscles of the TMJ follow a path along your jaw and cheeks and can cause pain and headaches. For example, when you grind your teeth the muscles located in your jaw tense and the tension can radiate along your cheeks and on the top of your head causing

a headache. A TMJ type of headache is most likely accompanied by additional symptoms such as:

- Restricted jaw movement
- A "clicking" noise in the jaw
- Facial/jaw pain
- Alteration in bite (how your top/bottom teeth meet together)

2. **Sinus Headache** — Sinus headaches present themselves with pressure around the eyes, cheeks, and forehead or an infection in the sinuses. The sinuses are cavities in the skull that connect with the nasal cavities. Sinus headaches may show the following signs:
   - Pressure, pain, and "fullness" located in your forehead, brow, or even your cheeks
   - The pain/pressure increases if you lean/bend forward or lay down
   - Fatigue, stuffy nose, and/or your teeth have a sore feeling

3. **Cluster Headache** — Cluster headaches will wake you up in the middle of the night with excruciating pain in or around one eye and usually come without any warning. They can last weeks or months. They get their name from the recurring attacks, which are also called cluster periods. Common symptoms that occur during the headache are:
   - Debilitating pain that is typically around or behind one eye but also can be found in other areas of the face
   - Facial or forehead swelling on the affected side
   - Eyelid drooping on affected side
   - One-sided pain

4. **Tension Headache** — Tension headaches, the most common type of headache, are typically described as feeling like there's a band around your head. These headaches are divided into two categories: 1) Episodic, lasting approximately a half hour to a week (which can eventually lead to a chronic tension headache condition), and 2) Chronic, lasting hours and occuring 15 days or more a month for three months. Symptoms that can describe a tension headache include:
   - Sensitivity on your scalp, neck, and/or shoulder muscles
   - Aching head pain; dull
   - Feeling of "pressure" on your forehead or back of head

5. **Migraine Headache** — Migraines are often described as excruciating pain typically located on one side of the head. They can last for hours or days and greatly impact activities of daily living. They typically are accompanied by sensitivity to light and sound as well as nausea and vomiting.

   Some migraine sufferers will experience a "warning" of the impending migraine in the form of an "aura." This can happen right before the headache or in concurrence. People can experience flashes of light, blind spots, or even a tingling feeling in the face or extremities. Migraine symptoms can progress through four stages but not always:

   A. **Prodrome** — A day or two prior to experiencing the migraine, possible mood or food changes can be identified, and/or there may be increased thirst and frequent urination. Those are just a few of the possible symptoms.
   B. **Aura** — As noted previously, some people experience visual disturbances and a "tingling" feeling. There may also be numbness or weakness on one side of the body. Some people report hearing music or noise while others may experience difficulty speaking.
   C. **Attack** — An attack migraine can last anywhere from 4 to 72 hours. During the attack, pain in the head typically "throbs or pulses" and there is noticeable sensitivity to light and sound as well as touch and smell with accompanying nausea and vomiting.
   D. **Post-drome** is the period following the migraine "attack" in which you may feel confused, exhausted, or the opposite — you may feel euphoric.

6. **Neck Migraine** — Cervicogenic headache pain develops in the neck. Cervicogenic headache is in the cervical spine (neck) or base of the skull while a migraine headache is rooted in the brain. It can be difficult to differentiate between the cervicogenic headache and the migraine headache because symptoms are very similar such as light and noise sensitivity and blurry vision. Cervicogenic headaches are actually caused by problems with muscles, nerves, or bones in your neck and the symptoms can include:
   - Pain around your eyes
   - Pain on one side of your face or head
   - Certain neck positions or movement increase the headache pain

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

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

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POST CONCUSSIVE MIGRAINES

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

Heaches and migraines are one of the most common complaints following a concussion or TBI (traumatic brain injury). In fact, migraines are a common symptom even five years after concussions. Migraines are debilitating and often affect schoolwork, sports, work, and family dynamics. Living with a migraine can be so debilitating that people are not able to maintain a job and often are not able to continue at school. Some of my patients have said they have a "cave" that they stay in to keep from having a migraine, which impacts their time with family.

