Zimmer
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TREATMENT MANUAL
Shockwave Therapy

GB

RSWT

en*Puls Version 2.0*

Contents

Radial shockwave therapy

Shockwave Therapy

Shockwaves are mechanical pressure waves that work on the tissue. Shockwave therapy is widely used to treat musculoskeletal problems.

Originally indicated for the non-invasive disintegration of kidney stones, shockwave therapy has since also been used successfully in orthopaedics. Its efficacy has been described and confirmed in numerous international studies and reports.

Indications and applications

RSWT (radial shockwave therapy) indications are corroborated by a sound study base.
The technique is generally used to treat:

- Myofascial trigger points
- Calcific tendonitis of the shoulder / impingement
- Radial and ulnar epicondylitis
- Plantar fasciitis / heel spores
- Deep back pain / lumbago
- Trochanteric bursitis
- Achillodynia

Users

- Orthopaedic consultants / sports doctors
- Physiotherapists
- Osteopaths
- Emergency surgeons
- Pain doctors
- Physiotherapists / masseurs

Objectives

- Pain relief
- Elimination of the cause of the pain
- Effect on muscle tone
- Stimulation of cell metabolism
- Activation of regeneration processes
- Improvement of muscle trophic level
- Stimulation of vascular renewal

Shockwave therapy methods

Two generally different techniques are used to generate shockwaves.

Since the early 1990s, acoustic waves have been used in chronic pain management and to treat impaired bone healing and other disorders under the term “Extracorporeal Shockwave Therapy“ (ESWT). The registered trade name of “Radial Extracorporeal Shockwave Therapy (rESWT)“ was coined in the late 1990s.

With ESWT, electrohydraulic or piezoelectric pressure pulses are generated – the so-called shockwaves.

In the case of rESWT, hereafter referred to as RSWT, an electromagnetic generator accelerates a projectile-like mass and creates these shockwaves ballistically.

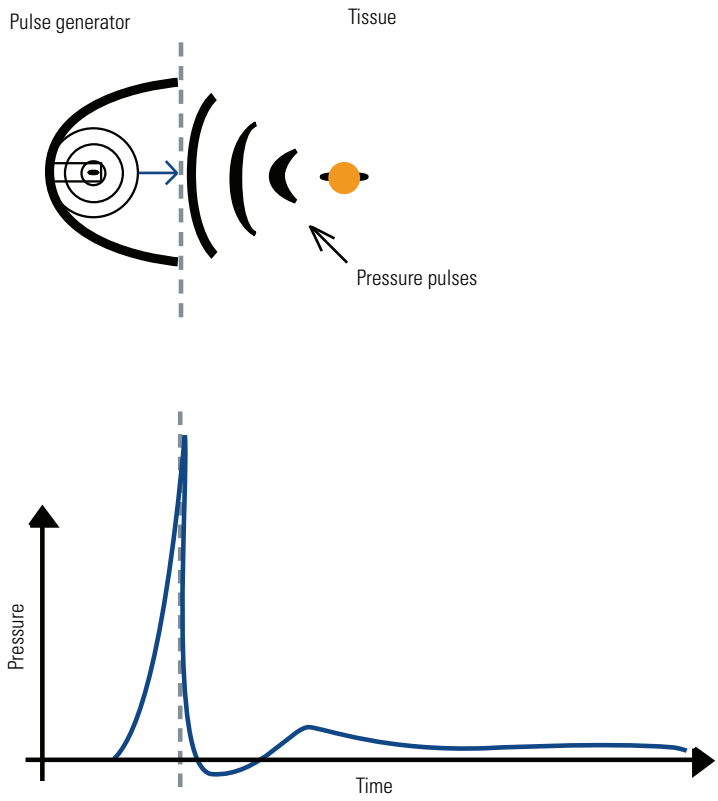
This differentiates RSWT from ESWT, which is also referred to as focused shockwave therapy

ESWT -> extracorporeal shockwave therapy, also known as focused shockwave therapy

A characteristic extracorporeal shockwave curve is a steep slope of the order of 10 ns while the pressure goes from ambient pressure up to 140 MPa.
The high pressure is followed by a low-pressure phase with negative pressure of the order of up to 10 MPa.

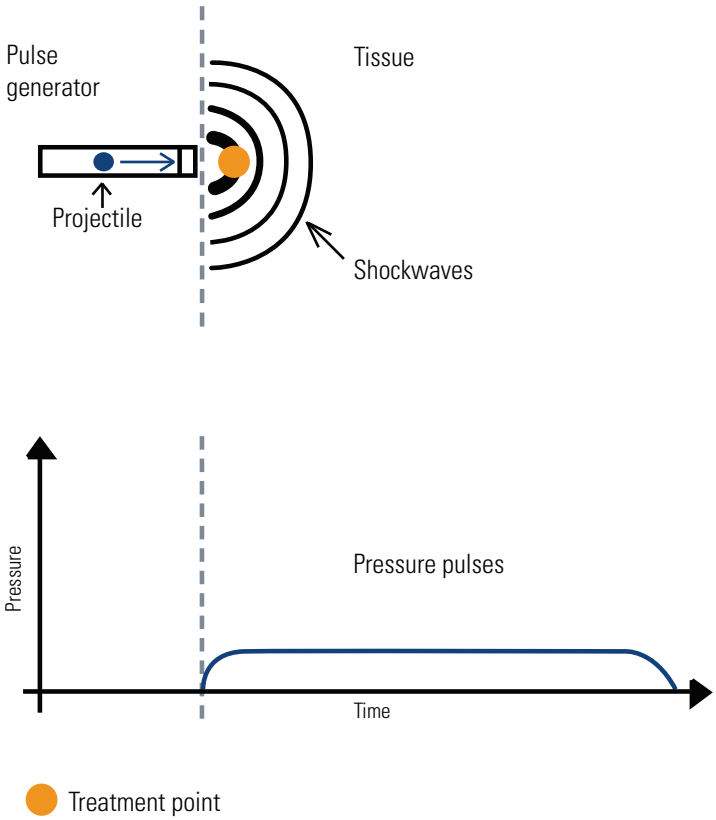
With ESWT, the point of maximum acoustic energy density is some distance away from the site where the pressure pulse originated. This means that the site of action in small tissue volumes is several centimetres below the surface of the skin at a variable tissue depth of up to 140 mm.

ESWT



Shockwave therapy methods

RSWT



RSWT -> radial shockwave therapy

With RSWT, the rise time of the pressure pulse is longer than with ESWT.
The maximum pressure is around 15 MPa. The waves are transmitted to the tissue via applicators of various diameters and geometry.

