

How your nervous system gets out of sync

What have I been doing wrong?

What have I done wrong? How did I get like this? What should I have done differently? These are age-old questions that we all ask and that patients ask in our office every day. The fact is that while we do a lot of things right, our bodies are in a constant state of change. When we perpetuate positive change, support, and enhancement, we sustain proper nervous system function for years. The problem is that the average American lifestyle perpetuates decline, breakdown, and destruction of the body, including the nervous system. The daily rigors of life are enough to wreak havoc on our structural frames. From the work we do to the play that we attempt, we ask a lot of our bodies. Let's look at three key factors that place our nervous system under attack and get us out of sync: stress, injuries, and chronic pain.

Stress

Recent studies attribute 85% of all disease or illness to stress-related factors. WOW! Our country is the greatest in the world, but it is also the most stressed in the world! Our lifestyles are stress-ridden messes on a large scale. We know that 14 million Americans suffer from anxiety and at least 30% of the population suffers from insomnia. Estimates say that 90% of women over 30 suffer from some degree of hormonal imbalance. The causes of degenerative effects on the nervous system due to stress are numerous. It is not just that your husband won't put the seat down after he uses the toilet. Stress is real, a daily companion.

This stress list is long and touches nearly everyone:

- Poor and unhealthy diet
- Lack of sleep
- Inadequate exercise (if any)
- Long hours
- Poor digestion
- Emotional reactions
- Financial problems
- Hormone imbalance
- Bad relationships
- Work
- Exposure to toxins
- Degenerative changes in the body
- Poor posture
- Stimulants such as caffeine, sugar, alcohol
- Prescription drugs
- And the list goes on....

If you want to move toward a life where nervous system insult is not a factor, you need to identify and follow appropriate lifestyle changes. There's no way around it.

So how does stress affect our nervous system?

The ever-active nervous system responds to a body under stress by increasing sympathetic-nervous-system activity. This results in hyperactivity, restlessness, muscle tension, cardiovascular stress, and other intensified functions. If the stress is prolonged, or perceived to be prolonged, by your nervous system, various hormones and glands become overworked and you pay the price: chemical waste is produced. This waste causes degeneration of nerve cells, free radical damage throughout the body, and even further hormone imbalance. It's all downhill as far as your body is concerned.

Your hypothalamus is a portion of the brain that monitors function and responds to stresses in the body. It monitors and normalizes thirst, hunger, body temperature, water balance, blood pressure, and more. It also links the nervous system to the endocrine system via the pituitary gland. It works much like an air conditioning system in your home, where the thermostat monitors temperature. The thermostat can be set at a certain level, let's say 72 degrees. The thermostat then monitors the room temperature at that level. If it goes above 72, the thermostat senses that and signals the A/C unit to inject cool air into the system until the temperature gets down to 72 degrees once again. It has done its job. All is comfortable and well.

In the body, the hypothalamus is like a thermostat in that it tries to keep many important functions within range. In fact, one of the many roles of the hypothalamus is to normalize body temperature both through shivering, and through contraction or expansion of the blood vessels. But for our purposes here, let's say an intruder is breaking into our home.

When the brain perceives environmental danger, a primitive structure in the brain called the amygdala immediately fires a nerve impulse to the hypothalamus to kick off the body's fight-or-flight response through the sympathetic nervous system. This stress response starts with the hypothalamus stimulating the pituitary gland (also in the brain) to release a hormone called Adrenocorticotrophic Hormone (ACTH). In turn, ACTH signals the adrenal glands to release cortisol, the stress hormone. Cortisol rises, followed by a cascade of physical effects and functions designed to aid in physical survival through the danger.

Once the intruder is subdued or leaves, the hypothalamus next has the job of *reversing* all the physiological stress created by the event because the stress is no longer needed for protection. So it signals the parasympathetic nervous system to start calming things down to normal levels. When working properly, this negative feedback loop keeps the nervous system functioning properly and all in check. The system is in order.