A 2017 article in the Journal of Neurotrauma, "Natural History of Headaches Five Years After Traumatic Brain Injury," notes that the prevalence of new or worse headaches remains consistent with at least 33% of the participants at 60 months. The article went on to suggest that ongoing assessment and treatment of headaches after TBI is needed; a symptom may be a problem up to five years post injury. The article speaks to the need of the underserved population of people suffering migraines. Serving this population is not simply finding the correct medication but identifying the cause and dysfunction and putting a rehabilitative care plan together.

Following a concussion, headaches and migraines can come on as quickly as five minutes after the injury but, in some cases, it can take as long as seven days to show symptoms. According to the American Headache Society, Dr. Bert Vargas states that following concussions, 95% of people are likely to experience headaches, and among those with headaches, roughly two-thirds will have migraine-like symptoms. The signs and symptoms of migraines can include pain, nausea, scalp tenderness, blurred vision, dizziness, poor concentration, pain behind the eyes, fatigue, anxiety, depression and a sensitivity to light and sound.

The definition of a migraine is often described as a recurring moderate to severe headache with throbbing pain that can last from four hours to three days. Migraines are often on one side of the head but can be on both sides and accompanied by the above-mentioned symptoms. Most people do not realize they are experiencing migraines and will often use the term headache. It's important to distinguish between the two when talking with your doctor. Migraines can be accompanied by an aura, which is a disturbance in your sensory system (vision, smell, sound, touch and taste). People can experience one or more types of auras prior to the onset of a migraine. Examples of auras include smelling unusual scents (grapes, coffee), hearing sounds like a train, seeing lines or spots, experiencing a metallic taste, or tingling around their lips. Auras typically precede a migraine from 30 minutes to hours before the onset.

Other terms associated with migraines are prodrome and postdromes. Prodromes are often thought of as pre-headaches and can come on a few hours to a few days prior to a migraine. Symptoms can include yawning, fatigue, irritability, and depression to name just a few. Postdromes can last 24-48 hours after the migraines with symptoms of inability to concentrate, fatigue, depression, nerve pain, and weakness.

After a concussion there is an increase in inflammatory mediators that can prime neurons in the brain. When these neurons are primed it increases their sensitivity. With this increase in sensitivity, the person will often become easily triggered by their environment or by their own physiology.

Another group of cells in the brain, microglia, can become primed as well and become sensitive to inflammatory processes, meaning they become sensitive

to a decrease in sleep, increase in stress, unhealthy foods, even a simple jarring of the body or head. People say that a subtle bump by another person or object can increase their concussion symptoms or trigger a migraine. When microglia priming or neuronal sensitivity occur, people will often complain of being sensitive to barometric pressure changes, weather patterns, hormonal changes, fluctuations in blood sugar, odors, or even simple foods they had consumed in the past. If a primed neuron is consistently sensitive over time it becomes a chronic condition. Once it becomes a chronic condition there's still hope for resolution but it may take a lot of work.

There are three main types of migraines associated with concussions — common migraines (without auras), classic migraines (with auras), and vestibular migraines.

Vestibular migraines are often associated with dizziness, vertigo, difficulties with balance, and can also be seen with neck pain and feelings of pressure in the head or in the ear. Vestibular migraines do not always cause headaches. Patients may simply feel disoriented, or they may feel like they're rocking on a boat, and many also have a sensitivity to sound. Other terms for vestibular migraines are migraine-associated vertigo, migrainous vertigo, and migraine-related vestibulopathy. Vestibular migraines are not easily diagnosed. Patients who experience symptoms that last anywhere from five minutes to 72 hours with multiple episodes of vertigo, spinning, moving, or motion sickness, should know that these could be signs of a vestibular migraine.

