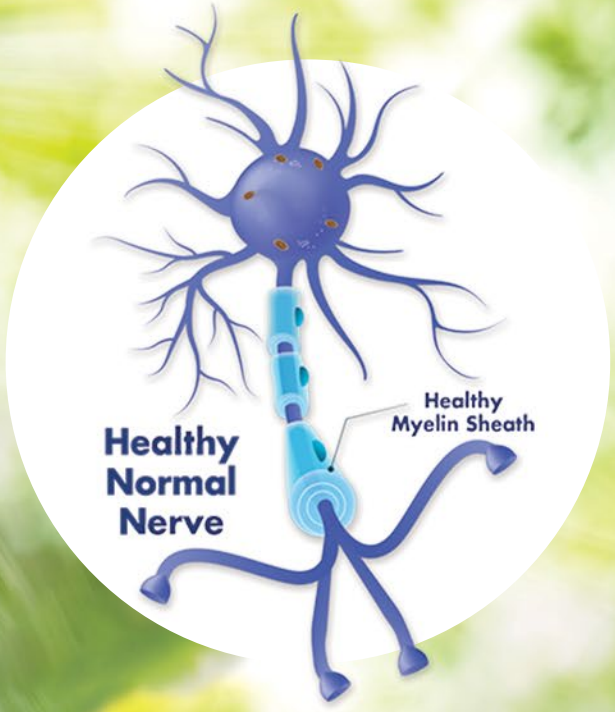
THE NEUROPATHY HANDBOOK™

A Book by Real Health Products

What Your DOCTOR Didn't Tell You!



What You Need TO KNOW

RHP® Health Products

The Neuropathy Handbook

DISCLAIMER: The information in The Neuropathy Handbook is provided for educational purposes only and is not intended to diagnose, treat, cure or prevent any disease.

The information in this book is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information.

We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.

We are here to help YOU.

You have taken an important step towards better health.

We know that most people will make the correct decision on how to improve their health and well-being if they are provided with real information that they can use.

The Neuropathy Handbook will give you more information about neuropathy and what you can do about it.

We want you to live a happier, healthier, longer life, as do your loved ones.

If you have any questions about the information in this eBook or would like more information, please do not hesitate to contact us.

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Chapter 1 - Introduction

What is Neuropathy?

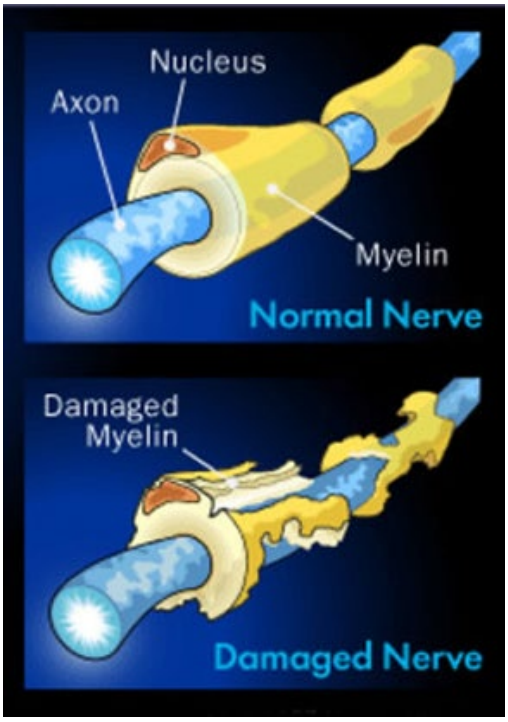
Neuropathy is where the outer sheathing (protective covering, also called the myelin sheath) of nerve cells (also called neurons) starts to degenerate. This is similar to an electrical wire that is covered with insulation, and the insulation is beginning to crumble. Without insulation the unprotected wire will start short-circuiting.

In the same way, when the sheathing of nerve cells degenerate, the signals being transmitted are scrambled, resulting in your body receiving signals that are interpreted as numbness, heat, cold, tingling, pain, etc. in the toes, feet legs, fingers, hands and arms.

> More than 20 million[1] people in the United States have been estimated to have some form of peripheral neuropathy, but this figure may be significantly higher—not all people with symptoms of neuropathy are tested for the disease and tests currently don't look for all forms of neuropathy. Neuropathy is often misdiagnosed due to its complex array of symptoms.

Neuropathy is a problem affecting the nerves of the human body. Pain, numbness, tingling, lack of motor function and other symptoms of neuropathy make life challenging for these individuals, who struggle to go to work, play with grandchildren, or engage in their favorite activities.

