

Serial  
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# Safe Laser®

## Safe Laser® 500 Infra



**“The joy of painless movement”**

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## Contents

- Laser basics ..... 1. page
  - Way of action of the soft laser therapy ..... 1. page
  - Description of the Safe Laser® devices ..... 3. page
  - Anamnesis and diseases treatable by Safe Laser® devices ..... 3. page
  - Process of treatment (time and frequency of treatment) ..... 4. page
  - Contraindications ..... 8. page
  - Medical Certification ..... 9. page
-

## Laser basics

In terms of biological effects lasers can be divided into two main categories:

- **High power = “hard lasers” - surgical lasers**
- **Low power = “soft lasers” - therapeutic lasers**



High power lasers (due to the very strong thermal effect) are capable of different surgical procedures, eg. surgery (thermal effects: cutting, vaporization, coagulation)

**Safe Laser®** instruments belong to the group of therapeutic „soft lasers”.

In case of soft lasers the photochemical reaction effect of the laser light is used to initiate beneficial biological processes.

## How does the soft laser therapy work?

As soon as in 1947 researches indicated that mitochondria of cells in our body are photo-sensitive Mitochondria of different cells react to lights of various wave length (color) in distinct measures. From the whole spectrum the red (e.g. 660nm) and infrared (e.g. 808nm) lights have the strongest curing effect.

The photo-acceptor molecules of the cells receiving energy become activated under the effect of soft laser light and are capable to activate another molecule, thus chemical reactions are initiated in neighboring cells, tissues.

## What are the physiological effects of the soft laser light?

The soft laser treatment has three known curing effect on the human body:

1. **Biostimulating effect – stimulates the self-healing ability of the body!**
2. **Antiphlogistic effect**
3. **Pain killing effect**

## A Safe Laser® devices can be divided in 2 main categories:

1. **Red (660 nm) light emitting lasers: Safe Laser® 30, Safe Laser® 150**
2. **Infra (808 nm) light emitting laser: Safe Laser® 500 Infra**

Light of infra (808nm) laser is hardly visible for the eye, therefore it is equipped with four red LED lamps, which function as signal lights in working status.



## What diseases may the lasers be used for?

The red (660nm) lasers mostly have their effect next to skin surface to depth of

3 cm, so they play important role in healing inflammations, pains, disorders **near to surface**, moreover also are suitable to treat disorders which can be cured by lighting-in the mucous membrane of the nose (e.g. allergies, catarrh).

The Safe Laser (880nm) Infra laser's light is absorbed in **much deeper layers** (biological effect reaches even depth of 8 cm), so it can be excellently used e.g. in **therapy of musculoskeletal disorder**, where pain is relieved, inflammation decreased and healing of muscles, tendons, joints is accelerated..

In case of higher dose it is suitable for regeneration of cartilage and cartilage surface of joints as well.

(Infra Laser is not suitable for treatment of disorders by radiating the nostril and it is forbidden to light into the nostril.)

According to clinic experiences the 660nm red laser performs better in decreasing inflammation, the 808nm infra laser is more efficient in pain relief.

**Further in the manual the Safe Laser® 500 Infra (808nm) is introduced in more detail.**

## Introduction of Safe Laser® 500 Infra device

**The Safe Laser® 500 Infra** is a medical device belonging to risk category II.a due to decree 4/2009.(III.17.) EüM (Ministry of Healthcare).

The instrument is manufactured by a special „**safe laser**” **technology** based on the principle that the parallel, dangerous for eye laser beam is modified by a specific optical system so that **it becomes harmless for eye**.



Due to this Safe Laser technology this special „soft laser” is a medical device which can be **safely used not only in hospitals, clinics, but also at home** (without goggles as well — Class 1 laser device)

The Safe Laser® 500 Infra can be efficiently used separately in itself or as supplementary therapy. Application of the laser light therapy is **painless**, its regular use **reduces the**

**curing time of disorders** and there is **no any known side-effect!** It can be combined with any other medication or instrumental therapy.

## **Medical conditions and diseases treatable with Safe Laser®**

### **500 Infra (indications)**

#### **Musculoskeletal disorders**

##### **Injuries:**

- Contusion, strain (distorsion), haematoma, rupture of taenia, muscle or tendon, fracture

##### **Disorders due to overstrain:**

- Tendinitis, myositis, bursitis
- Inflammation of periostil at the point of adhesion and sticking of muscles (e.g. tennis players' elbow inflammation at the point of adhesion of muscle to the lower arm as a result of overstrain)

##### **Degenerative deformations:**

- Joint wear, arthrosis
- Joint inflammation (arthritis)
- Disorders of vertebral column: pain relieving, inflammation decrease (e.g. lumbago)
- Muscle diseases e.g. muscle pain, limited movement (contracture)

Musculoskeletal disorders may cause problems, pains at various points of body and numerous joints.

##### **Time of healing of traumatic and sport injuries is shortened by laser therapy!**

Applying before surgery it accelerates absorption of haematoma, oedema, so the surgery area becomes more accessible, pain gets reduced.

Apply post-surgery laser therapy 1-2 times/day to achieve sooner healing.

