

# ***Understanding Laser Therapy***



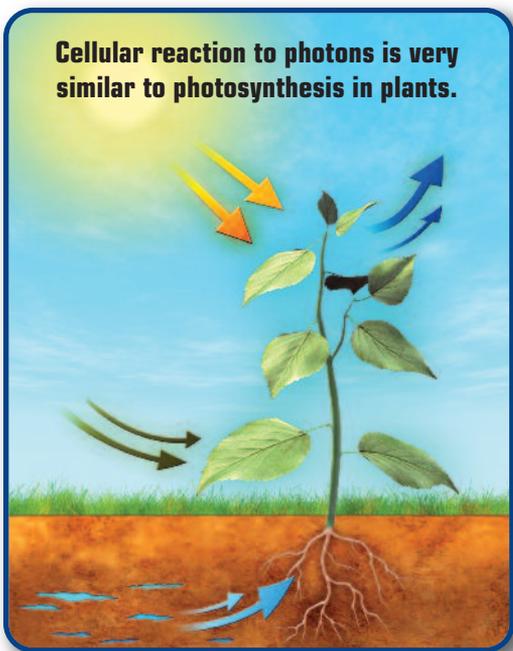


# Photons stimulate your cells to grow, repair and multiply

## The different types of lasers

You have probably heard of lasers being used in surgery or for industrial applications like cutting metals. These are typically what we call “hot” lasers, they use very high power and very long light wavelengths. Other types of lasers are used for skin conditions like wrinkle reduction and hair removal. These lasers are built with specific wavelengths and power levels and are only effective for these types of treatments.

“Cold” lasers use lower power than hot lasers and have wavelengths of light in what is known as the “therapeutic range”. The goal of cold lasers is to deliver light energy into injured tissue in the form of photons, but NOT to generate heat that could damage the skin or other tissue. It is these cold lasers that are used in therapy to increase healing and reduce pain.<sup>1</sup>



**Cellular reaction to photons is very similar to photosynthesis in plants.**

## How does laser therapy work?

Laser therapy is a process where light energy photons enter the tissue and are absorbed by the mitochondria and the cell membrane. Mitochondria are the cell's power centers. They allow the cell to move and divide.

Light photons act as “food” or “fuel” for your cells. Just like a plant's photosynthesis process, your cells use the energy to grow, repair themselves and multiply. Photonic energy is converted to chemical energy within the cells of your tissue. Cell membrane permeability alters, then physical changes occur and your body begins to heal itself.

When natural light is passed through one end of a prism the result at the other end is a rainbow. Each color in that rainbow has its own wavelength or colour signature. Each type of laser also has its own wavelength or color. A device which emits a Visible Red (VR) laser has a different wavelength than an Infra-Red (Invisible Red) laser.<sup>4,5</sup>

A laser's light wavelength determines how deep the light will penetrate into your body. Infra-red wavelengths will penetrate deeper, and so are used for deep tissue injuries. Visible red wavelengths do not penetrate as far, and are used more for surface conditions.

# Laser therapy can reduce your pain and inflammation

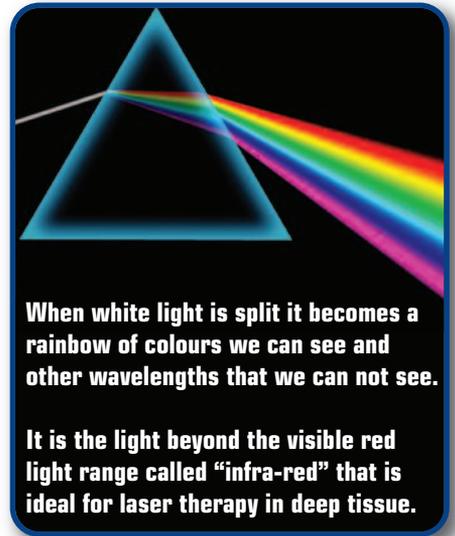


## What are the results?

Therapeutic lasers (cold lasers) can create a variety of effects on your tissues.<sup>2,3</sup> These include:

