

# High Frequency Ozone Therapy Based on Acupuncture Systematics

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## Summary

After witnessing a dramatic demonstration of pain relief following High Frequency Ozone Therapy (HFOT) at a medical conference in Germany, the author reports on his use of the treatment in 500 cases. Pain relief was the reason for 76.4% of treatments. The condition of no patient in the 500 worsened following therapy, and 18 patients suffering from malignant disease all obtained beneficial symptomatic relief.

The High Frequency Ozone Therapy apparatus uses a variety of electrodes ranging from simple probes to elaborate brush or comb devices for application directly on the skin surface or aurally above it. Treatment is most effective if given through a layer of natural textile (wool or cotton). Stimulation through synthetic material, however, may provoke pain.

## Key words

Acupuncture, Audit, Burns, High frequency ozone therapy, Malignancy, Scalp acupuncture.

## Introduction

First of all, let me acquaint you with my own introduction to high frequency ozone therapy (HFOT), which motivated my interest in the subject. In the autumn of 1989, while I was participating in a medical conference in Baden-Baden (Germany), my wife sustained 2nd degree burns to the dorsum of her left hand and the lower third of her left forearm due to a jet of steam instead of warm water from an inadequately adjusted electric heater in our hotel. However, despite immediate treatment at the burns unit of the local hospital, she felt continuous strong burning pain at the site of injury and in the whole upper left extremity.

At the congress centre Gunter Messerschmidt had been discussing HFOT and its beneficial analgesic effects. I therefore asked him to give a practical demonstration on my wife. Without the need for her to remove bandaging, he treated areas of the body covered with non-synthetic fabric. After an initial aerial application of brush electrode No. 8 (Figure 2) over the upper left limb and scapula, where parts of the large intestine, triple energiser and small intestine meridians are passing, and along the path

of the bladder meridian on the left of the lower cervical and the thoracic vertebrae, acupuncture point electrode No.34 was used in the microzones of BL.10, GB.20 and 21, TE.10 and 15, LI.4,10,11, and 14-16 on the left, and a four-pronged brush electrode No.57a in the same zones as the electrode No.8 bilaterally. The procedure lasted 14 minutes and was completed by the application of electrode No.2 in the region of the kidneys. With what result? From the time of that treatment until the final removal of her bandages, my wife felt no pain, and epithelialisation occurred 2 days earlier than expected.



Figure 1. High Frequency Oxygen Therapy apparatus: TEFRA N53 Standard III with hand and flat electrodes.

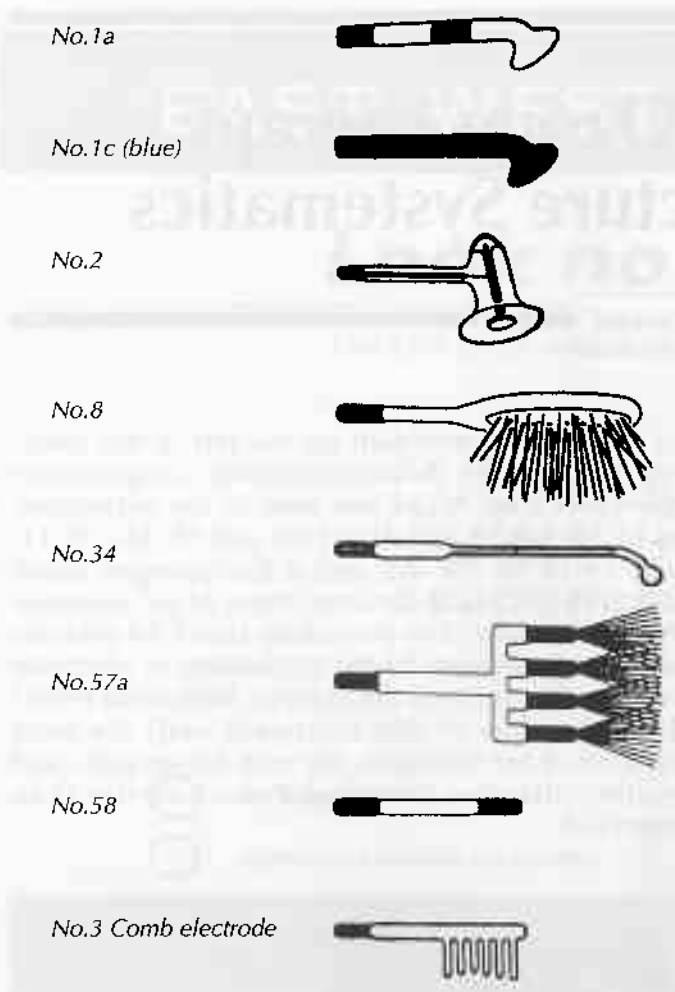


Figure 2. High Frequency Oxygen Therapy apparatus: standard electrodes.

