

# GUIDED **DOLORCLAST**<sup>®</sup> THERAPY

**HIGH ENERGY PERFORMANCE**

FROM THE INVENTORS OF RADIAL SHOCK WAVE THERAPY



YOUR HOLISTIC  
SOLUTION FOR  
MUSCULOSKELETAL  
PAIN THERAPY

**EMS** 

# THE GAME CHANGER

THE SUCCESS STORY OF  
GUIDED DOLORCLAST® THERAPY

MORE THAN  
**100**  
MILLION  
PATIENTS  
CAN'T BE WRONG  
**SINCE 1999**

# IN PAIN THERAPY



20 YEARS OF **UNMATCHED PERFORMANCE**

**PATENTED**

- ▶ **2 INTERNAL COMPRESSORS**
- ▶ **OPTIMISED ELECTRONIC VALVE CONTROL**
- ▶ **PATENTED COMPRESSION CHAMBERS IN THE HANDPIECE**

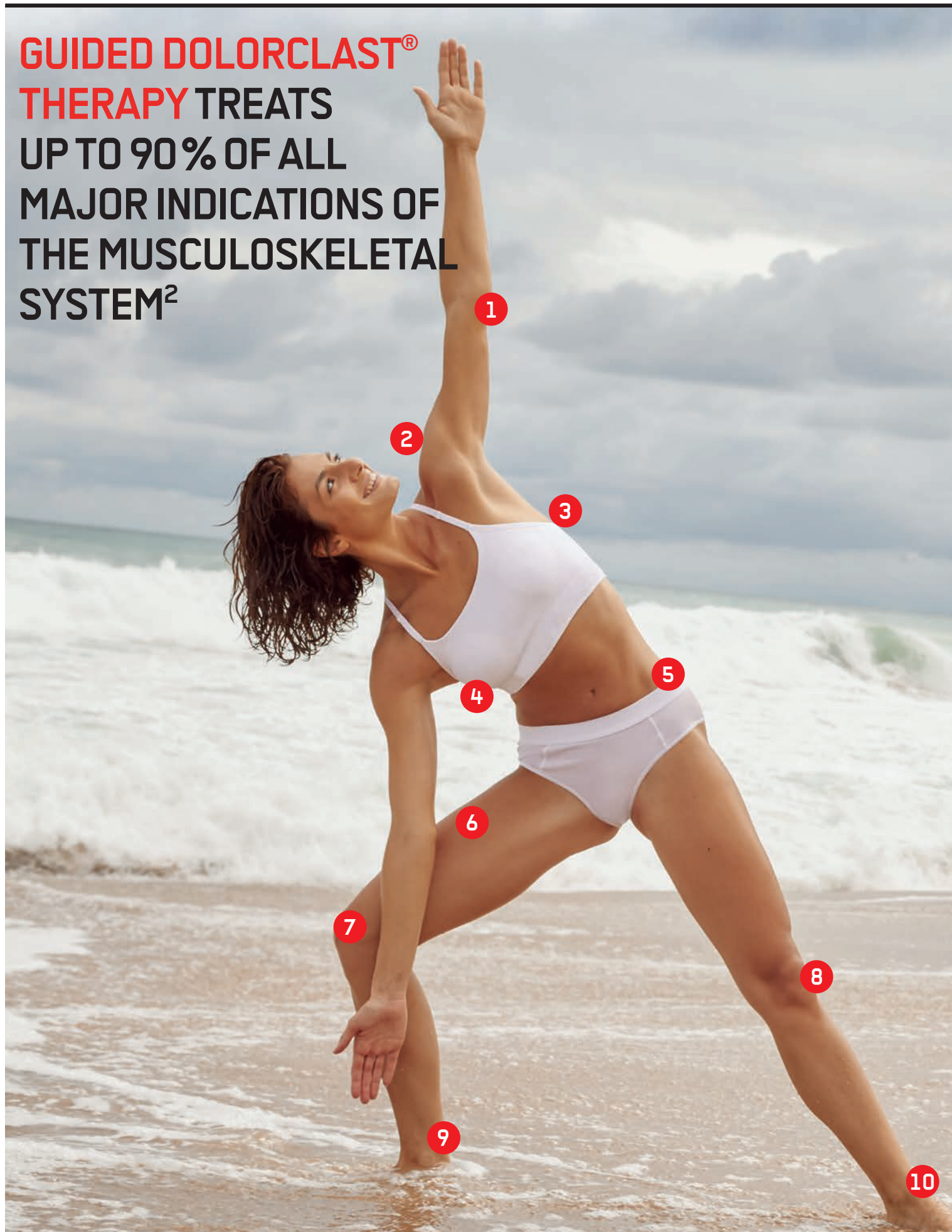
**WHY IS THIS SO IMPORTANT?**

**DOLORCLAST® RADIAL SHOCK WAVE DELIVERS EFFICIENT, FAST TREATMENTS AND HAPPY PATIENTS.**



# PROVEN INDICATIONS

**GUIDED DOLORCLAST<sup>®</sup>**  
**THERAPY TREATS**  
**UP TO 90% OF ALL**  
**MAJOR INDICATIONS OF**  
**THE MUSCULOSKELETAL**  
**SYSTEM<sup>2</sup>**



## 1 TENNIS ELBOW

► Almost 3% of adults suffer from lateral epicondylitis, which, without treatment, will take up to two years to heal<sup>1</sup>.

## 3 UPPER BACK PAIN

► Thoracic spine and neck pain are a leading cause of disability with an annual prevalence rate exceeding 30% of the population<sup>1</sup>.

## 5 LOWER BACK PAIN

► N<sup>o</sup>1 self-reported musculoskeletal pain, its prevalence is about 20% in individuals aged between 20 and 60 years<sup>1</sup>.

## 7 PATELLA TIP SYNDROME

► Also known as jumper's knee, this typical overload injury is characteristic of recreational athletes with a prevalence of 8.5% among this population<sup>1</sup>.

## 9 ACHILLES TENDINOPATHY

► One of the most frequent ankle and foot overuse injuries, this disorder affects about 9% of recreational runners and causes up to 5% of professional athletes to end their career<sup>1</sup>.

## 2 ROTATOR CUFF TENDINOPATHY

► This condition accounts for 45% of all shoulder pain that requires professional medical care<sup>1</sup>.

## 4 ADHESIVE CAPSULITIS

► Up to 5% of the population, with a greater predominance of women, will be affected by a frozen shoulder; usually appearing on the non-dominant hand<sup>1</sup>.

## 6 GOLFER'S ELBOW

► Fewer than 1% of the population will suffer from a medial epicondylitis. However, this condition affects subjects between the ages of 45 and 65, preventing them from living a normal life, working or doing sports<sup>1</sup>.

## 8 KNEE OSTEOARTHRITIS

► Almost 13% of women and 10% of men aged 60 years and older suffer from symptomatic knee osteoarthritis<sup>1</sup>.

## 10 PLANTAR FASCIOPATHY

► This very common condition accounts for about 10% of runner-related injuries and up to 15% of all foot symptoms requiring professional medical care<sup>1</sup>.



<sup>1, 2</sup> SCAN HERE FOR REFERENCE STUDIES  
& 40 OTHER INDICATIONS GUIDED DOLORCLAST THERAPY CAN TREAT

# WHY GUIDED DOLORCLAST®

## GUIDED DOLORCLAST® THERAPY OFFERS:

- ▶ GUIDANCE TO 3 HIGH ENERGY THERAPIES:
  - DOLORCLAST® RADIAL SHOCK WAVE
  - DOLORCLAST® HIGH POWER LASER
  - PIEZOCLAST® FOCUSED SHOCK WAVE
- ▶ EVIDENCE-BASED PRACTICAL EXPERTISE
- ▶ FAST, SAFE AND EFFICIENT
- ▶ A CONSERVATIVE TREATMENT
- ▶ NO MEDICATION, NO SURGERY
- ▶ EXCLUSIVE EDUCATION PROGRAMMES FOR PRACTITIONERS

FROM THE INVENTORS  
OF RADIAL SHOCK WAVE  
THERAPY



# THERAPY?



## PATIENTS LOVE **GUIDED DOLORCLAST® THERAPY**

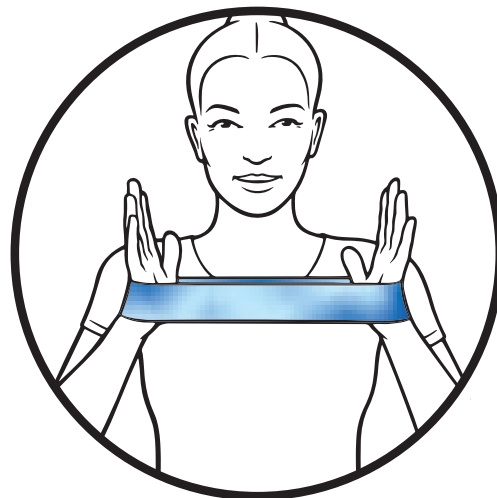
- ▶ BENEFICIAL EFFECTS OF GUIDED DOLORCLAST THERAPY ON PAIN AND MOBILITY ARE OFTEN EXPERIENCED **FROM THE VERY FIRST TREATMENT SESSION.**
- ▶ 3 TO 4 SESSIONS MAY BE SUFFICIENT
- ▶ LONG-TERM HEALING BENEFITS CONTINUE FOR MONTHS AFTER THE LAST TREATMENT



# THE **GDT** COMPASS AND ITS

## **04** REHABILITATE

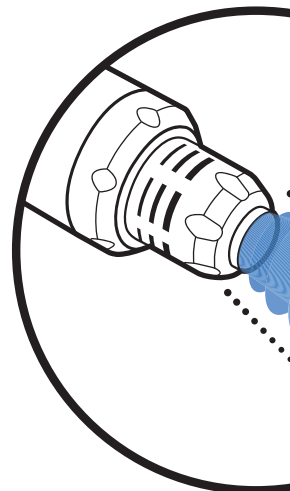
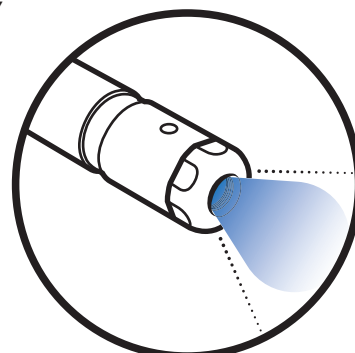
REHABILITATE WITH COMPLEMENTARY EXERCISES  
TO INCREASE FUNCTION AND SUSTAINABLE RECOVERY



## **03** TREAT

CHOOSE THE APPROPRIATE HIGH ENERGY DOLORCLAST® THERAPY  
TO TREAT YOUR PATIENT'S PATHOLOGY

- ▶ **DOLORCLAST®** RADIAL SHOCK WAVES
- ▶ **DOLORCLAST®** HIGH POWER LASER
- ▶ **SWISS PIEZOCLAST®** FOCUSED SHOCK WAVES