When it comes to treatment and therapy, it is crucial to find someone who specializes in treating brain injuries and concussions. It's important because not all concussions are the same and not all people are the same. A therapeutic strategy may work really well for one individual but may not have any impact on another. The mechanism of the migraine maybe different for each person and, therefore, the therapies needed to get that person better may be drastically different. Treating and rehabbing concussions and TBIs is not a one-size-fits-all program. Each individual is unique in their injury, symptoms, and recovery, so a treatment plan needs to be established with the treatment team (including the patient) that is specific to that individual. For example, some patients who were injured while playing a sport, or in an auto accident, may need a few sessions of counseling to help heal from the injury. Depending on the severity of the concussion or TBI, they may struggle with the fear of being injured again. Patients may also need help modifying their work/school schedule while in treatment. The bottom line is that while concussions and TBIs are common injuries, the treatment and recovery times are going to be just as unique as the individual with the injury. The treatment plan should be tailored around each individual person and their needs, goals, and specific health concerns.

Another area to focus on with migraines is breaking the vicious cycle of chronic pain. It's important to identify the causes and triggers of migraines. Using a journal is often helpful in figuring out the triggers and eliminating them. Apps can also be downloaded on personal devices that will allow patients to track symptoms, triggers, and notes. Both of these methods are helpful when talking with the treatment team and it's something that can even be emailed to the treating team. Chronic migraines can be very difficult to resolve but keeping a journal and working on overall health is essential toward reaching this goal.

Of major importance but often overlooked piece of rehabilitation from a concussion or TBI is nutrition. Nutrition is part of the foundation of normal physiology, reducing inflammation and stabilizing certain functions like blood sugar. It's important to identify any triggers that may lead to migraines and it's important to have a diet that is anti-inflammatory. A Paleo-type of diet includes consuming quality meats, healthy fats, and vegetables. In other words, reducing white foods and starches along with sugars and processed foods, but increasing the intake of clean meats, vegetables, and quality fats. Certain nutrients are beneficial when trying to abort a migraine. Most often the combination of magnesium, feverfew,

"When it comes to treatment and therapy, it is crucial to find someone who specializes in treating brain injuries and concussions."

and B6 are used as a migraine abortive. Other things that you can try for migraines are CBD and glutathione. Again, this is where it's important to find a reputable practitioner to work with — the goal is healing the entire person, not just finding a "Band-Aid" cure for the pain. It is a wholistic approach that will yield the best long-term solutions.

There are several therapy approaches and therapists who specialize in rehabilitation and can aid in TBI recovery. For example, functional neurology is a specialty of practitioners who evaluate the entire brain and body connection, including vision, proprioception, vestibular, structural, and coordination in the areas of the brain that were injured.

Home therapies can include the use of blue-blocking glasses, rose-colored glasses, and decreasing overall screen time. Computers, phones, and televisions have a high frequency of light that can fatigue the overall nervous system and increase the sensitivity of the neurons responsible for the migraines.

Manual therapies have also proven to be successful in those struggling with migraines. Chiropractors, massage therapists, and physical therapists have different modalities they use to help reduce pain and the frequency of migraines. With concussions there is often an imbalance between the eyes, the neck, and the head, causing compensation within muscles that can also trigger migraines. Working on the head and neck can be a big part of care.

Vision therapy has proven to be a big part of rehabilitation for those suffering from migraines and traumatic brain injuries. Vision therapy is provided by optometrists, ophthalmologists, and functional neurologists. Often, people will have difficulty with convergence, their eyes won't be aligned properly, or they will experience double vision. They will compensate with their head and neck and will have changes with spacial awareness and proprioception. This will change how they interact with the world and can have an impact on brain neurons.

While concussions and TBIs can be devastating for the patient and their loved ones, it is important to remember that there is hope. Lifelong suffering does not have to be the way the story unfolds. The brain is an amazing organ, and with the right treatment team, therapies, nutrition, and support, the brain can be rehabilitated to optimal function.