### Technical details

In my long-term experience with the use of acupuncture and related techniques I have regarded the scientific reasoning behind their mechanisms of action as always of the greatest priority for me. In this case, there is a non-invasive treatment with alternating electric currents of high frequency. The discovery was made by Tesla, and research has been carried out by the Nobel prize-winner Nernst, and by d'Arsonval, Nagelschmidt, Mann, Kahanne and others (1-10). They found that it was not the intensity or voltage of high frequency electric current, but the number of impulses a second that is important both for the outcome of treatment and for its safety. The human body is about 60% salt solution, the electrolyte balance of which can be disturbed by an electric current. High frequency alternating electric currents of more than 20,000 oscillations per second (period of alternating polarity) do not in practice provoke ionic movement within the body, thus electrical irritation does not of itself have undesirable electrolytic consequences. The high frequency apparatus *Tefra N53 Standard III*, made by Messerschmidt, Berlin (Figure 1) has a frequency of from 10kHz to 3GHz at 150,000V, 0.065A, and 1-2 million discharges per second with a consumption of 1kW in 99 hours of activity.

### Clinical use

From clinical experience, HFOT can be used as a part of complex diagnostics, particularly:

1. In a modification of Akabane's test (which involves heat or high frequency electrical current on the toes and fingers to diagnose energy imbalance between left and right meridians) (11), HFOT can be used in classical acupuncture to find functional imbalance of one or more meridian pairs. Decreased sensitivity found, by means of for instance *rod electrode No.58*, in initial or terminal microzones of individual meridians in the upper and lower extremities gives evidence of so-called relative *emptiness* of the relevant meridian; increased sensitivity shows a relative *fullness*. In a similar way, it is even possible to examine the differences of segmentally harmonious zones paravertebrally and, in fact, of any pair of acupuncture microzones.

2. In clinical practice HFOT is used similarly for testing disorders of sensitivity as well as in their treatment, for example in patients with painful syndromes of vertebral origin or radicular irritation, after cerebro-vascular emergencies, sclerosis multiplex, and after some more serious injuries: even neurologically based disorders of mobility.

### Case report

A 30 year-old female had had severe injuries in a traffic accident in Italy, including a splintered fracture of C5 and 6. She underwent operations of the head and cervical spine, with four month's hospitalisation in Italy and a further 3 weeks in Czechoslovakia followed by 7 months in a rehabilitation and spa centre. Because further improvement seemed improbable, she was discharged home with paraplegia: no sensation in the lower limbs, inability to change her lying or sitting position, practical insensitivity of both upper limbs and minimal movement in some fingers only. An experimental treatment was started with the combination of Yamamoto new scalp acupuncture (YNSA) (12-17) and electrostimulation, plus HFOT to chosen acupuncture points on the trunk, upper limbs and lower limbs, with manual medicine, humoral therapy, and rehabilitation exercises twice a week. After nearly one year of treatment, the patient is able to eat using her own hands, she can move and has reasonable sensation in her head, trunk, and upper limbs, she is able to sit without support, and sensation in both lower limbs has been returning, although their movement is still not under voluntary control. Psychologically her condition has improved substantially, much to the benefit of her family. Therapy continues.

3. HFOT can be used in searching for, and removing or relieving *disturbing fields*, that is: sites with pathologically changed tissue, which cause atypical, often sub-threshold, afferent stimulating activity outside their segmental innervation, and provoke

various functional disorders and pains that often prove resistant to routine therapy including acupuncture (18). Attention has been paid mainly to disturbing fields in the form of blocks and other changes to motor segments of the spine, in adjacent nasal sinuses, in the oral cavity, and at the sites of various scars. The location of a disturbing field may be shown by *aerial electrode No.1* used homolaterally, and its activity is determined by passing the forefinger over the margins of the trapezius muscle on the contralateral side. If the disturbing field is active and deep, some degree of muscle contraction occurs; after deactivation, no contraction is seen. HFOT induces a bioelectrical reaction which repolarises and normalises damaged ions and their exchange so that pathogenic differences in electric potentials are balanced. Complaints sometimes cease almost at once, or within a few hours.

