The Diverse Applications of Biomechanical Muscle Stimulation (BMS) for Health, Beauty and Fitness

English translation from the German-language source document: BMS-Nazarov.pdf.

Introduction

“Biomechanical Muscle Stimulation” (BMS) according to Prof. Dr. habil. Vladimir T. Nazarov (Riga / Moscow / Minsk) is a method that has been used for many years for rehabilitation, regeneration and prevention. It is applied in medicine, sport, training and cosmetics and is also referred to as “Nazarov stimulation”. According to the source text, it has shown notable results especially in physical medicine, postoperative treatment, neuromuscular problems such as multiple sclerosis, Parkinson’s disease and spasm, and in pain therapy.

BMS is a method in which no electrical stimulation treatment is used and no chemical substances are applied. It is based on the transmission of mechanical vibrations with a defined amplitude and frequency to the neuromuscular system. The effect is generally applied to tense or stretched musculature. The vibration generated by the devices is converted into longitudinal vibration of the musculature.

The fact that the muscle’s own vibration plays an important role in the blood supply of the capillary vessels has been part of medical knowledge for many years. A decisive advantage of this therapy method is also that the heart remains completely unloaded during treatment. The stimulation activates the muscle’s own blood supply. In this way the muscle, and therefore also the nerves, are supplied with “nutrition”.

Today the BMS method is used in many different areas of medicine. Contractures, circulatory disorders, metabolic diseases, eye conditions such as visual disturbances, and paralysis are only a few examples named in the source material. BMS is also described there as being used in burns and scar formation. It is also applied in sport, training and cosmetics.

Biomechanical muscle stimulation is described as producing the following effects

- improvement of blood circulation up to hyperemia [hyperemia: increased accumulation of blood];
- improvement of cooperation between the central and peripheral nervous systems and, as a result, a decisive improvement in movement and coordination;
- during vibration treatment, appropriate techniques may help release scar tissue or hardening in muscles or tissue within a short time.

For all patients with damage to the musculoskeletal system, whether:

- degenerative, for example joints, intervertebral discs, tendons and ligaments;
- after injuries, for example sport, occupational or traffic accidents;
- or constitutionally based, for example muscle weakness or muscle shortening,

BMS is described in the original document as a rehabilitation and regeneration method recognized by various health insurance funds in Germany and used by many specialists.

Areas of application

According to the source text, excellent results have been achieved, among others, in the fields of physical therapy, neuroorthopedics, neurology, internal medicine, endocrinology, geriatrics, oncology, sports medicine, general medicine, preventive medicine, anti-aging and cosmetics.

Together with proven traditional applications, this method is described as being able to help improve the following indications within a short time.

General medicine

- weakness of connective tissue;
- degenerative and rheumatic diseases;

- poor physical condition;
- headache and migraine;
- muscle tension and muscle weakness;
- pain in the muscles and musculoskeletal system.

Orthopedics - surgical diseases - osteopathy

- muscle development in muscle atrophy;
- degenerative processes of intervertebral discs and arthroses;
- fractures;
- joint diseases, for example tennis elbow or golfer's elbow;
- joint instability;
- contractures: muscular, capsular, scar-related;
- muscular imbalance and dysbalance;
- myelosis;
- myogeloses and hard muscle tension, including very severe tension;
- shoulder, back, hip, knee and ankle complaints;
- preparation for osteopathy or manual therapy through rapid warming and increased blood circulation before adjustment or manipulation.

Internal medicine

- circulatory disorders;
- congestion syndrome, including ulcus cruris;
- resorption of edema;
- neuropathies;
- strengthening of metabolism;
- urinary incontinence.

Neurology

- multiple sclerosis;
- muscular dystrophy and myasthenia;
- Parkinson's syndrome;
- stroke, paresis and prevention;
- pain therapy;
- spasm.

Dermatology

- arthrogenic or venous congestion syndrome, including ulcus cruris;
- blood circulation;
- Ehlers-Danlos syndrome (EDS);
- scar treatment, including burn scars;
- scleroderma.

Dental and jaw area

- periodontosis;
- temporomandibular joint complaints.

Eye diseases

- improvement of blood circulation of the optic nerve;
- strengthening of the orbicular eye muscle;
- weak tear fluid production, dry eyes;
- improvement of visual ability and accommodation.

