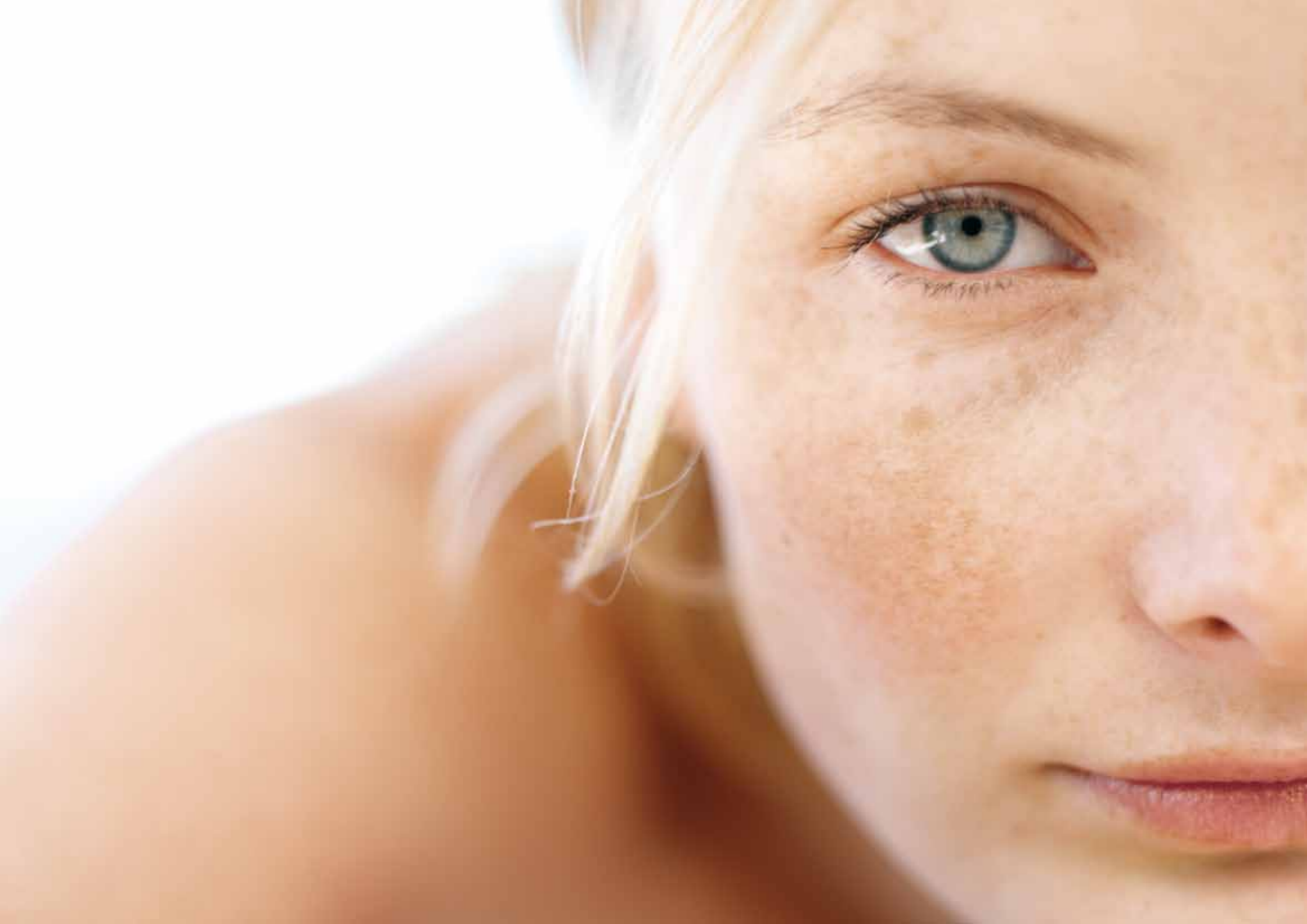


STORZ MEDICAL



AWT®

Acoustic Wave Therapy



Aesthetics with a fine tradition

STORZ MEDICAL AG is a Swiss member company of the KARL STORZ Group established in 1945. Our products have proved their efficacy all over the world in the fields of urology, orthopaedics, sports medicine, rehabilitation, gastroenterology, cardiology and dermatology.

Close co-operation with leading aesthetics institutes in the United States, Switzerland and Germany has enabled us to develop a pioneering treatment that sets new standards in aesthetic and cosmetic anti-ageing medicine. This new treatment method is referred to as Acoustic Wave Therapy or briefly AWT®.

This brochure gives the interested specialists an overview of this method.

