



Using Laser Therapy to Treat  
Chronic Knee Pain and Peripheral

# Neuropathy

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Kirk Eriksen, DCM

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## PART I

### WHO, WHAT, WHY

*“After all, chiropractic was not developed for the chiropractor; but for the patient who is subluxated. Likewise, the ultimate purpose of research should be to benefit patients through the development and improved understanding...”*

*— Kirk Eriksen*

# UPPER CERVICAL SUBLUXATION COMPLEX

*A Review of the Chiropractic  
and Medical Literature*

# ORTHOSPINOLOGY PROCEDURES

*An Evidence-Based Approach to Spinal Care*

## CHAPTER 1

## WHO IS KIRK ERIKSEN

Kirk Eriksen, DC, became passionate about chiropractic care from seeing what a miracle it can be - first hand through some pretty traumatic injuries. He then attended and received his Doctor of Chiropractic degree from Life College School of Chiropractic. He has also completed a 120-hour certification in physical therapy/rehabilitation.

In 1994 Dr. Eriksen received Board certification from the Society of Chiropractic Orthospinology, after passing stringent tests in x-ray proficiency and spinal correction. He has also attained Certification in Chiropractic Spinal Trauma (CCST). This year-long postgraduate certification involved advanced course-work in spinal trauma, neurology, radiology, injury mechanism physics, case management, and med-legal aspects.

Kirk Eriksen, D.C. has been on the Executive Board of Directors for the Society of Chiropractic Orthospinology since 1994. He is on the editorial review board for the Journal of Upper Cervical Chiropractic Research. Dr. Eriksen is a renowned lecturer and who has taught doctors all across the U.S. as well as in Europe and Central America. He has published several research studies and has authored two landmark textbooks—Upper Cervical Subluxation Complex: A Review of the Chiropractic and Medical

Literature and Orthospinology Procedures: An Evidence-Based Approach to Spinal Care, which were both published by Lippincott Williams & Wilkins.

### **Professional Education:**

Doctor of Chiropractic Degree, Life College School of Chiropractic, 1993

Board certification, Society of Chiropractic Orthospinology, 1994

Certification in Chiropractic Spinal Trauma (CCST)

### **Awards:**

1997—Chiropractor of the Year (Alabama Chiropractic Council)

2004—Chiropractor of the Year (Society of Chiropractic Orthospinology)

2006—Researcher of the Year (World Chiropractic Alliance)

2010—Dr. Christopher B. Kent Award for Scientific Excellence

### **Publications:**

Waldridge BM, Salazar T, Stanton MB. Techniques for Assessment of Fetal Well-Being. *Compendium of Veterinary Medicine Equine*. 2007; 6: 324-336.

Pugh DG, Stanton MB. Llama and Alpaca Reproduction. In: Youngquist's Current Therapy in Large Animal Theriogenology, Second Edition. St. Louis Missouri: Saunders's Elsevier 2007.

Stanton MB, Steiner JV, Pugh DG. Endometrial Cysts in the Mare. *Journal of Equine Veterinary Science*. 2004. 24:14-19.