Ear, nose and throat

- facial paresis, partial paralysis of the facial nerve;
- frontal and maxillary sinus symptoms;
- chronic rhinitis;
- tinnitus aurium.

Cosmetic applications

- reduction of fine wrinkles;
- scar treatment;
- tightening of tissue and musculature; cellulite;
- significant collagen build-up.

Literature cited in the source: Klyscz, Thomas: “Stellenwert physikalischer Therapieverfahren bei chronischer Veneninsuffizienz (CVI) und arthrogenem Stauungssyndrom”, paperback, 150 pages, 40 illustrations, Cologne 2000.

Contraindications

According to the source document, treatment must not be carried out in the following cases:

- acute infections;
- acute flare, for example in MS patients or rheumatism during a flare;
- amyotrophic lateral sclerosis (ALS), as symptoms may be intensified;
- aneurysms;
- malignant diseases, for example tumors and metastases;
- diabetic polyneuropathy;
- caution in diabetics: blood sugar monitoring;
- narrow-angle glaucoma in the direct treatment area;
- fractures with incomplete bone union;
- recent apoplexy/stroke, 4-6 months;
- gallstones or kidney stones;
- HIV-positive status;
- recent operations on muscles, tendons and ligaments;
- macular degeneration or retinal detachment in the direct treatment area;
- metal implants and endoprostheses;
- pseudarthroses;
- pacemakers;
- pregnancy, except as stated in the source with “UNOST” SF;
- specific and non-specific inflammations in the direct treatment area;
- intrauterine devices/coils;
- thromboses.

Theoretical foundations

Natural muscle vibration and the idea of biomechanical muscle stimulation

In the living body, muscle fibers constantly vibrate with different frequencies, which is related to muscle tone. These movements generate a vibration process at the tendons with a broad frequency range that can be detected even in complete rest.

Example: when the arm is stretched forward, the fingertips tremble slightly. When this trembling movement is recorded, an initially irregular oscillation process appears. When tension is increased up to maximum muscle contraction, the fluctuations become more regular and ultimately reach a sinusoidal form. This process can be demonstrated by bending and tensing the arm and making a fist. Synchronization of the vibrations of the individual muscle fibers occurs; this is called the “activity tremor” (W. W. Kuznetsov, 1977).

These oscillations are constantly present in humans throughout life. They are lower in women than in men, decrease during sleep by approximately one third, and in a state of irritation may increase up to tenfold, with amplitudes of about 1-5 mm. The central frequency in relaxed musculature is between 7 and 13 Hz; the maximum value in tense musculature may reach up to 30 Hz.

This leads to the idea of an amplifying sinusoidal external stimulation of tense musculature which, as in maximum self-generated muscular load, leads to a longitudinal vibration of the muscle fibers.

Figure references in the source document: Fig. 1 - muscle at rest; Fig. 2 - natural activity tremor; Fig. 3 - mechanical imitation of physiological tremor by means of BMS, achieving the blood-pumping effect without overloading the central nervous system.

Note in the source: “New 2012: Biomechanical Muscle Stimulation (BMS) download [131 KB]: BMS information flyer A4.”

General areas of use and information

Medicine / Therapy

Blood circulation

Vibration training according to Prof. Dr. habil. V. Nazarov, the scientific founder of biomechanical muscle stimulation (BMS), is described as improving circulation through the increased pumping action of muscle fibers that contract and relax rapidly, often around ten times per second. In classical training this increase in pumping effect is much lower. Peripheral blood vessels widen. This may be recognized by the light pink coloration of the skin after training or may even be felt as a slight tingling sensation.

According to research results cited in the source, peripheral blood circulation under BMS increases by 100% and up to 150%. A person treating cold feet with the BMS applicator is described as soon noticing improvement of these complaints through the mechanical vibrations produced and the resulting local widening of the blood vessels, or vasodilation. In this way, metabolism is also increased and strengthened.

Bone density and muscle atrophy

Scientific studies have shown on many occasions the effects of load on the skeleton and bone density. In orthopedics it is generally known that bones adapt their mass to the forces acting on them. Astronauts, for example, lose bone density during their stay in space because of reduced gravity.

The opposite also applies: the biomechanical stimuli and loads arising from BMS vibration and acting on the bones through the skeletal musculature, together with the release of hormones such as testosterone, are described as having a positive effect on bone density and, naturally, on the musculature as well.