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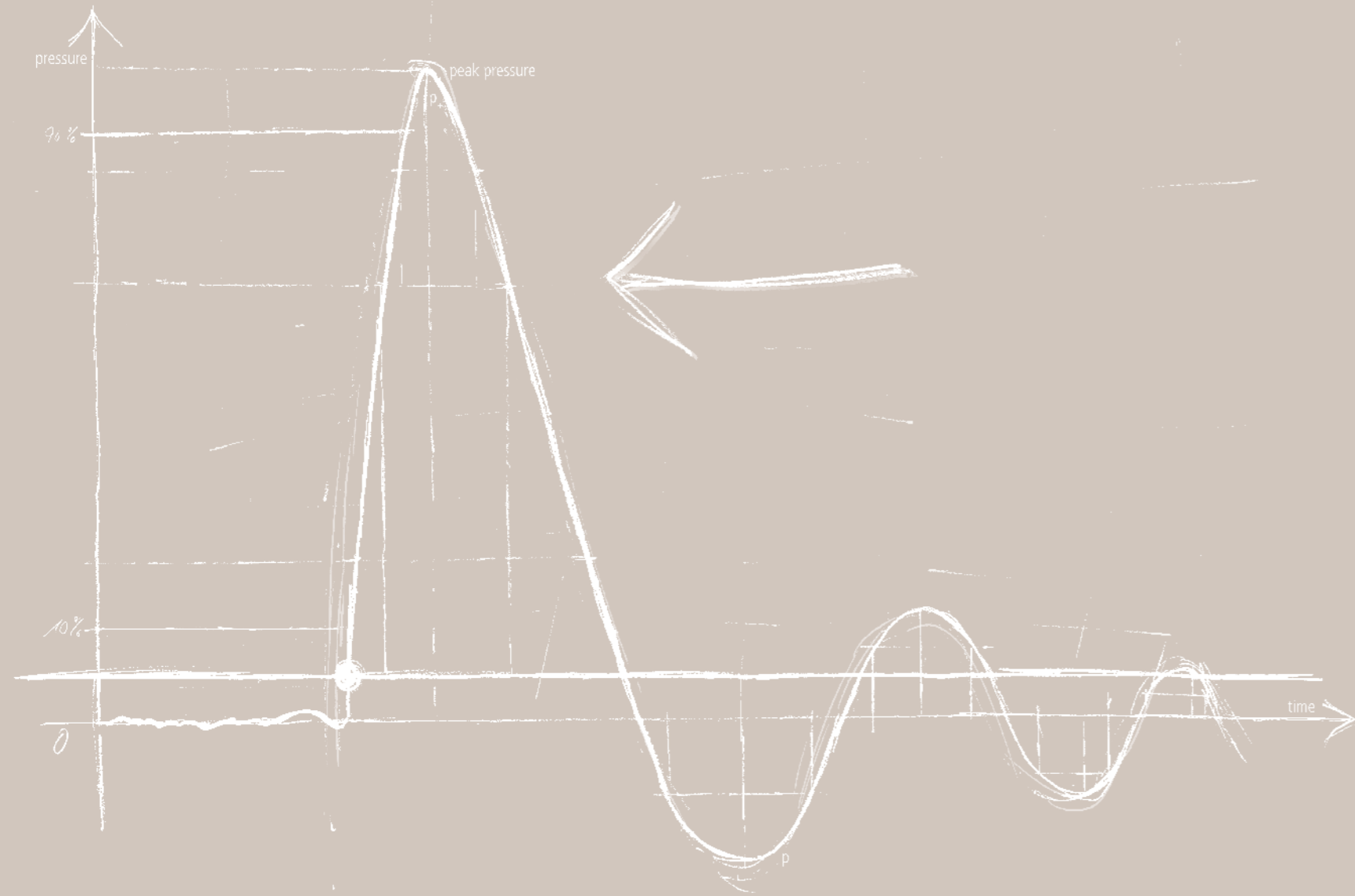
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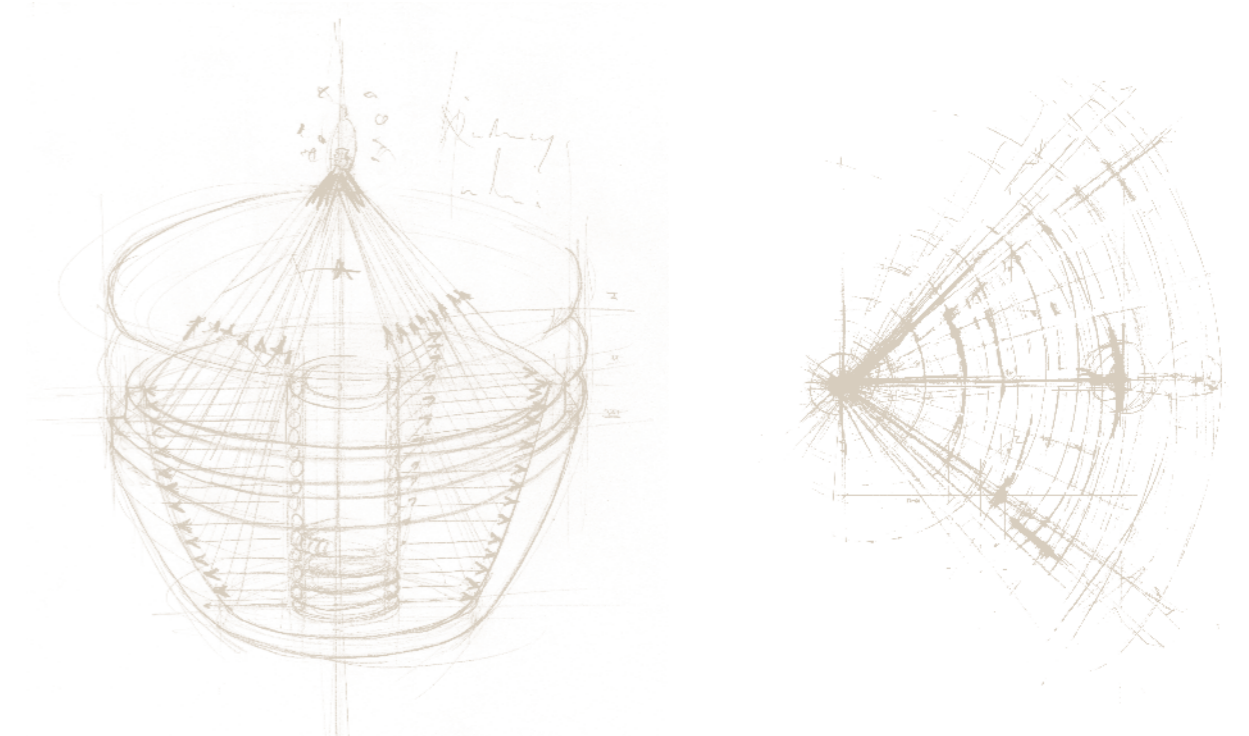
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Physics – the secret behind beauty