UPPER CERVICAL  
SUBLUXATION COMPLEX

ORTHOSPINOLOGY  
PROCEDURES

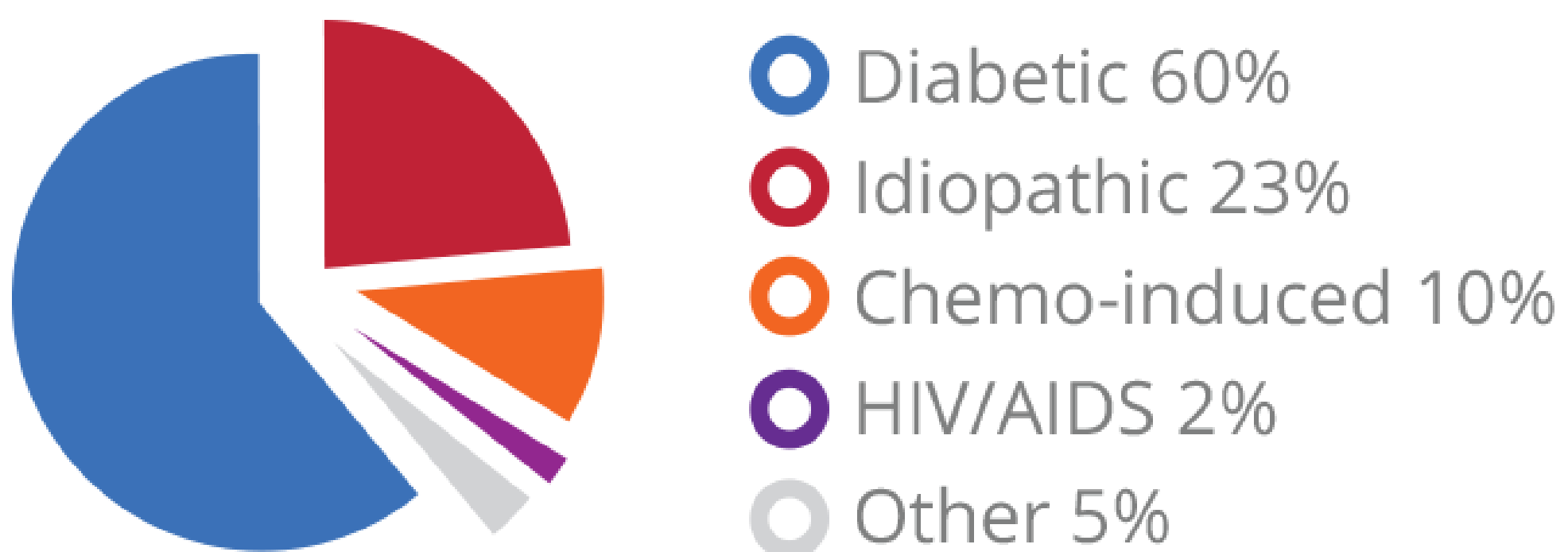
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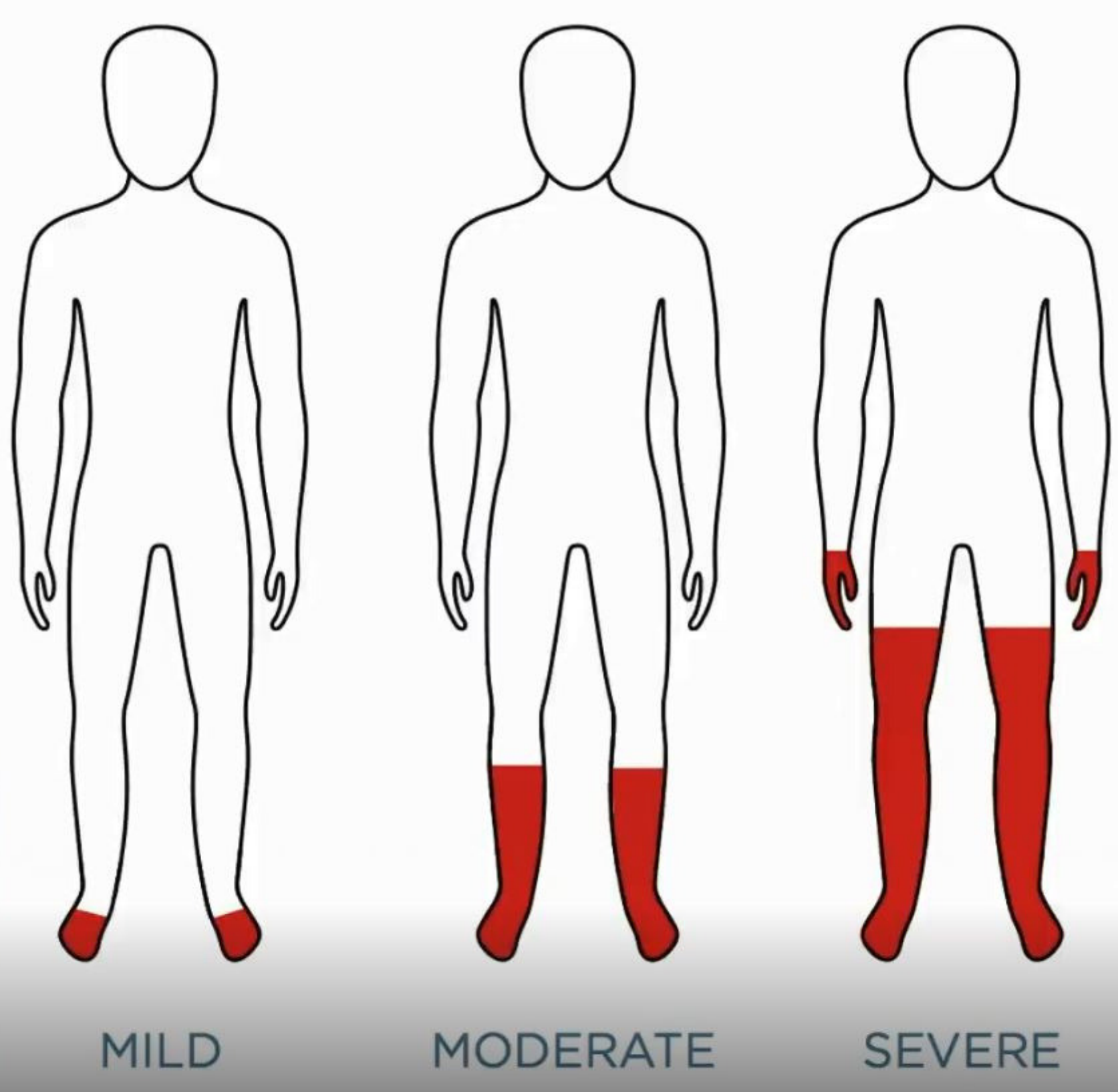
## CHAPTER 2

# PERIPHERAL NEUROPATHY & CHRONIC KNEE PAIN

The number one cause of **Peripheral Neuropathy**, as most of us know, is diabetes. According to the Foundation of Peripheral Neuropathy, 30 million American people suffer from some type of neuropathy and between 60-70% of those have diabetic peripheral neuropathy. In other words, between 18 and 21 million Americans are dealing with diabetic neuropathy.