During this process, the shockwaves propagate radially from the transmission point into the tissue.
They penetrate approximately 35-40 mm.
At 40 cm, the wavelength of the shockwaves is much longer than the diameter of the applicator heads as the pressure shock source, resulting in divergent, non-focused wave propagation.

The amount of energy in the shockwaves is controlled with different acceleration of the projectile.

The effective amount of energy in the tissue is influenced considerably by additional factors, such as contact area and contact pressure, etc.

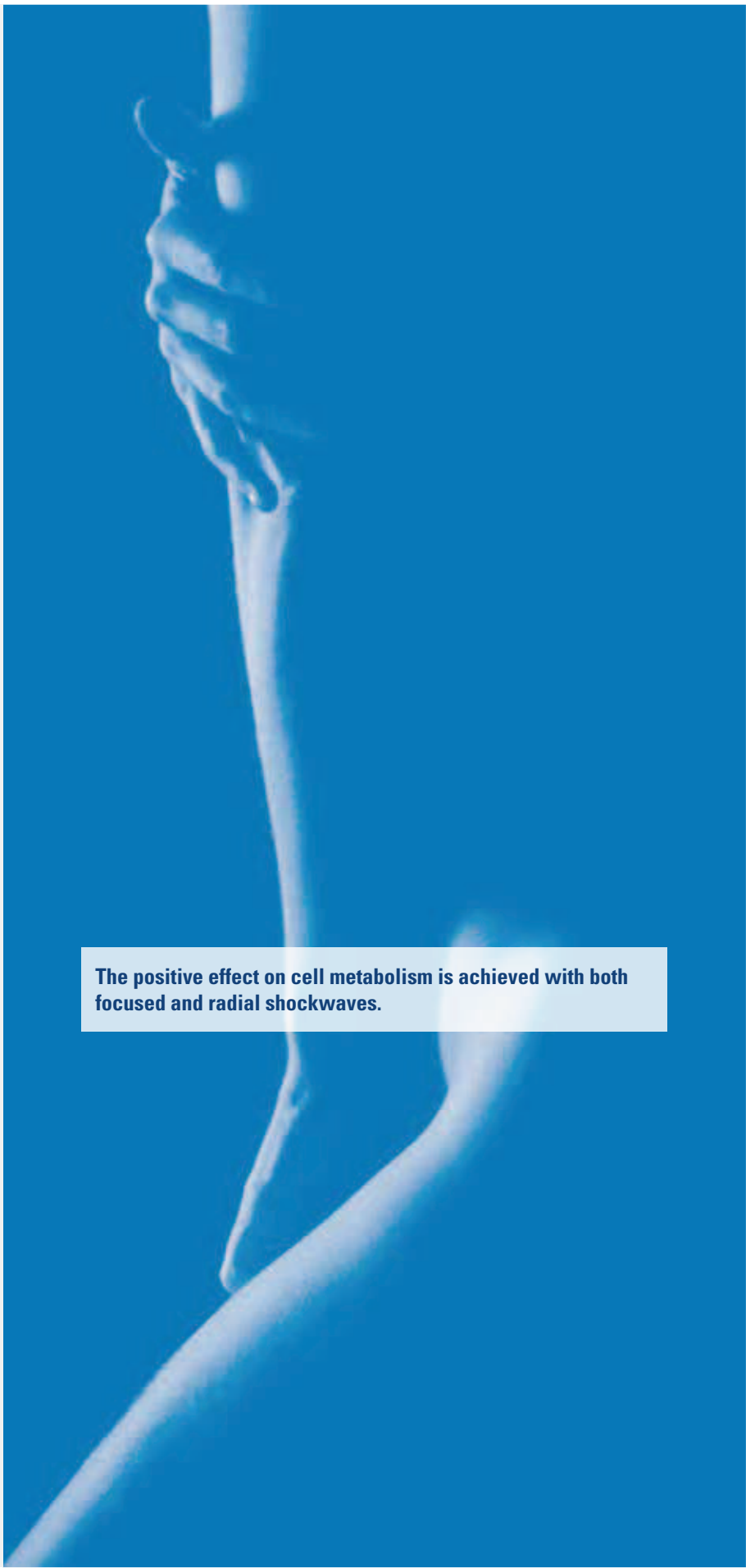
Mechanism of action of RWST

Mechanism of action of RWST

Radial shockwaves release numerous substances which, as messenger substances, trigger various pain-inhibiting and stimulating reactions in the body. This results in a reduction in pain, expansion of blood vessels, and, as a result, improved blood flow and tissue healing.

- **Inhibition of the COX II enzyme (cyclooxygenase)**
  Inflammatory mediators such as COX II can be inhibited by radial shockwaves. This attenuates inflammatory processes (anti-inflammatory effect).

- **Activation of cellular defences**
  Radial shockwaves trigger the release of free radicals. Hence this strengthens the body's cellular defence mechanisms.



The positive effect on cell metabolism is achieved with both focused and radial shockwaves.

Advantages of RWST

Treatment with RSWT

RSWT has been used successfully for more than 10 years for patients with a wide variety of disorders.

According to studies, a positive reaction (pain relief / improved function) has been recorded in over 80% of patients in the treatment of painful plantar fasciitis, for instance. The therapeutic outcome was even deemed to be good to very good in 70% of cases.

In this context it is interesting to note that the highest incidence of positive findings were recorded at low to moderate energy levels (2–3 bar, equivalent to an en*Puls*-Version-2.0 shock energy of 90 and 120 mJ) and frequencies of around 10 Hz.

Advantages of RWST

Radial shockwave therapy is gaining increasing significance for the treatment of superficial orthopaedic conditions.

This is essentially due to:

- virtually the same therapeutic outcome as with ESWT
- RSWT treatment costs less than ESWT (purchase price / wear and tear).

RSWT with the en*Puls* Version 2.0

Shockwave therapy with the en*Puls* Version 2.0

en*Puls* Version 2.0 uses an electromagnetic generator to produce ballistic shockwaves.
The advantages for users are as follows:

- Small, light, fully mobile device
- Long life-span of the handpiece (guaranteed at least 2,000,000 pulses)

The en*Puls* Version 2.0 handpiece is ideal for use with RSWT and ergonomically perfect for single-handed use. The heavy weight ensures optimal shock absorption for therapists and the transmission of high energy levels to patients.

