



HIRO



ASV

THERAPY



HIRO





The depth objective

HIRO is a new concept medical device, the result of the tenacious endeavour of our researchers. It can revolutionise physical-instrumental therapy, opening up unexplored horizons for it.

HIRO means domination of power.

In fact, only HIRO is able to convey the HILT impulse, the only one that can successfully intervene at depths hitherto considered impossible.

The research that led to the creation of HIRO, is also evinced in the attention to design, in the accurate ergonomic study, in a more attractive visual impact, and in maximum versatility.

**There was once a limit,
now ASA offers your HIRO.**

HIRO for HILT Therapy

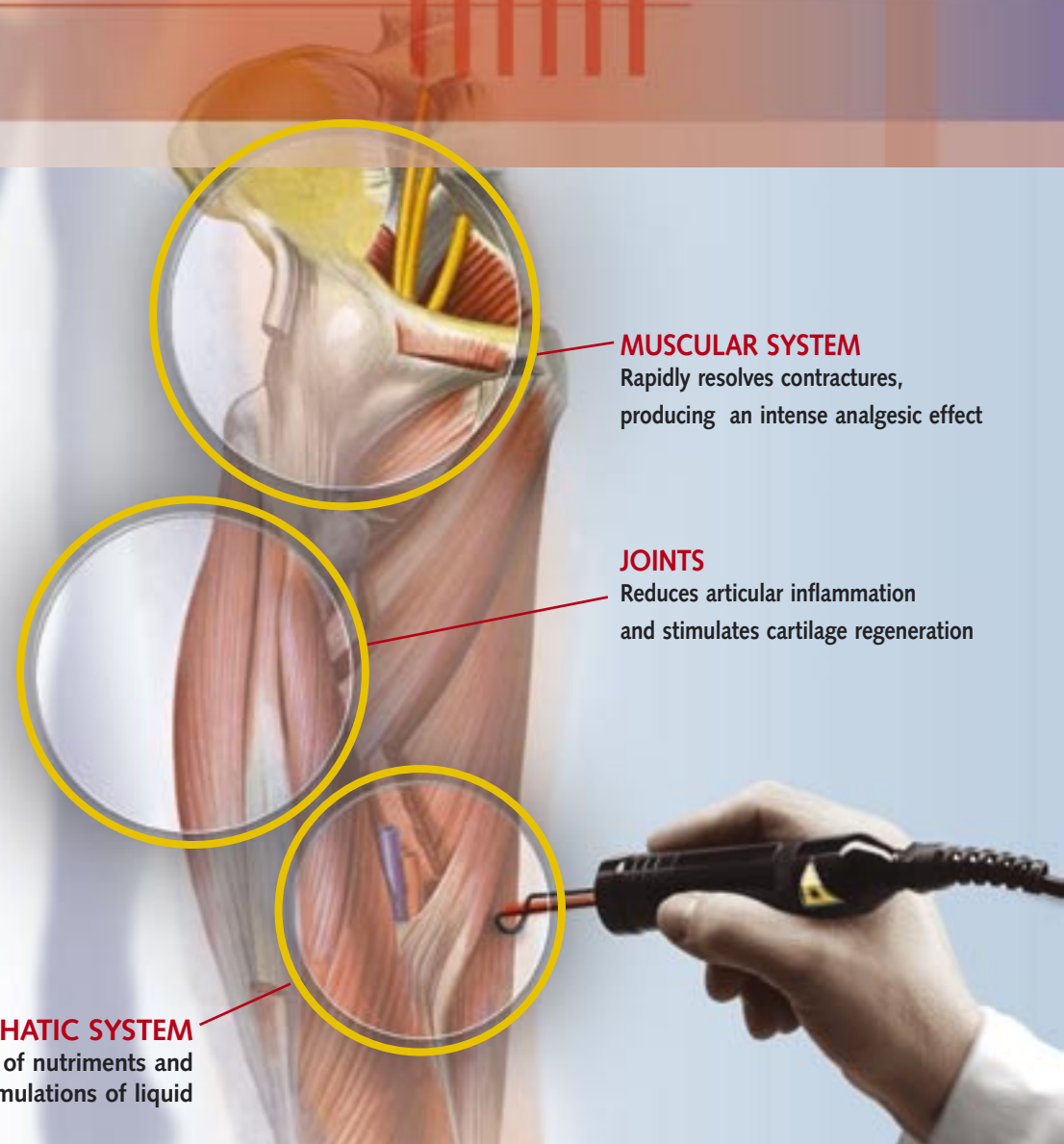
HIRO is a high intensity pulsed Nd:YAG Laser which enhances rapid analgesic response, also on deep seated pathologies.