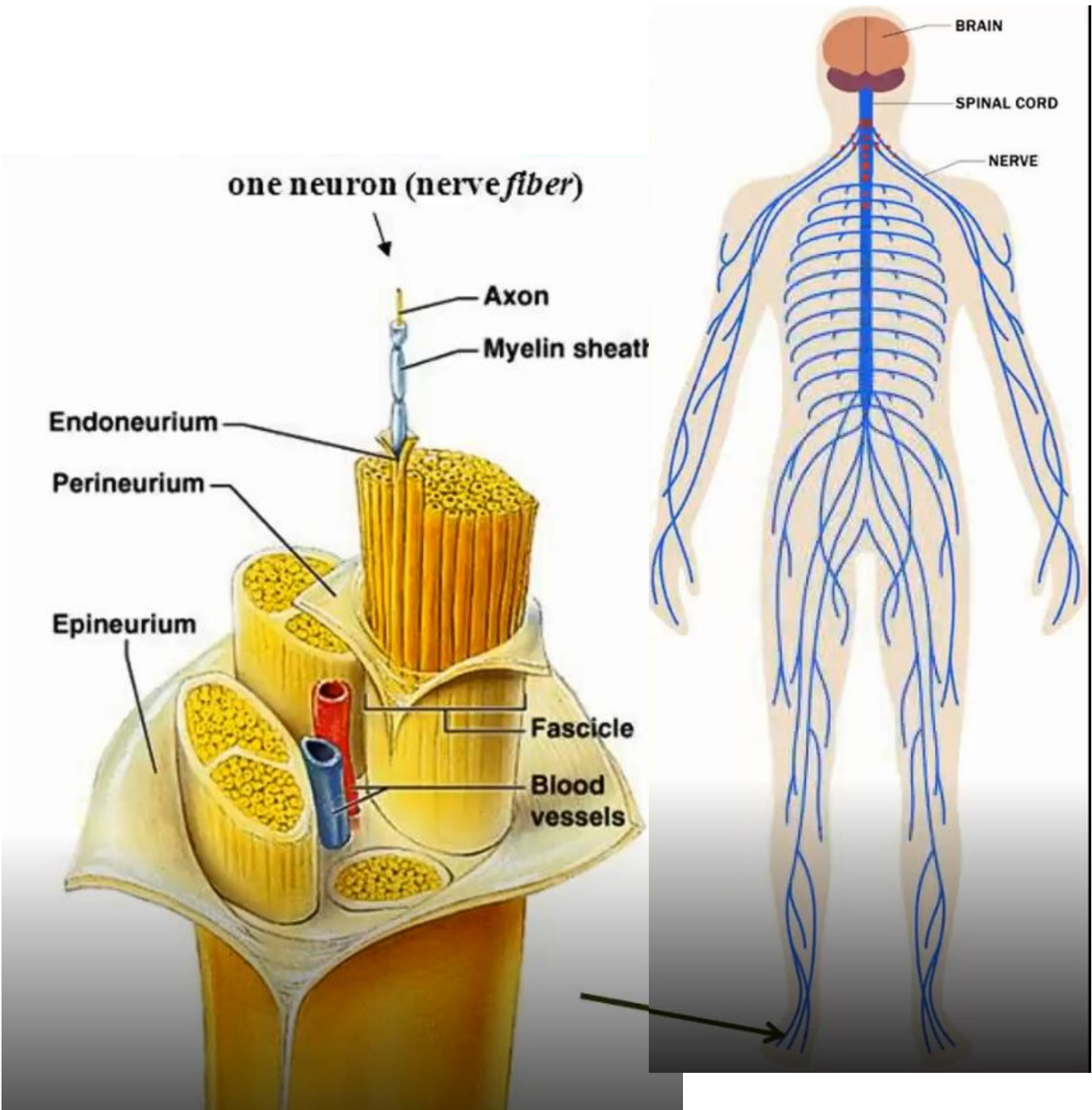


The Cleveland Clinic estimates that 25-30% of Americans will be affected by diabetic peripheral neuropathy.