Recommendations for use:

- Energy levels at the applicator tip: 60 mJ, 90 mJ, 120 mJ und 185 mJ

Maximum energy flow density:	0.25 mJ / mm² (12.5 MPa)
Available shockwaves applicator heads:	
6 mm	For narrow and confined areas as well as for acupressure and trigger points
15 mm	For the treatment of muscles, small tendons and ligaments
25 mm	For the treatment of plantar fasciitis of the rotary cuff and soft tissue
Penetrates to a depth of up to 35 mm beneath the surface of the skin	

1–9 Hz	For the intensive, high-energy stimulation of dense structures, such as bones, cartilage and calcification
10–16 Hz	For the treatment of soft tissues, such as muscles, tendons, tendon sheaths and bursae
Burst 4, 8 and 12 shocks	Delivery of short-pulse bursts for the targeted stimulation of trigger points. Various individual trigger point arrangements can be generated by adjusting the burst in conjunction with energy levels, frequency and related number of impacts

Preparation

Ensure that the patients are in a safe, comfortable position for treatment.

Select a position with which the operator can easily reach the affected area in an upright position and the handpiece can be applied vertically if required.

When treating muscles and joints, prepare the area or muscles and move or stretch in a pain-free region in advance.

Basic rules

- Pinpoint the treatment area. In the case of pain/ trigger points, detect the point with the greatest sensitivity.
- Create a virtual grid over the treatment area.
- Position the handpiece at right angles to the skin surface and apply its own weight.
- Apply only moderate pressure to the handpiece to move surface layers and to reach structures at depth.
- The contact gel is used to prevent friction on the skin. If gel is used, the silicone cap must be pulled over the applicator head in order to keep the handpiece clean.
- The handpiece can be held in one hand. The second hand can be used to hold the treatment area and firmly position the applicator head.
- Every point in the grid must be treated with the number of pulses stipulated in the protocol. If possible, start with the most sensitive point.

Treatment recommendations

Dosing

Patients should be gradually familiarised with the treatment.
If necessary, start with the large applicator head and switch to a smaller surface area during treatment.

Both the energy level and frequency can be changed for dosing purposes.

If treatment intensity has to be reduced on tolerance grounds, this should initially be done via the frequency.

Caution

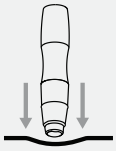
Treatment is basically feasible via virtually all body structures and can also be applied directly to bones or bony protuberances. The selected energy level and amount of pressure applied will obviously be adjusted to suit individual tolerance. As a rule, the more solid the structure, the less energy is required.

No treatment must be applied to the head, directly above the lungs, ventrally over the abdomen or in the vicinity of the testicles and epiphyseal plates of children.

Application methods

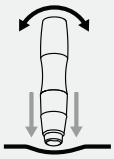
Static

The handpiece is applied to one point and only modulated vertically with the contact pressure. This is the rule of thumb when treating localised problems (pain point, trigger point).



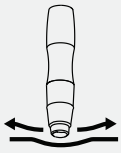
Semi-static

The handpiece remains on the point. The affected area is also treated by moving the handpiece evenly, working outwards from the vertical position with the amount of force applied varying according to the direction.



Dynamic

The handpiece is moved with the head in-situ and by applying contact pressure over the structure to be treated, without interrupting the pulse sequence. This method is used to treat soft tissue areas (muscles) and tendons.



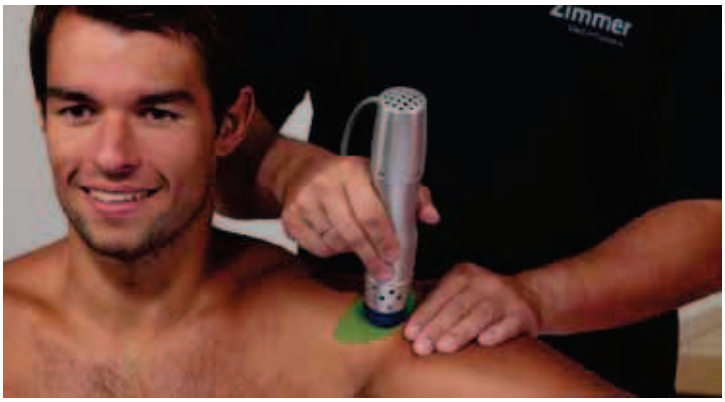
Treatment and treatment plans are comparable with Cyriax treatments in terms of objective and mode of action.

NOTE!

Typical uses of the en*Puls* Version 2.0 device are given below. These are based on the experience of doctors and therapists who use RSWT in their practices. These uses are intended solely as treatment recommendations. The treatment protocols can be adjusted to suit individual requirements.

Key / explanations regarding the following treatment recommendations

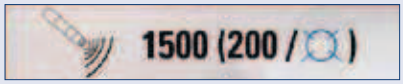
The following protocols are given solely as recommendations and **not** as treatment indications.



Treatment image with typical positioning and marked treatment area.
In the treatment area, a distinction is made between:

Region -> green area
Points -> blue circle or crosshairs

The following is given in the protocol:



The average number of pulses in one complete treatment session (in brackets, the number of pulses per point in one session).

The frequency range, whereby frequency is adjusted according to individual parameters (tolerance, personal acceptance). Modulation above the specified frequency range is unusual via or during treatment. Following an initial familiarisation period, the frequency is generally readjusted on one occasion and the procedure then continues at the fixed frequency.

The energy level to be selected always takes into account the patient's individual tolerance limit.

The working method to be adopted – static, semi-static or dynamic (see page 11) and, in addition, the explanatory text given below on every page of the protocol

The applicator head to be selected (always note the text in the following table).

	Acute	Chronic
Frequency	5–10	10–16
Shock energy	60 mJ	60 mJ
Pulses (on average, overall per ttreatment)	1500-2000	2000-3000
No. of treatments (average)	1–3	4–8
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

A distinction between "acute" and "chronic" conditions is made in the recommendations given in the table. Decisions regarding the relevant category for each patient should always be made on an individual basis and checked. In an acute condition, some changes should generally be apparent after a few treatments. Otherwise, this is a chronic problem.

