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## **PSYCHO-ENERGETIC AND BIO-ENERGETIC EFFECTS OF INTEGRATED MENTAL TRAINING**

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### **ABSTRACT**

Psycho-Energetic and Bio-Energetic Effects of the Swedish model of Mental Training ( Integrated Mental Training-IMT) were under study. Subjects were 19 students 18 – 21 age, both genders. "Profile of Mood States" (POMS), stress-profile test, Bilateral Digital Registration of Quasi-DC Potential, conductivity of acupoints and intensity of energy-emission patterns (GDV Technique) were measured. During the course of systematic Mental Training (7 weeks, 35 sets) there was a significant improvement of the POMS profile the "Vigour" factor ( $p < 0.01$ ), stress-tolerance ( $p < 0.01$ ) and the psychosocial adaptation ( $p < 0.05$ ). The conductivity of the acupoints changed towards a normalisation and harmonization of all the 12 main acupoints meridians together with a balance increase of the intersystem acupoints ("Yin", "Yang") and intensification and modification of GDV patterns ( $p < 0.01$ ). Phenomenon of Psycho-Energetic Phasing Activation under active imagination in the Self-hypnotic conditions was discovered from the data of energy-emission analysis. Based upon multi-parameter factor and correlative analysis data bioelectrographic correlates of psycho-energetic self-regulation process under the influence of systematic Mental Training were founded.

**Key words:** Mental Training, Altered States of Consciousness, Self-Hypnosis, POMS, Energy-Emission Analysis, GDV technique, Psycho-Energetic Effect.

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**INTRODUCTION**

A bio-energetic paradigm was developed in West-European psychosomatic medicine in the mid-1930s based on works by Freud and Jung. Further, this concept was expressed directly in W. Reich's and A. Lowen's researches. A. Lowen described the idea of individual internal harmony and beauty of the mind and body, which is the main purpose of "bio-energetic therapy" [Lowen, 1990. p. 20].

This approach serves as a basis for both psychotherapeutic and creative mental training. In the latest decade these methods have achieved worldwide use and note, specially in Europe, USA, Canada and Russia [Unestahl, 1986, 1997; Rushall, 1991; Straub, 1992; Orlick. 1997 & etc]. A series of surveys, conducted within the Russian-Swedish R&D project "Mental Training for Sport and Life"\* showed that the stress-eliminating effect of the Swedish model of Mental Training (IMT) was closely related to the raise of functional potential of a person and bio-energetic homeostasis reconstruction [Bundzen, Unestahl, 1997].

Based on the received results an investigation of the influence of IMT on the psycho-energetic processes was proposed. A complex psychophysical approach was applied with involvement of the latest bio-electrographic developments and technologies.

**RESEARCH METHODS**

1. Mental Training Audio-Programmes Complex. These programmes fall into two main groups. The basic training contains muscular and mental relaxation and self-hypnosis. The second group of programmes has creative and healing set: "Anti-stress", "Mental Power", "Problem-solving", "Beauty and Harmony". The training was around 15 minutes a day.

The entire course lasts seven weeks at five sessions a week. The basic training lasts three weeks, every creative or healing program mentioned above takes one week.

2. Bilateral Digital Registration of Quasi-DC Potential .. QDCP registration at the current

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\* "Mental Training for Sport and Life" International R&D project has been developed since 1996 by Scandinavian International University [Örebro, Sweden] and Petrovsky Academy Science and

study was aimed to control and measure the depth of the self-hypnosis.. To conduct QDCP registration, bipolar leads were used: the middling-frontal electrode position - thenar of appropriate right and left hands. Disappearance of the QDCP bilateral asymmetry [with values reducing up to  $20\pm 5$  mV] was considered to be the differential - diagnostic symptom of the penetration into a self-hypnotic state.

3. "Profile of Mood States" (POMS) – a wellknown and often used diagnostic test the psycho-emotional state and psycho-energetic potential [McNair, 1992]. A Russian adapted and verified version of POMS, developed by SPb PE R&D Institute [Bundzen & Schluter, 1995] was used. A development of the scale in order to measure of psycho-energetic readiness, was done. The psycho-energetic readiness parameter ( PSEN) is determined by a formula:

$$PSEN = \frac{V}{\sum(A_n + D + A + F + C)},$$

5

where: An – Anxiety, D – Depression, A – Aggression, F – Fatigue, C – confusion, V – Vigour – standard scales of POMS.