Acoustic waves are sound waves that are characterized by high pressure amplitudes in comparison to the ambient pressure. Sound waves used for medical applications are generated extracorporeally and introduced into the body without causing skin lesions. Owing to the extraordinary success achieved in kidney stone treatment (»ESWL«), the use of acoustic waves has been extended to other applications such as the treatment of shoulder calcifications, insertional tendinitis (»ESWT«) and muscle nodules (trigger points).

Acoustic waves propagate according to the laws of acousto-optics. Any changes in the acoustic properties, such as density or sound speed, cause an impedance jump at the interfaces between tissues (skin, fat cells or muscles) and energy will be released. This produces biomechanical effects such as lymphangion contraction and improved permeability of cellular membranes.



Time/pressure profile of an acoustic wave:
 The pressure increase to peak pressure takes place within a few nanoseconds. The peak pressures are up to 1500 bar.

AWT® mode of action and hypotheses

Acoustic Wave Therapy uses the body's intrinsic repair mechanisms to tighten the tissue.

When cellulite reaches an advanced pathological stage, the lymphatic vascular system is no longer able to return a sufficient amount of protein molecules and catabolic products from the interstitial space into the venous system. The high concentration of proteins in the interstice causes fibrosing and thus alters the tissue properties. This leads to an increase in the impedance jump where the effects of acoustic waves take place.

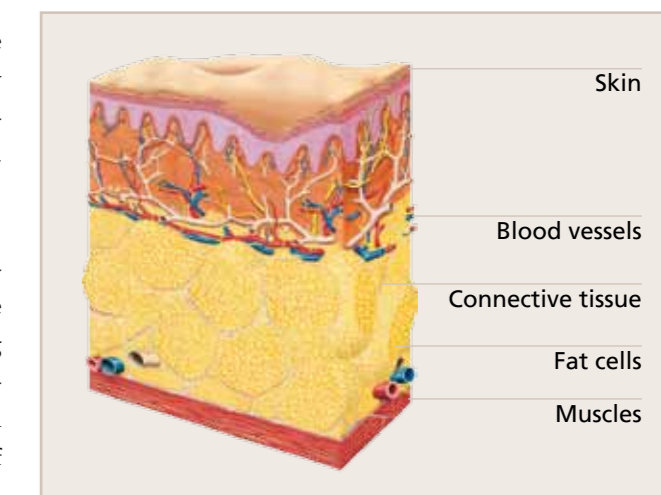
The application of acoustic waves results in transient cellular membrane permeability. The exchange of substances between cells is thus improved. In the treatment of the pathologies discussed in this brochure, membrane permeability activates fat-splitting enzymes (lipases).