Muscular back pain

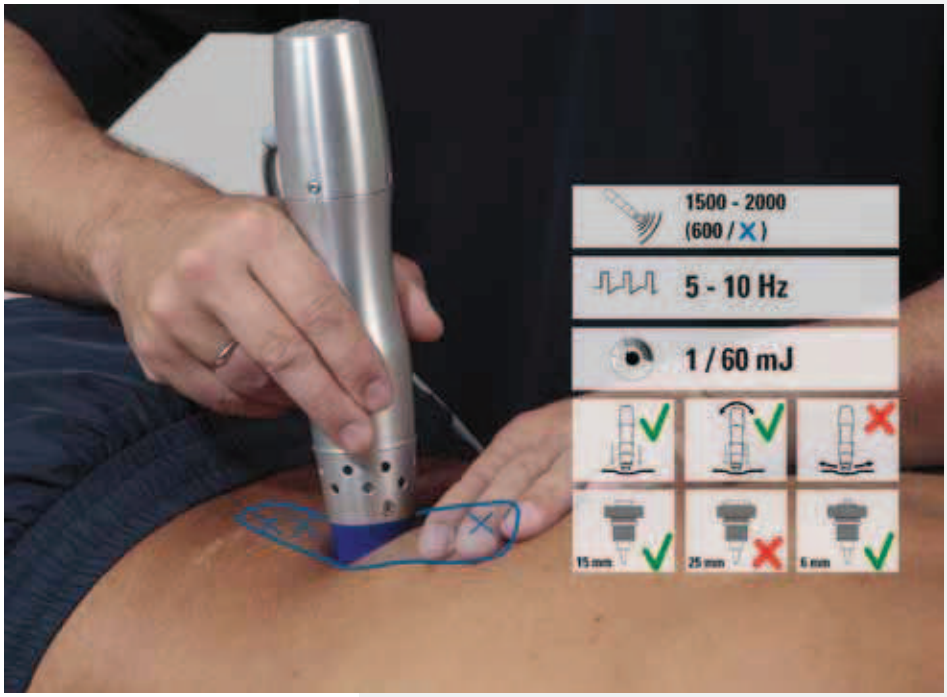
Treatment area

	Acute	Chronic
Frequency	5–10	10–16
Pulse energy	90–120 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	3000
No. of treatments (average)	1–4	up to 9
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

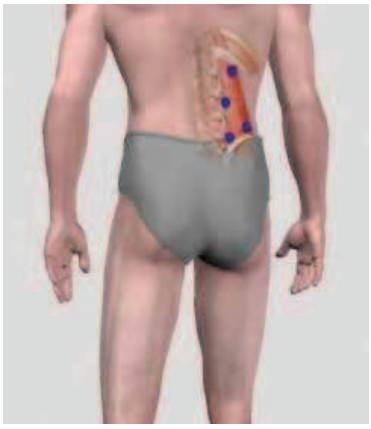
Patient in the abdominal position with possible abdominal support. Work dynamically through painful muscle area, always remaining in the paravertebral position and avoiding spinous processes

Notes

Myofascial trigger point treatment e.g. on the back, in the case of muscular back pain



Typical trigger points



	Acute	Chronic
Frequency	Burst or 5–10	Burst or 5–10
Pulse energy	60 mJ	60 mJ
Pulses (on average, overall per treatment)	1500–2000	1500–2000
No. of treatments (average)	1-4	6
Interval between treatments	7 days	7 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

Notes

Determine trigger points and myofascial tone and set priorities.

Initially treat trigger and pain points statically with up to 600 shocks per point and per treatment. Start with the point with the highest priority.
Work through dynamically at the end.

Myofascial trigger point treatment e.g. neck

	Acute	Chronic
Frequency	Burst or 5–10	Burst or 5–10
Pulse energy	60 mJ	60 mJ
Pulses (on average, overall per treatment)	1500–2000	1500–3000
No. of treatments (average)	1–4	6
Interval between treatments	7 days	7 days
Recommended applicator	15 mm / 6 mm	15 mm / 6 mm

Typical trigger points

Determine trigger points and myofascial tone and set priorities.

Initially treat trigger and pain points statically with up to 600 shocks per point and per treatment. Start with the point with the highest priority. Work through dynamically at the end.

Notes

Painful muscle spasms of the upper margin of the trapezius muscle

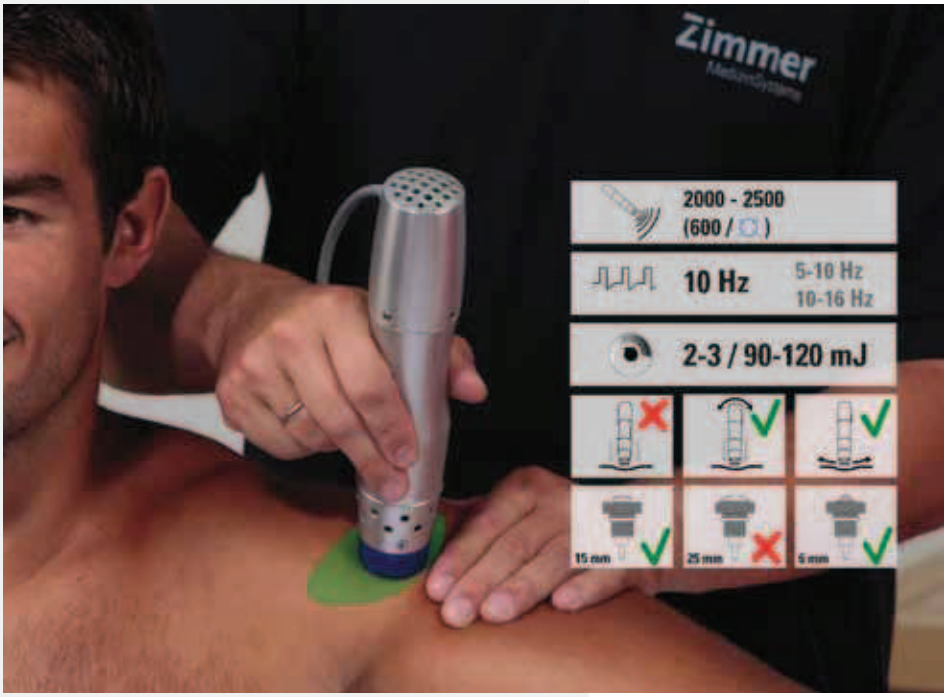
Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	10
Pulse energy	60–90 mJ	90 mJ
Pulses (on average, overall per treatment)	2000	2000–3000
No. of treatments (average)	3–4	1–6
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm punctual 6 mm	15 mm punctual 6 mm

Notes

Use the dynamic method at the upper margin of the trapezius muscle, working towards the clavicle and against the free hand, and adopt a short-term static procedure (for 100–200 pulses) for local hardening. Do not work directly in the direction of the shoulder blade.

If myogelosis is palpable, use the 6 mm applicator and carefully treat the hardness directly using the static method.



Calcific tendonitis of the shoulder

Treatment area
Typical trigger points

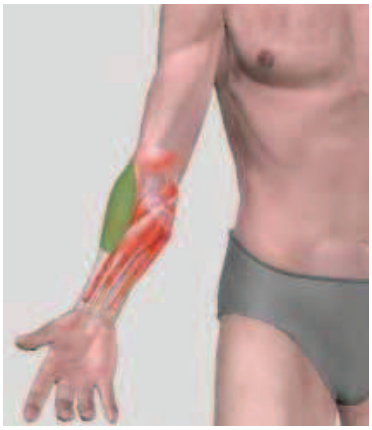
	Acute	Chronic
Frequency	5–10	10–16
Pulse energy	90 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	2000–2500
No. of treatments (average)	1–4	up to 9
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

Initially treat trigger and pain points statically with up to 600 shocks per point and per treatment and then work slowly and directly over the entire area using the dynamic approach.

