

## **Drum Journeying and Neuroplasticity: A Healing Breakthrough?**

My journey into sound was unexpected. But there is one instrument in particular I have to thank for kicking off my expansion and that is the drum.

At my very first music festival back in May, in a little town in Garrettsville, Ohio, I was wandering the festival grounds one night with my friends. The big bands were done performing. Majority of the festivalgoers were back in their tents, winding down to a campfire, slipping into their sleeping bags or hammocks.

Meanwhile, my friends and I were walking around- still full of energy. And that's when I heard it. Bu-dum, bu-dum, bu-dum, bu-dum, dum dum.

“Woah! Do you guys hear that?!” I asked my friends.

They said yes, but were not nearly as curious as I seemed to be.

“I'll be right back, guys.” I told them.

And that's what I did. I followed the sound. It led me to a tent. A duo, which I later found out to be a father and son, were drumming.

I stood there listening. But quickly, my brain became entrained into the beat. My thoughts diminished. My heart-rate synced up with the drums. I became lost in the beat.

My old fears that I was incapable of being musical, or playing instruments, left at once. With each tap of the drum, the vibration seemed to pinpoint and pierce any negativity or “heat” in the body.

A woman nearby handed me a rattle and I joined in and lost myself to the music.

This was my first experience with trance. This father and son led me on an unexpected drum journey- and when the music stopped- I was empowered. I knew right then that drumming held a key to something I was about to unlock.

During my time at the Globe Institute, I have traveled farther down the door of drumming and its relation to healing during my time in the sound therapy certificate program. Fortunately, the bridge between the Eastern and Western approach to healing has certainly strengthened in the past few decades as advancements in medicine continue. In this paper, I am going to discuss drumming, what happens to the brain during repeated drumming, and how this could assist the healing process- specifically for patients with chronic pain.

The origin of the drum dates way back to the beginning of mankind. Hollowed out logs were believed to be communication devices in primitive times. Drums would later take on a more spiritual role, in tribal celebration and rituals, as humanity caught onto the powerful concept of rhythm. The act of repetition from the beat had the ability to bring people out of their bodies into dance, putting them in a trance-like state.

According to dictionary.com, “trance” is a half-conscious state in which ability to function voluntarily may be suspended, a state of complete mental absorption or deep musing. Mankind found that drumming had the ability to bring people together, but now science is starting to uncover more. Drumming has the ability to not only bring people together in community and recreation (recreation comes from the Latin word *recreātiōn*, meaning to recover from illness), but make people better, mentally and physically.

In the United States, drumming started to see its revival in the 1950’s, when activists started to use it as a tool for activism and to transcend stereotypes of African culture displayed in Hollywood. Nigerian drummer Babatunde Olatunji was a key figure in this revival period, playing at MLK’s civil rights rallies and eventually teaching at colleges across America. At a school in Long Island, one of his participants was the young Mickey Hart, who became drummer with the Grateful Dead in 1967. The Dead returned the compliment by inviting Olatunji and two dozen members of his group to guest with them in Oakland, California on New Years, 1985.

As the art of drumming began to accumulate more interest in the western world, science also took note and many discoveries were found in the brain. During a TEDx talk, teaching artist Cornell Coley summarizes two of the biggest discoveries on the brain and drumming. There is the brain’s emotional response to drumming and the physical response to drumming, which together, can create the ideal healing scenario.

When drumming, the present time is all that is able to exist. The past and the future dissipate away, allowing the participant to release stress and anxiety, relax the nervous system and release emotional trauma. As you release stress and anxiety, the immune system is further supported and eventually, strengthened. Drumming has the ability to activate the Killer-T cells, a type of white blood cells which the body uses for fighting virus and disease, and killing cancer cells.

Other studies have demonstrated the calming, focusing, and healing effects of drumming on many groups such as: Alzheimer's patients, autistic children, emotionally disturbed teens, recovering addicts, trauma patients, and prison and homeless populations. Drumming can be a primary tool in healing and treating mental illness, cancer, paralysis, stroke and many more- but when looking at chronic pain, drumming can be a groundbreaking healing strategy.

The reason drumming is so powerful, especially for patients dealing with chronic pain, is because during the repetition of the beats, a part of the brain where information is processed is altered helping to relax the patient into a trace-like state. And getting patients with chronic pain into these “trance-like states” is crucial for healing- especially as science is beginning to reveal that chronic pain can be unlearned.

During drumming, which activates the theta (trance) state, the Hippocampal Cortex floods an area of your brain known as the Corpus Callosum with chemicals. As the flooding occurs, a pathway is created between the left and right hemispheres of the brain, transferring information between the conscious and subconscious mind. During trance, the two sides are able to work together more efficiently. Meanwhile, other important areas light up involved in memory, future planning, imagination and creativity. As the lines between imagination and reality are blurred, the imagination has an easier time comprehending new ways of thinking and behaving.

Previously, aging and damage to the brain was thought to be irreversible, but as the concept of neuroplasticity is explored, new doors are opening. The brain does have the ability to change, both structurally and functionally on the basis of environmental input. During trance-like states which can be accessed via drumming, patients can experience high levels of gamma wave activity, which continues after meditation/journeying and helps patients to not get stuck on a particular stimulus. This means that it's easier to control thoughts, as the brain becomes adaptable.