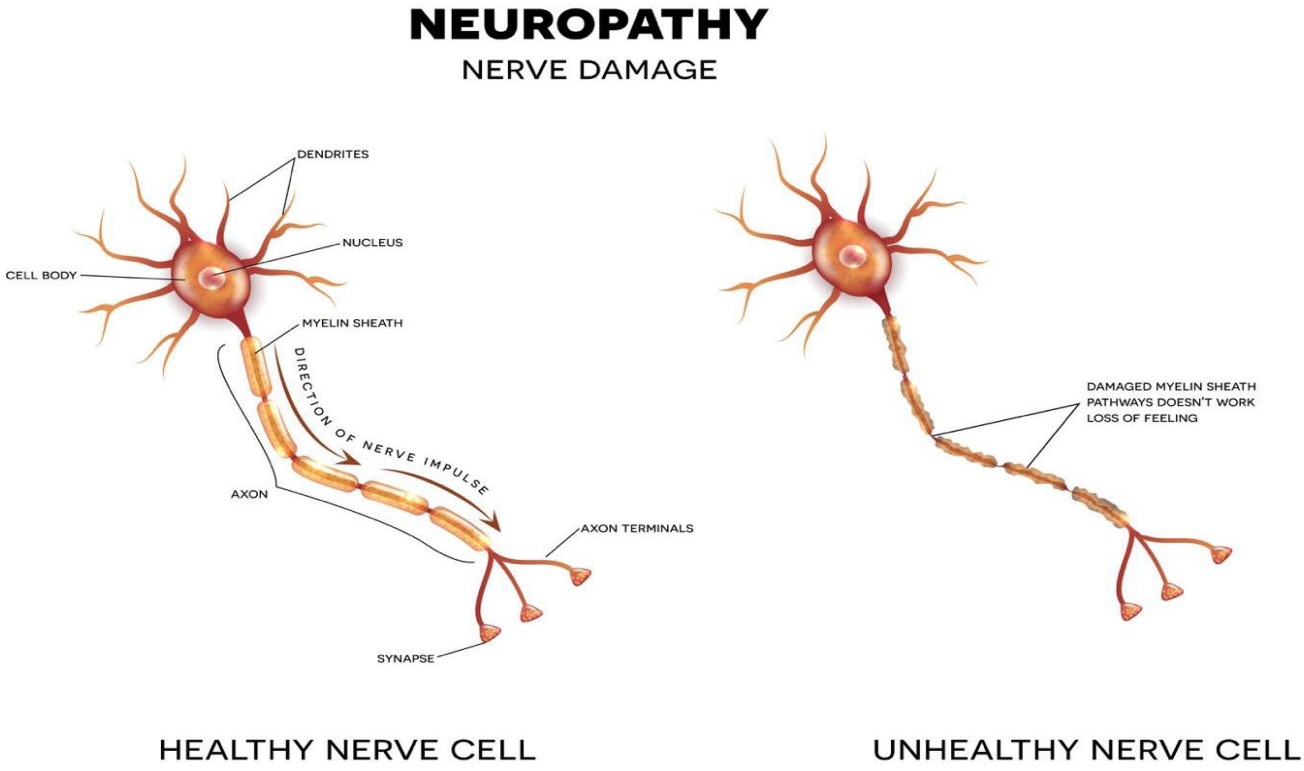
The human nervous system is a complex communication network that includes the brain and the spinal cord, together known as the central nervous system, and the rest of the peripheral nerves in the body. The peripheral nerves are those at the far reaches of the body, such as in hands and feet. Doctors refer to symptoms resulting from disease or damage affecting these nerves as "peripheral neuropathy."



Causes of Neuropathy

Certain diseases and disorders can cause peripheral neuropathy. Inflammation associated with certain conditions can also lead to peripheral neuropathy. Diabetes and other metabolic disorders can interfere with the body's ability to convert nutrients from food into energy and process waste products; lack of nutrients and toxicity from exposure to waste products can damage nerves. In fact, 60 to 70 percent of people with diabetes have mild to severe nervous system damage, according to the National Institutes of Health (NIH)[2].

A number of injuries and repetitive actions can cause neuropathy. Trauma from an automobile accident, fall, sports injury, surgery or other devastating events can damage, crush, sever, compress or stretch delicate nerve tissue. Repetitive stress from performing one action repeatedly can damage nerves to cause symptoms of neuropathy, as can cumulative damage from performing awkward or forceful actions that require the use of any one group of muscles for a long time.



Symptoms of Neuropathy

Symptoms of neuropathy can include numbness, tingling, pricking sensations known as paresthesia, and muscle weakness.

Neuropathy can cause areas of the body to become abnormally sensitive. In some cases, abnormal sensitivity can turn into allodynia, an exaggeratedly intense or distorted experience of touch. Someone with allodynia feels pain from stimuli that would not normally cause pain in another person.

Severe neuropathy symptoms may include burning pain, particularly at night. Nerve damage in the legs may cause a burning sensation in the feet, for example.

Neuropathy may affect the muscles and cause muscle wasting or paralysis. Damage to nerves serving internal organs can negatively affect digestion, perspiration, sexual function, and urination.

Chapter 2 - Things the Drug Companies Don't Want You to Know About

Doctors typically prescribe medications to treat neuropathy. There are several drugs commonly prescribed for the neurological condition, including:

- *Cymbalta/duloxetine*
- *Epitol/carbamazepine*
- *Lyrica/pregabalin*
- *Neurontin/gabapentin*

Unfortunately, none of these drugs is FDA-approved for the treatment of neuropathy.

Drugs go through clinical trials before the FDA approves them for use in the U.S. These research studies must prove that the drug works to treat a certain condition, works reliably, and is safe when taken as directed. Once the FDA approves the drug, the drug manufacturer creates a label that states the drug's intended use and dosage.

Doctors can prescribe medicines for off-label use, which means patients use the drugs in a different way than described on the drug label. Off-label use includes administering the drug through a different route, such as orally or through an IV, or administered in a different dose than described on the label. Off-label use also includes using a drug to treat different medical conditions than the ones approved by the FDA.

There is very little clinical evidence that off-label use works. In fact, research shows that 73 percent of all drugs prescribed[3] off-label had little or no scientific support.

Off-label prescribing is common for the treatment of neuropathy. Tricyclic antidepressants are not FDA-approved for treating neuropathy, yet these drugs are often the first line[4] of neuropathy treatment. Doctors also prescribe anti-psychotics and anticonvulsants to treat neuropathic pain, even though these drugs are not approved to treat neuropathy.

Because they were not tested or approved for that use, off-label use of these drugs may be ineffective for the treatment of neuropathy. Long-term use of these drugs and the side effects they cause, may even worsen the condition.

Chapter 3 - Freedom from Neuropathy

Freedom from neuropathy begins with understanding the condition. Knowing how the condition developed and determining the underlying cause of the nerve damage will help patients conquer neuropathy and avoid it in the future.

Neuropathy can affect only one nerve, a common condition known as mononeuropathy. It can also affect more than one nerve, known as polyneuropathy, which is less common and can be more dangerous.

Mononeuropathy is easier to diagnose than polyneuropathy, because the localized symptoms make it easy to identify the damaged nerve.

Polyneuropathy is more difficult to diagnose because it affects more than one nerve. Many peripheral neuropathies are polyneuropathies. Symptoms of polyneuropathies occur when many nerves malfunction simultaneously. These symptoms can develop suddenly, or slowly over time.

