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S.A. LYTAEV

**PSYCHOPHYSIOLOGY
OF STRESS**

Saint Petersburg

Ministry
of health
Russian Federation



Saint Petersburg
State
Pediatric
Medical
University

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PSYCHOPHYSIOLOGY OF STRESS

Educational and
methodological manual

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The educational and methodological manual “Psychophysiology of Stress” was compiled in accordance with the federal state educational standard of higher professional education of the third generation. The manual contains a lecture course program, seminar lesson plans, abstract topics, a checklist, a minimum terminology and a number of psychological methods for assessing (diagnosis) mental health – neuropsychic instability and negative mental states. The program is based on classical and modern concepts in the field of psychophysiology of stress and can be useful for students and graduate students of medical universities. The manual is intended for 2nd year students of the medical and pediatric faculties of the St. Petersburg State Pediatric Medical University, studying in an intermediary language (english).

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GENERAL INFORMATION ABOUT THE ACADEMIC DISCIPLINE

1. Target setting

Students mastering the psychophysiological knowledge and skills necessary for effective professional work, psychophysiological support for activities under stress.

2. Tasks

During the lessons you need to study:

- factors and activities in extreme conditions;
- mechanisms of adaptation to extreme operating conditions;
- habitability and production conditions;
- methods of psychodiagnostics of functional states;
- methods of psychocorrection of functional states.

3. The place of discipline in graduate professional training

The course “Psychophysiology of Stress” is one of the important stages in the professional training of a doctor; it allows you to form general ideas about the extreme conditions in which a person finds himself, about the mechanisms of adaptation to these conditions, about changing psychodynamics, its diagnosis and correction.

4. Requirements for the level of mastery of the content of the academic discipline

During classes, students must know and learn to diagnose the psychological characteristics of people working in extreme conditions and master methods of group and individual psychological correction. During the course, students write an essay (referat) on a chosen topic. The course ends with a test (exam).

II. Contents of the academic discipline

1. Sections, topics and summary

- 1.1. Extreme operating conditions;
- 1.2. Psychology and psychophysiology of stress;
- 1.3. Production conditions, habitability, assessment of functional state;
- 1.4. Methods for assessing and diagnosing professional conditions of a person;
- 1.5. The function of breathing in ensuring the vital functions of the body, the influence of extreme conditions;
- 1.6. Hyper- and hypobaria and their effects on humans;
- 1.7. Human activity in high mountains;
- 1.8. Post-traumatic stress disorders;
- 1.9. Specific functional states – fatigue, hypokinesia, monotony, psycho-emotional tension.
- 1.10. Acceleration and vibration;
- 1.11. Person in conditions of weightlessness;
- 1.12. The action of sound, light and other types of radiation.

- 1.13. Professional activity in high latitudes (low temperatures);
- 1.14. Professional activity in low latitudes (high temperatures);
- 1.15. Psychophysiology of pain.

2. Topics and their summary

SECTION 1. EXTREME OPERATING CONDITIONS

Topic 1. Natural, man-made (technical) and biological factors that create special and extreme operating conditions. Types of activities accompanied by special and extreme conditions.

Topic 2. Functional states and functional systems. Classification, levels, components. Factors in the dynamics of functional states: labor process, internal factors.

Topic 3. Human adaptation to operating conditions. Physiological mechanisms and phases. Structural trace of adaptation. Professional and socio-psychological adaptation, periods.

SECTION 2. PSYCHOLOGY AND PSYCHOPHYSIOLOGY OF STRESS

Topic 4. Psychology and psychophysiology of emotions. Functions and components of emotions. Theories of emotions (James-Lange, Freud, Cannon-Bard, Papes). Post-traumatic stress disorders (PTSD), manifestations, classification.

Topic 5. Psycho-emotional stress (PES). Classification. Syndromes. Signs of PES. Life stress, professional stress. Stress in combat conditions.

Topic 6. Correction of functional states. Rationale. Means and methods of correction: physiological, vitamin therapy, pharmacological, psychological, psychophysiological. Schemes and indications for the use of psychological correction.

SECTION 3. PRODUCTION CONDITIONS, HABITABILITY, ASSESSMENT OF FUNCTIONAL STATE

Topic 7. Production conditions, habitability, work and rest regimes. Categories of production conditions. Maximum permissible conditions and maximum permissible concentrations.

Topic 8. Methods for assessing the functional state and performance: physiological (indicators of the activity of the central nervous system, cardiovascular, respiratory systems, metabolism and energy), psychophysiological (indicators of the activity of the internal nervous system, sensory systems – visual, auditory, motor, etc.), psychological (social analysis of personality, personal properties, motivation, emotional stability, interpersonal relationships, study of group activities), performance (speed, accuracy, accuracy). Mathematical methods for assessing physical and mental work.

Topic 9. Specific functional states (monotonia, fatigue, hypokinesia, neuro-emotional tension) and their assessment.

SEMINAR LESSON PLAN No. 1

1. Characteristics of extreme factors according to the criteria of adaptation, energy consumption, degree of extremeness, spatiotemporal characteristics, summation.
2. Classification of extreme factors.
3. Functional states of a person, classification.
4. Functional systems, diagram, classification.
5. Classification of activities in extreme conditions.
6. Human adaptation to extreme operating conditions. Physiological mechanisms (structural trace of adaptation), stages.
7. Professional and socio-psychological adaptation, stages.
8. Psychology and psychophysiology of emotions. Functions and components of emotions. Theories of emotions (James-Lange, Freud, Cannon-Bard, Papes).
9. Post-traumatic stress reactions (PTSD), manifestations, classification.
10. Psycho-emotional stress (PES). Classification. Syndromes. Signs of PES. Life stress, professional stress. Stress in combat conditions.
11. Correction of functional states. Rationale. Means and methods of correction: physiological, vitamin therapy, pharmacological, psychological, psychophysiological. Schemes and indications for the use of psychological correction.
12. Production conditions, habitability, work and rest regimes. Categories of production conditions. Maximum permissible conditions and maximum permissible concentrations.
13. Methods for assessing the functional state and performance: physiological, psychophysiological, sensory systems, psychological, performance. Mathematical methods for assessing physical and mental work.
14. Specific functional states (monotony, fatigue, hypokinesia, neuro-emotional tension) and their assessment.

SECTION 4. FUNCTION OF BREATHING IN PROVISION LIFE ACTIVITIES OF THE ORGANISM, INFLUENCE EXTREME CONDITIONS

Topic 10. Gas composition of air. The influence of the percentage of gases in the inhaled air on the human condition at normal atmospheric pressure. Characteristics of the air exchange system:

Inhaled air		Arterial blood	
	Alveoli of the lungs		Body tissues
Exhaled air		Deoxygenated blood	

Topic 11. Classification of hypoxia. Impurities of harmful and toxic gases. Features of the action of carbon monoxide.

Topic 12. Hyper- and hypobaria and its effects on humans. Activities that involve being under high blood pressure. Equipment for scuba diving. The concept of absolute and excess atmospheric pressure. Features of the impact on humans of high pressure air and water environments. Mechanical effect of increased atmospheric pressure. Measures to prevent adverse and traumatic effects.

Topic 13. The effect of high pressure on respiratory function. The concept of partial pressure. Changes in the biochemical action of gases in the respiratory mixture under pressure and the associated change in the condition and performance of a person. Features of breathing mixtures for breathing under high pressure. The concept of compression, decompression, recompression. “Decompression sickness,” a discovery by Sorbonne professor Paul Baer in 1878. Topic

Topic 14. Human stay at various altitudes above sea level. The influence of low atmospheric pressure on human condition and performance. Limits of the functions of the respiratory, hematopoietic and cardiovascular systems.

Topic 15. Possibilities of adaptation. Measures to prevent and protect humans from adverse (damaging) factors of hypobaric conditions.

SECTION 6. THERMAL FACTORS OF THE EXTERNAL ENVIRONMENT AND THERMAL REGULATION OF THE HUMAN BODY

Topic 16. The human heat production system, the concept of basic energy expenditure and basic metabolism. The thermoregulatory system of the human body. Body temperature, possible fluctuations. The concept of calorimetry, its types. Calculation methods for determining heat production. Heat exchange, heat balance equation. Dependence of the components of the heat balance equation on various environmental factors and activities. Calorie content of food and difficulty of work. Hyperthermia in natural and industrial conditions. General and local overheating. Consequences of overstrain of the sweating function. Work in high and low latitudes. Features of the effects of thermal radiation. Hypothermia in natural and industrial conditions. Impact on performance. General and local hypothermia. Immersion hypothermia. The concept of “thermal comfort” and the possibility of ensuring it.

