



REPORT

on the results of neurophysiological studies of the effect of LIFETUNE Personal Protection, conducted on a group of 40-60 year-olds.

Research, data processing, and report preparation were carried out by  
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## LIST OF ABBREVIATIONS:

BEA - bioelectric activity  
EEG - electroencephalogram  
CNS - central nervous system  
AbsPwr - absolute power ( $\mu\text{V}^2$ )  
RPV - relative power value or index (%)  
DFV - value of the dominant frequencies (Hz)  
WAF - weighted average frequency (Hz)  
FAC - frequency asymmetry coefficient (%)  
AAC - absolute asymmetry coefficient (%)

The year 2020 rocked the world like no other in recent decades. Amid the unprecedented instability seen in all areas of social, political, economic, environmental, and other spheres of life, several fundamental questions have arisen, even questions unrelated to the current situation, but which require an immediate response and the identification of objectives on whose achievement the life of future generations depends. The use of energy-intensive linear technologies has led humanity to a mass of negative consequences, including the destruction of our ecosystem and shortcomings in a complex system of reactions aimed at maintaining the dynamic constancy (homeostasis) of the body's internal environment, the revival of long-forgotten "conquered" infectious diseases, as well as the emergence of infectious mutants that have no analogues. The current situation dictates the need to create new resource-conserving nature-like technologies both in hardware and in medicine.

From the perspective of traditional oriental medicine, true health is the body's ability to quickly adapt to changing environmental conditions, which allows the body to achieve a state of "complete physical, mental and social well-being (WHO)". From the perspective of a physical classification, a biological organism is a multicomponent open non-equilibrium dissipative fractally-organized nonlinear self-organizing system. An organism exists as an organizational and functionally holistic entity. The most important goal of a biological system as a unified structure is survival in a changing environment. This implies continuously renewable coordination of the interaction of coexisting system components. This is adaptive self-regulation. An organism's state and changes in its state are indicated by various biorhythms, as well as features of how their frequency and time parameters reorganize under the influence of modulation. Dynamic formation of a functional organization of state and biorhythms is one of biosystems' main mechanisms for adapting to the environment. The variability of the duration and sequence of these oscillations allows for the adjustment and readjustment of active functional connections, depending on the needs of any organ or system as a whole. In other words, self-regulation is based on the exchange of information: the perception, transmission, and construction of information control signals. The dynamically organized structure of biological signals is a collection of neurodynamic codes that manifest a biological entity's state pattern, the possibilities and direction of state change under the influence of external influences. In nonlinear biological systems, self-regulation happens because when the characteristics of [individual links of the system](#) change, the nature of their attunement also changes depending on the values of the [output signal](#) of the system as a whole or any internal control signals. Resonance is an inherent property of biological systems. The reorganization process is maintained by the same control signals that originally existed in the body, by means of "multifrequency parallel resonant capture", with subsequent synchronization and establishment of a new structure of the order in the system or a newly formed long-term memory matrix (Zaguskin S.L., 2004; Bekhtereva N.P. et al., 1985). The final result depends on the accuracy of the choice of the set of components of the applied influence in accordance with a preliminary assessment of the directions of the system's further development. A targeted influence on this process is possible only when accounting for many factors that apply to biosystems due to natural nonlinear laws and phenomena. The system is most sensitive to signals that are congruent with its own signals. For nonlinear systems, it is preferable to have a nonlinear natural or nature-like influence algorithm that, in accordance with the characteristics of the available state system, organizes the

formation of the structural and dynamic interaction of the regulatory systems initially inherent in the genome in order to achieve a goal: the formation of optimal system state and internal control signals necessary for a specific moment of vital activity. In other words, the current situation requires bringing in innovative approaches to the creation of modern physiotherapy devices for prevention and restoration.

## LIFETUNE

Personal Protection is a product with a high-tech design created using Aires technology. LIFETUNE Personal Protection (LPP) is a device that maximizes the mutual correspondence of the parameters of external electromagnetic fields and the body's own radiation, coordinating their reciprocal exchange interaction. Thereby, LIFETUNE Personal Protection acts as an adaptive mediator between the environment and the wearer, creating a unified biotechnical system (Akhutin et al., 1981).

The PURPOSE of this study is to assess the effectiveness and safety of using the device under study.

To achieve this goal, it was necessary to complete a number of tasks:

- select test subjects' EEG indicators and state of health that allow an objective assessment of the effectiveness of the device used;
- determine the direction of structural and dynamic changes in the selected indicators over the course of the study;
- evaluate changes in the patient's EEG pattern and state in terms of the safety of using the tested device.

