Understanding Peripheral Neuropathy -- the Basics

“Whatever you cannot understand, you cannot possess”.
-Johann Wolfgang von Goethe

What Is Peripheral Neuropathy?
The name of the condition tells you a bit about what it is:
Peripheral: Beyond (in this case, beyond the brain and the spinal cord.)
Neuro-: Related to the nerves
-pathy: Disease

Peripheral neuropathy refers to the conditions that result when nerves that connect to the brain and spinal cord from the rest of the body are damaged or diseased.
The peripheral nerves make up an intricate network that connects the brain and spinal cord to the muscles, skin, and internal organs. Peripheral nerves come out of the spinal cord and are arranged along lines in the body called dermatomes. Typically, damage to a nerve will affect one or more dermatomes, which can be tracked to specific areas of the body. Damage to these nerves interrupts communication between the brain and other parts of the body and can impair
muscle movement, prevent normal sensation in the arms and legs, and cause pain.

Types of Peripheral Neuropathy
There are several kinds of peripheral neuropathy that stem from a variety of causes. They range from carpal tunnel syndrome (an injury common after chronic repetitive use of the hands and wrists, such as computer use) to Guillain-Barre syndrome (a rare, sudden paralysis).

As a group, peripheral neuropathies are common, especially among people over the age of 55. All together, the conditions affect 3% to 4% of people in this group. Neuropathies are typically classified according to the problems they cause or what is at the root of the damage. There also are terms that express how extensively the nerves have been damaged.

Mononeuropathy
Damage to a single peripheral nerve is called mononeuropathy. Physical injury or trauma such as from an accident is the most common cause. Prolonged pressure on a nerve, caused by extended periods of being sedentary (such as sitting in a wheelchair or lying in bed), or continuous, repetitive motions,
can trigger mononeuropathy. If the fibrous, shock-absorbing discs that lie between the bones in the back are damaged, they could press on a nerve and cause this type of neuropathy.

Carpal tunnel syndrome is a common type of mononeuropathy. It is called an overuse strain injury, which occurs when the nerve that extends through the wrist is compressed. People whose work requires repeated motions with the wrist extended (such as assembly-line workers, physical laborers, and those who use computer keyboards for prolonged periods) are at greater risk.

The damage to the nerve can result in numbness, tingling, unusual sensations, and pain in the first three fingers on the thumb side of the hand, particularly while sleeping. In time, carpal tunnel injuries can weaken the muscles in the hand. You may also feel pain, tingling, or burning in your arm and shoulder.

Here are examples of other mononeuropathies that can cause weakness in the affected parts of the body, such as hands and feet:

• Ulnar nerve palsy occurs when the nerve that passes close to the surface of the skin at the elbow is damaged.
• Radial nerve palsy is caused by injury to the nerve that runs along the underside of the arm.
• Peroneal nerve palsy results when the nerve at the top of the calf behind the knee is compressed. This leads to a condition called "foot drop," in which it becomes difficult to lift the front of one or both feet.

**Autonomic Neuropathy**
Neuropathy can affect nerves that control muscle movement (motor nerves) and those that detect sensations such as coldness or pain (sensory nerves). In some cases, it can affect internal organs, such as the heart, blood vessels, bladder, sex organs and/or intestines. Neuropathy that affects internal organs is called an autonomic neuropathy.

**Polyneuropathy**
Polyneuropathy accounts for the greatest number of peripheral neuropathy cases. It occurs when many peripheral nerves throughout the body malfunction at the same time. Polyneuropathy can have a wide variety of causes, including exposure to certain toxins, poor nutrition (particularly vitamin B deficiency), and complications from diseases such as cancer or kidney failure.
One of the most common forms of chronic polyneuropathy is diabetic neuropathy, a condition that occurs in people
with diabetes. It is the result of poorly controlled blood sugar levels. Though less common, diabetes can also cause mononeuropathy, often characterized by weakness of the eye or of the thigh muscles.

These are the most common symptoms of polyneuropathy:

- Tingling
- Numbness
- Loss of sensation in the arms and legs

Because people with chronic polyneuropathy often lose their ability to sense temperature and pain, they can burn themselves and develop open sores as the result of injury or prolonged pressure. If the nerves serving the organs are involved, diarrhea or constipation may result, as well as loss of bowel or bladder control. Sexual dysfunction and abnormally low blood pressure also can occur.

Joints are particularly vulnerable to stress in people with polyneuropathy because they are often insensitive to pain. One of the most serious polyneuropathies is Guillain-Barre syndrome, a rare disease that strikes suddenly when the body's immune system attacks nerves in the body. Symptoms tend to appear quickly and worsen rapidly, sometimes leading to paralysis. Early symptoms include weakness, tingling, and loss of sensation in the legs that eventually spreads to the
arms. Blood pressure problems, heart rhythm problems, and breathing difficulty may occur in critical cases. However, despite the severity of the disease, recovery rates are good when patients receive treatment early.
What Causes Peripheral Neuropathy?

“To all facts there are laws, the effect has its cause, and I mount to the cause.”

Lord Lytton (Edward Robert Bulwer Lytton)

There are many factors that can cause peripheral neuropathies, so it is often difficult to pinpoint the origin. Neuropathies occur by one of three methods:

Acquired neuropathies are caused by environmental factors such as toxins, trauma, illness, or infection. Known causes of acquired neuropathies include:

- Diabetes
- Several rare inherited diseases
- Alcoholism
- Poor nutrition or vitamin deficiency
- Herniated discs in the back
- Certain kinds of cancer
- Conditions where nerves are mistakenly attacked by the body’s own immune system or damaged by an overaggressive response to injury
- Certain medications
- Kidney or thyroid disease
- Infections such as Lyme disease, shingles, or AIDS
• Hereditary neuropathies are not as common.

Hereditary neuropathies are diseases of the peripheral nerves that are genetically passed from parent to child. The most common of these is Charcot-Marie-Tooth disease type 1. It is characterized by weakness in the legs and, to a lesser degree, the arms -- symptoms that usually appear between mid-childhood and age 30. This disease is caused by degeneration of the insulation that normally surrounds the nerves and helps them conduct the electrical impulses needed for them to trigger muscle movement.

Idiopathic neuropathies are from an unknown cause. As many as one-third of all neuropathies are classified in this way.

**Neuropathy, A Natural Perspective....**

**Treat The Person, Not The Disease**

> “Life is a perpetual instruction in cause and effect.”

- Ralph Waldo Emerson

The following words of wisdom are credited to Author Marlene Buffa who writes; “Often in the everyday stream of things, we enjoy comfortable assumptions which allow us to float on the
river of life. Sometimes facing reefs of regret or butting against the banks of negativity, we nonetheless continue on our voyage. We see that we cannot travel backwards upstream since that path existed in the past, yet our future most certainly contains steady waters as well as rocky rapids. When challenges of the body appear, we face the depths of our humanity when we no longer separate the journey from who we are. Our conscious self listens intently to our tangled fears and charts a course for health based on the maps of other navigators before us. The spirit within us waits for us to realize we function as a whole being, capable of riding the wave of disease and healing our body”. Such is the case with neuropathy, which is a dis-ease of the body, not simply the hands and feet.

Our current medical system is no doubt an example in excellence to the rest of the world in life saving, emergency treatment. Besides being adept in trauma and acute health care, our current medical model offers a wide variety of specialists who are trained to evaluate and diagnosis sick and diseased livers and kidneys. We have entire medical centers dedicated to the niche treatment of veins, brains and hearts. And while one might think this to be the pinnacle of modern day accomplishment, I would like to suggest a different paradigm for
the treatment of chronic health concerns. A paradigm that may not only challenge the way you think about healthcare, doctors and the whole medical system, but about health itself!

It's Not The Rats, It's The Garbage

While I was attending Chiropractic College I was introduced to, what at the time was a breakthrough in thinking for me, that forever changed the way I view health and health care. The idea that inspired this breakthrough in thinking was brought about by a story told to the freshman class by an old anatomy professor...a story about rats. One day during yet another dry lecture on muscles and bones (yes, it can be tedious, even boring at times!), the question of dis-ease came up. More specifically, where did dis-ease come from? He asked the class to picture in their minds a trashcan with no lid, full of discarded food scraps, cans, a used milk carton and an over ripe banana. You get the picture? He then asked us then to imagine rats milling about, desperately trying to claw and climb their way into the trashcan. After making sure we all had this vivid picture in our heads he explained that is exactly what happens when conditions are right (or wrong!) for attracting unwanted guests.
Had there been no trash in the trashcan or at the very least the lid was secure, the rats may not have been interested.

This is the same principal for human disease (viruses, bacteria, etc.) and for purposes of this book, neuropathy. Conditions in the body must be right (or wrong!) to bring upon nerve degeneration! I encourage all my patients to resist the idea of randomness for it is in the refusal to accept randomness we can begin to find cause. Neuropathy (in this author’s opinion) doesn’t fall out of the sky or attack for no good reason. Nature is not random, and neither is your neuropathy.

Mama Always Said “If You Want To Throw A Good Party....Be A Good Host”

I had the experience back in college of witnessing a party gone out of bounds...too many guests, too much beer, a punk band, and of course, a fist fight between rival fraternity brothers. The frantic host was running about trying to control the situation to no avail. Now one would have to assume had the host taken better precaution...not invited so many guests, limited the alcohol and planned for better entertainment, the outcome may
have been a lot different. I use this example because this is not unlike what happens with neuropathy sufferers. Neuropathy is an outcome....an effect, not a cause. The question you may want to ask yourself is “what conditions attracted my neuropathy”? Again, excluding the idea of randomness, there must be a reason.