SECTION 7. SPECIFIC EFFECTS ON HUMANS

Topic 17. Accelerations and vibrations in industrial conditions and in everyday life. Types of accelerations. Overload as a result of acceleration. The effect of acceleration depending on the direction to the longitudinal axis of the body. The mechanism of action of accelerations on the body. Limits of tolerance. Shock accelerations. Protective measures. Vibrations. Sources of vibration in industrial environments. Vibration parameters that determine the impact effect. Local and general effects. The emergence of a resonant frequency of individual organs. Protection from the harmful effects of vibrations. Shaking and rolling are types of vibrations.

Topic 18. Man in conditions of weightlessness. Adaptation to the conditions of a short-term (up to 1 day) stay in space in a spacecraft. Adaptation to the conditions of long-term space flight. Changes in the basic psychophysiological systems of the body under conditions of weightlessness. Impact of various factors at different stages of flight. The importance of organizing the living and working space of an astronaut. Interpersonal interactions of astronauts during flight. Key points in preparing the body for its return to earth.

Topic 19. Extreme conditions associated with the action of sound, light and some other types of radiation. Acoustic environment, sound assessment characteristics.

Extreme conditions associated with activities in conditions of high noise, weak and strong sound signals. The concept of pain threshold. General effect of noise. Protective measures. Illumination of production premises. Extreme conditions caused by brightness, illumination and uneven brightness in the field of view. The concept of absolutely blinding brightness. Features of light and dark adaptation. Ultraviolet radiation in natural and industrial conditions, exposure, protective measures. Electromagnetic fields SW, UHF, microwave. Impact on the human body, protective measures. Radioactive effects on humans. "Radiation sickness", protection from radioactive exposure.

SEMINAR LESSON PLAN No. 2

1. Environmental psychology. Directions of research of foreign and domestic psychologists.
2. Characteristics of the human respiratory system. Composition of atmospheric air. Dynamic equilibrium of gases.
3. Types of activities and labor factors under high pressure conditions.
4. Classification of hypoxias and their characteristics.
5. The effect of inert gases on the functional state of a person (nitrogen, argon, krypton, xenon, helium, hydrogen, neon).
6. Nervous syndrome of high pressure.
7. Oxygen poisoning. Pulmonary and convulsive forms.
8. Occupational diseases in persons working under high pressure.
9. Decompression sickness.
10. Human stay at various altitudes above sea level.
11. Adaptive reactions of migrants in high altitude conditions.
12. The importance of energy consumption in extreme conditions. Basic concepts.
13. Basic metabolism, its meaning, terms of definition and factors influencing it.
14. Thermoregulation. Thermogenesis, heat transfer, environmental factors.
15. Adaptive reactions of migrants in high latitudes.
16. Adaptive reactions of migrants at low latitudes.
17. Accelerations and vibrations are factors of extreme conditions.
18. Factors of air and space flights.
19. Extreme conditions associated with high noise, weak and strong sound signals.

SUBJECTS OF ABSTRACTS ON THE COURSE "PSYCHPHYSIOLOGY OF STRESS AND EXTREME CONDITIONS"

1. Psychological and psychophysiological diagnostics of human conditions in extreme conditions.
2. Assessment of performance in extreme conditions.
3. Stress in combat conditions. Psychological and professional adaptation.
4. Post-traumatic stress disorders (PTSD).
5. Functional states.
6. The importance of functional and physiological systems in ensuring resistance to stress.

7. Professional and socio-psychological adaptation in various categories of specialists.
8. Psychological and psychophysiological methods for correcting functional states.
9. A person's stay at various altitudes above sea level (mechanisms, professional and psychological adaptation).
10. Hyper- and hypobaria (impact on humans, adaptation mechanisms).
11. Hypothermia and hyperthermia in natural and industrial conditions. General and local overheating (impact on humans, adaptation mechanisms).
12. Accelerations and vibrations in industrial conditions and in everyday life (impact on humans, adaptation mechanisms).
13. Features of mental adaptation to confined spaces.
14. Man in zero gravity. Adaptation to the conditions of short-term and long-term stay in space in a spacecraft.
15. Organization of the astronaut's living and working space. Interpersonal interactions of astronauts during flight.
16. Organization of living and working space in confined spaces. Interpersonal interactions. The role of leaders.
17. Extreme conditions associated with the effects of sound (impact on humans, adaptation mechanisms).
18. Extreme conditions associated with the action of light (impact on humans, adaptation mechanisms).
19. Extreme conditions associated with the action of electromagnetic fields (UHF, microwave) (impact on humans, adaptation mechanisms).
20. Radioactive effects on humans. "Radiation sickness", protection from radioactive exposure.
21. Methods for correcting a person's functional state under stress.
22. Methods for assessing the functional state of a person – sensory systems, central nervous system, cardiovascular system, respiratory system, movement system, skin system.
23. Professional human activity in high latitudes (low temperatures).
24. Professional human activity in low latitudes (high temperatures).
25. Psychophysiology of pain.

HUMAN PERFORMANCE IN EXTREME ENVIRONMENTS CONDITIONS AND METHODS OF ITS ASSESSMENT

The most laconic and most capacious formulation in terms of content reads “working capacity represents the maximum amount of work that a person is able to perform” (Lehmann H., 1967). For a specific work activity, a specific person, in specific conditions, it is advisable to talk about professional performance. The importance of the price of labor productivity is also obvious. The physiological cost of work is the amount of expenditure of the body's functional resources necessary to perform a given type of work, which is manifested in the functional stress of the body during work (working stress). Not only motor and autonomic systems, but also mental and sensory systems are involved in ensuring labor activity. Therefore, we

consider the term “cost of behavioral reactions” to be more adequate. On this basis, professional performance represents the maximum possible efficiency of a specialist’s activity, determined by the functional state of his body and the cost of behavioral reactions.

Monitoring the functional state (FS) of a person in the context of professional activity is traditionally carried out in three main forms:

- pre-launch control (in determining the possibility of allowing specialists to work and in order to predict the reliability of their activities);
- operational control (for the purpose of diagnosing the real characteristics of the FS and the performance of a specialist in the process of work);
- dynamic control (after completion of work in order to study the characteristics of the recovery period).

1. Principles and criteria for assessing functional state

Adequacy. This principle requires the establishment of a specific value for the cost of behavioral reactions, the effectiveness of activities by comparing the characteristics of the FS, direct indicators of performance and the parameters of the proper FS. The cost of a specialist’s behavioral reactions can be presented as the ratio of the integral assessment of changes in psychological, autonomic and sensory parameters (compared to the initial level) to the results of activity. The adequacy of shifts during the period of loading is determined by the relationship of the existing and proper characteristics of the FS with the physiological norm.

Complexity – taking into account all factors that determine the dynamics of the FS.

Multifunctional study of the states of specialists, taking into account a wide range of methods – the possibility of obtaining a summary assessment for the totality of the studied indicators.

Specificity is a limitation for multifunctional study – identifying the main features and evaluation criteria for a specific type of activity.

Minimization is a rational limitation of the number of indicators under study based on the comparative information content of individual methods and indicators.

Dynamism – registration of parameters during the dynamics of a work shift (cycle, watch) and after it during the rest process.

Reactivity is an assessment of the adequacy of the body’s response to additional load, taking into account the influence of activity factors (forced posture, physical inactivity, monotony, etc.).

The subjective state of a person and his individual characteristics.

The hidden capabilities of the body are a system of biochemical, physiological and mental reserves.

2. Methods for assessing functional state and performance

In practice, assessing professional performance, two groups of indicators are used – direct and indirect. Depending on the nature of the profession, direct indicators are shooting accuracy, the number of signals transmitted per unit of time, the speed and accuracy of performing combat techniques and actions, etc. Direct indicators of performance on the control panel are obtained from data from hardware-experimental

techniques (speed, error-freeness, accuracy, etc.). Direct indicators of performance are the standards existing in production that regulate the professional activities of specialists. However, it should be remembered that successful fulfillment of standards is often ensured by emotional and volitional tension and does not always reflect the actual level of performance.