## RESEARCH METHODOLOGY, CONTINGENT OF PARTICIPANTS

The tested device (LPP) was placed on the surface of skin in the region of the solar plexus (Celiac plexus). This application location was selected for its special features. The solar plexus is a collection of large nerve nodes and parasympathetic and sympathetic nerve fibers, which makes it one of the most sensitive parts of the body. Application time - 15 minutes. 18 people voluntarily participated in the study, having provided informed consent: 8 men and 10 women, aged 40-60 years without unhealthy habits and or active health complaints (hereinafter, "the subjects"). The list of subjects is presented in the APPENDIX. To ensure the objectivity of the research results, an EEG (recording of the brain's bioelectrical activity - BEA) was recorded during the entire application time. Changes in BEA parameters reflect changes in the level of functional state the body's central control link — the central nervous system (CNS). The change in the subjects' well-being was assessed through self-reporting, pulse rate, and saturation. The recording script is given in the APPENDIX. During the recording, the subjects were in a darkened, sound-dampened and light-dampened room, sitting in a chair in a relaxed state with closed eyes. Recording and processing was carried out using the electroencephalograph-analyzer EEGA-21/26 Encephalan-131-03. The electrodes were arranged according to the 10x20 scheme except for the central ones. The following frontal electrodes included in this treatment: F3 (left), F4 (right), parietal: P3 (left) and P4 (right). The obtained results were processed according to the sign test, which makes

it possible to assess the reliability of the primary hypothesis regarding the direction of changes in the level of the functional state of the central nervous system and the body as a whole.

## RESULTS AND DISCUSSION.

The resulting recordings of baseline BEA do not contain any deviations from the age norm. No pathological rhythms and signs were identified. In 11 of 18 subjects, sinusoidal alpha activity was dominant, the spindle-shaped modulation of alpha wave amplitude was distorted by slow-wave activity with an emphasis in the anterior regions, zonal differences were preserved, and bilateral asymmetry in the amplitude of alpha waves was recorded at  $D \geq S$ . All the test subjects showed alpha activity instability at a frequency of 9.5-11 k\\$, an amplitude from 40 to 80  $\mu\text{V}$  within one recording, and an index of 50-70%. This description indicates the instability of the level of the functional state and moderate dystrophic changes with an emphasis in the anterior leads.

A visual assessment of the EEG pattern dynamics showed that applying the LPP consistently changes the level of the functional state of the central nervous system is similar to the state during meditation, which manifests itself in an increase in slow-wave rhythm, mainly in the anterior leads, in a synchronous change in the power of alpha activity in all leads at  $S \geq D$ , and in smoothing of the bilateral asymmetry of BEA.

When statistically processing the obtained results, the choice fell on an assessment of changes in the alpha range. The alpha range is most sensitive to stressors, including the effects of electromagnetic fields (Abdulkerimov S.A. et al., 2003; Bazanova O.M., 2009; Iznak A.F., 2011; Lebedeva N.N. et al., 2010; Zenkov L.R., 2018; Croff R.J., 2010). THIS IS THE REASON WHY TEST SUBJECTS who had low alpha activity in the baseline recording and whose alpha activity index did not reach 25% even with application of the LPP WERE REMOVED FROM PROCESSING. The research results are presented in Tables 1-4 (see the APPENDIX). It should be noted that, despite the small size of the group and the large scatter of individual indicators, the trend noted during visual assessment turned out to be reliable. A consistent increase in the power ( $p \leq 0.05$ ) of alpha activity not only in the frontal, but also in the occipital leads turned out to be significant based on average indicators, which cannot be considered powerful due to the non-standard nature of the group. The averaged absolute value of the power in the frontal leads to the left increased from 25.75  $\mu\text{V}^2$  before 36.75  $\mu\text{V}^2$  after 12 minutes of application of the PQ ( $P \leq 0.05$ ), to the right - from 28.59  $\mu\text{V}^2$  to 31.71  $\mu\text{V}^2$  ( $P \leq 0.05$ ), the index - from 29.68% to 34.38% on the left (not significant) and 28.52% to 34.21% (not significant). The average frequency increase from 9.88 Hz to 10.17 Hz on the left can be noted as a trend, and from 9.85 Hz to 10.02 Hz on the right ( $p \geq 0.05$ ), i.e. not significant, which indicates that an increase in the power of alpha activity is associated with changes in amplitude, manifesting suppression of the activity source. Typically, activation of the frontal region on the left is associated with increased anxiety when assessing emotional state. Changes in the parietal leads are also more pronounced on the left. In the parietal lead on the left, the absolute power value decreased from 50.49  $\mu\text{V}^2$  to 48.81  $\mu\text{V}^2$ . However, here we exclusively observe a trend towards insignificant changes in the absolute power value without changing the relative value and average frequency. On the right, the changes in the analyzed mean values also do not reach the confidence level. From the point of view of theoretical neurophysiology,