And when healing chronic pain, an adaptable brain is a receptive brain and a brain that is more willing to take on the challenge of healing itself. Traditionally, pain was viewed as "when we are hurt, our pain nerves send a one-way signal up to the brain, and the intensity of the brain is proportional to the seriousness of the injury", aka: pain files damage report, brain accepts.

But in 1965, neuroscientists Ronald Melzak, who studied phantom limbs and pain, and Patrick Wall, who studied pain and plasticity, found that the pain perception system is spread throughout both the brain and spinal cord, and the brain is not just a passive recipient. It actually plays a much larger role. They explained the "gate control theory of pain", in which the pain messages from damaged tissue must pass through several "controls" before reaching the brain. If permission is granted by the brain, which is the final step, pain will finally be felt by certain neurons that turn on and transmit their signals. The adverse effect of this is when the brain closes the gate and blocks the pain through the release of endorphins, which are the body's natural pain-fighting narcotic. It's important to note here that drumming also releases endorphins.

Chronic pain is developed when the neurons in our pain mapping system get damaged, tricking our body into thinking it's still hurt, when really it's our brain that is struggling. Chronic pain can be understood when looking at the structure of the neuron and its three parts: dendrites, cell body and axon. The dendrites are the tree-like branches that receive input from other neurons which lead into the cell-body, where the cell's life and DNA live. All of this is controlled via the axons, which are the wires that carry the electrical impulses between each neuron. With enough excitatory signals, the neurons begin to follow their own pattern.

Axons avoid touching neighboring dendrites, which are separated by a microscopic space called a synapse. Once an electrical signal reaches the end of the axon, a neurotransmitter releases the message into the synapse, in which the adjacent dendrite of the neuron receives the message and chooses to either accept or reject: inhibiting or exciting it. This is where the concept of rewiring comes from: the activity that occurs at the synapses either strengthens or weakens the connection between the neurons.

This is the basis of neuroplasticity: fire together, wire together, or use-it-or lose-it. Michael Moskowitz, M.D. is a psychiatrist-turned-pain specialist who helped me to understand these concepts more, in which I took it and related it to drumming. He has been living proof that understanding and working with neuroplasticity can lead to tackling chronic pain. A victim of chronic pain himself, he decided to take charge of his own pain using the laws of neuroplasticity. When plasticity runs wild and causes chronic pain, the pain maps fire more easily and enlarge their receptive field.

To adverse the effects, Moskowitz set out to “weaken” the links formed in his pain maps. During his studies, he found that the areas that fire in chronic pain were also many of the same areas where the brain processes thoughts, sensations, images, beliefs, emotions and images, which explains why when we are in pain, we can’t think well. The areas that regulate these activities are taken over.

In his experiment, he drew three pain maps: the brain in acute pain, the brain in chronic pain, and the brain in no pain. Each time he had a pain attack, he would focus with all his strength on the brain maps he drew- imagining the firing areas shrinking and turning into the photo with no pain.

More details and extensive research can be found in Norman Doidge’s book, *The Brain’s Way of Healing*: but in summary, the gist is that the power of visualization and the right brain aiding in the healing process. Even if this is just used as one tool among others, it could drastically change the way patients perceive and manage pain.

Drumming plays an incredible role in the neuroplasticity process because as the brain falls into a more relaxed state, the analytical left brain slows down enough to meet the left brain halfway, and consider the message it has to say. A group drumming session, listening to drumming soundtracks or even one-on-one drumming between therapist and patient could provide excellent supplementation on top of neuroplasticity visualization.

To help patients ease into their healing journeys with chronic pain, Moskowitz used the acronym MIRROR, which is based on neuroplastic principles, to remind patients in chronic pain how to organize their minds. MIRROR is a revolution in medicine. Normally, patients are trained in their role to submit to an injection or take a pill. Yet in this approach, the patient becomes active, reads about how pain develops and can take charge of their treatment. They can use each pain of attack as a motivator to apply these concepts when focusing on changing their synapses.

M- Motivation  
I-Intention  
R-Relentlessness  
R-Reliability  
O-Opportunity  
R-Restoration

Minds become foggy and disorganized by the pain, which is why this, on top of drumming is an excellent aid in the healing journey. With each letter of the acronym, what if we met the word with a matching sound therapy technique? Example: 1. Motivation: Bringing them into their bodies, helping them relax, showing them glimpses of possibility but most importantly giving them strength—bells, soft singing. With intention, the possibilities are endless. This discovery has only just touched the surface. I hope to continue to research this area, study drumming, and firsthand try out this method on people I encounter in the future.

### **References:**

1. <http://briandavidphillips.net>
2. <http://www.drumming.com/drum-history.htm>
3. <https://www.theguardian.com/news/2003/apr/11/guardianobituaries>
4. <https://www.youtube.com/watch?v=OYG2BrrzY54>
5. <https://www.thoughtco.com/drum-therapy-1729574>
6. [http://www.normandoidge.com/?page\\_id=1042](http://www.normandoidge.com/?page_id=1042)
7. <https://www.youtube.com/watch?v=gD11v4wO9gM>