NON-GOVERNMENT AND NON-COMMERCIAL TRAINING ESTABLISHMENT
THE «MOSCOW INSTITUTE OF MEDICAL AND-SOCIAL REHABILITATION»
(105037, Moscow, Vtoraya Parkovaya, 24/28)

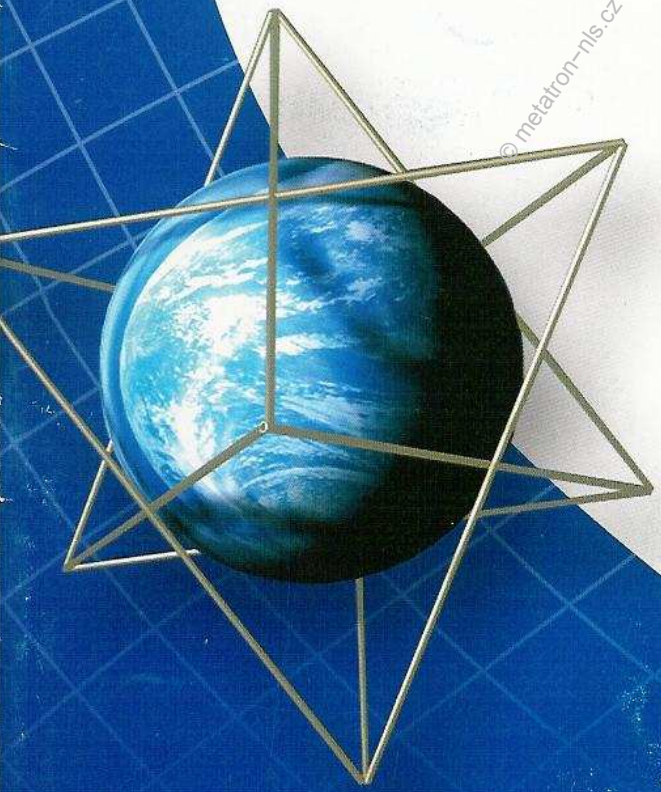
INSTITUTE OF PRACTICAL PYCHOPHYSICS , LTD
(644082, Omsk, Beethoven street, 33)

THE METHOD OF SCREENING DIAGNOSTICS

BY MEANS OF THE HARDWARE AND SOFTWARE COMPLEX

«METATRON»

(MEDICAL TECHNOLOGY)



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The method of screening diagnostics by means of hardware and software complex «Metatron»

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SUMMARY

The method of rough screening diagnostics of dysfunctional changes in human body consists in revealing probabilistic localization of the pathological process and the degree of its intensity (with 79.7 0/ precision) and is realized by means of the hardware-software complex «Metatron». The application of this non-invasive technology allows reducing the time of examination, including routine examinations of various cohorts, helping doctor to determine an individual program of target diagnostics required to clarity and verity the established provisional diagnosis, and also evaluating the dynamics of dysfunctional changes in a human body.

The medical technology is intended for medical practitioner, family doctors, functional diagnostics doctors of medical and preventive treatment facilities, such as regional and municipal hospitals, infirmaries, medical units, sanitoria, private clinics, equipped with the hardware and software complex «Metatron» and having the license tor this respective type of medical activity.

APLICANT DEVELOPERS:
- The Moscow Institute of Medical and Social Rehabilitation;
- Institute of Practical Psychophysics LTD.

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INTRODUCTION

For the recent decade the therapeutic effects that use information-wave technologies have been extensively implemented into medical practice. The technologies have been long carefully studied in clinical conditions. By now devices of radiowave diagnostics and therapies devices using modem information-wave technologies have been developed and are being introduced in medical practice.

Various wave or oscillatory processes occurring during vital activity of an organism, for example, electrical activity of the brain — (electroencephalogram) or heart — (electrocardiogram), have been long time used tor diagnostics.

At the same time, there are doubtless facts on the correlation between dysfunction of internals and pathology of separate cells making them up. Therefore various diseases change the course of metabolic processes in the cells, initiating thereby pathological rearrangements and variations of spectra of their electromagnetic fields.