Mobility

BMS application is described as greatly increasing body mobility within a very short time, about 1 to 2 minutes per muscle chain. It is therefore presented as an exceptionally effective aid for all types of functional and movement restrictions, or contractures, in the spine and in the joints of the upper and lower extremities.

Pain treatment

Through stimulation of mechano- and proprioceptors, an immediate distraction stimulus from pain is described as being achieved; subsequently, pain-related substances are said to be eliminated more quickly.

Body balance

The term “proprioception” can be understood as self-perception and is sometimes described as a “sixth sense”. It is the process by which the brain continuously receives information from the whole body about its movement and the position of its parts. Proprioceptive information comes mainly from receptors in muscles, skin and joints. Based on the information from these receptors, the body constantly sends reflex corrections back to the muscles.

During BMS applications, the person is continuously exposed to tiny movements. The entire balance system is constantly stimulated from different positions. According to the source, people immediately feel more secure in their sense of balance.

Fitness and sport

Short training sessions, major result

Sessions on BMS devices are described as so short and painless that the user does not even need to put on sportswear. Only 10 minutes a few times per week are described as helping maintain an already fit body. To obtain the same benefits in a gym, the source states that approximately five times this duration would be needed for a full training round including squats, jumps and push-ups.

Increased muscle strength and tone

With BMS vibration, even muscles that are rarely activated are reached. The whole body is reached. Scientific studies at the German Sport University Cologne are cited in the source as showing that this training method can produce greater and faster training effects compared with conventional training methods. The muscles become stronger and residual tone increases.

It should also be emphasized that, unlike normal training, correct application greatly reduces the load on joints and cartilage, which significantly reduces the risk of injury in untrained people.

Deeper muscle structures

In a conventional training session, only about 40% of muscle fibers are trained. With BMS vibration, deeper muscle structures are also reached and almost 100% of muscle fibers are activated. The BMS devices are described as making a positive contribution to strength development, both static and dynamic, as well as to jumping power.

A 15-minute vibration training session is described as producing the same result as approximately 60 minutes of weight training. Thus, muscle condition can be built and maintained in a pleasant and intensive way without the risk of overloading tendons and joints.

For young competitive athletes, BMS vibration training is described as an ideal variation within classical training plans. For older people, vibration training creates a good feeling because muscles are trained without heavy exertion. In addition, the intensive physical contact of the vibration is said to help dampen pain and prevent bone decalcification or osteoporosis.

Wellness

Hormone release

Hormones are chemical messengers between cells. Their function is to act as signals to target cells. During vibration training, increased release of certain important hormones can be observed according to the source. These include growth hormones, which are released to a greater extent. These hormones stimulate protein synthesis and contribute to the development of muscle tissue.

In addition, growth hormones play an important role in erythropoiesis, which increases the blood’s ability to transport oxygen. Growth hormones, particularly IGF-1, also have a direct effect on stimulation of lipolysis, which leads to reduction of body fat percentage. The source also states that neurotrophin, a brain stimulator, is increased under the influence of BMS vibration, and the level of the stress hormone cortisol is significantly reduced, which directly leads to a feeling of relaxation after a BMS training session.

Fat burning

A study cited in the source with slightly overweight people (BMI 27-30) reportedly showed that they lost a considerable 6.5% of body weight within eight weeks without changing lifestyle. During the same period, they built muscle mass. More muscle mass means a slimmer, firmer body.

Cellulite and skin

The strengths of BMS are described as rapid improvement of blood circulation and strengthening of the underlying musculature in a specific area. The vibrations can be used specifically in areas where cellulite has formed. Through the vibrations, the muscles underneath the cellulite region are trained, strengthened and firmed, and the skin is tightened. The skin appears smoother, bumps and dimples decrease, and weight reduction, meaning a reduction in body circumference, is also described as being achieved.

References and contact information in the source document

The source mentions that this text is also available as a two-page A4 sheet with photo documentation of different application options using the BMS device “Grizzly”: “Biomechanical Muscle Stimulation (BMS) - General areas of application and information”.