In case of fractures a „small window” would be cut on the plastered limb and direct laser enlightening gives intensive help to the process of ossification.

#### **Dermatological diseases**

- It subserves regeneration of normal tissues in case of bruises, injured skin surface, post-surgery wounds and initiates of healing of ulcers.

#### **Diseases of nervous system (pain killing):**

- Post-herpetic pain: following convalescence from shingles (herpes zoster) burning pain often remains along the nerve line for years.



(With Safe Laser® Infra the treatment time is 2 minutes per point along the nerve line. After the first treatments the pain may increase due to reaction to treatment followed by relief of pain.)

- Phantom pain: Pain emerging after amputation of limb on the place of the lost limb (very grave treatment reaction may be expected within 12 hours, the pain may increase for 24 hours, but after second treatment improvement may be noted.)

### **Dental and mouth diseases**

Diseases of **skin surface** and mucous membrane (e.g. herpes, mouth wounds, ulcers, sores) and gingivitis, periodontitis, gum bleeding **can be treated with red light (660nm)** Safe Laser® 150 more efficiently (with optional fibre optics).

**The 808nm Safe Laser® 500 Infra can reach deeper areas and it is more suitable for pain relieving.**

- Toothaches, inflammations can be efficiently treated either by enlightening through cheek or with the help of fiber optic.
- Recovery of soft and bone tissues is accelerated after dental treatments, mouth surgery, implantation. It improves the sticking of the epithelium (osseointegration) around dental implantation even by enlightening through cheek.
- Convalescence is reduced after surgery, stitches can be removed sooner.
- Lock-jaw (trismus) – Lasting contraction of jaw muscles may evolve as a result of several causes e.g. inflammation of the wisdom-tooth.

Several minutes of Safe Laser® 500 Infra treatment on the jaw joint loosens the muscle, the lock-jaw resolves in few minutes, inflammation will be reduced.

## **Treatment with the Safe Laser® 500 Infra laser device**

### **Way of treatment:**

The Safe Laser® 500 Infra instrument is to be placed on the sore or damaged area in contact with it and enlighten it for a given time, then put it farther on the next point (disposable protective cap can be ordered).

Several points in sequence can be treated depending of the size of sore, damaged surface. Generally **the points sensible to pressing are to be treated.**

For sake of maximal safety to avoid the casual sighting of laser light the instrument is to be switched on after placing it on the skin surface. Having finished the treatment switch it off before removing from the skin surface!

Layers to be treated deeper than 8 cm are better accessible, if the head of Safe Laser® 500 Infra is a bit pressed into the tissues.

~~If because of an open wound the laser can not be put on the skin surface, then it~~ 5  
should be held to the nearest possible distance (max. 0,5 cm), but in this case the  
treatment time should be prolonged by one minute at each point to transfer adequate  
energy quantity into the organism necessary for the healing!

### **Duration of treatments (in one spot!):**

For different diseases different energy quantities (Joule) are to be  
introduced to achieve efficient healing. **Higher energy input is  
provided by prolonged irradiation.**



#### **4-10 Joule energy = min. 2+ minutes irradiation:**

Strains, bruises, muscle spasms, improvement of microcirculation,  
light musculoskeletal injuries, acute and chronic inflammations, dental and mouth  
disorders, dermatologic diseases.

#### **15 Joule energy = 3 minutes irradiation:**

Pain relieving, grave musculoskeletal disorders.

#### **25 Joule energy = 4-5 minutes irradiation:**

Cartilage regeneration, musculoskeletal injuries in deeper layers, rupture of taenia,  
muscle or tendons, fractures (in the beginning even twice per day)

### **Frequency of treatment:**

Frequency of treatment depends of the duration of existence of  
the disease. (How long ago arose the problem?)



#### **1. Acute diseases (recently arisen) and treatment of post-surgery cases:**

Treatments are to be applied **daily during 1-2 weeks**, later 3 times per week until the  
cessation of symptoms. Already during the first treatment or **within one day  
improvement may be noticed.**

#### **2. Treatment of chronic (lasting) diseases (arisen earlier than 6-8 weeks):**

Prolonged diseases are to be **treated less frequently**. Use the laser instrument **3 times  
per week** until the cessation or significant decrease of symptoms.

In case of chronic (prolonged) diseases duration of the healing process is naturally  
longer (days, weeks, maybe months).

Following the first treatments mild tingle may be felt, several hours later the **pain may increase in case of several chronic diseases (treatment reaction), but this is temporary phenomenon**. Intensity of the pain keeps decreasing with the number of treatments and ceases after 3-4 treatments, and the amelioration starts up. Such treatment reaction is a normal accompanying phenomenon indicating the patient's reaction to the therapy.



If we observe that e.g. **the aching joint neither ameliorates nor deteriorates**, probably we **treated with too low dosage** (enlightening of too short duration).

Individual sensitivity varies person by person. Doses of treatment keep accumulating slowly, so the treatment reaction (e.g. increase of pain) appears sooner or later (cca. after 4-5 weeks) and only then the subjective amelioration begins.