- Rapid cell growth
- Faster wound healing and reduced recovery time
- Reduces the formation of scar tissue
- Anti-inflammatory action for improved joint mobility
- Lasers stimulate lymph and blood circulation.
- Lasers stimulate nerve function
- Laser can also optimize muscle function
- Improves immune responses.
- Reduces pain

**Do not expect to see a laser's light beam, many lasers use invisible light waveforms.**



**When white light is split it becomes a rainbow of colours we can see and other wavelengths that we can not see.**

**It is the light beyond the visible red light range called "infra-red" that is ideal for laser therapy in deep tissue.**

## What can lasers treat?

Lasers using visible red light can be used for<sup>2</sup>:

- Skin Conditions
- Leg Ulcers
- Wound Healing
- Dermatitis

Lasers using Infra Red wavelengths can be used for the above PLUS

### **Deep Soft Tissue Injuries like:**

- Capsulitis, Bursitis
- Sprains & Strains
- Haematomas
- Tendinitis,
- Myofascial Trigger Points

### **Chronic Pain conditions like:**

- Post Herpetic Neuralgia
- Chronic Back & Neck Pain
- Brachial Neuralgia
- Plantar Fasciitis
- Frozen Shoulder
- Carpal Tunnel

### **Joint problems including:**

- Osteoarthritis
- Rheumatoid Arthritis
- Ligament & Tendon injuries
- Chondromalacial Patella

# *Laser therapy can be done safely even with pacemakers and implants*

## *Does it hurt?*

No. The goal of laser therapy is to introduce light to the affected area, so there should not be any pain during therapy. Some patients experience some tingling or mild warmth but many do not feel anything at all.

## *How will I know if it is working?*

Your body uses a laser's energy to heal itself. Noticeable results often take up to 48 hours. Within two days you should notice reduced pain and increased mobility.

For lasting, long term benefits your healthcare provider will probably recommend several laser sessions in a treatment plan designed specifically for your condition(s).



Image courtesy of Zimmer MedizinSysteme

## *Is it safe?*

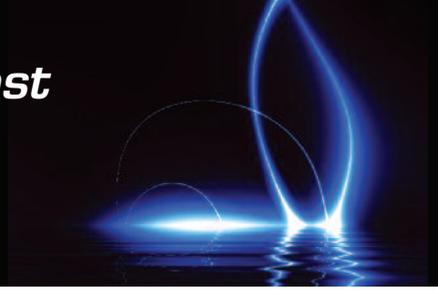
Yes. Your healthcare provider will provide you with protective goggles that will protect your eyes. Although accidental retinal damage is highly unlikely, these goggles are designed with the correct filter for the wavelength and power being used by their specific laser.

Cold lasers are generally very safe. Unlike some other forms of treatment, lasers can even be safely used with pacemakers and metal implants.

There are, however, specific areas that should be avoided or treated with extreme caution. These include but are not limited to applications over the Thyroid gland, over tattoos, over cancerous tissues and with pregnant patients.

Your healthcare professional will evaluate your condition to assure that laser therapy is safe and beneficial before they begin therapy.

# *Laser therapy is the most researched form of electrotherapy*



## *Is it effective?*

Yes. Over 3000 research articles have been published about the effectiveness of laser therapy for various conditions. In fact, laser therapy has the most published research of any form of electrotherapy. Cold laser therapy is commonly used in medical, physiotherapy, podiatric, chiropractic, osteopathic, acupuncture, dental and veterinary clinics.<sup>9</sup>

## *How is laser therapy different from ultrasound or electrical stimulation?*

There are other types of therapy modalities (technologies) that are often used by healthcare professionals. Some use electrical energy to stimulate muscle or nerve function, mainly to control pain. These are referred to as Electrotherapy devices.

Some use sound waves to create a warming effect that stimulates healing. These are called "Ultrasound" devices.

Both of these modalities offer therapeutic benefits, however there are many circumstances where they can not be used. Lasers can stimulate healing AND reduce pain at the same time and research has shown that laser therapy is often more effective than other technologies, for many conditions. In addition, lasers can be used safely in many cases where other technologies can not be used.