suppression of the activity of the source, possibly cortical, mainly in the left hemisphere, frees the right hemisphere from left-sided dominance, which performs sequential step-by-step information processing. This assumption is supported by the EEG recordings and figures given in the APPENDIX. When the numerical indicators in the dynamics of application of the LPP are unchanged, there is a smoothing of bilateral asymmetry, a transformation of the structure of order toward consistency and synchronization of the activity of the cortical-subcortical regulatory formations of both hemispheres of the brain. This indicates not only the weakening of the initially increased anxiety inherent in this age group, but also the expansion of the use of brain reserves: holistic and, at the same time, detailed processing of signals coming from the real environment. However, the observed changes after a 13-minute application of the LIFETUNE Personal Protection device turned out to be short-lived, and the EEG indicators returned to the baseline within 2-5 minutes. Perhaps this is related to the group's age characteristics, while more prolonged or repeated application of the LIFETUNE Personal Protection device will induce more permanent changes.

## CONCLUSIONS

1. AbsPwr stands for the absolute value of power. The alpha range turned out to be sensitive in assessing the effectiveness of the application of the LIFETUNE Personal Protection device.
2. The observed increase in the absolute value of power in the alpha range due to the increase in alpha wave amplitudes at  $S \geq D$  after application of the LIFETUNE Personal Protection device indicates a moderate deactivation of the anterior parts of the central nervous system and smoothing of the baseline asymmetry. This helps to reduce the level of anxiety and expand brain reserves by increasing the role of the right hemisphere in the holistic processing of signals from the real environment.
3. According to the test subjects' reports, heart rate and saturation indicators were not negatively affected during application of the LIFETUNE Personal Protection device.

Research, data processing, and report preparation were carried out by  
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## APPENDIX

Recording script (automatic):

1. Baseline recording – 120 s.
2. Open eyes - 15 s.
3. Close eyes - 15 s.
4. Application - 780 s. (LIFETUNE Personal Protection)
5. After application - 120 s.

List of volunteers who took part in the research:

1. B.V.- 7. K.A. 12. N.T.- 17. Ch.
2. B.T.- 8. K.K.- 13. P.E.- 18. Sh.T.
3. B.V. 9. K.O. 14. S.A.- Total - 22 experiments.
4. B.G. 10. M.Yu. 15. S.I.-
5. V.N.+ 11. M.M.+ 16. S.N.+
6. V.D.

(-) – excluded from processing; (+) - repeat experiment.

*Table 1*

FULL PROCESSING SEPTEMBER 2020														
BASELINE														
Nº	Full name	F3						F4						
		AbsPwr	RPV	DFV	WAF	FAC	AAC	AbsPwr	RPV	DFV	WAF	FAC	AAC	
1	B. V.	42,23	36,84	9,28	9,73	19,39	40,42	48,02	50,29	9,28	9,57	19,39	40,42	
2	B. G.	16,95	30,82	10,25	10,02	16,48	-54,55	37,31	48,75	10,01	9,91	16,48	-54,55	
3	V. N.	5,59	12,59	9,28	9,36	22,53	-4,61	5,86	12,76	9,28	9,81	22,53	-4,61	
4	V. D.	4,37	7,99	10,99	10,58	21,99	-10,53	37,81	11,62	10,09	10,73	21,99	-10,53	
5	K. A.	34,52	46,24	9,77	9,74	44,24	51,85	12,37	21,27	9,77	9,87	44,27	51,85	
6	K. O.	42,69	40,99	8,79	9,88	12,17	-3,25	44,13	38,38	8,79	9,81	12,17	-3,25	
7	M. S.	28,81	34,91	9,52	10,52	27,46	-22,64	37,24	43,36	9,25	10,25	27,46	-22,64	
8	M.	13,52	13,31	10,28	10,01	17,28	30,69	9,38	10,76	10,01	10,14	17,28	30,69	
9	S. N.	16,89	31,01	9,77	9,96	13,57	25,06	10,46	8,85	10,99	10,62	12,47	50,85	
10	Ch. I.	18,75	30,95	8,06	9,77	26,78	-13,96	16,57	31,63	9,77	9,96	13,57	25,06	
11	Sh. T.	21,21	26,83	10,51	10,42	12,47	50,85	20,46	28,85	10,99	10,06	12,47	50,85	
12	13 n=11													
13	14													
14	15													
15	MEAN VALUE	25,75	29,68	9,88	9,97	21,14	28,01	28,59	28,52	9,85	10,03	21,14	28,01	
16	DEVIATION													