4. There are currently 8 standard electrodes (Figure 2) and 53 non-standard. In contact irradiation, subjective feelings often corresponding with the needling sensation (*de qi*) of acupuncture (tingling, creepy feeling, itching, tickling, feeling of heat) can be provoked. This gives evidence of focused, non-nociceptive afferent stimulation (flow of nerve impulses) from a relevant microzone, part of meridian, body area or from some acupuncture microsystem. This activity is the most important factor in pain palliation. It is transmitted from the receptors via  $A\alpha$ ,  $A\beta$  or  $A\delta$  nerve fibres into the substantia gelatinosa (laminae 1 and 5) in the dorsal spinal horn (Figure 3). The basic analgesic mechanisms of both acupuncture and HFOT at spinal and supraspinal levels are shown in Figures 4 and 5.

5. After a short application of HFOT the smell of ozone is already apparent from the skin. The penetration of high-frequency alternating electric current and of some ozone into an organism enables overloaded atoms and cells to obtain again the necessary electric discharge for maintaining or restoring the organism's homeostasis and immunity and, from the view-point of biocybernetic medicine (maintaining optimal regulation of bodily functions through the direction and transmission of information, e.g. via the central nervous system) (19,20) amongst others, reviving metabolism, enriching blood with active oxygen and optimising its composition, thereby improving the nourishment of tissues from the central nervous system to the skin, stimulating nerve activity, improving motor and sensory functions, and restoring the balance of the vegetative nervous system. That is seen in the normalisation of blood pressure, sleep and psychological motivation, especially in those suffering from exhaustion, stress or emotional depression who experience feelings of relief, satisfaction, calm and restoration.

Depending on which electrode is used, and the intensity, rhythm, direction, method and duration of stimulation, we achieve tonifying, neutral or sedative effects according to the traditional principles of acupuncture stimulation, including Tuina-therapy (Chinese massage based on traditional acupuncture meridian systematics) (21) and related techniques. The finest over-threshold afferent impulse activity is provoked with a relevant intensity of current by direct contact of the electrode with a patient's skin. If the electrode end is slightly distant from the skin (1-3mm), spark discharges occur and there is greater intensity of afferentation. Even stronger local irritation, and thus more conspicuous afferentation,