Determining direct performance indicators is quite labor-intensive and not always possible. It is especially difficult to carry out such an assessment in people engaged in mental work. In these cases, it is more appropriate to use data from indirect indicators.

The indicators of the systems most responsible for a specific job serve as indirect indicators. For predominantly physical activity, this may be the PWC170 sample indicator, maximum oxygen consumption, oxygen debt, etc. For predominantly mental activity, indicators of short-term and long-term memory, sensory system capacity, short psychological tests to assess neuro-emotional stress, etc.

Comparison of direct and indirect indicators for the purpose of subsequent assessment of changes in performance represents the greatest methodological difficulty. A military specialist can perform excellent work assessed by direct indicators, but its implementation may be accompanied by very noticeable shifts in indirect indicators. The cost of behavioral reactions of such work will be excessively high and, therefore, it will be unjustified to talk about a high level of performance.

When assessing the results of experimental studies, two methodological approaches are possible: statistical and game. The game approach is advisable if there are simulators and installations that allow you to copy or simulate specific work at the control panel. Depending on the degree of negative consequences of each mistake made, a certain price for erroneous actions is established. With a statistical approach, all errors, failures, and incorrect actions are assigned the same price.

3. Specific functional states (FS)

These include extensive physical activity, intense physical activity, monotonous work, fatigue, hypokinesia, and neuro-emotional tension.

Extensive FS are qualitatively heterogeneous classes of conditions that have different neurophysiological basis and psychological content: fatigue, monotony, emotional tension, stress, etc. The qualitative differences between these states do not allow them to be ordered within a single scale.

Intense FS are different levels of certain conditions for which similar ordering according to the degree of severity of physiological manifestations is possible: various degrees of fatigue, neuro-emotional tension. Systematization of a certain set of intense states is carried out within the framework of activation theory, which establishes a hypothetical scale of wakefulness levels “sleep – wakefulness – selective attention – neuro-emotional tension – psycho-emotional stress – pathological stress”, covering a wide range of behavioral reactions in accordance with different levels of activity physiological systems.

Monotonous work is characterized by monotonous actions or continuous and sustained concentration of attention. The body's reaction (monotonia) is characterized by specific changes in the mental state, a decrease in the level of functional mobility

of sensory systems and changes in autonomic functions as a result of the predominance of inhibitory processes in the cerebral cortex. Manifestations of monotony are slow EEG waves, decreased evoked potentials amplitude, increased galvanic skin reaction (GSR), decreased lability of the visual system, weakened memory functions, attention, decreased heart rate, decreased blood pressure, decreased dispersion of daily autonomic fluctuations, decreased activity of stress hormonal systems (catecholamines and corticosteroids).

Fatigue. Three groups of indicators necessary for an objective assessment of the state of fatigue are distinguished:

- *nonspecific*, reflecting changes in the level of vegetative-energy supply to the working body (the state of the circulatory, respiratory, thermoregulation, metabolism and energy systems);
- *specific*, characterizing a decrease in the productivity of mental activity and activity of precisely those functional systems that are directly involved in the implementation of the labor process and determine its effectiveness (changes in GNI, psychophysiological functions, indicators of the quality of activity);
- *subjective*, characterizing changes in the emotional sphere of a person in the process of work (various sensations of discomfort, changes in mood and motivation, in aggregate, form the basis of a subjective assessment of the state).

Depending on the level of study (subcellular structures, individual neurons, neural circuits, functional structures or systems), mental fatigue is divided into sensory, perceptual, informational and emotional.

Sensory fatigue develops as a result of prolonged or intense exposure to a stimulus (strong noise, light), in which primary changes occur in the sensory systems – from receptors to the cerebral cortex.

Perceptual fatigue is localized primarily in the cortical representation of the sensory system and is associated with the difficulty of detecting a signal in conditions of interference, lack of time, low intensity, and difficulty of differentiation.

Information fatigue develops due to insufficient information or information overload, when the greatest load falls on the dynamics of intercentral relations. This consists in closing temporary connections between various structures of the central nervous system and reviving associative connections, allowing one to correctly reflect in the mind an objective picture of the external environment.

Emotional fatigue develops when the greatest changes occur in the structures of the central nervous system that form emotional states.

In real life, in the process of work, all of the listed changes are most often combined, associated with both mental and physical labor. Therefore, general fatigue is often diagnosed, while emphasizing the most pronounced disorders in the central nervous system.

General biological instability to adverse external influences, resulting from limited motor activity, is called *hypokinesia*. When assessing this condition, the choice of methods is determined by the need for research:

- volume of physical activity and severity of physical activity during work;
- intensity of gas and energy exchange;
- circulatory and respiratory systems (by reaction during physical activity);

- indicators of physical performance;
- functional state of the motor analyzer;
- indicators of protein and mineral metabolism;
- indicators of subjective state.

Neuro-emotional stress (NES), experienced during work, is acquiring in modern conditions the importance of a leading factor for a large number of military professions. As a nonspecific reaction of the body to various emotional stimuli, NES is usually expressed by characteristic shifts in the activity of the cardiovascular, endocrine and motor systems, changes in metabolic processes, behavioral and motor reactions. The volume, concentration and switching of attention, acoustic-phonetic signs of speech and logical thinking change. Diagnosis of NES conditions is based on quantitative characteristics of objective and subjective indicators:

- muscle-motor and behavioral reactions (EMG, tests);
- vegetative changes (ECG, GSR);
- changes in bioelectrical activity of the brain (EEG, evoked potentials);
- excretion of “stress hormones” (catecholamines and corticosteroids) changes in the spectral composition of the speech signal.

4. Classification of specialties in extreme conditions

A large number of specialties that provide work in extreme conditions imply the need to classify them taking into account the individual qualities of a person. This classification was created in the armed forces with the development of the fundamentals of professional selection. The classification includes seven classes of specialties:

- *organizational* (command staff, watch officers, operational duty officers). In medicine – chief doctors, clinic directors, doctors on duty.
- *sensory-gnostic* (gunners, operators, navigator). In medicine – endovideo surgeons.
- *sensory* (communications specialists, combat information posts, acoustics, dispatchers);
- *sensory-motor* (drivers, pilots). In medicine – surgeons, anesthesiologists.
- *technological* (specialists who service and repair equipment);
- *motor-volitional* (specialists operating in particularly difficult conditions – special forces);
- *motor* (arrows, calculation numbers).

Establishing the level of performance of military personnel based on psychological and physiological data is a more complex task. Currently, as a result of numerous field studies, the following levels of changes in military professional performance (MPP), or professional performance (PP) have been established. So, for example, for the ground forces, four levels of changes in the PP are designated: optimal, slightly reduced, reduced and significantly reduced.

The first level of performance is characterized by minor fluctuations (within + 5%) of the studied physiological parameters. The performance of professional techniques complies with their standard values.

The second level is characterized by a slight deterioration in the values of indirect indicators (by 2–10%). The quality of professional work is maintained. Sometimes

there may be a slight extension in the execution time of some elements of the activity algorithm.

At the third level of change in the PP, there is a deterioration in direct and indirect indicators by approximately 15–20% (for example, 16–19% for the Navy). The time required to meet professional standards increases significantly.

A further deterioration in direct and indirect indicators of PP, reaching 25% or more (for example, 19% for the Navy), corresponds to the fourth, significantly reduced level of PP.

5. Factors determining the level of performance

The factors that determine the level of performance in extreme conditions include a number of *psychological factors*:

1. *Motivation*, determined by interest in the labor process itself and its results, moral and material incentives. It is motivation that is the most effective incentive for mobilizing a person's functional reserves associated with professionally important qualities.

2. *Professional training*, strength of knowledge and skills.

3. *The nature of interpersonal relationships* in the team, the behavior of formal and informal leaders.

Changes in PP are caused by a number of influences:

1. *Exogenous* influences, including physical and chemical factors of the environment, features of work (discreteness, continuity, rhythm of shifts and shifts), features of the "man-machine" interaction (direct, indirect, remote), temporary features of work (in standby mode, in imposed pace, under time pressure), seasonal changes, chronotropic influences (desynchronization, night shift work), geophysical influences and many others.

