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PSYCHO-DYNAMIC AND BIO-ENERGETIC RESULTS OF INTEGRATED MENTAL TRAINING

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The bio-energetic paradigm in West-European psychosomatic medicine was figured 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 research. A. Lowen considered the idea of individual internal harmony and beauty, mind and body reuniting the main purpose of “bio-energetic therapy”ⁱ. This very approach serves as a basis for both psychotherapeutic and creative mental training modifications development. In the last decade these modifications have achieved worldwide use and note, especially in Europe, USA and Canada^{ii, iii, iv, v, vi}. A series of surveys, conducted within “Mental Training for Sport and Life-Style”^{*1} a Russian-Swedish R&D project, highlighted that the stress-eliminating effect of Swedish systematic mental training is in an inextricable connection with both the raise of functional potential of a person and bio-energetic homeostasis reconstruction.

After the initial positive results further research into the integrated mental training psycho-energetic influence was launched. A complex psychophysical approach was applied with involvement of the latest electrographic developments and technologies.

RESEARCH METHODS

Main research techniques used:

1. Mental Training Audio-Programmes Complex. These programmes fall into two main groups. The first group performs basic course syllabuses for muscular and mental relaxation. The second group of programmes has a creative and sanative set: “Anti-stress”, “Mental Power”, “Problem-solving”, “Beauty and Harmony”.

The entire course lasts seven weeks at five sessions a week. The Russian training version programs were identical to the programmes developed by Scandinavian International University³. The basic course lasts three weeks, every creative or sanative program mentioned above takes one week. The “Active Imagining” test was conducted under so-called “mental room” conditions (when a testee self-induces an “Alternative State of Consciousness ” (hereinafter named “ASC”) and was used as functional load of psycho-energetic nature. The test was held upon completion of the training course with the use of an electrographic device scheduled to control testee “penetration” into ASC via quasi-constant potential registration.

2. Bilateral Digital Registration of Quasi-Constant Potential (Russian patent № 20113775, 1994), or of Omega-Potential (OP). OP registration at the current study was aimed at controlling the process of “penetration” into ASC. To conduct OP registration, bipolar leads were used: the middling-frontal electrode position - thenar of appropriate right and left hands. OP bilateral

* “Mental Training for Sport and Life-STYLE” International R&D project has been developed since 1996 by Scandinavian University International and Baltic Teachers Academy (St-Petersburg, Russia).

dissymmetry disappearing (with values reducing up to 20 ± 5 mV) was considered the differential and diagnostic symptom of complete penetration of a participator into ASC.

3. Profile of Mood States” (POMS) – diagnostic test on psycho-emotional state and psycho-energetic potential^{vii}. Russian adapted and verified version of POMS, developed by SPb PE R&D Institute^{viii}, was applied in research. The calculation of parameter, characterizing relative scale of psycho-energetic readiness, was the only POMS modification factor. The psycho-energetic readiness parameter (hereinafter PEPR) is determined by a formula:

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

5

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

The test was run prior to the beginning of mental training program, as a result of the basic course (as mentioned above), and promptly after the completion of the whole program.

4. “Stress Profile” Test, developed by “Stress Management Centre” (Karlstad, Sweden). This test consists of 224 questions, designed to estimate received data by 8 parameters: 1 - work-place situation; 2 - home situation; 3 - vital well-being; 4 - difficulties and troubles; 5 - life events and chop & 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 of its completion.

5. Acupoints (hereinafter AP) Conductivity Level and Meridian AP Concentrated-Kinetic Potential (ξ -potential) Registration. AP conductivity level is registered via special “Nakatani” system developed by “Electronic Medical Systems” corporation, Saint-Petersburg. Meridian AP ξ -potential was measured by automated “Zodiak” system (Russian patent № 2106799, 1998). ξ -potential and AP conductivity registrations were conducted before and after the carrying out of the mental training course. A series of check researches were superinduced for ξ -potential discrete registration while mental relaxation and ASC were developing. The following parameters were used for results estimation:

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

where n – the number of measured acupoints, n_{normal} is number of them inside the normal physiology range (80 ± 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 +/- 5%.

Balance of Yin and Yang is B_{YI} :

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

Good value for balance coefficients is 0% within +/- 5%.

6. Ergo-emission Intensity Patterns Registration (Kirlian effect) by Photomethod and Computerised “Digel” System. High-voltage generator parameters were as following: impulse width – 0,5sec, impulse rate – 100Hz, electrode voltage-15kV. System photosensitivity in 215-650nm range no less than 97mkA/lm. Ergo-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 Field, amplified by Gaseous Discharge with Visualisation by Computer processing. In short the technique named as BEO GDV Technique and images after processing are named as BEO-grams^{ix}. Three-years experience in using GDV Technique demonstrated its exclusive practical importance in different fields of study: express-diagnosis of a person's health and psycho-emotional state, both at the given moment in time and in its change over time; the influence of different drugs, medicine, meditation, exercises; investigation of energy and information characteristics of plants, leaves, seeds, etc.; study and prediction of a person's state by the GDV characteristics of blood and other biological liquids; investigation of different modalities of a person's Consciousness^x. More than 200 specialists all over the world now utilise this technique.

