

# The *Power* of **NEUROPLASTIC HEALING**

The 5 Stages Everyone Must Understand

By Irene Lyon

# The Power of Neuroplastic Healing.

## The 5 Stages Everyone Must Understand

In our complex and intricate world, healing MUST start with understanding some theory about what makes us tick and how we can heal at a very deep cellular and nervous system level.

I've had disagreements with folks at health conferences and in various business-oriented coaching programs around their advice to just offer people the amazing benefits of my work; don't bother them with the "how" or the "process" - but you see, that is where we are going wrong. And I'm sticking to my guns on this one due to my own observations in working with thousands of people for the past 20 years.

When we promise them the "pleasure island" and all the rosy of bliss and maybe even get them there without teaching them how it is done, how this actually unfolded inside of them, all too often they pop back to the same old pain points - back to their misery - because nothing ever really got shifted at a core, fundamental level.

"Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime." Chinese Proverb

This piece was inspired by Norman Doidge and the five stages of neuroplastic healing that he outlines in his latest book *The Brain's Way of Healing* (1)

He did such an amazing job at summarizing these stages in Chapter 3 of his book, *The Stages of Neuroplastic Healing - How and why it works*, that I wanted to share them.

When I get into the actual stages, I GIVE HIM FULL CREDIT.

The rest, however, is mine.

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**+** *Neuroplasticity is responsible for all the habits we have - both helpful and harmful ones.*

## Why Theory First?

I want to bring these five stages to the masses because no matter what kind of healing or recovery process you are in these stages are happening, whether you are aware of them or not. I have also found that because our human intellect is so powerful, understanding the theory from an in-depth, non-layman's point of view actually speeds up the healing process.

Based on my own observations, when a person understands the theory, and of course applies it, their healing is exponential - as opposed to them just being a passive, or even *active* recipient in the healing process.

## Enter Neuroplasticity

**NOTE:** I use the terms nerve cells, nervous system, and neuropathways interchangeably. The main thing to grasp is that you've got this invisible system that is embedded throughout ALL of you and it wants to be healthy.

Neuroplasticity is responsible for all the habits we have - both helpful and harmful ones.

For me, neuroplasticity is simply the capacity of your body, brain and nervous system, to change, grow and heal (and, as you'll soon read, it is also responsible for this NOT happening.)

Wikipedia writes:

***"Neuroplasticity, also known as **brain plasticity**, is an umbrella term that encompasses both synaptic plasticity and non-synaptic plasticity—it refers to changes in neural pathways and synapses due to changes in behavior, environment, neural processes, thinking, and emotions - as well as to changes resulting from bodily injury. The concept of neuroplasticity has replaced the formerly-held position that the brain is a physiologically static organ, and explores how - and in which ways - the brain changes in the course of a lifetime."***

**+** *When there is a strong force to maintain a certain habit and any attempt to break free from that habit fails, it is the power of already existing neuropathways that are so heavily grooved and feel so safe that keep us stuck and the same year in, year out.*

I believe there are two things missing in this primary definition that I want to bring to the table.

### 1. More than just the brain is involved in neuroplasticity.

The brain is not an isolated organ. It works in relationship to our interactions with our environment, and of course with the connections that bridge the brain with the rest of our body.

For example, when we are learning how to talk and walk as babies, we are wiring together new neuropathways between our brain, nervous system and the muscles that help us move and create sound, as well as between all these elements and the terrain we are moving across or the mother tongue we are sensing with our hearing.

### 2. The dark side of neuroplasticity

Neuroplasticity is often spoken about in terms of positive shifts and transformations, and yet we mustn't forget that it is the flexible wiring of the brain with the nervous system and environment that brings us our harmful and addictive habits that do not serve our well-being.

For example, addiction to various substances, activities and even people and toxic relationships, is all because of neuroplasticity.