2. *Endogenous* influences associated with age, personal characteristics of a person, his psychological capabilities, level of professional training, fitness.

3. *Biotropic* factors caused by biorhythmic disturbances, seasonal changes, sleep deprivation, influences associated with the intersection of several time zones during the redeployment of troops over significant distances.

4. *Social and psychological* factors, including the motivation of specialists, interpersonal relationships with colleagues and commanders, formal and informal leadership.

5. *Altered functional states* that arise in working conditions – hypokinesia, monotony, hypoxia, fatigue, phantom FS.

GLOSSARY – KEY DEFINITIONS AND CONCEPTS

ADAPTATION. 1. *Process.* Structural and functional adaptation of the *organism* as a whole or its individual *systems* to environmental *conditions*. Adaptation is intended for the body to maintain its *structure and functions* within normal limits in changing *environmental conditions*. In reality, adaptation occurs simultaneously at many *levels* of the organism as a whole. The basis of adaptation is *forecasting*. 2. The result of this process. Examples of this process and/or its results: adaptation of the

body to high-altitude conditions, adaptation of the *cardiorespiratory system* to physical activity, adaptation of the *visual system* to low lighting, adaptation of the *auditory system* to noise, *social adaptation*, etc.

ASTHENIA. A *condition* of the body expressed in a temporary decrease in physical and mental *capabilities as a result* of physical, mental, emotional *fatigue* or illness. The leading universal *symptom* that determines particular forms of asthenia is a deterioration in the *quality of control of the physical and mental functions* of the body. As a result, the optimal interaction between the body's systems is disrupted, which leads to a decrease in its capabilities. The best (from an ethical and economic point of view) method of treatment is to eliminate the cause of asthenia, create normal, natural conditions for the full restoration of a normal state (good nutrition, activity, rest) and use the natural protective capabilities of the body without limiting the recovery process over time.

ACTIVITY ANALYSIS. See BUSINESS STRUCTURE.

UNCONSCIOUS. Unconscious. A number of *physical and mental functions* (processes) carried out without their control by *consciousness*. In particular, many vegetative functions are carried out *unconsciously*.

ACTIVITY. Manifestation of an active, conscious attitude towards the world around us. Includes the goal, means, conditions, result and the process of activity itself. The unit of activity is an action. Methods of carrying out actions – operations. There are various forms of activity: spiritual, mental, physical, labor, non-labor, professional, non-professional, productive (creative), reproductive, etc. Labor activity can be professional and non-professional. Professional activity is an activity characteristic of a professional, a good specialist who has a sufficient minimum of knowledge, skills and abilities for the activity to be effective.

LEADER. A member of the *group* for whom she recognizes (should recognize) the right to make responsible *decisions in situations* that are significant to group.

LEADERSHIP as "a process of social influence in which a person can enlist the help and support of others in accomplishing a common and ethical task", in other words, as influential power – a relationship in which the power of one party (the "leader") promotes movement/change in others ("followers").

PERSONALITY STRUCTURE. The structure and subordination of relatively stable personal properties of an individual. In the hierarchy of these properties, the main unit that determines the manifestation of all the properties of an individual and all types of human behavior are his ideals, which form the orientation of the individual. From an ethical and pragmatic point of view, the results of an individual's behavior are determined by the following relationship (between attributes of the same and/or different levels): ideals – motives – needs – plans – programs – behavior – activities – actions.

PERSONALITY. A stable self-organizing system of socially significant traits of an individual that characterize him as an activist, as a member of a particular society or community. In contrast, the concept of individuality implies unique originality, hereditary and acquired characteristics of a given person, as opposed to the typical, general, inherent in all or most members of a society or community.

MENTAL TENSION. One of the *characteristics of the human condition*, due to the anticipation of possible unfavorable developments for the *subject*. *Indicators* of

tension – *level and stability* (sustainability) are determined by the availability of opportunities for the best organization of behavior with the maximum degree of use of forecasting. *Mental tension* has intellectual, emotional, vegetative, motor manifestations, each of which and all as a whole can be assessed quantitatively. With an increased level of tension, the subject does not lose readiness to take control of the situation. *Physical and mental processes* are organized in excess, so that through generalization and high intensity they can reliably compensate for possible damage.

NERVOUS-MENTAL STABILITY. *Mental stability.* The ability of an individual to withstand external influences that can remove a person from a state of neuropsychic balance, the ability of an individual to independently, with high speed, return to a state of mental balance. An *indicator of neuropsychic stability* is the *statistical invariance of the parameters* (mathematical expectation and dispersion) of the probability distribution of variables describing the neuropsychic state and behavior of a person. The *concept of neuropsychic instability* is often used in relation to a healthy person. The *instability* of any processes in the body is a universal sign of disease. If *instability* is not eliminated, it leads to a violation of the structural and functional integrity of the system and, ultimately, to the destruction of the system, to death. Therefore, in relation to a healthy person, it would be more correct to talk about one or another degree of decrease in neuropsychic stability (compared to the norm).

NORM. The most probable value of an *indicator* characterizing any mass *collection of random events and phenomena*. In medical psychology, a norm is a condition of mental health and/or health.

GENERAL ADAPTATION SYNDROME. *Reaction to repeated and/or prolonged exposure to stress factors* of any nature. It is characterized by a set of nonspecific and specific functional and morphological protective changes in the body, caused by adaptation to a stressor, restoration of optimal control.

PSYCHOLOGICAL CORRECTION. Providing psychological assistance to clients (patients) who need to eliminate mental disharmony, disruption of a harmonious combination, loss of the best mutual correspondence of mental functions.

PSYCHOLOGICAL CLIMATE. *Social and psychological climate of the team.* The prevailing and relatively stable spiritual atmosphere that determines the attitude of team members towards each other and towards work. The effectiveness of the team's work directly depends on the socio-psychological climate. The best socio-psychological climate is formed when the closest correspondence of objective possibilities to the subjective claims of each member of the team regarding the following aspects ("potentials") of activity is achieved: 1. *The choice of an individual method of self-organization of activity.* 2. *Updates of elements of subject or communicative aspects of activity.* 3. *Recognition of individual uniqueness.* 4. *Self-expression.* 5. *Mental tension of activity.* 6. *Certainty of objective conditions of activity.*

PSYCHOTHERAPY. *Prevention of diseases, treatment of patients or rehabilitation of patients using psychological means.* Psychotherapy can be carried out in individual or group forms. The range of its methods is diverse and allows in each case to choose a method that is adequate to the goal.

PSYCHOPHYSIOLOGICAL CORRECTION. *Providing psychophysiological assistance to clients (patients) who need to eliminate disharmony (violation of a harmonious combination, loss of the best mutual correspondence) of physical and/or spiritual and mental functions. Such disharmony is a potential and/or actual direct or indirect cause of disease. Psychophysiological correction is a sequence of the following steps: assessment of the client's physical (somatic) and mental functions, comparing them with the statistical norm (group or individual), making a diagnosis, making a prognosis, choosing means (mostly natural, non-drug) correction, using these means for continuous monitoring of the client's condition, assessment of the results of correction, and, if necessary, selection of new means of correction. Essentially, psychophysiological correction is a purposeful organization of a person's condition, management of his physical and mental state in conditions of a potential threat of loss, a tendency for the client to lose optimal self-organization (control and coordination) processes.*

PERFORMANCE. 1. *The ability of the system to perform specified functions in accordance with specified requirements. Appropriate assessment.* 2. *A person's ability to perform some kind of work in accordance with given requirements. Appropriate assessment.* Performance depends on the physical and mental state (health) of the body, the individual's training and professional qualities, as well as on the physical and social environment in which the activity is carried out. A distinction is made between actual performance, optimal performance, extreme performance, specific performance, professional performance, and general performance.