HOWEVER, a problem arises when our brain senses we are in constant and ongoing stress due to some of the points, and more, that were listed above. Long hours; improper sleep; inadequate or non-existent exercise; poor diet filled with fast foods, or processed and packaged foods; over-work; financial strain; physical pain and injury, and so on, cause the negative feedback loop to fail. That's when the chronic stress response runs unchecked throughout your day and night. The results to the nervous system are degenerative, detrimental, and catastrophic. A slow, ongoing breakdown of your nervous system and body are the result. Fatigue, mental fog, hormone imbalance, inflammation and pain, decreased range of motion, weight gain, loss of the will to participate in life—these are just a few of the results. Do any of these ring a bell?

Please read the article, [How to Embrace Your Self-Care Opportunities.](#)

Injuries

For some people, the nervous system can get out of sync quickly. An injury or accident that causes bodily harm will do this. The framework elements consisting of the bones, joints, ligaments, muscles and other soft tissues that protect and support the delicate nervous system can become over-stretched, torn, loosened, inflamed, fractured, or simply pushed out of normal alignment. This can result in frank pressure or irritation of the nervous system.

Either depressed or overactive nervous system function and signals can result in catastrophic consequences. Nervous system impulses and firing should occur at a normal rate. If this rate is too high or too low, problems will result. Pain, numbness, tingling, muscle tightness and spasm, loss of movement and strength, loss of sensation and more can occur. Further, the injury starts the affected area down the devastating and debilitating path of degeneration. Spinal canal stenosis (narrowing), disc space narrowing through disc dessication (drying), bone spurs, loss of mobility, chronic pain—these all can result from past injuries that were not properly taken care of in a timely manner. All of these consequences lead to nervous system dysfunction and alteration of the normal patterns of function. This in turn leads to improper bodily function in any area of the body affected by the nerve supply.

That's right! That lifting injury you had 15 years ago that causes your back to hurt when the weather changes, or when you mow the lawn, can also be the underlying cause of your constipation or adrenal hormone imbalance. How can this be? The resulting nervous system dysfunction caused by the injury results in altered nerve flow to certain areas of the body. This in turn results in altered function to the lower colon, let's say for example. The colon's mobility is affected and it no longer performs its normal function as it should. The result is constipation.

You may try all types of remedies from laxatives to fiber. You may have a colonoscopy performed that shows no problems such as tumors or polyps. You may even try a colon cleanse, but to no avail. If nervous system function is not improved to the point where nervous impulses can get from the proper brain centers, through the proper channels, to the target organ (in this case the colon), then proper function will not occur. The good news is that we are living creatures made up of cells and tissue and the ability to recover and heal. If proper flow can be restored, better function will follow. We see it everyday in our office.

Chronic pain

Chronic pain is defined as pain that persists longer than it should based on what we know about the natural healing recovery period associated with a particular disease or type of injury. The International Association for the Study of Pain defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue or cell damage.” We know about that! But it's good to remember that pain is subjective and has complex routes. Only the person experiencing the pain knows how it truly feels.

Pain perception involves both the central nervous system and the peripheral nervous system. The receptors and nerves of the peripheral nervous system convey messages to the brain via the spinal cord. The specific parts of the brain that handle pain signals are the thalamus, the limbic system, and the sensory cortex.

Nociceptors are special nervous system receptors that convey information regarding damage and trauma from the various parts of the body to the brain. The brain interprets these signals as pain. Where persistent nociceptive signal transmission occurs, a “wind up” phenomenon induces an unhealthy change that allows pain signals to be transmitted more easily. This change may even “hijack” non-nociceptive types of nerve fibers and get them to transmit pain signals along with the fibers that are supposed to do the job. The result is what we term chronic pain.

Such responses may arise from injury or disease to nerve structures; or from degeneration and prolonged, abnormal function in the body. Chronic pain may also cause other symptoms and conditions such as depression or anxiety. It contributes to decreased physical activity and apprehension as well as psychosomatic and psychogenic conditions.



Chronic pain is a primary source of nervous system stress that leads to damage, degeneration, hormone imbalance, and aging of the body.