Articles by Fritz Weber listed in the source:

- “Biomechanical stimulation in multiple sclerosis (MS)”, with photo documentation;
- “Biomechanical Muscle Stimulation (BMS) - General areas of application and information”;
- “The diverse applications of biomechanical muscle stimulation for health, beauty and fitness”;
- “Description of cellular processes in biomechanical muscle stimulation”;
- “Bio-Face-Handy” - BMS hand-held device for facial musculature, face-lifting for wrinkle formation and gum recession.

Requests and device orders in the source are directed to Fritz Weber, Dipl.-Ing., ÖKO-TREFF im Lichtental, Vienna. The document includes contact, office hours and service information such as electrosmog measurements and infrared heating technology.

Biomechanical muscle stimulation (BMS) - General areas of application and information

The following section in the source repeats and expands information on general areas of BMS use.

Medicine / Therapy

Blood circulation

Vibration training according to Prof. Dr. habil. V. Nazarov, named as the scientific founder of biomechanical muscle stimulation, leads according to the source to improved circulation through the intensified pumping effect of muscle fibers contracting and relaxing rapidly, usually around ten times per second. Peripheral blood vessels widen, which may be seen as a light pink skin color after training or felt as slight tingling. According to cited research results, peripheral blood circulation under BMS increases by 100% and up to 150%.

Bone density and muscle atrophy

The source again notes that loads influence the skeleton and bone density. Bones adapt their mass to the forces acting on them. The biomechanical stimuli and loads from BMS vibration act through the skeletal musculature on the bones and, together with hormone release such as testosterone, are described as positively affecting bone density and musculature.

Mobility

BMS use is described as greatly increasing mobility in a very short time, 1 to 2 minutes per muscle chain, and as useful for functional and movement restrictions of the spine and joints of the upper and lower extremities.

Pain treatment

Through stimulation of mechano- and proprioceptors, an immediate pain-distraction stimulus is described, followed by more rapid elimination of pain-related substances.

Body balance

Proprioception, or self-perception, supplies the brain with continuous information about movement and body position. BMS exposes the body to continuous tiny movements and stimulates the balance system from various positions, which according to the source helps people feel more secure in their balance.

Fitness and sport

Short training sessions, major result

Sessions on BMS devices are described as short and painless. The source states that 10 minutes a few times per week can help maintain an already fit body, while comparable benefits in a gym would require about five times that duration.

Increased muscle strength and tone

BMS vibration is described as reaching muscles that are rarely activated and as addressing the whole body. Studies at the German Sport University Cologne are cited as showing larger and faster training effects than conventional training methods. Correct use is also described as causing less load on joints and cartilage than normal training.

The BMS device “Grizzly” - selected applications

The source document includes a heading referring to the BMS device “Grizzly” and selected applications. It then continues with the topic of deeper muscle structures.

Deeper muscle structures

In conventional training, the source states that only 40% of muscle fibers are trained. With BMS vibration, deeper muscle structures are also reached and almost 100% of muscle fibers are activated. A 15-minute vibration training session is described as producing the same result as about 60 minutes of weight training. The text also presents BMS vibration training as a useful variation for young competitive athletes and as suitable for older people because the muscles are trained without heavy exertion.

Wellness

Hormone release

According to the source, vibration training can increase the release of important hormones including growth hormones. These support protein synthesis and muscle tissue development, are involved in erythropoiesis, and may influence lipolysis. The text also states that neurotrophin increases and cortisol is reduced, which is associated there with relaxation after BMS training.

Fat burning

The source cites a study in mildly overweight people with BMI 27-30, reporting a 6.5% weight loss over eight weeks without lifestyle change, together with an increase in muscle mass.

Cellulite and skin

BMS is described as improving blood circulation quickly and strengthening underlying musculature in a targeted area. In areas with cellulite, vibrations are said to train and firm the muscles under the cellulite region, tighten the skin and reduce the appearance of bumps and dimples.

Internet references and contact information

The source lists internet materials under the following headings: “Biomechanical Muscle Stimulation (BMS) - General areas of application and information”; “Biomechanical stimulation in multiple sclerosis (MS)”, with photo documentation; “The diverse applications of biomechanical muscle stimulation for health, beauty and fitness”; “Description of cellular processes in biomechanical muscle stimulation”; and “Bio-Face-Handy” - BMS hand-held device for facial musculature, face-lifting in wrinkle formation and gum recession.

The contact information is again given as Fritz Weber, Dipl.-Ing., ÖKO-TREFF im Lichtental, Vienna, with address, telephone, fax and office hours.