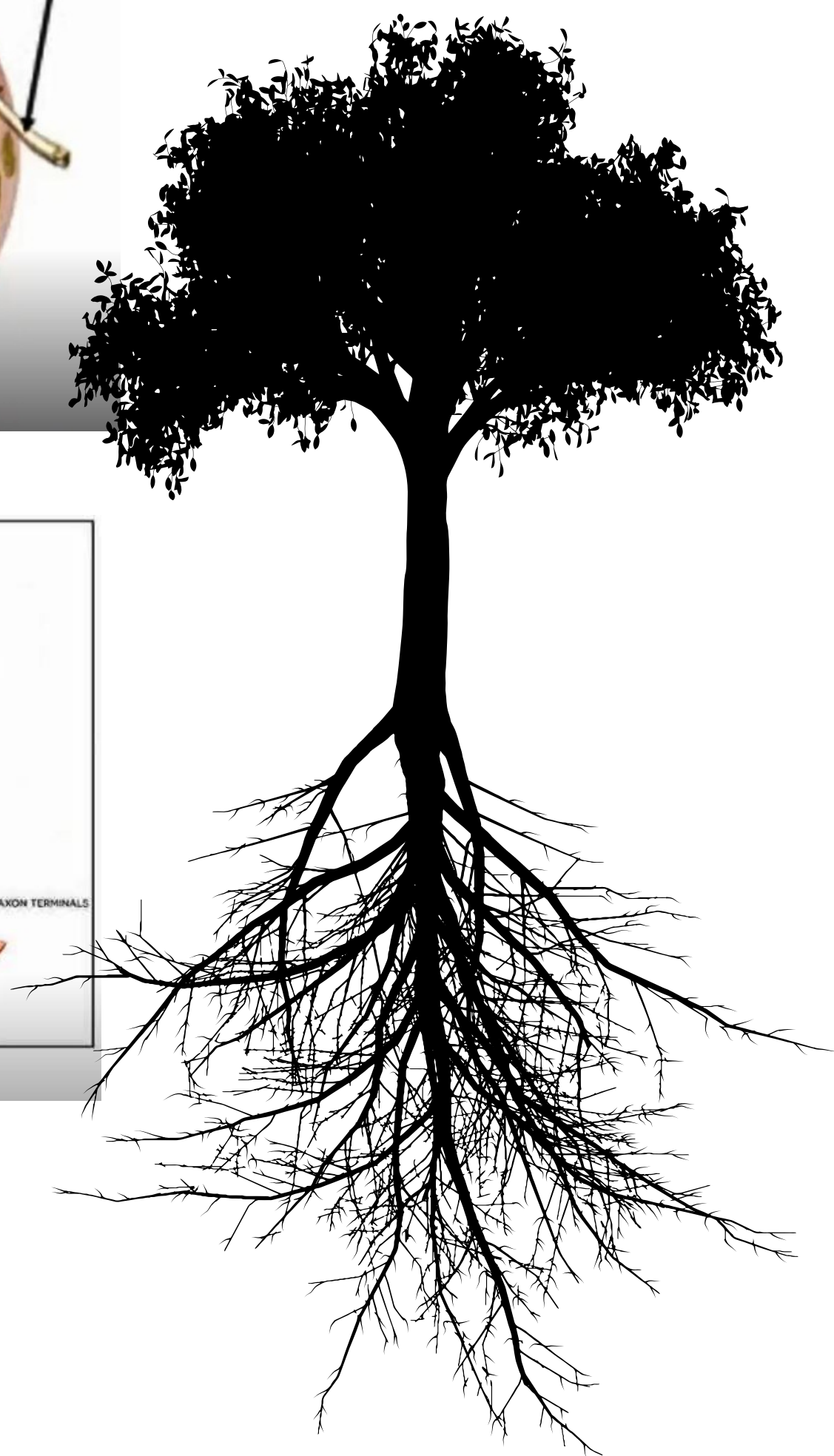
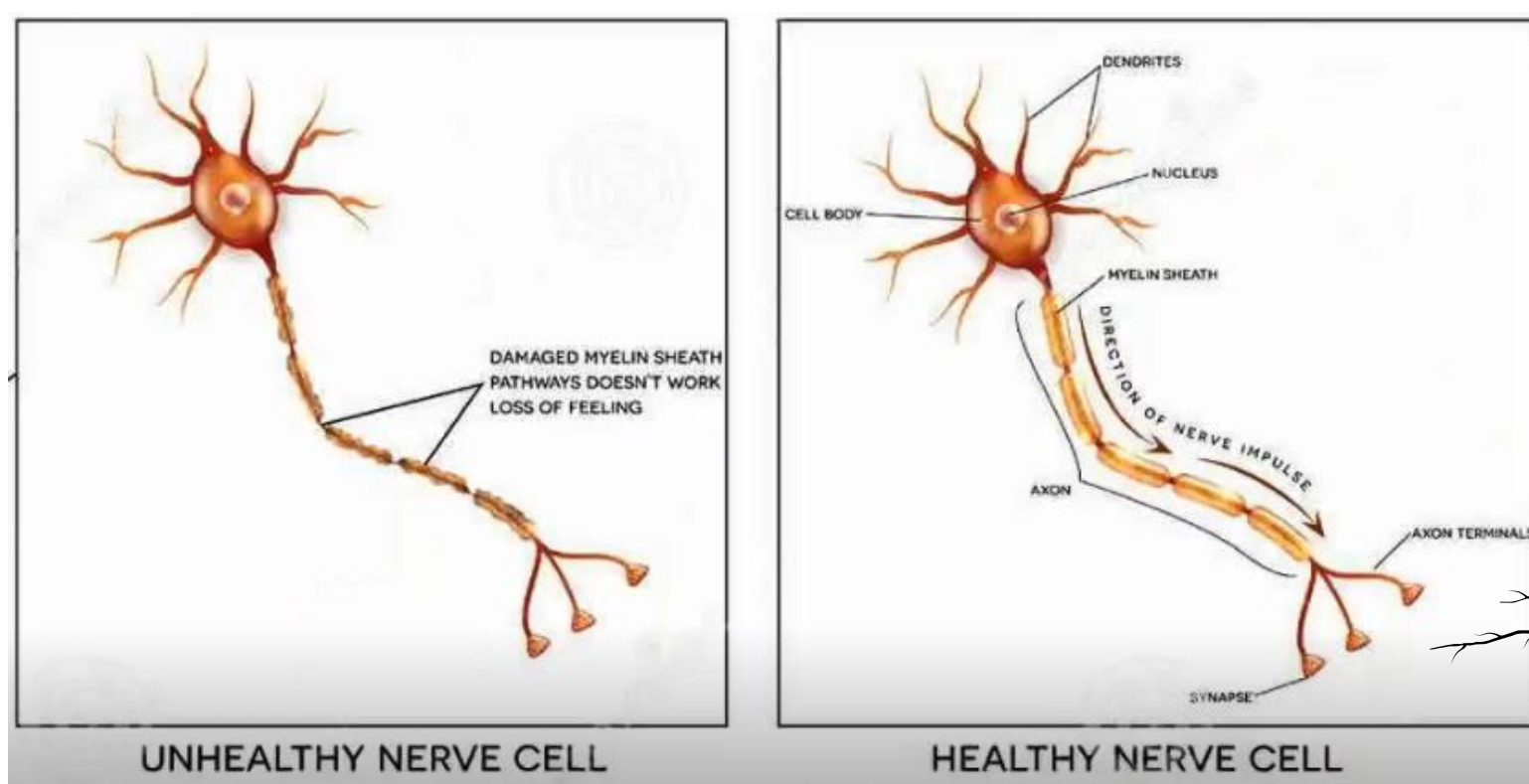