All research techniques were approved on wide-range of testees. This research aimed at the integrated usage of all these techniques for finding correlative connections between the studied parameters and psycho-physical principles of systematic mental training.

19 healthy students 18 – 21 years of age, both genders (random access) took part in the research. 15 testees of 19 succeeded in self-inducing ASC during the seven-week mental training course. These 15 persons' findings were taken for statistic processing with correlative and factorial analyses. Typical OP changes in the course of mental relaxation (as mentioned above) were considered to be objective criteria of mental training success, as well as testees' self-reports, whose verbal structures were estimated by linguistic test^{xi}.

RESEARCH RESULTS AND DISCUSSION

INDIVIDUAL PSYCHO-EMOTIONAL STATUS AND PSYCHO-ENERGETIC POTENTIAL CHANGES UNDER SYSTEMATIC MENTAL TRAINING INFLUENCE

Researches into psycho-emotional status (hereinafter PES) and psycho-energetic potential were conducted three times during the mental training course: before the beginning of the program, after the basic course (three weeks), and upon the whole course completion (seven weeks).

Averaged data of POMS scales values diversity are represented on fig.1. According to the data provided, the mental training basic course, mainly, has an influence upon PES modifications with T, D & F factors reliable reducing ($p < 0,05$). This effect is verified by results of numerous researches into both original Sweden, and Russian mental training versions influence on PES. These researches were based on wide range of testees involved: vocational- and high school students, higher education students, middle-aged people, shaping- and fitness associations members, athletes. It is important to point out, that similar POMS factors variations are accompanied by reliable stress-hormone (cortisole, dehydroepiandrosteron) level modifications and immunity improvement^{xii xiii}.

At the same time it was noted that the statistically reliable "Vigour" factor modifications emerge only under the entire programme complex (including both basic and creative mental training courses) application. At that point the POMS profile is getting close to the well-known "ice-berg" model as the "Vigour" parameter is dominant and the PEP parameter is ever changing ($p < 0,001$) in statistically reliable manner (fig.1).

Testees' self-reports completely confirm the discovered POMS modifications by emphasising the development of such qualities as "Cheerfulness", "Alertness", and "Vigor".

According to POMS modifications, we can conclude also that the mental training course results in individual statistically reliable stress-tolerance development. Moreover, not only stress-tolerance scales (№3,7,8), but also psychosocial adaptation values are under (positive) change (fig.2).

Basing upon data received and analysed, it is possible to sum up that the systematic mental training course has integrated psycho-dynamic effects, including testees' stress-tolerance increase, psychosocial adaptation rise, and strongly pronounced psycho-energetic effects.

PSYCHO-ENERGETIC EFFECT

In the search for psycho-energetic status modifications bioelectrographic correlates, state-of-the-art technologies were applied. By methodology, these technologies take their intermediate stand between “substratum” and “energetic” approaches of present-day psychosomatic medicine^{xiv}. The application of these technologies is well-founded in terms of fundamental and applied psychophysiology and psychophysics^{8,11,xv}.

Data, gathered by standard and (well-known in reflexology) Nakatani method, are represented at table1. The results estimate proves that two main system (meridian) processes accompany the individual PES and PEPR modifications mentioned above. First, some polysystem effects, concerning conductivity normalisation and stabilisation of all the 12 main AP meridians, emerge in the course of training. Table1 illustrates this very effect, showed both in AP current characteristics and general functional index. The second process contains intersystem effect expressed in the balance increase between AP current values, which relate to meridian subsystems, adopted in acupuncture diagnostic as “Yin” and “Yang”. Taking into account well-known (in reflexology) fact that “Yin” and “Yang” meridian subsystems directly correspond to ergotropic and trophotropic subsystems^{xvi}

, it is possible to assume that the mental training basic course leads to somato-vegetative regulation optimisation. It is confirmed, in particular, by study of extracardial and intracardial regulation modifications under influence of mental training with up to date cardiology technique¹¹.

The automated “Zodiak” system data, aimed at meridian AP concentrated-kinetic ξ -potential determination, verified entirely classical reflexodiagnostic measurements. These researches revealed that the integrated mental training course resulted in highly reliable ($p < 0.001$) bilateral balance indexes of all the main 12 paired meridians. Thus, 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 ever increasing in 215-650nm range up to statistically reliable upper limits at 7th course week (fig.3). Energy-emission intensity reinforcement corresponds to PEPR dynamics, defined by POMS parameters (see above).

Data received upon seven weeks course completion were analyzed by correlative and factorial analyses (table2). It testifies that nearly all parameters correlating with psycho-energetic status (POMS – Vigour and PSER scales; Current AP; ξ -potential; Energy-Emission), are in a statistically reliable interconnection and belong to the factor 1. Therefore, factor1 could be adopted as a psycho-energetic potential factor.