Each cell has its own, specific oscillations inherent to it only. Any pathological process as typically has specific oscillations. It is a common fact, that the resonance frequencies of a living cell conform to; in a somatic cell - $2.39 \cdot 10^{12}$ Hz; in the nucleus of a somatic cell - $9.55 \cdot 10^{12}$ Hz; in a mitochondrion from liver cell - $3.18 \cdot 10^{13}$ Hz; in a genome of human cell - $2.5 \cdot 10^{13}$ Hz; in inter phase chromosome - $7.5 \cdot 10^{11}$ Hz; in a metaphase chromosome $1.5 \cdot 10^{11}$ Hz; in DNA -(2-9)• 10^{9} Hz; in a nucleosoma - $4.5 \cdot 10^{15}$ Hz; in a ribosome -$2.65 \cdot 10^{15}$ Hz; in cellular membranes - $5 \cdot 10^{10}$ Hz; in a cytoskeleton -10^{11} Hz [1,2,3] respectively.

The working rhythms of human body functional systems also have their own range. Thus, the rhythm of the electrical potential of stomach and intestine is 3.80 - 4.6 Hz; the respiratory rhythm is 6.3 - 7.6 Hz; the rhythm of cardiac beat 3.2 Hz; the rhythm of electrical activity of the nervimuscular element is 2.6 - 6.5 Hz, the rhythms of controlling signals of the brain - 0.5 - 13 Hz [4.5].

The screening diagnostics method is based on the utilization of the non-invasive electromagnetic signals (1.8 - 8.2 Hz) and the biological feedback between the operator, the patient and the hardware-based computer module. As the result we have a biological feedback contour; with the initiating gauge remotely perceiving reactions of the patient's brain waves to the irritant and sending the digital signal back in the hardware-based computer module (Annex 1).

The function of the initiation gauge consists in perceiving the patients response to the information codes supplied by the central processor-telemetering module, converting them in a digital signal and sending back to the processor-telemetering module. The sensing element can be described as a noise generator based on a radioelement remotely affected by patient's brain waves. Direct electric current of an optimized value in the range of a few microamperes (preferably 1-5 microamperes) is supplied by power supply unit for feeding the sensing element. The current can be individually adjusted and defined at tine tuning of the device in a lab.

INDICATIONS FOR USING THE MEDICAL TECHNOLOGY

- Screening-diagnostics of the functional status of human organs and systems; determining the probabilistic localization of functional changes locuses;
- Approximation of one or few provisional diagnoses;
- Assessing dynamics of dysfunctional changes in a human body.

CONTRAINDICATIONS TO USING THE MEDICAL TECHNOLOGY

- Less than 7 years age;
- Epilepsy, mental disorders;
- Hyperthermia (>38°C);
- Aftertreatment after a myocardial infarction or a stroke;
- Pregnancy;
- Implanted heart pacemaker;
- Presence of foreign objects in a human body, such as implants, metallic and other structures, i.e., endoprostheses, etc.).

BAREBONE OF THE MEDICAL TECHNOLOGY

- The hardware-software complex «Metatron», registration NO FSNO 022a2005/2221-05 («Institute of Practical Psychophysics, LTD», Russia) includes;
- The computer complex (Windows 2000/XP operating system; at least 1GHz Pentium processor, 512 Mb Random Access Memory (RAM); SVGA Hi-Colour 1024X768 8 Mb and over video card; printer (colour); at least 1 GB free space on the hard disk; one USB port; CD-ROM; an Uninterrupted Power Supply).

DESCRIPTION OF THE MEDICAL TECHNOLOGY

The room intended for the diagnostics should be equipped with a desktop, chairs and a personal computer. Neither x-ray nor physiotherapeutic units should be installed near the room.

The stabilization of the measurements conditions of the diagnostics necessitates 60-70% humidity and +20 to +22°C temperature at the premises. Before the research the patient should be in a state of quiet vigilance during at least 15 minutes. Performing the diagnostics after abundant meals or physical and psychoemotional stress is not recommended.