It is essential when treating neuropathy that you look at your lifestyle; what you eat, where you live, where you work, what medications are you taking, what stress are you under, etc. to begin to unravel the mystery of this nerve disease. What other, seemingly unrelated medical concerns might have precipitated your neuropathy? What about that dull back pain that you have learned to live with....is that possibly, partially to blame?

**You Are The Difference**

When patients ask me what it is that makes our neuropathy treatment different I tell them “The difference is you!” It is important that doctor and patient have a very good understanding of what the patient is doing (or not doing) that helped bring on this degenerating condition of the nervous
system. To be fair, sometimes these conditions are out of a patient’s control, but identifying them is the first step in understanding why neuropathy is occurring. Once understanding “why”, the process can begin in earnest to remedy the situation.

While our course of treatment for neuropathy involves many different aspects, perhaps none is more important than understanding the mechanism of causation. It is from understanding the origin of neuropathy that we can then begin, both doctor and patient, to better understand how to slow the progression, halt, and perhaps even reverse this debilitating nerve disease.

How Chronic Inflammation Affects Neuropathy

“I'm not fat; I'm just really inflamed.” ~Carrie Latet

In this chapter we will discuss the role that chronic inflammation plays in causing and perpetuating neuropathy. There are many different causes of inflammation and we will explore the most common ones we see in our neuropathy patients. We will touch on a subject that is receiving more and more attention lately yet
still not as much attention as it deserves: Leaky Gut Syndrome. Finally, we will present you with practical solutions to decrease the chronic inflammation inside your body thus helping to resolve your neuropathy.

We must first understand that inflammation is a normal and necessary process our body relies upon in order to maintain health. The inflammatory process is a delicate coordinated series of reactions in your immune system that involves chemicalmessengers called cytokines. The complete breadth of the inflammatory process is beyond the scope of this chapter but suffice to say that without inflammation you could not maintain or regain health. Inflammation is our immune systems reaction to a foreign invader like bacteria, viruses or parasites. It is a necessary step in helping the body rid itself of the invader from the outside. Without inflammation we would surely succumb to the slightest of infections and health would not be possible. Inflammation also helps us to handle the healing process after an injury. One needs to look no further than the last time you sprained your ankle. Shortly after the injury you notice the swelling of your ankle. That is an outward manifestation of the inflammation going on inside your body. You will also notice pain, heat and discoloration to differing degrees.
**Inflammation Gone Wild**

In a perfect world, the inflammatory process would start when needed and stop when no longer needed. However, in the real world, inflammation very often lingers on and on and can have devastating effects on the body. This is a sign that your immune system is stuck in the “on” position. That will surely set the stage for chronic health problems if not addressed appropriately. This can further lead to an autoimmune attack where your immune system starts to attack your own body. One of the most common areas of the body to fall under attack is the nervous system, leading to the symptoms of neuropathy. Inflammation is the common thread that drives most of the chronic health problems we see in the industrialized world: heart disease, cancer, arthritis, diabetes, Alzheimer’s, and neuropathy to name just a few examples. Yet despite this being a proven scientific fact, few people in the traditional healthcare system address inflammation as the source of chronic health problems. Instead, they will prescribe drugs that only mask the symptoms while leaving the underlying cause (inflammation) to fester.
As we mentioned earlier there are many ways that the inflammatory cascade begins. We have mentioned infections and injury as potential causes of inflammation. As well, poor diet, chronic stress and poor blood sugar control may all cause inflammation. It is not unusual for patients to be dealing with multiple issues at the same time. For instance, a patient with very high levels of inflammation and burning neuropathy in their feet may have a chronic, subclinical infection, poor blood sugar control, chronic stress and a poor diet. If these are all causing the patients inflammation, thus their neuropathy, do you see how futile it would be to take a pill like Neurontin or Lyrica? If you do not address the CAUSE of the inflammation you can never find a solution.

**Leaky Gut Syndrome**

Much of the inflammation that we encounter in our patients originates from their GUT. By gut, we mean your digestive tract: stomach, small intestine, large intestine and gall bladder. Inside your gut lives 75% of your immune system. When your gut goes bad, your immune system goes bad. If you, like many of our patients, have a genetic sensitivity to certain foods this could be a major player in your neuropathy. Every time you eat a food
that you have sensitivity to you are creating more inflammation and more immune system imbalance. This commonly leads to a condition known as Leaky Gut. A healthy gut is a tightly woven network of cells that will prevent the invasion of viruses, bacteria, parasites and large undigested food particles. An unhealthy situation arises when the tight junctions are now gaping holes. Now all kinds of invaders get directly into your bloodstream further irritating your immune system. This sets the stage for an autoimmune attack, like we mentioned earlier. The only way to rectify this situation is to test for food sensitivities, remove the foods you are sensitive to, and heal the damage done to your gut. This, along with some other dietary and lifestyle modifications, will calm down the immune system and stop the attack on your nerves that could be causing your neuropathy in the first place.

Our Approach

First and foremost we must find out what the CAUSE of your inflammation is. In order to do that you need to have a few simple tests performed. Tests that are not routinely ordered in
the traditional healthcare model. Once the cause is found we set out to rectify the situation. If there is an infection (bacteria or virus) or a parasite, we need to rid your body of it. If there are not enough good bacteria in your gut, we need to use a powerful, broad-spectrum probiotic. If there are food sensitivities, we need to make dietary changes. Lastly, if there is a leaky gut, it must be healed and sealed. Most patients have some combination of the above issues and they all need to be addressed in order to help resolve your neuropathy.

Blood Sugar and Peripheral Neuropathy

“I love to eat - Kit Kats or cookies-and-cream ice cream. I need sugar like five times a day”. –Kim Khardashin

The body’s main source of energy is sugar. Blood sugar concentration or level is the amount of Glucose (sugar) in the blood. The glucose is transported to all parts of the body and every cell by the vascular system or bloodstream. To help move the glucose from the blood into the cells, the body uses a hormone called Insulin, which is made in the pancreas.
Blood sugar is very much related to and can cause Peripheral Neuropathy. Specifically in patients that have been diagnosed with Diabetes, which is a fasting blood sugar above 126 after fasting for 8 hours. But nerve tissue is very sensitive and any level of blood sugar above 100 is abnormal. So, those patients with dietary habits that lead to spikes and chronically high blood sugar could be putting their nerve tissue at risk.

It turns out our brain and nervous system requires a lot of sugar to function properly. But nerve cells do not have insulin receptors like most other cells in the body and do not need insulin to get the sugar that is in the blood. To get blood sugar into the nerve cells a process called diffusion is used. Diffusion is where molecules of higher concentration move to areas of lower concentration. So the higher concentration of sugar in the blood causes the glucose to diffuse (or move) into the nerve cells.

The problem with chronically above-average and high glucose levels is the constant diffusion into the nerve cells. That’s because along with the glucose comes water causing the pressure within the nerve cell to increase, much like shaking an unopened soda-pop can. The unrelenting high levels of pressure eventually cause the nerve tissue to degenerate and die.
Thus, a diet that causes spikes of and frequent high levels of blood sugar, can lead to destruction of nerve tissue and the presentation of Peripheral Neuropathy. One of the conditions that precedes Diabetes is Insulin Resistance. This is where the body has chronically produced high levels of insulin, often for decades, with no notable signs or symptoms to the individual and the cells no longer easily allow the insulin to bring glucose into the cell. They are “resistant” to insulin. So, the blood sugar stays elevated for longer periods of time, leading to longer periods of diffusion. The prolonged diffusion of sugar from the blood into the nerve cell bringing water along with it causes slow and relenting stress and degeneration of nerve tissue. This often shows up as “stocking & glove parasthesia” or numbness, tingling, burning and pain in the hands and feet.

Medline Plus indicates that long-term high blood sugar, which results from eating sugary foods, can increase the development of peripheral neuropathy. If you suffer from diabetes, you can prevent further neuropathy by eating a diet low in candies, sweets and soft drinks.

As a general guideline, controlling blood sugar levels with the frequency of eating and improved choices of foods can limit the stress on the pancreas and insulin levels. This can lead to a
more steady level of moderate to lower levels of blood sugar and thus less stress on the nerve cells.

It is advisable to learn of the Glycemic Index and each food’s rating. Essentially each food is rated for how quickly it influences blood sugar levels. Foods that break down quickly and increase blood sugar, like breads and cereals, have higher ratings versus lower glycemic foods like vegetables, which cause a more steady release of sugar into the blood. Also, eating smaller portions more frequently of lower Glycemic Indexed foods can lead to even better control of blood glucose levels. Frequently, it is recommended to eat every 2-3 hours. Foods to eat should include protein and vegetables with very little to no starch. The protein and vegetables break down slower than starchy foods and lend to better blood sugar regulation.

**How Gluten Affects Neuropathy**

“*By taking this action, I hope that I will have hastened the start of the healing.*” - Richard M. Nixon

The New England Journal of Medicine listed 55 “diseases” that can be caused by eating gluten.
Gluten (from Latin gluten, "glue") is a protein composite found in foods processed from wheat and related grain species, including barley and rye. It gives elasticity to dough, helping it to rise and to keep its shape, and often gives the final product a chewy texture. Gluten may also be found in some cosmetics or dermatological preparations. While we have all been told that whole grains are good for us, nothing could be further from the truth if you have gluten sensitivity. The numbers of people that have sensitivity to gluten is on the rise and the effects of gluten on their bodies can be devastating.