Notes

Radial epicondylitis

Treatment area
Typical trigger points



	Acute	Chronic
Frequency	10	10–16
Pulse energy	60–90 mJ	120 mJ
Pulses (on average, overall per treatment)	1500–2000	2000
No. of treatments (average)	1–3	4–8
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm / 25 mm	15 mm / 25 mm

Notes

Differential diagnosis: Use another protocol if trigger points are palpable.

Otherwise, accurately determine the painful area or structure. Then apply the dynamic method directing the shock across the tendon and muscle fibre.

Myofascial trigger point treatment in the event of radial epicondylitis

Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	5–10
Pulse energy	60–90 mJ	60–120 mJ
Pulses (on average, overall per treatment)	1500–2000	2000–2500
No. of treatments (average)	3–4	1–7
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

Determine trigger points and myofascial tone and set priorities.

Initially treat trigger and pain points statically and then semi-statically with up to 600 shocks per point. Start with the point with the highest priority. Briefly apply the dynamic method at the end.

Notes

Tendonitis of the shoulder / shoulder problems

Typical trigger points

	Acute	Chronic
Frequency	5–10	10–16
Pulse energy	60–120 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	3000
No. of treatments (average)	1–4	up to 9
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

Notes

Pinpoint the problem accurately: which tendon, which point of attachment is affected?

Initially treat statically and then semi-statically with up to 600 shocks per point.
If possible, always direct the pulses across the fibre to be treated. In the case of bones and bony processes (Coracoid, ACG), do not work directly in the direction of the bony structure, but around the affected area using the semi-static method.

Ulnar epicondylitis

Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	10–16
Pulse energy	60–90 mJ	90–120 mJ
Pulses (on average, overall per treatment)	1500–2000	2000
No. of treatments (average)	3–4	1–7
Interval between treatments	5–7 days	3–5 days
Recommended applicator	25 mm, after familiarisation 15 mm	25 mm, after familiarisation 15 mm

Differential diagnosis:
Use another protocol if trigger points are palpable.

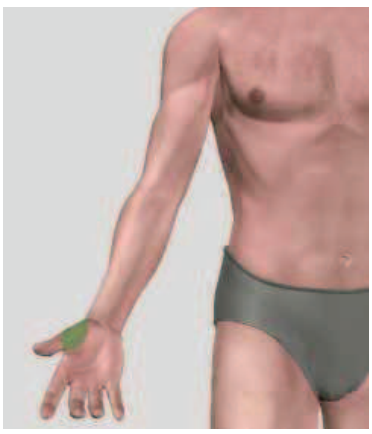
Otherwise, accurately determine the painful area or structure. Use the dynamic method in this area, directing the pulses across the tendon and muscle fibre.

Notes

Thumb basal joint arthritis / rhizarthritis

Treatment area

	Acute	Chronic
Frequency	5–10	5–10
Pulse energy	60–90 mJ	90 mJ
Pulses (on average, overall per treatment)	1500	2000
No. of treatments (average)	3	4–8
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm	15 mm



Notes

Apply the static method directly to the problem area. In the event of intolerance, use the semi-static method to apply the shocks from various directions. Support or firmly position the joint by placing two fingers either side during treatment.

Always comply with intervals and observe the patient's reaction.

Dupuytren's disease

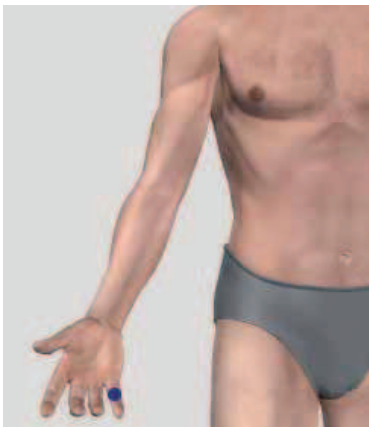
Typical trigger points

Frequency	10
Pulse energy	2 / 90 mJ
Pulses (on average, overall per treatment)	200–300, with an interval after 25 pulses in order to observe the patient's reaction
No. of treatments (average)	5
Interval between treatments	5–7 days
Recommended applicator	6 mm

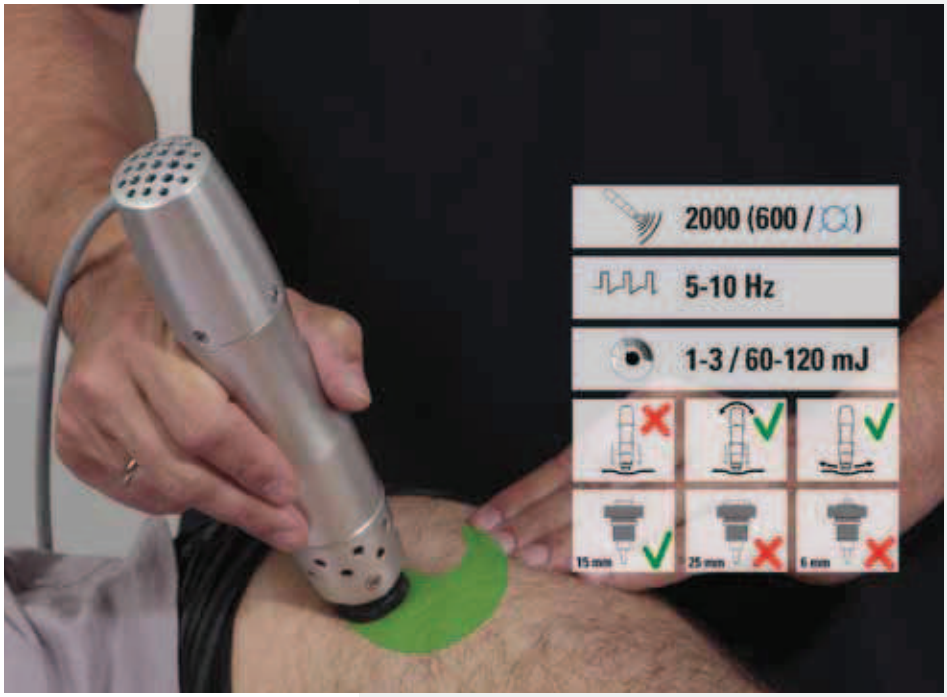
Apply the static method directly to the problem area. In the event of intolerance, use the semi-static method to apply the shocks from various directions. Support or firmly position the joint by placing two fingers either side during treatment.

Always comply with intervals and observe the patient's reaction.