The mechanical stimulus produced by acoustic waves is known to be converted into chemical activity. This phenom-

enon is referred to as mechanotransduction. The shear force exerted by Acoustic Wave Therapy releases biologically active substances that lead to increased blood flow (hyperemization) in all tissue layers, including the connective tissue, through vasodilation and vascularization.

Patients with cellulite are often found to have hypotonic postural muscles. In these cases, vibration treatment should be used to ensure additional muscular stimulation. Combining AWT® and vibration treatment with the V-ACTOR® applicator enhances the effectiveness of the treatment. Increased muscular blood circulation contributes to the formation of energy-rich adenosine triphosphate (ATP) from the activated cellular metabolism. This leads to the formation of new muscle fibres and muscular strengthening.

The main objective of Acoustic Wave Therapy is to induce tightening and neoformation of connective tissue to reduce cellulite and improve the appearance of the affected skin.



AWT® has an effect on the skin, blood vessels, connective tissue, fat cells and muscles.

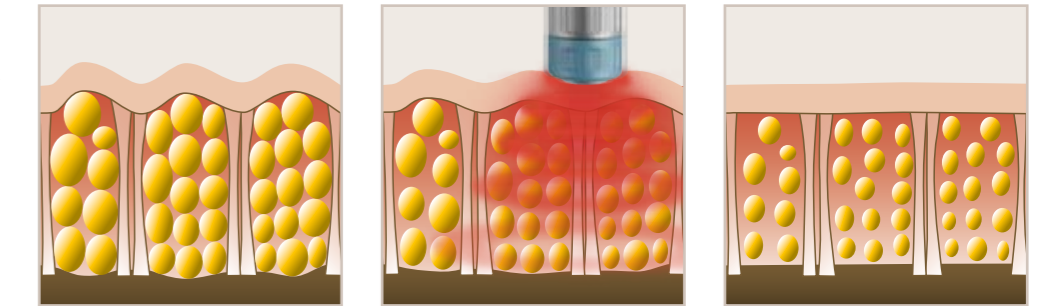


AWT® effects in cellulite treatment

Cellulite may have a profound cosmetic and psychological impact which may be quite independent of its stage of development. Many women affected by this skin condition suffer from the dimpled appearance of their legs and the reduced quality of life that comes with it.

Cellulite is associated with a reduced transport capacity of the lymphatic vessels. AWT® accelerates the lymphatic flow, enhances metabolic activity and stimulates fat breakdown.

Effects on the epidermis and subcutaneous tissue



Before AWT®:

Enlarged fat cells bulge upwards towards the skin surface, giving the skin the typical orange peel appearance. The inelastic vertical connective tissue fibres do not stretch along with the surrounding adipose tissue, which leads to the undesirable dimpling. Local blood circulation is significantly reduced.

During AWT®:

Oscillating acoustic waves are introduced into the body. The connective tissue relaxes, and the firmness of the epidermis increases. Blood circulation in the tissue is significantly enhanced. Collagen production is stimulated, strengthening the dermis and epidermis.

After AWT®:

The results of AWT® are improved firmness and restored natural elasticity of the skin and connective tissue along with a visible and long-lasting improvement in skin texture.



AWT® in the treatment of cellulite and weak connective tissue Improved skin elasticity and dermal revitalization

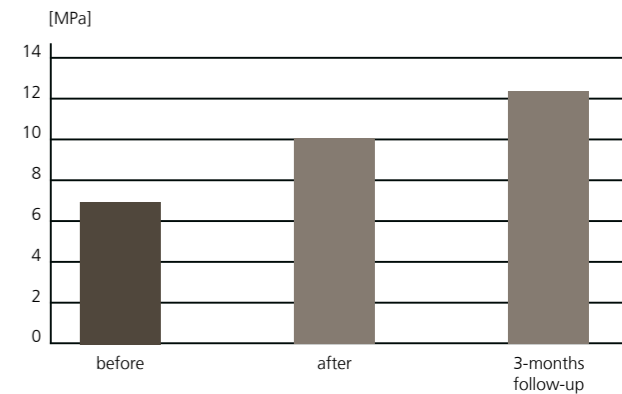
Several clinical observational studies have been conducted to assess the effects of AWT® in the field of dermatology. Acoustic Wave Therapy has been found to be the first non-invasive treatment method to ensure effective and long-lasting treatment of age-related connective tissue weakness, especially in the treatment of unsightly cosmetic skin defects referred to as cellulite. Acoustic waves stimulate microcirculation in fat tissue and improve existing metabolic regulation disorders to reduce the visible signs of cellulite.