Gluten sensitivity is actually an autoimmune (your immune system is attacking your own body) disease that creates inflammation throughout the body, with wide-ranging effects across all organ systems including your brain, heart, joints, digestive tract, and more. It can be the single cause behind many different “diseases.” To correct these diseases, you need to treat the cause—which is often gluten sensitivity—not just the symptoms. If you have gluten sensitivity and you have grown up eating gluten then there has been a fire smoldering inside your body for years if not decades. Eventually it will manifest as some type of symptom and very often does show up as
neuropathy. The autoimmune reaction and inflammation both work to damage your peripheral nerves. A major issue with this is that it is poorly understood, never looked for, and poorly managed. Most traditional healthcare providers do not even know about the link between gluten and neuropathy. If your cause is due, even partly, to gluten sensitivity then you had better make sure your doctor knows about the possible connection.

Proper Testing

There are many different types of tests that claim to rule in or rule out gluten sensitivity. The gold standard is a blood test from Cyrex Labs that checks for 18 different forms of gluten. The test also checks to see if you have different antibodies, which would indicate you have an autoimmune disease if they are present. Many others tests that are run on patients have a common problem in that they lack validity, meaning they give a lot of false negatives. This is called low sensitivity and commonly occurs up to 70% of the time. If you do not want to
guess regarding your health, you should do the accurate test from Cyrex.

**Autoimmunity**

If you have the genes for gluten sensitivity and you grow up eating gluten it is just a matter of time until you have insulted your immune system enough that it will respond in kind by creating an autoimmune disease. There are many different autoimmune diseases that are possible, but in this chapter we will focus on neuropathy.

Every time a gluten sensitive person eats gluten it will spark the immune system into action. Gluten is perceived as an invader from the outside that does not belong in our body, just like bacteria and viruses. Antibodies are produced against gluten so the next time it comes in (you eat it) the immune system is even more efficient at mounting an attack. The problem lies in the fact that many body tissues, like your nerves, can be mistaken for the outside invader and thus they begin to fall under attack of your immune system. This is what is called molecular mimicry. That is an oversimplification of an autoimmune disease, but I think it will help you get the picture.
More Issues With Gluten

Not only will gluten set up the autoimmune cascade in people who have the genes but also it creates a few other noteworthy problems. Eating a diet like the Standard American Diet (SAD) that is very high in refined carbohydrates and grains, thus gluten, is very bad for your blood sugar. Grains are carbohydrates and as such they are broken down inside your body and turned into sugar. If you have a large carbohydrate load you basically have a large sugar load. When you get large sugar spikes in your blood it is followed by a spike in insulin. Large spikes in blood sugar are not healthy for your nerves. Lifelong spikes of insulin may lead to insulin resistance, which is even worse for your nerves health. We will speak more about blood sugar in another chapter.

A second issue we need to look at is inflammation. Diets that are high in grains produce a lot of inflammation inside the body. Again, we will speak more about this topic in another chapter but it is so important I feel compelled to mention it as often as possible. Inflammation drives all the major diseases of the industrialized world: cancer, heart disease, diabetes, Alzheimer’s, arthritis and neuropathy. Basically, if you have lots of inflammation inside your body whatever you are genetically
predisposed to is much more likely to occur. Conversely, if you create an anti-inflammatory environment inside your body, those same genes are much less likely to express themselves. Grains are very high in Omega-6 fatty acids and have little to none Omega-3 fatty acids. You need both kinds of fatty acids to maintain your health but ideally in a 1:1 ratio. Some sources say the average American has a 40:1 ratio of Omega-6 to Omega-3. This is created from eating large quantities of gluten containing grains. Cereal for breakfast, sandwiches for lunch, and pasta for dinner. This is a recipe for inflammation.

There is a Way Out
First and foremost, if you are suffering with neuropathy you need to be checked for gluten sensitivity. If gluten sensitivity is the whole reason or part of the reason you are suffering and you do not get checked, your treatment plan is set to fail. You MUST get the proper tests done to see if you are reacting to gluten, if you have antibodies (autoimmunity) or if you are genetically predisposed to gluten sensitivity. If you do have gluten sensitivity you MUST eliminate all gluten grains like wheat, rye, and barley. However, that is only the first part. Many people have dabbled with going gluten free only to notice no noticeable improvements in their health. The issue is
they did not do step two: heal and seal the damage done to the inside lining of the digestive tract from years of eating gluten. This is why it is mandatory that you find a healthcare practitioner that is an expert in dealing with gluten sensitivity. Even if you do not have detectable gluten sensitivity, it may be beneficial to reduce grains or avoid them all together. Many of our patients will respond favorably by eliminating all grains for a short period of time. Remember that diets low in grains are also low in blood sugar problems. As well, diets low in grains are more anti-inflammatory than the Standard American Diet (SAD).

Just some “food for thought”.

What To Do When Going Gluten-Free Doesn’t Quite Get The Results You’re After

“All things make sense, you just have to fathom how they make sense”. ~Piers Anthony

So you have peripheral neuropathy, and you’ve discovered you have gluten sensitivity. Your doctor has advised that you go on a gluten-free diet, and you’ve done just that. But the story
doesn’t end there. To make things more complicated, there are most likely foods you’re eating right now that are making your condition worse.

You might ask...how could that be? After all, everyone seems to be talking about gluten and even Celiac Disease, and all you ever hear about are “gluten-free” foods. Well yes, going gluten-free is the first step, but there are other steps you must follow too.

In order to completely heal yourself of the damage to the small intestine caused by gluten, you must also eliminate the “cross-reactive” foods too.

What is that? That’s a great question, because most people have never heard of cross-reactive foods, nonetheless most doctors have never heard of it either. And thus the reason why there is a growing group of patients that continue to suffer needlessly from gluten-type reactions.

Here’s the deal. There are foods that look and act like gluten, but indeed do not contain gluten. (The concept of this physical similarity is known as “molecular mimicry”.) And
because of the physical similarities, the body reacts as if it had ingested gluten. The body creates antibodies against these foods, in the same way it creates antibodies against gluten. And when the antibodies are created against these cross-reactive foods, similar symptoms can appear as if gluten was ingested. Can you see why eating these cross-reactive foods can be problematic for you? Can you see why your peripheral neuropathy may never totally get better if you can continue to eat these cross-reactive foods? Can you further understand why going gluten-free is not as clear-cut as you once may have thought?

Take a look at the image below. It’s explains very nicely the interaction between certain foods (antigens) and the gliadin (gluten) antibody. Notice how the gliadin antigen fits perfectly into the gliadin antibody; this is a definite negative reaction. Then, notice how the casein antigen (from milk) fits into the gliadin antibody, although not perfectly. It fits in just enough to cause a reaction, specifically a cross-reaction. And then finally notice how the rice antigen does not fit so well in the gliadin antibody, therefore it is non-reactive.
In this scenario, the results from the above test would require the person to completely eliminate all gluten-containing food, and all casein-containing foods from cow’s milk; but they would be allowed to eat rice. This is a classic example of what’s good for one person may be bad for another, and thus the importance of getting properly tested.

**Here is further explanation.**

What you need to know is that gluten-sensitivity and Celiac Disease, of which both have been implicated as a causative factor in neuropathy, go hand-in-hand with increased intestinal permeability or what’s known as Leaky Gut Syndrome. It has also been shown that only 8% of all Celiac patients ever fully heal from the disease. Perhaps the ingestion of these cross-reactive foods is part of the reason for that. You see, if you are ever going to heal the damage (i.e. Leaky Gut) caused by gluten then not only do have to 100% eliminate gluten from your diet, but you also must eliminate the cross-reactive foods too.

**What exactly are these foods that need to be eliminated?**
Actually, not all the foods on the cross-reactive list need to be eliminated; only the ones that you react to. The way to determine that is to have the proper testing performed from Cyrex Labs, specifically Array 4. The foods on that list are as follows:

- Corn
- Rice
- Potato
- Coffee
- Oats
- Tapioca
- Yeast
- Quinoa
- Amaranth
- Spelt
- Millet
- Sorghum
- Buckwheat
- Polish wheat
- Barley
- Rye
- Hemp
• Sesame
• Chocolate, milk
• American cheese
• Milk butyrophilin
• Casomorphin
• Casein
• Cow’s milk
• Soy
• Egg
• Teff

Wow, is that a long list or what? Yes it is, but it’s necessary to determine what foods you are reactive to.

What you also may notice is that those foods are very commonly found in gluten-free foods. Look on the labels of various gluten-free foods, and you will find such ingredients as corn, rice, potato, quinoa, and milk, among others. If you’re eating a lot of gluten-free foods, you may be making yourself worse, or at the least halting the progression of your healing due to the ingestion of cross-reactive foods. This is why doing the proper testing is so important in overcoming your neuropathy.
So there you have it. In this chapter you learned about the importance of avoiding the cross-reactive foods and getting properly tested for them. If you expect to ever get well, it is vitally important that you put this information into play. You now know and understand what most gluten-sensitive and Celiac patients do not. If you know someone with gluten-sensitivity or Celiac Disease, perhaps you will share this vital information with them.

**Plan of action:**

In regard to what to do, you must have a solid plan of action; one that is laid out step-by-step. Here you go.

1. Educate yourself as much as possible about gluten, and where gluten oftentimes is hidden in foods.
2. Strive to be 100% gluten-free. In fact, there is a new term being used, it’s called “Gluten-Zero”. The “gluten-zero” term is actually more descriptive of how much gluten you can have... zero!
3. Take food enzymes, preferably one that contains the DPP-IV enzymes, which are specific for digesting the gluten molecule.
4. Ask your Neuro-Metabolic practitioner about a leaky gut protocol. Some nutritional products that may be used in this endeavor include Repairvite, GI Revive, GI Restore, Neuro PRP, and/or glutamine. Your Neuro-Metabolic practitioner will advise you as to which supplement program is best for you.