Notes



Trochanteric bursitis



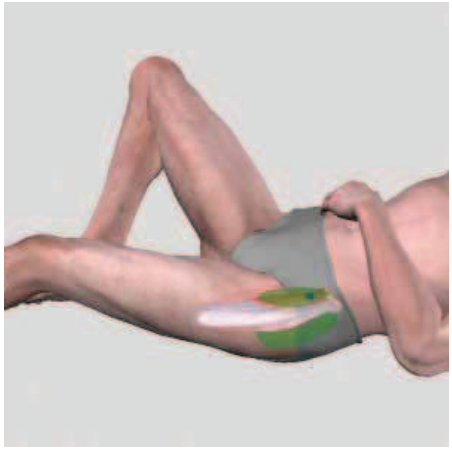
Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	5–10
Pulse energy	60–90 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	2000
No. of treatments (average)	1–4	6–8
Interval between treatments	7 days	7 days
Recommended applicator	15 mm	15 mm

Notes

Initially treat trigger and pain points semi-statically with up to 600 shocks per point and per treatment, and then work slowly and directly over the entire area using the dynamic approach.

Approach the treatment area sideways, at an angle of 45°, and do not directly administer laterally to the trochanter or iliotibial tract.



Tendinitis of the iliotibial tract

Typical trigger points

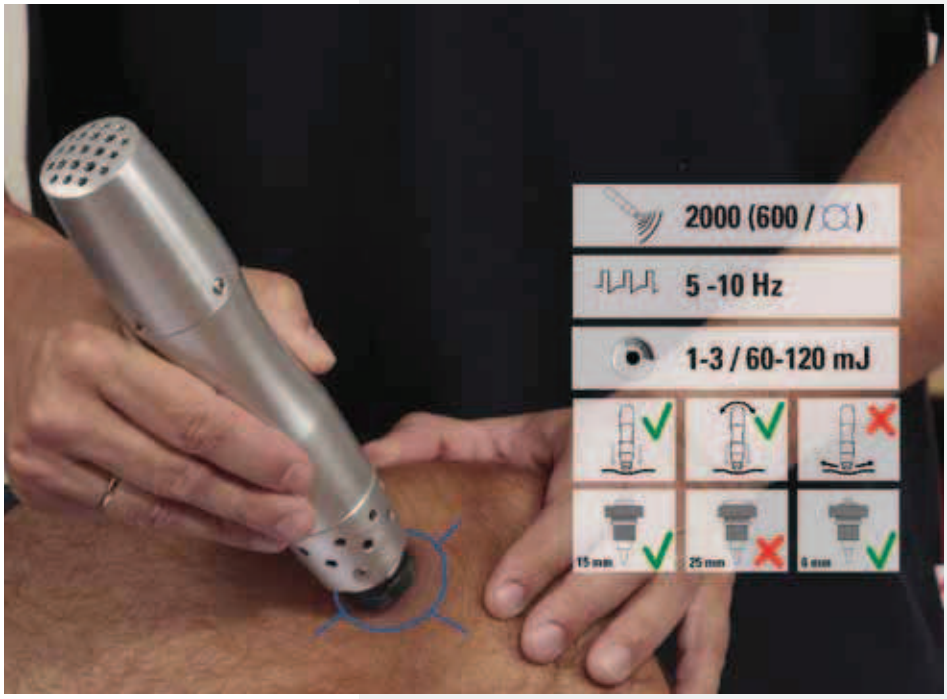
	Acute	Chronic
Frequency	5–10	–
Pulse energy	60–90 mJ	120 mJ
Pulses (on average, overall per treatment)	–	–
No. of treatments (average)	1–4	6–8
Interval between treatments	5 days	7 days
Recommended applicator	15 mm	15 mm

Apply the static method directly to the problem area. In the event of intolerance, use the semi-static method to apply the shocks from various directions. Support or firmly position the joint by placing two fingers either side during treatment.

Always comply with intervals and observe the patient's reaction.

Notes

Trigger point treatment,
Pes anserinus



Treatment area

	Acute	Chronic
Frequency	–	5–10
Pulse energy	60–90 mJ	90–120 mJ
Pulses (on average, overall per treatment)	1000	2000
No. of treatments (average)	3	4–8
Interval between treatments	1–2 days / week	2 days / week
Recommended applicator	15 mm	15 mm

Notes

Treat the painful area statically and then semi-statically with up to 600 shocks. Hold the aponeurosis firmly in position with the free hand and lift from the layer of bone by applying light compression. Always remain within the patient's tolerance range.

Patellar apex syndrome

Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	10
Pulse energy	60–90 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	2000–2500
No. of treatments (average)	1–4	up to 10
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

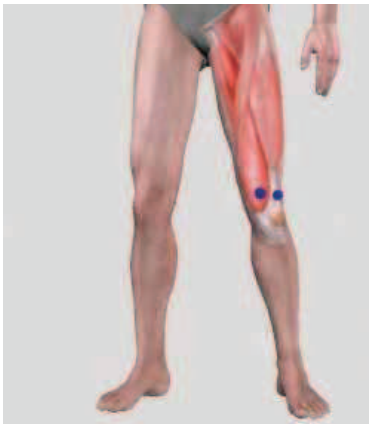
Always closely monitor for signs of acute inflammation. Then either discontinue treatment or reduce the dose accordingly.

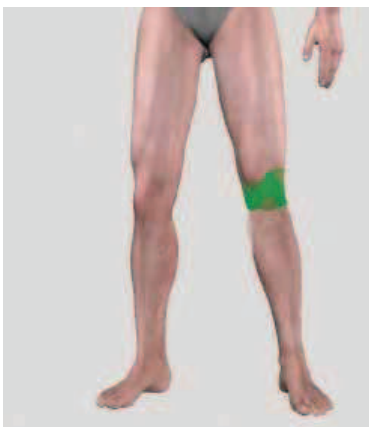
Generally apply the static method, always working towards the tip of the patella from various directions. Apply approximately 400 shocks per insertion. Apply the last shocks directly from the front.