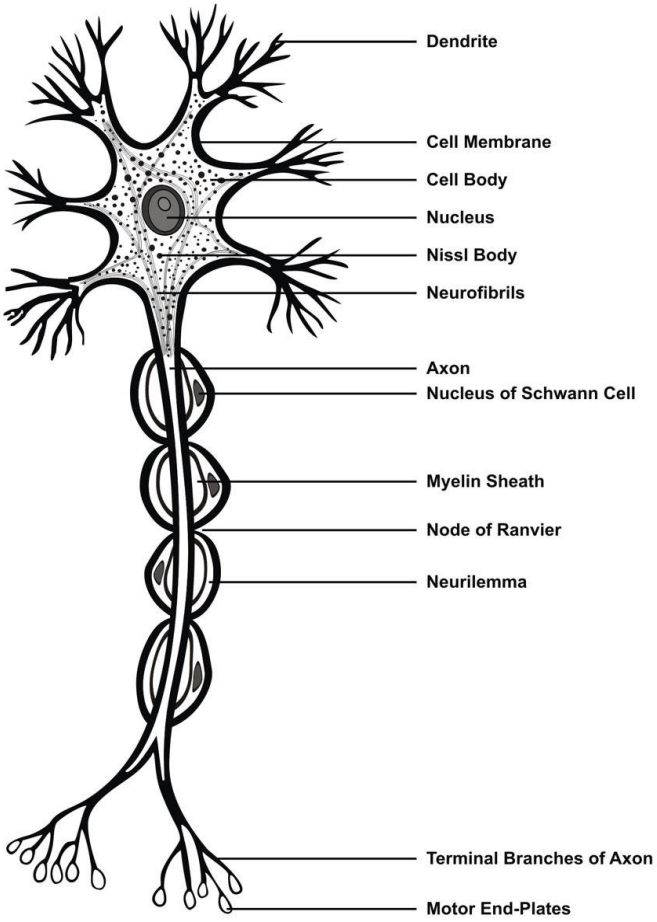
Peripheral neuropathies are often symmetrical, affecting both of the patient's hands or both feet. This is quite different from mononeuropathies that affect only one nerve, causing patients to feel symptoms on only one side of their bodies.

The Nerve

Every nerve cell, known as a neuron, has an axon, at least one dendrite, and a myelin sheath.

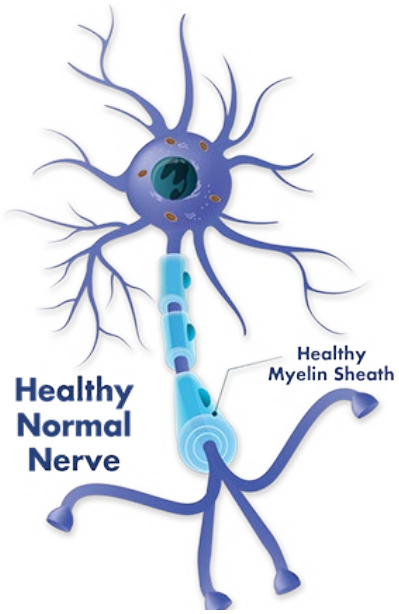
Dendrites are long, tree-like extensions of the nerve cells. Dendrites act like antennae, receiving messages from the brain and spinal cord. Dendrites send the information they receive to the main cell body of the neuron containing the nucleus, also known as the soma.

Axons are the actual nerve fibers that carry information away from the neuron. Long and thin, axons are somewhat like a landline telephone wire that carries information reliably and quickly over long distances.



There is a small gap, known as the synapse, between axons and dendrites. Information flows from one neuron to another nerve cell across this synapse. Special minerals in the synapses help transmit these messages.

The myelin sheath acts as an insulating covering for axons. These sheaths are similar to rubber or plastic tubing insulating telephone wires. Myelin sheaths increase the speed at which nerve impulses can travel along axons; like plastic wire tubing, they also protect against damage and external interference.



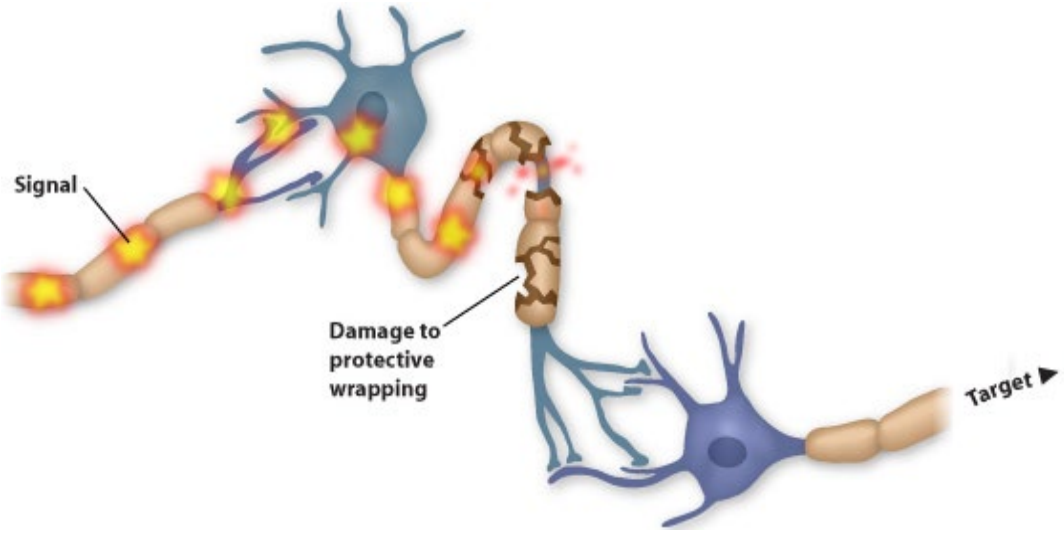
The protective coating of the myelin sheath contains fats and proteins. In fact, about 75 percent of myelin is fat.

This is important to know because many medications, like statin drugs that treat high cholesterol, break down the fat in the myelin sheath, and damage the axon's protective coating.