The device (see Annex 1) belongs to diagnostic systems with a biological feedback between the patient and the central processor-telemetering module and can be used for determining the functional status at the patient.

The system (see Annex 2) includes a unit producing of a series of electromagnetic irritants, which is controlled by a microprocessor and uses certain frequencies.

In order to segregate the patients reaction this device uses a unit synchronizing the irritators with the sensor modulated by both the signal tram the processor telemetric module, and that tram the sensor (maintaining the operation of the synchronization unit), picking information off a particular patient. The sensor element remotely perceives the response of the patient‘s brain waves to the irritant. The sensor is typically a of a broad-frequency noise generator using the redesigned generating diode 2G401V).

Modulation frequencies: low-frequency - 240 Hz; high-frequency - 4.9 GHz. The information signal is taken off the sensor and passes through amplification path. The amplification coefficient of the differential amplifier is at least 60 db. Frequency range for processing information surges in a sampling noise is from 4 to 600 kHz. Clock frequency of the shift register is 1.2 ± 0.03 MHz.

Before performing the research it is necessary to find out from the patient, whether he/she has any contraindications to examination. The patient must be explained the purpose of the examination.

1. 1. The patient should be sitted on a chair to the left from the operating doctor. The information on the functional status of organs and tissues is picked-up non-contact by means of the sensor built in the headphones to be put on the patient before the research according to the poles.

2. Collecting information about the patient and its entry in the computer memory. (First name, middle initial, last name of the patient, his/hers date of birth, sex, address, phone, effected resections of limbs).

3. Choice of type of examination:

The express examination allows carrying out research on poliorgan anatomical schemes without detailed elaboration.

Standard examination allows to conduct studying segregated biological structures, on[y at existence of pathological changes therein.

Detailed examination allows evaluating the functional status of histological and cytological models.

4. Choice of the form of research:

The programmed choice; the program algorithm allows to carry out research of poliorgan models revealing functional changes by analysing the models and using subsequent automatic examination of the organs, and their histological and cytological structures. The independent choice allows the doctor to choose organs for examination solely.

5. Examination consists in the measurement of intensity of functional changes at the monitored points standardly placed on poliorgan, organ, histological and cytological models, the results being assessed on Fleindler’s six-point polychromatic scale (see Annex 3), where is the level of a latent functional activity; 2 - is the level of the optimum regulation; 3 – is a shift of characteristics to a higher level, the status of a strain of regulatory systems; 4 - is the asthenisation of the regulatory mechanisms; 5 - is the compensated failures of the

adaptation mechanisms; 6 - s the decompensation of the adaptation mechanisms, i.e., the expressed functional strains.

6. The examination findings analysis.

7. Formalising of the conclusion, recommendations to the patient.

The examinations which were conducted using the hardware-software complex «Metatron», allow obtaining frequency spectra from the researched structures, which are compared with the available spectral standards of pathological processes (see Annex 4). The obtained coefficient of spectral differences allows evaluating the probability of the preliminary diagnoses.

For the performance measurement of the examination by means of analysing the chart the status of the input signal has to be tracked; it is depicted by red colour (S) and the status of the output signal depicted by the dark blue colour (N). By the shape of the charts, you need to determine to which of the reference processes it is closer and to track the value of spectra[similarity between the reference process and the chart which was obtained from the patient.

These working the rhythms of the functional systems of the organism have a low-frequency range.

1.8 - osteal tissue;
2.6 - rasping copulative tissue, joints, valves of heart;
2.6-3.4 - quaggy copulative tissue, cross- barred musculature, muscles of the heart;
3.4 - unstriated muscles;
4.2 - unilaminate flat epithelium of the digestive tube;
4.9 - laminated flat and prismatic epithelium.
and genital organs;
4.9-5.8
6.6 - peripheral nervous system, epithelium of air-tubes, butterfly adrenals, thyroid gland;
7.4 - central departments of sensorial analyzers (except for visual ones), subcortical structures of the brain, bridge, cerebellum, limbic system and parenchyma of lungs.
8.2 - retina of an eye, optic nerve, cortex of hemispheres of the brain.