MAIN CHARACTERISTICS

- high emission power
- acts effectively at depth
- rapid analgesic effect
- high guarantee of safety
- controlled release of energy
- observes the thermal relaxation time of tissues

MAIN INDICATIONS

- arthrosis and degenerative process of the cartilage
- bursitis, synovitis, capsulitis, epycondilitis, and impingement syndrome
- tendinitis and tenosynovitis
- trauma induced oedemas and hematomas
- post-traumatic or overload induced pathologies
- abductor syndromes, tibia tarsic distortions, entesitis, rotula chondropathies in sports traumatology



MUSCULAR SYSTEM

Rapidly resolves contractures, producing an intense analgesic effect

JOINTS

Reduces articular inflammation and stimulates cartilage regeneration

CIRCULATION AND LYMPHATIC SYSTEM

Encourages supply of nutrients and re-absorption of accumulations of liquid



Technical CHARACTERISTICS

In 2003 HILT Therapy was **patented** in the USA both as a technological innovation and as a new therapeutic method.

HIRO is the only medical device that by using the HILT technology employs an absolutely new therapeutic approach, specifically for treating articular inflammations: **HILT Therapy**.

The patented wave shape of the **HIRO** models entails pulses with a high energy content (150 - 350 mJ) and a Duty Cycle of about 0.1%. This translates into pulses with very high peak power values (kW), of short duration (μ s), and with very long intervals between pulses.

In this way, thanks to HIRO, one can at last obtain photochemical, photomechanical and photothermal effects in complete **safety**.

- A Laser technology based system for the treatment of **deep seated** muscular-tendon and articular pathologies caused by traumatic and/or degenerative etiopathogenesis.
- User **interface** with graphic backlit colour touch screen display.
- User friendly management **software**.
- Stored **therapeutic protocol**, validated long-term by clinical studies.
- **Editable, storable programs** to personalise treatment parameters.
- Emitted **energy calculated** automatically according to selected parameters.





Standard handpiece for pain therapy
with spacer for correct supply of energy
in the treatment volume.



DJD handpiece for regenerative therapy
Patented handpiece for optimising transfer
of the HILT pulse to the tissue.



Control of:

- Repetition frequency of the pulse with HILT characteristics
- Emission cycles
- Energy Dose

On-trolley device with turning handle

Alarms and safety devices:

- buzzer for start of therapy and for each second of treatment (can be disabled)
- dater and clock
- language change
- machine status warnings and alarms
- Laser emergency stop push-button
- Laser emission warning light
- interlock

Dimensions and weight

30 x 70 x 78 cm; 40 kg

AVAILABLE VERSIONS

HIRO 1.0

Pulsed high power Nd:YAG
Peak power: 1 kW
Energy per pulse (max): 150 mJ
Average power: 6 W
Fluence: 760 mJ/cm²
Pulse duration: <150 µs
Standard handpiece Ø 5.0 mm

HIRO 3.0

Pulsed high power Nd:YAG
Peak power: 3 kW
Energy per pulse (max): 350 mJ
Average power: 10,5 W
Fluence: 1780 J/cm²
Pulse duration: <120 µs
Standard handpiece Ø 5.0 mm
DJD handpiece Ø 5.0 mm

HIRO is designed with particular attention to the system's ergonomics. The turning handle and wheels enable movement in all directions, while maintaining a correct posture.



III Use GUIDE

These were the priorities in designing HIRO: quick and **easy use** for the operator, to guarantee precise, correct performance of the therapy.

In fact, HILT Therapy is based on a **therapeutic protocol** which is the result of many years of research.

The interface **software** guides the user while s/he is performing the therapeutic protocol. Correct application of HILT Therapy guarantees results in pain therapy, right from the first session.

The software also enables the operator to input and store, in a specific **database**, parameters personalised for every patient - these data are easy to retrieve according to need.

Contrary to other instrumental therapies, with **HIRO**, the operator treats directly with a handpiece, in order to adapt the parameters to the disorder, thus not overlooking the patient's needs.

The database helps '**personalise**' the therapy.

A handpiece (standard) is provided for **analgesic therapy**, and also a handpiece (DJD, exclusive for HIRO 3.0) specifically designed for **regenerative therapy**.