This unhealthy process, known as demyelination, slows the speed at which information travels across nerves. Demyelination makes nerves vulnerable to external interference and static that can garble messages, such as signals of non-existent pain or inappropriate sensations of hot and cold.

Peripheral neuropathy can develop after damage occurs to the axon, myelin sheath, or both. Neuropathy may also occur when the synapses between nerve cells becomes too wide, which can be the result of taking certain medications or of some conditions, such as diabetes.

Damaged or destroyed nerves or synapses do a poor job of sending messages between the brain and the rest of the body. Peripheral neuropathy can act like static on a telephone line, interrupting and distorting communications.



Nerve fibers farthest from the brain and spinal cord are the most likely to suffer damage first, which is why peripheral neuropathy often starts with foot pain.

Symptoms can be progressive, which means they worsen and spread to different parts of the body over time. This is particularly true for those with diabetes or other conditions that continuously inflict damage to the nerves.

There are three types of peripheral nerves: motor, sensory, and autonomic. Some types of neuropathies affect one or two types of peripheral nerves, while other neuropathies affect all three types.

Motor nerves send messages from the central nervous system to the muscles to help someone walk, pick up a glass, or sit on a chair. Damage to motor nerves can cause muscle weakness, cramps, and spasms. Motor nerve neuropathy can even make it hard to move arms or legs.

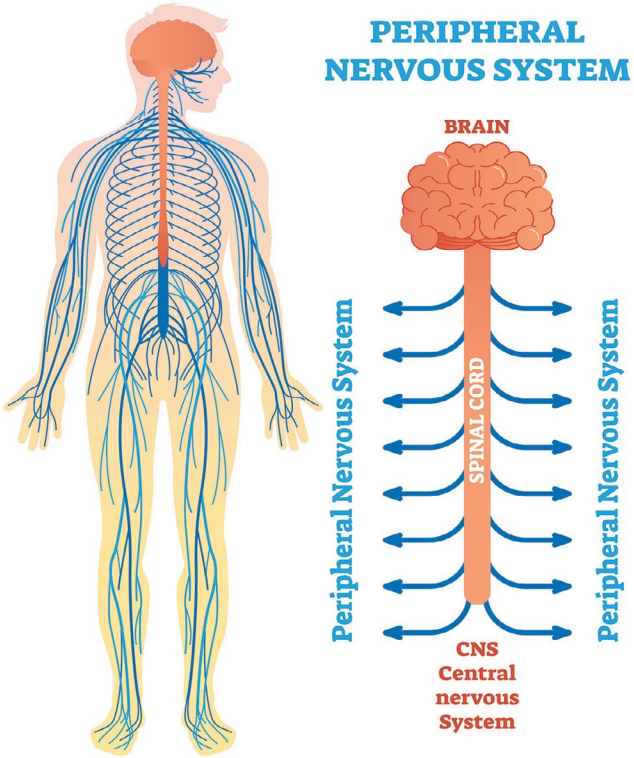
Sensory nerves carry messages from the far reaches of the body back to the spinal cord and brain. Sensory nerves in the skin helps a person determine whether something is hot or cold, for example, while the sensory nerves in the muscles tell the brain whether the person's legs are in motion or not. These nerve fibers also allow someone to feel pain and other sensations, so damage to sensory nerves can result in pain, tingling, numbness, extreme sensitivity to touch, and other symptoms of neuropathy.

Autonomic nerves carry out involuntary or semi-involuntary actions, such as maintaining a heartbeat and controlling breathing, blinking, blood pressure, and digestion. Damage to autonomic nerves can result in dizziness when standing, excessive sweating, trouble swallowing, nausea and vomiting, diarrhea and more. Autonomic nerve damage can even lead to sexual dysfunction.

Peripheral Nerve Size

Scientists classify peripheral nerves according to size, determined by the thickness of the protective myelin coating encasing the nerve.

Heavily myelinated large nerve fibers provide motor strength, vibratory sensation, and touch sensation. The thick myelin coating allows for very fast transmission of signals. Damage to these nerves interferes with the muscles' ability to contract, resulting in weakness, twitching, cramps and spasms. Injury to large nerves can negatively affect the individual's sense of touch and vibration in ways that can ultimately cause him or her to lose balance and experience poor coordination. Damage to large nerve fibers tends to occur slowly over time.



Small nerve fibers have very thin myelin sheaths or no myelin at all. Found mostly in skin and involuntary organs like the heart and kidneys, these small nerve fibers control autonomic functions, temperature sensations, and pain sensations. Damage to small nerve fibers can cause numbness, burning pain, deep pain, stabbing pain, pins-and-needles sensations, and electrical shock-like sensations. Small nerve damage can even result in extreme sensitivity to touch, which can make the light pressure of clothing against the skin or a bed sheet on the individual's feet or legs unbearable.

Damage to small nerve fibers can happen quickly, with symptoms typically beginning at the soles of both feet. Symptoms usually spread up the legs and to other parts of the body as neuropathy progresses. When neuropathy reaches the calves, it can begin to affect the rest of the body.

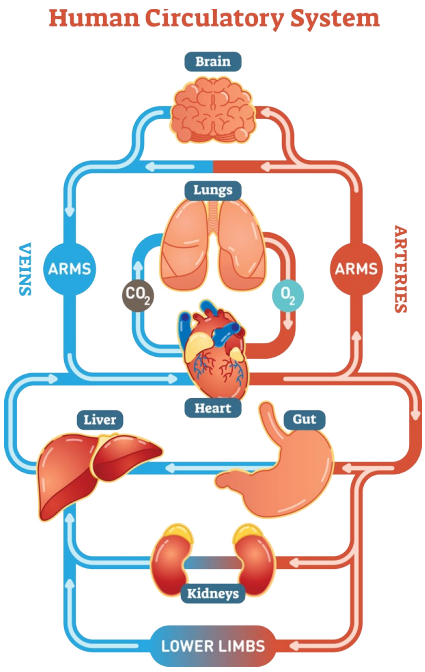
Many people begin to develop symptoms in their hands, for example, as the damaging effects of neuropathy reach their arms and expand to the rest of the body. Since the symptoms often affect the hands and feet, areas of the body that socks and gloves might cover, some refer to this as "stocking and glove" sensation.