The program allows conducting comparison by size of spectral differences (D) with available panel of standards. The results are displayed on computer in the form of the table in which on upper line depicts the standard with the least value of spectral differences. If the size of spectral differences is less than 0.425, then, the probability of the provisional diagnosis makes more than 90%, and such standards are red bolded. The parameters of spectral differences from 0.450 to 0.750 - testify to the probability of the provisional diagnosis from 90 to 50 %.

EFFICIENCY OF THE MEDICAL TECHNOLOGY

Since 2004 research have been carried out, with the purpose of an impartial assessment of the method of bioresonant diagnostics performed by means of the hardware-software complex «Metatron». The results were verified by comparing the obtained data with clinically established nosological diagnoses on such parameters as sensitivity and specificity. To this effect this professional terminology was used:

a) Truly positive results (concurrence of findings of screening diagnostics with the data of functional and laboratory research);

b) False positive (results positive according to the method of screening diagnostics performed by means of the hardware-software complex «Metatron» but not revealed by modem standard methods);

c) False-negative results (the pathology is detected by modern methods and is not detected by the screening diagnostics);

d) Truly negative results (the absence of pathology is detected by method of bioresonant diagnostics performed by means of the hardware-software complex «Metatron» and by the modem methods and clinical research).

All in all 1780 person were examined with various pathological processes in the age range from 7 to 93 years.

At processing the research material the following data were obtained:

a) true-positive results - 82.2%;

b) false-positive results - 9.7%;

c) false -negative results - 12.2%;

d) true-negative results - 17.8%.

The obtained parameters are presented in Table 1.

At diseases of various organs and systems the following diagnostic parameters of screening diagnostics sensitivity (Table 2) were obtained.

Table 1. **Diagnostic parameters of screening diagnostics**

Parameter	Definition	%
Sensitivity	relation between the true positive results and the sum of true positive and false-negative results (the parameter characterizes the percentage of apparently ill persons established by means of screening diagnostics among the single population, which illness was established by clinical research);	89,4%
Specificity	relation between the true-negative results and the sum of false-positive and true-negative results (the parameter characterizes the percentage of the revealed healthy persons among the single population determined at clinical research as healthy)	64,7%

Table 2. **Sensitivity of the diagnostics applying the method of screening diagnostics**

Diseases of organs and systems	Sensitivity (%)
Diseases of respiratory organs	77,2
Neuropathies	75,7
Diseases of endocrine system	78,8
Diseases of cardiovascular system	83,3
Diseases of stomach	89,8
Diseases of pancreas	85,7
Diseases of liver	83,4
Diseases of bilious bladder	88,0
Diseases of intestine	86,6
Diseases of kidneys	76,8
Diseases of sexual system	79,3

Thus, the hardware-software complex «Metatron» allows non-invasively to:
- register functional changes of systems and organs of a human body;
- obtain the topical focuses of functional changes;
- determine probability of the provisional diagnosis;
- evaluate the dynamics of functional changes.

LIST OF REFFERENCES

1. Interplay of physical fields with living substance / E.I. Nefedov, A.A. Protopopov, A.N.Sementsev, A.A.Yashin; Under A.A. Hadartseva's general edition. Tula, 1995;

