



**Is BIOPTRON Light Therapy the same as laser therapy?**

No, light therapy is not the same as laser therapy.

- **BLT** contains light from a wide range of wavelengths.
- **BLT** emits light that is of low-energy so there is only a minimal heating effect, making the treatment safer.
- **BLT** devices emit light with a wide beam to allow exposure of larger treatment area.

**Is BIOPTRON Light Therapy safe?**

Yes, light therapy with **BLT** is safe. To date, there are no known adverse effects associated with **BLT**.

**Is BIOPTRON Light Therapy expensive?**

**BLT** is cost effective.

**Where can I get more information on BIOPTRON Light Therapy?**

Comprehensive information on all aspects of **BIOPTRON Light Therapy** is available from:

Please add local contact details here:



BIOPTRON Pro 1



BIOPTRON 2



BIOPTRON Compact III

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**What is carpal tunnel syndrome?**

Carpal tunnel syndrome is caused by compression of a nerve in the wrist called the median nerve. The median nerve provides sensation to part of the palm and fingers (thumb, index & middle fingers, part of ring finger) and also controls movement in certain muscles of the thumb. When the nerve is compressed it cannot function normally, with resulting loss of sensation and movement in the hand.

The carpal tunnel is a narrow anatomical passageway on the palm-side of the wrist, formed by the small bones of the wrist and a fibrous ligament (the carpal ligament). Tendons from the muscles used to bend the fingers/hand pass through this tunnel, accompanied by the median nerve. Any swelling in the tissues around the carpal tunnel can press on the median nerve and cause carpal tunnel syndrome.

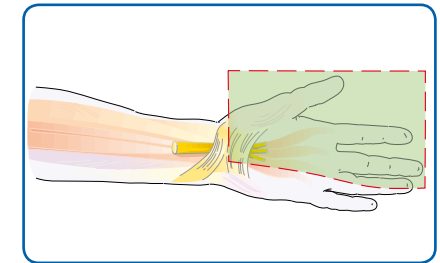
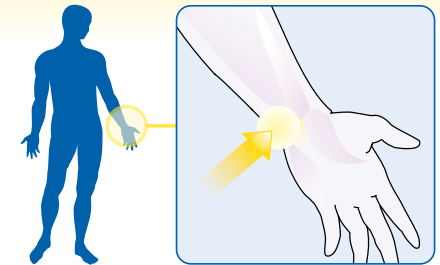
**Who gets carpal tunnel syndrome?**

Carpal tunnel syndrome is fairly common; it occurs in around 1-3% of the population (i.e. 1-3 people in 100). It is more common in women as they have narrower wrists (i.e. a smaller carpal tunnel), particularly those aged over 40 years old, although it can also occur in men.

Carpal tunnel syndrome is often found in people whose job requires substantial use of the hands, such as people using computer keyboards/typewriters, musicians and assembly line workers (e.g. meat packers, sewing, cleaning). Workers using vibrating hand tools (e.g. pneumatic drills) are also at risk of developing this condition.

In the USA, the average lifetime cost of carpal tunnel syndrome for each worker, including medical bills and time lost from work, was estimated to be \$30,000 [€23,745]

[Data source: National Institute of Neurological Disorders and Stroke (USA), 1998; [www.ninds.nih.gov](http://www.ninds.nih.gov)]



Apply to affected area for 4-10 minutes, 1-2 times per day



# CARPAL TUNNEL SYNDROME

information for patients

## What are the causes of carpal tunnel syndrome?

Carpal tunnel syndrome may occur following an injury to the wrist (e.g. sprain or fracture), after an infection in the bones or tendons of the hand/wrist, or in association with bone diseases such as arthritis or gout. The condition can also be due to retention of fluid within the carpal tunnel caused by pregnancy, menopause, kidney failure or an underactive thyroid. Other conditions associated with carpal tunnel syndrome include diabetes, obesity and use of the oral contraceptive pill.

Although many diseases are associated with carpal tunnel syndrome, most people with the condition have no identifiable cause.

## What are the common symptoms of carpal tunnel syndrome?

Carpal tunnel syndrome usually occurs in the dominant hand, but some people develop symptoms in both hands. Common symptoms include tingling, aching or numbness in the area of the hand supplied by the median nerve (Fig. 1/2), and in some cases this can also occur in the arm and/or the shoulder. The symptoms are often worse at night and may interrupt sleep. In severe cases, the muscles of the thumb can weaken and shrink.