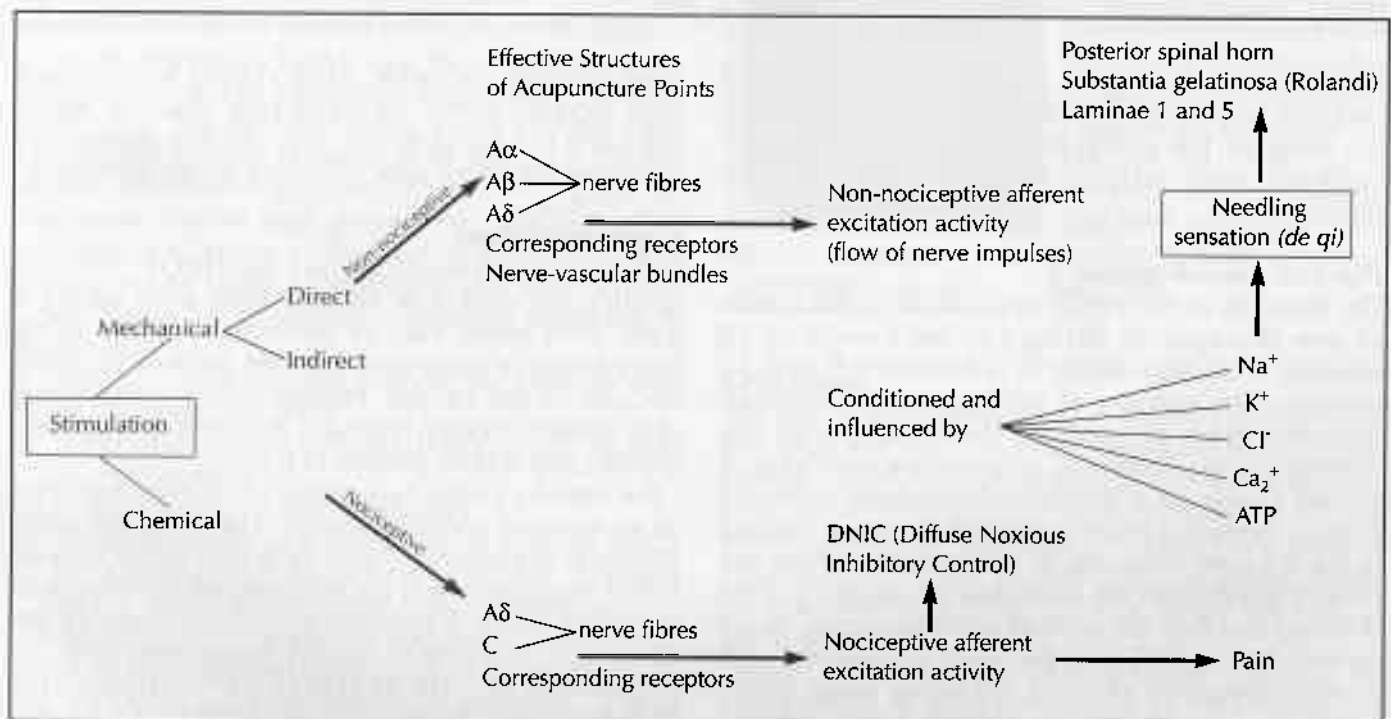


Figure 3. Basic mechanisms of acupuncture action at a peripheral level.