5. If you haven’t already done so, have the Cyrex Array 4 lab test performed to determine the cross-reactive foods that you react to. Once you receive your results, completely avoid the foods on that list. Your Neuro-Metabolic practitioner will guide you in reintroducing those foods perhaps at a later time.

6. Consider following a Paleo Diet. Search Amazon.com by putting in “Paleo Diet” into the search feature. You will be given a list of books. I suggest you get one at a time and implement the concepts into your life.

7. Continue to strive for better health.

So there you have it. I hope you learned a lot and you continue to implement the things you learned in this chapter.

Dr. Joseph Medina – Chiropractic Physician

WHAT??? My Cholesterol lowering medication gave me Peripheral Neuropathy?!?
The world today doesn't make sense, so why should I paint pictures that do? –Pablo Picasso

By Bryan W. Hulsey, D.C., board eligible clinical nutritionist

There is a common misconception about the use of cholesterol lowering medications in “controlling” cholesterol. The fact is that these medications do lower cholesterol, but is cholesterol the bad guy? It would be similar thinking to say that the scab on a healing wound caused the cut in the first place.

What is meant by this is that cholesterol has gotten a bad rap. Cholesterol tries to patch up a damaged blood vessel when there is damage causing agents such as smoking, stress, diet, homocysteine, glycosylated end products (Hemoglobin A1C is a measure of this), viruses, bacteria, high blood sugar, high blood pressure, etc. Recent studies have shown that most people with heart disease had NORMAL levels of cholesterol and with those that had high cholesterol was successfully reduced, there was NO impact whatsoever on death rate, non-fatal heart attacks and the development of atherosclerosis.
Over time there is repeated damage to blood vessels. This causes inflammation and the body thinks that there is damage. With this the immune system comes racing in to fix the damage. Cholesterol is sent in to seal up the damaged area; Repeated damage and walling off of damage causes stenosis or closing down of blood vessels. With closure of blood vessels, the heart has to work even harder to pump blood through these thickened, less flexible blood vessels. This can cause potential for part of the clot to be broken off. This clot now travels to smaller blood vessels and can get stuck. If this blood vessel is in the heart, a heart attack can ensue. If it travels to the brain there is potential for blood supply to be cut off from the brain. When there is prolonged loss of blood supply to the brain a stroke can occur wiping out part of the brain’s function. Bottom line THERE ARE MANY OTHER FACTORS that contribute to the development of cardiovascular (heart) and cerebrovascular (brain) disease. Cholesterol can actually be a response to heart disease not the cause of it.

Then why is there such a huge push to lower cholesterol? Shutting down this protective mechanism is pointless and can actually harm us. There are so many other processes that cholesterol is used for, that cholesterol is one of the most
important substances in the body. It is used in the production of all sex hormones (Testosterone, Estrogen, Progesterone), Cortisol (Our stress hormone, also necessary to help balance out blood sugar). It is necessary for production of hemoglobin, myoglobin and CoQ10. These are essential for fuel and fuel transport throughout the body! It is utilized in the production of Vitamin D, a necessary hormone that is involved in ALL cellular processes. Cholesterol plays a major role in NERVOUS SYSTEM FUNCTION, insulin production (drives blood sugar into cells, more on this to come), bile acid production (which aids in the breakdown and digestion of fats and fat soluble vitamins), and, most importantly, it helps to create and sustain the membrane of every cell in our body. Cholesterol pure and simple is essential for life! Why would we want to stop production of it?

Here is the debacle! We lower cholesterol to prevent heart disease but we may in fact be making the problem worse. We lower the ability of the immune system to function properly; this is likely due to decreased Vitamin D synthesis and increased fragility of our cells. This can cause early cell destruction, this can happen to all of our cells, immune, red blood cells that carry oxygen (fuel), and most importantly for peripheral
neuropathy, nerve cells and the myelin that covers nerve cells. Myelin is a protective covering around nerve cells that is akin to insulation on an electrical wire. Myelin is composed of more than 80% Cholesterol and up to 20% protein.

A recent study of a Danish population of 460,000, showed that those people who took statins were 16 times more likely to develop peripheral neuropathy. Another study that followed 500,000 individuals taking a cholesterol lowering medication showed that there was a 15% increased risk of developing peripheral neuropathy only after 1 year of taking the medication, and that risk rose to 26% after two years. This shows us that 1 in 4 people taking a statin medication for longer than 2 years develop peripheral neuropathy. This is the norm, especially if one has a history of cardiovascular disease. The patient is placed on a statin for the rest of their life!

In addition to peripheral neuropathy, statins can have drastic impacts on cognitive (brain) function. This is such a side effect that it is now listed on statin medications. Many instances of amnesia, called transient global amnesia occur, and can be bad enough in that the sufferer may not even recognize their spouse. Cholesterol is also necessary in the formation of
synapses, or connections in between nerves. With lowering cholesterol via statins and/or decreasing eating of cholesterol rich foods, it was shown that less synapses were formed and the ones that were formed were inefficient and under functioning. The brain uses at least 25% of the cholesterol available during the day. The brain also synthesizes it on stores of cholesterol while we sleep. Statin drugs inhibit the cholesterol making process everywhere in the body, including the brain. Other research indicated that if the brain cells are deprived of cholesterol, they are 5 times less effective at releasing neurotransmitters for brain function.

Neurotransmitters issues are associated with mood disorders, difficulty with memory, anxiety, impulsivity, obsessive compulsive disorder, etc...If the brain is not functioning correctly, we may not be interpreting sensation correctly and responding appropriately, for example pulling our hand away from a hot object.

So, here is the process that cholesterol lowering medications, statins, actually impact. Statins are a class of medications called HMG CoA Reductase Inhibitors. Cholesterol is very far downstream in this process that many other necessary
reactions are also shut down or inhibited. Some of these other necessary reactions that are inhibited include the production of heme groups and CoQ10.

Heme groups are necessary to help form hemoglobin and myoglobin. These proteins are essential with transfer of oxygen from the bloodstream to other tissues. All cells require oxygen as one of their fuels to drive the production of cellular energy in the mitochondria. Also the inhibition of CoQ10 occurs. Why is this important? Statin therapy without CoQ10 supplementation puts your health in SERIOUS JEOPARDY!

CoQ10 is a cofactor (co-enzyme) that is necessary in production of ATP molecules. This is cellular energy! Certain organs have higher energy requirements. One such organ is your heart; your heart, which consists of cardiac muscle, has 200 times the number of mitochondria, as does skeletal muscle, so its energy requirements are 200 times higher than skeletal muscle.

As your body gets more and more depleted of CoQ10, you may suffer from fatigue, muscle weakness and soreness, and eventually heart failure. Interestingly, heart failure, not heart attacks, is now the leading cause of death due to
cardiovascular diseases. Coenzyme Q10 is also very important in the process of neutralizing free radicals. This can lead to a loss of cellular energy, and damaged mitochondrial DNA.

Statin therapy has also been shown to cause diabetes, which in itself is major risk factor for peripheral neuropathy. 60-70% of all people with diabetes also have issues with their nervous system; this can give tingling sensations to fire, pain in the feet and hands, slowed digestion of food in the stomach, carpal tunnel syndrome, erectile dysfunction, memory issues, and other brain function issues.

As written on GreenMedInfo: "The profound irony here is that most of the morbidity and mortality associated with diabetes is due to cardiovascular complications. High blood sugar and its oxidation (glycation) contribute to damage to the blood vessels, particularly the arteries, resulting in endothelial dysfunction and associated neuropathies due to lack of blood flow to the nerves. Statin drugs, which are purported to reduce cardiovascular disease risk through lipid suppression, insofar as they contribute to
insulin resistance, elevated blood sugar, and full-blown diabetes, are not only diabetogenic but cardiotoxic, as well."

THIS IS STATING THAT STATINS CONTRIBUTE TO INSULIN RESISTANCE AND FULL BLOWN DIABETES! THIS IN TURN CAUSES/INCREASES INFLAMMATION. THIS IS A COMMON COMPONENT AMONG ALL CHRONIC CONDITIONS, INCLUDING HEART DISEASE, THE VERY CONDITION THAT STATINS WERE CREATED TO HELP!

Most of our cholesterol is produced in the liver. Cholesterol is produced in response to insulin levels and thus more related to blood sugar levels and regulation than it is to dietary intake of fats. Optimizing your insulin and blood sugar level will then in turn help to optimize your cholesterol level. We still need to be critical of the fats that we are eating. Decreasing trans-fats and increasing Omega 3 fatty acids and plant and animal based saturated fats can help to decrease inflammation and decrease cellular fragility. This will allow better transfer of oxygen, glucose and nutrients into the cell and waste products out of the cell.

In summary, statin medications have been shown to increase risk for peripheral neuropathy by not only damaging the nerve cells themselves but making less energy available to the cells by altered CoQ10 production and heme production. Remember
that ANY and ALL nerve cells can be impacted. This includes: the peripheral nervous system which gives sensation from our hands, arms, feet and legs back to the brain, motor control from the brain back to the hands, arms, feet and legs, our autonomic nervous system which gives control to our internal organs and our central nervous system (brain and spinal cord). The best bet is to stay away from statin medications and take appropriate dietary and lifestyle measures to optimize cholesterol. Your doctor will discuss these with you as part of your care plan.