Damage to small nerves can lead to dry skin, as damaged nerves may do a poor job of telling the skin to produce new cells. Widespread damage to small nerves can cause dysfunction in other organs as nerves lose their ability to control other autonomic functions, such as controlling digestion or blood circulation.

Symptoms are often worse at night. During the day, your brain is busy managing the details of your life. At night, however, your brain has much more time to focus on aches, pains and tingling caused by dysfunctional nerves associated with neuropathy.

Chapter 4 - Shocking Facts About Your Medications and Neuropathy

Good blood circulation is essential for the health of every cell in the body, including the neuron cells of the nervous system.



Arteries carry oxygen- and nutrient-rich blood from the heart to the rest of the cells in the body, which use the oxygen and nutrients to perform various functions. In the course of their work, body cells produce toxic byproducts. Veins carry the oxygen-poor, toxin-rich blood away from the cells and back up towards the heart.

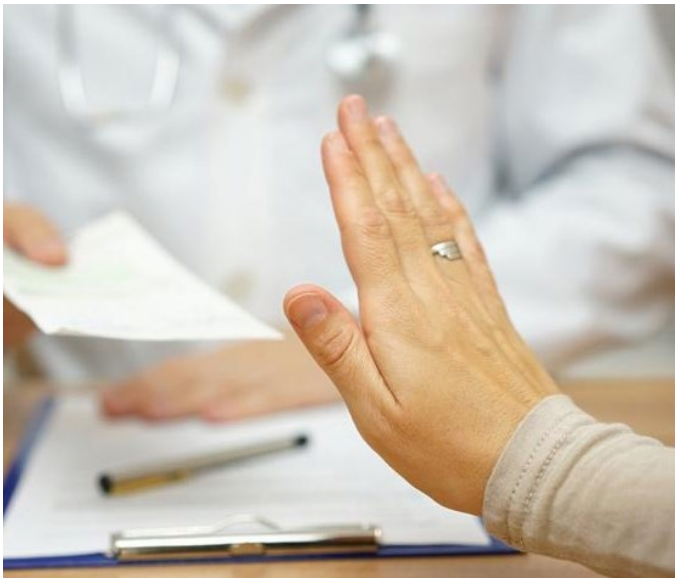
Like the cells in other body systems, neurons depend on the oxygen- and nutrient-rich blood delivered by arteries. In fact, the nutrients in blood provide synapses with minerals that make it easier for messages to leap from one neuron to another.

Many common medications can cause neuropathy by preventing nerve cells from getting the oxygen and nutrients they need to function well. Doctors frequently prescribe antihypertensive drugs to treat high blood pressure, for example. Antihypertensives work in several ways to lower blood pressure, also known as hypertension. Some cause the body to lose salt and water, which decreases the volume of blood within the veins. Other antihypertensives work by blocking the production of a substance that tightens blood vessels, thereby allowing blood vessels to expand in response to the high pressure of blood inside.

High blood pressure medication lowers the amount of pressure blood exerts against the walls of blood vessels, but it also reduces the body's ability to refill those blood vessels with oxygen- and nutrient-rich blood. This means blood pressure medications can prevent blood vessels, particularly those in the faraway peripheral areas of the body, from delivering oxygen and nutrients to the nerves serving these areas. In time, lack of oxygen and nutrients will lead to cell death, demineralization of the synapses, and decreased conductivity of the nerve, which can ultimately damage the nerve.

Lack of oxygen and nutrients can damage peripheral nerves and interrupt transmission of messages. Nerves and the synaptic junctions that connect them respond to low levels of nutrients and oxygen by shrinking, which creates larger gaps between neurons. This means messages have to jump further to leap from one nerve cell to another. Eventually the gap grows too large for the signals to cross, so messages either never reach their destination or reach the wrong destination, where the body part misinterprets the misdirected communication as a pain signal, cold signal, or other inappropriate message.

Sometimes the impulses pile up on the dendrite side of the synapse until the signal is strong enough to leap over to the receiving axon. The brain interprets this sudden burst of synaptic energy as a sharp, stabbing, or shooting pain.



Other commonly prescribed medications can cause peripheral neuropathy. Statins lower cholesterol by breaking down fat, but this action also breaks down the fat in myelin sheaths and increases the risk of peripheral neuropathy. In fact, research[5] shows that people taking statins were 14 times more likely to develop neuropathy than were those who did not take the cholesterol-lowering medication. Taking large doses of statins or using statins for a long time increases this risk.

The use of antidepressants has skyrocketed recently, with the percentage of Americans using antidepressants jumping from 6.8 percent to 13 percent[6] between 1999 and 2012.

Antidepressants may cause neuropathy indirectly by increasing the risk for diabetes[7]. Antidepressants interfere with the way muscles absorb sugar from the bloodstream. When muscles do not absorb sugar, also known as blood glucose, the sugar continues to circulate in the bloodstream. In time, sugar accumulates in the bloodstream to cause the high glucose levels associated with diabetes. Glucose is very potent, and exposure to high levels of glucose can damage nerves and blood vessels. Prolonged exposure to glucose can damage delicate dendrites and axons.

In some cases, the insulin used to control high blood glucose can damage nerves. People with diabetes usually take insulin shortly before a meal. A person might experience insulin shock, a painful condition, after taking insulin without eating food. A condition known as "insulin neuritis[8]" or "treatment induced neuropathy" may also cause neuropathy pain associated with insulin use. Insulin resistance[9], which is a problem where the body cannot absorb insulin properly, can also cause peripheral neuropathy.

Over-the-counter pain relievers, which are among the most widely used medications among American consumers, can damage the liver and kidneys in ways that lead to the development of peripheral neuropathy. The liver and kidneys remove cellular byproducts and other toxins from the bloodstream. Liver or kidney damage interferes with the body's ability to cleanse the blood and allows toxins to accumulate in the bloodstream and body tissues, and this toxic accumulation can damage nerves. More than 70 percent[10] of people with liver disease have neuropathy.

