

Biomechanical stimulation with the **STORZ MEDICAL V-ACTOR®**

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The STORZ MEDICAL V-ACTOR® is the ideal complement to modern shock wave therapy. The development of this add-on tool was based on new knowledge about the vital function of the extracellular matrix (ECM) and the physiological vibrations of human tissue.

Over time, an increasing amount of cellular waste products and toxins accumulate in the ECM and interstitial space and slow down or even block metabolic processes. Injuries, continuous strain and mental stress exacerbate the clogging of the ECM. This inhibits the exchange of substances and reduces physiological tissue vibrations.

A relaxed muscle vibrates at a frequency of between 7 and 13 Hz. When the muscle is tensed, this frequency may rise to up to 30 Hz. The frequency of muscular vibrations in women is generally somewhat lower than in men. The effects of biomechanical stimulation are based on the stimulation and normalisation of the physiological body rhythm through muscle vibration stimulation. When normal muscle vibration is restored, all other rhythmic processes in the body, most of all cellular and matrix functions, will return to normal as well. This induces and promotes natural regeneration and healing processes.

By strengthening longitudinal vibrations (e.g. during muscle training or through biomechanical stimulation), the pumping effect of muscles and, consequently, muscular oxygen and nutrient supply are improved. In addition to this, adhesions and scarring are removed so that muscular elasticity is restored. This results in an instant increase in mobility. This effect also improves the metabolism and elasticity of the connective tissue and ECM.

Researchers such as Prof. V. Nazarov found out that these so-called microvibrations play a crucial role in the physiological processes that take place within the organism. Microvibrations are produced by skeletal muscles and transmitted to the surrounding tissue. In addition to stabilising the body temperature, physiological vibrations are of decisive importance in metabolic activity and cell renewal. Owing to their pumping effect, microvibrations support the circulation of nutrients, oxygen and blood cells and enhance the removal of metabolic waste products and toxins in capillaries and in the interstitial space. This means that muscles and the microvibrations they produce are the timer of microcirculation.

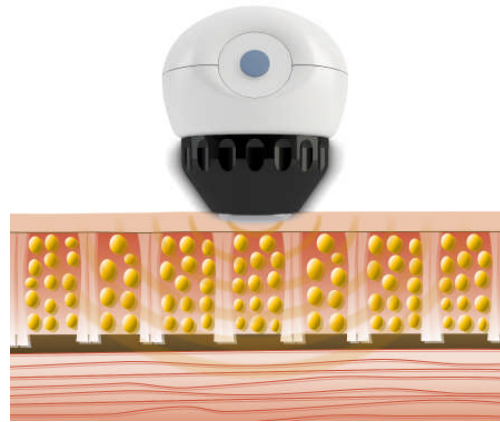
The vibration plates employed primarily in the fitness world for muscle building are based on this principle. However, vibration plates produce vibrations throughout the entire body or entire body regions, which may have undesired side effects in people with musculoskeletal system disorders.



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By contrast, the V-ACTOR[®] induces targeted local vibration pulses in the affected muscles. For this purpose, the muscle to be treated is slightly stretched to produce preliminary tension. The V-ACTOR[®] is then moved slowly to and fro along the muscle fibres. Depending on the frequency setting, this action normalises or stimulates physiological muscle vibrations. The frequency should be selected according to the specific indication and should be between 17 and 30 Hz. The energy level at which the V-ACTOR[®] is operated depends on the patient's pain threshold. It is generally between 2 and 3 bar. The treatment takes 3 to 10 minutes and varies according to body region and indication. Biomechanical stimulation with the V-ACTOR[®] can be performed on a daily basis, when necessary, or even several times a day for top athletes.

In the daily medical practice, the V-ACTOR[®] has also made its way into a second field of application. In fact, it is frequently used before and after shock wave treatment. The V-ACTOR[®] is an ideal tool to prepare highly sensitive or new patients for shock wave therapy and accustom them to the shock waves. Chronic pain patients in particular are often very sensitive to shock wave therapy. If the affected muscles are treated with the V-ACTOR[®] for about 5 minutes before shock wave application is started, the shock wave therapy then performed is much better tolerated by patients. In these cases, treatment with the V-ACTOR[®] takes place at a frequency of 25 to 35 Hz and at an energy level of between 1.4 and 3 bar to make sure it is comfortable for patients.



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The V-ACTOR[®] has also shown to give beneficial results if used after shock wave application. It induces an additional stimulation of tissue regeneration and creates a feeling of well-being. As many patients feel pain during shock wave application, the painless V-ACTOR[®] treatment gives patients a pleasant feeling at the end of the treatment session. The psychological effect of this final positive experience should not be underestimated.

As a rule, the V-ACTOR[®] can be used independently or in combination with shock wave therapy. It has proved effective in the following applications:

- reduction of swellings, oedema and haematomas
- breakdown of tissue hardening, adhesions and scar tissue
- improvement of mobility
- improvement of microcirculation in the treatment of paralysis and circulation disorders
- normalisation of muscle tone
- improvement of muscle build-up in rehabilitation
- faster regeneration and more effective loosening of muscles in competitive athletes
- painless connective tissue massage without causing haematomas
- preparation of sensitive or new patients for shock wave therapy
- creation of a feeling of well-being when performed after shock wave application

As a result, the V-ACTOR[®] is a highly useful and versatile tool and an ideal complement to shock wave therapy. The ergonomic handpiece connects directly to the control unit of the shock wave system. However, rather than producing the sound and pressure waves that are typical of shock waves, the V-ACTOR[®] generates genuine vibration pulses. Compressed air is used to move a suspended swinging transmitter forward and backward to produce vibrations with a frequency of up to 35 Hz. The transmission of these vibrations to the human body induces biomechanical tissue stimulation.

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