Some of which include:

- Stopping smoking
- Decreasing intake of alcohol
- Decreasing sugar intake,
- Decreasing grains, and increasing carb intake from vegetables,
- Increasing sleep,
- Increasing Omega 3 fatty acids,
- Increasing good fats from nuts and seeds, avocados, and
- Increasing saturated fats for example olive, palm, coconut oils and animal sources such as eggs, and grass-fed free range meats
Vitamin B12 deficiency And Neuropathy

"Every human being is the author of his own health or disease." ~ Buddha
B12 vitamin is important in the formation of red blood cells and the synthesis of DNA during cell division. When B12 deficiency occurs, all folate functions are blocked, which can create a neurological compromise of the peripheral nerves. Vitamin B12 deficiency symptoms, associated with nervous system disorders, is a common problem in the elderly and in people whose diets are compromised such as alcoholics. Vitamin B12 (cobalamin) deficiency associated with neuropathy may occur in 5% to 40% of the general population. The prevalence has been found to be higher in the elderly, especially those in nursing homes.

**Causes of Deficiency**

One of the most common causes of vitamin B12 deficiency is a lack of a protein called intrinsic factor, which is produced by the parietal cells in the stomach. Some people are born without the ability to produce intrinsic factor, but most people develop the deficiency as a result of injury or stomach surgery. Medications used for the treatment of gastric reflux can often interfere with B12 production. Vitamin B-12 is bound to protein in food. Hydrochloric acid is needed to release the vitamin from food. During long-term use of reflux medication, stomach acid
secretion is suppressed, which hinders the release of vitamin B-12 from foods.

Other causes of vitamin B12 deficiency include digestive diseases, infection, overgrowth of bacteria in the small intestine, medications and surgical removal of all or part of the small intestine. In less common cases, vitamin B12 deficiency can occur as a result of inadequate dietary intake.

**Symptoms Of B12 Deficiency**

Symptoms of vitamin B12 deficiency include:

- Chest pain or heart palpitations
- Confusion, memory loss, or dementia
- Constipation
- Depression
- Pernicious Anemia (numbness/coldness in hands and feet)
- Dizziness, trouble maintaining balance, and fainting
- Fatigue or weakness
- Pale skin or jaundice (yellowing of skin and eyes)
- Poor appetite
- Shortness of breath
Sore mouth and tongue

Testing For B12 Deficiency

Methylmalonic acid test:

While a simple B12 blood test is often done to help determine B12 deficiency, sometimes it will not tell the whole story. The Methylmalonic Acid Test, also called an MMA Test, is really the only accurate test for Vitamin B12 Deficiency that there is. Methylmalonate is a waste product that builds up in the blood and is excreted in the urine when Vitamin B12 is not available to transform the substance into the energy metabolite Succinic Acid. Because it begins to build up within ten days after a Vitamin B12 deficiency begins, it is not only the most accurate marker, but it is the earliest detectable marker of Vitamin B12 deficiency. Because Methylmalonic Acid is found in both blood and urine in amounts relative to the degree of deficiency, both urine and blood tests are excellent tests for Vitamin B12 deficiency, although your doctor may have their own preference.

Homocystiene:
Another useful test in helping to determine B12 deficiency is Homocysteine. Your doctor may order a homocysteine test to determine if you have a B12 or folate deficiency. The homocysteine concentration may be elevated before B12 and folate tests are abnormal. Some doctors may recommend homocysteine testing in malnourished patients, the elderly, who often absorb less vitamin B12 from their diets, and those with drug or alcohol addictions.

**Folate**
Folate is used in the metabolism of DNA and amino acids, which are your body's protein building blocks. Folate is found in leafy green vegetables, and a synthetic form, called folic acid, is available as a nutritional supplement. Women are advised to make sure they're obtaining enough dietary folate before becoming pregnant and during the early months of pregnancy, in order to decrease the risk of neural tube defects in their unborn children. Folate deficiency can also cause megaloblastic anemia.

The reason your doctor may test Folate with suspected B12 deficiency is because excess folate masks B-12 deficiency. Maintaining an adequate, but not overly excessive, level of
folic acid in your bloodstream is important in that getting too much folic acid can hide the symptoms of B-12 deficiency. When a B-12 deficiency causes megaloblastic anemia, high dosages of folic acid may correct those hematological symptoms and make it appear that the problem has been resolved. However, the neurological damage caused by B-12 deficiency cannot be cured with folic acid, and if excessive folic acid has masked the signs of B-12 deficiency, the patient may not get the help they need until after nerve damage has occurred.

To B12 Or Not To B12?

Whether or not to take B12 should be discussed with your doctor. Because neuropathy symptoms are often associated with B12 deficiency it is a matter that should certainly be considered. (Please note: There are different ways to take B12, some more effective than others. Again, please consult your doctor which way is best for you).
The Role Of Vitamin D And Neuropathy

The following excerpt was taken from www.livestrong.com:

Neuropathy affects the nervous system and can cause muscle pain and weakness, tingling and loss of sensation in the hands and feet. Commonly caused by diabetes, trauma or infections, neuropathy symptoms may be improved with vitamin D therapy. Research published in the American Medical Association "Journal of Internal Medicine" suggests that vitamin D therapy can facilitate nerve growth and regulate nerve functioning, which can benefit patients suffering from neuropathy symptoms.

Vitamin D Supplements
Supplemental vitamin D comes in many forms including tablets, gel capsules, liquid and is also available in multi-vitamins. Appropriate vitamin D dosage varies on whether or not vitamin D deficiency is present. According to Dr. Jeff Unger of the Primary Care Metabolic Group in Charlotte, North Carolina, neuropathy can occur or become exacerbated by vitamin D deficiency, and therapeutic dosing of supplemental vitamin D depends on how much is currently in the bloodstream. Normal supplementation of vitamin D is 400 international units (IU) daily for men and women. Additionally, injections of vitamin D are also available by prescription. Vitamin D can cause serious illness if taken in excess, so overdose should be carefully avoided. (Author’s Note: Please consult with your doctor regarding Vitamin D supplementation as there are many varying opinions on how much you should be taking and in what form).

**Vitamin D in Food**

Vitamin D comes naturally from food sources, or from food that has been fortified. Modern diets do not commonly lend to the adequate consumption of vitamin D-rich foods, such as organ meats (beef liver), cod liver oil and sardines. However, other food sources, such as fish, egg yolks, Swiss cheese and
fortified foods like cereals, milk, yogurts and orange juice, offer good supplemental choices for dietary vitamin D. Though sufficient levels of vitamin D are not normally obtained from diet alone, dietary intake should be counted as part of total daily intake, especially if other forms of vitamin D are being used for treatment.

**Vitamin D from Sunlight**

Direct exposure to sunlight UV rays synthesizes vitamin D in the skin, allowing it to occur naturally in the body. The National Institutes of Health (NIH) recommends five to 30 minutes of direct sunlight to uncovered arms, face, legs and back, without the use of sunscreen, at least twice per week for beneficial vitamin D production. UV rays do not penetrate through windows, so going directly outside for maximum sun exposure is preferred. Avoidance of excessive unprotected sun exposure should be considered, however, as the NIH also recommends taking recommendations for preventing skin cancer into consideration.
“We don't appreciate what we have until it's gone. Balance is like that. It's like air. When you have it, you don't notice it. But when it’s gone, watch out!” – Dr. Eric Balcavage

This quote kind of says it all. We take balance for granted when we have it but when we don’t have it we realize how difficult some of daily activities can quickly become. Loss of balance can be a terrifying thing making some people a prisoner in their own home.

Peripheral neuropathy is a leading cause of balance problems and falls. In this chapter I will focus on the basics of balance, the role peripheral neuropathy plays in your loss of balance, and how doctors like those authoring this guide are using functional medicine, functional neurology, Brain Based Therapy, and chiropractic care to help people with peripheral neuropathy restore the feeling in their feet, regain their balance, and get their quality of life back.

Let’s start with some basics of how we maintain balance whether it’s with walking or standing still.
How The Brain Controls Balance

1. Sensory Input
The ability to maintain balance depends on information that the brain receives from three different sources—the eyes, the muscles and joints, and the vestibular organs in the inner ears. All three of these sources send information in the form of nerve impulses to the brain.

Input from the eyes
Nerve endings or sensory receptors in the back of the eye (retina) are sensitive to light. When light rays strike them, their nerve fibers send impulses to the brain with visual cues that aid in balance. For example, if a person is walking down the street, buildings appear to be aligned straight up and down.

Input from the muscles and joints
The input received by the brain from the muscles and joints comes from proprioception. Proprioceptors are sensory receptors that are sensitive to stretch or pressure in the tissue that surrounds them. These sensory impulses are then sent to the brain for cues on what the body is doing in that moment of time. Most important are the impulses that come from your neck, which indicate the direction the head is turned, and the
impulses that come from the ankles and feet, which indicate the body's movement or sway relative to the ground while standing.

Input from the vestibular system

The vestibular system (inner ear) is a complex series of passageways and chambers within the bony skull. These chambers are filled with and surrounded by fluid. There are identical systems located in the right and left ear. Each inner ear has a hearing component (the cochlea) and a balance component (the vestibular apparatus consisting of three semicircular canals and otolith organs). Inside each fluid filled canal is a sensory receptor that responds to head movement. When the head moves, the fluid in the ear lags behind causing the sensory receptor to bend, which creates an impulse to the brain about your movement. When the vestibular apparatus on both sides of the head are functioning properly, they send symmetrical impulses to the brain. That is, the impulses coming from the right side agree with the impulses coming from the left side. When impulses are not symmetrical on the right and left sides, one can become off balance and report dizziness.