Measurements of skin elasticity values confirm significant improvements in the course of Acoustic Wave Therapy. The measured parameters of the mechanical skin properties, skin structure and degree of satisfaction of the female subjects are very promising in terms of the long-term effectiveness (> 6 months) of this treatment.

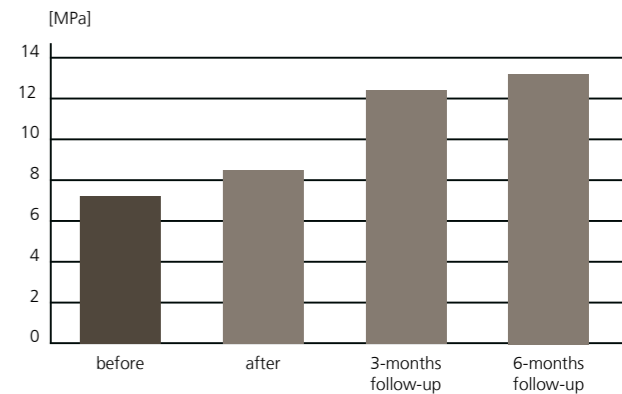
The skin elasticity values measured at the end of the treatment revealed a 74% increase. At the 3-months follow-up, skin elasticity had even improved by 105%. By contrast, the improvement in skin properties achieved with chemical skin care products (creams, lotions) is only between 12% and 25% and may reach just over 30% in individual cases.

According to Dr. Voss (medical specialist in dermatology), Director of Dermatest GmbH in Münster/Germany, an improvement of over 40% is to be considered an exceptional result.

**Improvements in skin elasticity (MPa)
Study I: 6 treatment sessions, 14 patients**



**Improvements in skin elasticity (MPa)
Study II: 8 treatment sessions, 42 patients**





AWT® in the treatment of cellulite and weak connective tissue
Improved skin structure and anti-ageing effect

Analysis and evaluation of ultrasound images

The ultrasound images of each patient were blinded on the basis of the manufacturer's image coding and rated by an independent group of reviewers according to the following criteria: score 1 = weak structure; score 2 = medium-firm structure; score 3 = firm structure.

The evaluation of the ultrasound images revealed an increase in the cell density. The visually established improvement in skin firmness proved significant.

Cosmetic evaluation

Cosmetic appearance of upper arms and gluteal region of female patients before and after six treatment sessions. (See »AWT® case studies« 1 and 2)

AWT® case study 1 – skin elasticity

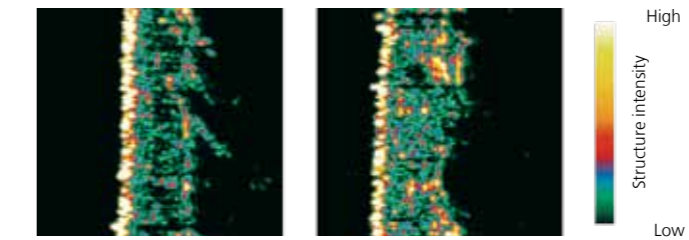


before AWT®
Source: Rosenparkklinik, Darmstadt/Germany

after AWT®

Ultrasound image

Study II: Patient with cellulite



Left (before AWT®): the interface between the corium and the subcutis appears as a broken, irregular line; the black structures are fat cells and lymphatic fluid.

Right (after AWT®): the skin tissue has become measurably more compact; echo-free interspaces (black) have been further reduced.

AWT® case study 2 – long-term effects in cellulite treatment



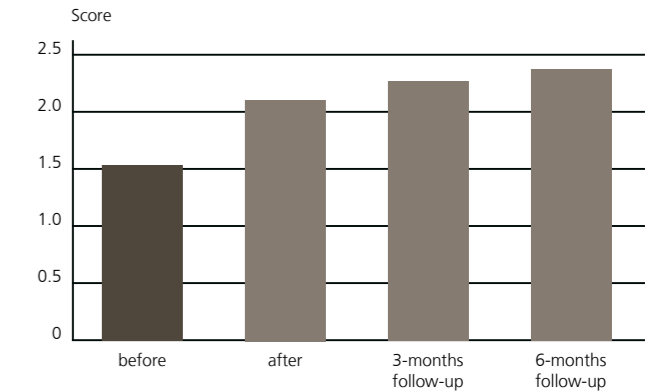
before AWT®

after AWT®

3 months after treatment

Evaluation of ultrasound images

Study II: 8 treatment sessions, 42 patients



Evaluation of score ratings of ultrasound images, including 3-months and 6-months follow-up examinations