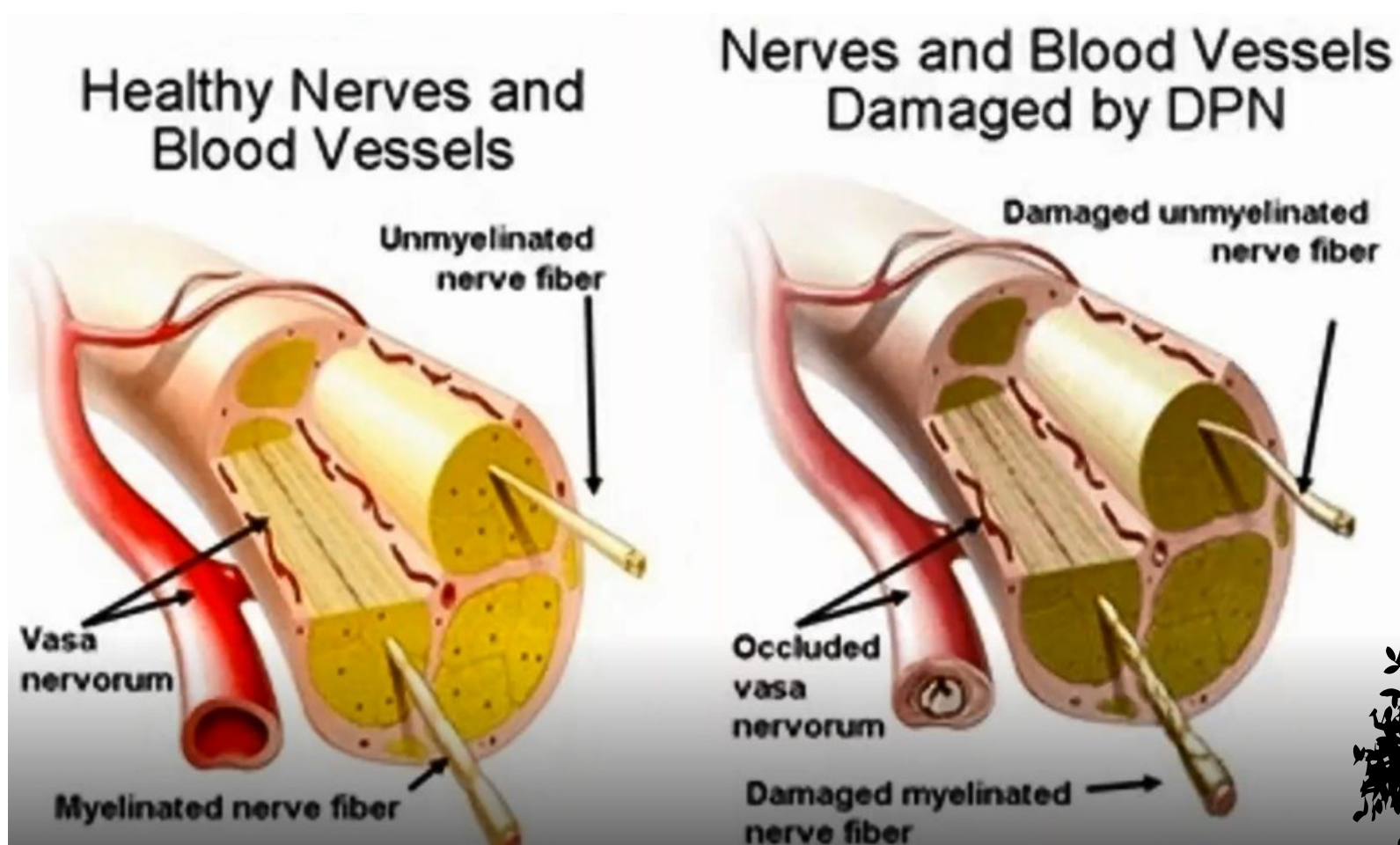