Dr. Shane Steadman, DC, DACNB, DCBCN, CNS is the owner and clinic director of Integrated Brain Centers. To learn more about how we can help with concussions, stroke and TBIs, please visit www.integratedbraincenters.com. For a free consultation, please call 303-781-5617.

What Should I Do If I Meet a Service Dog?

BY TONI POPKIN

Keeping the following points in mind when meeting or just passing by a service dog team will make a world of difference and the handler will certainly be appreciative.

Do Not Distract the Dog or Interfere with His Job

In order to perform their jobs to the best of their abilities service dogs must be able to focus on their handler or the task at hand. Even though service dogs are trained to the highest of standards and typically ignore distractions, they are not infallible. A distracted service dog could slip up on a key part of his job and put his partner and himself in danger. Some things that can distract a service dog are:

- Calling to the dog
- Making kissy, barking, or other sounds at the dog
- Petting the dog without permission

Please do not allow young children or your pets to interfere with a service dog team.

Do Not Be Offended

Do not be offended if a service dog handler will not let you pet his or her dog. Some service dog handlers have a strict "no petting" policy and others don't. If a handler doesn't allow petting, it may be because it would prevent

the dog from performing his or her job correctly. It is up to the handler to decide, on a case-by-case basis, whether others may pet the service dog.

Do not be offended if a service dog handler doesn't stop to chat. Many service dog handlers are happy to answer respectful questions about their service dogs. However, this may not always be possible, as the handler may be in a hurry, may not feel well, or have other reasons not to be able to stop and talk at that moment.

Never Offer Food to a Service Dog

Never offer food to a service dog without first receiving permission from his handler. Even service dogs can be tempted by food. While service dogs are trained to ignore food on the ground and not to beg when it's around, food can still serve as a distraction. Furthermore, not all dogs can eat all food, even dog food or dog treats. Feeding a service dog something that can cause an adverse reaction could make the dog sick, which would mean the dog could not work until he is better. This would effectively take away his handler's independence.

Offer Help But Do Not Insist

Service dog handlers are very appreciative of others who ask them if they need any help. If you think a service dog handler may need some help, ask before acting. Do not attempt to take the dog's leash or harness from the handler and do not attempt to physically move or direct a handler unless he or she has given you permission to do so. If a service dog handler rejects your offer to help, please respect his or her wishes.

Treat Service Dog Handlers with Dignity

Speak to the handler, not to the dog. Speak to the handler as you would anyone else and do not ask personal questions about his or her disability.

Do Not Ask a Service Dog Handler to Have His or Her Dog Demonstrate a Task

It is in poor taste to ask a service dog handler to cue the dog to demonstrate a task. Service dogs' jobs revolve around mitigating their handlers' disabilities, and disabilities are very personal matters. Furthermore, many service dogs do work that is dependent on very specific circumstances that cannot be recreated on a whim.

Do Not Draw Unncessary Attention to a Service Dog Team

Pointing, exclaiming things like "Look, a dog!" and doing other things to make a spectacle of a service dog team are rude and make service dog handlers feel uncomfortable. Allow a service dog handler to go about his or her business just as you would anyone else.

Do Not Photograph

Do not photograph or video record a service dog team without permission.

Use an Encounter with a Service Dog Team as an Opportunity to Educate

Use it as an opportunity to educate children (and adults)! Explain to children what a service dog does and why it is important not to interfere with the team's work. Also explain that not all disabilities are obvious to others.

Toni Popkin and her service dog, Bud, live in Alexandria, Virginia, where she advocates and educates about service dogs and about people like herself who have a TBI.

Natural Relief:
Full Spectrum Hemp Oil


BY DEAN FOOR AND JEFF BALLARD

For those of us who suffer persistent headaches or migraines, there is nothing more dread-inducing than the first twinges that indicate the onset of an episode. Maybe you know your triggers well, or perhaps you're still searching for answers — but either way, once the pain sets in, so too does the desperation for relief.