AWT® – the ideal body shaping treatment

Acoustic waves provide an ideal body shaping treatment option. They are applied to tissue to stimulate cells. Cellular membrane permeability is thus increased and free fatty acids and glycerol are released from the cells. Metabolic products accumulate in the intercellular space and are removed via the lymphatic and blood systems. Acoustic waves improve tissue

metabolism and enhance the transport of catabolic products to the liver for use in energy metabolism.

The additional energy sources created inside the body as a result of fat cell activation need to be eliminated by a slight diet, physical exercise and by drinking plenty of fluids.

The results of the conducted studies confirm the effectiveness of the body shaping treatment.

- ▶ circumference reduction: in 72% of the subjects treated
- ▶ body shaping effect on thighs: 2.5 – 7 cm circumference reduction
- ▶ firmer legs: in 84% of the subjects treated
- ▶ smoother skin surface: in 95% of the subjects treated

AWT® case study 3 – body shaping



before AWT®

Source: Rosenparkklinik, Darmstadt/Germany



after AWT®

AWT® case study 4 – body shaping



before AWT®

Source: Dr. Goisis, Milan/Italy



after AWT®



AWT® – the ideal body shaping treatment

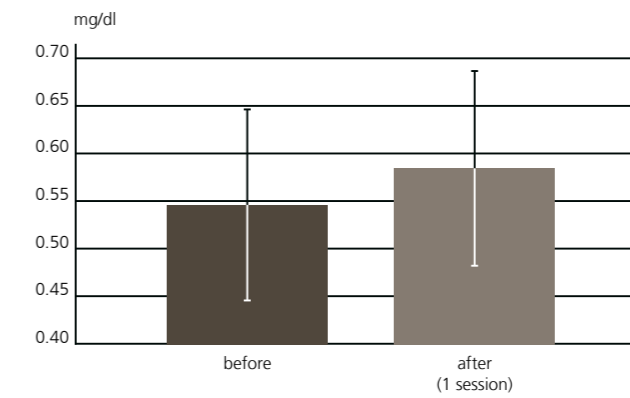
Abnormal adipose tissue is characterized by massive oxidative stress with increased formation of ROS (reactive oxygen species) and accelerated LPO (lipid peroxidation) in the patient's tissue. This is revealed by a higher concentration of MDA (malonic dialdehyde) and plasma protein carbonyl.

Glycerol and free fatty acids are mobilised as a result of the acute effect of AWT®. Acoustic waves separate these substances and MDA, which leads to a temporary increase in the serum levels. Treatment with acoustic waves ensures long-term elimination of these substances in the tissue.

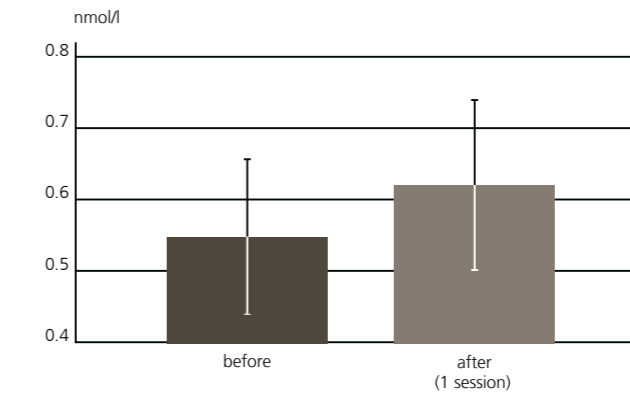
AWT® thus provides an antioxidative defence of the tissue.

Text sources:
 BioFactors 24 (2005) 275 – 282;
 Hufeland-Klinik, Bad Ems/Germany, Dr. R. Brenke
 Loges-Institut, Bad Harzburg/Germany, Dr. W. Siems
 Institute for Environmental Medicine, Heinrich Heine University
 Düsseldorf/Germany, PD Dr. T. Grune

Glycerol: acute effect of AWT®



Free fatty acids: acute effect of AWT®



Long term reduction of oxidative stress



AWT® case study 5



before AWT®
 Source: Dr. Johnson, Grapevine, USA

after AWT®



CELLACTOR® SC1 – Combined planar and radial Acoustic Wave Therapy

Acoustic Wave Therapy performed with the CELLACTOR® SC1 uses high-energy acoustic waves that are generated by means of two combinable treatment devices – planar and radial type applicators – and introduced into the patient's body. Aesthetic and dermatological disorders such as cellulite, scars or oedema can be treated effectively and with long-lasting results. The CELLACTOR® SC1 is also used with great success for other applications such as skin elasticity improvement, wrinkle smoothing and circumference reduction (body shaping).

