



**Realief® Therapy for relief of  
peripheral neuropathy symptoms:**

**A description of mechanisms  
and outcomes**

## What is Realief Therapy?

The research compiled by Realief Neuropathy Centers from more than five years of study among hundreds of patients has resulted in a treatment system based on the use of a proprietary Class IV therapeutic laser. By delivering a specific frequency of light in sufficient strength and depth, the laser induces photochemical, photomechanical, and photo thermal changes that, together, result in the mitigation of the symptoms of PN. What differentiates Realief Therapy from all other light modalities is the Realief System that guides the entire therapy process, from the first exam through the long-term maintenance and control of this disease. The software continuously collects data on symptoms, treatments, and outcomes from all patients treated at any Realief Center. The system is then continuously adjusted and improved to provide best-in-class therapy for PN symptom relief.

A complete medical history is collected for a new patient. Additionally, the patient's reported symptoms and the results of a series of standard neurologic tests are gathered to determine which nerves are involved and to what extent. The combined information provides the software algorithms with the basis to recommend a therapy plan to the doctor. If deemed appropriate, the doctor will apply his or her own experience to adjust the therapy for the patient's specific circumstances. The initial treatment phase usually consists of a series of treatments given multiple times per week and lasting, on average, under an hour. The treatments are non-invasive, painless, relaxing, and with no adverse side effects reported. With each treatment visit, the therapist collects a new set of symptom levels which prompts the algorithms to account for progress at each visit and guide the next treatment.

Often, PN is accompanied by dysfunction of strength and balance as well as loss of pliability or tightening of the soft tissues. All of these physical function problems can create significant symptoms for the patient and require their own interventions. Realief Therapy includes non-laser based treatments and physical therapies to reduce soft tissue tightness, improve strength and balance and restore coordination resulting in statistically significant improvements in quality of life.

Following the initial phase of treatment, the vast majority of patients experience very significant relief of symptoms. However, PN is a chronic disease that is currently not curable. In order to prevent the return of



symptoms over time, each patient will be scheduled for a return exam after two or three months. If at that time no symptoms have returned, then another follow up exam will be scheduled for a later date. If, however, any sensory loss is detected in the exam (keep in mind that the neurologic tests can often detect sensory loss before the patient is aware of it), then one or two treatments may be scheduled to prevent the symptoms from returning to their previous levels. Ordinarily, this maintenance treatment resolves the symptoms for an even longer period. Realief Therapy has been able to control the symptoms of Peripheral Neuropathy for many patients for many years.

## What are the results that a patient can reasonably expect?

It is important to note that, unlike other available peripheral neuropathy treatments, Realief Therapy not only significantly reduces or eliminates the pain of PN, it also significantly reduces or eliminates other symptoms affecting patient quality of life. Unique to Realief Therapy, sensations associated with numbness, hot and cold, tightness, burning, or tingling can be significantly reduced or eliminated. Feeling can be restored for sensations as common as feeling the texture of the carpet under one's feet or knowing which foot is on the gas or brake pedal. Additionally, patients have experienced statistically significant improvements in balance and quality of life.

To learn more about how Realief Therapy has helped patients just like you, visit us at [www.realief.info/learn](http://www.realief.info/learn).



### Symptoms and causes

Nerves are specialists. In other words, specific nerves sense hot and cold, pressure, or texture. Others convey pain or control muscles. The long axons of peripheral nerves (those that branch from the spine), such as those at the bottom of the foot or the fingers, are particularly susceptible to damage due to their length. Depending on which nerves are damaged, symptoms can vary from pain to tingling, numbness, loss of muscle function, and balance problems.

Nerve damage may have many causes. Diabetes or even trauma can cause initial injury to a nerve. Damage is also caused by exposure to a variety of toxins such as chemotherapy drugs, alcohol, cigarettes, environmental pollutants, food additives, and reactions to prescription drugs. Many cases of nerve damage are classified as idiopathic, having no known cause. While the triggering mechanism of each cause is not well understood, the damage may become chronic if not mitigated quickly. When nerve damage becomes chronic, it is termed peripheral neuropathy (PN) and is considered a disease in its own right, not simply a complication of another condition. Regardless of the cause, peripheral neuropathy often becomes its own distinct condition even if the original triggering mechanism is addressed.

Once started, PN usually progresses over time and symptoms become worse. If not relieved, the symptoms can lead to more serious injury, debilitation, or at the least, a significant degradation of a patient's quality of life.

### Traditional and alternative treatment

Peripheral neuropathy is not curable today but relief of symptoms is possible to some degree. Traditional medical providers typically prescribe drugs, usually anti-depressants or anti-convulsants, to reduce the pain symptoms. Unfortunately, these drugs also sometimes carry unpleasant side effects which, in some cases, patients cannot tolerate. Alternative treatment modalities including hypnosis, acupuncture, electrical stimulation, and a few light therapies have been known to deliver some relief to some patients. Any number of other less reputable treatment modalities is available but provide no proof of any effectiveness. The efficacy of the more reputable treatment modalities will be supported with statistically relevant prospective or retrospective studies of significant populations of PN patients treated with that specific therapy.