REACTIVE STATE. *Psychogeny.* A mental state that reflects the content of mental trauma. Types: *reactive depression, affective-shock reactions.*

CONDITION (FUNCTIONAL STATE). *Minimum and sufficient information about the history of the system necessary to organize processes in the system in the future.* Often in psychology and physiology the phrase "functional state" is used in relation to the body as a whole and its systems. The word "functional" means "associated with the performance of functions, with the manifestation of life activity." The body, as a system of systems, always performs certain functions, that is, its state is always associated with the manifestation of vital activity. Therefore, the definition of "functional" does not add anything new to the content of the concept of "state" and is unnecessary. The entire continuum of body states can be divided into three areas: *normal states, pathological states and extreme (borderline) states.*

SOCIAL ADAPTATION. *The interaction of an individual or a social group with the social environment, during which the requirements and expectations of the participants in the interaction are agreed upon. The most important component of social adaptation is the coordination of the subject's self-esteem, aspirations and expectations with his capabilities and with the reality of the social environment. The result of successful social adaptation is socio-psychological competence. A chain of consistent successful results of social adaptation ensures social development and leads to social maturity. Mismatch between the requirements and expectations of the social environment and the subject leads to maladaptation and deviant behavior.*

SOCIAL ATTITUDE. *State of readiness, predisposition of the subject to the conditions of social activity.* It is the result of the implementation of forecasting as a

general strategy for optimal control in living systems. *A social attitude contains emotional, semantic (cognitive) and behavioral (readiness to act) aspects of a predisposition to perceive and behave in relation to social objects and situations. In the mental structure of readiness for action, the following are distinguished: unconscious simplest attitudes; social attitudes that regulate social behavior; value orientations that determine holistic programs of social behavior.*

SOCIAL AND PSYCHOLOGICAL COMPETENCE. *An individual's ability to interact effectively with people around him.* It is based on the moral ideals of the individual, knowledge of the general laws of the psyche and the ability to understand them in other people, understanding of the hierarchy of relationships between different people, and the ability to best organize one's behavior in a social environment.

ABILITY. 1. *Ability* is a property or state that makes it possible to do something. 2. *Human abilities* – individual psychological characteristics of a person necessary for the successful implementation of one or another productive activity. Abilities are not limited to the knowledge, skills and abilities an individual has. They are found, first of all, in the speed, accuracy and simplicity of methods of mastering dynamic, deep and lasting knowledge, skills and abilities. There are general abilities necessary to carry out many types of activities (for example, intelligence), and special abilities necessary to perform a specific type of activity (for example, mathematical, artistic, musical abilities). It is obvious that to carry out any effective professional activity, both general and special abilities are required. There are a large number of very diverse tests to assess both general and special abilities.

STRESS. *A state of the body caused by the nonspecific action of any pronounced and/or prolonged physical or mental stress – stress factors or stressors.* Stress is caused by the loss of optimal control in the body's systems and manifests itself in a variety of vegetative, motor and mental functional deviations from the norm. With the continuation of stress factors over a long period of time, a general adaptation syndrome develops.

STRUCTURE OF ACTIVITY. *A set of interrelated actions and operations performed by a person in the process of achieving a specific work goal.* Ideas about the structure of activities can be obtained in the process of activity analysis. The results of the analysis are used to assess which personality qualities and to what extent are necessary to carry out this type of activity.

ANXIETY – 1. *The body's reaction to an unknown factor in the environment or in itself.* Discomfort that arises in a situation of an uncertain future. Manifestation of a generalized response of the body to a possible threat of danger, a threat of violation of structural and functional integrity. Anxiety has mental and physical (somatic: vegetative and motor) components, which can have different degrees and nature of manifestation.

ANXIETY – 2. *An individual's tendency to experience anxiety.* Anxiety is characterized by a lower threshold for exposure to future uncertainty. An indicator of individual differences, a property (temperament) of a person.

CONDITION. 1. *An essence that expresses the relationship of an object to the phenomena surrounding it, without which it cannot exist.* 2. *Provisions, information*

underlying something. 3. *Basis*, prerequisite for something. 4. *Rule* for choosing one of the alternatives.

FATIGUE – 1. *Feeling of weakness, loss of strength from intense activity, tension.* Fatigue is a precursor or sign of fatigue.

SUSTAINABILITY. *Stability.* The ability of a system, removed from a state of equilibrium, to independently return to this state. A sign of system stability is the statistical invariance of parameters: mathematical expectation and dispersion of the probability distribution of variables, and their time functions (stationarity), which describe the behavior of the system. *The stability of the structure and/or functions (physical or mental) of living systems is a sign of normality (health).* Instability of structure and/or functions is a sign of an extreme condition or disease.

FATIGUE – 2. *One of the types of extreme conditions of the human body, developing as a result of prolonged and/or intense activity or stress (physical, intellectual, emotional).* A precursor and accompanying symptom of fatigue is a feeling of tiredness. Fatigue is characterized by suboptimal control in systems that support activity (a decrease in their speed, accuracy, and adaptive capabilities), which results in a loss of activity efficiency. Fatigue, like any extreme condition, depending on a number of conditions, can move into both the area of normal and pathological conditions. *The following types of fatigue are distinguished: physical, sensory, perceptual, informational and emotional.*

HUMAN. *Man is a living system, representing the unity of the physical, mental and spiritual, natural and social, hereditary and lifetime acquired.* As a living organism, a person is included in the natural connection of phenomena and obeys biological laws. At the level of the conscious psyche and personality, a person is turned to social existence with its specific laws, norms of morality, law, life, rules of thinking and language, and its other features.

CREW. *A small group in which the effectiveness of any member depends relatively little on the activities of other group members.*

EXTREME CONDITION. *All physical and mental conditions can be divided into three categories: normal conditions, pathological conditions, and those occupying an intermediate position between them – extreme (borderline) conditions.* A normal state corresponds to physical and mental health, a pathological state corresponds to a disease. An extreme condition is a potential disease, pre-disease. An extreme state is characterized by a loss of optimal control in the body's systems. Moreover, this manifests itself, first of all, in an increase in the dispersion of signals at the outputs of these systems, that is, in an increase in the variability of physical and mental processes. Following this, the level of these processes may also change. At the same time, there is a reduction in the capabilities of system inputs. As a result, the normal interaction of systems is disrupted. There is a mismatch between the inputs and outputs of interacting systems, physical and/or mental processes. The speed and accuracy of any actions decrease, actions lose their minimal property, that is, they are carried out by more than possible number of elements of the system structure and according to a more complex algorithm. The form of manifestation of extreme states depends on the nature of the factor causing the extreme state, the physical and mental

characteristics of the organism reacting to these factors, and the social conditions of human activity. An example of an extreme condition is fatigue.

EXTREME FACTORS. *Any factors (conditions) that cause or condition spiritual, mental and/or physical stress (functions) of the body that go beyond normal limits.* These factors can cause or contribute to the occurrence of extreme and/or pathological conditions. *Two groups of extreme factors can be distinguished: physical and chemical environmental factors and information-semantic factors related to the structure of activity.* Physico-chemical factors include physical factors (microclimatic, radiation, pressure, mechanical) and chemical factors (quantitative change in ordinary air components, qualitative change in the gas composition of the environment, mechanical impurities in the air). Information-semantic factors include information factors (lack of information, excess information, falsity of information, surprise of information) and semantic factors that threaten the individual and/or team.

PSYCHOLOGICAL METHODS OF ASSESSMENT (DIAGNOSTICS) OF MENTAL HEALTH

We offer psychological techniques that have been tested for reliability and validity and have proven themselves in the examination of both sick and healthy people. The shortest and simplest tests are presented, which students can get acquainted with in practical classes, and could also be used by a general practitioner, even without special psychological training. Information on each technique contains information about its purpose, features of data acquisition, their processing and interpretation. The tests are intended for people aged 18 years and older, but in most cases teenagers can take them.

Methods from 2 groups are presented.

The first includes methods for diagnosing signs of neuropsychic instability and social maladaptation, which are expressed in an integral final assessment. They are mainly intended for group, even mass (screening) examinations, but they can also be used individually. Using these techniques, each subject can be classified into a specific mental health group. Although we tend to distinguish only four such groups (see Chapter 1), the proposed methods also contain a different number of gradations: 3, 5 or 7. Despite these differences, each of the methods in this group allows us to assess the overall degree of risk of mental pathology. We believe that all patients with general (systemic) pathology should undergo examination using one of these methods (depending on the available time).

The second group contains methods for diagnosing negative mental states, which make it possible to differentiate the psychological assessment of the current state according to four main manifestations: asthenia, anxiety, depression and aggression. By applying all these four methods to a specific patient, we obtain a fairly complete description of emotional disorders associated with stress. If necessary, you can use each of these techniques separately, or group them in pairs, depending on the observed clinical picture of mental disorders.