If you've struggled with headaches or migraines for long, you've most likely explored both preventive and abortive medications as well as lifestyle changes. Healthy habits are always positive to develop — who couldn't stand to drink some extra water or get a little more sleep?

But when it comes to relying regularly on medication, you could be doing yourself more harm than good. Over-the-counter (OTC) painkillers and prescription medications can cause damage to your kidneys, liver, and stomach when taken over a long period of time. They can also be dangerous to take with other medications if the ingredients are the same or contraindicated, which means you have to be hypervigilant if you're combating your headaches/migraines with more than one medication. If you've got allergies, you have an extra reason to watch out: Most OTC painkillers contain allergens, which can lead to inflammation, skin irritation, and more.

Prescription pills come with a whole additional host of concerns, depending on the kind you're taking. But even if the benefits outweigh the risks, being chained to an RX for the rest of eternity can be discouraging — especially when you're dependent on a doctor and/or insurance, forced to make regular office visits, etc. It can feel like you have less control of your health than you're entitled to.

We're sure you've been asked this before: Have you tried CBD?

Specifically, we want to know if you've tried full spectrum hemp oil. Unlike products that use CBD isolate, full spectrum hemp oil takes advantage of the entire profile of terpenes, cannabinoids, and flavonoids that a plant has to offer. Working together synergistically, these compounds can have an incredible impact on a person's wellness.

For many sufferers, Full Spectrum Hemp Oil can offer relief after the onset of a headache or migraine. For others, a daily dose can lead to fewer episodes as the CBD and other compounds have a chance to build up in the system. In either case, a CBD-rich wellness tincture can be a way to lighten one's dependency on OTC or prescription medications — and to discover much-needed relief from a natural source.

Whether you've given it an unsuccessful shot or eschewed it altogether, we encourage you to consider full spectrum hemp oil. Look specifically for a tincture extracted from organic hemp, as hemp can accumulate chemicals that are present in the land it is being grown in. It should also have been tested for heavy metals. Dosage will depend on your particular situation and needs, so give yourself time to adjust — and don't hesitate to talk to an expert if you need advice.

SPECIAL OFFER: *Receive 15% off your first purchase at www.entangledbiome.com with code: 15tbitribe*

Dean Foor is the director and extraction specialist at Entangled Biome. He oversees production of all products from seed to shelf utilizing only organic certified USDA industrial hemp and food-grade ethanol. Jeff Ballard is the operations manager and branding specialist. They are located in Eugene, OR.

What a PAIN in the Neck!

BY JEREMY SCHMOE, DC, DACNB

The connections between the cervical spine and post-concussion symptoms are real and determining whether a patient's symptoms are from a brain injury or an injury to the cervical spine is complicated because the symptoms overlap.

After a series of whiplash skiing concussions, I started to develop multiple symptoms within weeks of my last injury in 2011. I didn't experience severe symptoms right away, "just" a headache, fatigue, and neck pain, which decreased over a week. It wasn't until a few weeks later when I rode up an elevator and felt extremely dizzy when I got off that I knew something was not right with my brain. The episodes became more frequent and I developed symptoms while walking, riding elevators, driving and doing anything where I was carrying different amounts of weight. I realize now that my brain was not interpreting gravitational loads correctly.

Manual therapy on my neck helped with my headache but I still felt "off." I was going to chiropractic school at the time and did not want to make a big deal of it. I just pressed on with life like many of my patients do. Who has time to slow down, right?

Then I started to feel dizzy 24/7, experienced sensations of rocking when my eyes were closed, developed tremors in my hands, a sensation of inner shaking in my core, out-of- body sensations, feelings of floating, weakness in my legs, neck pain, stiffness, and a headache located deep inside my head. The headaches were by far the worst and affected my ability to function. It was not fun feeling out of balance but when you are in pain everything is amplified.