Biomechanical stimulation in multiple sclerosis (MS)

The source notes that this article can be downloaded as a PDF file and attributes it to Fritz Weber.

Short summary

Biomechanical stimulation (BMS) is described as a supportive measure for physical therapy. The purely mechanical microvibration generated by special BMS devices is transmitted to the patient's musculature by means of an applicator and applied in combination with physical therapy such as massage or therapeutic exercise.

Its oscillation consists of a defined amplitude in a coordinated, variable frequency range, measured in Hertz. The frequencies are selected according to the intended therapeutic goal, for example 18 Hz for lymphatic effects, 27 Hz for muscular effects or 30 Hz for neural effects.

What is BMS based on?

The human body constantly exhibits oscillations. These are the natural microvibrations of the skeletal musculature. Among other functions, they contribute to heat production and, particularly through their pumping effect, to the return flow of venous blood from the capillary blood vessels through venules and veins to the right atrium of the heart. The source states that the heart itself is demonstrably at least 25 times too weak to press blood through the enormous network of approximately 100,000 km of the finest capillaries.

These microvibrations were discovered and researched from 1944 onward by Hubert Rohracher, long-time head of the Psychological Institute of the University of Vienna, in "Die Mikrovibration, ihre biologische Funktion und ihre klinisch-diagnostische Bedeutung" (1969). During intensive dynamic muscle work, blood circulation in the musculature and thus the metabolic processes of the body are described as increasing up to twentyfold.

These oscillations are responsible in the human body for triggering control and information processes. With an appropriate BMS device they can be artificially generated and applied to the musculature in order to influence the body's own information and control processes reflexively through the central nervous system. The stimulation thereby triggered is described in the source as up to 100 times more efficient than a classical physiotherapeutic application.

How is the vibration applied?

The body's own oscillations of the skeletal musculature consist of the individual movements of sarcomeres, the smallest functional units of muscle. With increasing alignment during the rise in tension, a sinusoidal movement pattern develops in the longitudinal direction of the fiber course. Therefore, in biomechanical stimulation the generated vibration must be applied with the applicator, stimulator or "vibrathode" in the longitudinal direction of the muscle fiber course.

Tense or stretched musculature, as far as this is possible for the patient, ensures optimal conduction and transmission of the vibration to the corresponding mechanoreceptors. The result of this amplified longitudinal vibration is a higher pumping effect of the muscles, meaning better supply with nutrients and oxygen.

Caution in the source: whole-body vibration devices on which the patient or client stands, sits or lies are not recommended there. The source states that, if the tissues are excessively affected as can happen when sitting or standing on vibration plates due to the body's own weight, tissue damage may develop over time without being noticed. The applied frequency should not be substantially higher than 35 Hz.

What are proprioceptors?

The organism has sensory cells that perceive and "measure" mechanical forces, convert them into a physiological signal, a nerve excitation, and pass it on to the central nervous system. Such mechanoreceptors are considered proprioceptors when they act as sensory end organs responding to

changes in state, such as self-perception of body position and movement in space, or of the locomotor and postural system, including muscle spindles and tendon spindles.

The processing of proprioceptive sensations is a prerequisite for all regulated motor function. These receptors are stimulated by BMS.

Experience in the neurological field - the example of multiple sclerosis

In addition to existing dermatological studies available in book form, the source describes significant effects with BMS in neurology as well. Convincing results are reported as having been presented at the end of 2001 by Jürgen Aschoff, physician for naturopathic medicine, through evaluation of findings from twelve patients with encephalomyelitis disseminata, meaning multiple sclerosis. Eleven of these patients, some of whom had been in BMS treatment for years, had reportedly remained free of relapses since beginning treatment with BMS according to Hofschröer®.

The source cites, for example, works by Dr. med. habil. Thomas Klyscz: “Biomechanische Stimulationstherapie zur Behandlung der systemischen Sklerodermie und sklerodermiformer Hauterkrankungen” and “Stellenwert physikalischer Therapieverfahren bei chronischer Veneninsuffizienz (CVI) und arthrogenem Stauungssyndrom”.

On average, the total treatment period of the patients was 3.5 years. The time since diagnosis averaged 12.5 years. Thus, patients with a more advanced disease picture were also included in the evaluation.