Even taking aspirin can lead to neuropathy, as long-term use of this non-prescription analgesic can deplete the body of folic acid, iron, potassium, sodium, vitamin C and other nutrients nerves use to transmit messages.

Many medications can lead to neuropathy. Here are just a few of the many medications that may cause peripheral neuropathy:

Heart or blood pressure medications:

- *Amiodarone*
- *Hydralazine*
- *Perhexiline*

Cancer drugs:

- *Cisplatin*
- *Docetaxel*
- *Paclitaxel*
- *Suramin*
- *Vincristine*

Drugs used to fight infections:

- *Chloroquine*
- *Metronidazole (Flagyl)*
- *Isoniazid (INH), used against tuberculosis*
- *Nitrofurantoin*
- *Thalidomide (used to fight leprosy)*

Drugs used to treat autoimmune disease:

- *Etanercept*

Some of the medications prescribed to treat neuropathy were not intended to be neuropathy treatments. Antidepressants are the third most widely prescribed group of medications on the U.S. market today, according to the CDC[11], behind analgesics that reduce pain and drugs to reduce cholesterol.

Chapter 5 - What Your Doctor Didn't Tell You!

Some of the most common causes of neuropathy include:

- *Diabetes*
- *Medications*
- *Chemotherapy/radiation*
- *Physical injuries*
- *Surgery*
- *Exposure to lead, mercury, chromium, arsenic and other heavy metals*
- *Environmental chemicals and toxins, such as pesticides, MSG, and aspartame*
- *Malnutrition and nutritional deficiencies resulting from low-nutrient foods, processed foods and poor nutritional absorption associated with acid reflux, gluten intolerances, food sensitivities, Crohn's disease, IBS and other digestive conditions*

Diabetes is the leading cause of polyneuropathy (involving more than one nerve) in the United States. About 60 to 70 percent of people with diabetes[12] have mild to severe forms of damage to sensory, motor, and autonomic nerves that cause such symptoms as numbness, tingling, or burning feet, pain, and weakness.

Many medical conditions cause neuropathy. Metabolic syndrome, a group of risk factors that increase the likelihood of cardiovascular disease and diabetes, can increase the risk of neuropathy. Insulin resistance, a condition that interferes with muscles' ability to absorb glucose from the blood can also lead to nerve damage.

Some treatments can cause neuropathy. Chemotherapy and radiation to treat cancer do not differentiate between cancer cells and normal cells, so these treatments may damage nerve cells. Trauma from injury or surgery can damage neurons.

Certain lifestyle choices increase the risk for nerve damage. Drinking alcohol may cause neuropathy, as the toxic effects of alcohol can poison the nerves. Long-term use of alcohol can inhibit the body's ability to absorb nutrients from food and use them properly to nourish nerves.

Neuropathy can develop as the result of exposure to toxins from food, water, and the plastics and products in common use. Neurotoxins from these products are destructive and poisonous to the nervous system. Long-term exposure to these neurotoxins can ultimately damage nerve cells and disrupt their function, leading to neuropathy.

Exposure to mercury is of special concern as a neurotoxin. Doctors as far back as ancient Roman healers knew that mercury could cause illness. Modern medical professionals know that this heavy metal damages and kills nerves to cause adverse health effects and learning disabilities. The elderly and very young are particularly susceptible.

The highly processed and chemical-laden food common in the American diet is another cause of neuropathy. The Western diet is chock full of animal proteins that contain hormones and antibiotics, unhealthy trans-fat, excessive caffeine, an abundance of flavor enhancers, and too much alcohol. The body works hard to get rid of these toxic substances before they can do harm. A steady diet of unhealthy food, however, drastically overloads the body's natural detoxification processes.

Processed foods have additives that can damage nerves. Some additives, known as excitotoxins, overexcite neurons and cause the nerve cells to fire uncontrollably. Left unchecked, the over-excited neuron can die. Used as flavor enhancers and sweeteners, excitotoxins are pervasive in the food supply. The most common excitotoxins are monosodium glutamate (MSG) that makes meat taste meatier, and the sweetener aspartame, sold under the brand names NutraSweet and Equal.

Chapter 6 - Proven Treatments to Reverse Neuropathy

The first step in treating neuropathy is identifying its underlying cause. The second step in neuropathy treatment is to maintain muscle strength and function. The third and final step is to eliminate symptoms. Identifying the underlying cause of neuropathy is tougher than it might seem. It can also take longer than some might expect.

The average visit with a doctor lasts about 15 minutes[13] and typically covers six topics. Doctors and patients spend about five minutes discussing the longest topic, and spend only about 1.1 minutes on remaining topics. This means a doctor only has about 5 minutes to discover the underlying causes of neuropathy if that is the main reason for the visit. The doctor has only about one minute if the appointment was for another problem. A thorough diagnosis requires a lengthier consultation and evaluation that includes neurological examination.

A neurological examination may include tests such as, quantitative sensory testing (QST) and skin vasomotor testing that assess nerve function. In skin vasomotor testing, doctors measure changes in blood flow and temperature of the skin in the hands and feet in response to exposure to cold. QST determine a person's sensation and pain thresholds for cold and warm temperatures, and the vibration sensation threshold.

These tests accurately confirm the presence of neuropathies, especially the large and small fiber neuropathies associated with diabetes. Nerve conduction studies and electromyography may also be helpful.

Electromyography is a diagnostic procedure to assess the health of muscles and the nerve cells that control them (motor neurons). EMG results can reveal nerve dysfunction, muscle dysfunction or problems with nerve-to-muscle signal transmission.

A nerve conduction study, another part of an EMG, uses electrode stickers applied to the skin (surface electrodes) to measure the speed and strength of signals traveling between two or more points.

Once they make a diagnosis of neuropathy, doctors traditionally prescribe drugs to control the symptoms of peripheral neuropathy. The big problem with this approach is that these drugs do not actually treat the problem – they just mask the symptoms.