The test was done prior to the beginning of the mental training program, after the basic training and promptly after whole program accomplishment.

4. "Stress Profile" Test, developed by "Stress Management Centre" (Karlstad, Sweden). This test consists of 224 questions, measuring 8 parameters: 1 - work-place situation; 2 - home situation; 3 - vital well-being; 4 - difficulties and troubles; 5 - life events and changes; 6 - life style; 7 - mental state; 8 - health .

"Stress profile" test was conducted before the beginning of the mental course and within three days after its accomplishment.

5. Acupoints (hereinafter AP) Conductivity Level and Meridian . AP conductivity level was registered via the special "Nakatani" system developed by "Electronic Medical Systems" corporation, Saint-Petersburg. The following parameters were used:

$$\text{General functional index B is: } B = n_{\text{normal}}/n$$

where n – the number of measured acupoints,  $n_{\text{normal}}$  is the number of acupoints inside the normal physiology range ( $80\pm 10$  mkA).

Balance of left and right is  $B_{LR}$ :

$$B_{LR} = \frac{\sum X(i_R) - \sum X(i_L)}{\sum X(i_R) + \sum X(i_L)} \times 100\%$$

where  $i_R$  and  $i_L$  are currents, measured on the right and left side of the body, correspondingly.

Good value for balance coefficients is 0% within  $\pm 5\%$ .

Balance of Yin and Yang is  $B_{YI}$ :

$$B_{YI} = \frac{\sum X(i_Y) - \sum X(i_I)}{\sum X(i_Y) + \sum X(i_I)} \times 100\%$$

where  $i_Y$  and  $i_I$  are currents, measured on the Yang and Yin acupoints, correspondingly.

Good value for balance coefficients is 0% within  $\pm 5\%$ .

6. Energio-emission Intensity Patterns Registration by the Photomethod and Computerised "Digel" System. High-voltage generator parameters were as following: impulse width – 0,5 sec, impulse rate – 100 Hz, electrode voltage-15 kV. System photosensitivity in 215—650 nm range no less than 97 mkA/lm. Energio-emission intensity registration was carried out by inertia-free "Sigma" registrar and by videotape recording.

7. Program-hardwired "GDV-Camera" Complex, using GDV Technique developed by K. Korotkov ("Kirlionics Technologies International" company, 1995). The principle of this technique is the registration of Biological Emission and Optical Radiation of biological subject stimulated by Electromagnetic Fields, amplified by Gaseous Discharge with Visualisation by Computer processing. In short the technique so called BEO GDV Technique the images after processing are named as BEO-grams [Korotkov, 1999]. Two-years experience in using GDV Technique has demonstrated its practical importance in different fields of study: express-diagnosis of a person's health and psycho-emotional state, the influence of different drugs, medicine and meditation [Proceedings, 1999]. More than 200 specialists all over the world are now using this new technique.

SUBJECTS :19 students 18 – 21 age, both genders (random access) took part in the research. 15 subjects reached the criteria of a "self-hypnotic" state. This was determined by QDCP changes, complemented with a self-reports and linguistic test for diagnostics of alternative state of consciousness [Spivac, 1986].

## **RESEARCH RESULTS AND DISCUSSION**

### Individual Psycho-Emotional Status and Psycho-Energetic Potential Changes under Systematic Mental Training Influence

The results from the POMS –test is shown in fig.1. According to the data provided, the mental training basic course mainly gives a reliable reduction of A, D & F factors

[ $p < 0.05$ ]. This effect is in accordance with earlier research results in Sweden and Russia. These earlier researches have been carried out on many groups like: vocational- and high school students, higher education students, middle-aged people, shaping- and fitness clubs members, athletes [Bundzen & Unestahl, 1997].

Important to point out, is also that similar POMS factors changes are accompanied by reliable stress-hormones (cortisol, dehydroepiandrosteron) level modifications and immunity improvement [Bundzen et al., 1998; Gavrilova et al., 1998].