In addition to general finding questions, 24 special questions about muscle strength, spasticity, sitting ability, walking ability and visual ability were included. On average, the questions were answered as 60% improved, 35% unchanged and 5% generally worsened.

No MS relapse occurred in any patient during ongoing treatment. In parallel with BMS according to Hofschröer®, seven patients were treated with interferon and five patients without interferon.

The source states that the Fachinstitut für Physiotherapie Hofschröer has worked with biomechanical stimulation since 1992. In the treatment of patients with MS, therapeutic treatment techniques from various fields were combined with biomechanical stimulation. According to the source, this ultimately led to side-effect-free cessation of relapses in multiple sclerosis. The original text further claims that this allows one to speak not merely of slowing but of ending the progressive course of the disease.

General information on multiple sclerosis in the source

Multiple sclerosis is described in the source as a disease with an approximately 20% chronically progressive course and in approximately 30% of cases a relapsing course. Approximately 50% of relapsing disease courses gradually develop into chronic progression. The age of onset is stated as between 20 and 40 years, more common in women than in men. The average life expectancy after disease onset is stated as 27 years.

From a prognostic point of view, the source distinguishes a benign form and, in about 5% of cases, a malignant form that leads to death within a few years. In general, the primary chronic course is assessed unfavorably. In therapy, corticosteroids are administered during a relapse. Long-term therapy usually involves immunosuppression with azathioprine (Imurek) to reduce the relapse rate.

The prophylactic use of interferon to prevent relapses is described as not yet assessable in the long term. Most drug studies are stated to be very short and to base their prognostic results on extrapolations. One of the most important elements of therapy, however, relates to physiotherapy, which is indispensable when oriented to the respective findings. In all cases, the therapy goal is to slow the progressive course of the disease. This section is attributed in the source to Jens Hofschröer.

Photo documentation: biomechanical muscle stimulation in Thera-Fit spa and sauna park

The source document includes photographs and captions from Thera-Fit, Emsland Kur- und Saunapark Hofschröer. The captions describe the entrance portal, the Hofschröer spa and sauna park, and treatment situations involving an MS patient dependent on a wheelchair.

One caption states that Jens Hofschröer treats a wheelchair-dependent MS patient whose feet rest on the vibrating applicator of the “Grizzly” BMS device. First, lymph flow from the feet to the legs must be activated

and promoted. Then massage begins with the foot musculature. Another caption indicates lymph flow in the thigh.

Additional captions in the source: thigh strength exercise - tension by the patient; thigh strength exercise - resistance by the therapist; strength exercise alone, with the patient supporting herself; BMS treatment of a spastic patient; BMS massage of neck musculature; BMS massage of the right shoulder musculature.

The source describes the combination of upper-body massage with biomechanical muscle stimulation as follows: the masseur supports his elbows on the vibration applicator and transmits the vibrations with his forearms, while the client's muscles are tensed, to the respective muscle area, which is also tensed. In the lumbar spine area, the massaging hand of the BMS masseur forms the connection to the vibrathode.

Further photo captions: BMS massage of chest musculature; BMS massage of facial musculature; BMS massage of back musculature; BMS massage not with dry hands, but only with herbal body milk; BMS massage of the left lumbar spine area; BMS massage of the right lumbar spine area.

Description of cellular processes in biomechanical muscle stimulation

General

Biomechanical stimulation makes use of the known fact, as stated in the source, that every living organism oscillates harmoniously and coherently in a finely tuned defined mode. Known rhythms such as the heart rhythm and brain rhythm act as pacemakers for all biological structures.

In the body, the pacemaking rhythms are coupled to the directed movements of the fluids that bathe the individual body cells, the extracellular matrix. Persistent rhythm disturbances inevitably lead, even with adequate supply of nutrients and active substances, to deterioration in the quality of this milieu. If it becomes chronically "acidic", for example, the cells perform less and less effectively. As a consequence, tissue remodeling occurs and structural quality is gradually impaired, ultimately expressed in organ damage. Non-specific symptoms are described as characteristic of functional disturbances of a neglected matrix system in the body.

Cellular foundations

For microcirculation in any organ of the body, an intact and characteristic resonator quality of the skeletal musculature is described as primarily responsible. Through the heart muscle and the skeletal musculature, which accounts for 40% of total body mass, blood circulation is rhythmically maintained.