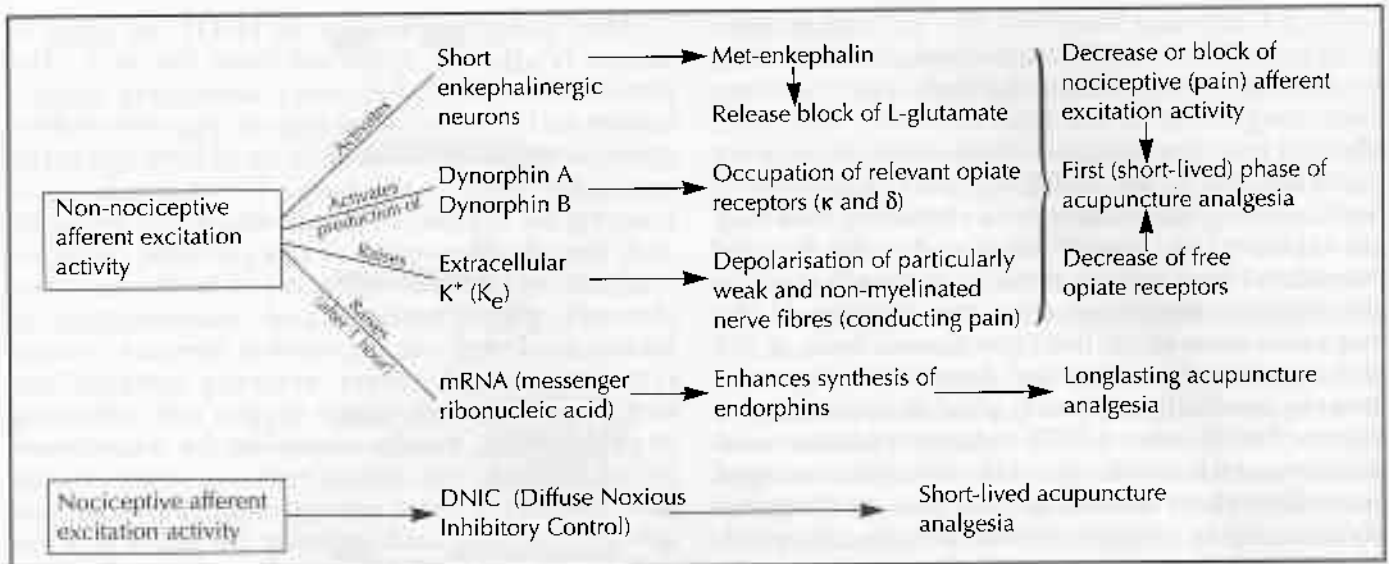


Figure 4. Basic mechanisms of acupuncture action at spinal level

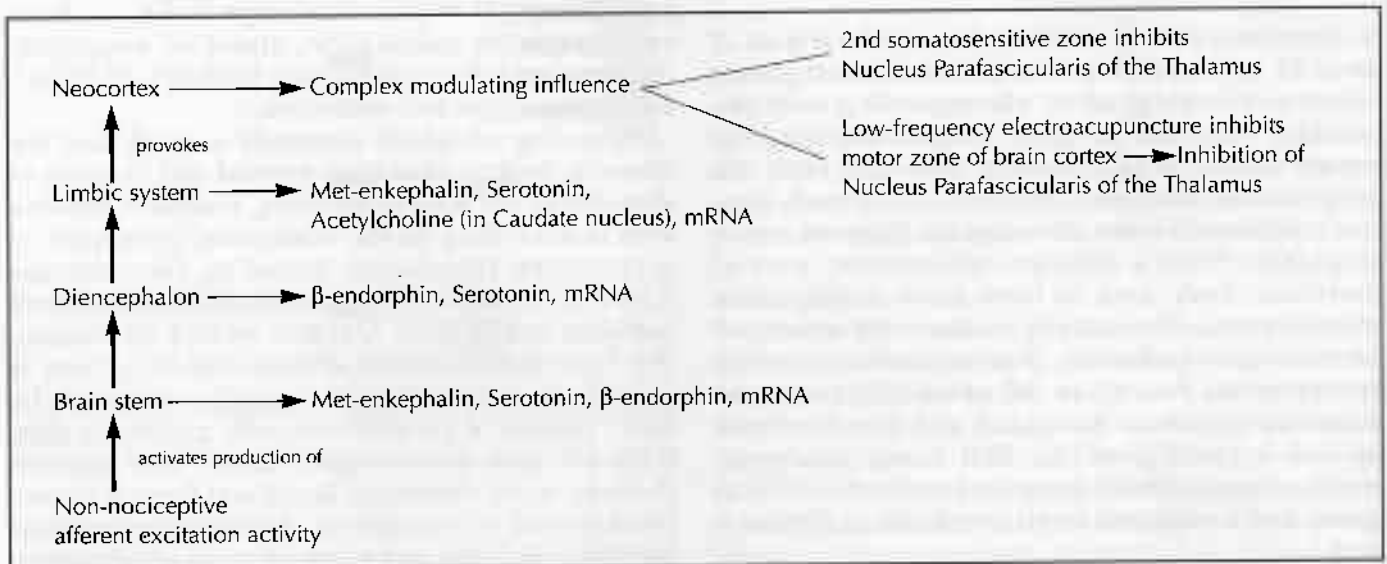


Figure 5. Basic mechanisms of acupuncture action at supra-spinal level.

is provoked through a textile layer of natural materials (e.g. wool or cotton). The thicker the layer, the stronger the stimulation. Stimulation through synthetic materials, on the other hand, usually provokes pain.

### Practical considerations

The duration of the HFOT application in the course of one therapeutic sitting can be from 2 to 30 minutes, but most often it is between 8 and 15 minutes. The number of sittings and the intervals between them depend on the character of the disease and on traditional acupuncture principles. It should always be a strictly individualised treatment pattern. Sensitive patients require a slower method using a lower intensity of stimulation, where the time of application for individual electrodes is often doubled and they are applied more frequently, direct to the skin. HFOT can be used in patients with endoprostheses of all types, including metal joints. Glass vacuum electrodes should not be placed immediately after use on a cold surface such as

glass, marble, or metal. They should be cleansed with alcohol, petrol, or water plus cleaning agent, but need not be sterilised: they sterilise themselves by ozone discharge after switching on the generator.

### Contraindications

Relative contraindications to HFOT include application during or immediately after taking a bath, with moist hair, or immediately after using toilet lotion or other concentrated alcohol solutions because of fire hazard. Patients with hypersensitive skin require longer intervals between therapeutic sittings, and shorter periods of therapy.

The use of a cardiac pacemaker had been regarded as an absolute contraindication. However, following technical improvement and increased safety in both HFOT equipment and pacemakers, we have verified that none of the 8 standard HFOT electrodes of the *Tefra N53 Standard III* caused interference with an implanted double-chamber cardiostimulator *Synchrony II - 2022 T DDDR* (Siemens Company, Sylmar, California, USA).