It should be remembered that psychological tests complement, but do not replace, clinical-psychopathological diagnostics carried out in direct contact with the patient. Their main benefit is to identify patients at high risk of developing mental pathology.

1. Methods for diagnosing mental health groups and signs of neuropsychic instability

1.1. Test "Nervous-mental adaptation"

To conduct a level assessment of the mental state in various extreme situations, it is used and developed at the V.M.Bekhterev Psychoneurological Research Institute. "Test of neuropsychic adaptation" (Gurvich I. N., 1992). This test allows you to divide the people being examined into five mental health groups: healthy – group I; practically healthy with favorable prognostic signs – group II; practically healthy with unfavorable prognostic signs (pre-pathology) – group III; mild pathology – group IV; with signs of pathology – group V.

Completing the Neuropsychic Adaptation test takes no more than 10–15 min. The forms are processed by a paramedic or other specially instructed person. Processing the form comes down to calculating the total amount of points scored by the subject and takes, if you have minimal skills, no more than one minute.

Instructions: "This questionnaire presents the phenomena with which, as a rule, the human psyche responds to difficult life situations. Read carefully and rate (on the following scale) how present they are in your life:

- 4 – is and has always been;
- 3 – has been there for a long time;
- 2 – appeared recently;
- 1 – it was in the past, but not now;
- 0 – no and never happened."

1. Insomnia, sleep disorders.
2. The feeling that people around you are unkind to you.
3. Headaches.
4. Changes in mood for no apparent reason.
5. Fear of the dark.
6. Feeling that you have become worse than other people.
7. Tearfulness, tendency to tears.
8. Feeling of a "lump" in the throat.
9. Fear of heights.
10. Fatigue, feeling tired.
11. Lack of self-confidence and self-confidence.
12. Strong feelings of guilt.
13. Concern about the possible occurrence of a serious illness.
14. Fear of being alone indoors or outdoors.
15. Fear of blushing "in public."
16. Difficulties in communicating with people.
17. Unreasonable, unreasonable fear for oneself, for other people, fear of any situations.
18. Trembling of the arms, legs, whole body.
19. Inability to restrain the manifestations of your feelings.
20. Depressed, bad or depressed mood.

21. Rapid heartbeat.
22. Causeless, unfounded anxiety, a premonition that something unpleasant might happen.
23. Indifference to everything that happens.
24. Increased irritability, short temper.
25. Excessive sweating.
26. Feeling of general weakness, lethargy.

The distribution by mental health groups is as follows:

Group I – score less than 10;

Group II – 11–20 points;

Group III – 21–30 points;

Group IV – 31–40 points;

Group V – more than 40 points.

A level assessment of the state, distinguishing five mental health groups, is used when conducting screening (mass psychoprophylactic) examinations.

1.2. Express questionnaire “Forecast”

The “Forecast” questionnaire was developed at the Military Medical Academy (Baranov Yu. A., 1988). The technique is intended for the initial tentative identification of persons with signs of neuropsychic instability; it allows us to identify individual pre-morbid signs of personality disorders, as well as assess the likelihood of their development and manifestations in human behavior and activity.

The questionnaire contains 84 questions, to each of which the subject is asked to answer “yes” or “no”. The results of the survey are expressed as a quantitative indicator (in points), on the basis of which a conclusion is made about the level of neuropsychic stability. Analysis of the answers allows us to clarify individual biographical information, behavioral characteristics and the state of a person’s mental activity in various situations.

25–30 people can participate in the survey at the same time. The examination takes up to 20 minutes.

Registration sheet for the “Forecast” questionnaire

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84						

Instructions: “Before you is a questionnaire consisting of 84 statements. Having familiarized yourself with each of them sequentially, you need to decide which

answer, “yes” or “no,” more accurately characterizes you. If you answer the question “yes”, then put “+” in the corresponding cell of the registration sheet, if “no”, then put “-”. Work quickly and independently. Don't miss statements. All answers must be frank. The results of the examination will not be disclosed. If you have any questions, please raise your hand. You are not allowed to talk while performing the task.”

The results obtained are processed using keys (Table 1).

Table 1

Keys for processing data from the “Forecast” questionnaire

Scale name	Conents of answers	Serial numbers of statements corresponding to the scale
Scala sincerity	no (-) A	1, 4, 6, 8, 9, 11, 15, 17, 18, 22, 25, 31, 34, 36, 43
Neuropsychic instability scale	yes (+) B	3, 5, 7, 10, 16, 20, 26, 27, 29, 32, 33, 36, 37, 40, 41, 42, 44, 45, 47, 48, 49, 50, 51, 52, 53, 56, 57, 59, 60, 62, 63, 64, 65, 66, 67, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84
	no (-) A	2, 12, 13, 14, 19, 21, 23, 24, 28, 30, 38, 39, 46, 54, 55, 58, 61, 68

Text of the express questionnaire “Forecast”

1. Sometimes such bad thoughts come into my head that it’s better not to tell anyone about them.
2. I rarely have constipation.
3. From time to time I have attacks of laughter or crying that I cannot cope with.
4. At times I just want to swear.
5. I often have a headache.
6. Sometimes I tell lies.
7. Once a week or more often, for no apparent reason, I suddenly feel hot throughout my body.
8. It happens that I miss editorials in newspapers.
9. It happens that I get angry.
10. Now it’s hard for me to hope that I will achieve anything in life.
11. It happens that I put off until tomorrow what needs to be done today.
12. I willingly take part in all meetings and other social events.
13. The most difficult struggle is with yourself.
14. I experience muscle cramps and twitching very rarely.
15. Sometimes, when I don’t feel well, I get irritable.
16. I am rather indifferent to what will happen to me.
17. When visiting, I behave better at the table than at home.
18. If I don’t face a fine and there are no cars nearby, I can cross the street where I want, and not where I’m supposed to.
19. I think that my family life is as good as that of most of my friends.
20. Sometimes I have the feeling that I just have to hurt myself or someone else.
21. As a child, I had a company where everyone always tried to stand up for each other in everything.
22. In the game I prefer to win.

23. For the last few years, I have been feeling good most of the time.
24. Now my weight is constant (I am neither gaining weight nor losing weight).
25. I am pleased to have significant people among my friends; it seems to give me weight in my own eyes.
26. I would be pretty calm if anyone in my family got into trouble for breaking the law.
27. There is something wrong with my mind.
28. I am worried about sexual (gender) issues.
29. When I try to say something, I often notice that my hands are shaking.
30. My hands are as dexterous and agile as before.
31. Among my friends there are people I don't like.
32. I think I'm a doomed person.
33. There were times when it was difficult for me to resist stealing something from someone or somewhere, for example, in a store.
34. It happens that I gossip a little with someone.
35. I often see dreams that it's better not to tell anyone about.
36. It happened that when discussing some issues, I, without particularly thinking, agreed with the opinion of another.
37. At school, I learned material more slowly than others.
38. In general, I am satisfied with my appearance.
39. I am quite confident in myself.
40. Once a week or more often I get very excited and anxious.
41. Someone controls my thoughts.
42. I drink an unusual amount of water every day.
43. It happens that an indecent or obscene joke makes me laugh.
44. I am happiest when I am alone.
45. Someone is trying to influence my thoughts.
46. I loved Andersen's fairy tales.
47. Even among people, I usually feel lonely.
48. Sometimes such bad thoughts come into my head that it's better not to tell anyone about them.
49. I am easily confused.
50. I easily lose patience with people.
51. I often want to die.
52. It happened that I quit something I started because I was afraid that I couldn't handle it.
53. Almost every day something happens that scares me.
54. I am indifferent to religious issues; they do not interest me.
55. I rarely have attacks of bad mood.
56. I deserve severe punishment for my actions.
57. I have had very unusual mystical experiences.
58. My beliefs and views are unshakable.
59. I have had periods when I lost sleep due to anxiety.
60. I am a nervous and easily excitable person.
61. It seems to me that my sense of smell is the same as that of others (no worse).