2. PP. Garjaev Wave genome. Moscow: Public advantage, 1994;

3. G.S. Edvards, C.C. Davis, I.D. Saffen, ML. Swicord // Phys. Rev. Lett. 1984. Vol.53, №13.-P.1284-1237;

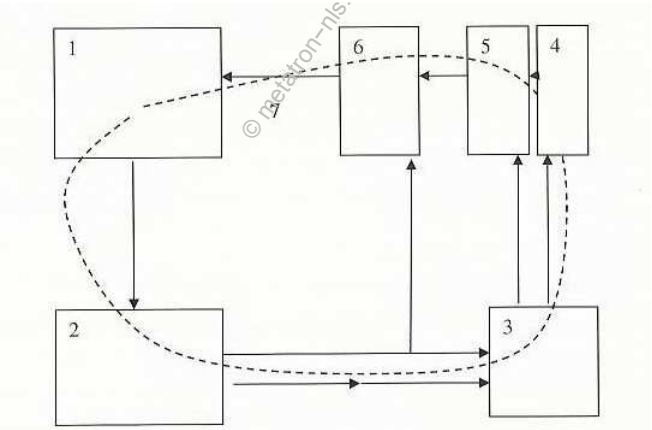
4. Cherkasov AV.. Magnetic-optical effect on water-dependent structures of living body // Bulletin of biophysical medicine. 1994 - №1- Pages 29-41;

5. M.A. Sobakin Physical fields of stomach. Novosibirsk. Science, 1978.

Annex 1.

The hardware-software complex «Metatron».

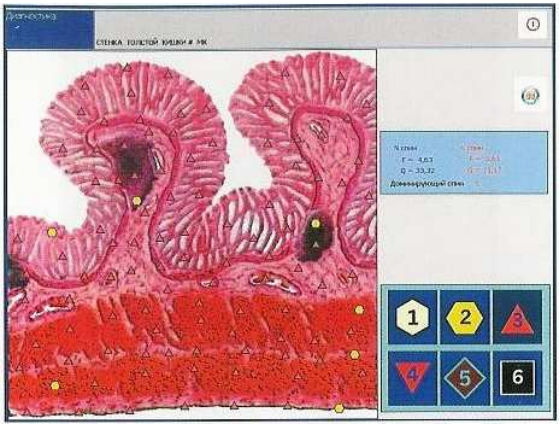
Annex 2.



The basic schematic of the hardware-software complex «Metatron».

1 - processor-telemetering unit (the microprocessor unit and the telemetric module);
2 - unit for developing a series of irritators;
3 - patient;
4 - capacitance detector;
5 - triggering gauge;
6 - timing unit;
7 - patient's biological feedback circuit.

Annex 3.



Large bowel wall with reference points and symbols
of Fleindler's six-point polychromatic scale

1 — Level of latent functional activity.
2 — Level of optimum regulation.
3 — Shift of characteristics to a higher level of regulatory systems strain condition.
4 — Astheneia of regulatory mechanisms.
5 — Compensated failures of adaptation mechanisms.
6 — Decomposition of adjustment mechanisms, the expressed functional strains.

Annex 4.

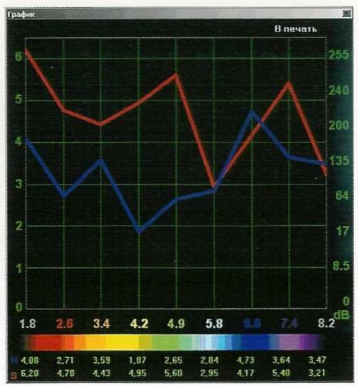


Chart types with spectral frequencies of tissues.

The working rhythms of the functional systems of the organism have a low-frequency range.

1.8 - osteal tissue;

2.6 - rasping copulative tissue, joints, valves of heart;

2.6-3.4 - quaggy copulative tissue, barred musculature, muscles Of the heart;

3.4 - unstriated muscles;

4.2 - unlamented flat epithelium of the digestive tube;

4.9 - laminated flat and prismatic epithelium and genital organs;

4.9-5.9 - lymphatic ring of the pharynx, upper department of respiratory channels, lymphatic system, hen, ovary, prostate;

6.6 - peripheral nervous system, epithelium of air-tubes, butterfly adrenals, thyroid gland;

7.4 - central departments of sensorial analyzers (except for visual ones), subcortical structures of the brain, bridge, cerebellum, limbic system and parenchyma of lungs.

8.2 - retina of the eye, optic nerve, cortex of hemispheres of the brain.