Treatment PROTOCOL

INITIAL STAGE

During the initial stage, the high supply of energy rapidly increases the basal metabolism, and also produces tissue-hematic hyperperfusion, and activation of the lymph draining pump. One can observe an increase in protoplasmatic and inter-cellular exchanges, the so-called 'tissue bioactivation'.

These paracrine effects are manifested in local analgesia and a reduction of possible accumulations of liquid, accompanied by muscular relaxation.

This stage is made up of three sub-stages during which gradually higher fluences (J/cm^2) are supplied. In addition to producing a rapid local anti-inflammatory effect, by inhibiting the expression of the proinflammatory cytokine pattern, it also guarantees a gradual effect of muscular relaxation. In this context, the clinical situation evolves to rapid recovery of the organ's mobility.

INTERMEDIATE STAGE

The intermediate stage entails trigger point treatment for preset times. During this stage, an anaesthetic effect is exploited: it is obtained by modulating the axonic potential of the membrane (Orchardson, Laser Med & Surg; 1997).

FINAL STAGE

In common with the initial stage, the final stage is also made up of three sub-stages. The latter are characterised by increasing fluencies which enhance and stabilise the effects induced in the two previous stages. In addition to the hypoexpression of the cytokine proinflammatory pattern, there is also a re-balancing of the tissue hemostatic balance, encouraged also by anti-edematous effects and by direct anaesthetic effect. These phenomena guarantee a long-lasting effect also for treating chronic and chronic-degenerative pathologies.



The user friendly software guides the operator to correctly execute the therapeutic protocol, which consists of three stages to be executed at each session: initial phase, intermediate phase, and final phase.



HIRO 3.0 the CARTILAGE objective

In a healthy person tissues renew themselves continuously, and in varying time periods depending on their degree of specialisation. The articular cartilage is an important tissue and a highly specialised one too. Consequently, it has a very slow 'turnover'.

There is a natural balance between the deterioration of the articular cartilage, due both to ageing and bio-mechanical stresses and its regeneration. This balance is actually the "tissue-haemostatic balance" and is characterised by the balance between anabolic mechanisms (growth) and catabolic mechanisms (destruction).

Any traumatic, phlogistic, or infective event that alters this balance, inevitably induces damage to the articular cartilage.

The cartilage's method of spontaneous growth depends both on the degree and the duration of this imbalance. If of brief duration, the tissue has repairing capacities that differ according to the seriousness of the lesion. For slight lesions, restitutio a integrum can occur, whereas in the course of more serious lesions, synthesis of the fibrocartilage tissue takes place, and produces partial and temporary recovery.

In cases of serious or long-lasting imbalance - see the arthrosis phenomena - the tissue is unable to react and tends to succumb to the destruction mechanisms.

Thanks to the characteristic shape of the HILT pulse, HIRO 3.0 is capable of conveying huge quantities of readily available energy to the stressed chondrocytes.



The chondrocytes will manifest reactive capability, by inverting and orienting the hemostatic balance toward anabolism, i.e. the regeneration of the tissue.

Experiments have verified, on one hand, a drastic reduction of the phlogogenic cytochinc pattern, and of metalloproteases, and, on the other hand, an increase of their inhibiting factors and cell growth factors. Furthermore, the recovery of type II collagen synthesis was observed.

In other terms, experiments verified the presence of indicators which unquestionably confirmed the activation of the mechanisms we described.

To conclude, HIRO 3.0 guarantees the physiological recovery of tissue balance, rapidly inducing both the functionality of the organ and the patient's well being. In fact, the reduction of pain and improvement in articular mobility can already be observed as from the first treatment session.

Integrated services FOR CLIENTS

HILT THERAPY TRAINING COURSES

A study day with practical demonstrations by the sector's specialists to obtain knowledge and fuller details about HILT Therapy and use of HIRO.

HILT THERAPY SCIENTIFIC REPORTS

A scientific publication containing the latest results of medical research.

WEB SITE

Web space dedicated to the dissemination of the innovative therapeutic method, with specific sections focussing on applications, courses, results of scientific researches, and clinics on HILT Therapy.

ON-LINE HELP

Form for technical and scientific requests. Competent personnel are on hand for practical advice on using HIRO.

INFORMATION GUIDE FOR PATIENTS

An information booklet for use by patients, for easier understanding of the therapeutic indications of HILT Therapy.



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