At the same time it was noted that a statistically reliable "Vigour" factor change emerge only in the measurements made after combination of the both basic and creative mental training application. The POMS profile is here changed to the well-known "ice-berg" profile, where at "Vigour" parameter as a dominant and PSEN parameter is changing [ $p < 0.001$ ] in statistically reliable manner [fig.1].

The testees' self-reports confirmed these findings by emphasising such qualities as "Cheerful", "Alert", and "Vigorous".

According to the POMS changes and modifications of the scales of "Stress profile" / fig.2 /, we can conclude that the IMT course results in both: a statistically reliable stress-tolerance development and improvement of the psychosocial adaptation.

#### Complex Bioelectrographic Analysis of Mental Training Psycho-Energetic Effect

In the search of bioelectrographic parameters of the psycho-energetic status state-of-the-art technologies were applied. In the methodological sense these technologies take their intermediate stand between "substratum" and "energetic" approaches of present-day psychosomatic medicine [Gerber, 1997]. The application of these technologies is now well-founded in terms of fundamental and applied psychophysiology and psychophysics [Bundzen et al., 1998; Korotkov, 1999].

Data received through the Nakatani method, are represented at table 1. The results indicate that two main system (meridian) processes accompany the PES and PSEN changes. First, a polisystem effect, concerning conductivity normalisation and stabilisation of all the 12 main AP meridians, emerges in the course of training. Table 1 illustrates this very effect showed both in AP current characteristics and the general functional index. The second process contains an intersystem effect expressed in a balance increase between AP current values, which relate to meridian subsystems, named in acupuncture diagnostic as "Yin" and "Yang". Taking into

account the idea that "Yin" and "Yang" meridian subsystems directly correspond to ergo- and trophotropic subsystems [Luvsan, 1986], it is possible to assume that IMT basic course leads to harmonization of the sympatic and parasympatic systems of organism. This has also been confirmed by a study of extra- and intracardial regulation modifications under influence of mental training with up-to-date cardiology technique [Bundzen et al., 1998].

. Thus, the discovered AP functional state modifications can be defined as personal bio-energetic homeostasis harmonisation under mental training influence.

Energy-emission processes rate, measured by "Digel" system, is increasing in 215—650 nm range to statistically reliable upper limits at 7<sup>th</sup> course week [fig.3]. Energy-emission intensity reinforcement corresponds to PSEN dynamics, defined by POMS parameters (see above).

Data received after the seven weeks course completion were analyzed by correlative and factorial analyses [table 2]. It testify, that nearly all parameters correlating with psycho-energetic status [POMS – Vigour and PSEN scales; Current AP;  $\xi$ -potential; Energy-Emission], are in statistically reliable interconnection and belong to the factor 1. Therefore, factor 1 could be adopted as the psycho-energetic potential factor.

Factor 2 might be taken as the psycho-energetic asymmetry parameter, but factor 3 registers individual psychosomatic self-regulation peculiarities.

Factor 1 also includes the parameter, determining energy-emission level by functional load that specifically has means an active imagining process (ASC formation period) under the "mental room" ( self-hypnosis ) conditions [Unestahl, 1997].

It is very important to note that in self-hypnotic conditions process of imagination has attended by short-term (phasic ) activation of the energy emission [fig.4]. From our viewpoint, it is appropriate to define this process, according to its functional specificity (attention focusing; memory activation; imagining), as **Psycho-Energetic Phasic Activation** [hereinafter **PEPA**] phenomenon.

Some PEPA functional peculiarities by now:

1. Only the entire IMT course, including both the basic and the advanced programs creates the base for PEPA fenomenon..
2. PEPA arises during specific mental functioning (active imagining) conditions, when an experiment participator is in a mental room.
3. PEPA can by registrated mainly with the fourth finger (in 80% cases), and at topographic zones corresponding, in accordance with Mandel - Korotkov [1986, 1995], to neuro-endocrine regulation centers.