Notes

Patellar tendon syndrome

Treatment area
Typical trigger points





	Acute	Chronic
Frequency	5–10	10–16
Pulse energy	60–90 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	2000–3000
No. of treatments (average)	3–4	1–6
Interval between treatments	5–7 days	3–5 days
Recommended applicator	25 mm	25 mm

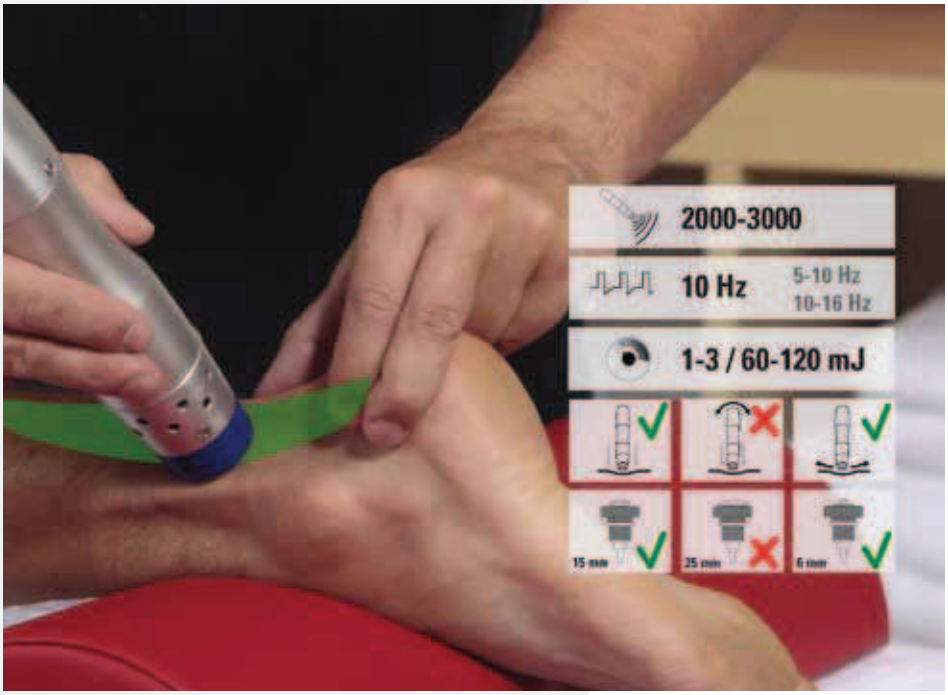
Notes

Pinpoint the problem accurately: Are the tendon, the patellar insertion or the lower sections of the quadriceps muscle affected?

Treat the tendon insertion and trigger and pain points with up to 600 shocks per point. Then switch to the dynamic technique.

In the case of a treatment point on the tendon insertion -> Energy level 2–3

In the event of treatment on the tendon or muscle -> Energy level 3



Achillodynia

Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	10–16
Pulse energy	60–90 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	2000–3000
No. of treatments (average)	3	1-6
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

Differential diagnosis: Is the tendon itself or the tendon insertion on the heel bone affected?
Does the tendon move freely or is there evidence of crepitation or palpable nodules in the tendon?

Static treatment of tendon insertion with energy level 1–2

Dynamic treatment of the tendon using the static or semi-static method for the nodules. Do not work directly from the dorsal direction, but from the side at an angle of 45°. Use energy level 2 or 3 here.

Notes

Plantar fasciitis

Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	5–10
Pulse energy	60–90 mJ	60–90 mJ
Pulses (on average, overall per treatment)	2500	1500-3000
No. of treatments (average)	3–4	1–7
Interval between treatments	5–7 days	3–5 days
Recommended applicator	25 mm, after familiarisation 15 mm	25 mm, after familiarisation 15 mm

Notes

Place the patient in the supine (abdominal) position with foot arch supported or overhanging and adopt dynamic approach for the complete aponeurosis.

Heel spurs

Treatment area
Typical trigger points

	Acute
Frequency	10
Pulse energy	90–120 mJ
Pulses (on average, overall per treatment)	2000
No. of treatments (average)	6
Interval between treatments	5–7 days
Recommended applicator	15 mm, after familiarisation 6 mm

Notes

Apply directly to the point of pain or initial or manifest calcification on the heel bone. Place the patient in the abdominal position with foot arch supported or overhanging.
Adopt static or semi-static approach.

In particularly painful situations or if the patient is sensitive, cryo 6 can alternatively be applied prior to treatment in order to reduce the pain.

Achillodynia, combined with Cryo 6

Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	10–16
Pulse energy	60–90 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	2000–3000
No. of treatments (average)	3–4	1–6
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm	15 mm

Notes

Pinpoint the problem accurately: are the tendon, the upper patellar insertion or the lower sections of the quadriceps muscle affected?

Treat the tendon insertion and trigger and pain points statically with up to 600 shocks per point before switching to the dynamic method.

In the case of a treatment point on the tendon insertion -> Energy level 2–3
In the event of treatment of a tendon or muscle -> Energy level 3

In particularly painful situations or if the patient is sensitive, cryo 6 can alternatively be applied prior to treatment in order to reduce the pain.

Status post muscular injuries

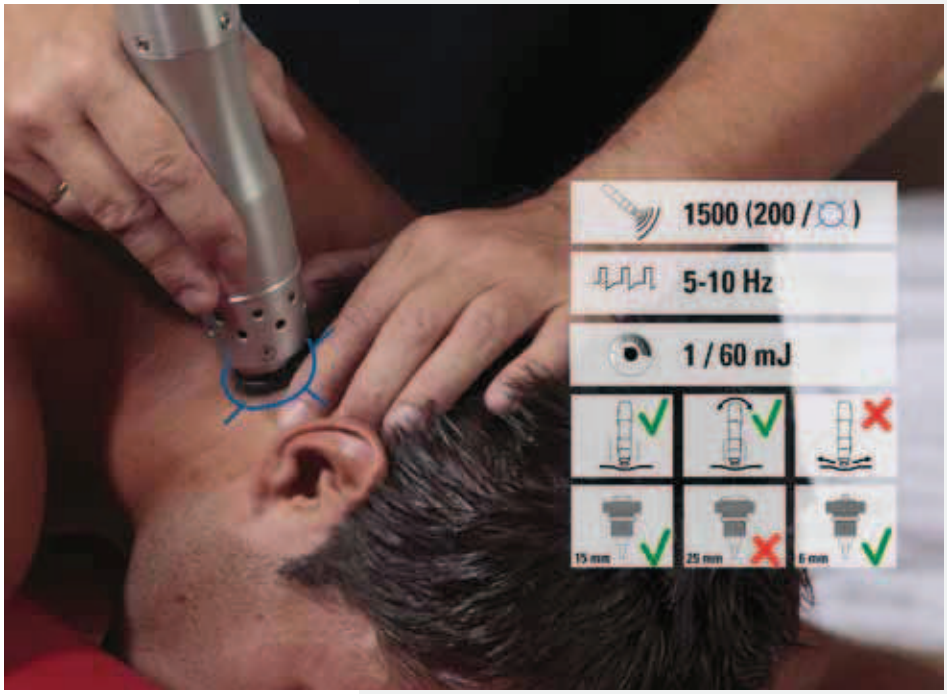
Treatment area
Typical trigger points

	Acute	Chronic
Frequency	5–10	10–16
Pulse energy	60–90 mJ	120 mJ
Pulses (on average, overall per treatment)	2000	2000–3000
No. of treatments (average)	3	1–6
Interval between treatments	5–7 days	3–5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

Notes

Initially treat statically and then semi-statically with up to 600 shocks per point. If possible, always direct the shock across the fibre to be treated. Applying slight compression, use the free hand to lift the affected structure from the underlying surface. In the case of bones and bony processes, do not work directly in the direction of the bony structure but around the affected area using the semi-static method.