*Notation used here and below:*

*BASELINE – Baseline recording; DEFENDER -LIFETUNE Personal Protection;*

*F3 - Left frontal lead; F4 - Right frontal lead; P3 - Left parietal lead;*

*P4 - Right parietal lead*

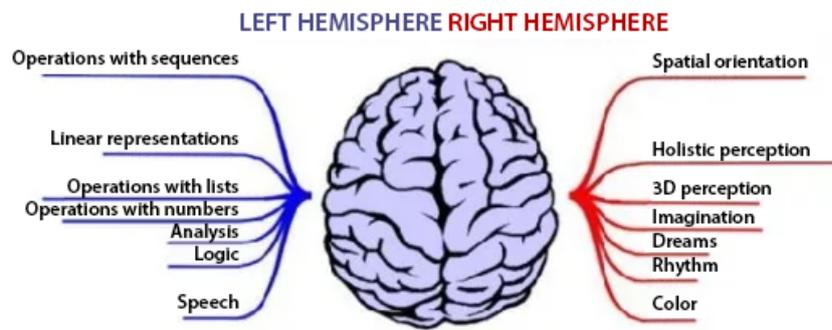


## CHAPTER 1. THEORETICAL FEATURES OF THE PSYCHE.

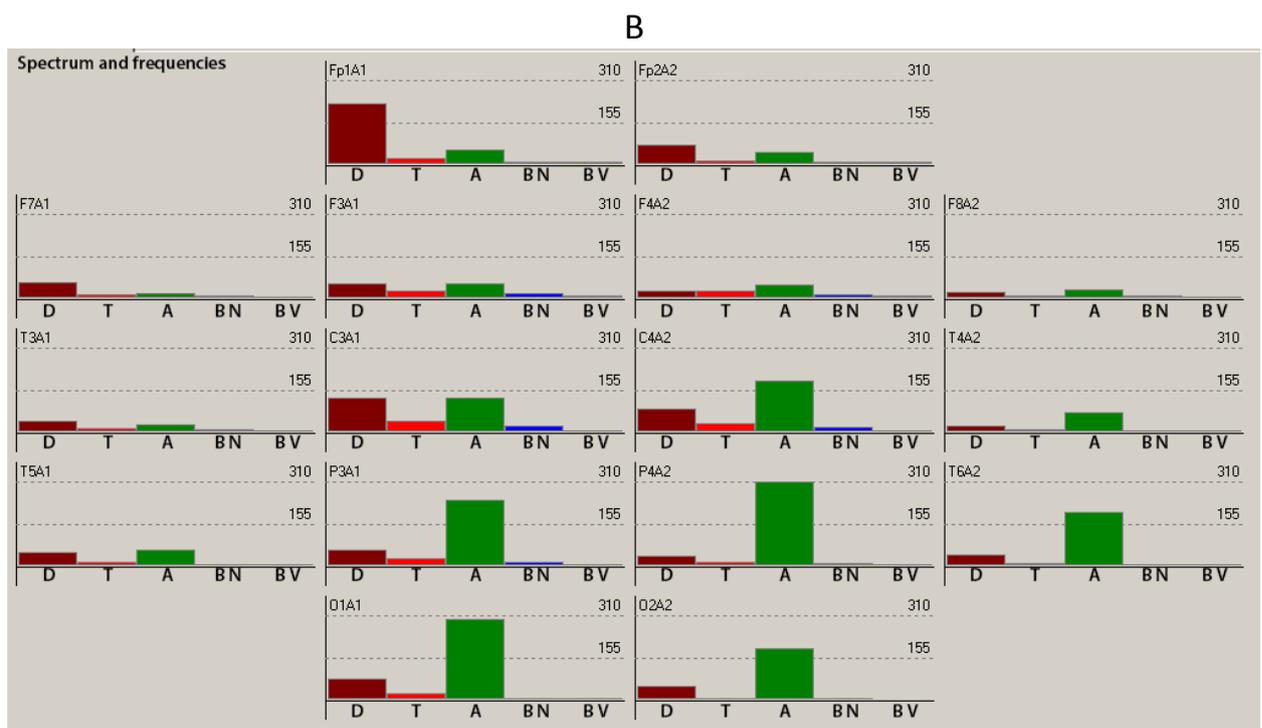
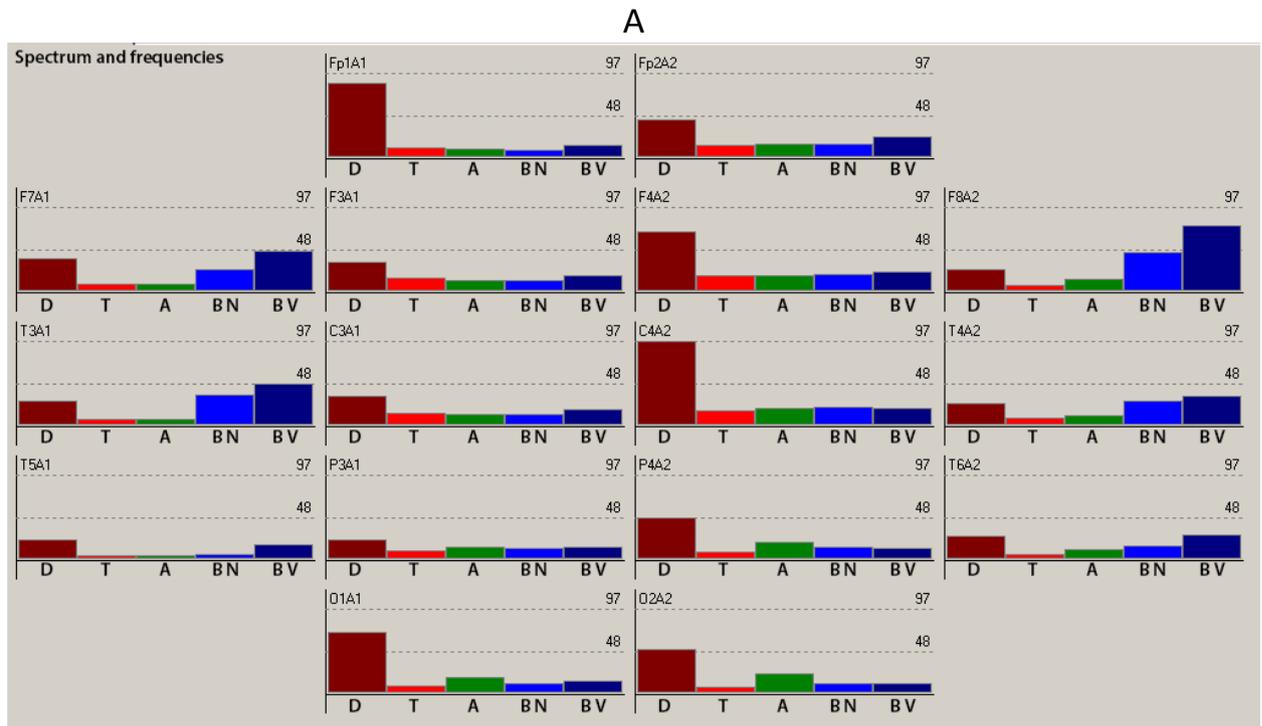
Solution of task 1. Solution of task 2.

The human brain is divided into two hemispheres: left and right. The properties of the functions of the psyche largely depend on the activity of one or another hemisphere. Thus, when the activity of the left hemisphere predominates in a person, the individual has a wide vocabulary, purposefulness, and high activity. If the right hemisphere dominates, then the person is slow and remains calm, is drawn to certain activities, and a sophisticated ability to feel.

This is interconnected with the activity of the blocks into which the cerebral cortex is subdivided.



*Figure from a book: Features of the left and right hemispheres of the brain*



*Fig. 1. Here and below: distribution of the absolute value of the power of rhythms by leads: A - before application of the LIFETUNE Personal Protection (LPP) device; after application of the QP; even leads on the right (A2), odd leads on the left (A2); F - frontal leads, T - temporal, S - central, P - parietal, O - occipital; D - delta, T - theta, A - alpha, BN - beta = 14-24 k/s, BV - beta = 25-35k/s*