4. Two types of PEPA patterns are to be emphasized: either reinforcement of the energy-emission intensity or detached distant concentrated fragments of the emission.
5. There is a couple of conditions necessary for PEPA generation : first, bilateral quasi-DC potential balance (see above), adopted as a differential-diagnostic sign of ASC formation [Bundzen & Unestahl, 1997]; second, highest possible individual values of current emission characteristics [fig.5].

Taking into account the energy-emission patterns modifications, it is reasonable to presume that the physical nature of registered emanations is also under going certain changes, getting "quasi-coherence" characteristics [Korotkov, 1998, p.210].

On the basis of the received data, it can be concluded that along the systematic IMT take place modification of the functional control of individual bio-energetic system , as well as essential alteration of the physical nature energy- emission processes.

## **CONCLUSION**

To summarize: psycho-energetic and bio-energetic modifications under integrated mental training influence are of complex energy-informative nature, whose interpretation might be of vital importance for the cognition of both mental training psycho-physical mechanisms and proper "bio-energetic therapy" fundamentals of psychosomatic medicine.

Energy-emission reinforcement effect by mental functioning in ASC, first discovered in this research, requires further detailed development work. Experimental data, however, confirm that this phenomenon testifies psycho-energetic self-regulation programs transitions while consciousness state transformations. It may be practically applied as mental training efficiency criterion.

Experimental findings point the urgency of ASC principles virtual study and application; they also stress the very importance of fundamentals and methodology synthesis of "substratum" and "energetic" approaches, present stumbling-stone of the West and the East scientific paradigms.

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Table 1.

Alteration of the functional state of meridian acupoints (AP) under the influence of seven weeks mental training course. [data from "Riodoraku" profile]

№	Indices	Prior to mental training	After mental training
1	Average value of AP current, mkA	79,2±8,1	95,4±6,6 **
2	General functional index – B	0,3±0,19	0,8±0,07 *
3	Balance of left- and right-side AP	+7,7%	-1,4%
4	Balance of BAP concerning meridian subsystem " yin" and "yang"	+6,8%	-2,9%

The reliability of indices changes  $0.01^{**} < p < 0.05^*$ .

Table 2

## Factor analysis

Items	Factors		
	1	2	3
POMS-ANXIETY	-0.53	-	+0.59
POMS- DEPRESSION	-0.69	-	+0.53
POMS-ANGER	-0.58	-	+0.61
<b>POMS-VIGOR</b>	<b>+0.80</b>	-0.55	-
POMS-FATIGUE	-0.61	-	-
POMS-CONFUSION	-	-0.57	-
<b>POMS-PSER</b>	<b>+0.87</b>	-	-0.55
<b>CURRENT BAP</b>	<b>+0.71</b>	-	-
DISBALANCE L/R BAP	-	<b>+0.68</b>	-
DISBALANCE YIN/YANG BAP	-	-	<b>+0.71</b>
<b>KSI-POTENTIAL</b>	<b>+0.67</b>	-0.53	-
LEVEL q.DC POTENTIAL	+0.63	-	-
ASYMMETRY q.DC POTENTIAL	-0.66	+0.57	-
ENERGY EMIS. INT. L 1	-	+0.61	-
ENERGY EMIS. INT. L 2	-	-	-
ENERGY EMIS. INT. L 3	-	+0.55	-
<b>ENERGY EMIS. INT. L 4</b>	<b>+0.68</b>	-	-
<b>ENERGY EMIS. INT. L 5</b>	<b>+0.54</b>	-	-
ENERGY EMIS. INT. R 1	-	+0.59	-
ENERGY EMIS. INT. R 2	-	-	-
ENERGY EMIS. INT. R3	-	+0.67	-
<b>ENERGY EMIS. INT. R 4</b>	<b>+0.77</b>	-	-
ENERGY EMIS. INT. R 5	-	+0.53	-
ENERGY EMIS. INT. IN MENTAL ROOM R 4	-	-	-
<b>ENERGY EMIS. INT. IN MENTAL ROOM L 4</b>	<b>+0.84</b>	-	-
Percentage of variance N=15; p< 0.05-0.01	0.41	0.14	0.10