# 4-STEP PROTOCOL



## 01 ASSESS

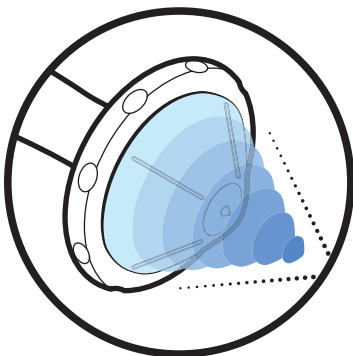
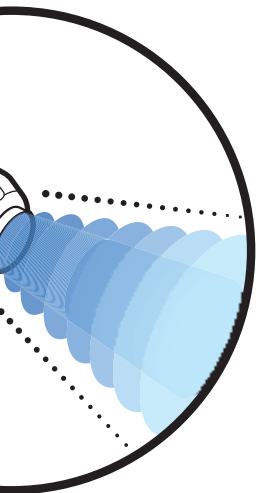
ASSESS YOUR PATIENT'S PATHOLOGY  
WITH KEY QUESTIONS & TESTS



## 02 ENGAGE

OFFER YOUR PATIENTS A HIGH ENERGY,  
EFFICIENT AND DRUG-FREE SOLUTION TO:

- ▶ RELIEVE PAIN
- ▶ TREAT INFLAMMATION
- ▶ STIMULATE NATURAL HEALING



# PROVEN CLINICAL EFFECTS

## GUIDED DOLORCLAST<sup>®</sup> THERAPY PROVIDES THE TOOLS TO TARGET THE ROOT CAUSE OF PATHOLOGIES

### 1. RELIEVE PAIN

**DolorClast<sup>®</sup> Radial and Focused Shock Wave Therapy inhibits pain signalling of the C-nerve fibres:**

Pain leads to release of substance P, a neuropeptide responsible for overwhelming pain signaling inside C-nerve fibres. By blocking the release of substance P, DolorClast<sup>®</sup> Shock Wave Therapy brings rapid and durable pain relief and reduces neurogenic inflammation.

### 2. TREAT INFLAMMATION

**DolorClast<sup>®</sup> Shock Wave and Laser Therapies reduce biochemical inflammatory response inside tissues:**

By reducing inflammatory mediator prostaglandin E2 (PGE2), DolorClast<sup>®</sup> therapies contribute to reduce inflammation and Substance P release. In turn this also reduces neurogenic inflammation.

### 3. STIMULATE TISSULAR HEALING

**By reducing neurogenic inflammation, DolorClast<sup>®</sup> devices enable tissular healing:**

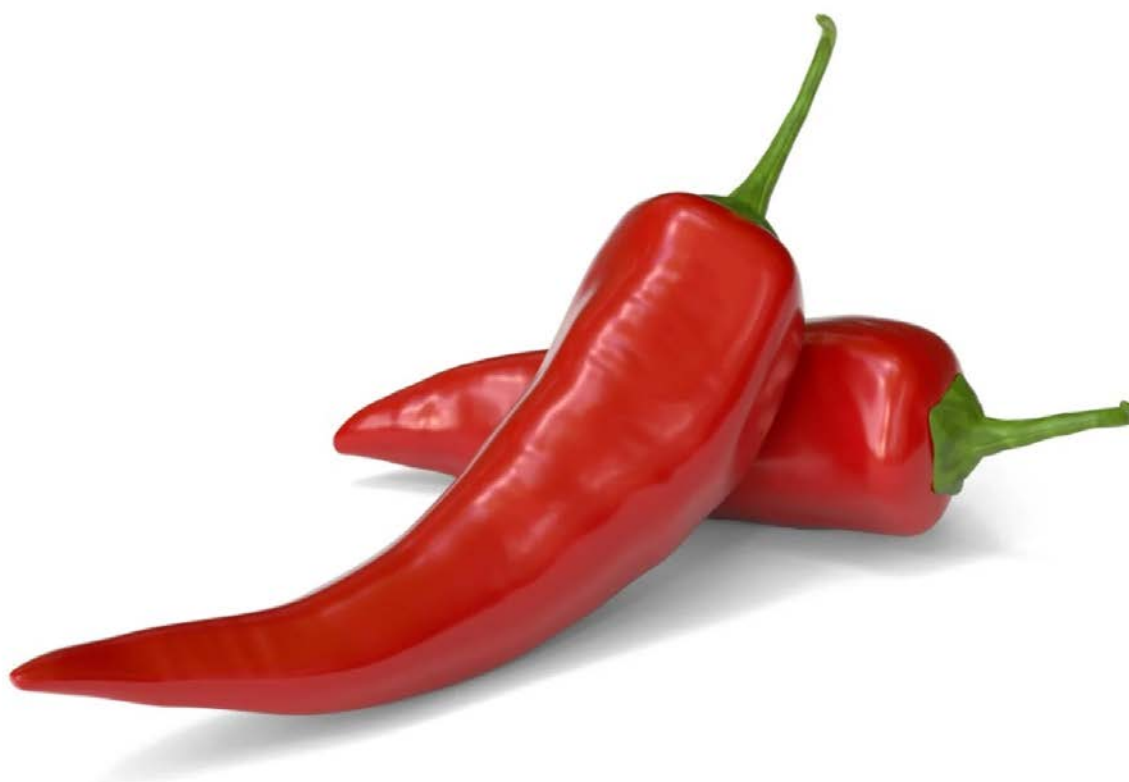
Neurogenic inflammation inhibits the expression of scleraxis<sup>3</sup>, as well as inhibiting healing processes.

**Important: Pharmaceutical drugs can inhibit the expression of scleraxis<sup>3</sup>. This is the case with steroid injections; they address inflammation but they inhibit healing. In the same way, local anaesthetics reduce pain but they also inhibit scleraxis.**

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<sup>3</sup>Scleraxis is a transcription factor required for proper embryonic development of tendons. Scleraxis is the earliest detectable marker for differentiated tendon cells and activates downstream tendon differentiation genes.

# GUIDED DOLORCLAST<sup>®</sup> THERAPY PROVIDES PATIENTS WITH A UNIQUE DRUG-FREE TREATMENT TO HEAL THEIR MUSCULOSKELETAL PATHOLOGIES



## THE HOT CHILLI EFFECT

Hot chilli peppers contain capsaicin.

At first this substance overwhelms the so-called C-nerve fibres responsible for transmitting pain but then disables them for an extended period of time. Everybody knows the feeling; first, the mouth is on fire, then it feels completely numb.

Research has indicated that shock wave therapy works in the same way. When activated, the C-nerve fibres release a specific substance (substance P) in the tissue as well as in the spinal cord. This substance is responsible for causing slight discomfort during and after shock wave treatment. However, with prolonged activation, C-nerve fibres become incapable for some time of releasing substance P. The effect is pain relief.

# MECHANISMS OF ACTION

## NERVES

- ▶ Hyperstimulation of nerves, activating the gate control mechanism
- ▶ Removal of substance P from C-fibres
- ▶ Blockade of neurogenic inflammation

## TENDONS

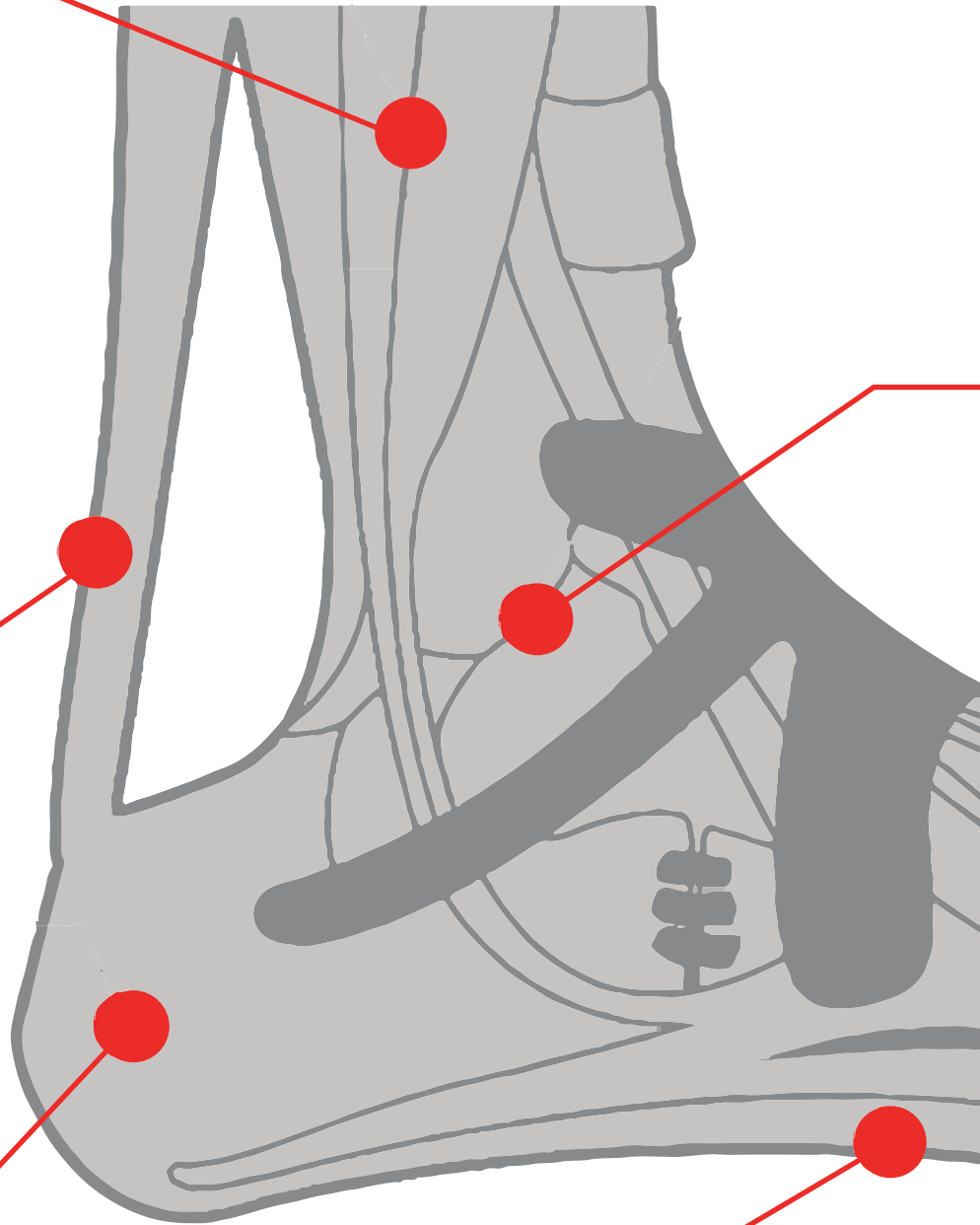
- ▶ Improved movement of tendon gliding thanks to lubricin
- ▶ Stimulation of tendon remodelling

## BONES

- ▶ Stimulation of proliferation and differentiation of osteoblasts
- ▶ New bone remodelling thanks to increased microcracks / new bone formation

## MUSCLES

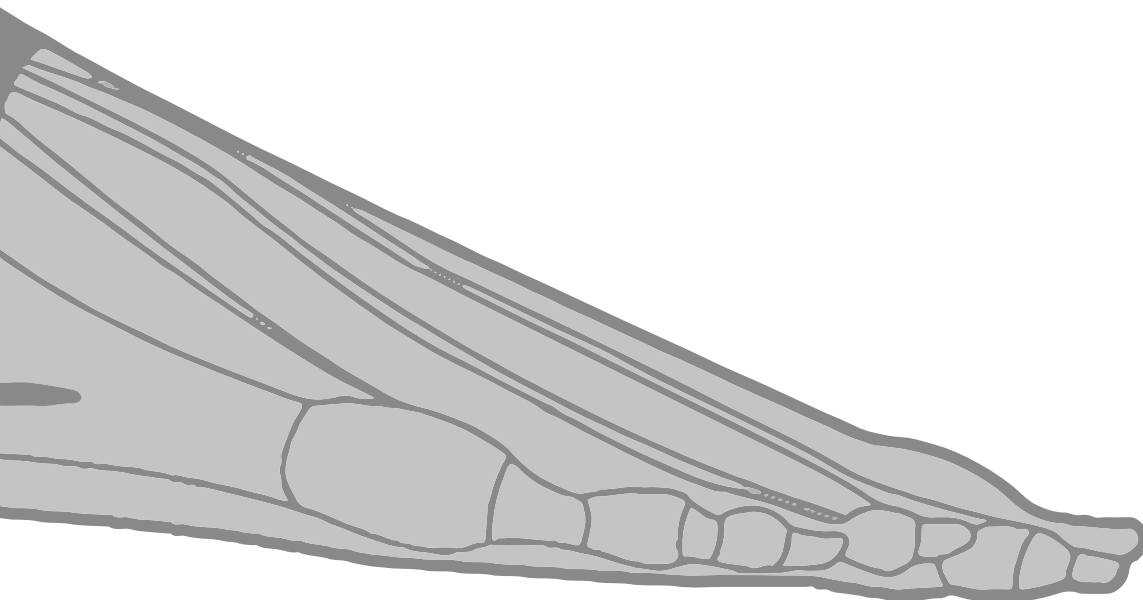
- ▶ Removal of substance P from trigger points
- ▶ Functional angiogenesis - improved blood circulation
- ▶ Mechanical muscle relaxation



# GUIDED DOLORCLAST® THERAPY ACTS ON THE MUSCULOSKELETAL SYSTEM VIA A MULTITUDE OF MOLECULAR AND CELLULAR MECHANISMS

## CARTILAGE

- ▶ Decreased cartilage degradation
- ▶ Reduced progression of osteoarthritis



Wuerfel T, Schmitz C, Jokinen LLJ. The effects of the exposure of musculoskeletal tissue to extracorporeal shock waves. *Biomedicines* 2022;10(5):1084. doi: 10.3390/biomedicines10051084.



# CLINICALLY PROVEN

**IN 80% OF THE STUDIES<sup>3</sup>,  
THE SWISS DOLORCLAST<sup>®</sup> PRODUCED  
BETTER CLINICAL OUTCOMES**

INDICATION	STUDY	ENERGY DENSITY	OUTCOME
Achilles tendinopathy	Rompe et al. (2007)	0.10 (ED <sub>+</sub> )	+
	Rompe et al. (2008)	0.12 (ED <sub>+</sub> )	+
	Rompe et al. (2009)	0.10 (ED <sub>+</sub> )	+
Adhesive capsulitis of the shoulder	Hussein & Donatelli (2016)	0.16 (ED <sub>+</sub> )	+
Calcifying tendonitis of the shoulder	Kalvaag et al. (2017)	Up to 0.24 (ED <sub>+</sub> )	+
	Kolk et al. (2013)	0.11 (ED <sub>+</sub> )	-
Greater trochanteric pain syndrome	Rompe et al. (2009)	0.12 (ED <sub>+</sub> )	+
Knee osteoarthritis	Imamura et al. (2017)	Up to 0.16 (ED <sub>+</sub> )	-
	Li et al. (2015)	0.04 - 0.16 (ED <sub>+</sub> )	+
	Zhong et al. (2019)	2.5 bar	+
	Zhao et al.	0.25 mJ/mm <sup>2</sup> (3 bar air pressure)	+
Lateral epicondylitis	Yang et al.	2 - 3.5 bar	+
	Lee et al. (2012)	0.06 - 0.12 (ED <sub>+</sub> )	+
	Mehra et al. (2003)	0.10 (ED <sub>+</sub> )	+
Non-unions	Silk et al.	0.16 mJ/mm <sup>2</sup>	+
Plantar fasciopathy	Mehra et al. (2003)	0.10 (ED <sub>+</sub> )	+
	Gerdesmeyer et al. (2008)	0.16 (ED <sub>+</sub> )	+
	Ibrahim et al. (2010)	0.16 (ED <sub>+</sub> )	+
	Rompe et al. (2010)	0.16 (ED <sub>+</sub> )	-
	Chow & Cheing (2007)	0.05 - max. tolerable ED <sub>+</sub>	+
	Rompe et al. (2015)	0.16 (ED <sub>+</sub> )	+
	Eslamian et al. (2016)	0.2 (?) (ED <sub>+</sub> )	+
	Shaheen (2010)	0.06 - 0.14 (ED <sub>+</sub> )	+
	Konjen et al. (2015)	0.08 (ED <sub>+</sub> )	+
	Grecco et al. (2013)	0.12 (ED <sub>+</sub> )	+
	Greve et al. (2009)	0.12 (ED <sub>+</sub> )	+
	Marks et al. (2008)	0.16 (ED <sub>+</sub> )	-
	Akinoglu et al. (2017)	0.2 and 0.3 mJ/mm <sup>2</sup>	+
	Cinar et al. (2018)	0.02 mJ/mm <sup>2</sup>	+
Narin et al. (2020)	2-3 bar	+	
Primary long bicipital tenosynovitis	Liu et al. (2012)	0.12 (ED <sub>+</sub> )	+
Proximal hamstring tendopathy	Cacchio et al. (2011)	0.18 (ED <sub>+</sub> )	+
Spasticity	Vidal et al. (2011)	0.10 (ED <sub>+</sub> )	+
Subacromial pain	Engebretsen et al. (2009)	0.1 - 0.16 (ED <sub>+</sub> )	-
	Engebretsen et al. (2011)	0.1 - 0.16 (ED <sub>+</sub> )	-
	Kalvaag et al. (2018)	0.01 - 0.3 mJ/mm <sup>2</sup>	+

# RESULTS



## CLINICAL OUTCOMES OF DOLORCLAST® RADIAL SHOCK WAVE

**80%**

OF PUBLISHED STUDIES<sup>3</sup> PERFORMED WITH A SWISS DOLORCLAST DEVICE DEMONSTRATED A POSITIVE PATIENT OUTCOME WITH ONLY 3 SESSIONS

**80%**

OF ALL PUBLISHED STUDIES<sup>3</sup> PERFORMED WITH A SWISS DOLORCLAST DEVICE DEMONSTRATED A POSITIVE PATIENT OUTCOME

**90%**

OF CLINICAL TRIALS<sup>3</sup> WERE PERFORMED WITH AN ENERGY DENSITY  $> 0.1 \text{ mJ/M}^2$

<sup>3</sup>Clinical trials published on PEDro database performed with a DolorClast device

<sup>3</sup>SCAN QR CODE  
TO PEDro



# 3 THERAPIES - 1 GOAL:

EVIDENCE-BASED  
**HIGH ENERGY THERAPIES**  
FOR ORTHOPAEDICS  
AND SPORTS MEDICINE





# PAIN-FREE PATIENTS



**DOLORCLAST®**  
RADIAL SHOCK WAVES



**PIEZOCLAST®**  
FOCUSED SHOCK WAVES



**DOLORCLAST®**  
HIGH POWER LASER



# DOLORCLAST® RADIAL

The DolorClast® Radial Shock Waves has the widest range of treatment possibilities, to address superficial sub-acute or chronic musculoskeletal pathologies.

## HIGH ENERGY DELIVERY

The most powerful radial shock wave device on the market with the most constant high energy output at all treatment frequencies.

- ▶ **2 integrated compressors** coupled with optimised air management system delivers high energy impulses up to 25Hz.
- ▶ Treat anywhere with the transportable DolorClast® Radial Shock Waves

## IMPROVED PATIENT EXPERIENCE

Specific treatment modes to achieve best possible comfort:

- ▶ **«Analgesic»** to reduce pain even for sensitive patients or painful conditions
- ▶ **«Ramp up»** to gradually and automatically increase energy output during the treatment
- ▶ **«Burst»** to deliver impulses altering 2 frequencies increasing mechanical stimulation variation

## IMPROVED USER EXPERIENCE

The new DolorClast® Blue handpiece features:

- ▶ Easy access, **large output control buttons** for easy treatment control
- ▶ **7 applicators with fast twist release** for quick applicator changing and adapting to treatment needs
- ▶ **Up to 25 Hz frequency**, enabling an output of 1500 high energy shock waves per minute for short and efficient treatment sessions



# SHOCK WAVES

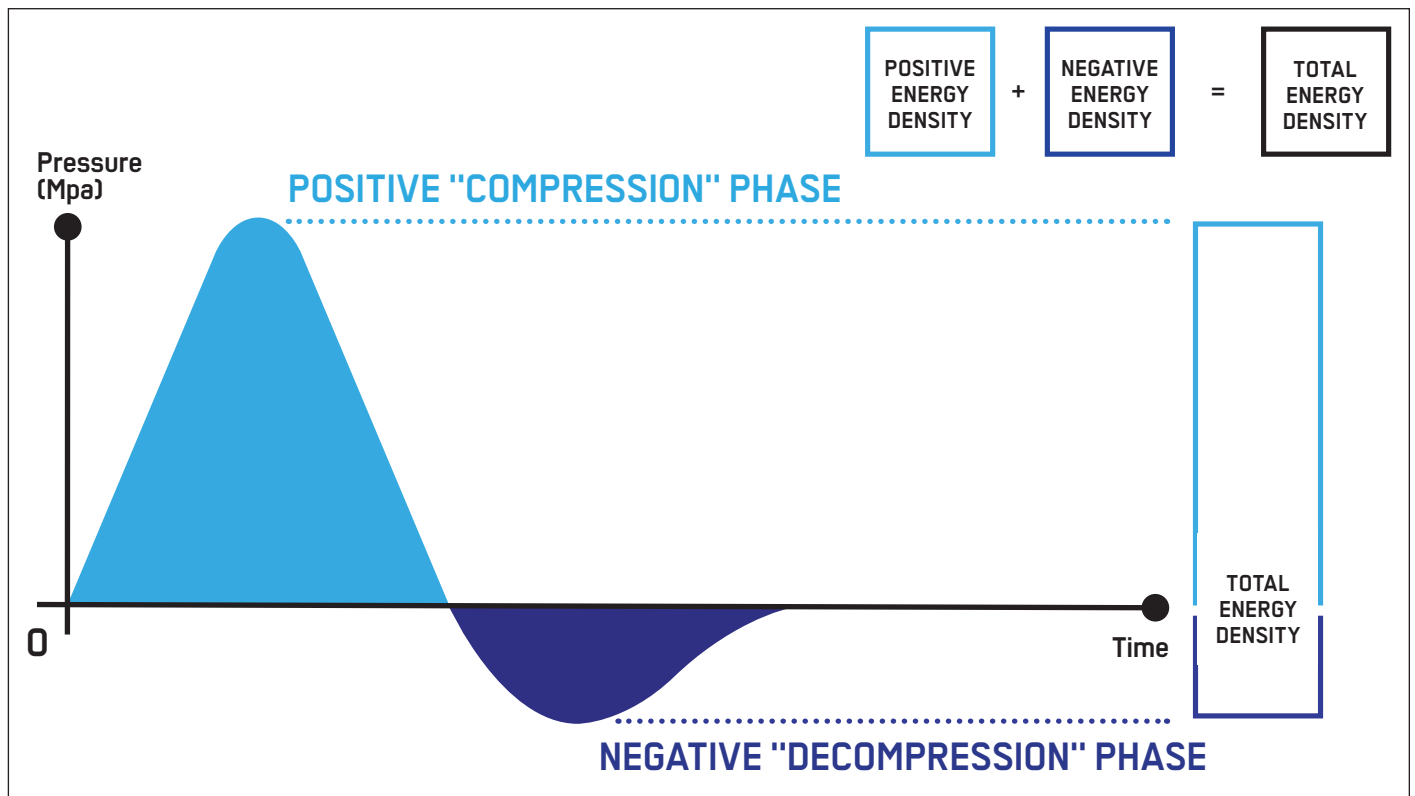
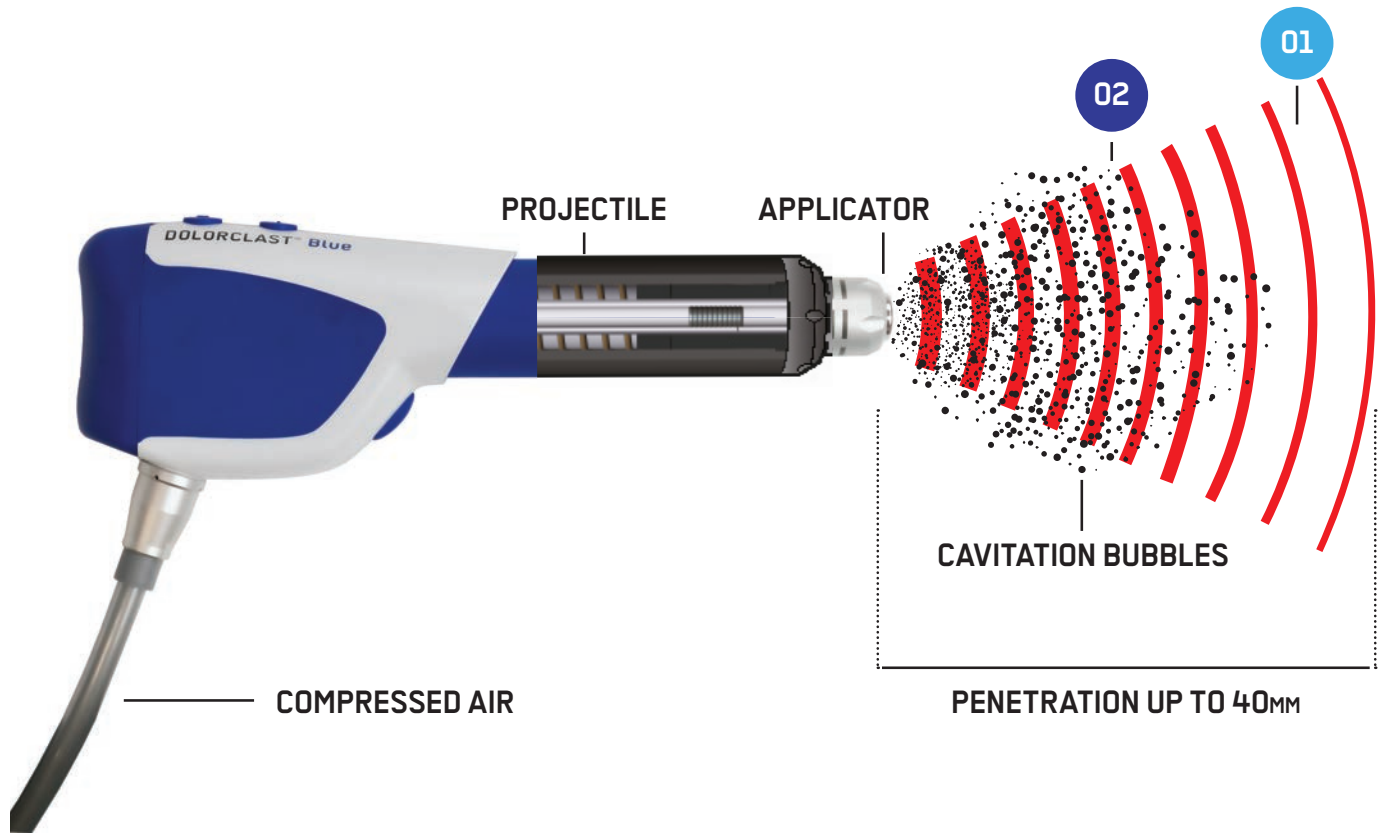


**THE MOST VERSATILE THERAPY FROM THE INVENTORS OF RADIAL SHOCK WAVES**

**25Hz**  
HIGH ENERGY



# HIGH ENERGY



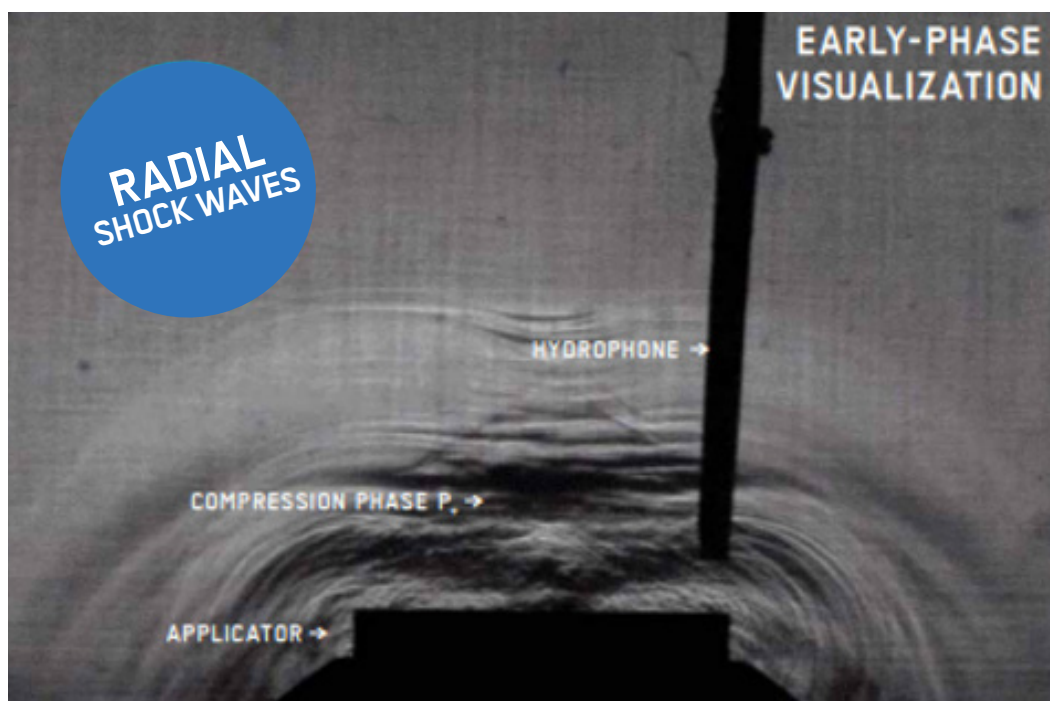
Pressure characterization of a radial shock wave

# = HIGH CAVITATION



## ONLY A HIGH ENERGY SHOCK WAVE CAN DELIVER HIGH CAVITATION

- ▶ A HIGH PRESSURE POSITIVE COMPRESSION PHASE RESULTS IN A HIGH NEGATIVE DECOMPRESSION PHASE
- ▶ CAVITATION IS CAUSED BY THE NEGATIVE PRESSURE IN THE SECOND PART OF THE SHOCK WAVES<sup>4</sup>
- ▶ THE IMPLOSION OF CAVITATION BUBBLES GENERATES SECONDARY SHOCK WAVES THAT SIGNIFICANTLY INCREASE TISSULAR STIMULATION



- ▶ A SIGNIFICANT PART OF THE EFFECT OF SHOCK WAVES IN THE TISSUE IS MEDIATED BY CAVITATION.<sup>5</sup>
- ▶ STIMULATION OF THE NERVES VIA A CAVITATION MECHANISM HAS BEEN DEMONSTRATED IN A STUDY BY SCHELLING ET AL. (1994).

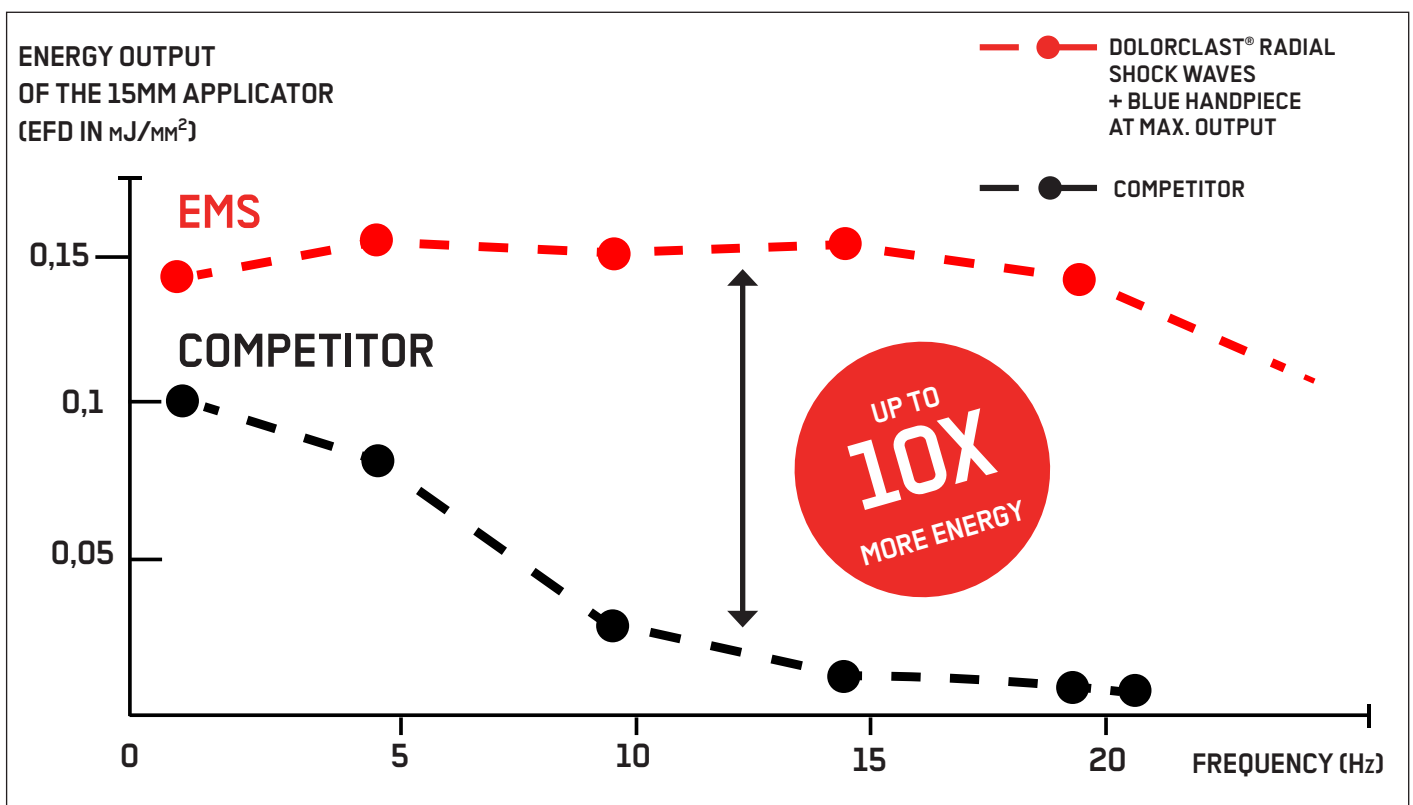
<sup>4</sup>Ogden JA, Tóth-Kischkat A, Schultheiss R. Principles of shock wave therapy. *Clin Orthop Relat Res* 2001;(387):8-17. doi: 10.1097/00003086-200106000-00003.

<sup>5</sup>Császár NB, Angstman NB, Milz S, Sprecher CM, Kobel P, Farhat M, Furia JP, Schmitz C. Radial shock wave devices generate cavitation. *PLoS One* 2015;10(10):e0140541. doi: 10.1371/journal.pone.0140541.

# PROVEN OUTSTANDING

## SUPERIOR PERFORMANCE OF EMS DOLORCLAST® RADIAL SHOCK WAVES

A NEW BENCH TEST COMPARISON STUDY BETWEEN THE DOLORCLAST® RADIAL SHOCK WAVES AND THE STORZ MASTERPULS® 200 ULTRA DEMONSTRATES SIGNIFICANT DIFFERENCES IN ENERGY OUTPUT AT HIGHER FREQUENCY SETTINGS.



Comparison of energy output at all frequencies. Source of extracted measurements<sup>6</sup>.

For detailed information of the test bench setup, measurement accuracy and measured values represented in the graph above, please refer to pages 2, 6 of the comparative study.<sup>6</sup>

These differences were investigated in a recent comparative study by Nina Reinhardt and colleagues at the Helmholtz Institute for Biomedical Engineering, RWTH (Aachen, Germany). The authors of this study compared the latest DolorClast® Radial Shock Waves and the Storz MASTERPULS® 200 Ultra. They found substantial differences regarding the total energy that can be delivered to a patient.

SCAN QR CODE  
TO READ FULL STUDY\*



<sup>6</sup>Reinhardt N, Wegenaer J, de la Fuente M. Influence of the pulse repetition rate on the acoustic output of ballistic pressure wave devices. *Sci Rep* 2022;12(1):18060. doi: 10.1038/s41598-022-21595-5.

MASTERPULS is a registered trademark of STORZ MEDICAL AG, Tägerwilen, Switzerland.

# PERFORMANCE



## HIGHER POSITIVE AND NEGATIVE OUTPUT PRESSURE AT ALL FREQUENCIES

### WHY IS THIS IMPORTANT TO PRACTITIONERS?

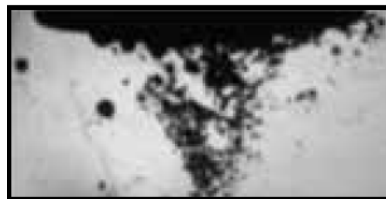
The latest essential science and clinical research has confirmed the importance of higher energy delivery for better treatment results. However, not all devices are capable of delivering high energy.

### CAVITATION IS LINKED TO HIGH OUTPUT PRESSURE: NOT ALL DEVICES PRODUCE THE SAME AMOUNT OF CAVITATION

**EVO BLUE®**  
AT 4 BAR / 15 HZ



**COMPETITOR 1**  
AT 5 BAR / 15 HZ



**COMPETITOR 2**  
AT 5 BAR / 15 HZ



COMPETITOR 1 (Storz Medical D-Actor 200 with external compressor) | COMPETITOR 2 (Zimmer en Puls V. 2.0)

High-speed imaging of cavitation bubbles generated with radial extracorporeal shock wave devices. Source of extracted images<sup>7</sup>.

### HIGHER ENERGY SHOCK WAVE DELIVERS THE BEST RESULTS FOR:

- ▶ PAIN RELIEF
- ▶ REDUCTION OF NEUROGENIC INFLAMMATION
- ▶ TISSULAR HEALING



<sup>7</sup>Császár NB, Angstman NB, Milz S, Sprecher CM, Kobel P, Farhat M, Furia JP, Schmitz C. Radial shock wave devices generate cavitation. *PLoS One* 2015;10(10):e0140541. doi: 10.1371/journal.pone.0140541.

# GUIDED DOLORCLAST THERAPY =

## DOLORCLAST® IS THE GLOBAL STANDARD

50%

OF ALL PUBLISHED<sup>8</sup> LEVEL 1 CLINICAL TRIALS PERFORMED WITH A SWISS DOLORCLAST SHOCK WAVE DEVICE

60%

OF ALL STUDIES DEMONSTRATING CELLULAR AND BIOLOGICAL EFFECTS ARE PERFORMED WITH **SWISS DOLORCLAST DEVICES.**<sup>8</sup>

80%

OF THE STUDIES<sup>9</sup>, SWISS DOLORCLAST RADIAL SHOCK WAVE TREATMENTS DEMONSTRATED **BETTER CLINICAL OUTCOMES** COMPARED TO THE CONTROL GROUPS. CTS ARE DEFINED AS STUDIES PROVIDING EVIDENCE AT THE HIGHEST LEVEL.

<sup>8</sup>Wuerfel T, Schmitz C, Jokinen LLJ. The effects of the exposure of musculoskeletal tissue to extracorporeal shock waves. *Biomedicines* 2022;10(5):1084. doi: 10.3390/biomedicines10051084.

<sup>9</sup>R-ESWT studies published in PEDRO database.



# CLINICALLY PROVEN EVIDENCE



## NEW

KENMOKU T ET AL. INFLUENCE OF DIFFERENT ENERGY PATTERNS ON EFFICACY OF RADIAL SHOCK WAVE THERAPY. J ORTHOP SCI. 2021 JUL;26(4):698-703. DOI: 10.1016/J.JOS.2020.07.009. EPUB 2020 AUG 28. PMID: 32868208.

ZHANG YF ET AL. DOSE-RELATED EFFECTS OF RADIAL EXTRACORPOREAL SHOCK WAVE THERAPY FOR KNEE OSTEOARTHRITIS: A RANDOMIZED CONTROLLED TRIAL. J REHABIL MED 2021;53(1):JRM00144. DOI: 10.2340/16501977-2782.

\*MORGAN JPM, HAMM M, SCHMITZ C, BREM MH. RETURN TO PLAY AFTER TREATING ACUTE MUSCLE INJURIES IN ELITE FOOTBALL PLAYERS WITH RADIAL EXTRACORPOREAL SHOCK WAVE THERAPY. J ORTHOP SURG RES. 2021 DEC 7;16(1):708. DOI: 10.1186/S13018-021-02853-0. PMID: 34876172; PMCID: PMC8650394.

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- 26 HOFMANN ET AL., J TRAUMA 2008; 65:1402-1410.
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- 30 KEARNEY ET AL., J ORTHOP RES 2011; 29:1536-1543.
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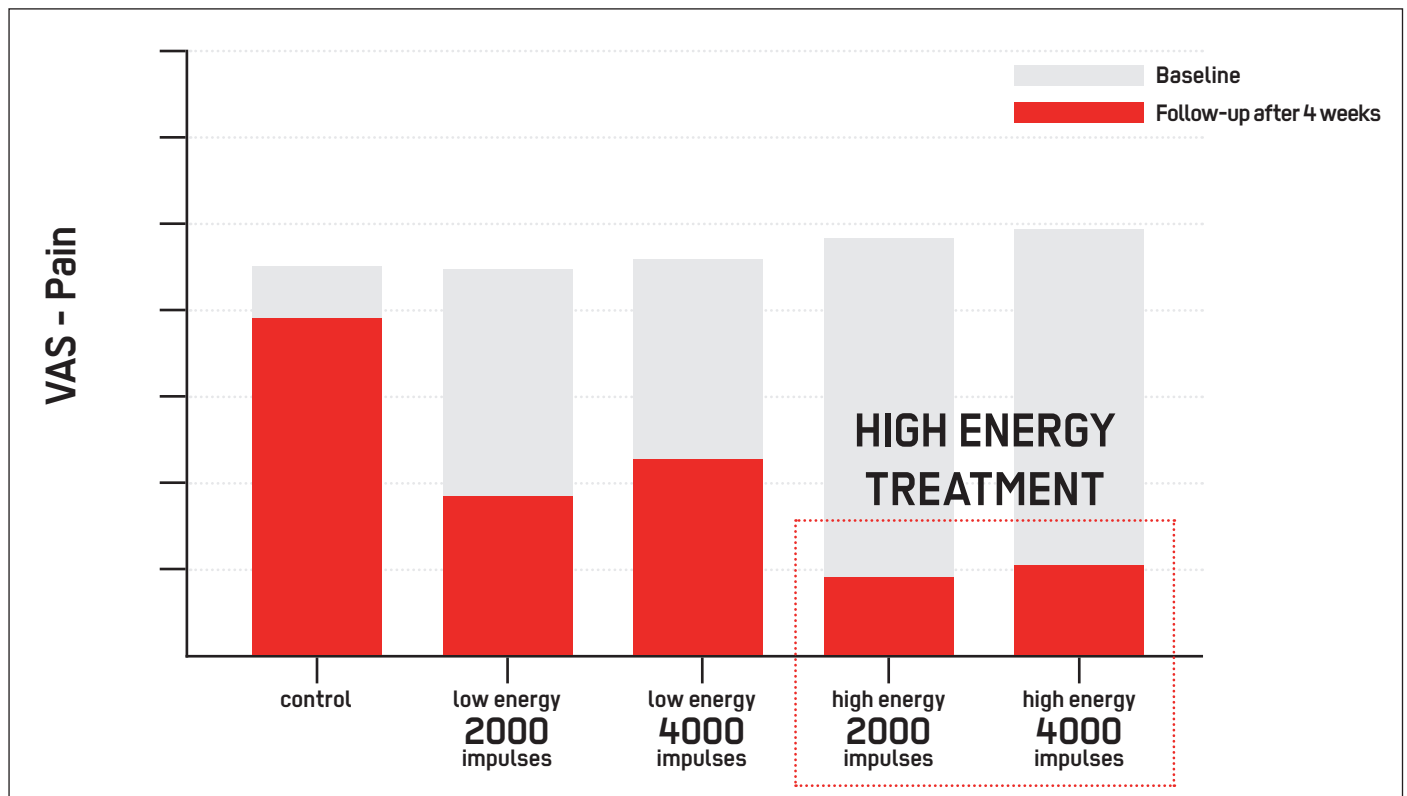
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LEARN MORE ABOUT  
HIGH DOSE VS. LOW DOSE SHOCK WAVE THERAPY.



# BYE-BYE PAIN

## HIGHER ENERGY SHOCK WAVE TREATMENTS LEAD TO SUPERIOR PAIN RELIEF<sup>10</sup>



### Importance of high energy over number of shocks for pain reduction in knee osteoarthritis. Source of charts.<sup>10</sup>

- ▶ This study on knee osteoarthritis proved superior pain relief with high energy shock waves over low energy shock waves. High energy shockwaves are more efficient for improving patients' conditions
- ▶ A low energy shock wave does not provide the same treatment outcome as a high energy shock wave.
- ▶ Low energy cannot be compensated by applying more shocks.

<sup>10</sup>Zhang YF, Liu Y, Chou SW, Weng H. Dose-related effects of radial extracorporeal shock wave therapy for knee osteoarthritis: A randomized controlled trial. *J Rehabil Med* 2021;53(1):jrm00144. doi: 10.2340/16501977-2782.

# RETURN TO PLAY



## ATHLETES RETURNED TO THEIR SPORTS ACTIVITIES SIGNIFICANTLY FASTER WHEN TREATED WITH DOLORCLAST® RADIAL SHOCK WAVES<sup>11</sup>:

- ▶ When compared to conventional treatments, shock wave proves to be beneficial in reducing duration of activity interruption in professional sports.<sup>11</sup>
- ▶ Average duration of activity interruption (lay-off time) in Type 1a (muscular tightness / hypertonicity) and 2b (muscular strain injury) muscle injuries were 50% shorter than comparable cases reported in literature.<sup>11</sup>
- ▶ High frequency radial shock wave treatments enable fast treatments on large regions of the body without compromising the energy delivery to the treated tissues.

### LAY-OFF TIME REDUCTION WITH DOLORCLAST® SHOCK WAVES

reduced  
by 54%

reduced  
by 50%

reduced  
by 23%\*

Type 1a  
injuries

Type 2b  
injuries

Type 3b  
injuries

<sup>11</sup>Morgan JPM, Hamm M, Schmitz C, Brem MH. Return to play after treating acute muscle injuries in elite football players with radial extracorporeal shock wave therapy. *J Orthop Surg Res.* 2021 Dec 7;16(1):708. doi: 10.1186/s13018-021-02853-0. PMID: 34876172; PMCID: PMC8650394.

# PIEZOCLAST® FOCUSED

Your best choice for all high energy application needs. PiezoClast® Focused Shock Waves is the treatment of choice for deep musculoskeletal indications, calcified lesions, bone non-unions, myotendinous tears, non-union fractures and painful enthesopathies.

## HIGH ENERGY FOR DEEPER PATHOLOGIES

- ▶ A true high energy shock wave for deep-seated indications
- ▶ Up to two times higher peak pressure than competitive devices
- ▶ Sharp focusing of the shock wave thanks to special arrangement of piezo crystals concentrating high energy delivery in the targeted area

## THE “MUST-HAVE” DEVICE FOR TREATING SENSITIVE PATIENTS

- ▶ Piezoceramic-generated shock wave with no mechanical displacements of the handpiece prevents the tissues from being under unnecessary pressure
- ▶ High comfort therapy ideally suited for painful indications or highly sensitive patients
- ▶ Silent shock wave therapy

## EASY TO SET UP, RUN AND SERVICE

- ▶ Maintenance-free device with no need for a water-cooling system
- ▶ Handpiece lifetime of over 5M impulses
- ▶ Treat anywhere and anytime with this compact, lightweight, transportable device



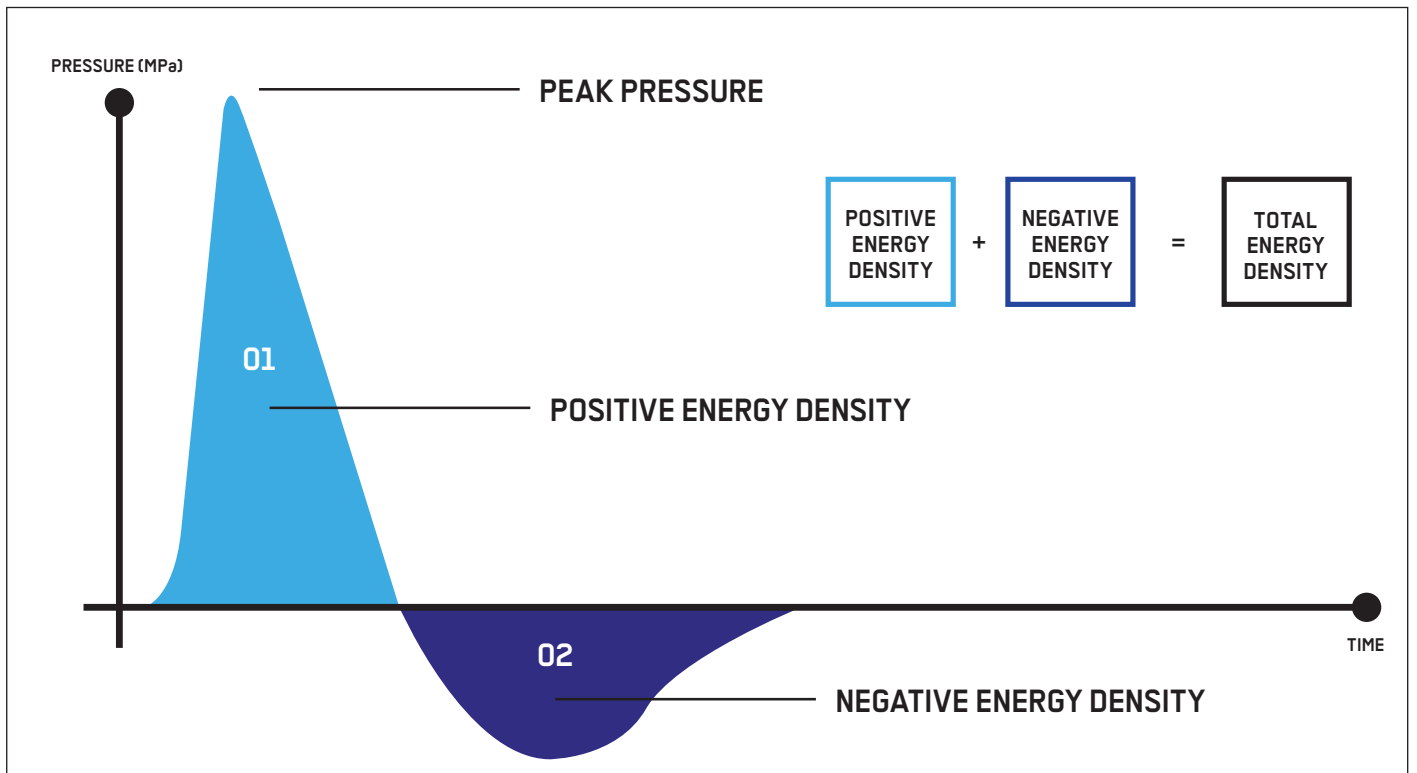
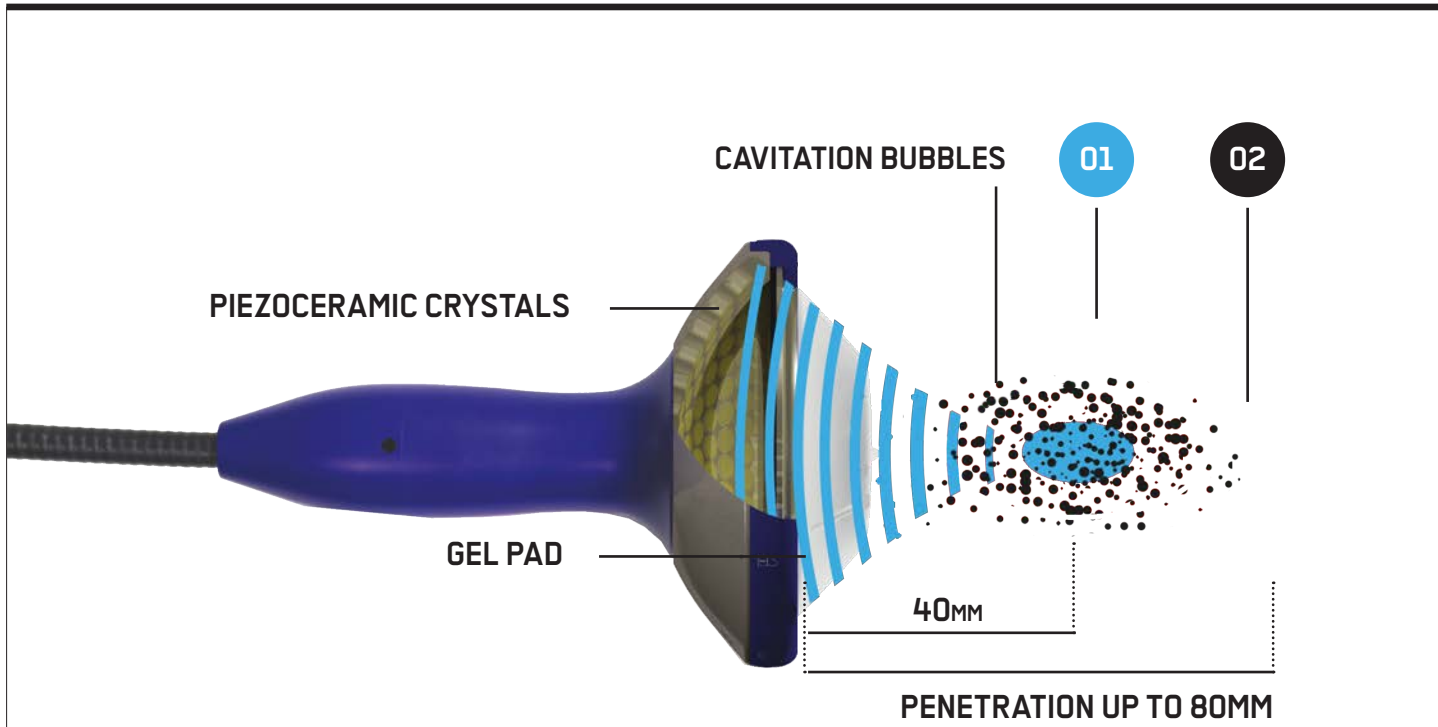
# SHOCK WAVES



**HIGH ENERGY FOCUSED TREATMENT  
FOR DEEP-SEATED INDICATIONS**



# PIEZOCLAST® FOCUSED

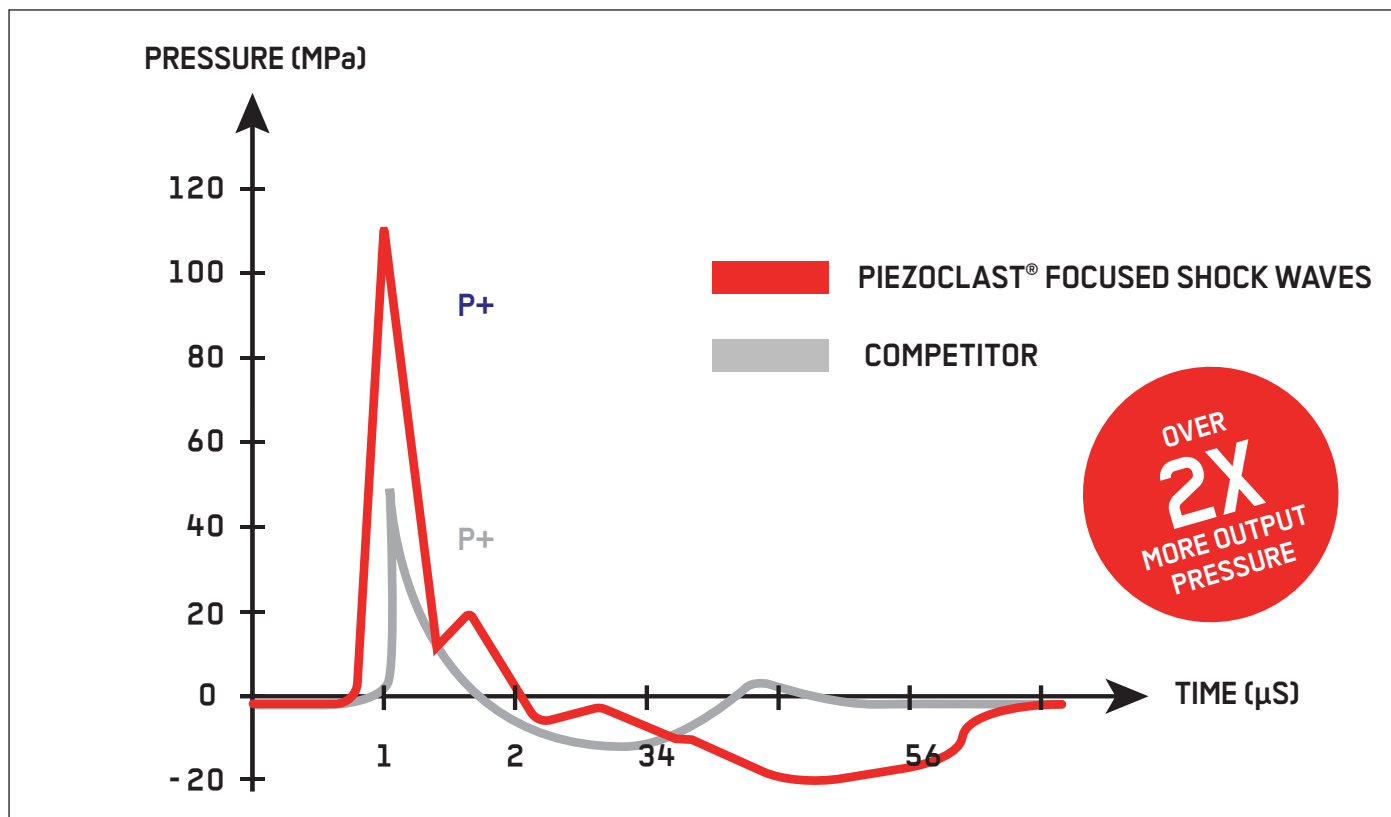


Positive vs. Negative Energy Density

# SHOCK WAVES



## HIGH ENERGY FOCUSED SHOCK WAVE



Acoustic characterisation of the PiezoClast® focused shock waves.<sup>12, 13</sup>

STUDIES<sup>12, 13</sup> DEMONSTRATE THAT THE **PIEZOCLAST®** PEAKS OF POSITIVE AND NEGATIVE PRESSURE ARE 2 TIMES HIGHER THAN THOSE OF THE COMPETITION (+110 MPA VERSUS +45 MPA AND -20 MPA VERSUS -11 MPA).

THIS MEANS THAT THE TOTAL ENERGY DENSITY IS GREATER WITH THE **PIEZOCLAST®** THAN BEST-IN-CLASS COMPETITION.

<sup>12</sup>Schmitz C, Sternecker K, Geist J, Beggel S, Dietz-Laursonn K, de la Fuente M, Frank HG, Furia JP, Milz S. Exposure of zebra mussels to extracorporeal shock waves demonstrates formation of new mineralized tissue inside and outside the focus zone. *Biol Open* 2018;7(7):bio033258. doi: 10.1242/bio.033258.

<sup>13</sup>Perez C, Chen H, Matula TJ, Karzova M, Khokhlova VA. Acoustic field characterization of the Duolith: measurements and modeling of a clinical shock wave therapy device. *J Acoust Soc Am* 2013;134(2):1663-1674. doi: 10.1121/1.4812885.

# DOLORCLAST®

DolorClast® High Power Laser is a concentration of optimal technical parameters combined like never before, delivering outstanding treatment outcomes with a portable unit.

## HIGH ENERGY TRANSFER PARAMETERS

- ▶ 905nm wavelength to provide best-in-class energy transmittance to deep tissues
- ▶ 300W high peak power to deliver high energy to subcutaneous target tissues
- ▶ A true super-pulsed emission with 100ns modulated pulses to keep tissues below thermal threshold

## GUIDED LASER THERAPY

- ▶ 40 preset programs for simple application
- ▶ 7 action modes to focus on a wanted effect or a particular skin sensitivity (analgesic, anti-inflammatory, muscle relaxant, hypersensitive...)
- ▶ Personal programme customisation

## DESIGNED FOR SAFETY

- ▶ Clear display to monitor, in real time, frequency and modulation values, remaining time and energy delivered
- ▶ Evenly distributed laser beam (1cm in manual mode / 3cm in automatic mode) to be sure to deliver the right dose of energy over the tissues
- ▶ Versatile hands-free mode to save time without compromising patient safety





# HIGH POWER LASER

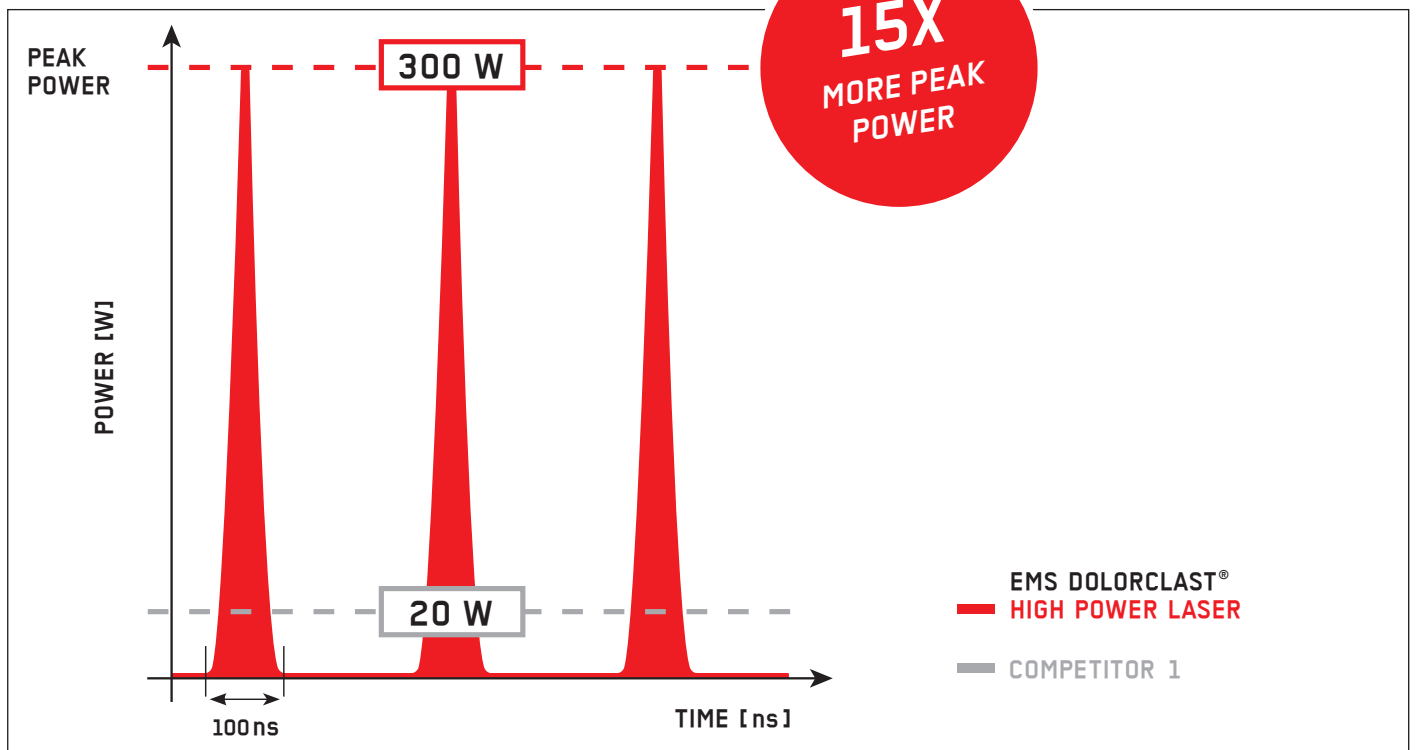
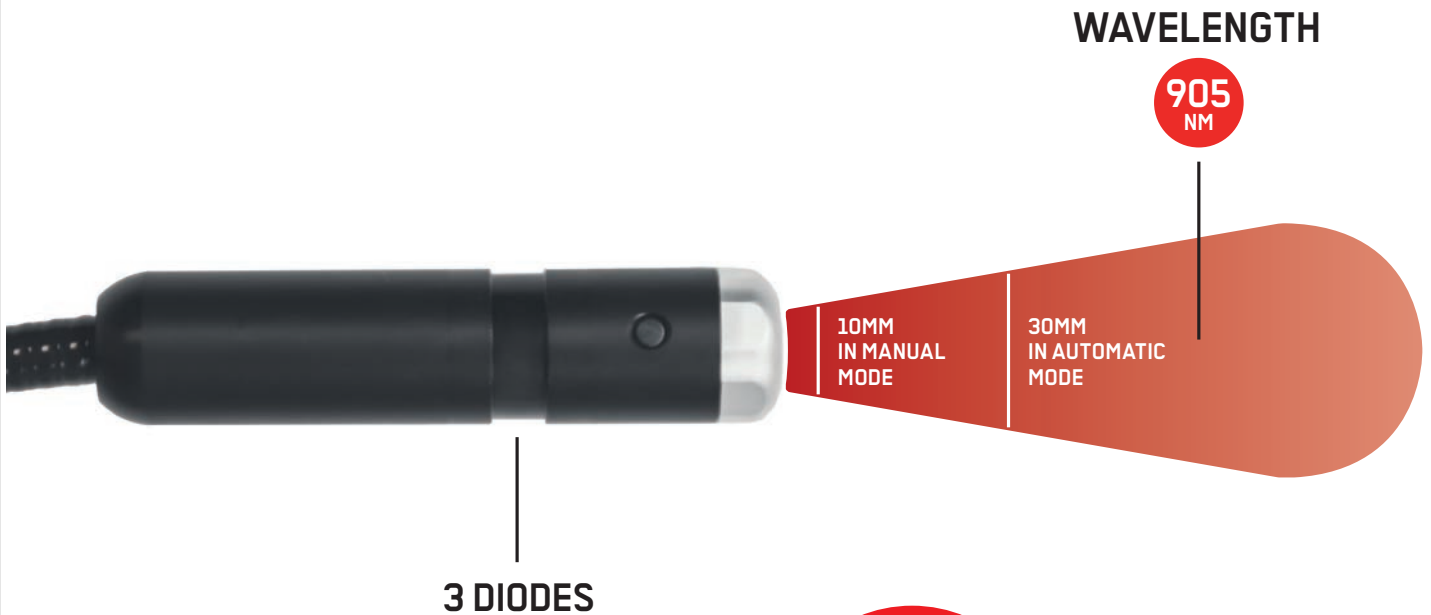


PROVEN PARAMETERS FOR OPTIMAL  
MUSCULOSKELETAL APPLICATION

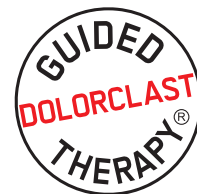


# DOLORCLAST®

## HIGH POWER SUPERPULSED LASER DELIVERING HIGH ENERGY TO DEEP TISSUES



# HIGH POWER LASER

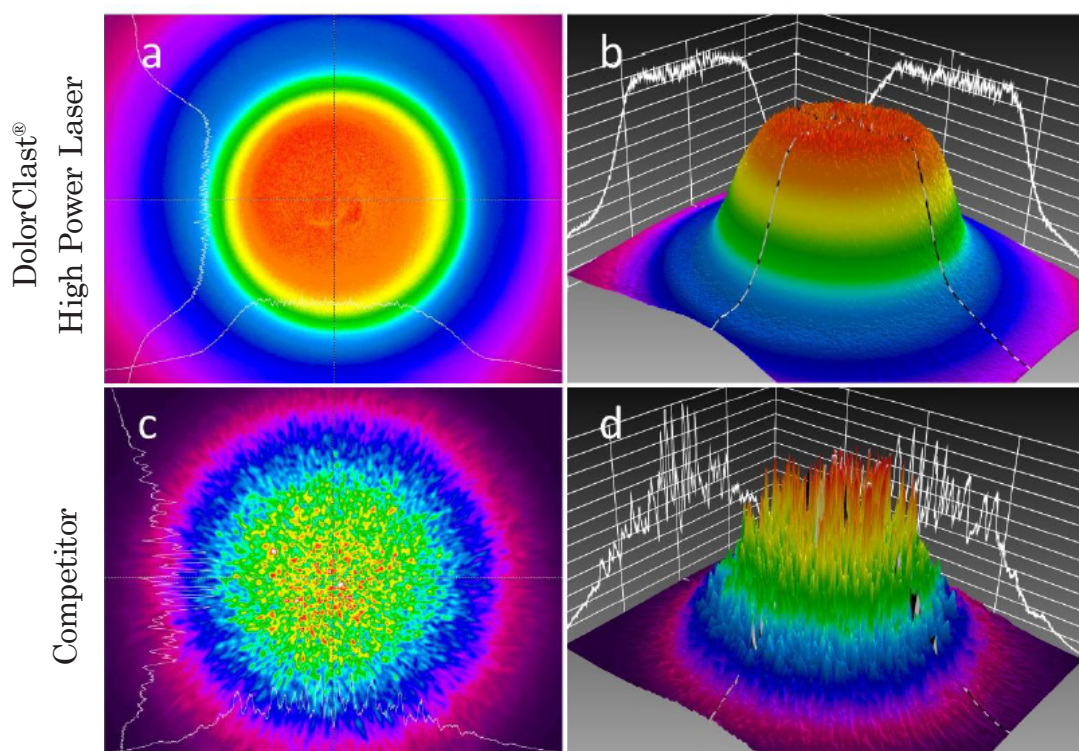


## 905NM HAS BEEN DEMONSTRATED TO PROVIDE HIGHER TRANSMITTANCE THAN COMPETITIVE LASERS WITH OTHER WAVELENGTHS<sup>14</sup>

The 905 nm wavelength is unique as it is the least absorbed by water, blood and melanin within the near-infrared spectrum. It can therefore penetrate more easily through the skin and reach deeper tissues.

## DOLORCLAST® HIGH POWER LASER DELIVERS HIGH ENERGY SAFELY

The DolorClast® High Power Laser delivers a stable, high power light beam providing an even energy distribution over its surface. Competitive gated lasers with uneven energy distribution can lead to tissular damage by overdosing certain areas.



Power density maps recorded with a beam profiling camera.<sup>14</sup>

<sup>14</sup>Kaub L, Schmitz C. More than ninety percent of the light energy emitted by near-infrared laser therapy devices used to treat musculoskeletal disorders is absorbed within the first ten millimeters of biological tissue. *Biomedicines* 2022;10(12):3204. doi: 10.3390/biomedicines10123204.

# SWISS DOLORCLAST®



# ACADEMY



## LET US SHARE OUR EXPERTISE WITH YOU. NOTHING IS BETTER THAN LEARNING!

In 2012 we launched the Swiss DolorClast® Academy (SDCA) to create a global research and education platform for our Swiss DolorClast® users and research experts.

The Swiss DolorClast® Academy collaborates with some of the most renowned experts and scientists worldwide to initiate new studies and share their best practice treatments with our user community.

## WHY PARTICIPATE IN A SWISS DOLORCLAST ACADEMY COURSE?

Swiss DolorClast® Academy courses bring unique benefits to DolorClast® device users:

- ▶ Expert guidance supported by proven evidence-based practice
- ▶ Up-to-date knowledge sharing the most recent scientific publications
- ▶ Continuous education

Every year our 100 internationally selected trainers provide hundreds of courses worldwide. User needs are all different so you can choose between in-person courses or digital formats to learn when and what you need to treat your patients successfully.

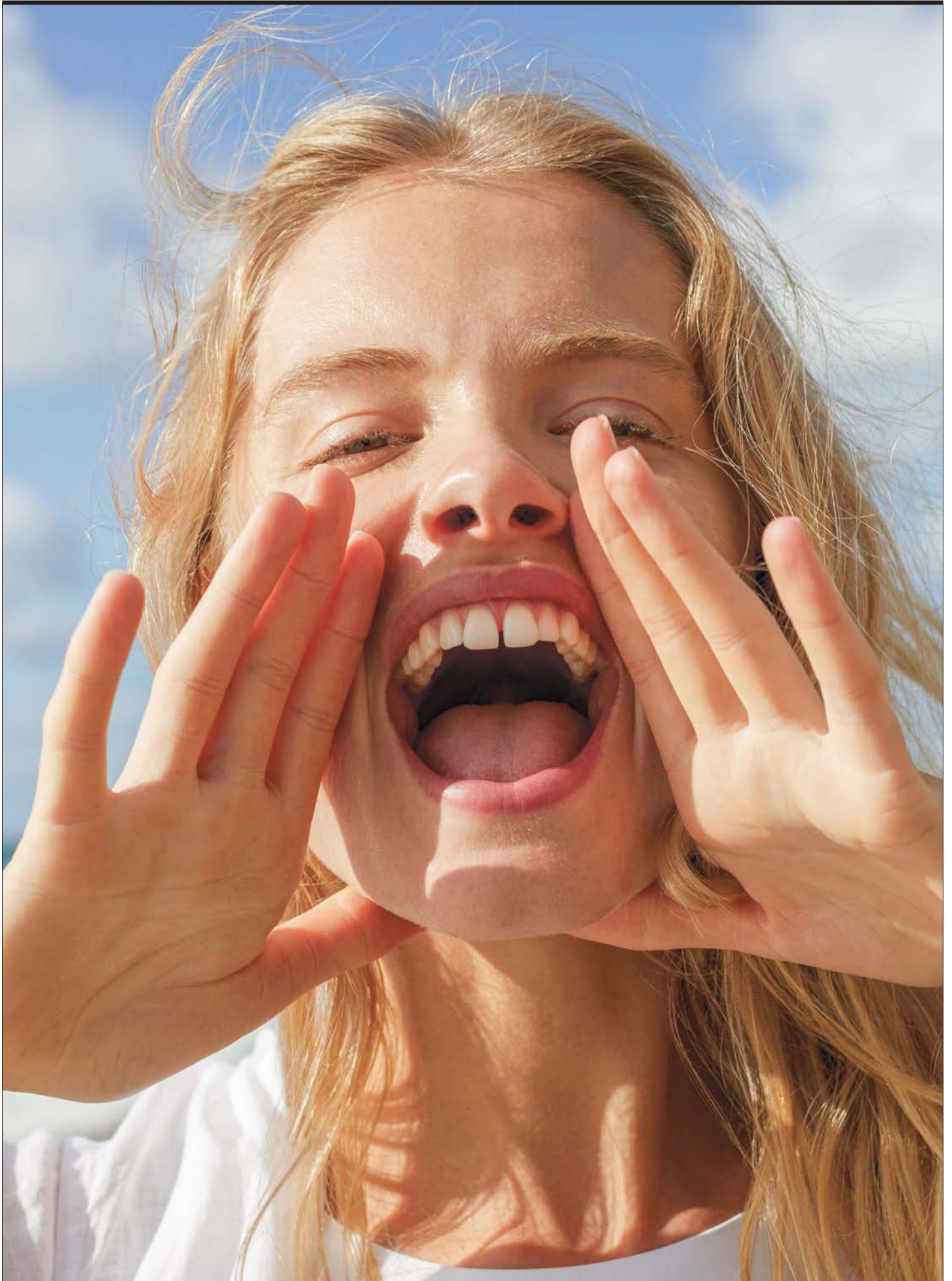
**Join a SDCA course to learn more about how to treat your patients with Guided DolorClast® Therapy.**



TO JOIN A SWISS DOLORCLAST®  
ACADEMY COURSE

**SDCA**   
SWISS DOLORCLAST ACADEMY

# JOIN THE MOVEMENT



# GET GDT-CERTIFIED!

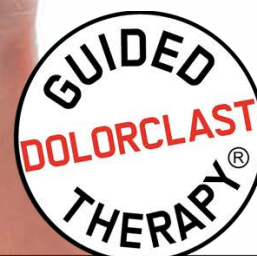


## JOIN THE COMMUNITY OF CERTIFIED PRACTICES AND MAKE THE MOST OF EXTRA BENEFITS

**CERTIFY YOUR CLINIC** AND BENEFIT FROM EXCLUSIVE TRAINING PROGRAMMES, MARKETING SUPPORT FOR YOUR CLINIC AND SPECIAL OFFERS.



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