

# Photobiomodulation and Pain Management

**Fotona**  
choose perfection



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## Dear Fotona Partner

We would like to encourage you to join our worldwide effort to enable faster healing and improve the quality of life of countless patients with the power of Photobiomodulation (PBM) and Pain Management treatments. With Fotona's MarcCo™ handpieces and the power of light, we now have the perfect tools to improve the well-being of millions of people around the world. To show our commitment to this matter, we are now offering special deals on MarcCo™ handpieces.

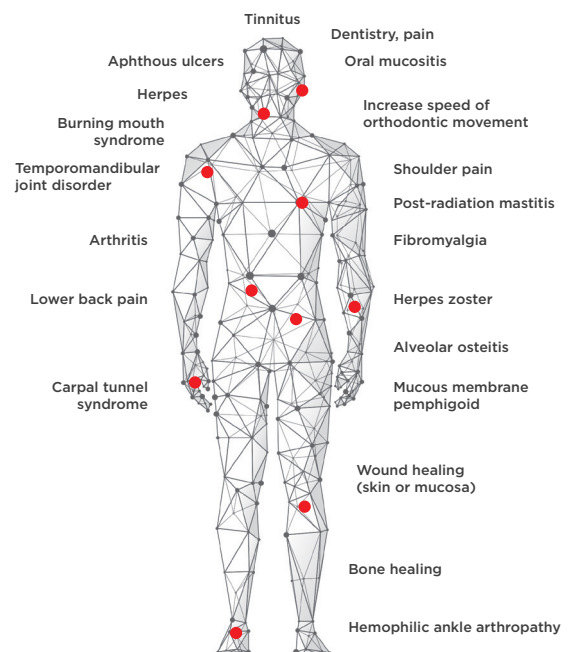
## The ideal solution for wound healing and pain reduction

PBM provides a clinically proven, non-invasive solution for a wide variety of wound healing and pain management applications.

### The process creates three key mechanisms of action:

1. PBM energy is absorbed in the mitochondria of the cell and results in an increase in ATP, a natural fuel for cell activity and metabolism.
2. The process creates mild oxidants (ROS), which leads to cellular repair and healing.
3. PBM therapy helps to dilate blood vessels and improves blood circulation.

PBM utilizes low-level, visible-red to near-infrared light energy, which stimulates cells to naturally heal, relieve pain and reduce inflammation. Additionally, the process results in accelerated tissue regeneration, stimulation of cell metabolism, increased lymphatic flow and stimulation of micro-circulation.



**For internal use only**

## Why should healthcare professionals consider upgrading their treatment options with PBM and Pain Management?

1. To be up to date with the latest trends in medicine.

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2. To offer patients a superior treatment and to let them know that not only their health is important but also their **well-being**.

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3. To speed up the healing process and to reduce the pain of their patients.

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4. With PBM and Pain Management protocols, healthcare professionals can now offer their patients a more **natural way of healing** and pain relief, which can play an important role in reducing the need for analgesics.

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5. With the implementation of PBM and Pain Management, they obtain something that few other clinics have – a unique competitive advantage and great marketing tool.

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6. Healthcare professionals can charge more for their treatments and/or present this as an extra treatment for their patients. It usually helps if patients receive their bills while keeping in mind that additional effort was put into reducing their pain and **accelerating healing**.

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7. It can also make life easier and better for the practitioners and staff themselves – for internal use to reduce neck and back pain, which often occurs among healthcare professionals. This helps to create a better atmosphere in the team which leads to **better overall results**.

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8. The majority of PBM and Pain Management treatments can be performed by auxiliary staff (with the instructions of healthcare professionals).

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## MarcCo™ Handpieces

- Enable fast, effective and non-invasive treatments
- Sterilizable spacers offer increased safety
- Patient and practitioner friendly
- Modern ergonomic design with 3 sizes for every clinical situation
- Deliver a unique, collimated beam profile that maintains its effect on the irradiated tissue, regardless of distance, and can be used in contact (with spacer) or non-contact mode
- Homogenous (flat-top) beam profiles enable standardized and reproducible treatments, especially if used in the recommended “stamping” mode, which enables greater control of the delivered energy density, independent of the practitioners’ experience and attention
- Enable the easy combination of photobiomodulation and pain-relief protocols, which would usually require two separate devices.



## Specifications

### 1. MarcCo™ S:

- Spot size: 10 mm
- Ordering reference: ID 105118
- Main intended use: MarcCo™ S is mainly intended for intraoral PBM and wound healing, due to its optimal size and compatibility with the LA-adapter. It is designed for easy intraoral accessibility. The spacer and LA-adapter are sterilizable.

### 2. MarcCo™ M:

- Spot size: 24 mm
- Ordering reference: ID 105119
- Main intended use: MarcCo™ M is most suitable for the head area (inside the mouth if there is a slightly larger area to irradiate and if it is accessible without the LA adapter). Otherwise it is particularly good for TMJ (temporomandibular joint disorder) or TN (trigeminal neuralgia), which are conditions that doctors deal with frequently. It is irradiated from the outside via application on the face, neck & around the ears. For a better effect, treatment can also be performed intra-orally using the MarcCo™ S coupled with the LA adapter. The MarcCo™ M is also suitable for other not-too-large body areas.