Table 1

**PROBLEMS TREATED WITH HIGH FREQUENCY OZONE THERAPY**

| Diagnosis                 | Number of patients |
|---------------------------|--------------------|
| Cervical pain             | 120                |
| Thoracic pain             | 43                 |
| Lumbar pain               | 147                |
|                           | 310 (62.0%)        |
| Shoulder joint pain       | 16                 |
| Elbow joint pain          | 17                 |
| Hip joint pain            | 15                 |
| Knee joint pain           | 17                 |
| Ankle joint pain          | 7                  |
|                           | 72 (14.4%)         |
| Vasomotor rhinitis        | 21                 |
| Chronic bronchitis        | 27                 |
|                           | 48 (9.6%)          |
| Cerebro-vascular accident | 30 (6.0%)          |
| Psoriasis                 | 5                  |
| Atopic eczema             | 3                  |
| Alopecia                  | 10                 |
|                           | 18 (3.6%)          |
| Gastro-intestinal         | 12 (2.4%)          |
| Deafness and tinnitus     | 10 (2.0%)          |
| <b>Total</b>              | <b>500 (100%)</b>  |

For all patients: ozone therapy was in addition to other treatment, selected to suit the individual.

**Clinical results**

Details of the first 500 patients treated by the author with HFOT are given in Table 1. The results of therapy are dependent mainly on the proportion of organic and functional components of a disease, its chronicity, the patient's age, life-style and general health and fitness. It seems that HFOT is best used in combination with other treatment. This should be determined on an individual basis, but some combinations have proved particularly effective in clinical practice. YNSA can be used as a non-pharmacological *premedication* before HFOT treatment for patients with a peripheral pain component to their disease, or as the main therapy where autonomic pathological activity plays an important role in pain perception. HFOT is often successful if given at the end of each treatment session when body acupuncture and microsystem acupuncture are combined with other therapies, in particular:

- i. manual medicine and cupping for patients with musculo-skeletal pain,
- ii. magnetotherapy for patients with neuro-vegetative disorders,
- iii. neural therapy in non-responders,
- iv. magnetotherapy and Tuina modification of HFOT for patients with some psychosomatic diseases and in severe physical and mental conditions.

Following HFOT treatment not one of the author's patients has reported deterioration of problems so far. Treatment has even influenced positively, at least for a short time, some of the pathological signs and symptoms, and the general physical and

psychological condition of 18 patients with malignant disease, particularly after chemotherapy or radiotherapy. However, assessment of the part that HFOT has played in the improvement of patients is often difficult where a multiple treatment modality approach has been adopted, as in the following case report.

**Case report**

A patient aged 53 underwent panhysterectomy for advanced uterine carcinoma. One year later she had developed metastases within the abdominal and thoracic cavities. She was treated with 5 successive courses of chemotherapy at the Oncology Department of the Clinic of Gynaecology and Obstetrics, Faculty Hospital, Brno. Immediately after her first treatment and discharge from hospital she suffered substantial loss of hair, severe headaches, indigestion and insomnia. Following one treatment using YNSA combined with master points of traditional body acupuncture, manual medicine, humoral treatment and HFOT (including application of *comb electrode No.3*), the loss of hair almost completely stopped, and all the subjective complaints disappeared. After borrowing a magnetotherapy (22-25) *Metronom* apparatus (G Ludwig Bärteles Medizintechnik, Horb, Germany) (Figure 6) she started the *night* regime with the apparatus close to her head, and her sleep also improved (this regime uses waves of a weak magnetic field varied at 5 second intervals from 3.3Hz to 10kHz).



Figure 6. *Metronom* magnetotherapy apparatus

Thereafter, following discharge from hospital after each course of chemotherapy, she was immediately treated with the above regime. This appeared to significantly improve the quality of the rest of her life, until recently she collapsed and died after three days from metastatic tumor in her brain.

**Conclusion**

The skin is an important organ for the application of therapies that will influence the whole body. In this context HFOT can be compared with Tuina therapy, trans-cutaneous electrical nerve stimulation (TENS), *electropuncture*, soft laser treatment and others. However, HFOT has the advantage of being simple to use and requiring only a brief period of application.

High frequency ozone therapy cannot be considered a panacea, but in the author's experience and from his clinical results this non-invasive therapy can prove a helpful addition to

other treatment, especially in some painful conditions and functional disturbances of health, for patients of all ages.

#### Acknowledgement

My thanks to the Cardiological Clinic, Faculty Hospital, Brno-Bohunice for their cooperation in testing the safety of HFOT with pacemakers.

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