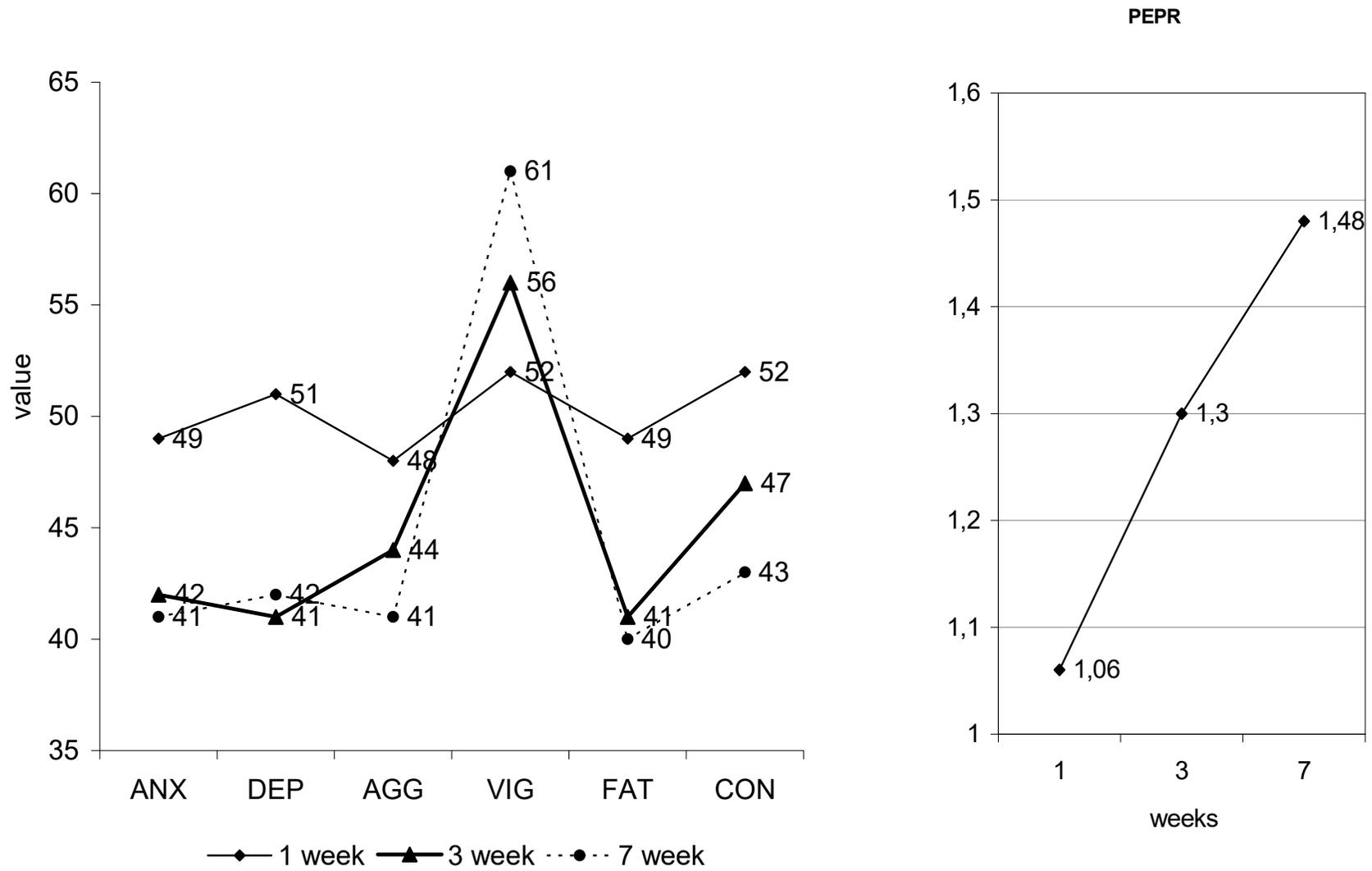


Figura 1. Modifications of the Profile of Mood States and PEPR parameters under influence of the integrative mental training.