Certain movements of the wrist will worsen the symptoms of carpal tunnel syndrome, including holding a book/newspaper, gripping the steering wheel of a vehicle and the use of certain tools, such as knives for cutting meat.

## What treatment is available for carpal tunnel syndrome?

Simple treatments for the condition include the use of ice packs, resting the hand/wrist and the use of splints to keep the wrist straight. Certain pain killing drugs can reduce swelling (called non-steroidal anti-inflammatory agents) and decrease symptoms in a small number of people; however, these drugs also have possible side effects such as nausea, irritation of the stomach lining/development of a stomach ulcer.

For more severe cases, the family doctor can administer an injection of a drug called a steroid into the wrist to reduce the swelling and relieve the symptoms. However, this treatment can only be given once or twice to provide temporary respite. The doctor can also prescribe stronger drugs to reduce pain. Depending on the condition, also other treatments are possible. If none of these treatments have an effect, surgery to cut the carpal ligament and enlarge the carpal tunnel is then necessary.

A new and innovative type of treatment for relieving pain and reducing tissue swelling is the use of **LIGHT THERAPY**.

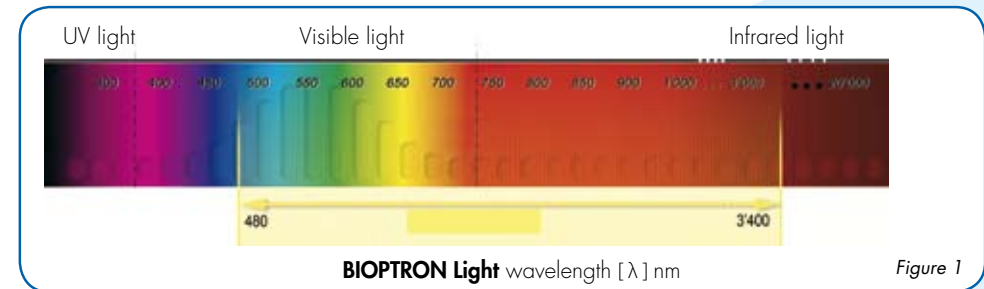


Figure 1/2  
BLT with BIOPTRON Pro 1



## What is BIOPTRON Light Therapy?

Light is a form of energy and has 'wave-like' properties; the difference between the various colours of light is determined by their *wavelength* (Figure 1). Light has been used as a healing tool since ancient times. Scientists now have a better understanding of which components of natural light are useful in the stimulation of healing. This has led to the development of optical devices to produce various types of 'medically useful' light, such as the **BIOPTRON Light Therapy (BLT) System**.



## What effect does BIOPTRON Light Therapy have the body?

**BIOPTRON Light Therapy** devices emit light containing a range of wavelengths that correspond to visible light plus infrared radiation, both of which have been reported to stimulate biological reactions. Importantly, *no harmful ultraviolet (UV) radiation* is present in **BLT**.

When the **BLT** device is held over the skin surface, energy from the emitted light penetrates the underlying tissues (Figure 2). This produces a biological response, called photo-biostimulation, causing various reactions within these tissues that may result in the reduction of pain and swelling and in the promotion of healing.

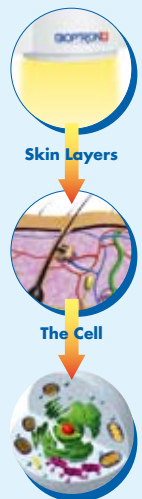


Figure 2

## How does BIOPTRON Light Therapy relieve pain?

Light therapy is believed to reduce pain sensation in several ways -

- Improving local blood supply & reducing muscle spasm
- Reducing the release of chemicals that stimulate pain receptors (called an anti-inflammatory effect)
- Inducing the release of the body's natural pain-killing agents (called endorphins)
- Direct action on nerve fibres to prevent transmission of pain impulses to the brain

Therefore, the positioning of a **BLT** device over the injured area (e.g. the wrist, knee or ankle) allows light therapy to be applied to help reduce pain and discomfort.