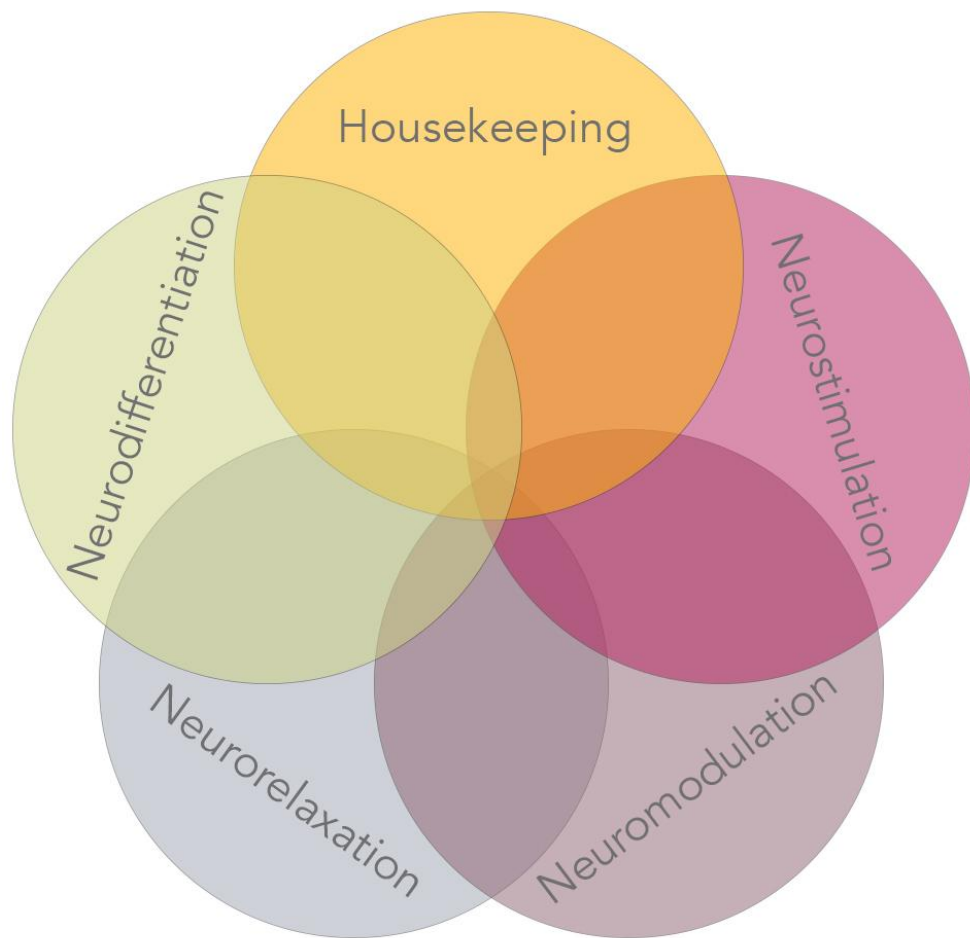
When there is a strong force to maintain a certain habit and any attempt to break free from that habit fails, it is the power of already existing neuropathways that are so heavily grooved and feel so safe that keep us stuck and the same year in, year out.

When we tap into neuroplasticity and begin to build more helpful habits, it can be VERY challenging - not only from a thought-based perspective, but also from a deep visceral perspective because you are literally breaking down old patterns that are by nature electrical, biochemical, sensorial,

behavioural, physiological and relational. This ain't easy. Which is why so many people fail to break harmful addictions, relationships, etc.

To fully tap into neuroplastic healing you need to do more than just trick the brain with fancy patterning exercises and calming meditations - the process must have a keen eye on all the interactions you have with life.

Put another way, to break free from nasty neuroplastic behaviours requires a long-term campaign that involves all your faculties. As you'll soon read, more than willpower and positive thinking is required.





*Both an infant growing up in a war-torn country and one who develops in a toxic environment that has no emotional connection, are logged as "the same" from a nervous system perspective.*

## Why do we need neuroplastic healing in the first place?

Before diving into the stages (don't worry, I'll get there soon!) we have to understand why we need this in the first place. There is a high amount of individuality when it comes to healing processes, but it seems there are some key triggering factors, or stressors, that throw our systems out of harmony.

### **1. Injury, abuse and highly threatening or stressful situations (AKA: Shock Trauma).**

This category throws the nervous system off kilter so much that it becomes STUCK either ON (in fight/flight) or OFF (in freeze, or shutdown), or BOTH. A car accident, injury, rape, a sudden death of a loved one - anything that happens as a solitary event, or even multiple events, after the age of 3, or post-verbally.