Recent research cited in the source indicates that healthy skeletal musculature does not tremble only in extreme situations such as chills, fever and fear, but already oscillates throughout life at rest with a characteristic frequency and amplitude spectrum. Through the macroscopically visible synchronization of skeletal muscle fiber oscillations, a pumping and suction effect supporting the heart muscle arises. This has a decisive effect on supply to all connective tissue, especially its finest micro-areas, the interstitial matrix.

By means of an applicator or resonator that permits frequency modulations, specific oscillations are activated or restored in all tissues, including deeper and finest layers. By adapting the resonator, the muscle and its fasciae and tendons are set into oscillation externally, and its oscillation pattern is modulated toward normally timed musculature.

Through phase-synchronous mechanical oscillations, derailed biochemical and physical processes coupled to rhythmicity are normalized, and natural healing processes are initiated and promoted. Because the method couples into the physiological regulatory circuit, all metabolic processes are also described as normalizing, enabling healing or regeneration to be initiated within a short time.

BMS imitates nature

- It produces body-own oscillations.
- In tense musculature, the activity tremor arises naturally, including in muscles that are no longer under voluntary control.

The phenomenon of pain relief

The patient's pain sensations are often the limiting factor in applying movement programs in physiotherapy. Because the nature of pain perception is still only partially clarified, the source assumes that pain is a biological signal for disturbances in the body. The most widespread theory considers the human cell to be the origin of pain. Due to injuries, substances such as serotonin, calcium chloride, histamine and others are released into the intercellular spaces and irritate pain receptors.

Pain relief would then result if the exchange of cellular and intracellular fluids were promoted and the concentration of irritants in the pain foci reduced. The circulation-promoting and metabolism-stimulating effect of BMS is described as supporting its positive contribution to pain relief.

Improvement of mobility

Both in prevention and rehabilitation, improvement of joint mobility is an important prerequisite for coping with sport and everyday loads.

In prevention or preparation for athletic load, the source states that BMS can achieve a clear performance increase and improvement with treatment units lasting only about two minutes. These improvements relate to stretchability, blood circulation, improved gliding behavior of tissue layers relative to each other, and subjective body perception.

In therapy and physiotherapeutic follow-up treatment of joint contractures, both contractures after prolonged immobilization and postoperative contractures could be treated effectively with the help of BMS according to the source. Not only muscular shortening, but also capsular contractures or even adhesions could be loosened. Major progress in joint mobility is described at the shoulder joint. Using known stretching techniques from manual therapy, improvements in anteversion and elevation of 30-40 degrees per three-minute stimulation are described as not uncommon.

Muscle toning

According to tests described in the source, strength development, muscle stretching and other exercises using BMS lead to increased muscle tone and a feeling of lightness in the muscles. The desire for further muscular activity is awakened. This feeling generally persists for up to two days.

Dominant movements in the neuromuscular apparatus, a kind of muscle memory, can thereby be built up. In the absence of muscle obedience, for example due to diseases of the neuromuscular apparatus such as paresis, plexus inflammation, paralysis, muscular dystrophy and similar conditions, BMS can be applied for muscle toning, development of movement coordination and practice of specific movements and movement sequences.

Muscles that cannot actively perform their work must be stretched and stimulated with the help of a device or the therapist's hand. Under BMS the muscles warm quickly, the sensitivity of nerve endings increases, and the impulses reach the central nervous system. Inactive structures are reactivated. The source describes this as a kind of new programming of "muscle memory" in the central nervous system through BMS.

Conclusion

Biomechanical stimulation (BMS) is applied both preventively and rehabilitatively. On the one hand, it is used for people who suffer from performance-reducing non-specific symptoms, because such disturbances of well-being are described as characteristic of functional disorders of a neglected matrix system in the body. On the other hand, it is used for people with accident-related or posture-related degenerative changes of the musculature. According to the source, such degenerations can be positively influenced in a lasting way by the therapy.

The source refers again to "Biomechanical Muscle Stimulation (BMS) - General areas of application and information".

"Bio Face Handy" - now also for home use

The source presents the "Bio Face Handy" as a simple, fast and successful home application.

It states that there are two anatomical foundations of beauty: the facial musculature and the elastic tissue of the dermis. During the natural aging process, facial muscles and elastic skin fibers lose tone and volume.

