To eliminate pain and to improve strength, muscle tone-trophism and balance
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“If exercise were a pill, it would be the most sold drug in the world... and the most prescribed.”

— Robert Butler, First Director of the National Institute on Aging (NIA)

Human Tecar VISS is a device for the activation of neuromotor control modules, developed from neurophysiology researches on the use of vibrations.

It acts on neuromuscular rebalance by activating an exchange of information with the Central Nervous System, thanks to the focal vibration through mechanical acoustic waves of appropriate shape, frequency and intensity.

Benefits for the body

- Pain reduction
- Explosive strength and athletic performance increment
- Fatigue resistance increment
- Coordination and postural rebalance improvement
- Muscle tone, trophism optimization and remodulation, promoting reathletization

Immediate body response

The frequencies that exclusively stimulate the treated musculotendinous areas

Human Tecar VISS is a technology that has the amazing ability to produce a special pressor-depressor action, whose intensity and frequency are controlled by an innovative medical device, covered by an international patent that is able to transmit variable stimuli to the deep derma. These stimuli physiologically involve the mechanical receptors, adjoining the musculotendinous organ. These activated receptors promote neuromuscular rebalance, having an immediate effect on pain, on muscle tone normalization and on recovery of strength and coordination, in a natural and non-invasive manner.

In few minutes the body regains its natural functions and maintains them over time

The device provides unique response time and can be applied simultaneously on different muscle areas, enabling recovery of the muscle’s functional ability, compromised by a wide range of causes, including: inactivity, after effects of surgical procedures, overly intense athletic activities, acute or chronic inflammation, fluid retention, physical decay, etc.

Flow Modulator

The heart of this technology is the Flow Modulator, a device that allows a high frequency-intensity ratio, separating what produces energy from what produces vibration.
The mechanism of action of vibrations

Vibration's studies on humans

The first studies on the possible use of mechanical vibrations on humans date back to the late 19th century. The principle was to transmit a stimulus to the Central Nervous System (CNS) acting directly on neuromotor control modules. At the end of the 70s of the last century, when the plasticity of the CNS had been widely demonstrated and in-depth studies on conditioning paradigms had been conducted, researches on the biological use of vibrations was resumed. The initially insurmountable technical limit was in generating high vibration frequencies in human beings - from 100 to 300 Hz - at the appropriate intensity. The assumption was that once these vibrations, “strongly” perceived by the mechanical neuroreceptors, reached the CNS through type I A afferent impulses, they would have been recognized by it as a real indication of the muscle's selective mechanical ability, so effectively that the CNS would store them in its memory as its own and maintain them over time. On 1998 began the research process in this direction, which has led to the Human Tecar VISS development.

Human Tecar VISS, effective neuromuscular stimulation for pain control, strength and exercise intensity

Human Tecar VISS activates mechanical receptors with a square wave signal capable to fit effectively into the constant exchange of information that the Central Nervous System perceives and maintains over time, thanks to its plasticity.

The neuromotor system.
The engine's body.

The central nervous system receives tons of information from the environment and from everything that a person gets in contact with, through the sensory organs - acoustic, visual and tactile receptors, pain receptors, etc. - This constant and extremely fast exchange of information is composed by afferent signals, which reach the brain and the spinal cord from the periphery of the human body, and efferent signals transmitted to the periphery from the brain and the spinal cord. This incredibly fast dialogue continues throughout the whole day and at night during sleep, when the conditions of each single part of the body are recorded, checked and instantly re-adjusted.

Afferent and efferent impulses

This highly complex process takes place thanks to the information that the mechanical receptors of “High Threshold” - Pacini’s Corpuscles - transmit to the Central Nervous System. Mechanical receptor activation is correlated to the frequency of the vibration, while pulse amplitude is associated with discharge frequency, i.e. the power of the signal that each individual receptor emits and the number of activated receptors. The efferent response will depend on signal power and on the number of afferent transmissions. Therefore, the stronger the afferent signal, the greater will be the response of the efferent signal and the number of active muscle fibers, as well as the improvement in coordination, strength, resistance and flexibility.

Pacini’s Corpuscles

Pacini’s Corpuscles are mechanoreceptors, sensory receptors that adapt very quickly and that are particularly sensitive to high frequency vibrations (60-300 Hz).

Square mechanical wave and atmospheric pressure adjustment

Thanks to the flow modulator, Human Tecar VISS generates a pressor-depressor square acoustic mechanical wave, able to modify the physical capabilities of any individual, whether healthy or needing to be rehabilitated, whose effects have been studied by universities and research institutions. The technology enables to modulate the wave parameters, enabling personalization of the treatment.
THE TECHNOLOGY

In the heart of the system, The Flow Modulator. Human Tecar VISS adopts a technology that basically consists of a blower connected to a special Flow Modulator, the patented core of the technology, which generates vibration configuring an exclusive mechanical square wave. The therapy consists into the application of specially shaped transducers to the skin. They act by transferring to the patient the vibration produced by the Flow Modulator, which activates the mechanical receptors with its peculiar type of wave, whose frequency and intensity have demonstrated their effectiveness, validity and duration over time. All this occurs without any side effects and on different pathologies disorders.