### **2. Early and/or developmental trauma\* (AKA: Anything that occurs pre-verbally - before we can make meaning or associate emotions with our experiences.)**

This means growing up in an environment that is unsafe and doesn't offer the securities of healthy attachment, bonding and the basics (food, shelter etc.).

This could include being born prematurely, an in utero stress experience because mom was overly stressed, early surgeries, or lack of emotional attunement. This last one is a biggy! Adoption is another big one, as are parents who are depressed and/or not very present emotionally and/or aren't embodied. The baby feels it all!

Interestingly enough, both an infant growing up in a war-torn country and one who develops in a toxic environment that has no emotional connection, are logged as "the same" from a nervous system perspective. That little nervous system only feels the lack of safety and constant threat. It doesn't matter if it's from constant gunfire and explosions, or the insidious silence of neglect and mis-attunement; the effect is the same.



*Living in a world with constant 24/7 demands, deadlines and overstimulation, means constant activation in the nervous system.*

So please don't think that early trauma only means horrific circumstances in 2nd or 3rd world countries, or in 1st world countries wherein the parents are addicts and child molesters - it is happening everywhere. I hear it everyday when affluent, successful and good looking folks in my neighborhood verbally abuse their 3 year old at the park.

### **3. Chronic Stress (AKA: The burden of westernized society)**

Living in a world with constant 24/7 demands, deadlines and overstimulation, means constant activation in the nervous system. Eventually what is technically stressful and might be perceived as a minor threat to the overall safety of the system becomes registered as the norm.

Over time, the bodily systems start to learn how to exist at a different baseline, and because this is gradual and occurs over a large portion of time, the change in your neuropathways is less obvious - but they are happening earlier (electrical, biochemical, sensorial, etc.).

For example, if I were to walk to and from work everyday for 30 minutes each way, and then my work changes such that I don't have to walk, or I have to drive instead, I might not notice a difference immediately, but over one year that extra 60 minutes of movement will show up on my body, most likely in the form of fat, even if I am still working out at the gym 3x/week.

Same goes for our invisible nervous system - put it under a low level stressor for a long enough period of time, let's say having slight resentment towards your partner and feeling unable to speak from your heart for nearly 8 years (speaking from personal experience in my first marriage), and soon enough the by-product of this stress and holding-in of emotions will presents itself in a way that you can't ignore, such as a health crisis (2).

**+** *From my experience living in Western society and working with people to help them in their neuroplastic healing journeys, it is very rare that I meet someone who isn't juggling a concoction of all three of the above; shock trauma, early trauma, chronic stress - our toxic culture cocktail.*

#### 4. All of the above.

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### Enter Healing

How we heal depends on MANY factors.

For example, it isn't enough to just practice mindfulness and body-based awareness work if we are still living in an environment that puts us under threat. Taking ourselves out of a toxic relationship is essential, but failing to rebuild the foundations that broke and fractured while in that toxicity, not to mention the patterns that allowed a person to be there in the first place, is equally essential.

This whole neuroplasticity thing is a multi-faceted process, and as I mentioned above, it is also HIGHLY individual.

For some folks, simply improving diet and exercise can do wonders for improving the health of their nervous system, for others the trauma and dysregulation of the nervous system is so deeply entrenched that you need to bring in more than just correction of food and addition of exercise. (These are those people who have tried everything under the sun, but are still sick and tired even after a hundred juice fasts and dietary cleansings).

Also, I find that when more nervous system regulation is on board and many past traumas have been released and there is less stress sticking to the system, the importance of diet and exercise lessens a bit - we can let go of that control. (Now wouldn't that be wonderful? To eat freely and not be afraid of everything you put in your mouth!)

Remember this is a spectrum.



## Here are the 5 stages that Norman Doidge outlines in his book *The Brain's Way Of Healing*

His exact stages are as followed:

- Correction of general functions of the neurons and glia\*\*
- Neurostimulation
- Neuromodulation
- Neurorelaxation
- Neurodifferentiation/Learning

### 1. Correction of general functions of the neurons and glia

*For me this is simple **Housekeeping** for the body's cellular processes.*

It has to do with the external stuff that we take in based on what we consume voluntarily and what we are exposed to in our environment.

