



Is BIOPTRON Light Therapy the same as laser therapy?

No, light therapy is not the same as laser therapy. Light emitted by a **BLT** device differs from laser light in several ways.

- **BLT** contains light from a wide range of wavelengths (vs. the narrow band width of laser light).
- **BLT** emits light that is of low-energy so there is only a minimal heating effect, making the treatment safer (vs. the high-energy beam from a laser that may generate a great deal of heat).
- **BLT** devices emit light with a wide beam to allow exposure of larger treatment area (vs. the usually much narrower beam from a laser).

Is BIOPTRON Light Therapy expensive?

BLT is cost-effective.

Is BIOPTRON Light Therapy safe?

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

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 Pro1



BIOPTRON 2



BIOPTRON Compact III

What is arthritis?

Arthritis is the inflammation of a joint. The main symptoms of arthritis are pain, swelling, stiffness and loss of function in one or more joints.

Arthritis can vary in severity from mild aches and pains to extreme disability causing loss of employment and independence. Bending, standing up and walking can become increasingly difficult if arthritis affects the spine, hip, knee or foot joints, while disease in the elbow or hand joints can eventually prevent activities such as washing, dressing, cooking, writing, etc.

The cost of arthritis to individuals and to society is immense. In the UK, the total cost of arthritis treatment in 2000-2001 (including consultations with doctors, drugs and surgery) was £5.5 billion (\$10 billion, €8 billion). A further £2.4 billion (\$4.3 billion, €3.5 billion) was spent on costs due to loss of earnings (i.e. men and women who could no longer work). In the USA, similar medical costs in 1997 totalled \$51 billion (€40 billion), while costs due to loss of earnings were \$35 billion (€28 billion).

[Data source: Arthritis Research Campaign (UK) www.arc.org.uk/about_arth/astats.htm; National Center for Chronic Disease Prevention & Health Promotion (US) www.cdc.gov/arthritis/data_statistics/faq/cost_analysis.htm]

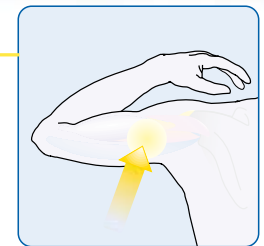
What is osteoarthritis?

Osteoarthritis is the most common joint disorder in the world. The frequency of osteoarthritis increases with age: severe osteoarthritis is found in more than 30% of people aged over 75 years compared to less than 1% of those aged less than 35 years. However, almost all people aged over 60 years will show some signs of this disease. Osteoarthritis is more likely to occur in people who are over weight, where other family members have the disease, and following injury to a bone or joint (e.g. fractured hip, torn knee cartilage).

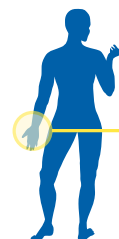
Sportsmen and women and workers in certain manual and agricultural occupations are also at risk from osteoarthritis (e.g. miners, dockworkers, farm labourers, fruit/cotton pickers, etc.).

Osteoarthritis is a *degenerative* joint disease, and is caused by the wearing away of a protective pad of cartilage that lines many joints, such as the hip, knee, elbow, hand and foot joints. This cartilage, called *articular cartilage*, acts like a 'shock absorber', and protects the joint from stress and friction during movement.

The articular cartilage in young people is flexible and strong, but as we get older it becomes 'stiffer' and less resilient to mechanical stress. Eventually, small cracks appear in the cartilage and it starts to wear away. Once this happens, there is nothing left to protect the underlying bone and it also starts to degenerate. This causes pain and swelling in the joint, making movement more difficult. Osteoarthritis commonly affects only one or two joints, usually the joints in the hand/fingers, the hip and knee. In some cases, multiple joints are affected: this form of the disease is more common in women.



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



What is rheumatoid arthritis?