2. Central Nervous System Processing

All of the sensory input concerning balance, from the eyes, from the muscles and joints, and from the two sides of the vestibular
system, is sent to the brain stem, where it is sorted out and integrated with contributions from other parts of the brain.

**Motor Output**

After the brain processes all of the information coming in regarding your movement and the environment around you, it must respond quickly and tell the body what to do in order for you to maintain balance and keep upright. It sends impulses back to muscles in your head, neck, eyes, legs and the rest of your body to allow a state of balance to occur.

Motor output to the eyes

The impulses that go to the eyes coordinate their movement to produce clear vision during head movements. This is controlled automatically by the vestibular system. If this did not occur, anytime you moved, your vision would be blurry.

Motor output to the muscles and joints

The impulses that are sent from the brain to the other muscles of the body control their movement so that balance is maintained whether a person is sitting, standing, walking or playing a sport. Through practice and repetition, the impulses from the sensory receptors to the brain and then out to the muscles form a pathway. With repetition, it becomes easier for
the impulses to travel over the same network or pathway, until maintaining balance during any activity becomes automatic. Whew, that was quite a bit to take in.

The key point is that your feet play a critical role in helping you maintain your balance. Unfortunately, when you have peripheral neuropathy you have damage to the nerve fibers in your feet (and the rest of your body). As it progresses, it typically affects more and more sensory fibers in the affected nerves. Loss of these fibers gradually causes difficulty with things like sensing the contour of the ground one is walking on, so that for example, you might not be able to feel a crack in the sidewalk and accidentally trip.

This type of loss of sensation can become so severe that you have to literally stare at your feet to visually compensate for the lack of ability to FEEL where your feet/legs are. You may not be able to stand still if your legs and feet are too close together. This type of sensory loss is most pronounced at night or in the dark where the ability to compensate with vision is most limited. The better the sensory perception in your feet the better balance you will likely have.

So that brings us to the next point and that is, if you have peripheral neuropathy what can you do about it.
Pulsed Electromagnetic Field Therapy and Peripheral Neuropathy

“Although the world is full of suffering, it is also full of the overcoming of it.”
-- Helen Keller

All feeling, normal or abnormal is carried by nerves from your body to the brain. The nerves in the feet, for example send messages to the brain depending on the information they receive. If someone steps on your toe, your brain instantly is aware of the discomfort. The same holds true if you wear a shoe that is too tight. It feels much better when you take it off! All of this is due to nerve stimulation. Just like information goes from your feet to your brain, nerves come from the brain down to the feet.

Nerve Irritation Is A Major Cause of Neuropathy

All nerves begin in the brain. From there they travel down throughout the body, some reaching down the legs to the feet. If there is irritation to those nerves before they reach the feet, a person will experience abnormal feelings in the feet.
themselves. These feelings may be sensations such as pain, heat and tingling.

**The Low Back Is A Common Place for Nerve Interference**

As the nerves come from the brain down the spinal cord, they exit the spinal cord in the lower back and then extend down to the feet. It is at this point of exit that many problems may occur. Think of it like a person travelling by car down a highway and getting off at an exit ramp to enter a town. If things are not running smoothly or there is construction on the ramp, there can be trouble getting into the town. The nerve flow can be easily disturbed at this crucial spot when it exits the spine.

**Exercise And Peripheral Neuropathy Recovery**

“What I Do For Exercise Sort Of Depends On What’s Happening In The Rest Of My Life”. – Cynthia Nixon

The Why And How Regarding Exercise And Natural Recovery For Patients Suffering With Peripheral Neuropathy
PN is a whole body (systemic) problem. It is not just a foot or hand problem. I will try to keep this simple ... You have PN because you are sick. We are going to support you in your quest for improving your health. The healthier you are the better your body will be able to heal itself. In order to get at the root cause of neuropathy we are supporting you Neurologically, Structurally and Metabolically.

I believe regular movement and exercise is essential to getting and staying healthy. As Stephan Guyenet pointed out in a recent blog post, our paleolithic ancestors had a different word for exercise: “life“. They naturally spent a lot of time outdoors in the sun, walking, hunting, gathering, and performing various other physically-oriented tasks. They had no concept of this as “exercise” or “working out”, it was just life.

Exercise is part of your natural recovery program. Exercises will be broken down into a couple of categories...

1. Brain balancing exercises, to stimulate the weaker areas of the brain
2. Vibrational platform
3. General fitness program.
THE BENEFITS OF AN EXERCISE PROGRAM:

Every time you exercise you:

1. Decrease insulin resistance – will help with diabetes and/or blood sugar issues.

2. Lowers blood glucose levels – this helps reduce inflammation which increase nerve healing.

3. ...Reduce or optimize body fat.

4. ...Add a little muscle.

5. ....Improve balance, strength and stamina

6. ....Balance the brain and calm the nervous down

(Decrease Sympathetic tone and decrease a high firing mesencephalon.)

7. Decreases plasma cortisol – the stress hormone that increases fat storage.

8. Increases peripheral blood flow – helps detox and feed extremities.

9. Improves muscle hormones – helping balance erratic hormone levels

10. Reduces inflammation – which also reduces pain

11. Increases Growth Hormone levels – an anti-aging benefit
12. Increases HDL

13. Increases angiogenesis – the growth of new blood vessels

Lower your stroke risk. In an extensive study reported in JAMA, more than 70,000 nurses ages 40 to 65 without cardiovascular disease or cancer completed detailed physical activity questionnaires, and the results showed walking was associated with reduced risk of stroke.

Protect against osteoporosis. Weight-bearing exercise, such as walking, promotes the build up of new bone. In fact, studies have shown people who engage in regular weight-bearing exercise have higher bone densities than people of a similar age who don’t exercise.

Increase your metabolic rate. Allows you to burn more calories, even after you hit the lounge chair following your workout.

Prevent, and even reduce, high blood pressure. That’s because physical activity helps to lower the levels of stress hormones circulating in your blood (stress tends to constrict arteries and drive up blood pressure).
Alleviate depression. A study undertaken at the world-famous Cooper Clinic in Dallas showed that individuals diagnosed with depression who would normally be put on medication could get relief from 180 minutes a week of physical activity.

Reduce your risk of developing breast cancer. In one study of nurses 30-55 years old, those exercising seven hours or more per week, reduced their breast cancer risk by 20 percent. Plus, those who exercised just two to four hours a week had a ten percent reduction in their breast cancer risk. Other research has found that as little as three hours of moderate exercise per week, such as walking, can reduce breast cancer risk in postmenopausal women.

Keep it simple and start slow, gradually building up your tolerance. If you have a heart problem see your cardiologist first for any special instructions.

Key concept regarding Exercise

Exercise defeats diabetes by increasing the sensitivity of insulin receptors so the insulin that is present works much more
effectively, and your body doesn't need to produce as much. Insulin is very inflammatory which is not good for patients suffering with PN. Insulin is a key player in the vast majority of chronic health problems.

Abnormal blood sugar is only the symptom in most diabetics. The real challenge is to control your insulin levels. Once insulin levels are stabilized, it is common for the blood sugar to come back to normal levels.

Fortunately, insulin is very easy to influence by correct eating and correct exercise habits.

One of the keys in using exercise to normalize insulin levels (with secondary benefits such as weight loss and normalization of blood sugars), is to make certain minimum thresholds are met. It is my experience that most people are not exercising enough. I believe exercise needs to be viewed like a drug -- if the dose is not high enough, it will not work.

There are three important variables to consider when you exercise:

- **Intensity**
- **Length of time**
- **Frequency**

Most of your time will be spent doing relatively easy exercise like walking. Only two or three days per week for higher
intensity exercise and this is based on your fitness level. Start slow and increase your intensity as your fitness level increases. Eventually you will be able to exercise hard enough so that it is difficult to talk to someone next to you. Be sure to get checked by your doctor first and take your time building up to it!!

Note: When you are exercising hard enough it is difficult to have a conversation, your cardiovascular system is under significant stress the mere act of talking makes you unable to provide your body with enough oxygen because of the diversion of airflow. If you cannot carry on a conversation at all, then you have gone too far and need to decrease the intensity slightly. Most people don't exercise at the appropriate intensity and as a result aren't able to obtain the benefits

A Few Guidelines

It is normal to feel a little sore and tired after exercise at first. The key word is little. A general rule to follow is what I call the “One Hour Rule”... If after exercise you eat and take a one hour rest or nap and are fine the rest of day, then the intensity and duration was appropriate. However, if you feel excessively tired, exhausted or just plain don’t feel well, then the duration
or intensity was too much. Remember it takes time but if you are consistent and gradually increase your intensity within your recovery limits, you will progress.

Tired for 1-2 hrs = Fine - Keep the same intensity or gradually increase intensity

Tired for greater than 2 hrs = Too much intensity, duration or both so scale it down

Additionally, exercise improves the circulation of immune cells in your blood. Your immune system is your first line of defense against everything from minor illnesses like a cold right up to devastating, life-threatening diseases like cancer.

The trick about exercise is understanding how to use it as a precise tool. This ensures you are getting enough to achieve the benefits and not too much to exceed your metabolic capacity or cause injury. Also, the right variety of exercise is needed to balance your entire physical structure and maintain strength, flexibility, aerobic and anaerobic fitness levels. This is why it is helpful to view exercise like a drug that needs to be
carefully prescribed by an expert to achieve its maximum benefit.