Trigger point treatment of the sternocleidomastoid muscle insertion



Typical trigger points

	Acute	Chronic
Frequency	5-10	10-16
Pulse energy	60 mJ	60 mJ
Pulses (on average, overall per treatment)	1500-2000	2000-3000
No. of treatments (average)	1-3	4-8
Interval between treatments	5-7 days	3-5 days
Recommended applicator	15 mm, after familiarisation 6 mm	15 mm, after familiarisation 6 mm

Notes

Treat the trigger point carefully, initially using the static and then the semi-static method with up to 200 shocks. Apply only the inherent weight of the handpiece or initially lift some of the weight.
Position the patient with the head slightly lowered, gently pulling the muscle tendon (turn the head in the direction of the affected side).

Use the free hand to support the back of the head. Never direct the pulses in the direction of the occipital bone.

Option

Option

As an option, apply a stream of cold air on completion of RSWT.

In some circumstances, RSWT can be painful for the patient.
A stream of cold air following RSWT will substantially alleviate post-treatment pain and is found to be extremely pleasant in most cases.

Furthermore, the application of cold air following RSWT treatment minimises the risk of haematoma, which can be triggered by shockwave therapy.

	Nach RSWT
Aim	Pain relief, Affects tone, Regeneration of blood vessels
Cryo 6 adjustments	P 5 / P 6 Sequence 30 s – 1 min Airflow 7 / 8 / 9 3-5 min Airflow 4 / 5

Cryo 6

FAQ / Fragen – Antworten

Why is the energy setting expressed in mJ as opposed to bars?

As the en*Puls* Version 2.0 does not use a compressor, no information about accelerating pressure is possible since the correct information is the amount of energy transmitted to the tip of the applicator head. The levels displayed are approximately equivalent to bar levels 1, 2, 3 and 5 on comparable devices.

Is it normal to experience pain during treatment?

RSWT involves mechanical stress, which may cause pain during treatment.

It is usually possible to stay within the patient's tolerance range by adjusting the intensity and pressure and by cleanly applying treatment with counter-resistance from the therapist.

What is the duration of pain relief after treatment?

If pain relief is achieved with RSWT treatment, it generally persists for 2 to 3 hours before the pain may recur.

Why isn't the energy level reduced to ensure that pain does not recur during treatment.

Depending on the desired depth of penetration, a certain amount of energy is required in order to trigger the reactive processes. If an insufficient amount of energy is applied, the treatment can still be painful under certain circumstances or devoid of effect.

Can I receive any number of treatments?

RSWT triggers reactive processes in the cell structure. The cells need time after treatment to generate this reaction. It is therefore advisable to leave an interval between treatments and a gap of 6 weeks after a course of treatment (up to a maximum of 9 treatments) in order to allow the body to adjust.

Should sport be practised during shockwave therapy?

In the treatment area, simply take care to ensure that no new injuries are sustained through vigorous exertion. Otherwise, physical exercise promotes metabolism and the restructuring processes and should not, therefore, be discontinued.

Should shockwave therapy be used alone or can it be combined with other treatments?

RSWT should not be carried out with treatments having a direct analgesic effect.

Contraindications

Absolute contraindications

Shockwaves are mechanical compression and expansion waves which can have both positive and damaging effects on tissue structures.

- Vascular diseases present in or near the affected area
- Local infections in the treatment area
- Around malignant or benign tumours
- Directly on cartilage surfaces or near the small facet joints of the spinal column
- Directly over implanted electronic devices, such as pacemakers, analgesic pumps, etc.
- In areas in which mechanical energy in the form of vibrations may lead to tissue damage, such as metal implants for fractures, muscle pulls or tears
- Quick's value < 30

Relative contraindications

- Blood clotting disorders or treatments which result in changes to blood clotting
- Pregnancy
- Diseases with vasomotor impairment in the treatment area
- Over air-filled cavities, e.g. treatment on the thoracic spine, etc.
- Children, particularly around the epiphyseal plates
- Generalised pain syndromes, such as fibromyalgia

Caution is advised for individuals who

- present with impaired aesthesia
- present with severe autonomic disorders
- are under the influence of drugs and/or alcohol

as circulatory stresses and inadequate treatment responses cannot be excluded.

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NOTES

Please follow the manufacturer's operating instructions for the en*Puls* Version 2.0 device. This device must only be operated by qualified and appropriately trained personnel.

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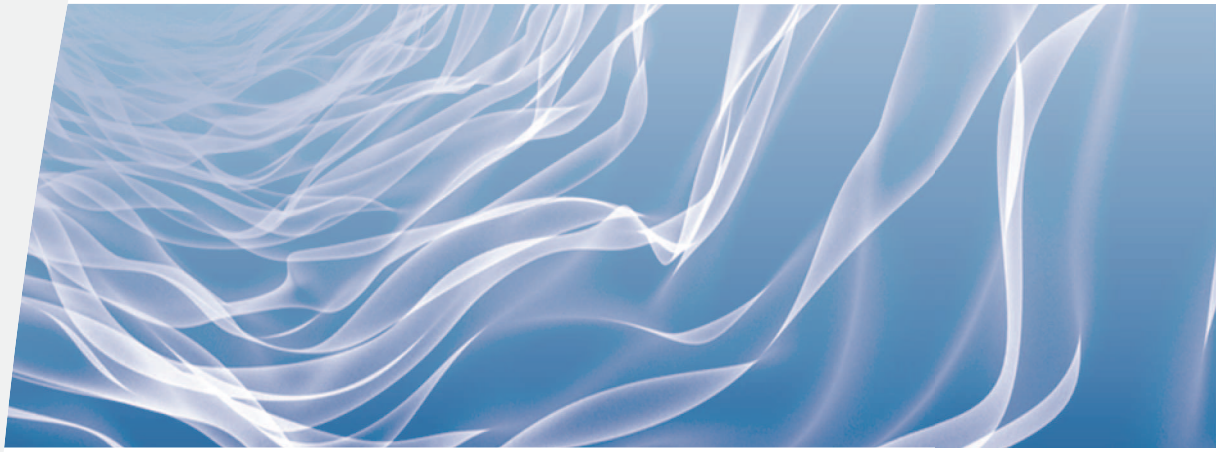
Shockwave Therapy



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