Neuropathy Treatment

Many view neuropathy as an incurable condition, one that patients just have to learn to live with.

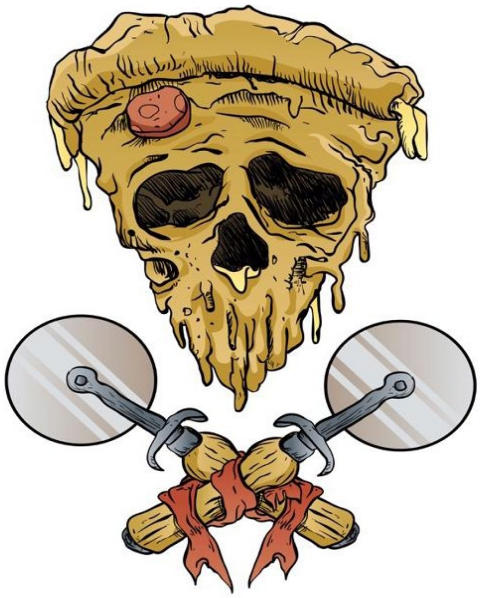
Recent research debunks this myth, however, showing that diet and exercise[14] can reduce neuropathic pain and even help regenerate nerve fibers in patients.

Restoring communication pathways between the brain and the rest of the body is the last step in healing peripheral neuropathy. Vitamins and minerals play an important role in restoring these pathways, so a nutritious diet and dietary supplements can also help.

Proven treatments to reverse neuropathies include:

- *A nutritious diet and dietary supplements can correct vitamin deficiencies*
- *Strict control over diabetes can reduce or prevent nerve damage associated with high glucose levels*
- *Detoxifying the body to remove nerve-damaging toxins*
- *Non-surgical treatments that reduce pressure on compressed nerves, as happens in carpal tunnel syndrome*

Chapter 7 - The Foods You Eat May Be Killing Your Nerves



While obesity rates soar, more Americans are malnourished and mineral deficient than ever before. Aggressive agricultural cultivation practices have stripped the soil of beneficial minerals and nutrients. Nutrient-poor soil produces nutrient-poor food that, in turn, produces nutritional deficiencies.

The food grown today does not have the nutritional value it had a century ago. Processing and handling of food has also changed dramatically. Once consumed within a few hundred miles of where it grew, food now crisscrosses the country – and sometimes the globe – before it reaches the plate. Chemical stabilizers help freshly picked food make the long trip. Each of these factors minimizes the nutritional value and vitality of food.

What's worse is a steady diet of fake foods, such as highly processed meat products, frozen meals, boxed foods and fast foods. American consumers eat out more often now than ever, and they eat larger meals. They guzzle soft drinks but shun water, and avoid fresh vegetables like the plague.

Americans also eat a large amount of refined grains instead of whole grains. Processing grains removes some of its most important nutrients. Refining grains can remove as much as 80 percent[15] of the dietary fiber, for example. Refining brown rice into white rice destroys a significant amount of the vitamins, minerals, fiber, and healthy fatty acids that the natural grain provides.

Consuming large amounts of calorie-rich, nutrient-poor processed foods has led to one of the largest health problems facing Americans today – obesity. Busy schedules foster poor eating habits and sedentary lifestyles. Families no longer sit down for home-cooked meals. Instead, they catch meals on the run from fast food joints.

Sugar consumption among adults in the U.S. increased by more than 30 percent[16] in just over 30 years, with Americans consuming 228 calories from sugar daily in 1977 to 300 calories daily in 2009. Consumption of crackers, chips and other processed grains have increased, as have soft drink and cheese consumption.

Many processed foods contain toxins, such as:

- *Neurotoxic sweeteners*
- *Processed salt*
- *Artificial flavors*
- *Trans fats*
- *Food colorings*
- *Preservatives and chemicals*

Because they eat nutrient-poor foods, many Americans are malnourished – even as they struggle with weight gain and obesity. Malnutrition occurs as the result of inadequate calorie intake, but malnutrition may also be due to a steady diet of nutrient-poor food.

Widespread malnutrition is leading to nationwide deficiencies. Many Americans struggle with vitamin D deficiency, for example. Vitamin D is instrumental in muscle and nerve function, so vitamin D deficiencies can cause nerve inflammation that leads to neuropathy.

Chapter 8 - Nutrients to Heal the Nerves

As with other parts of the human body, nerves undergo continual maintenance and repair. An ongoing supply of quality nutrients supports this regenerative process.

Research shows a number of antioxidants, nutrients, vitamins, minerals and herbs help protect the body against nerve damage and are essential for maintenance and repair processes.

Antioxidants prevent cell damage resulting from oxidation, which is a process that occurs when a cell is exposed to oxygen during the normal course of cellular function. Oxidation can damage nerve cells and lead to neuropathy. In some cases, the cell simply dies and is replaced with a new cell.

Interaction with oxygen changes cells. Oxidation can cause a molecule inside the cell to lose an electron and become a free radical. Becoming a free radical changes the cell, and these changes can alter the way the cell behaves and functions.

The damage from oxidation can spread to other cells. Free radicals spend their time looking for a replacement electron, which they “steal” from another cell. This causes other cells to become free radicals.

Becoming a free radical can also damage the cell’s DNA, causing mutations that replicate each time the cell divides. Left unchecked, this can lead to chronic illness and disease.

Antioxidant Foods

Eating foods high in antioxidants can prevent this damage or help reverse some of the harmful effects of free radicals.

Foods high in antioxidants include:

- *Blueberries*
- *Cranberries*
- *Elderberries*
- *Strawberries*
- *Blackberries*
- *Raisins*
- *Acai berries*
- *Prunes*
- *Spinach*
- *Kale*
- *Raw cocoa bean*

Vitamins - Supplement Your Nutrition

Vitamin C plays a major role in protecting nerve cells from oxidative stress. The vitamin also acts as a natural anti-inflammatory[17]. Vitamin E is another antioxidant that can protect neurons from free radicals.