\* p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

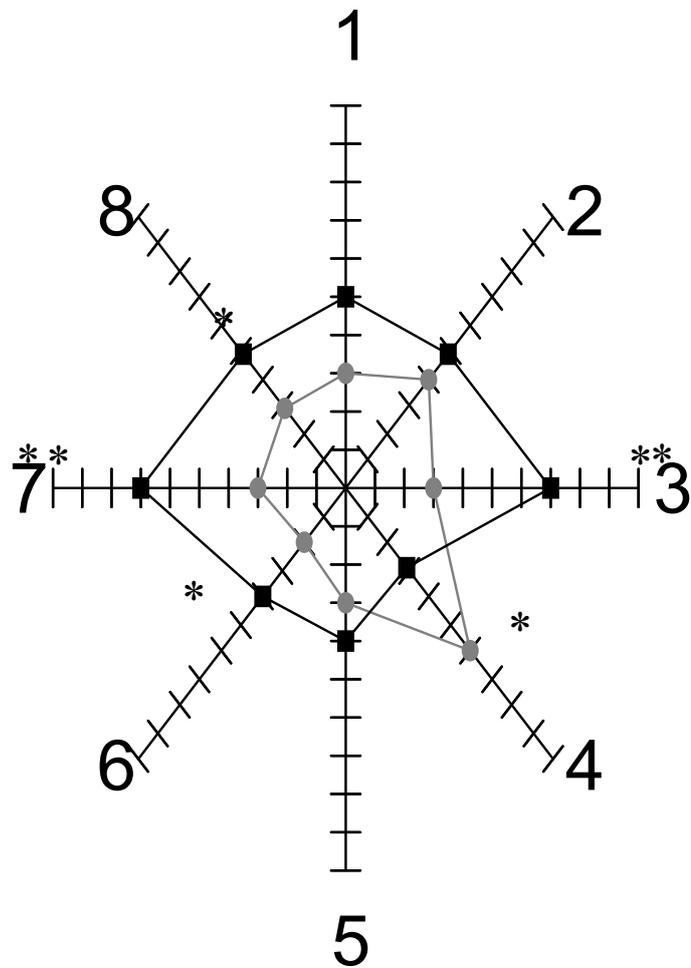


Figure 2. Modifications of the scales of "Stress profile" under influence of the integrative mental training.

---▲---before mental training

---●---after 7 weeks of mental training

Scales : 1 – Work situation, 2 – Situation at home, 3 – Health, 4 – Problems and difficulties, 5 – Changes in life, 6 – Lifestyle, 7 – Psychoemotional status, 8 – Wellbeing.