Getting the key vitamins and minerals we need for proper cellular function can definitely have an effect on proper nervous system health. Because most of us are living in the first-world the types of deficiencies that once existed aren't as common, however we still want to keep on eye on our body from a cellular level to ensure all things are in balance.

Things to consider for general housekeeping of the nervous system:

- Healthy, clean, wholesome food and water.
- Clean air.
- A home environment that is free from harsh chemicals, toxins, molds etc.
- Exercise and activity that challenges our heart and muscles and gives us good circulation.

**+** Getting the key vitamins and minerals we need for proper cellular function can definitely have an effect on proper nervous system health.

**+** *The main purpose of stimulating the system is to challenge it and wake up circuits in the system that have been asleep and not active.*

## 2. Neurostimulation

*To stimulate means to activate.*

This is anything that provide a stimulus to the nervous system.

Sound, movement, light, thought and even visualizing are all various kinds of stimuli into the human system.

Walking is a form of neurostimulation, as is listening to music, or being in the sunshine. Yoga would fit into this category. So would learning how to salsa dance! Acupuncture, acupressure, and so on.

The main purpose of stimulating the system is to challenge it and wake up circuits in the system that have been asleep and not active.

In Doidge's book he writes about laser therapy, visualizing pain receptors in the brain changing for the better, structured exercise, Feldenkrais awareness through movement exercises, electrical devices that stimulate large networks of the neurons via specific frequencies, and the use of a mother's voice to calm erratic brain pathways.

Being a Feldenkrais practitioner by trade, I'm slightly biased towards the Feldenkraisian approach to neuroplasticity because, rather than having something done to you, or having something embedded on you or inside of you, you and your awareness are the activator in the process. The process in Feldenkraisian learning demands a pausing between your thought of the movement and the actual movement itself. There is a continual self-corrective process that doesn't allow the attention to wander off. You are constantly sensing yourself and visualization is also on board for many of the explorations. Feldenkrais is like biofeedback and neurofeedback, but rather than using a computer interface and various electrical sensors on your body to register your electrical impulses and internal body

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rhythms, you are listening to sense your very own impulses and rhythms. *Kind of cool eh?!*

### 3. Neuromodulation

This stage is all about helping the noisy brain and nervous system become more quiet and settled so that it can have the chance to heal and grow.

The process of bringing the system down will vary depending on the person and their history.

The key here is to help re-set and bring the brain's level of arousal back down to baseline by tapping into two main brain systems that are housed below the more evolved portions of the brain, meaning the parts of the brain that are "subcortical" or below the cortices of the brain. (The brain's cortex involves the higher more evolved functions that sets apart us humans from other mammals and animals.)

#### **Those two main brain systems are:**

1. **The reticular activating system, or RAS** is what helps regulate a person's level of alertness. It lives in the area of the brainstem which is roughly at the base of the skull, where the spinal cord starts to come out of the brain into the spine. When a person has had some form of brain issue, or trauma, the RAS can be "off-set" and muck up sleep-wake cycles which doesn't allow the person to get the repair and recovery needed post-trauma. Often, clients will report feeling very "buzzy" or "on edge" or "always exhausted" and because of this, it is tough for them to fully rest: hence they need to modulate this system so they actually CAN rest.

2. The other main brain system that comes into play with this neuromodulation stage isn't so much a brain system, but a system that connects the brain to the rest of the body - **the autonomic nervous system, or ANS.**

**+** *What typically happens in our westernized culture is a failure to come out of these stressful states that are meant to be short-term, not long lasting. In other words, we fail to go back to nervous system harmony, and release the survival energies..*

One function our ANS is responsible for is our survival instincts, also known as our fight, flight-flee and freeze reactions. The other function is regulating key organ systems in the body such as digestion, sexual function and even how we connect and socially engage with others.

We have this incredibly valuable system embedded deep in our unconscious, hence autonomic or automatic, to keep us safe from threat and out of harm's way. The classic example is the immediate release of adrenaline and corresponding running or attack response that comes in if we should encounter a wild animal, or threatening person.