Alpha lipoid acid (ALA) is a potent antioxidant that helps the body convert glucose into energy, so it helps lower blood sugar to prevent nerve damage. ALA helps restore vitamin C and E levels to promote nerve repair, particularly in patients with diabetic neuropathy. ALA also improves conduction of messages to enable proper signaling to muscle fibers.

N-acetylcysteine (NAC) is an amino acid with powerful antioxidant effects, and gamma linolenic acid (GLA) is an amino acid that helps diminish the symptoms of diabetic neuropathy. Another antioxidant, acetyl l-carnitine, protects nerves, expedites nerve regeneration, and improves the speed of signal transmission.

Omega-3 fatty acids are a crucial component of cell membranes, including the myelin sheath that protects nerves. Omega-3 fatty acids, naturally occurring in fatty fish, support[18] the nerve repair process.

B vitamins may be the most important group of vitamins for nerve regeneration. Vitamin B1, also known as thiamine, is essential for the synthesis of DNA. Niacin, also known as vitamin B3, helps build, repair and maintain the nervous system. Pantothenic acid, or vitamin B5, supports the production of neurotransmitters responsible for the firing of nerve impulses. Vitamin B5 also helps build and protect the myelin sheath.

Other vitamins, such as benfotiamine[19] and vitamin B12[20] can alleviate the symptoms of peripheral neuropathy.

Benfotiamine is a fat-soluble version of vitamin B1. What does this mean? It means this special form of vitamin B1 can be taken orally in large dosages and it will not flush out of the body the way ordinary Thiamine (vitamin B1) does.

Methylcobalamin, a form of vitamin B12 (also called Methyl B12), is the form of vitamin B12 that can be directly utilized by the body. Methyl B12 can be taken orally and is immediately available to the body much like injectable vitamin B12.

Chapter 9 - Rebuilding Nerves...One Meal at a Time

A healthy diet is important for everyone, but particularly for those with chronic illnesses, such as peripheral neuropathy.

Choosing the right foods and preparing them correctly can improve symptoms of neuropathy and even prevent its development.

Whole grains and beans provide a number of B vitamins. Fish and eggs are good sources of vitamins B12 and B1. Leafy green vegetables contain calcium and magnesium, which are essential for healthy nerve endings and nerve impulse transmission. Broccoli, cauliflower and other cruciferous vegetables are rich in vitamin E, while yellow, red and orange fruits and vegetables are good sources of vitamins A and C.

Some foods fight inflammation to reduce neuropathy. Inflammation-fighting foods include kelp, salmon, turmeric, shiitake mushrooms, celery, green tea, papaya, and pineapple. Cherries, ginger, and garlic are also effective anti-inflammatory foods.

Fruits and vegetables contain flavonoids, which are chemicals inside food that provide many health benefits. Some flavonoids have a neuroprotective effect, which means they can actually protect nerves from damage. There are many types of flavonoids[21], including anthocyanidins, flavan-3-ols, flavonols, flavanones, flavones, and isoflavones. Blueberries are very good for nerves because the delicious fruit contains anthocyanins, which have a potent neuroprotective effect[22].

Fresh, raw fruits, vegetables and nuts have the most nutritional value, as cooking can destroy some nutrients. Low heat cooking helps preserve nutrients.

Menu planning is essential to rebuilding nerves. Planned meals help consumers avoid the temptation to stop for fast food. It also promotes regular trips to the grocery store for fresh, whole ingredients that contain healthy amounts of fat, protein, carbohydrates, fiber, and water.

Chapter 10 - Move it...And Lose the Neuropathy

Immobility is a problem for people with neuropathy, as pain, muscle weakness, loss of balance, and other symptoms can make physical activity challenging.

Exercise, however, is an integral part of neuropathy recovery. Therapeutic exercise can increase range of motion, improve muscle movement, and optimize heart rate. Physical activity can also stimulate blood circulation, which increases blood flow to strengthen nerve tissue. Exercise can also lower blood glucose levels to reduce the effects of diabetic neuropathy.

Research shows that resistance training and aerobic exercise[23] provided significant improvements in neuropathy symptoms. Other research shows yoga[24] helps. Walking, swimming, jogging on a treadmill, and rowing improve muscle strength and helps people lose weight.

Hand and leg exercises can reduce symptoms of neuropathy by strengthening muscles, stimulating circulation that promotes healing, and reducing inflammation. Hand exercises involve touching fingertips to thumb to promote healing there, while seated leg raises reduces neuropathy in feet.

Those with neuropathy should begin new exercise routines slowly to avoid injury. Individuals with heart problems or other serious conditions should consult with a physician before they engage in new activities.

Chapter 11 - You Have the Information – What's Next?

You can overcome the pain, the tingling, the numbness, etc. by changing your life in just 6 steps!

Step 1:

- [x] **Review your diet. Are you eating the right kind of foods? Make any changes as needed.**

Step 2:

- [x] **Start an exercise routine. You can start by doing a walking program, even if it is only walking for 20 minutes, 3 times a week.**

Step 3:

- [x] **Find a health care practitioner (medical doctor, chiropractor, nutritionist, etc.) who will work with you to help you improve the quality of your life.**

Step 4:

- [x] **If you are taking any medications that may be causing neuropathy, speak with your doctor about them.**

Step 5:

- [x] **Find and take the right nutritional supplements that will help you improve your health and well-being.**

Step 6:

- [x] **Be patient. Give your body the time it needs to heal.**

Neurologists will tell their patients that it can take a long time to get nerves to repair, but this is only if the body has what it needs in order to do the repair.

The nerves could have been damaged quickly or slowly. When it occurs slowly, a person may not notice it until long after it's begun — only when the symptoms of the damage show up.

Repair is the same way. It can occur quickly or slowly. The nerves use nutrients to repair, in fact the whole body does. It must repair to a certain point, before the symptoms start subsiding and sometimes this can take time.

You have already taken the most important step towards better health by getting real information you can use to improve the health and wellness of your body.

The rest is up to you.

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