If by chance the **pain increases, becomes prolonged** as a result of treatments, it may mean that the **dosage of treatment was too high**. Over-treatment does not cause lasting harm. In this case several treatments are omitted and the therapy is continued with lower doses (less sessions or shorter duration).

**One of the reason of the accompanying pain is the sudden restart of microcirculation** (flow of blood in the smallest veins) in the stagnant areas. Decomposition products (not carried away) accumulated in the stagnant parts get into the circulation suddenly, therefore nausea, fatigue, malaise may seldom occur (following treatment of extended areas or high doses).



**More frequent or prolonged treatments does not necessarily accelerate healing, because there is a biological limit beyond which cells can not be further stimulated by irradiation!**



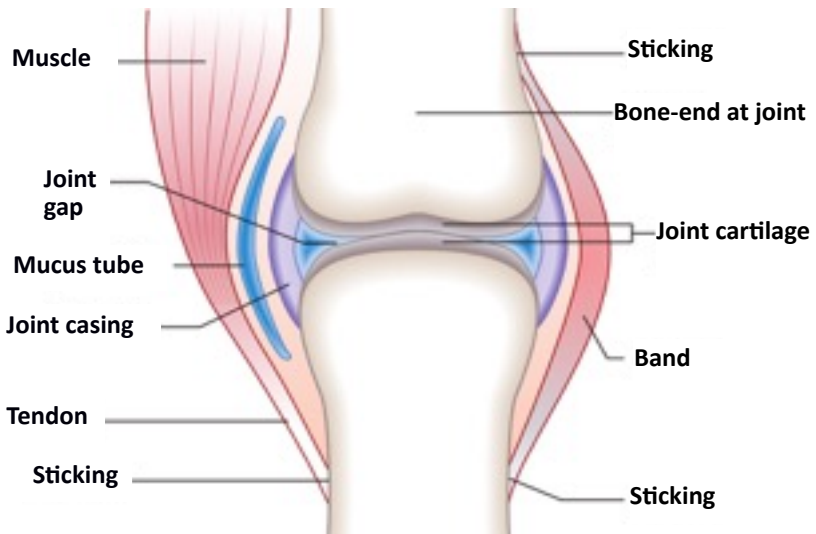
## Designating places of treatment:

**For muscles:** Muscles are thoroughly felt and touched and points of high pression-sensitivity are treated.

**For joints:** Generally are treated in the line of joint gap.

Joints can be better reached by bending the limbs, so inner part of the joint can be enlightened. Muscles moving the joint are felt and touched and sensitive points are treated.

**For tendons:** Treatment is applied at sticking of tendons, muscle-tendon transition and pression-sensitive points.



Even in case if the treatment points are not found precisely, the therapy can be efficient, because the light of Safe Laser® Infra is spread on extended surface.

## When to expect improvement as a result of the treatment?

**In certain cases** laser light provides rapid results. Improvements come in effect **within minutes/hours** in following cases: pain soothing, reduction of acute inflammations, bettering of microcirculation, muscle strain, resolution of muscle cramp.

**Concerning other problems** the effect may be noticed within **days/weeks**.

### **Contraindications:**

- In case of pregnancy irradiation of abdomen is forbidden because of (dangerous) increase of congestion!
- Usage of the instrument is forbidden in case of persons suffering of grave blood coagulation problems as well!
- Do not enlighten: tumor areas,  
thyroid (in case of super-activity) and breast area,  
fungus infected skin surfaces,  
implanted pacemaker!
- Direct irradiation of colored moles may be dangerous, because it qualifies as status prior to cancer.
- To enlighten into the nostril with Safe Laser® 500 Infra is forbidden (without nasal accessory)! (Only the instruments SL30 and SL150 are suitable for this purpose e. g. to treat allergy or catarrh.)
- **Never treat yourself without precise medical diagnosis by doctor**, because the Safe Laser® 500 Infra can decrease pain, but not always capable to eliminate the root of the problem and may obscure grave diseases temporarily!



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**EC CERTIFICATE**
**Production Quality Assurance**  
 Directive 93/42/EEC on Medical devices, Annex V

CE Certiso Ltd., Organisation for Certification and Testing on the Field of Medical and Hospital Engineering (NB 2409) certifies that the following manufacturer's quality management system concerning to the listed devices and device categories meets the requirements of the related requirements of the directive.

Name of the manufacturer:

**Safe Laser Bt.**

Headquarters:

**2011 Budakalász, Fecske u. 7. HUNGARY**

Scope:

**Therapeutic laser equipment**

The certificate covers the following devices:

Description of the device	Type	Intended use	Model	Risk class	Start date of certified status
therapeutic low-intensity laser	Safe Laser	laser light therapy	SL30	II.a	16 August 2013
soft laser	Safe Laser 150	laser light therapy	SL150	II.a	04 April 2014
soft laser	Safe Laser 500 Infra	laser light therapy	SL500	II.a	31 July 2014

This certificate is valid only in case of successfully conducted annual surveillance audits.

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**15 August 2018**

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 NB ID number: 2409



# Safe Laser

*New generation of soft lasers*

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