**An Exciting Balance Breakthrough: The Vibration Platform**

An exciting balance-training option on the fitness front is the vibration platform, a whole body workout exercise machine that engages 95 percent of your muscle fibers. This multi-directional vibration machine has a number of benefits for your health, beyond the cardiovascular and metabolic aspects commonly associated with exercise. For example, the vibrational action of the vibration platform can help:

1. Strength
2. Proprioception Balance
3. Flexibility
4. Circulation
5. Neurological Processes

The directional movement promotes proprioception, which is just a medical term for sensing the relative position of neighboring parts of your body. Proprioception is an internal feedback mechanism crucial for balance, as your body constantly adjusts to uneven terrain as you walk.
The unique ability of the Vibrational Platform to train and build your neurological system has huge implications for treating people with neurological problems—for example Multiple Sclerosis (MS), peripheral neuropathy, and elderly individuals who are prone to falls because of instability.

If you have ever done any exercise training on an uneven surface, you'll have noticed that it's harder -- you were recruiting more muscle fibers and more energetic pathways. The same idea applies to the Vibrational Platform. Beyond its applications for professional athletes, astronauts, and fitness enthusiasts, the Vibrational Platform has been useful in treating a wide variety of clinical conditions.

If you have issues with circulation or blood flow, hormonal deficiencies, or mobility, you can use the Vibrational Platform daily for these issues. In fact, the people who have more clinical issues see improvement much faster. For example, if you have any kind of circulatory problem or nervous system disorder, you will typically see benefits right away. Vibrational Platforms have been used in Europe for neurological rehabilitation and have been found to help relieve spinal cord injuries, symptoms of MS, stroke, and paralysis resulting from trauma.
Why High Intensity Exercise is Better

“Body By Science”, is an excellent book on high intensity strength training in which Dr. Doug McGuff explains how high-intensity training is superior to chronic cardio because it produces a greater stimulus and thus more effectively empties the muscles and liver of glucose. This stimulus can last several days as opposed to just a few hours with low-intensity training. High intensity exercise also activates hormone-sensitive lipase (HSL), which mobilizes fatty acids for energy use. This means that during high intensity exercise, both glucose and fatty acids will be burned, leading to greater fat loss and restoration of insulin sensitivity.

High-intensity strength training: best of all?
Both high-intensity running or bicycling sprints and high-intensity strength training are effective but I believe high-intensity strength training is probably a better choice for most, simply because the wear-and-tear and risk of injury is lower – especially if the strength-training is performed using weight machines as described in Body By Science. For most PN patients, running is out but walking fast followed by walking slow intervals or bike riding can be a valuable substitute.
If you’re interested in this kind of training, I’d recommend picking up a copy of Body By Science and checking out their blog. You can post your weekly workout results and get help and suggestions from a knowledgeable community there – including both authors of the book, Doug McGuff & John Little, as well as other experienced trainers and enthusiasts. Another option that may be more accessible for some is Fred Hahn’s The Slow Burn Fitness Revolution. Fred also has a website and blog worth checking out.

Final note to slackers: the popular excuse of “I don’t have time to exercise” is no longer valid. If you’ve got 6 minutes, you can do this... and I know you do.

This secret will transform your physique, increase your energy, increase the health of your nerves, heart and lungs and to top it off help you burn fat quicker than you can possibly imagine.

Let me explain:
When you exercise for more than 15 minutes, you utilize mainly fat for energy.

I bet you think this is a good thing.
Right?
Wrong!

This will cause your body to build more fat! It is preparing for the next exercise session when it will need fat to fuel the long duration.

Researchers at Laval University in Quebec wanted to find out which type of exercise program was best for fat loss.

Participants were split into two groups. A long duration group cycled uninterrupted for 45 minutes. An interval group cycled in numerous short bouts (lasting from 15 to 90 seconds), resting in between.

The long endurance group burned twice as many calories as the interval group. But for every calorie burned, the interval group lost 9 times more fat.

Here is the key:
It is what happens after your stop exercising that determines how much fat you will burn.

The reason for this phenomenon was uncovered in another recent study. Colorado State University researchers measured how long fat continues to be burned after brief periods of exercise. Participants exercised for two minutes then rested for one minute. They continued this cycle for 20 minutes. The researchers found that participants continued to burn fat at a high rate 16 hours after the exercise.

Even while they rested their fat oxidation was up by 62%.

Another study done at Stanford University School of Medicine tried to find out how long people needed to exercise to get this benefit. The study demonstrated that ten intense minutes of exercise is enough to burn body fat.

The prestigious Harvard Alumni Health Study has confirmed that in average non-athletic Americans, ten-minute bouts of exercise promote health and weight loss.
If you want to lose fat, exercise in short bursts. You will burn much more body fat during the recovery period.

It's important to include a variety of techniques in your exercise routine, such as strength training, aerobics, core-building activities, and stretching. Most important of all, however, is to make sure you include high-intensity, burst-type exercise, once or twice a week in which you raise your heart rate up to your anaerobic threshold for 20 to 30 seconds, and then you recover for 90 seconds. These exercises activate your super-fast twitch muscle fibers, which can increase your body's natural production of human growth hormone.

You can perform High Intensity or Interval Training with any type of exercise you choose. While having access to a gym or exercise equipment will provide you with a larger variety of options, you don't require either. You can just as easily perform this by walk-slow walk-fast or bike-slow then bike-fast, or squat fast alternating with walking. You'll want to start slow and work your way up, but ultimately you want to exercise vigorously enough so you reach your anaerobic threshold, because this is where the growth hormone release is triggered.
HOW TO PUT IT ALL TOGETHER

1...Daily, Move Frequently at a Slow Pace. This strengthens the cardiovascular and immune systems, promotes efficient fat metabolism and gives you a strong base to handle more intense workouts. Add Vibrational Platform daily if you have access to the equipment. This is where all PN patients should start and spend most of their time.

2...Twice a Week... Lift Heavy Things. (this is relative, see benefits under high intensity) stimulates lean muscle development, improves organ reserve, accelerates fat loss, and increases energy. High Intensity is a relative term start slow and build up. Here is an example of using basic body weight exercises to provide the resistance. Start slow and be progressive

• Chair squat...This is the number one exercise for 90 % of the human race. Keys... use a safe sturdy chair, aim rear end to the back of chair. Keep your chest up and push your knees out. Squat slowly down without using your hands, lowering your rear end to the chair. If your knees hurt ask your doctor about using a massage stick or foam roller to work on tissue quality of
the leg muscles. The majority of knee problems will be helped tremendously when you soften the muscles around the knees which will decrease friction, pain, and inflammation.

- Pushup or wall pushup...One pushing exercise for the upper body

- Horizontal Row...One pulling exercise for the upper body. The “Perfect Pull Up” is a great inexpensive tool to work the pulling muscles. It is appropriate for unfit beginners to seasoned athletes. (Can be found at Walmart or sporting goods store for approximately $19.95)

3...Once or Twice a week: Interval or Sprint training (This also is relative) This stimulates the production of Human Growth Hormone (HGH) and testosterone, which help improve overall fitness and delay the aging process – without the burnout risk of excessive prolonged workouts. Once cleared by your doctor and you have been walking for 30 days now you can slowly try interval “sprint” TYPE of exercise’
· First work up to 30 min nonstop walking. If can’t do that, walk in 5-10 min increments to eventually total 30 min daily.
· Once up to 30 min goal add some intervals or “sprint” type workouts twice a week. See beginner routine.

BEGINNER ROUTINE
1. Walk slow for 5 minutes.
2. Walk fast for 30 seconds.
3. Walk slow for 90 seconds.
4. Repeat 1-2 more times.
5. Work up to 7 more times.

The actual "sprinting"=fast walking, totals only 4 minutes!

ADVANCED ROUTINE
(Here's what a typical High Intensity or Interval routine might look like using a recumbent bike)
1. Warm up for three minutes
2. Push yourself as hard and fast as you can for 30 seconds. You should feel like you couldn’t possibly go on another few seconds
3. Recover for 90 seconds
4. Repeat the high intensity exercise and recovery 7 more times
With High Intensity, Burst, or Interval Training, by the end of your 30 second exercise period you’ll want to reach these markers:

• It will be relatively hard to breathe and talk because you are in oxygen debt
• You will start to sweat profusely. Typically this occurs in the second or third repetition unless you have a potential thyroid issue and don't sweat much normally.
• Your body temperature will rise
• Lactic acid increases and you will feel a muscle "burn"

Since this is a bit more extreme, do be mindful of your current fitness level and don't overdo it when you first start out.

Start with just one or two repetitions, and work your way up to eight. You may even need to start with just walking and when you do your 30 second bursts your legs would be moving as fast as possible without running - and your arms would be pumping hard and fast.

Summary
1. Get an ok from your doctor. (Cardiologist if have a history of heart problems.)
2. Don’t quit! Be consistent and start slow.
3. Your goals are to decrease inflammation, blood sugar, and insulin to promote a better healing environment for your nerves.

4. Remember... Every Day easy walking, 2 Days per week lift something heavy, 1-2 Days per week do "Sprint" or interval type training.

5. Keep track of your progress. If you can do 5 chair squats and add 3 per week in one year where will you be?

5-8-11-14-17-20-------- Over 100!!

You will be a different person. Just think...
How will your balance be?
How will your pain levels be?
How will your energy levels be?
How will you look, feel, and move?

Remember PN is a chronic disease which took many years to develop. Give your body the time it deserves to get well.

Good luck with your journey!
Why We Recommend The MagnaCharger Pro PEMF Machine.