\* $p < 0.05$  \*\* $p < 0.01$

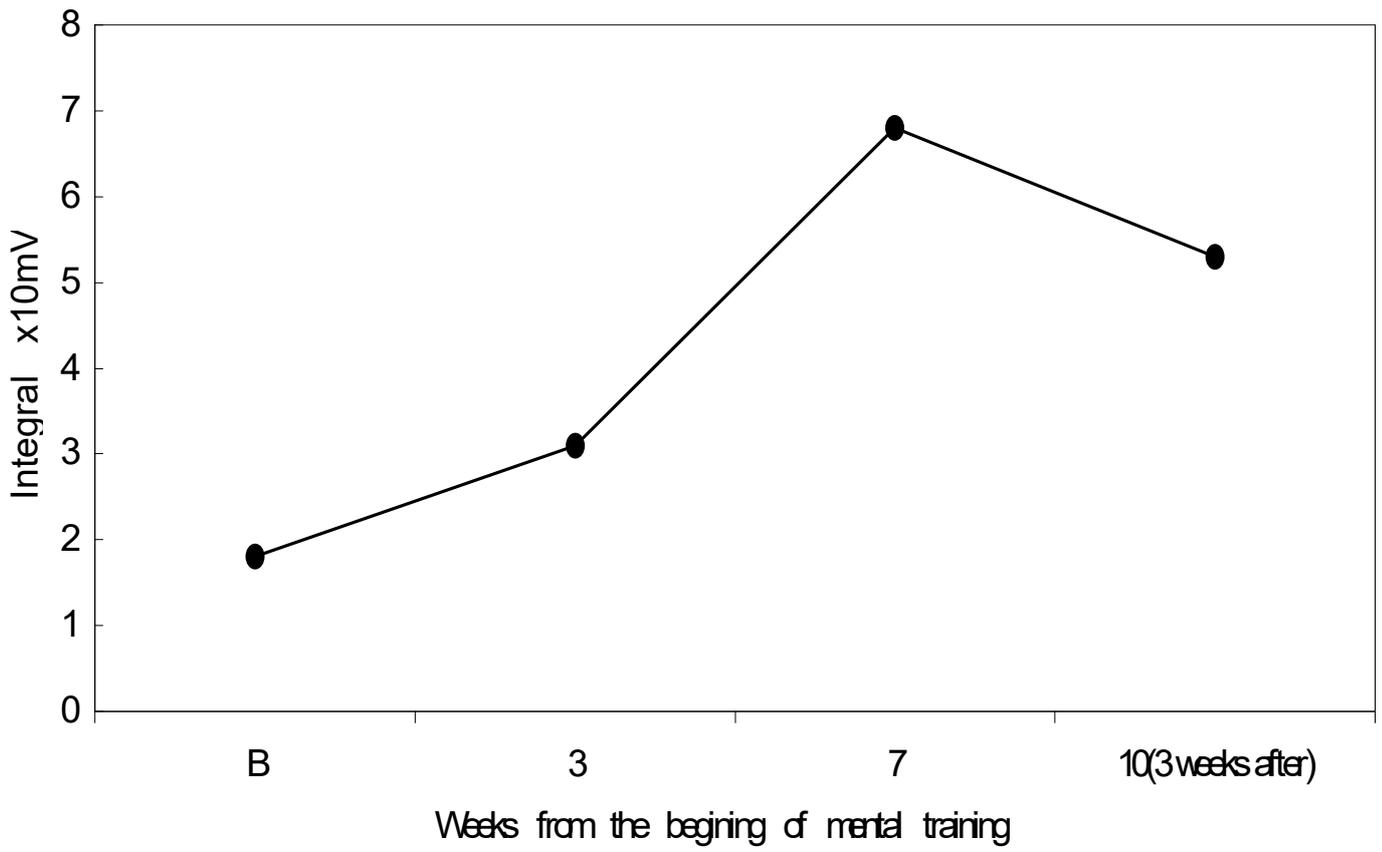
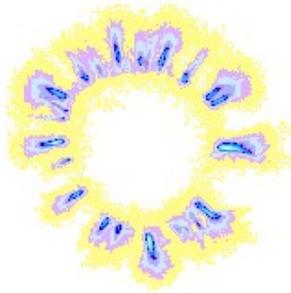


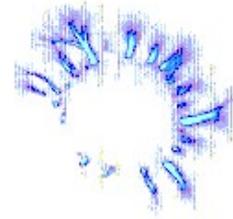
Figure 3. Intensification of the energy emission during and after the integrative mental training. Averaged data from all fingers of the right hand.

B - background level. \*\* -  $p < 0.01$  [ between B and 7w ]. \* -  $p < 0.05$  [ between B and 10w].



A1

S = 11647 Fr = 20



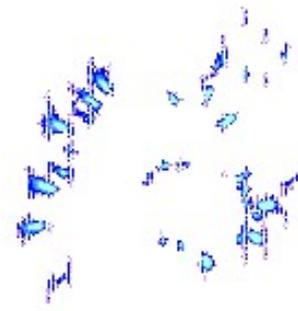
A2

S = 4101 Fr = 16



B1

S = 13819 Fr = 10



B2

S = 1493 Fr = 50

Figure 4. Modification of the patterns of energy emission of left ring finger of two testee in conditions of mental work - active imagination during the alternative state of consciousness.