How to Reboot Your Nervous System for Optimum Performance

Wellness is a dimension of health that goes far beyond the absence of symptoms, disease, and infirmity. It is an on-going, day-to-day and moment-to-moment lifestyle that requires taking responsibility and making smart, healthy choices whenever you get the chance. Wellness follows the principle of maintaining optimum health by *preventing* the onset of disease and infirmity; also, by allowing the body’s innate healing intelligence to contribute to that prevention in the best ways possible. Wellness practice wants to remove the *causes* that lead to symptoms of distress. It doesn’t just want to cover them up.ⁱ

Have you ever seen a bored newborn? Of course not. Babies radiate awe, joy, wonder, vitality, energy, life, and rejuvenation. It’s their natural state. But it’s your natural state, too. You are always in touch with the magic of life. Even the most ill person retains a healing ability: cut their skin, they’ll bleed and begin healing. If there’s life, there’s still a spark of healing, of hope.

This incredible ability you have to heal and auto-regulate body functions is due to an inner intelligence that you are born with. Dr. Lewis Thomas, M.D., said, “...a kind of super intelligence exists in each of us, infinitely smarter and possessed of technical know-how far beyond our present understanding.” This is your *innate intelligence*, the inborn wisdom of your body. This intelligence allows your body to constantly adapt to its ever-changing environments. For example, it knows how to digest your food after you’ve eaten. You don’t have to think about it. It also heals the cut on your finger (no, your Band-Aid doesn’t do the healing), it keeps your heart beating, and it kicks your immune system into high-gear when your body is being invaded by bacteria.

Innate intelligence resides everywhere in your body. It is mediated by your brain, which communicates with every muscle, gland, organ and cell in your body via your nervous system. Chiropractors are the only doctors, as a profession, who formally recognize the body’s inborn wisdom or intelligence. They work on, and with, the body so that our innate intelligence can express itself as near to 100% of its capacity as possible. And that’s where the practical foundations of chiropractic come in.

Because your brain and the rest of your nervous system mediate your innate intelligence, it stands to reason that this system must be optimized to its highest potential if true health is to be achieved. Your nervous system really is your master computer. It regulates all functions of the body every second of your life. When it's out of sync, you're out of sync.

As a quick review from [Understanding the Master Computer](#), it is important to first understand just how this bio-computer of the human body works. We can then focus on proper ways to keep this computer in sync, allowing your best opportunity for "peak performance" wellness.

Why Chiropractic Works

Chiropractic is based on understanding and acting upon four crucial principles. Here they are:

- **Your Body is a Self-Healing and Self-Regulating Organism.**
- **Your Nervous System is Under "Computer" Control.**
- **Interferences in the Nervous System Create Health Problems.**
- **Your Spine is the Most Likely Place for Nervous System Interference to Occur.**

Here's what each of these four principles means to you.

- **Your Body is a Self-Healing, Self-Regulating Organism.** This means your body was designed to heal itself. Did you know that approximately every 30 days you get a brand new liver? Over the period of a month, your liver cells die off and are replaced by new ones. Every four months all of your blood cells are also replaced. And before the end of the year, nearly all of you is new—at least physically! This process continues, year after year, for your entire life. Awesome! The point is that your body is in a constant mode of change and repair. However, to do this it must follow an exact program that was set in motion almost from the time you were conceived. So, if you're not well, it stands to reason that your body is unable to follow the program.
- **Your Nervous System is Under "Computer" Control.** In order for your body to follow its self-healing program, there needs to be communication from point to point. Your nervous system—the master control network of your body—orchestrates this communication. Your nervous system is made up of your brain, spinal cord, and your spinal or peripheral nerves (the nerves that extend from your spine to every area of your body). Your brain is the control center of literally every function in your body. If your brain dies, you die. As long as your brain can effectively communicate with every organ, tissue, cell, nook, and cranny, your body has the opportunity to be at its very best health. We should consider this condition of unfettered communication as being normal.
- **Interferences in the Nervous System Create Health Problems.** Your brain sends 100% of your body's information and energy down your spinal cord *first*. Your spinal cord is protected by 24 moveable vertebrae. Spinal nerves exit between vertebrae and branch out to deliver the messages sent from your brain through your spine to each muscle, gland, organ, and cell of your body. And through the same system, messages are returned. As long as there is no signal interference in your brain, spinal cord and spinal nerves, your body has the ability to receive messages from, and return messages to, the brain so that you can function at your best. In other words, as close to 100% as possible with all things taken into consideration.