*HOW DOES NEUROPATHY DEVELOP?*

Although peripheral neuropathy doesn't involve larger nerves such as the brain, spinal cord, or sciatic nerve, but the small peripheral nerves. More specifically it is the tiny nerves on the end that are starting to degenerate and break down.

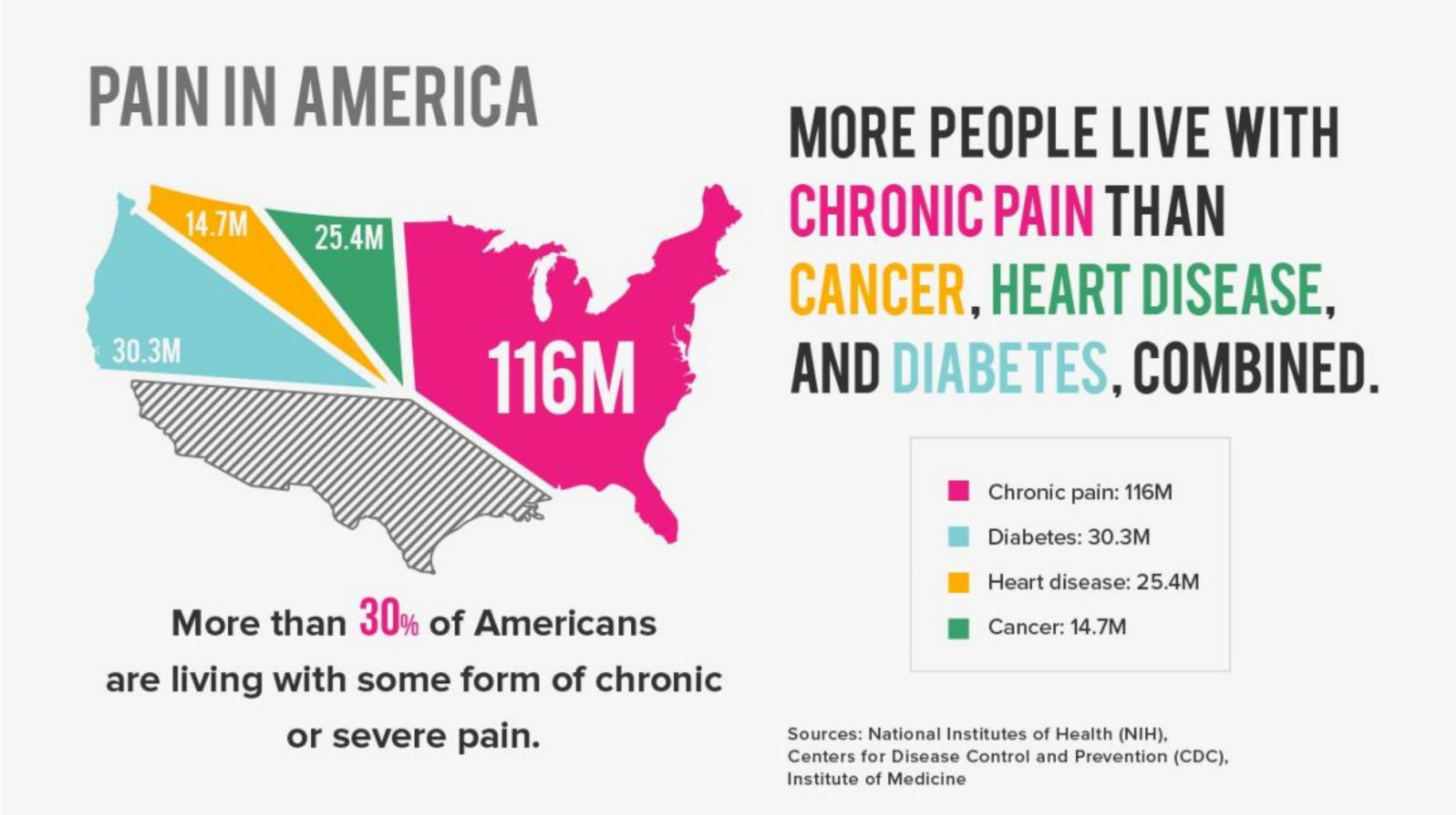


It is very likely that the cause of this could be that the blood supply to the nerve may be compromised. This would cause the nerve to begin degenerating and withering.



*"If this tree is a nerve, and the roots here are blood vessels feeding that nerve life... For that tree to be healthy, it has to get enough water nutrients and minerals delivered through the roots. If we compromise that, we have a tree that is starting to die! However, if we start to water that tree and provide it with the nutrients and minerals it needs, that tree will start to grow again. But if we wait too long, that tree can be dead for good. In the case of nerves, it comes down to the blood supply." -Kirk Eriksen*

According to the current study by Nguyen and colleagues, frequent knee pain affects 25% of adults, and osteoarthritis is the most common cause of knee pain in adults 50 years and older. In recent years, the rate of knee replacements has surged. Rates have tripled in women in the United Kingdom and have increased 8 times in the United States among those 65 years and older. Knee pain, just like neuropathy, can be debilitating and even further, life-threatening to certain patients in specific situations.





## *CHAPTER 3*

# WHY THEY NEED SOLUTIONS

Here is some food for thought...

As of February 7th, 2019, the American population totals at 328,163,985 based on the latest United Nations estimate. This then being known, neuropathy and chronic pain put together affects almost HALF of the American population.

Symptoms of these conditions are no light matter and can sometimes end up causing trouble for people who are less able to care for themselves.

There is not a "cure" medication available to those who suffer with the symptoms associated with chronic pain or peripheral neuropathy. So, how are these people getting treated?

## PART II

### HOW

*“It isn't by getting out of the world that we become enlightened, but by getting into the world...by getting so tuned in that we can ride the waves of our existence and never get tossed because we become the waves.”*

*— Ken Kesey*

A close-up photograph of a hand holding a single, translucent yellow capsule between the thumb and index finger. The background is a soft, out-of-focus light gray.

## CHAPTER 4

# TREATMENTS

So, what does modern medicine have to offer people who suffer from neuropathy? Treatment goals are to manage the condition causing neuropathy and to relieve symptoms.

- **Lifestyle:** Some basics for neuropathy patients: **Take care of feet**, especially if diabetic. **Regular exercise**, such as walking three times a week. **Quit smoking**. Cigarette smoking can affect circulation, increasing the risk of foot problems and other neuropathy complications. **Eat healthy meals**. Good nutrition is especially important to ensure that you get essential vitamins and minerals. **Avoid excessive alcohol**. **Monitor your blood glucose levels**.
- **Alternative Medicine:** Acupuncture, Alpha-lipoic Acid, Herbs, and amino acids such as acetyl-L-carnitine.

- **Medications:** **Pain relievers.** Over-the-counter pain medications, such as nonsteroidal anti-inflammatory drugs, can relieve mild symptoms. **Opioids.** Such as tramadol (Conzip, Ultram) or oxycodone (Oxycontin, Roxicodone, others), which can lead to dependence and addiction. **Anti-seizure** medications such as gabapentin (Gralise, Neurontin) and pregabalin (Lyrica). As you are most likely aware of, the side effects of these medications are not great for patients. **Topical creams,** such as Capsaicin. **Antidepressants.** Certain tricyclic antidepressants, such as amitriptyline, doxepin, and nortriptyline (Pamelor).
- **Therapies:** Transcutaneous electrical nerve stimulation (TENS) applied daily for a month before seeing results. **Plasma exchange and intravenous immune globulin,** which involves removing your blood, then removing antibodies and other proteins from the blood and returning the blood to your body. **Physical Therapy, or surgery.**

How about treatments for chronic knee pain? Each underlying cause of chronic knee pain has a specific type of treatment. These treatments may include:

- **physical therapy**
- **medication**
- **surgery**
- **injections**

Bursitis, a common cause of knee pain, is treated in the following ways:

- **Ice the knee**
- **Wear cushioned, flat shoes that support feet**
- **Avoid sleeping on sides. When lying on your side, keep a pillow between your knees**
- **Stay seated when possible**
- **Lose weight if you are overweight or obese**

All of these treatments and directions on how to deal with these situations are great, however, they may not work for all. Surgical procedures can be too risky for some patients due to other complications. Medication can help, but at what cost to the patient? Are there any other ways to treat, or successfully relieve pain, for the unbelievably high number of these patients?