The other classic example is the shut down or freeze response that often occurs when we sense that a threat is too overwhelming to overcome.

Either way, these survival instincts send our nervous system, brain and our internal organs into a hyper-alert state, or shutdown mode. What typically happens in our westernized culture is a failure to come out of these stressful states that are meant to be short-term, not long lasting. In other words, we fail to go back to nervous system harmony, and release the survival energies.

When this happens, our metabolism can become either stuck on really, really HIGH, or it shuts down, or worse - BOTH of these instructions can be running in our system at the same time. When we are caught and stuck in this survival energy loop, it is next to impossible to change the brain and neuropathways for the better. Healing and learning anything new becomes incredibly challenging and often leads to failed results.

What helps a person neuromodulate is way beyond the scope of this article, but one such practice that is highly effective is Somatic Experiencing, the main body-based trauma resolution work that I practice, that is geared towards releasing held trauma from the nervous system.

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#### 4. Neurorelaxation

Often you'll hear of people who sleep 10+ hours per night, and they wake-up still tired and exhausted and they say they are "out cold" all night long - it doesn't make sense right? How can you sleep so much and still not feel rested?

Well, when you understand the different levels of the autonomic nervous system and what they are in charge of, you learn that it isn't so much the length of sleep that is important, but rather **being in the appropriate nervous system level** that allows for proper cellular repair, organ system regeneration and immune enhancing functions.

If a person is still deeply in shutdown (that part of the nervous system that is very low metabolism; tons of fatigue - due to high stress or old trauma still being held in the system), their body is too far towards one end of the spectrum and they just can't repair their body's tissues.

But let's just pretend, you've successfully gone through, or have at least started to dabble in the first three stages of neuroplastic healing; basic housekeeping, neurostimulation and neuromodulation - and now ALL you want to do is rest and sleep.

But it feels different. When you sleep, you actually wake-up less groggy and more alert. But you still can't get enough. This is the body going into a massive regeneration and reparation phase.

This is where sleep comes in and where our busy 24/7 go-go-go lifestyle and "I should be doing more" society mucks us up. When a person gets to this stage, this is where I find people fall off the wagon. They find it too hard to stop and just rest. Those entrenched neuropathways that want to keep going and striving and pushing through sabotage the entire healing process.

## 5. Neurodifferentiation/Learning

Now, let's assume the brain and nervous system are in better balance.

It has been rested.

There is less chaos and noise inside.

Good nutrients and a healthy environment are present and in full force.

Now is the time to put more attention on the body such that finer distinctions can be learned and more complex pathways can begin. More challenging forms of neurostimulation can occur.

Here's the interesting thing though: this 5th stage is often where people start. They start with the challenging yoga class, or the advance brain training games. Even in my own practice of Feldenkrais, I've seen many students come to classes and not reap the full benefits because their nervous systems are on high alert, or they are so shut down they can't sense their body for long enough to challenge it in a healthy, productive way.

In essence, neurodifferentiation has very similar attributes to the 2nd phase, neurostimulation. They are both about stimulating and offering the brain, nervous system, and associated body systems new challenges. This phase is all about enhancing the skill of the person by throwing it greater complexity and more chances for refinement. This is where enhancing creativity starts to poke through.

### At this point, I must bring back Feldenkraisian learning.

I believe, as do many (Doidge included), that Feldenkraisian movement is neurodifferentiation at its finest - after all, two out of the eight chapters in his book are dedicated to Dr. Feldenkrais' work and discoveries. What happens in a Feldenkrais lesson is very different than other forms of mind-body movement. It is

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*That is not in chaos and/or in shutdown.*

*That can reap the benefits of rest.*

*Once you get here, so much is possible.*

next to impossible to convey the difference in writing and the best way to understand is to experience it.

To end, imagine having a system that has completely been repaired and recouped.

That is not in chaos and/or in shutdown.

That can reap the benefits of rest.

Once you get here, so much is possible.

I'd love to help you get there.

So much health to you and all your loved ones,

A handwritten signature in black ink, appearing to read 'Irene'.