The CELLACTOR® SC1 »TABLE TOP« or »TOWER« version is available in three different colours: »Safari Green«, »Arctic Blue« or »Swiss Red«.

Applications

- ▶ cellulite treatment (stages I – III)
- ▶ body shaping
- ▶ scar/wrinkle smoothing
- ▶ treatment of pregnancy stretch marks
- ▶ skin elasticity improvement
- ▶ regulation of muscle tone

Please refer to page 25 of this brochure for a complete list of applications.

AWT® case study 6 – cellulite



before AWT®

Source: Rosenparkklinik, Darmstadt/Germany



after AWT®

AWT® case study 7 – cellulite

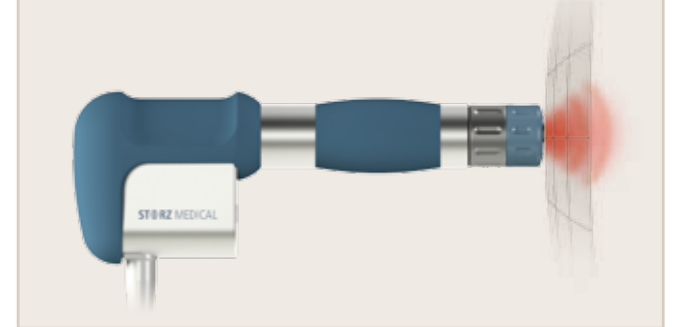


before AWT®



after AWT®

D-ACTOR® – Radial AWT®



C-ACTOR® – Planar AWT®





D-ACTOR® 200 – oscillating radial AWT® system

Successful cellulite treatment

Acoustic Wave Therapy performed with the D-ACTOR® 200 system uses high-energy acoustic waves that are introduced into the patient’s body in the form of high-frequency oscillations. AWT® is the first effective and long-lasting treatment modality for cellulite stages I to III.

Major AWT® indications are:

- ▶ cellulite treatment (stages I – III)
- ▶ muscle and connective tissue tightening
- ▶ elimination of lymphatic congestion
- ▶ body shaping
- ▶ regulation of muscle tone
- ▶ medical massage

The D-ACTOR® 200 is available in three different colours – »Safari Green«, »Arctic Blue« and »Swiss Red« – so that it can be perfectly matched with the ambience of the medical practice.

AWT® case study 8 – cellulite

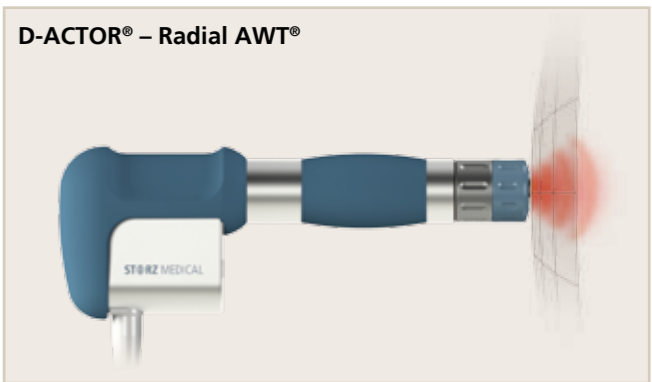


before AWT®

after AWT®

Source: Rosenparkklinik, Darmstadt/Germany

Cosmetic appearance of gluteal region before (left) and after (right) six AWT® sessions



D-ACTOR® – Radial AWT®



V-ACTOR® – the ideal complement to Acoustic Wave Therapy with the CELLACTOR® SC1 and D-ACTOR® 200

The V-ACTOR® applicator is an ideal complement to Acoustic Wave Therapy and contributes to long-lasting treatment results. Vibration treatment stimulates metabolism and accelerates the elimination of waste products. Pneumatically generated oscillating pulses trigger skin and muscular vibrations, which have a positive impact on the lymphatic flow. This improves natural skin tightening and smoothing.

During vibration treatment, mechanical oscillations induce a natural reflex-controlled contraction of muscle fibres. As a result of the stimuli thus produced, signals are conducted electrically, stimulating chemical processes at the synaptic contact sites. The complex spatial and time-related stimulus pattern is stored at the synapses as a memory engram in the form of long-term modifications. The pathological condition of muscular or vascular tone is gradually improved through the stimulating effect of vibration treatment. As a result, the non-pathological state of muscle tone is restored.

