Why doesn’t the pain stop?
Listen to your body talk
Use your brain to stop your pain
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Brain Facts
Did You Know?

- Every cell in your body is wired to send information to your brain.
- Your brain doesn’t just receive the information from your body, but sends directions back out to tell your body what to do.
- Your brain “reads” everything going on in your body 30 times a second for your entire life.
- The adult brain changes throughout our lives based upon the information it receives.
- Your brain sees you differently than you see yourself. The image is called the Homunculus.
- The more sensation each part of your body has, the bigger the image of that body part in your brain.
- Your body uses electricity to send information to your brain.
- Once that information arrives, it is routed all over your brain so that your brain can better understand the information and tell your body what to do.
- We only experience pain when the electrical signals reach the thinking part of our brains.
- There are specific regions of the thinking brain where we fully experience pain, but these parts of our brains do a lot more than just perceive pain.
- Your brain cells pass on that information by releasing chemicals at the spaces between them called synapses.
- Synapses allow your brain to change the intensity and speed of the incoming signals from your body.
- Your brain has 100 billion nerve cells and 1000 trillion synapses. Every synapse is used to pass information around your brain and your body.
Your brain changes constantly

Your brain changes automatically, instantly, efficiently, seamlessly and constantly in response to changes in your body. The messengers are our senses, thoughts, beliefs, memories, emotions and movement. It also changes in response to injuries, disease, traumatic events and stressful situations. The process by which these changes take place is called neuroplasticity. Thus the changes we see can be positive or negative.

Three rules of neuroplasticity

There are three basic rules of neuroplasticity:

- What is fired is wired
- What you don't use you lose
- When you make them your break them; when you break them you make them.

These principles are the reason our brains change with repetitive simulation.

Training your brain

Most of us don’t realize it, but we are actually training our brains every time we learn a new skill, such as reading, typing, singing a song, learning a dance or riding a bike. It is through repetition, practice, creativity and improvement that we master any activity. This happens through electrical and chemical signals in our cells creating pathways in our brains that allow us to perform these tasks. We are literally changing the anatomy of our brains. By being aware of this process we can consciously utilize it to our benefit.
Acute and Chronic Pain

Not all pain is created equal

Understanding the difference between acute and chronic pain is critical. Although the pain is transmitted and perceived similarly, acute pain is a symptom and chronic pain is a disease.

Acute pain

Acute pain is an alarm going off in the brain that signifies danger and/or damage to the body. As such a signal is sent to the brain and is perceived as a familiar sensation of unpleasantness. The brain sends an order to the body to remove itself from the danger. Under this circumstance the brain works to dampen the pain, and the pain will stop even before the tissue is fully healed.

Chronic pain

In chronic pain the story is different. The brain perceives ongoing danger and the pain pathways are reinforced instead of inhibited. The pain response is enhanced in the brain, the spinal cord and the peripheral tissue. These processes are reinforced with continued signaling from the periphery to the brain and the brain back to the periphery. A loop is set up and pain causes more pain, even if the original injury heals. In this case neuroplasticity works against us. In the brain more brain cells are being recruited to sense pain. Pain transforms from symptom to disease.
Neuroplastic Transformation

A place to start
In chronic pain our brains change due to the constant pain signaling loop between the brain and the body. The changes in the brain occur in numerous ways. We have identified sixteen places in the brain where pain signaling is received. Nine of these places are in the conscious part of the brain, the cerebral cortex. In these nine places only 5% of the nerve cells are normally dedicated to pain processing, but in chronic pain this expands to 15 to 25% of the cells. To accomplish this, pain signaling cells use the three principles of neuroplasticity. Essentially the brain learns pain. As with any type of learning the process of repetition reinforces the strengthening of brain pathways, causing a genuine anatomical change.

The person in pain
Thus far we’ve talked about the changes taking place inside our bodies in response to chronic pain. As these changes are occurring we suffer a significant loss: loss of function, loss of quality of life, loss of our purpose and loss of any sense of control over our bodies and our lives. This leaves us feeling isolated, worried, helpless and out of touch with the world around us.

The road back
The challenge is to reverse this process. Neuroplastic Transformation is treatment that uses the basic principles of neuroplasticity to change brain pathways back to normal function and anatomy. To accomplish this we use thoughts, images, sensations, memories, soothing emotions, movement and beliefs to harness the power of our brains. By learning principles of how our brains work, we can begin to use the conscious part of our brain to modify the experience of our lives. One of the best examples of this is reading. Unlike language reading is not a built in part of our brain. To learn to read we have to start with basic
Neuroplastic Transformation

training, such as learning the alphabet, the difference between consonants and vowels, short sounds and long sounds. Then we sound out simple words and string together enough words to make a sentence. At some point we go from learning to read to becoming a reader, and magic happens. We can look at ink on a page or a screen and feel the strongest emotions, imagine places we will never see, experience triumph and loss, have our senses stimulated to the point of a hallucinatory experience.

**Neuroplastic Transformation**

These same principles we use to become readers can be applied to overcome the experience of chronic pain and nudge the brain back to its natural state of enhancing our lives. *What we fire we wire*. In chronic pain the pain signaling has relentlessly wired the brain to enhance pain pathways. The brain essentially keeps the pain turned on, instead of tuning it off. By stimulating the brain during pain spikes to stop the pain, we begin to activate the cells and their connections that have been appropriated for pain enhancement, returning them to normal function. *What we don’t use we lose.* Once we block the brain’s unopposed stimulation of chronic pain pathways, we set the stage for the third rule of neuroplasticity. *When we make them we break them. When we break them, we make them.*

Developing multiple strategies for counter-stimulation of the brain provides ways of not only fighting off the immediate pain spikes, but also of developing new nerve connections. At the same time we eliminate excessive pain synapses, by consciously inhibiting their use.

As with reading the initial going is likely to be slow and awkward. It is easy to lose sight of the goal of moving from strategies to fight pain to a return of function, quality of life, purpose and meaning. Slowly we build new pathways in the brain leading to less pain, less angst and less hopelessness. We can create and effect changes in our brains and our lives through repetitive thoughts of reducing the pain, soothing emotions and sensations and comforting beliefs. Vision, scent, touch, sound, movement, meditative calm, spirituality, kindness, gratitude and love all directed toward changing the brain allow us to change cells, genes, molecules, anatomy, physiology and circuits. We shift the balance away from unrelenting pain to normal brain function. We reclaim what we have lost. We become empowered to regain the meaning and direction of our lives. We become more active and overcome de-conditioning so trained into our bodies by chronic pain. Our brains direct our bodies and our bodies return the favor by decreasing the painful stimuli sent toward the brain.

**Is it that simple?**

We have been practicing these ideas all of our lives. Persistent pain so defeats us that we often believe that we can only submit to it and alter our lives under pain’s tyranny. If we are motivated with the intention of changing our brains to limit our pain, we can make the changes to achieve Neuroplastic Transformation.