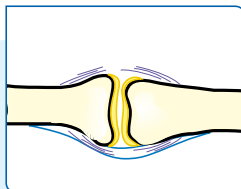
Rheumatoid arthritis is a disease of the immune system that causes the body to attack a thin layer of tissue that lines the joints. It affects multiple joints, usually in a symmetrical pattern.

Other parts of the body can also be affected. For every 100 people with rheumatoid arthritis, 25 will have mild symptoms only, 40 will have to alter their daily activities to cope with the disease, 25 become severely disabled and 10 will need to use a wheelchair.

Rheumatoid arthritis affects 0.5-3% of the population (i.e. 1 to 6 people in every 200). The disease can occur at any age (even in young children) but the most common age of onset is between 30 and 50 years. Approximately three times as many women are affected than men. Although the exact cause of rheumatoid arthritis is not yet known, research suggests an abnormal immune response is likely. The main risk factors include female gender, family history of the disease, and certain immunological/genetic characteristics.

Rheumatoid arthritis begins with swelling (*inflammation*) of a thin layer of tissue that lines the joint, called the *synovial membrane*. This provokes the body's defence system (or *immune system*) into *attacking the synovial membrane* in an attempt to remove whatever is causing the initial inflammation. Unfortunately, this reaction makes matters worse and causes even more inflammation in the joint, resulting in swelling and pain. This process eventually results in erosion of the *articular cartilage* and exposure of the underlying bone, which then also becomes damaged. Tissues around the joint, such as tendons, can also be affected, which may result in the joint becoming unstable and/or deformed.

Rheumatoid arthritis commonly affects the small joints in the hands and feet, as well as the elbow, shoulder, knee, and joints in the neck; the hips are rarely involved.



What treatment is available for arthritis?

Until today, arthritis cannot be cured. However, many treatments are available to manage the symptoms. Medication is usually required to relieve pain and reduce joint swelling. Simple pain killers (such as acetaminophen) are often tried first. If there is no useful effect, non-steroidal anti-inflammatory drugs (e.g. *aspirin*, *ibuprofen*) may be prescribed. These drugs can help to reduce joint pain and swelling in many people; however, they may also have side effects (e.g. diarrhoea, indigestion, irritation of stomach lining and ulcer formation) and should be used with care. In people with severe symptoms, an injection of *steroid* directly into the damaged joint can provide symptom relief for 1-4 weeks. However, steroids also have side effects (e.g. diabetes, raised blood pressure, weight gain).

Surgery can improve joint function and reduce pain by replacing an arthritic joint with an artificial one, such as a hip, knee or elbow. Such procedures are expensive and there are risks associated with the surgery (e.g. risk of anaesthetic complications, blood clots, infection, etc.); however, joint replacements have significantly improved the quality of life for many people with arthritis.



BLT with BIOPTRON Pro 1



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

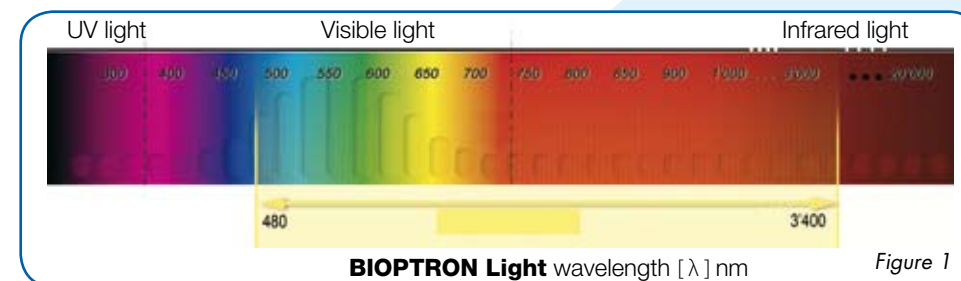


Figure 1

What effect does BIOPTRON Light Therapy have on 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).

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 BIOPTRON 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 elbow) allows light therapy to be applied to help reduce pain and discomfort.