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

Factor 1 includes also the parameter determining energy-emission level by functional load, specifically that means here an active imagining process (ASC formation period) under the “mental room” conditions³.

A series of specialised complex researches based on different energy-emission analysis techniques (photomethod; “Digel” system; computerised “GDV” complex) discovered the energy-emission phasing activation under functional load (active imagining) conditions (fig.4). From our viewpoint, it is appropriate to define this process, according to its functional load specificity (attention focusing; memory anagrams activation; imagining), as **Psycho-Energetic Phasing Activation** (hereinafter **PEPA**) phenomenon.

Some PEPA functional peculiarities by now:

1. Only the entire integrated mental training course, including both basic and creative programs, stimulates individual PEPA rise.
2. PEPA arises under specific mental functioning (active imagining) conditions, when an experiment participator “penetrates” into ASC while mental relaxation.

3. PEPA discovers mainly within fourth finger (in 80% cases), and at topographic zones corresponding, in accordance with Mandel - Korotkov, to neuro-endocrine regulation centers specifically.
4. Two types of PEPA patterns are to be emphasized: either reinforcement of the energy-emission intensity within the topographic zones mentioned above or detached concentrated fragments of emission.
5. There are a couple of PEPA generation pre-conditions: first, bilateral quasi-constant potential balance (see above), adopted as a differential-diagnostic sign of ASC formation; second, highest possible individual values of current emission characteristics (fig.5).

Thus, in contrast to AP functional state modifications, PEPA is phasing natural phenomenon, connected directly to ASC mental functioning period. Taking into account energy-emission patterns modifications, it is reasonable to presume that the physical nature of registered emanations is also under related changes, giving “quasi-coherence” characteristics.

On the basis of data received, it is to be concluded that along with exposed psycho-dynamic modifications, functional state reconstruction of individual bio-energetic system segments, as well as essential energy-emission physical nature modification take place as the result of mental training influence.

CONCLUSION

To summarize research results and progress, it is sound to infer that psycho-dynamic modifications under 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 working principles and proper “bio-energetic therapy” fundamentals of psychosomatic medicine.

Energy-emission phasing reinforcement effect by mental functioning in ASC, first discovered in the researches, requires further detailed development work. Experimental data, however, confirms that this phenomenon confirms psycho-energetic self-regulation program transitions when the state of consciousness transforms. 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 great importance of fundamental methodology synthesis of “substratum” and “energetic” approaches which present a stumbling stone for the Western and the Eastern 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%
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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
POMS-VIGOR	+0.80	-0.55	-
POMS-FATIGUE	-0.61	-	-
POMS-CONFUSION	-	-0.57	-
POMS-PSER	+0.87	-	-0.55
CURRENT BAP	+0.71	-	-
DISBALANCE L/R BAP	-	+0.68	-
DISBALANCE YIN/YANG BAP	-	-	+0.71
KSI-POTENTIAL	+0.67	-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	-
ENERGY EMIS. INT. L 4	+0.68	-	-
ENERGY EMIS. INT. L 5	+0.54	-	-
ENERGY EMIS. INT. R 1	-	+0.59	-
ENERGY EMIS. INT. R 2	-	-	-
ENERGY EMIS. INT. R3	-	+0.67	-
ENERGY EMIS. INT. R 4	+0.77	-	-
ENERGY EMIS. INT. R 5	-	+0.53	-
ENERGY EMIS. INT. IN MENTAL ROOM R 4	-	-	-
ENERGY EMIS. INT. IN MENTAL ROOM L 4	+0.84	-	-
Percentage of variance	0.41	0.14	0.10

N=15; $p < 0.05-0.01$

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

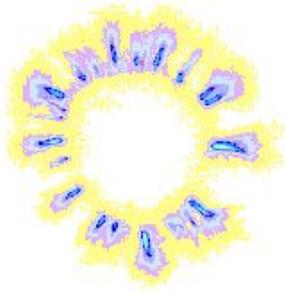
---●---after 7 weeks of mental training

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.

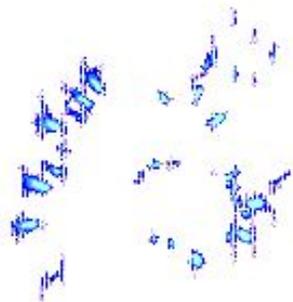
B - background level. ** - $p < 0.01$ [between B and 7w]. * - $p < 0.05$ [between B and 10w].

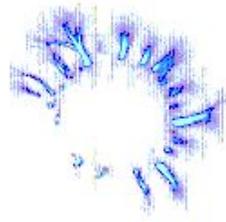


A1



A2





S = 11647 Fr = 20

B1

S = 13819 Fr = 10

S = 4101 Fr = 16

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.

P₁ – P₃-patterns of the energy emission. P₂ – pattern during the active imagination in mental room.

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