### Realief Neuropathy Centers

Realief Neuropathy Centers was first created to discover and develop a new treatment modality for PN symptoms based on the application of the emerging technology of laser phototherapy. After more than five years of clinical application and development, a series of effective treatment protocols was identified, tested, and is now performed in clinical use in various Realief Neuropathy Centers in the US. The Realief Therapy for each patient is customized for the specific symptoms of each patient at each treatment visit. Documented patient outcomes after treatment show dramatic results. A very high percentage of patients realize a significant reduction in all of the symptoms of PN, not just pain. See the enclosed insert for a summary of results from the most recent patients treated.

### What is a Realief Neuropathy Center?

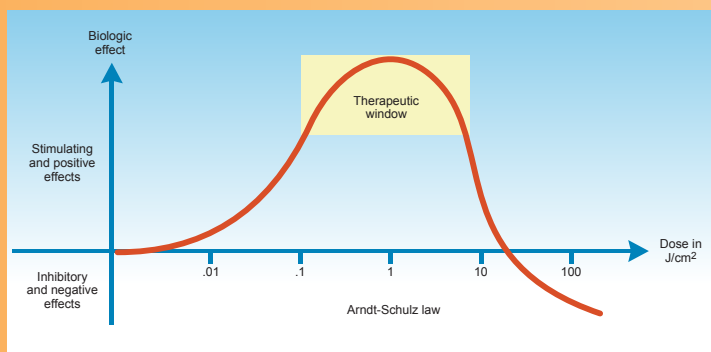
Realief Therapy is provided by selected medical centers around the country. The primary Medical Director of a Realief Center may be a Medical Doctor (MD), Doctor of Osteopathy (DO), Chiropractor (DC), or Nurse Practitioner (NP). All have been thoroughly trained at the Realief Neuropathy Centers Training and R&D Center in Minneapolis, Minnesota. Realief Neuropathy Centers are dedicated solely to treating the symptoms of peripheral neuropathy. To find a center near you, go to [www.realiefcenters.com](http://www.realiefcenters.com).

### How does Laser Phototherapy work?

When a therapeutic dose of laser phototherapy (LPT) is delivered to tissue, it causes the tissue to accelerate its normal process for cell regeneration (healing), thus causing unhealthy tissue to become healthier while having no reported adverse effects on normal tissue.

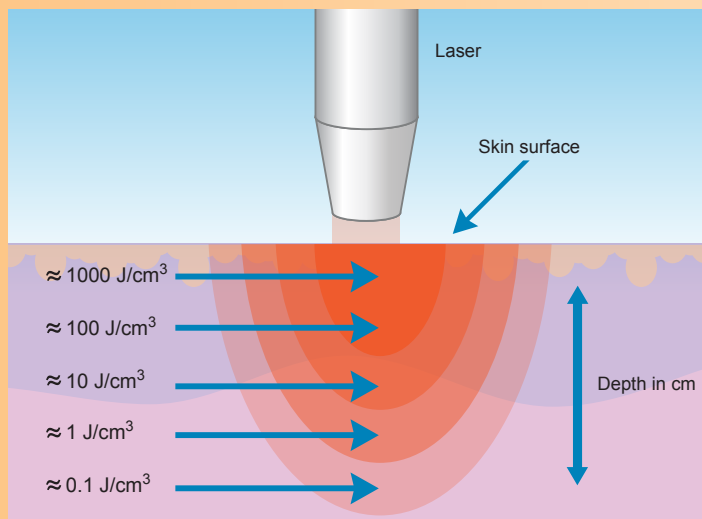
Realief Therapy is a multimodality therapy using a proprietary Class IV therapeutic laser to deliver LPT. Therapeutic lasers have been FDA cleared for human use in the US since 2003, but have been in human use in Europe for more than two decades. The diagram below summarizes information published in *The New Laser Therapy Handbook*, Jan Turner and Lars Hode, Pima Books AB 2010, which contains over 2,100 scientific references. Unlike virtually all other lasers used in medicine, these therapeutic lasers do NOT damage or cut tissue when used appropriately.

Several parameters affect the proper therapeutic dose and measurement of the impact on symptom relief for peripheral neuropathy patients. Delivery of too little or too much of LPT can result in little to no effect and/or inhibitory effect.



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Because the majority of the symptoms for peripheral neuropathy patients are caused by damage to some part of the peripheral nerves, the LPT must adequately penetrate to the affected tissue to reach the therapeutic window.



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### Delivery of a therapeutic dose.

The following parameters impact the ability to deliver a therapeutic dose and penetrate to the affected tissue.