At times I felt like I was about to black out and like I was rolling in space over to the right side. I would be overstimulated by visual motion and driving became difficult. Elevators and escalators would cause me to feel unbalanced and like I was getting pulled into the ground. Anxiety started to kick in and I started losing weight and developed insomnia.

Does this sound like brain injury? Or cervical spine injury? Both? What was the cause of the headaches?

Based on my clinical experience, I believe I suffered trauma to my brain ***and*** my cervical spine. My headaches had both a cervicogenic component as well as visual/vestibular and autonomic.

There is a lot of overlap centrally in the brainstem and upper cervical spinal cord that can cause headaches related to the neck. When a headache is solely from the neck, manual therapy may help.

Some patients may find that manual therapy to the neck helps for a short period but stiffness returns. In many of these cases a sensory mismatch occurs with the neck, vestibular and visual systems. Something is off centrally causing the neck to stiffen. This occurred in my case. Upon examination, I had excessive eye movement in the dark, indicative of a central vestibular processing issue. Until addressing it in rehabilitation, my neck would become stiff within a few hours of therapy. Sound familiar?

A headache may come from both the cervical spine and visual/vestibular mismatch, which is why an extensive examination of the structural integrity of the neck and the other sensory systems is very important. The central vestibular dysfunction may need to be dealt with first is some cases before addressing the cervical spine with manual therapy. There are so many connections in the brain between the eyes, spine, and vestibular system that must be assessed to unravel the complexity.

If headaches that seem to be related to your neck are not improving, consider getting an in-depth examination of the connections between the sensory systems of the brain. Even though you may feel like it is just an issue with the neck, due to the complexity of the cervical spine connections with the brain addressing both can help you move in the right direction.

Dr. Jeremy Schmoe, DC, DACNB is the founder and director of The Functional Neurology Center and works with complex neurological cases from all over the world. www.theFNC.com

Alternative Therapies for Post-Traumatic Headache

BY KELLIE POKRIFKA

Many of us with post-traumatic headache are willing to try just about anything to ease our pain. The problem is that we just do not know where to start. To help reduce the burden of this search, below are a few options that tend to be popular for treating post-traumatic headache. Before we get started, we need to discuss a few issues regarding these treatments.

One of the most pressing issues is the great disparity in getting access to these treatments. Many of the services cost enormous amounts of money and are considered alternative options that most insurance companies rarely cover. Accessibility is further limited by the location of these services and the lack of providers with adequate knowledge about brain injury.

Headache is a symptom of almost every issue that follows a brain injury. For example, University of Pittsburgh Medical Center's (UPMC) health plan defined the six clinical trajectories or types of concussion, including cognitive/fatigue, vestibular, ocular, post-traumatic migraine, cervical, and anxiety/mood. Headache is a common symptom of every single one of these types. You can take steps to help relieve the headache and help it from further exacerbating other symptoms, but until you address the root issue, the headache is likely to reemerge.

In addition, the research supporting these treatments is often scarce and the amount of evidence supporting these treatments further diminishes when we limit it to the under-researched field of post-traumatic headache. This extends to traditional medications as well. In fact, not one drug has been approved by the FDA for the treatment of post-traumatic headache. The validity of these treatments is often controversial and the only way to truly tell if a treatment will work for you is to try it yourself. The same treatment that works well for one person will be useless to another. Every brain injury is unique and we will all respond differently. With that being said, here are a few options you may not have considered.

- **Acupuncture** — A staple in Eastern medicine for thousands of years, acupuncture has recently surged in popularity in the West. A practitioner will insert thin needles into specific locations around the body to help rebalance one's qi (chee.) This helps stimulate the nervous system and releases neuroendocrine messages. In one study, the U.S. military found acupuncture to be as effective as drug therapy in the prevention of migraine, tension-type, and neurovascular headaches.

- **Neuromodulation** — Neuromodulation devices utilize electric or magnetic currents to initiate changes in the brain, similar to those which would occur after taking a drug designed for headache. A few of these devices, such as the Cefaly, gammaCore, and SpringTMS devices, are approved by the FDA for conditions like migraine, but none are yet specifically cleared for post-traumatic headaches.