**Laser therapy stimulates healing for lasting results.**

## *Are the results temporary?*

No. Laser therapy is not masking or blocking pain temporarily. By "feeding" your cells, lasers speed up the natural healing process so that damaged cells can actually heal themselves.

Healing takes time and as you progress, you could experience more or less pain/discomfort as your body recovers.



# *Powerful lasers can do full treatments in seconds for surface conditions*

## *How long will it take?*

Your average treatment time depends on two main things, the power of the laser being used and the size of the area being treated.<sup>6</sup>

Using a typical deep tissue, low back treatment as an example, a powerful laser can deliver the appropriate dose of energy to the area in just a minute or two, where a weak laser can take as long as an hour to deliver the same amount of energy.

The larger and deeper the treatment region is, the longer a treatment will take. Some surface treatments can be done in seconds with a powerful laser.

So if your treatments are only taking a few minutes do not feel cheated, your clinic has invested in a very powerful laser.

If you have a deep tissue condition and laser therapy has not worked for you in the past, it is likely that the laser used was not powerful enough or its wavelength (colour) was not Infra-Red.<sup>7</sup>

How many treatments you will require will depend on what you are being treated for and how quickly your body responds to the treatment. Typically, laser therapy requires several sessions for the best results.



Imagine walking through a forest at night. You are using the small pen light attached to your key chain. Your friend is using a powerful flashlight. Who's light do you think will penetrate further into the woods?

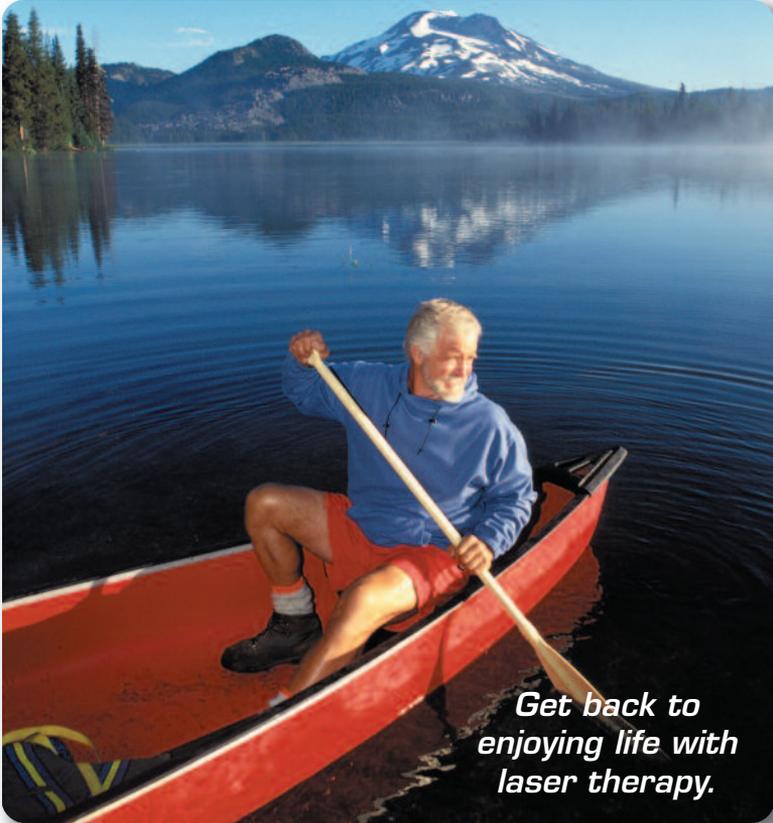
Holding a weak laser on a region for a long time does not mean it will reach the target area. A laser needs to have sufficient power to penetrate to the depth required.

## *Can I do laser therapy at home?*

There are "laser" devices on the market designed for home therapy, however these are typically very, very low powered light therapy units. They may provide some benefit for superficial conditions but they do not have enough power to reach deeper tissues.

For a "laser" to be sold to the general public it has to be safe enough to not have any risk of damaging eyes or skin accidentally, even when being used incorrectly or without safety goggles.

***Laser therapy can “unlock” your body’s healing potential and speed up your recovery.***



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# ***The Healing Power of Light***

Ask today if laser therapy is right for you.

For more information contact: