DEEP OSCILLATION®

Unique, non-invasive, atraumatic therapy technique with significant pain and oedema relieving effects

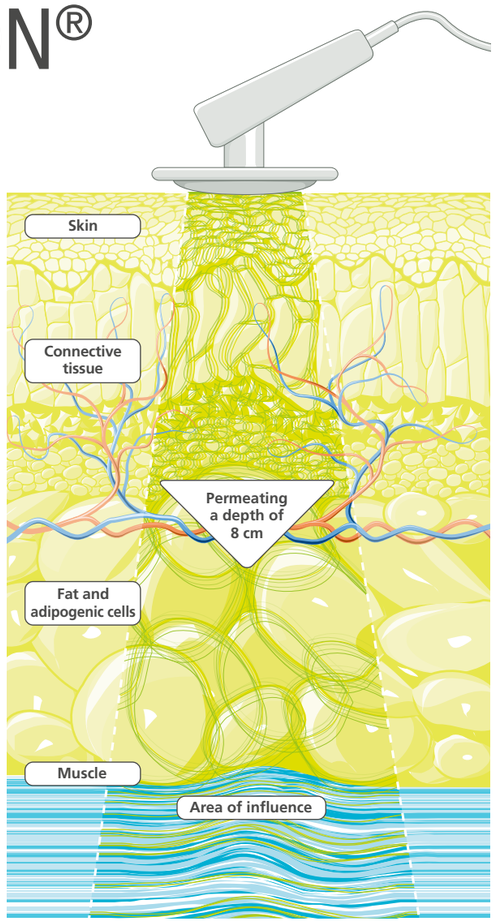
PHYSIOMED®
technology for therapy

DEEP OSCILLATION®

DEEP OSCILLATION® is a unique international patented non-invasive, non-traumatic therapy method. Its special structure allows you to create biologically effective oscillations in the treated tissue using electrostatic attraction and friction. In contrast to other therapies, these pleasant oscillations have a gentle and deep-acting effect on all tissue components (skin, connective tissue, subcutaneous fat, muscles, blood and lymph vessels).

For the treatment, the patient holds a titanium neutral element loosely between the fingers. The pleasant therapy effect of deep oscillation is created beneath special gloves of the therapist or a specially designed hand applicator (second contact) circling over the tissue.

The exceptionally gentle action, early implementation and specific clinical effects make DEEP OSCILLATION® a unique therapy option, which is being used increasingly in medical fields that are not typically focused on by conventional physical therapies.



The following effects of DEEP OSCILLATION® are clinically proven:

- High pain-reducing potential (both for traumatic and chronic pain syndromes)
- Prevention and reduction of secondary and primary lymphoedema
- Anti-inflammatory effect
- Muscular relaxation, movement-promoting effect, mobilisation
- Promotes wound healing, particularly for secondary wounds and burns

Fields of application

Pre- and postoperative therapy
With deep oscillation, oedemas can be relieved pre- and postoperatively. Because it can be used at an extremely early stage, wound healing is stimulated and accelerated, local inflammation processes are inhibited and pain is significantly reduced over a sustained period. Deep oscillation is therefore frequently used as a routine adjuvant post-operative therapy, for instance in oncology, neurology and traumatology.

Lymphoedema
Use of deep oscillation reduces volume in the case of primary and secondary lymphoedema. The therapy is also increasingly used with success for lipoedema. Skin conditions and lymphatic drainage are improved.

Mechanical traumata and damage from overstraining
In the case of traumata and damage from overstraining, deep oscillation has a direct oedema- and pain-reducing effect and consecutively stimulates self-mobilisation in pain-relieved areas, thus enabling an early return to active life. For sportspersons it means an earlier commencement of active forms of therapy and training, for 'normal' patients a swifter return to activities in daily life.

Training aftercare and performance stabilisation in sport
In training aftercare, deep oscillation is known for its rapid, muscle-relaxing and pain-relieving effects, and for its direct effect against microtrauma (muscle aches). Roughage and cell remains are removed more quickly through the treatment. This promotes a more effective nutritional supply to the muscle cells, thus accelerating the restoration to optimal performance. Regeneration times in the systematic training process can thus be reduced.

Burns
In the case of second-degree burns wound healing is significantly accelerated and qualitatively improved by deep oscillation.

Chronic pain syndromes
In indications such as fibromyalgia syndrome, Sudeck's dystrophy etc., which are accompanied by chronic pain, deep oscillation has a strong pain relieving effect, which often allows for a reduction of medicine intake. The treatment promotes mobilization to a great extent, alleviates muscle stiffness and tackles impairments in activities of daily life, with consequent positive effect on fatigue, fears and depression.

Neurortehabilitation
In brain stoke rehabilitation deep oscillation is used for semi-paralysed regions of the body to improve trophicity and reduce spasms in affected areas, and also for lymphatic drainage, for instance to treat lymphoedema in the head area.

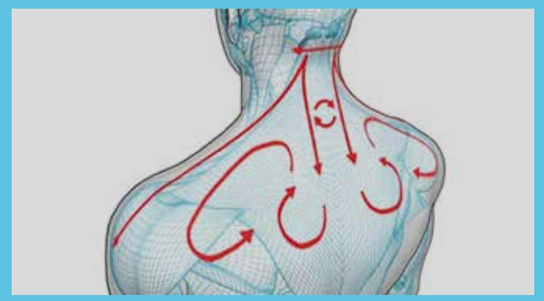
Deep oscillation is recommended by:
www.wittlinger-therapiezentrum.com
Center for excellence in lymphedema treatment
Lymphedema rehabilitation center – Treatmen
Academy – Training – Research

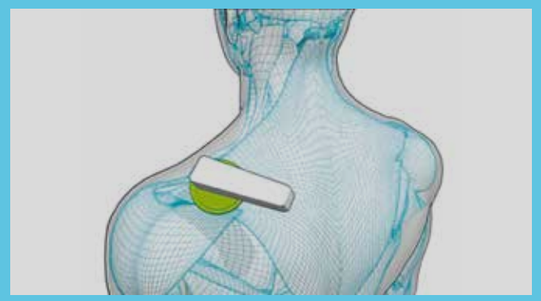
Wittlinger
Therapie · Reha · Ausbildung

Dr. Vodder
Akademie der Wittlinger Gruppe

DEEP OSCILLATION® Evident

Two-channel deep oscillation unit for professional use





Extensive therapy and dosage suggestions and detailed animations illustrating treatment, which can be viewed during therapy at the touch of a button

DEEP OSCILLATION® Evident allows you to begin treatment with maximum speed and ease: direct selection of deep oscillation parameters, over the indication index or program memory. During treatment you have a constant overview of all values and timers. With decades of proven use, the PHYSIOMED one-button operation allows fast intuitive operation in combination with the touch screen.

Deep oscillation characteristics can be adjusted precisely to the desired treatment over the individual setting of frequency (or frequency band), duty cycle, burst function and therapy duration. The extensive indication list with practical information, graphics, animations and patient database with 'potpourri' function additionally ease use.

Up to three indication menus can be selected for DEEP OSCILLATION® Evident:

· CLINICS (for use in clinics, hospitals and physiotherapy practices)
· SPORTS (for use in sport medicine centres and clinics)
· AESTHETICS (for use in aesthetic medicine)

Special features DEEP OSCILLATION®

Two-channel deep oscillation
Frequeny range from 5 – 250 Hz
Individual setting of frequency, frequency bands, duty cycle, duration of therapy and burst function
Contact elements made from biocompatible titanium
Special hand applicators in different sizes for all-over and local treatment
Easily interchangeable treatment membranes guarantee a hygienic application
Individual programmes as well as suggested treatments from the indication index can be easily stored on the DEEP OSCILLATION® therapy card and used with DEEP OSCILLATION® Personal

General features

Perfected user guidance through combination of touch screen and PHYSIOMED one-button operation
8" colour monitor
Swivel and tilt mount for optimum monitor alignment at all times
Comprehensive overview of the therapy parameters including all therapy timers
Fastest therapy start: direct, through program memory or indications index
Treatment index with intelligent filtering functions based on body region or per alphabet for quick location of the desired treatment proposal
Extensive therapy and dosage suggestions and detailed animations illustrating treatment, which can be viewed during therapy at the touch of a button
Patient database for max. 100 entries: up to 5 treatment levels can be saved and configured as potpourris per patient
Multifunctional intensity controls with emergency stop function and quick switching between channels

Swivel and tilt monitor mount

Therapy cards for treatment proposals

Special hand applicators in various sizes

Technical Data

Protection class	1, type BF
Power connection	100 – 240 VAC ± 10%
Mains frequency	50 / 60 Hz
Current consumption	0.1 A (at 230 V) or 0.2 A (at 115 V)
Power consumption	20 – 30 VA
Output voltage max.	400 V
Load impedance	10 MΩ
Output frequency	5 – 250 Hz
Dimensions (W x H x D)	260 x 350 x 370 mm (monitor unfolded)
Weight	6.2 kg

Standard accessories

2 Applicator handholds
4 Connection cables DEEP OSCILLATION®
1 Connection cable grey for adhesive electrodes
1 Mains cable
1 Operating instructions
2 Oscillator heads Ø 5 cm
2 Oscillator heads Ø 9.5 cm
2 Patient leads DEEP OSCILLATION®
1 PHYSIOPADS adhesive electrode for DEEP OSCILLATION® (set of 4)
1 Powder
1 Special gloves size M (100 pcs.)
3 Therapy cards DEEP OSCILLATION®
2 Titanium neutral elements
1 Trolley Evident

DEEP OSCILLATION® Personal

DEEP OSCILLATION® unit for mobile use or to continue treatment at home

Technical data

Protection class	II, type BF
Input voltage	7.2 VDC
Input current	1.3 ADC
Power supply	1 x 7.2V Li-Ion 24 Wh battery
Output voltage max.	400 Vs
Load impedance	10 MΩ
Output frequency	5 – 50 Hz

Dimensions (W x H x D)	100 x 31 x 190 mm
Weight	0.5 kg
Charging device: Power connection	100 – 240 VAC
Mains frequency	50 – 60 Hz
Current consumption max.	0.35 A

DEEP OSCILLATION® Personal can be used to read and retrieve program sequences previously written on the DEEP OSCILLATION® therapy card with the DEEP OSCILLATION® Evident unit in the clinic. This enables personalised mobile therapy on the ward and continuation of treatment in the patient's home according to the desired specifications. This way you can guarantee the sustainability of your treatments until the next appointment in your clinic or treatment room.

DEEP OSCILLATION® Personal is also available with the Basic and Pro therapy cards. The Basic version offers a wide selection of the most important indication settings with pre-programmed treatment parameters, which usually consist of different treatment sections of different frequencies. In addition, the Pro therapy card allows all parameters to be set manually as required for up to three therapy sequences of a treatment.

Therapy cards for treatment proposals

One-button operation

Special features DEEP OSCILLATION®

One-channel deep oscillation
Frequency range from 5 – 250 Hz
Contact elements made from biocompatible titanium
Special hand applicators in various sizes for both large or local treatments with easily replaceable treatment membranes for hygienic application (optional accessory)

General features

IIntuitive PHYSIOMED one-button operation
Colour monitor
Comprehensive overview of the therapy parameters
Fastest therapy start over the indication index* or programmable therapy card DEEP OSCILLATION® therapy card
Extensive treatment index* featuring therapeutic information, dosage proposals and application graphics
Battery-driven

Special hand applicators in various sizes

Standard accessories Pro

1 Applicator handhold set, consisting of: 1 Hand applicator set 2 Oscillator-head Ø 5 cm 2 Oscillator-head Ø 9,5 cm 1 Connection cable DEEP OSCILLATION®
1 Charging device
1 Connection cable DEEP OSCILLATION®
1 Connection cable grey for adhesive electrodes
1 Operating instructions
1 PHYSIOPADS adhesive electrode for DEEP OSCILLATION® (set of 4)
1 Powder
1 Special gloves size M (100 pcs.)
1 Therapy card Pro
1 Titanium neutral element
1 Transportation bag

Standard accessories Basic

1 Applicator handhold
1 Charging device
1 Connection cable DEEP OSCILLATION®
1 Connection cable grey for adhesive electrodes
1 Operating instructions
1 Oscillator-head Ø 5 cm
1 PHYSIOPADS adhesive electrode for DEEP OSCILLATION® (set of 4)
1 Powder
1 Special gloves size M (100 pcs.)
1 Therapy card Basic
1 Titanium neutral element
1 Transportation bag

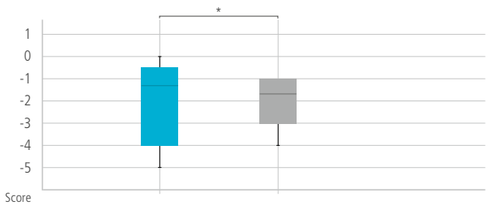
*in combination with Basic oder Pro therapy card

Clinical effects and studies

Pain reduction
Many medical studies show that deep oscillation reduces pain. The effect in the case of trauma-induced pain is seen in a reduction of noxious inflammatory potential (inflammation syndrome and, among other, Calor, tissue acidosis and prostaglandin) of TRPV1 pain receptors, explained by the mechanical distribution and intensified interstitial drainage via deep oscillation.

In an ex-vivo study Boisnic and Branchet (2013) found significantly fewer TRPV1-expressing keratinocytes than in the control group following deep oscillation treatment. The findings from ex-vivo skin models also confirm a statistically significant pain-reducing potential through deep oscillation.

Postoperative pain syndrome (VAS)
Source: Reinhold et al. (2014)



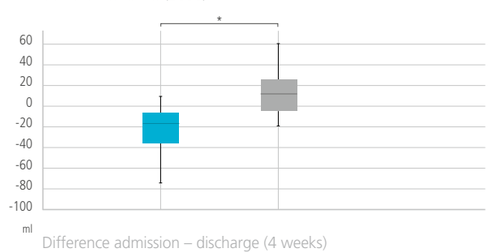
Median difference between day 7 and day 2 post OP

Deep Oscillation n=20 | Control n=20
* p-value (Wilcoxon) = 0,006 (group comparison)

Volume change
Several studies confirm the oedema-reducing effect of deep oscillation. Oscillation effects a 'stirring' of the basic substance, thus promoting the removal of interstitial fluid and substances (proteins, cell debris, neurotransmitters etc.). Interstitial septa and fissures are kept open by the mechanical activation, which helps interstitial drainage. This significantly reduces both local oedema and aseptic inflammation. Proof was also established of a significant reduction in swellings in the area of the wound, due to the treatment. In chronic conditions the treatment helps to disperse fibrosis and to diminish hardening of the tissue.

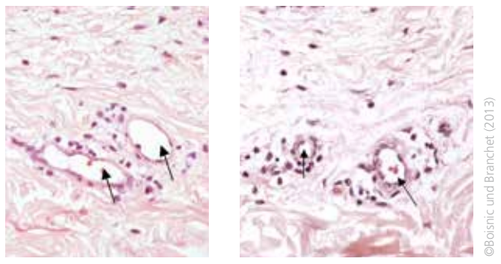
Ex-vivo tests show that deep oscillation also results in a significant reduction of dermal oedema compared to the control group. Significantly lower values than in the control group were also recorded in the histological evaluation of the percentage of dilated capillaries in the treatment group. Clear differences were likewise established in a histological planimetric measurement of the surface of dilated dermal capillaries (Boisnic and Branchet 2013). The findings suggest a vasomodulating effect (moderate vasoconstriction) of capillaries as a mechanism with an anti-oedematous effect prompted by deep oscillation.

Volume measurement oedema (3D-Messung)
Source: Jahr et al. (2008)



Difference admission – discharge (4 weeks)

Deep Oscillation n=11 | Control n=10
* p-value (Whitney U) = 0,007 (group comparison)

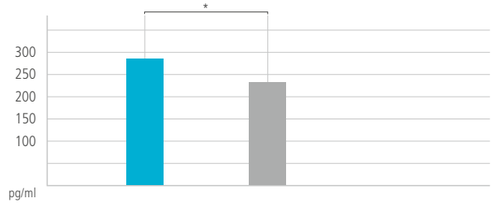


©Boisnic und Branchet (2013)

Analysis of vasodilation following HE staining (x 400): untreated skin model (on left). Vasoconstriction of dermal capillaries following two treatments with DEEP OSCILLATION® (on right).

Anti-flammatoy effect
Deep oscillation checks acute and chronic inflammation by confining inflammation-promoting cell movement to the affected area. This is achieved by reducing the production of inflammation mediators and minimising water and protein loss from blood and lymph vessels. The findings of a study (ex-vivo) by Boisnic and Branchet (2013) confirm these clinical experiences: DEEP OSCILLATION® achieves a significant reduction in the prominent pro-inflammatory cytokine IL-8 compared to the control group.

Content IL-8 (ELISA)
Source: Boisnic und Branchet (2013)



Median difference between
group comparison post interventionem

Deep Oscillation n=4 | Control n=4
* p-value (student) = 0,005

The physiological effectiveness of deep oscillation has been documented in numerous publications based on experimental and clinical studies:

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technology for therapy