- **Biofeedback** — Biofeedback is a branch of therapies that use operant conditioning to help patients learn how to actively control certain bodily processes

that usually function subconsciously. This includes aspects like heart rate, blood pressure, muscle tension, and even brain waves.

- **Cognitive Behavioral Therapy** — No, CBT will not directly take away our pain. However, it will help teach us the skills to prevent the pain from getting worse. We learn how to control our bodies so that when the pain does hit, we remain calm and avoid setting off all of the processes like tensing our muscles and/or stressing, which drastically exacerbate the pain. We also learn how to cope with living with chronic pain.

- **Chromotherapy/Light Therapy** — Chromotherapy is the term used for a broad class of therapies that use light to help modify bodily responses. For PTH, light therapy can be administered through devices with lasers, colored glasses, and many other options. Depending upon the wavelengths of light, seen as different colors, this therapy can have control over sleep, mood, cognition, and pain.

- **Supplements** — A variety of supplements are recommended for headache, again all with varying evidence reports. A sample of the most common supplements include omega-3 fish oil, magnesium, coenzyme Q10 (CoQ10), melatonin, ginkgo biloba, feverfew, riboflavin, butterbur, and several others. Following brain injury, many of us experience deficiencies in a multitude of nutrients. Discuss all supplements and nutritional deficits with your doctor before making any changes to your recovery plan.

- **Diet** — Depending upon your source, any number of diets may help with brain injury recovery. Two of the most common diets used for TBI are anti-inflammatory diets and the ketogenic diet. Even without committing to a completely restrictive diet, aiming for healthy choices such eating more vegetables and fewer processed foods may benefit our recoveries. Discuss nutrition and any dietary suggestions with your doctor before making any changes to your recovery plan.

- **Float Tanks** — Float tanks, or sensory deprivation chambers, are essentially oversized bathtubs saturated with magnesium sulfate, or epsom salts. Because of the high saturation levels, a person floats in the water without effort. The tanks are kept silent and pitch black, which further promotes the parasympathetic "rest and digest" state in our bodies. This helps switch our wired-and-tired brains out of sympathetic "fight, flight, or flee" mode. Our bodies also absorb the magnesium, helping reduce that nutritional deficit often experienced after TBI.

"Float tanks are essentially oversized bathtubs saturated with magnesium sulfate ... The tanks are kept silent and pitch black, which further promotes the parasympathetic 'rest and digest' state."

- **HBOT** — Hyperbaric oxygen therapy consists of sitting in a 'tank,' breathing pure oxygen at a much higher than normal pressure. This process increases our blood oxygen levels, which is designed to help encourage both recovery and neuroplasticity.

Again, this list is in no way all-encompassing. The best way to find the right therapy for you is to do your own research starting with the above topics and consulting with your own doctor. There is no magic solution for recovery, and yet it is always possible. Believe in yourself and believe in your recovery.

Kellie is a TBI survivor and works as an intermediary between the experts and the patients with brain injuries.

Hydration

BY SUE WILSON, MA, ATC/L, PES, CHHC

Many different factors affect the everyday function of the brain. Research has shown that dehydration has several negative neurological and psychological effects. But did you know that hydration is critical to brain function? That's one more reason to make proper hydration a daily priority.

Every cell of the body depends on water to help perform hundreds of chemical reactions and balance metabolites. When cells of the body become dehydrated, the entire body is affected, from muscle contraction of the legs to memory to emotions to rapid hormone changes.

Several studies have identified a link between those who have suffered a TBI and dehydration. People often don't realize how much water humans need daily for our bodies to perform all the functions necessary to move, walk, talk, think, see, and taste.