Whatever Good Things We Build End Up Building Us -Jim Rhon

What is Pulsating Electro Magnetic Field (PEMF)

What is this new therapy in our office? The MagnaCharger Pro is the latest innovation in Pulsed Electromagnetic Field, PEMF, therapy. The Russians and Eastern Europeans have successfully been using similar technology over the past 30 years, but in the U.S. it has only been available for about five years. To sum up the true potential of this exciting technology in a single sentence: The MagnaCharger is the most advanced injury repair and pain elimination technology in the world today. Allow us to explain how it works and why we believe it will change the future of natural medicine, as we know it.

Of all the wonderful natural healing modalities available to us today – nutrition, organic diets, chiropractic, cold laser therapy, bio-meridian, ionic foot baths, etc. – the primary stumbling block has always been:

The Patient’s Energy Level
One patient can try a natural therapy and experience results almost immediately, while another patient doesn’t feel any positive change for weeks or even months. One of the biggest differences between these types of patients is the level of energy inside the cells. Each cell needs a certain amount of energy to make the needed repairs or benefit from the healing modality. It doesn’t matter what kind of therapy you perform, if cells don’t have enough energy to function, the therapy won’t work well.

Though we practitioners have understood this for years, what to do about it has eluded us...until now. Pulsed Magnetic Cellular Exercise, or PMCE, increases your cells’ electric membrane potentials. But what does that really mean for you?

Think of it this way – every cell in your body is a small, electrical battery that is constantly conducting a current. Cells use this current to take in essential nutrients, excrete waste and communicate with each other. How well your “batteries” are charged is inevitably going to determine how much work your body can accomplish. And how much work your cells perform has a direct impact on your health.
How Does The MagnaCharger Work?

Let’s visualize a construction crew building a new home. The workers are our cells that have specific jobs to do. The home they’re building could be any injury or damaged/diseased tissue that’s in need of “re-building.” What do the workers need to accomplish their task?

They need three things:

Supplies - Supplies are your cells nutrition. Your cells build with nutrients, and each cell needs nutrients to work. The quality of the supplies directly affects the quality of the house. You wouldn’t build a house with weak wood or flimsy straw, and your cells can’t build or repair your body with poor nutrients.

A clean working environment - In order to build a solid foundation, you would first remove the trees, shrubs, large rocks and other debris from the work area, creating a clean work environment. This debris represents the toxins in your body. You cannot build on toxic or uneven soil.
Power - Finally, you need Power. The workers’ power tools run on batteries, which represent the batteries in each of your cells. If you don’t have enough charge, the tools don’t work and the house can’t be built.

A perfectly healthy body has the ability to naturally maintain a steady supply of “power” to its cells’ batteries. However, most people are bombarded with numerous stressors from the modern world that prevent or block this natural flow of energy to the cells. Exposure to DC electricity, stress, poor nutrition, stress, insomnia, lack of exercise, dehydration and more can all impact your body’s capacity to renew its power.

Let’s think about what would happen to this work crew if you cleared the land, gave them all the supplies they needed, such as blueprints, tools and payment in full, but were unable to charge the batteries in their power tools? Not much work could be done. You’d have a crew with potential, but no power to cut wood, build a frame or put up walls.

This is the missing link in patients’ “cellular health,” and the MagnaCharger can bridge the gap.
The MagnaCharger “recharges” your cells’ batteries. With fully charged power tools and the right supplies the crew is now ready to get to work.

How much PMCE will I need?

This power tool analogy also perfectly answers the patient question: “How much PMCE will I need, and how often do I need it?” The answer, as with most natural therapies, is different for each person. It really comes down to how well you can “hold a charge.” Your cells’ ability to hold a battery charge depends heavily on two things:

How well hydrated the tissues are - Hydration refers to whether or not you have enough healthy water and electrolytes in the areas surrounding the cells. The battery ‘age’ does not necessarily refer to a person’s biological age, but rather the amount of wear and tear the cells have endured. Think about your cell phone. A cell phone with a two year old battery is not going to hold a charge as long as a phone with a new battery. However, one person’s two year old battery can be much more “used and abused” than another person’s.
The age or damage to the batteries - Your cells’ batteries may need a charge once per week or three times per week depending on your goals. The length of therapy depends on the amount of work that needs to be done. Are you building a new deck or a whole new house?

My pain is gone, am I done now?

The next question that needs to be addressed relates to a patient’s pain levels. He or she will soon notice that MagnaCharger therapy rapidly decreases or eliminates pain. The question is, “My pain is all gone, am I done now?” No, you are not. Pain is simply a signal from the body for more energy. When the workers run out of charged batteries, they aren’t able to complete their work, so it builds up. They are also sitting around with nothing to do they become grumpy and start to complain. When you charge their tools the complaining stops and they go back to work. First they have to get to the backlog of tasks that have piled up, so they need power support during this time.

If you stop charging the tools before the work is completed, the complaining – i.e., the pain – will resume.
Does the MagnaCharger make other modalities/therapy obsolete?

Not at all. As explained above, your cells need supplies, a clean environment and power to accomplish their tasks. Pulsed Magnetic Cellular Exercise simply alleviates the biggest stumbling block to most people’s health goals. In addition, it works well with your other therapies, amplifying their effectiveness.

**Why We Recommend The Rebuilder Treatment For Home Use.**
We recommend the ReBuilder because it has demonstrated a reliably high level of positive clinical outcomes. The patients can be relaxed while on treatment in the comfort of their own home.

Peripheral neuropathy is a systemic electrical problem with the nerves, not just a foot or hand problem. Treating a local area with laser or infrared lights, etc. only treat a local area. The entire nerve path, from the toes to the nerve roots in the lumbar area must be stimulated.

The ReBuilder's signal is unique to peripheral nerves, and just as a heart pacemaker must send a signal that simulates a healthy heart signal, the peripheral nerves work best when stimulated with a waveform that the peripheral nerves use.

Other modalities like a TENS merely block the nerve signals to stop the nerve from operating. This may temporarily give some pain relief, but can cause more numbness, and can permanently damage the nerve cell possibly resulting in permanent paralysis. The Rebuilder opens the nerve paths. We are looking for the patient to be able to rejuvenate the nerves over time and gain some strength back in the areas of their hands and feet depending on the area of the neuropathy. With
continued use, the patient, along with the Doctor who prescribed the medications, hopefully will be able to reduce or eliminate those medications (which also has their own set of side effects)

Can Neuropathy Be Controlled Or Reversed?

Neuropathy can definitely be controlled, and in many cases even reversed. Neuropathy is a progressive disease and if not controlled only gets worse. The number one cause of accidents in patients over the age of 60 is falls. They might trip a lot, or lose their balance because they can’t tell that their feet are on the ground. Sometimes the original pathology that caused neuropathy has been eliminated, such as a completed round of chemotherapy. During the chemotherapy, the patient's nerves may have compensated by re-routing the nerve paths around those overly medicated nerves. Now that the chemo has been cleared from the patient, sometimes all it takes is a
customized treatment protocol with the Rebuilder to re-educate and restore those nerve paths.

Working with a doctor who understands the importance of neurological issues combined with metabolic issues will increase the patients’ outcome for success.

We have found that 60% of our patients suffer from some level of impingement, ranging from muscle spasms, subluxations to piriformis entrapment syndrome. Once those physical issues have been eliminated with physical manipulation, the ReBuilder can then do its work to awaken nerves that had gone dormant due to the entrapment issues. The doctor will follow protocols customized for the patient to maximize the outcome.

**How Long Does It Take For Nerves To Regenerate?**

Nerve regeneration is a definite possibility, especially with younger patients, non-smoking patients, and those who have their blood sugar levels or metabolic issues under control. We have found that the patient who suffers from nerve degeneration and not impingement issues or nutritional
deficiencies can still have a positive outcome. This process takes longer than the more common types of neuropathy, but nerve regeneration, when properly supported by appropriate changes in lifestyle, can be affected from 30 to 90 days.

**Neuropathy And Myofascial Release**

“The treatment is really a cooperative of a trinity--the patient, the doctor and the inner doctor”. - Ralph Bircher

Peripheral neuropathy can become extremely painful and debilitating, often at night, but for many it’s an all day long event. As discussed in previous chapters there are many causes however two common areas of focus must be 1) nerves and 2) blood vessels, as it is disease of one or both that ultimately causes neuropathy. Myofascial release is similar to massage, the difference being the intent of the practitioner. While massage is often associated
with decreasing stress and typically administered full body, myofascial release focuses on specific areas of complaint and the application of varied tissue techniques and manual pressure. 

As mentioned, when addressing neuropathy it is wise to take into consideration the role of both nerves and blood vessels. While the nerves are typically to blame for neuropathy it is the small blood vessels (micro-circulation) that nourish the nerves and allow them to heal. Therefore, one can make the argument for stimulating the small blood vessels (capillaries) to help aid in the nerves recovery. This is one of the many benefits of myofascial release. Studies have shown improved blood circulation, increasing oxygen capacity by up to 15%, allowing muscles to relax and increase of endorphins (which helps with pain symptoms).

It is been my experience that myofascial release not only helps to improve the blood flow to the nerves, allowing healing, it offers a great deal of immediate relief. Besides releasing endorphins it is theorized that relief also occurs due to the stimulation of proprioceptors. Proprioceptors are sensory nerve receptors situated in the muscles, tendons, and joints that furnish information to the central nervous system. It is believed
when proprioceptors are stimulated they override the small pain nerve fibers thus causing a cessation in symptoms.

**What To Expect**

When working with a therapist you can expect mild to moderated soft tissue pressure applied to the feet, hands, arms and legs, as symptoms dictate. Each session could last anywhere from 15 minutes to 45 minutes, again depending on symptoms. The procedure is painless and as talked about earlier, often brings immediate relief.