The transducers
The transducers are made of ABS and are equipped with comfortable Santoprene contact pads for perfect adhesion to the skin, which ensures maximum comfort to the patient. They come in six sizes and they have shapes and dimensions designed for application on different areas to be treated, ensuring adhesion to tissues and airtight closure of the system.

The membrane
The membrane allows the treatment of areas where the perfect adhesion of the transducer to the skin may be difficult to achieve, because it enables to maintain a homogenous vibration even in the absence of a complete contact.

Endless possibilities of local and general treatment of the body
Human Tecar VISS is the most complete device of the range. The application is very simple. The transducers have to be placed directly on the muscular abdomen, in the proximity of tendinous joints, where the highest number of mechanical neuroreceptors are present. Human Tecar VISS is versatile, easy to use, and is not active operator dependent.

Up to 14 bilateral muscle districts can be treated simultaneously, with 28 transduction points, ensuring maximum comfort to the patient. Patients are not required to actively participate during the treatment, other than making useful movements to identify the area that has to be treated. The effects quickly appear from the second or third consecutive session and last over time (six months or more). In athletes, one session per month is recommended for maintenance of the best performance.

A specific and personalized method, it allows achieving an extraordinary body response significantly improving its performances.

BENEFITS FOR THE CENTRE

- REDUCTION OF RECOVERY TIME
- AUTOMATIC AND MANUAL OPERATION TECHNOLOGY
- EASY TO INTEGRATE WITHIN TRADITIONAL REHABILITATION PROTOCOLS
- INDICATED ACROSS MANY REHABILITATION AREAS
CLINICAL STUDIES

Some of the published articles on mechanical vibrations based on the use of the Human Tecar VISS Mechano Acoustic Vibration System are listed below.

**Articles**

**TREATMENT ON MYOFASCIAL PAIN SYNDROMES: LOCAL ACOUSTIC VIBRATION VS LIDOCAINE INJECTION.** Int. Journal of Musculoskeletal Pain, August 2007

**THE USE OF MECHANICAL ACOUSTIC VIBRATIONS TO IMPROVE ABDOMINAL CONTOUR.** Aesthetic Plastic Surgeon, January 2008

**HIGH FREQUENCY VIBRATION CONDITIONING STIMULATION CENTRALLY REDUCES MYOELECTRICAL MANIFESTATION OF FATIGUE IN HEALTHY SUBJECTS.** Journal of Electromyography and Kinesiology, August 2008

**EFFECTS OF LOCAL VIBRATIONS ON SKELETAL MUSCLE TROPHISM IN ELDERLY PEOPLE: MECHANICAL, CELLULAR, AND MOLECULAR EVENTS.** Int. Jour. of Molecular Medicine, June 2009

**ACUTE AND CUMULATIVE EFFECTS OF FOCUSED HIGH-FREQUENCY VIBRATIONS ON THE ENDOCRINE SYSTEM AND MUSCLE STRENGTH.** Eur J Appl Physiol, September 2010

**FLEXIBLE FLAT FOOT TREATMENT IN CHILDREN WITH MECHANICAL SOUND VIBRATION THERAPY.** Int. J Immunopathology and Pharmacology, March 2012

**LONG TERM EFFECTIVENESS OF COMBINED MECHANOTRASDUCTION TREATMENT IN JUMPER’S KNEE.** Eur J Inflamm., August 2012

**MUSCLE STRENGTH AND BALANCE TRAINING IN SARCOPENIC ELDERLY: A PILOT STUDY WITH RANDOMIZED CONTROLLED TRIAL.** Eur J Inflamm., January 2013

**TASK-ORIENTED PHYSICAL EXERCISE USING POSTURAL RE-ALIGNMENT WITH BODY WEIGHT SUPPORT IN CHRONIC STROKE.** Eur J Inflamm. Stroke, May 2013

**THE TREATMENT OF CANCER: A COMPREHENSIVE THERAPEUTIC MODEL ENTAILING A COMPLEX OF INTERACTION MODALITIES.** Int. J. Neuro Rehabilitation, October 2013

**COMBINED REHABILITATION PROGRAM FOR POSTURAL INSTABILITY IN PROGRESSIVE SUPRANUCLEAR PALSY.** Topics in Stroke Rehabilitation, October 2014

**RESPONSES OF NEURONES IN MOTOR CORTEX AND IN AREA 3A TO CONTROLLED STRETCHES OF FORELIMB MUSCLES IN CEBUS MONKEYS.** Lucier - J of Physiology, April 1975

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**Technical specifications**

- Power supply: 230 V - 50/60 Hz
- Absorbed power: 0.9 kw (max)
- Air-cooling
- Electrical safety class I Part applied: BF
- Medical Device Class Ila
- Classification 93/42/EC
- Notified Body CE 1836
- Variable frequency range 30-300 Hz
- Max tension p.p. 630 mBar
- Dimensions: 440L x 960H x 400P mm
- Weight: 52 kg

European Patent granted EP1824439B1