62. Everything works out badly for me, not as it should.
63. I almost always feel dry in my mouth.
64. I feel tired most of the time.
65. Sometimes I feel like I'm close to a nervous breakdown.
66. It really annoys me that I forget where I put things.
67. I am very careful about how I dress.
68. I like adventure stories more than love stories.
69. It is very difficult for me to adapt to new living and working conditions. The transition to any living, working, or studying environment seems difficult.
70. It seems to me that people especially often treat me unfairly.
71. I often feel unfairly offended.
72. My opinion often does not coincide with the opinions of others.
73. I often feel tired of life.
74. People pay attention to me more often than to others.
75. I have headaches and dizziness due to worry.
76. I often have periods when I don't want to see anyone.
77. It is difficult for me to wake up at the appointed time.
78. If someone is to blame for my failures, I do not leave him unpunished.
79. As a child, I was capricious and irritable.
80. I know of cases when my relatives were treated by neurologists and psychiatrists.
81. Sometimes I take valerian, elenium, codeine and other sedatives.
82. Do you have any relatives with criminal records?
83. Have you ever been brought before the police?
84. Did you stay in school for a second year?

1.3. Mental Adaptability Scale

The mental adaptability scale was developed by V.A.Duke (1994) based on frequency analysis of responses to MMPI statements in a group of people who received a low expert assessment of mental adaptability and in a normative sample.

The questionnaire is intended for an integral assessment of mental health and mental adaptation.

The 111 statements included in the scale characterize a wide range of deviations in the somatic, psychological and behavioral spheres.

Statements require a yes/no answer. The questionnaire contains direct and reverse questions.

Numbers of statements for which the answer “**yes**” is awarded 1 point (“direct”): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 31, 32, 33, 35, 36, 37, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 59, 60, 62, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 102, 103, 104, 107, 108, 109, 110, 111.

Numbers of statements for which the answer “**no**” is awarded 1 point (“reverse”): 13, 14, 22, 29, 30, 34, 38, 41, 58, 61, 63, 76, 101, 105, 106.

Then the “raw” points are converted into stens (Table 2).

Converting “raw” points into Stens

«Raw» points	Stens
0—1	1
2—3	2
4—5	3
6—7	4
8—11	5
12—15	6
16—19	7
20—25	8
26—33	9
34 and more	10

The range of 1–3 stens is interpreted as complete mental health and a high level of mental adaptation.

Range 4–5 stens – limited mental health, neuropsychic instability, mental maladjustment.

The range of 6–7 stens is a high risk of borderline mental pathology.

The range of 8–10 stens is a high risk of serious mental pathology (consultation with a psychiatrist is necessary).

Mental Adaptability Scale

Instructions: Read the following statements carefully. If you agree, you should answer “yes”; if you disagree, you should answer “no.”

№	Statements	Yes	No
	I often feel like I have a lump in my throat		
	Work costs me a lot of stress		
	Sometimes such bad thoughts come into my head that it's better not to tell anyone about them		
	At times I really wanted to leave my home		
	At times I have bouts of laughing or crying that I just can't cope with		
	At times I am at the mercy of some evil spirits		
	As a child or teenager, I at one time committed petty thefts		
	Sometimes I want to break and destroy everything		
	My family does not approve of the job I have chosen (or am about to take)		
110	I often have severe headaches		
111	Once a week or more often, for no apparent reason, I suddenly feel like I have a fever		
112	At times I feel like I'm dying		
113	Most people who know me generally like me		
114	I'm a sociable person		
115	I didn't live the way I should		
116	Several times a week I am bothered by discomfort in the upper abdomen (under the stomach)		

№	Statements	Yes	No
117	Most of the time I'm in a bad mood		
118	Sometimes I am so attracted to other people's things (shoes, gloves, etc.) that I want to hold them in my hands or even steal them, although I don't need them		
119	I would like to be a florist		
220	I often do things that I regret later (more often or more deeply than others)		
221	At times I feel a strong desire to break the rules of decency or do something harmful		
222	I experience muscle cramps or twitching extremely rarely (or almost never)		
223	I'm pretty indifferent to what will happen		
224	I feel full in my head or nose almost all the time		
225	Some people love to command so much that I feel the urge to do everything contrary, even if I know that they are right		
226	Some people would be happy to harm me		
227	I often feel like my head is being held in a hoop		
228	I think there's a conspiracy against me		
229	I can easily bear the sight of blood		
330	I think my family has as good a life as most of my friends		
331	Sometimes I feel like I just have to hurt myself or someone else		
332	At times I feel confident in my worthlessness		
333	I often failed because I couldn't make a decision in a timely manner		
334	I usually fall asleep peacefully and no thoughts disturb me		
335	I have periods when I did something and then didn't know what I was doing		
336	I cry easily		
337	I began to understand the content of what I read worse		
338	I like to study in detail what I do and read about it		
339	I'm scared to look down from a great height		
440	I'd be pretty cool if anyone in my family was in trouble with the law		
441	I loved school		
442	There are people who try to steal my thoughts and ideas		
443	I think I'm a doomed man		
444	At times I cannot resist stealing something from someone or somewhere, for example, in a store		
445	I'm religious		
446	I know that my sins cannot be asked		
447	My family treats me more like a child than an adult		
448	I abused alcohol		
449	Compared to other families, there is very little love and warmth in my family		
550	My parents were often opposed to my dating		
551	Some members of my family have habits that really annoy me and bore me		
552	They tell me I walk in my sleep		
553	I like to talk about sexual topics		
554	I often indulge in sad thoughts		

№	Statements	Yes	No
555	I often have dreams that it's better not to tell anyone about		
556	At school I learned things more slowly than others		
557	I sweat easily even on cool days		
558	Я вполне уверен в себе		
559	In society I find it difficult to find a suitable topic of conversation		
660	Sometimes I scare people for fun because it's easy for me to make others afraid of me		
661	I like kids		
662	There are times when I hate members of my family that I usually love		
663	I love Andersen's fairy tales		
664	It seems to me that I feel everything more acutely than others		
665	Life for me is almost always connected with tension		
666	Even among people I feel lonely		
667	At times I really wanted to leave my home		
668	Definitely fate is unfair to me		
669	I'm more impressionable and sensitive than most people		
770	I often have sexual dreams		
771	I have had completely unusual, very strange and peculiar experiences		
772	Some of my family members did things that scared me		
773	I've definitely had more than my fair share of worries and concerns		
774	Often I want to die		
775	I often feel like everything around me is unreal		
776	Without any fear, I enter a room where others have already gathered and are talking		
777	I find it harder to concentrate than others		
778	I tend to take things hard		
779	People say vulgar and offensive things about me		
880	At times my head seems to work slower than usual		
881	When visiting, I more often sit somewhere on the sidelines or talk with someone alone than take part in general entertainment		
882	People often disappoint me		
883	I'm afraid to be alone in the dark		
884	Horses that don't pull should be beaten		
885	The future is so uncertain that it is pointless to make any serious plans		
886	Often, even when everything is going well for me, I feel like I don't care		
887	Sometimes I had the feeling that so many difficulties were piled up in front of me that it was simply impossible to overcome them		
888	I often think: "It would be nice to be a child again"		
889	When I hear about the success of a close friend, I begin to feel like I am a failure		
990	I tend to feel my disappointments so intensely that I can't stop myself from thinking about them		
991	At times I feel like I'm good for nothing		
992	At school I skipped classes quite often		
993	I have had very unusual mystical experiences		

№	Statements	Yes	No
994	There are very nervous people in my family (one person or more)		
995	I'm embarrassed by the jobs that some of my family members did		
996	It happened that I invented comrades for myself		
997	I like to gamble for small stakes		
998	I am called to celebrate the Great Mass		
999	If things go badly for me, I immediately want to quit everything		
1100	I must admit that at times I worried irrationally about things that didn't really matter		
1101	I like others to know my point of view		
1102	I am a nervous and easily excitable person		
1103	Everything turns out bad for me, not as it should be		
1104	There's something wrong with my genitals		
1105	As a rule, I strongly defend my views		
1106	My family members and my close relatives get along with each other		
1107	People can quite easily change my decision, even if it already seemed final to me		
1108	I think I would like the job of a women's dress tailor		
1109	Several times a week I have this feeling that something terrible is going to happen		
1110	Most of the time I feel tired		
1111	I would like to work as a personal secretary (for example, for a director)		

1.4. Methodology for diagnosing the level of neuroticism

The technique allows you to identify people suffering from neuroses or predisposed to them. It was developed at the V.M.Bekhterev Psychoneurological Institute in 1999 (B. V. Iovlev, E. B. Karpova, A. Ya. Vuks). The text of the LN questionnaire with instructions contains 45 statements.