Through targeted muscle and tissue training using BMS, the aging process of the skin is described as being significantly delayed, and in a fraction of the time required for conventional facial training. BMS stands for biomechanical muscle stimulation.

In younger clients who have no wrinkles or only very fine lines, stimulation is described as also serving prevention of wrinkle formation and care of the muscles.

BMS stimulation activates the “muscle pump”; blood circulation and strengthening of the facial musculature are stimulated. More oxygen and nutrients reach the skin cells. At the same time, tissue detoxification is optimally influenced through stimulation of lymph flow. The important ability of the tissue to bind moisture is described as being greatly increased by stimulation.

The source describes the device as very easy to use and states that a user folder is supplied.

Applications of the BMS device “Bio Face Handy”

- skin in need of regeneration and slack skin associated with muscle atrophy - natural, painless face-lifting;
- acne and general skin impurities;
- couperose;
- scar treatment;
- prevention and delay of the natural aging process;
- prophylaxis;
- against wrinkle formation and for wrinkle treatment;
- muscle and skin care.

Commercial information in the source

- Price: EUR 690, including VAT;
- delivery time: approximately 1 to 2 weeks after receipt of order;
- delivery: free delivery to the home;
- warranty: 2 years;
- CE-certified and EMC-tested.

Further information in the source is requested from A-1090 Vienna, Liechtensteinstr. 123, DI Fritz Weber, private environmental and wellness institute. Websites and office hours are also listed.

Biomechanical stimulation

Unique procedures with biomechanical stimulation - new in Latvia, but not in the world

This section in the source is written in German with several Latvian context references. It states that biomechanics is a science and that biomechanical stimulation is a scientifically recognized healing method. One of the world’s best-known scientists in this field is described as the Riga-born doctor of biomechanics, Professor Vladimir Nazarov.

According to the source, during the period of the USSR until the 1990s Nazarov was the director of an important scientific institute on the USSR scale, described as a kind of “secret weapon” for the rehabilitation of top-level athletes, ballet dancers and, without doubt, also statesmen. After the collapse of the USSR, the source states that Nazarov founded more than 60 “Nazarov Institutes” in the largest sanatoriums of Switzerland, Austria and Germany. The text lists the following websites: www.nazarov-stimulation.de; www.fitnestribune.com; www.biomechanicalstimulation; www.biomechanicalstimulationtherapy; www.nazarov-institut.ch.

Healing procedures using biomechanical stimulation

1. Whole-body biomechanical stimulation procedure with the “Orion” device, described as universal. The source states that even 2-5 procedures eliminate leg and hip-joint pain, “decalcify” the blood vessels and

regenerate the body’s circulation well. It also states that the procedures promote a shorter rehabilitation time after bone fractures and injuries because adhesions of scar tissue are broken down. Price: 30 minutes - Ls 19.

2. Biostimulation procedure especially suitable for the upper body, using the “Marss” device. According to the source, even 3-5 procedures help injured and painful shoulder joints very well. They promote the activity of internal organs - heart, circulation and lungs. Beauty effect: slack muscles are reduced. Price: 30 minutes - Ls 19.
3. Biostimulation procedure especially suitable for back problems, using the “Saturns” device. It is intended for back problems. The source states that the procedure quickly relieves osteochondrosis and restores injured back cartilage and cervical vertebrae. A painful neck tense from stress is released during one treatment. Price: 15 minutes - Ls 12.
4. Restorative procedure for facial skin and subcutaneous facial muscles with the cosmetic device “Reja”. The procedure is described as having a real effect after the first treatment. Compared with a massage performed by a cosmetologist, the effect is stated in the source as being multiplied by 60. The facial oval improves, the eyebrows lift, and relaxed facial muscles smooth wrinkles. The source claims that the new facial appearance lasts for one week after the procedure and that after 4-5 procedures an effect comparable to facial plastic surgery is achieved. Price: 30 minutes - Ls 16.

Additional photographs in the source document

The final pages of the PDF include photographs of practical BMS applications: work with a patient at the device, demonstration of active body positions, a portrait of a specialist, and a cosmetic facial procedure using a hand-held device.

Translator’s note

This document is an English translation of the original German-language PDF material on BMS and the Nazarov method. Medical, therapeutic and advertising claims have been preserved in meaning as translation of the source text. No independent scientific verification of these claims was performed as part of this translation.