A1 and A2 – patterns before immersion in alternative state of consciousness

B1 and B2 – patterns during imagination in alternative state of consciousness

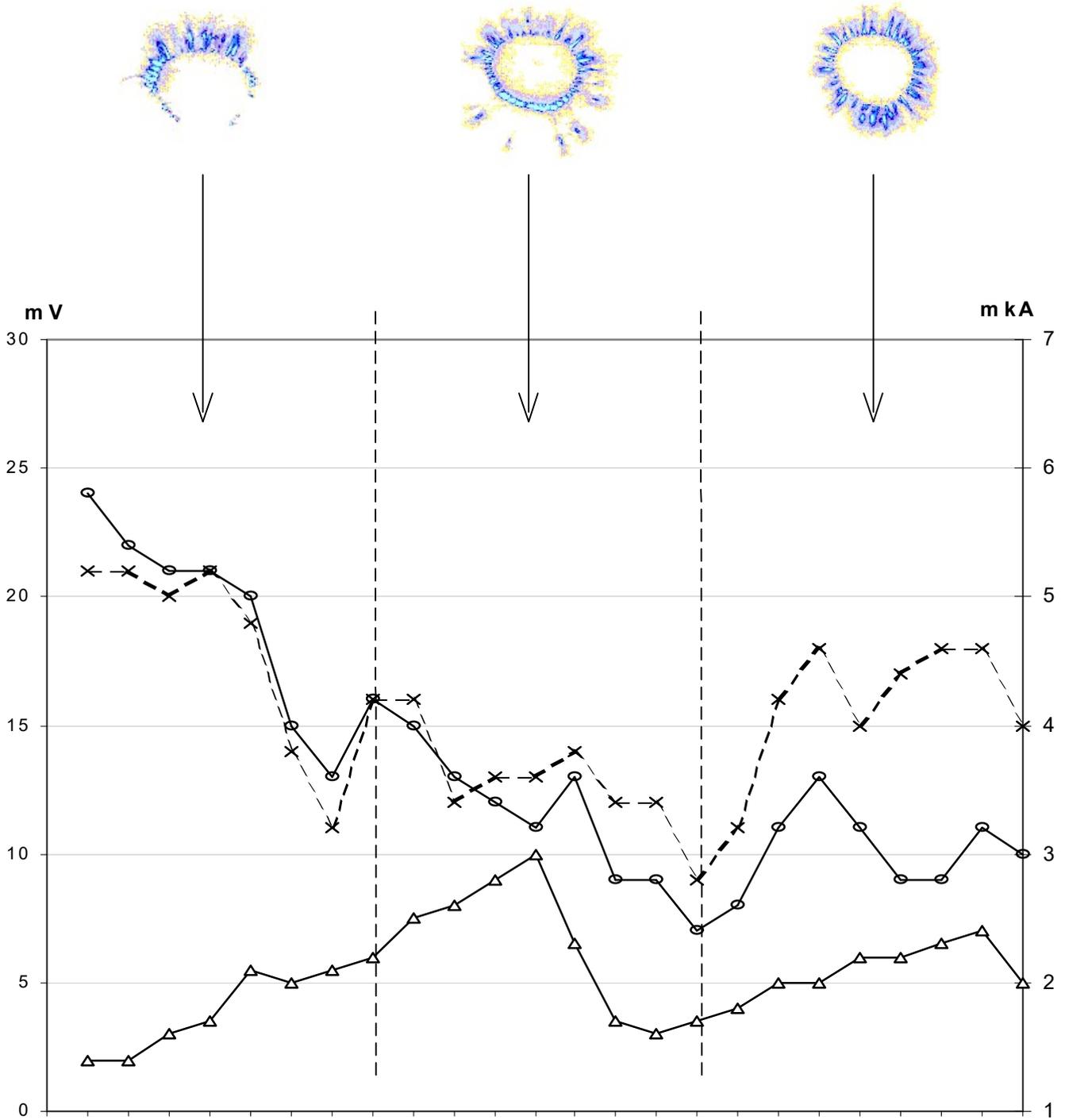


Figure 5. Alterations of the quazi-DC potential and current of the energy emission during immersion to alternative state of consciousness and active imagination in the mental room.

o ————o quazi-DC potential of the left side of body;

X ————X quazi-DC potential of the right side of body;

Δ ————Δ current of the energy emission;

----- time of the mental relaxation and imagination in the mental room.

P<sub>1</sub> – P<sub>3</sub>-patterns of the energy emission. P<sub>2</sub> – pattern during the active imagination in mental room.