#### Wavelength

Because of their respective absorption rates by certain tissue types, some wave lengths penetrate deeper than others and deliver different photochemical effects. Realief Therapy uses some or all of the following wavelengths (nm) 660, 800, 905 and/or 970 per the treatment plan.

#### Body location

The Realief software uses patient symptoms and physician exam data to adjust each treatment and address changes and progress in symptom relief.

#### Power

The right power is determined per the treatment plan.

#### Continuous versus pulsed wave

The laser will emit either a pulsed or continuous laser waveform, based on the treatment plan.

#### Treatment time

The proper length of treatment time is determined by the treatment plan.

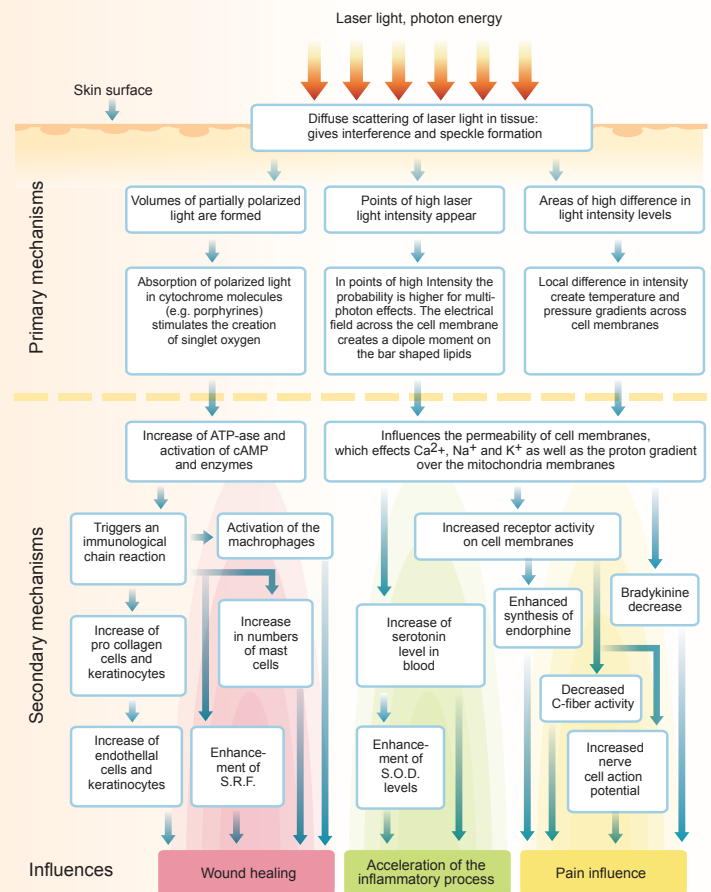
## Laser probe location

Pressing the laser delivery probe against the skin during treatment can enhance penetration by moving blood away from the surface treated area.

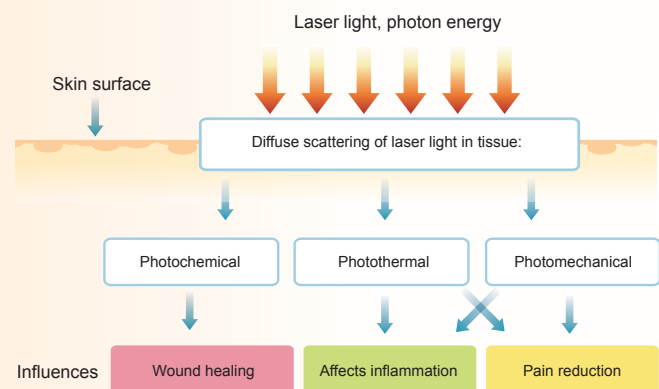
The Realief System (US Patent Pending) is an iterative system in which each patient treatment visit is unique to that patient based on patient and physician input at the time of treatment. A proprietary algorithm incorporates the input to generate a unique set of parameters to achieve delivering a therapeutic dose of LPT and achieve the best results based upon accumulated data. The understanding of the actual mechanism(s) of action at a cellular and body system level is still being researched. The graphic top right, is a summary of the primary and secondary mechanisms as described in Turner and Hode.

This complex series of reactions can be simplified as depicted bottom right. The three mechanisms are 1) a photochemical effect in the stimulation of the production of ATP/ADP from Cytochrome C that initiates a healing process, 2) photo thermal, and 3) photomechanical effects that both increase blood flow, reduce inflammation, and reduce pain.

Because the cellular level mechanisms of LPT are not fully understood and, more important, are not easily measurable, the Realief System measures and tracks outcomes with three primary data sources; the impact of the symptoms on the patient's quality of life, sensory loss measurements from exams done by the clinician, and patient symptom surveys. These sources help practitioners guide and adjust the therapy and also measure and track clinical outcomes. See the insert Clinical Outcome Results for the outcomes of the most recent patients treated.



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1660 South Highway 100, Suite 229  
St. Louis Park, MN 55416

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