Vibration massage rounds off AWT® treatment and offers a relaxing wellness experience.

Vibration treatment

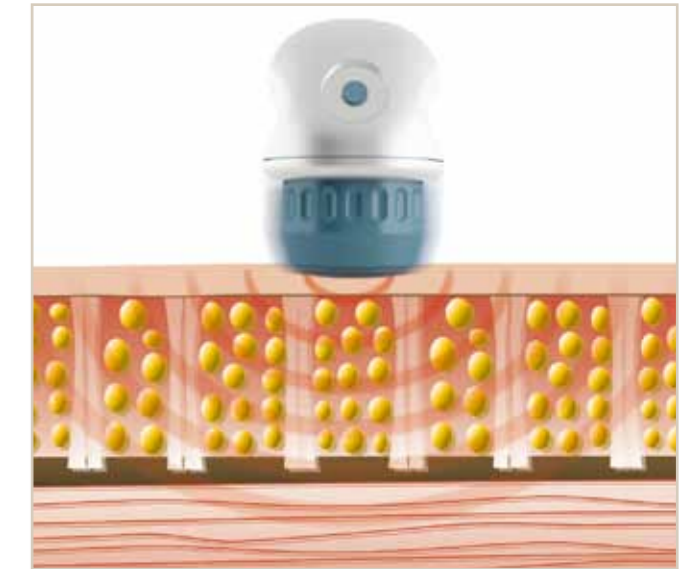
- ▶ stimulates metabolism and accelerates the elimination of waste products.
- ▶ tightens tissue through muscular stimulation.
- ▶ improves skin firmness to restore a natural, young appearance.
- ▶ offers a relaxing wellness experience.

Applications

- ▶ body shaping
- ▶ lymphatic drainage
- ▶ wellness massage
- ▶ muscle and connective tissue activation



Vibration treatment



Connective tissue stimulation and activation



**Specifications & applications:
CELLACTOR® SC1 and D-ACTOR® 200**

Specifications	CELLACTOR® SC1	D-ACTOR® 200
C-ACTOR®		
Method: planar		
Therapeutic penetration depth: 65 mm		
Duration of effectiveness: long		
Effects on cells, skin and muscles		
D-ACTOR®		
Method: radial		
Therapeutic penetration depth: 50 mm		
Duration of effectiveness: medium		
Effects on skin and muscles		
V-ACTOR®		
Method: vibrations		
Therapeutic penetration depth: 30 mm		
Duration of effectiveness: short		
Effects on skin and muscles		

Applications	CELLACTOR® SC1	D-ACTOR® 200
Cellulite treatment (stages I – III)		
Muscle and connective tissue tightening		
Elimination of lymphatic congestion		
Body shaping		
Scar smoothing		
Treatment of pregnancy stretch marks		
Enzyme-controlled lipolysis		
Wrinkle smoothing		
Skin elasticity improvement		
Regulation of muscle tone		
Lymphatic drainage		
Medical massage / wellness massage		
Muscle and connective tissue activation		



Global presence

Worldwide sales and service

Based in Tägerwilen/Switzerland on Lake Constance, the company operates around the globe through its branch offices and partners, making sure that qualified service is always near at hand.

Creating synergies

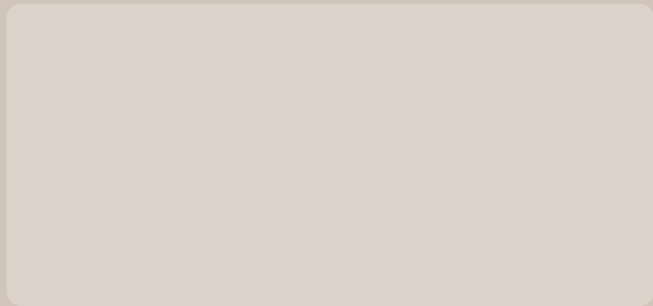
The customer is the focus of everything we do! Complex technology is only as good as the skills of the people who use it. Our training concepts are geared to the interaction between practitioners, systems and patients. We offer regular seminars and workshops and provide on-the-spot training to our partners to ensure efficient use and operation of our systems right from the very start.

Quality

Our products are designed to satisfy all requirements in terms of quality, safety, ease of use and service life.

Japanese garden at company headquarters of STORZ MEDICAL AG in Tägerwilen/Switzerland

HUMANE TECHNOLOGY – TECHNOLOGY FOR PEOPLE



STORZ MEDICAL

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