

What effect does light therapy have on the human 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 1*). This produces a biological response, called *photo-biostimulation*, causing various reactions within these tissues that may result in the reduction of pain and promotion of healing.

How does light therapy help 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.



Figure 1

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

What is arthritis?

Soft tissue injuries are those that occur in tissues other than bone, such as muscles, ligaments and tendons. Soft tissue injuries can be caused by repeated overuse or by a single episode of trauma (e.g. a sudden jerk, a fall or a being hit by something). Types of soft tissue injury include sprains, strains, contusions, tendinitis/tenosynovitis and bursitis. The main symptoms of soft tissue injury are pain and swelling; there may also be difficulty in movement if the injury involves a joint. Soft tissue injuries are very common and can cause significant disability in some people.

What is a sprain?

A sprain is an injury to a ligament. Ligaments are bands of tissue that connect one bone to another and are important in holding joints together. Sprains occur when a ligament is overstretched (simple sprain) or torn (partial tear or complete tear). Areas commonly sprained include the ankle, knee and wrist.

Sprained ankles are very common, especially in people participating in sports such as football, tennis or basketball/netball. Sprained ankles also occur in women wearing high-heeled shoes. Sprained knees are frequent sporting injuries, particularly in football and rugby players. A sprained wrist can be caused by falling with the hands outstretched.

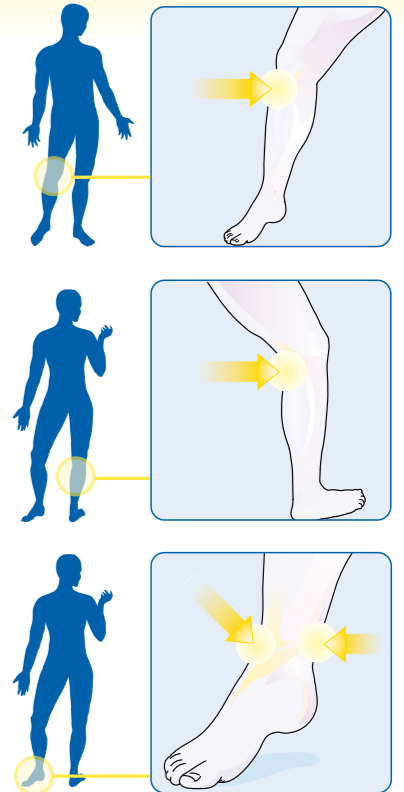
A sprained joint is painful, swollen and difficult to move; it may also be bruised. Treatment for a simple sprain includes resting the joint, ice packs to reduce swelling, compression with a support bandage and elevation of the injured limb. A torn ligament may require surgical repair.

What is a strain?

A strain is an injury to a muscle or tendon. Tendons are bands of tissue that connect muscles to bones. Muscles and tendons provide support and stability to joints. Strains occur when muscles and/or tendons are overstretched or torn and, as with sprains, a tear can be partial or complete. Areas commonly strained include the upper arm, elbow, thigh, knee, ankle, abdomen and groin.

As with sprains, strains are common in people participating in sports. Activities such as gardening, manual labour and lifting heavy objects may also cause strains.

The symptoms and treatment of a strain are similar to those described for sprains (see above).



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



SHINE A LIGHT ON YOUR HEALTH

What is a contusion?

A contusion is a bruise, i.e. bleeding into the tissues without breaking the skin surface. As the blood pools around the injured area it discolours the tissue, making it appear dark purple/black. Over the next days or weeks, the blood in the bruised area is broken down by the body and changes colour, going from purple to green and then yellow.

Contusions are caused by an object hitting the body and they can occur in many situations (gardening, building, carpentry, cleaning, etc.). Contusions are also very common in men and women playing contact sports (e.g. football, rugby, judo, boxing, wrestling, etc.).

The symptoms of a contusion are pain and swelling, the amount of swelling will depend on the severity of the injury. Most contusions are usually mild and respond to simple measures, such as rest, ice packs, compression and elevation. More severe injuries should be seen by a doctor.



What is tendinitis (tenosynovitis)?

Tendinitis is inflammation around a tendon and tenosynovitis is inflammation of the sheath covering the tendon.

Both conditions are caused by overuse or overloading of the tendon. Tendinitis is often seen in sportsmen and sportswomen, examples include damage to the knee tendon (patellar tendon) or to the tendon at the back of the lower leg/ankle (Achilles tendon) observed in runners and jumpers.

Tenosynovitis is commonly caused by repetitive actions such as typing, working on an assembly line (e.g. packing, sewing), etc. It usually affects the hands and arms.

The symptoms of both tendinitis and tenosynovitis are pain, stiffness, numbness and weakness in the affected joint: swelling is not usually present.

Tendinitis is usually more painful than tenosynovitis and causes greater restriction of movement.

The symptoms often improve after resting but then return after re-use. Treatment mainly involves rest, although drugs to reduce pain and inflammation may also be required by some people. On rare occasions, the continued use of an inflamed tendon may cause it to rupture, which may then require surgical repair.

What is bursitis?

Bursitis is inflammation of a bursa. A bursa is a small fluid-filled sack located between a muscle/tendon and a bone; it reduces the friction in a joint by allowing the tendon to move smoothly over the bone.

Bursitis is usually caused by repeated overuse of a joint and is often found in people with tendinitis.

Common sites for bursitis are the elbow, knee and heel of the foot. Elbow bursitis can occur after trauma to the arm; however, often no precipitating cause is found. Knee bursitis is commonly seen in people who spend a lot of time kneeling (e.g. carpet fitters).

Bursitis of the heel occurs in people with arthritis, and is also found in runners and ballet dancers.

The symptoms of bursitis are mainly pain (worsening on movement) and swelling. Bursitis is treated with rest and anti-inflammatory drugs. Severe cases may require surgical removal of the bursa, but this is rare.

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

[Data source: www.rsi.org.uk 'RSI Facts and Figures' fact sheet.]



Repetitive Strain Injury (RSI)

Certain types of soft tissue injury, such as tendinitis/tenosynovitis and bursitis, are becoming increasingly common these days, mainly due to the widespread use of computer 'mice' and keyboards. Tendinitis/tenosynovitis and bursitis are part of a group of disorders called Repetitive Strain Injury, or RSI (also called Work-Related Upper Limb Disorders, or WRULDs). RSI also includes injuries to ligaments such as tennis elbow, and nerve damage such as carpal tunnel syndrome.

RSI has a huge impact on society, causing many people to take time off work through illness, or even making them leave their job permanently and retrain in another profession. For example, RSI is estimated to cost the UK economy between £5 billion and £20 billion per year (€7.5 to €29 billion) in medical treatments, lost income and lost productivity. One in every 50 workers in the UK has reported suffering from an RSI; 60% of office workers in Sweden have an RSI; and 40% of Dutch university students also have an RSI.

[Data source: www.rsi.org.uk 'RSI Facts and Figures' fact sheet.]

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



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 the **BIOPTRON Light Therapy (BLT) System.**