But if nerve restrictions suppress or garble these messages, your body will not be able to do what it was programmed to do—heal itself. It will not be *able* to follow or execute its built-in, self-healing program. But there's even more that so very few people know about. In his latest book, Dr. James Chestnut discusses how the most recent, unquestionable research shows that *changing the way the spine moves actually alters the form, function, and structure of the brain!* Further, spinal movement

literally charges the brain's "batteries" and allows it to function fully. In fact, movement of the spine generates 90% percent of the stimulation and nutrition to the brain.ⁱⁱ *Reduce spinal movement through restrictions, and the brain can no longer be fully powered and can't function correctly.*

- **Your Spine is the Most Likely Place for Nervous System Interference to Occur.** If your spinal vertebrae get out of alignment, even slightly—which injuries, poor posture, and many other life stresses can cause—the vertebrae may act as resistors to the distribution of your nervous system energy. The misalignments interfere with the flow of nervous impulses and diminish the body's ability to stay healthy. Chiropractors call these vertebral misalignments or displacements "subluxations." When a vertebral subluxation chokes a spinal nerve, it only takes a pressure as light as the weight of a quarter for three minutes to reduce the function of that nerve by 60%. Moreover, degenerative changes in the nerve begin to take place within three hoursⁱⁱⁱ.

The Value of Chiropractic Adjustments

My responsibility as a Doctor of Chiropractic is to locate subluxations in your spine and gradually coax your vertebrae back into place so that normal nerve function is restored and other damaged tissues in the region can begin to heal. This will allow the nervous system to effectively communicate and control bodily functions once again. Greater health is the result.

Although these gentle adjustments help realign vertebrae and restore function to your nervous system, it is important to understand the broader effects that adjustments have on your physiology and the maintenance of your nervous system. The old school of thought simply removes pressure from a peripheral nerve by shifting offending vertebrae into better positions. But that outdated approach overlooks the cascading effects that take place within the intricate microcosm of your nervous system.

If you have read [How Your Nervous System Gets Out of Sync](#), you understand that your nervous system needs maintenance through spinal care, just as your teeth and gums, or your skin, need maintenance. If you haven't read that piece, please review it for a complete understanding. Without this periodic spinal care, you will age more quickly and fall victim to avoidable disease processes that are so prevalent today. A nervous system in disrepair means the entire body will eventually suffer.

Movement Is the Key to "Rebooting" Your Nervous System

So, exactly how do you "reboot" your nervous system when it's out of sync? And how do you keep it functioning at its highest level?

Under the third principle of chiropractic that I cited above, I alluded to the work of Dr. Roger Sperry, Nobel Prize winner for brain research. He discovered that our brain and spinal cord must have a source of perpetual stimulation in order to stay "powered up." But what is that source of stimulation? After all, we don't plug ourselves in every night to recharge our electrical power plant. Something must be providing power to this system.

What Dr. Sperry discovered was tiny receptors embedded within the tissues of our joints, predominately in the spinal joints. These receptors "fire" whenever they sense movement, sending charging impulses into the brain and spinal cord. This action is analogous to the way a motion-powered Rolex watch works. The Rolex has no battery. Instead, it contains an internal rotor that reacts to various movements of the wrist. As the rotor turns in one direction or the other, it winds the watch's mainspring to store the power that runs the watch. Without periodic rotor movement, the watch will slowly lose time and eventually stop.

In the same way, spinal movement powers your nervous system. Therefore, you must maintain freedom of movement in your spine if you are to continue to enjoy the benefits of a fully powered, healthy nervous system. Otherwise, you too will slowly begin to lose time (health) and eventually stop (death).