During the webinar "Using Laser Therapy to Treat Peripheral Neuropathy and Chronic Knee Pain", Doctor Kirk Eriksen describes his strategy in using MLS Laser Therapy to treat these patients. The first step he describes in his process is using a detailed history form. This will help you determine the best and safest way to manage the treatment protocol.

*"A lot of chiropractors, even myself at one point, had the attitude of 'hey, I'm a chiropractor... what I can do for neuropathy may work, or it may not work' and I would assume other medical professionals would be able to help these patients in a better way - but I was wrong! That's why this is the perfect niche to get involved with." -Kirk Eriksen*

Due to the fact that MLS Laser Therapy treatments are not covered by health insurance, this makes two things stand out. One, you will be adding a cash-based modality to your practice, which is a great way to stay afloat with the dwindling health insurance reimbursements. Two, the patient is paying out of pocket for this treatment, so you want to make sure the treatment works in the best way possible for them to see results (making the history form a crucial step in the process).

Like Doctor Kirk and many other Cutting Edge customers that utilize the lasers to their full potential, results are nothing short of amazing for patients and the financial benefits come in as a hot second.

If you would like to learn more about what MLS Laser Therapy could do for your practice, [click here to speak with an MLS specialist](#) who can assist you with any questions you may have. You can even set up an in-practice hands-on demonstration with one of our lasers, showing you first hand the results it can have with your patients, your staff, or even yourself!

**[Schedule a demonstration today here!](#)**

## CHAPTER 5

# WHAT IS LASER THERAPY

There are many types of lasers. Each laser has different characteristics which produce a different effect. These characteristics include:

- **Energy:** measured in joules
- **Time:** defined as the duration of irradiance of the target tissue and is measured in seconds. It is also known as impulse duration or called “impulse width”.
- **Wavelength:** penetration depth is directed by the laser emission wavelength and the type of tissue (chromophores).
- **Frequency:** defined as the number of impulses emitted during the unit of time (1 second) and should reflect the condition treated.
- **Power:** the rate at which energy is delivered and is measured in watts.
- **Fluence:** energy, density or dose
- **Irradiance** (also known as power density): power delivered per unit area
- **Emission Mode:** continuous wave (CW) or pulsed wave (PW)
- **Impulse Duration:** duration of laser emission, also called “impulse width”.

Laser therapy uses light to favor and accelerate the body's natural healing processes. The laser beam is moved over the skin so that the light energy (photons) penetrates the tissue where it interacts with various molecules (chromophores) that cause different biological effects. It produces a photochemical, photothermal and photomechanical effect.

### **Low-Level Laser Therapy (LLLT) Class 3B**

These lasers use very low power, are limited to surface biostimulation, and often require many treatment sessions and long treatment times. Results are only achieved at the end of the treatment cycle, and results are limited because of the use of only one or two wavelengths that are not synchronized.

### **High Power (HP) Class IV**

These lasers were developed with the expectation that greater power corresponded to better efficiency. On the contrary, unless suitably controlled, high power can thermally damage the treated tissue. Therefore, the majority of high power lasers cannot operate at their maximum power without causing damage.

### **Multiwave Locked System (MLS) Class IV**

MLS Laser Therapy is a patented emission system created to achieve an efficient and simultaneous effect on pain, contracture, inflammation, and edema within a short period of time. The patented control system that generates the MLS pulse synchronizes the emissions to achieve optimum results. Due to this characteristic synchronization, the various therapeutic effects not only take place at the same time but reciprocally reinforce each other, without the risk of thermal damage.



## *CHAPTER 6*

# MULTIWAVE LOCKED SYSTEM

The innovative and patented Multiwave Locked System (MLS) Therapy Laser was developed in an effort to produce an efficient and simultaneous effect on pain, inflammation, and edema, exceeding the limits of traditional LLLT (low power) and concerns of HP (high power) laser therapy. MLS technology delivers therapeutic wavelengths, 808 nm (anti-edemic and anti-inflammatory) and 905 nm (analgesic), allowing a tissue penetration depth of 3-4 cm.

An energetic synergy is created when delivering these wavelengths that produces greater anti-inflammatory and analgesic effects than either can produce on its own, while minimizing the risk of thermal damage. It is this unique combination and synchronization of continuous and pulsed emissions that characterizes MLS and distinguishes it from other Class IV lasers.

Unlike early-generation Class IV technology, MLS Laser Therapy has the capability to deliver controlled laser energy. This unique feature provides more accurate therapeutic dose delivery, which means consistent and repeatable results.

With high levels of efficacy, safety, and consistency, MLS Laser Therapy can help physicians relieve pain and restore lives while rewarding their practice financially.

## No pain. All gain.

In the current economic climate, physicians are facing significant pressure to find new revenue streams. Reimbursements from insurers – the primary source of income for many practices – are declining sharply as a result of political reforms. At the same time, market forces such as increased competition and patient consumerism are adding to the pressure. In this environment, practice owners have limited options for strengthening their financial position. MLS Laser Therapy can help.

MLS Laser Therapy allows physicians to leverage technology to provide higher quality patient care, while attracting new clients, generating additional revenue, and ultimately improving businesses' bottom line.