A 2015 study conducted at London's Loughborough University found that driving while dehydrated can be extremely dangerous. Volunteers committed a significantly greater number of errors, such as lane drifting and late braking, in a two-hour driving simulation when they "drove" dehydrated. Volunteers' performance on the driving tests were just as poor as those who completed similar tests while driving at the legal limit for blood alcohol content.

The likely reason is that dehydration reduced concentration and reaction time. Other studies have proven over time that dehydration can cause decreased cognitive function, motor skills, memory, coordination, and can produce unwanted emotions and even make you more sensitive to pain.

When a brain injury occurs, the inflammatory process is activated and remains activated until we can get the body balanced. Proper hydration is one way to help balance the body. Humans needs different amounts of hydration due to the differences in body mass. Our bodies require half of our body weight in ounces of water to daily generate all the reactions and functions of our organs. For example, someone weighting 250 pounds should drink at least 125 ounces of water a day. Notice that I said water, not fluids. Our bodies need water. Take your weight and divide it by two for the total ounces of water you need to drink every day.

Your liver detoxifies every morning from 1-3am so the water you consume in the morning will help support the liver in flushing out all the toxins from the previous day. Water helps to flush the organs, replenish the blood, and balance any inflammation in the body. Upon waking every morning, everyone should drink between 10-20 ounces of water before they do anything else. Keep your water bottle or cup out in the open by your bed or in the kitchen so it is a friendly reminder every morning.

Once you find the target amount of water you need to consume every day, start slowly to increase the amount every morning and throughout the afternoon. Your total ounces in water should be consumed by 4pm so the fluids don't disrupt your sleep pattern. If you quickly increase your water intake, you will find yourself in the bathroom often because your body can't adapt to rapid absorption. Therefore, slowly increase your fluid ounces over a couple weeks.

Sue Wilson received her master's degree in Exercise Physiology from Minnesota State University, Mankato. She is a Certified Holistic Health Coach, a Certified Athletic Trainer, and a loving mother of two. She's on the board of directors for CTE Hope, and is dedicated to helping improve the lives of those who have been affected by concussion and brain injury.

Life Lessons Learned from a TBI

AMY ZELLMER, EDITOR-IN-CHIEF

As we enter Brain Injury Awareness Month, I'd like to take a moment to reflect on how far I have come in my personal journey, as well as how far we have come as a community in our advocacy of this invisible injury.

When I first fell on ice six years ago, I wasn't sure if I would ever feel like myself again. Was I going to be able to work again? Be able to exercise or walk more than a few hundred feet? Was my dizziness going to subside? Would my headaches *ever* go away?

As time went on, it seemed like I might be stuck in this scary world far longer than I had hoped. Symptoms not only weren't subsiding, they were getting worse. Doctors kept telling me there was nothing they could do for me; I just had to give it more time — *how much* time seemed a mystery to everyone.

At the one-year mark, my neurologist told me I was likely the best I was going to get, and that I needed to come to terms with it.

That was unacceptable to me. I was 40 years old and at the height of my career. How could I accept such a statement at face value without at least *trying* to find better answers?

Up to this point, no one had done any therapies or even suggested different providers to me. I was dumbfounded that there appeared to be *nothing* for me to try … I realized I had to take my recovery into my own hands. I started doing yoga and meditation, I began writing on the *Huffington Post*, and I created a Facebook group for survivors and caregivers to help support each other in our journey.

I am fortunate that I eventually found The Functional Neurology Center. They were able to give me back a quality of life even I had started to believe wasn't possible. Their validation and support gave me strength to continue on.

Now, six years later, I look at how much has changed: my Facebook group has almost 10,000 members, I have published two books about my journey, a podcast series, TBI TV, and most recently [drumroll, please] this magazine.

Awareness is growing. It may seem like it's growing at glacial speed at times, but it is indeed growing.

The moral of the story: not all doctors have an understanding of brain injury. If you're not getting answers, continue seeking answers. You will likely have to look outside mainstream medicine to find them, but they are there. Also, know that recovery can happen no matter how far out you are from your injury. There is always hope!

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