So, what happens to these receptors when a particular joint is not able to move correctly? Until this joint is re-aligned, or at least coaxed closer to normal to allow a more complete motion, the receptors in that joint will not fire at their full potential and the brain and spinal cord won't receive their stimulation. Power shortage!

But how in the world do these spinal vertebrae and their associated joints get displaced or "locked" up in the first place? That's easy to answer: It's called life!

The Impact of Stress on Your Health

Your body undergoes stress every day by assaults from physical, chemical and emotional stressors. Just physical stress, alone, adds up over time to create damage within spinal joints, much like the added trauma that the knees and lower back of a long-distance runner undergo. Maybe you're not an athlete and can't recall anything that might have caused trauma or damage to your spine. But think about this: A motor vehicle accident occurring at only 12-15 miles per hour can injure or even damage the ligaments of your spine—ligaments that give it proper support and stability. Being "pain averse," your body uses its innate intelligence to compensate for the pain and ligament injuries. It does this by *immobilizing the joint* through inflammation, calcification, and other effects that reduce movement. Before too long, everything seems wonderful again because you no longer feel the painful ligaments. After all, they aren't moving very much! But guess what: Immobilization of the joint is called "osteoarthritis" or "degenerative joint disease." So, over the course of say 10-15 years, the buildup of joint disease starts to get noticed, even by teenagers.

Such long-term joint degeneration is much like rusting. It leaves "corrosion" around the receptors that are supposed to be firing into your spinal cord to keep it "powered up." The longer the damage remains, the less energy is available to support the nervous system. Not only are the health-giving power pulses reduced, but the degeneration usually leads to reduced disc height, damaging spurs, and pressure on peripheral nerves passing between the vertebrae. The organs and cells being served by those nerves no longer communicate well with the brain. Everything goes downhill from there, including the possible loss of function. In addition, there's also the great likelihood of back pain from damaging bone spurs and compressed nerves. See how one thing leads to another? And see how things can start out so innocently as the pain is going away?

Heed caution here. It's all too easy to dismiss the possibility of damaging spinal processes because you "feel good." Yet, just like all disease processes that move slowly—tooth decay, for example, or heart disease, or cancer—pain is not always apparent until the damage is irreversible or life-threatening.

So, whether there have been memorably traumatic events in your life or not, know that we all have accumulated stress damage to one degree or another. And your innate intelligence has done the best it can with what it has to work with. But it can't adjust your spine, or even recognize the need for adjustment! It needs some help through conscious intervention. Most physical stresses are micro-level, accumulative traumas that include bumps, bruises, falls, repetitive activities such as typing, and even the prolonged sitting posture that you have become accustomed to. The average American lifestyle is grossly deficient in movement, even when injuries are not interfering. If it is movement that fires these receptors within your joints to charge up your brain and spinal cord so you can stay healthy, then it's little wonder that so many of us need periodic "re-booting."

Embracing Your Two Opportunities for Nervous System Wellness

So what's the best way to keep these receptors firing and thus optimizing the power of your nervous system? You have two major wellness opportunities at your disposal: spinal maintenance and movement. First, about maintenance.

Most of my patients take their first look at their spine and nervous system far into their 20s or 30s because they are starting to experience pain symptoms as well as other discomforts and abnormalities. More often

than not, accumulated stress damage is responsible for the symptoms. Vertebral misalignments and early stages of joint degeneration are already present and the nervous system is reacting. These patients are often quite surprised to learn how many symptoms of abnormality can arise from spinal problems even when no major back or neck pain exists. When I look at their x-rays for the first time and see what should belong to someone in their 80s, it can be quite disquieting. I do believe this trend will change in the near future as our children start getting the education they need about wellness and preventive care. It seems to have worked pretty well for dentists. But right now, this is what I'm seeing.