## No pain – Clinical Benefits

MLS Laser Therapy is quickly becoming the standard of care in alleviating both acute and chronic pain. This patented, FDA-cleared technology has an 85% – 90% efficacy rate in relieving pain and inflammation, eliminates risk from surgery and prescription painkillers, has no negative side effects, and restores patients' lives.

- **Anti-Inflammatory:** MLS Laser Therapy has an anti-edema effect as it causes vasodilation, but also because it activates the lymphatic drainage system which drains swollen areas. As a result, there is a reduction in swelling caused by bruising or inflammation.
- **Analgesic:** MLS Laser Therapy has a beneficial effect on nerve cells. It blocks pain transmitted by these cells to the brain which decreases nerve sensitivity. Also, due to the decreased inflammation, there is less edema and less pain. Another pain blocking mechanism involves the production of high levels of pain killing chemicals such as endorphins and enkephalin from the brain and adrenal glands.

- **Accelerated Tissue Repair and Cell Growth:** Photons of light from lasers penetrate deeply into tissue and accelerate cellular reproduction and growth. The laser light increases the energy available to the cell so that the cell can take on nutrients faster and get rid of waste products. As a result of exposure to laser light, damaged cells are repaired faster.
- **Faster Wound Healing:** Laser light stimulates fibroblast development in damaged tissue. Fibroblasts are the building blocks of collagen, which is the essential protein required to replace old tissue or to repair tissue injuries. As a result, MLS Laser Therapy is effective post surgically and in the treatment of open wounds and burns.
- **Improved Vascular Activity:** Laser light will significantly increase the formation of new capillaries in damaged tissue which speeds up the healing process, closes wounds quickly and reduces scar tissue. Additional benefits include acceleration of angiogenesis, which causes temporary vasodilation and increases the diameter of blood vessels.
- **Increase Metabolic Activity:** MLS Laser Therapy creates higher outputs of specific enzymes, greater oxygen and food particle loads for blood cells.
- **Trigger Points and Acupuncture Points:** MLS Laser Therapy stimulates muscle trigger points and acupuncture points on a noninvasive basis providing musculoskeletal pain relief.
- **Reduced Fibrous Tissue Formation:** MLS Laser Therapy reduces the formation of scar tissue following tissue damage from cuts, scratches, burns or surgery.
- **Improved Nerve Function:** Slow recovery of nerve functions in damaged tissue can result in numbness and impaired limbs. Laser light speeds the process of nerve cell reconnection and increases the amplitude of action potentials to optimize muscle healing.
- **Immunoregulation:** Laser light has a direct effect on immunity status by stimulating immunoglobulins and lymphocytes. Laser emissions are absorbed by chromophores (molecule enzymes) that react to laser light. Upon exposure to the laser, the enzyme flavomononucleotide is activated and starts the production of ATP (adenosinetriphosphate), which is the major carrier of cell energy and the energy source for all chemical reactions in the cells.

## Primary Biological Effects

- **Photochemical Effect:** Direct transfer of energy to the biological sublayers (endogenous or exogenic chromophores).
  - Enzymatic activation
  - Increase in ATP production
  - Modulation of cellular metabolism
  - Effect on pain perception threshold
- **Photothermal Effect:** Photothermic interaction is based on the conversion of option radiation into thermal energy which, at a microscopic level, occurs through the inelastic encounter between excited molecules following the absorption of photons.
  - Increase in circulation
  - Increased supply of oxygen and nutrients
- **Photomechanical Effect:** The absorption of energy involves the formation of mechanical waves.
  - Production of an extracellular matrix (important in tissue repair & regeneration)
  - Acceleration of lymphatic peristalsis
  - Re-absorption of edemas
  - Reactivation of microcirculation

## Science

The patented MLS pulse was developed as a result of nearly three decades of scientific research that studied the biological and therapeutic effects of different emission components and methods. The departments of biology at both the University of Turin (Italy) and the University of Padova (Brazil), as well as the Department of Anatomy and the Orthopedic Clinic at the University of Padova have studied and verified the remarkable effectiveness of MLS Laser Therapy. To read the MLS Scientific Report, [click here](#).

A collection of studies that demonstrate the effectiveness of MLS Laser Therapy can be read here: [MLS® Laser Therapy – Innovation is built on results](#)

## FDA CLEARANCE

### **‘Mphi Family’ Diode Lasers – Mphi, Mphi5, Mphi Orange**

*Cleared via Section 510(k) on November 9, 2011, Number K11901*

**Conclusion:** “The ASA ‘Mphi Family’ Diode Laser is a safe and effective device for the indications specified.”

Indications for Use: “The ASA ‘Mphi Family’ Diode Laser is intended to provide topical heating for the purpose of elevating tissue temperature for the temporary relief of muscle and joint pain and stiffness, arthritis pain, or muscle spasm, the temporary increase in local blood circulation and/or promoting relaxation of muscle.”

### **‘MLS Family’ Diode Lasers – MLS Mix5, MLS M1, MLS M6**

*Cleared via Section 510(k) on August 26, 2005, Number K051922*

**Conclusion:** “The ‘MLSFamily’ Diode Laser is a safe and effective device for the indications specified.”

Indications for Use: “The ‘MLS Family’ Diode Laser is intended to provide topical heating for the purpose of elevating tissue temperature for the temporary relief of muscle and joint pain and stiffness, arthritis pain, or muscle spasm, the temporary increase in local blood circulation and/or promoting relaxation of muscle.”





# THANKS FOR READING

For more information about MLS Laser Therapy, click below or simply give us a call at 800-889-4184 to schedule your complimentary in-office laser demonstration.

**Request More Information**