### 3. MarcCo™ L:

- Spot size: 43 mm
- Ordering reference: ID 105120
- Main intended use: MarcCo™ L is recommended for all large areas, especially for muscle and nerve conditions throughout the body.

#### What is included with a single handpiece from the MarcCo™ family?

- MarcCo™ handpiece.
- Dedicated sterilizable spacer for contact use.
- Protective case.



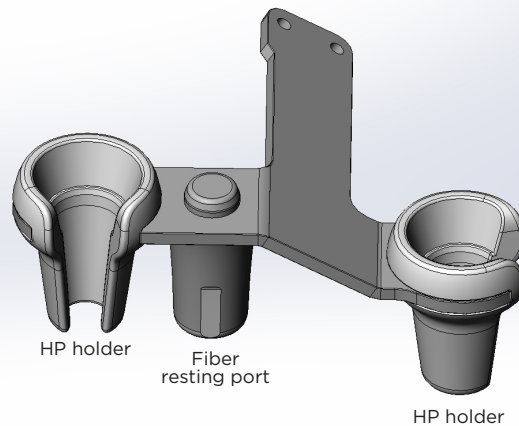
#### Extras:

- 945 µm fiber beam delivery assembly compatible with all MarcCo™ handpieces. The fiber beam delivery assembly must be purchased separately.
  - LightWalker®: fiber beam delivery 945 µm - ID 105145 (also compatible with R30-A handpiece fiber)
  - SkyPulse®: fiber beam delivery 945 µm - ID 106228

#### Important notice for LightWalker® users:

The MarcCo™ fiber beam delivery is inserted in to the **RED PORT**, while with the Genova™ it is inserted in to the **BLACK PORT**.

- Aesthetic Handpiece Holder for LightWalker - ID 108526



- LA-adapter (ID 99282), designed for treatment of hard-to-reach intraoral areas in contact mode at a 90° angle. It is compatible with the MarcCo™ S and Genova™.



### **Sterilizability:**

All **MarcCo™** handpieces have dedicated spacers that are sterilizable.

### **Genova™ Handpiece:**

The Genova™ HP has a beam size similar to the MarcCo™ S. The MarcCo™ S is essentially an evolution of the Genova™ HP with exceptional beam homogeneity, a sterilizable spacer and the option to be separated from the fiber beam delivery.

## **Protocol**

### **PBM**

The treatment protocol for PBM is to irradiate the target tissue 1 min per spot, with MSP pulse duration (CW in SPL), 10-15 Hz, without overlapping, using the parameters below. Repeat the treatment every second day to complete at least 3 sessions, optimally between 5 and 8.

MarcCo™ S, MarcCo™ S-LA, Genova™, Genova™-LA: **0.4 - 0.6 W/cm²**

MarcCo™ M, MarcCo™ L: **0.2 W/cm²**

## Pain Management

Treatment protocol for pain management is to irradiate the target tissue 1-2 min/spot with MSP pulse duration (CW in SPL), 30-60 Hz using the parameters below. Optimally we want to achieve 38-39 °C superficially on the target tissue. The number of sessions varies according to the condition and the treatment results.

MarcCo™ S, MarcCo™ S-LA, Genova™, Genova™-LA: **0.7 - 1.7 W/cm<sup>2</sup>**

MarcCo™ M: **0.6 W/cm<sup>2</sup>**

MarcCo™ L: **0.4 - 0.5 W/cm<sup>2</sup>**

## Tandem - Fotona's unique technological solution

Tandem offers simultaneous action of both diode wavelengths – 670 and 1064 nm. In this way, dentists can perform simultaneous PBM of different target tissue layers and depths for superior treatment outcomes. This feature is only available with SkyPulse®.



### Why is it important to set lower intensities when using larger Handpiece (HP) diameters?

With a larger spot size HP you can simultaneously achieve faster and wider treatment area coverage as well as deeper penetration.

However, at the same laser power, the tissue gets heated up much quicker with larger spot sizes compared to smaller sizes. Therefore, we are able to use much lower power densities with larger spot sizes for the same effect.

## Useful Links

### Webinars:

- [Jason Pang: Lasers and Photobiomodulation](#)
- [Linhlan Nguyen: Introducing MarcCo Handpieces](#)

### Clinical Notes:

- [Nd:YAG Photobiomodulation for the Treatment of Oral Mucositis Jason Pang, BDS, BSci, MSc](#)
- [Biomodulation with Nd:YAG for Treatment of TMJ Syndrome - Dr. Betül Göfteci](#)
- [Biomodulation for Pain Relief - Dr. Nguyen, Linhlan](#)

### Brochure:

- [Photobiomodulation and Pain Management](#)

### PBM manual with acupuncture and trigger-point illustrations, treatment recommendations:

- [Prof. Stefano Benedicenti - ATLAS OF LASER THERAPY](#)

### Articles (PubMed):

- [Assessment of the Healing of Dental Implant Surgical Site Following Low-Level Laser Therapy Using Bioclinical Parameters: An Exploratory Study](#)
- [Effectiveness of occlusal splints and low-level laser therapy on myofascial pain](#)
- [Efficacy of Low-Level Laser Therapy in Subjective Tinnitus Patients with Temporomandibular Disorders](#)
- [Effects of low-level laser therapy as an adjunct to standard therapy in acute pericoronitis, and its impact on oral health-related quality of life](#)