Managing spinal degeneration and adjusting misalignments (subluxations) can reestablish joint movement and insure that movement receptors in the joints have a chance to fire correctly. Without periodic adjustment, these damaged joints will tend to "freeze-up" like a rusty hinge and create permanent damage. As more joints become involved, fewer receptors fire. The power pulses available to energize and nourish your nervous system will diminish in number, sometimes greatly. This is not good for quality of life.

Now about movement, your second major wellness opportunity. When you move, walk, run, stretch, or place resistance into your movements, you are creating your body's charge-up equivalent to the Rolex power scenario I mentioned earlier. You must strive to achieve and maintain the largest degree of normal movement (range of motion) in your joints that you can without strain. Place special emphasis on spinal motion. If you'll recall, that's where the greatest number of nervous system "charge-up" receptors are located. Regular exercise that includes resistance training, cardiovascular training, and stretching will help you develop the kind of flexibility and range of motion in all your joints to fire the largest number of receptors possible.

As you exercise or stretch, imagine the receptors of your spine lighting up and sending a barrage of tiny sparks into your main cable system (spinal cord), and flowing upward into your brain. The more joint movement, the more you begin to literally glow and illuminate. You see, exercise doesn't only create cardiovascular fitness or a physically strong and well-shaped body. It also keeps your most important organ, your nervous system, alive and functioning at its highest level. Lack of exercise is one of the main reasons we see elderly people deteriorate so quickly following an injury that forces them to reduce their activity.

Sadly, I see major deterioration much too often with patients of mine who are neither elderly nor incapable of exercising. I tell these patients, "It's like someone has turned down your body's dimmer switch and you are now functioning at a very low level of energy." In addition to these generally low energy levels, this "dimming down" includes brain fog, slowed metabolism, weight gain, a higher percentage of body fat, and a diminished ability to digest properly. In my book, ***Reclaim 24***, I outline the science-based exercise program that works for anyone at any age. Because it takes as little as 35–40 minutes just three times a week, you no longer have a good reason to continue treating yourself so badly. If your priorities can't handle that, then it's unlikely you're on a wellness track.

In the Final Analysis ...

Here's the thing. You can either invest a little scheduled time each week to secure the fulfilling, abundant life you were destined to have, or you can plan on making a much larger, inconveniently scheduled investment in time, dollars, and quality of life down the road. That's when you *or your caretakers* will be trying to clean up the mess left by poor health and disease. Many people "throw the dice" in hopes that they can get away without investing in regular physical activity. They bet that the odds are "different" for them, that they are the exception to the rule. But they are betting against the house, and the house gets its due. The saddest part is that very few dice throwers will never get to see themselves enjoying the fulfilling, abundant life they were destined to have had they embraced a simple habit and made a few, educated choices. Those interested in a wellness lifestyle don't throw dice.

In summary, with a wellness lifestyle, you hold the reins. You are in a position to manage 95% of your body's needs for ongoing health maintenance—as long as you don't surrender to a medical lifestyle of drugs and surgery, and allowing others to make your most important quality-of-life decisions for you. Just as you are ultimately responsible for taking care of your teeth and gums—which includes regular check-ups and clean-ups—the same holds true for your spine and nervous system. Having regular check-ups or “tune-ups” will prevent minor problems from turning into major ones that can leave you with permanent damage and a dimmer switch turned very low.

So, when it comes to following a system or protocol for optimizing your body's computer, simply embrace your two major wellness opportunities. First, find a reputable chiropractor near your home and schedule an appointment. Remember, you don't have to be hurting to get a check-up. In truth, if you wait until you're hurting, your recovery will be much slower and some damage is less likely to be reversible. Follow his or her instructions on taking care of any immediate problems. Then get moving; exercise intelligently and efficiently! When combining periodic, corrective adjustments to your spine and joints with the movement involved in exercising and stretching, you can't help but power your system up, ensuring the best opportunity you have toward an abundant and fulfilling life.

ⁱ Some symptoms of distress, like nausea, are desirable because they may be telling you something important!

ⁱⁱ Dr. Roger Sperry, Nobel Prize Winner for Brain Research.

ⁱⁱⁱ Dr. Suh, University of Colorado neurophysiologist