**\*Early and/or developmental trauma.** This category is a tricky one to discuss in one paragraph, let alone one article - if you'd like a full understanding of this form of trauma I highly recommend participating in one of my online programs (21-Day Nervous System Tune-Up and/or The New Inner Game, A 12-Week Rewire) so you can access my signature Biology of Stress Video Training Series wherein I go into great detail about this subject and offer practical and transformative exercises that help heal early trauma wounds.

**\*\*Neurons and Glia.** Neurons and glial cells are contained in the brain. About 15% of our brain cells are neurons, and the other 85% are glial cells. These important brain cells (both neurons and glial cells) are responsible for cell communication. Glial cells are specialized cells that offer neuroprotective qualities which help the neurons wire and rewire the brain.

#### References

1. The Brain's Way of Healing. Remarkable Discoveries and Recoveries from the Frontiers of Neuroplasticity. Norman Doidge, M.D. 2015.
2. When The Body Says No. The Cost of Hidden Stress. Gabor Mate, M.D. 2003.

## What past clients have to say about my work.



"Irene is the real deal! She has discovered a way to have your body **de-stress so much that you no longer remember what it's like to have fear, anxiety or resistance**. Irene's work is an absolute must if you want to reach your ultimate potential. She gets my highest recommendation."

- **Bill Baren**, CEO & Founder of Bill Baren Coaching. Oakland, California.



"I have done lots of other therapies including yoga, but this material really gave me a new level of self awareness and body awareness. **I now sleep better, have less back pain and headaches**, understand how I hold stress in my body, and practice tools that gently release tension throughout my day. It is so worth it so invest in yourself and learn advanced self-care skills."

- **Shaina Loos**, Massage Therapist. Vancouver, B.C.



"Each person needs to study themselves – this course is a wonderful guide to help us do that. **Irene has a wonderful voice, pacing, and manner of speaking that makes the audio lessons easy to follow and comforting**. The exercises we covered expanded the sophistication of my approach to continued self-understanding and self-maintenance."

- **Mark Fan**, Engineer & Researcher/ Toronto, Canada.



"TAKE THIS COURSE!! Before Irene's course, I hadn't been paying attention to my body's cues. **After the first day, my relationship to stress was permanently altered**. Such a powerful start – giving me information I needed to see how I was holding stress IN my body instead of noticing it, tuning in, and using it to my advantage. I began to feel more "myself" when I would tune in and let go of tension in my body. Her genuine care for those she



helps is totally present in her voice. I can't think of a more powerful thing you can do for yourself for such a low investment."

– **Amy MacClain** of "Bullet Proof Kids", Oakland, California.



"This course has left me so much more empowered to make changes in my life and handle stress than years of meditation. Irene has found **the perfect blend of do-able, helpful and interesting lessons** that will appeal to people very new to body work as well as people who have been doing body practices for awhile. Irene has the unique gift to blend the science and the practice into a course that feeds your mind, body and spirit. I was really blown away."

– **Jo Ilfeld**, Ph.D., Executive Leadership Coach. Berkeley, CA.

## Professional Biography

Irene Lyon, MSC., is a nervous system specialist and therapeutic coach who has been studying all things “body and mind” since 1993. Since opening her private practice in Vancouver, British Columbia in 2005, Irene has made huge strides in her mission to help people release stress and trauma from their deepest human system - their nervous system. She has helped many people recover from debilitating and misunderstood conditions such as PTSD, depression, anxiety, chronic fatigue, chronic pain and much more.



Irene graduated with a bachelor's degree in sport science in 2000 and obtained her master's in research in the fields of biomedical and health science in 2002. Shortly after this, a series of debilitating knee injuries and surgeries turned Irene to investigate alternative healing and wellness practices and she hasn't looked back since.

She is a certified and highly skilled practitioner of the Feldenkrais method (based on the work of Dr. Moshe Feldenkrais) and Somatic Experiencing (a nervous-system based approach to healing trauma founded by Dr. Peter Levine).

Irene's brand is her ethos and represents her desire to help the planet, one nervous system at a time, by educating, teaching and helping people discover how they can become their own medicine. She is an optimist and a realist, an introvert and an extrovert, a creative science geek and a lover of the natural world.

### Contact Irene

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