Text of the questionnaire “Level of neuroticism”

Instructions: “The questionnaire contains several dozen statements relating to your health and your character. Read each statement and decide whether it is true or false for you (put “+” or “-”). If a statement in relation to you is both true and false, choose a solution in accordance with what happens more often. If a statement is true or false for you at different times in your life, choose the solution that is correct at the present time.

Any statement that you cannot regard as true about yourself should be considered false.

Please note that when deciphering the research results, the content of the statements is not taken into account. All further processing is carried out according to the number that each statement has, so you can be completely honest.

1. I am pleased to have significant people among my acquaintances; it seems to give me weight in my own eyes.
2. I don't get tired enough.

3. I must admit that at times I worried irrationally about things that didn't really matter.
4. I often feel burning, tingling, crawling, or numbness in various parts of my body.
5. At times I just want to swear.
6. Sometimes I had the feeling that so many difficulties were piled up in front of me that it was simply impossible to overcome them.
7. My stomach bothers me a lot.
8. Several times a week I have the feeling that something terrible is going to happen.
9. I like to go dancing.
10. If I don't face a fine and there are no cars nearby, I can cross the street where I want, and not where I'm supposed to.
11. Several times a week I am bothered by unpleasant sensations in the upper abdomen (in the pit of the stomach).
12. Almost every day something happens that scares me.
13. I notice that I have difficulty concentrating on any task or work.
14. I have much less concerns and fears than my friends.
15. It happens that I gossip a little with someone.
16. Life for me is almost always connected with tension.
17. Nowadays, only naive people can believe in an afterlife.
18. I have had periods when I lost sleep due to anxiety.
19. Once a week or more often, for no apparent reason, I suddenly feel like I have a fever.
20. In the game I prefer to win.
21. Most of the time I am quite happy with life.
22. Work costs me a lot of stress.
23. I have periods of such intense anxiety that I can't even sit still.
24. I often have severe headaches.
25. Sometimes I get angry and angry.
26. When visiting, I more often sit somewhere on the side or talk with someone alone than take part in general entertainment.
27. I have attacks of severe agitation and anxiety once a week or even more often.
28. I have pain in the heart or chest very rarely (or not at all).
29. If possible, I try to avoid large crowds of people.
30. It is true that my table manners at home are not as good as when visiting.
31. I am quite confident in myself.
32. Often I myself am upset that I am so irritable and grouchy.
33. I have nightmares almost every night.
34. At times my head seems to work slower than usual.
35. Sometimes when I don't feel well, I get irritable.
36. Sometimes I get so excited that it is difficult for me to fall asleep.
37. The most difficult struggle for me is the struggle with myself.
38. I often indulge in sad thoughts.
39. I have little self-confidence.

40. It happens that an indecent or even obscene joke makes me laugh.
 41. I rarely feel out of breath, and I don't have strong heart palpitations.
 42. Now I feel better than ever.
 43. At times I exhausted myself by taking on too much.
 44. I feel anxious about someone or something almost all the time.
 45. Among my friends there are people I don't like.

Registration form for the neuroticism level questionnaire

№№	YES	NO
1		
2		
3		
4		
5		
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11		
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15		

№№	YES	NO
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18		
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23		
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26		
27		
28		
29		
30		

№№	YES	NO
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35		
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37		
38		
39		
40		
41		
42		
43		
44		
45		

The key to the “LN” method (for men)

№№	YES	NO
1		L
2	+2	-1
3	0	+2
4	-3	+2
5		L
6	-1	+2
7	-2	+1
8	-7	+2
9	+2	-1
10		L
11	-4	+1
12	-8	+1
13	-4	+4
14	+3	-2
15		L

№№	YES	NO
16	-3	+4
17	0	0
18	-2	+4
19	-3	+1
20		L
21	+4	+5
22	-4	+2
23	-3	+4
24	-4	+2
25		L
26	-3	+3
27	-5	+3
28	+1	-3
29	0	+1
30		L

№№	YES	NO
31	+3	-4
32	-2	+3
33	-6	0
34	-1	+2
35		L
36	-1	+3
37	-2	+3
38	-3	+4
39	-5	+3
40		L
41	+2	-3
42	+3	-1
43	-1	+3
44	-2	+3
45		L

The key to the “LN” method (for women)

№№	YES	NO
1		L
2	+4	-2
3	0	+4
4	-4	+5
5		L
6	-1	+4
7	-3	+1
8	-6	+3
9	0	0
10		L
11	-5	+2
12	-8	+2
13	-4	+4
14	+2	-1
15		L

№№	YES	NO
16	-3	+6
17	-2	+1
18	-2	+9
19	-6	+3
20		L
21	+4	-3
22	-4	+4
23	-3	+6
24	-3	+3
25		L
26	-2	+2
27	-4	+5
28	+2	-3
29	-2	+3
30		L

№№	YES	NO
31	+4	-2
32	-2	+7
33	-9	+1
34	-1	+4
35		L
36	-2	+7
37	-2	+4
38	-3	+6
39	-3	+4
40		L
41	+4	-4
42	+1	0
43	-1	+5
44	-3	+7
45		L

After filling out the registration form, a score on the sincerity scale is calculated (answers “no” to questions 1, 5, 10, 15, 20, 25, 30, 35, 40). If you receive 6 points or more, the survey results are unreliable. Each of the subject’s responses to statements on the neuroticism scale is assigned a corresponding diagnostic coefficient, using for this purpose a form with diagnostic coefficients (male or female). Then the sums of positive and negative responses on the neuroticism scale are calculated and their algebraic sum is calculated. Scores on the neuroticism scale can range from -98 to +84 in men and from -103 to +133 in women. Conventionally, the following

generalized gradations of final assessments of the level of neuroticism can be distinguished (Table. 3).

Table 3

Gradations of final assessments of the level of neuroticism

Levels of neuroticism	Scale rating indicators, points	
	men	women
Very tall	-41 and less	-81 and less
High	from -21 to -40	from -41 to -80
Elevated	from -11 to -20	from -21 to -40
Uncertain	from -10 to +10	from -20 to +10
Reduced	from +11 to +21	from +11 to +40
Short	from +21 to +40	from +41 to +80
Very low	+41 and more	+81 and more

2. Methods for diagnosing (assessing) negative mental states

2.1. Asthenic State Scale (ASS)

An asthenic state or reduced mental activation is a condition that is characterized by general and, above all, mental weakness, increased exhaustion, irritability, decreased productivity of mental processes, sleep disorders, physical weakness and other vegetative-somatic disorders.

The asthenic state scale was created by L. D. Malkova on the basis of the MMPI questionnaire and data from clinical and psychological observations, and was subsequently adapted by T. G. Chertova. The scale consists of 30 points – statements reflecting individual signs of an asthenic state.

Instructions: “Read each sentence carefully and, having assessed it in relation to your current state, put a plus sign in one of the four boxes on the right side of the form.”

Asthenic state scale

№	Feature content	No, that's wrong	Perhaps so	Right	Absolutely right
1	I work under a lot of pressure				
2	I have trouble concentrating on anything				
3	My sex life does not satisfy me				
4	The waiting makes me nervous				
5	I am experiencing muscle weakness				
6	I don't feel like going to the cinema or theater				
7	I'm forgetful				
8	I'm feeling tired				
9	My eyes get tired when reading for a long time				
10	My hands are shaking				
11	I have a bad appetite				
12	I find it difficult to be at a party or in a noisy company				

13	I don't understand what I read so well anymore				
14	My hands and feet are cold				
15	I'm easily offended				
16	I have a headache				
17	I wake up in the morning tired and unrested				
18	I get dizzy				
19	I have muscle twitching				
20	My ears are ringing				
21	I'm worried about sexual issues				
22	I feel heavy in my head				
23	I feel general weakness				
24	I have pain in the crown of my head				
25	Life for me is about tension				
26	My head feels like it's wrapped in a hoop				
27	I wake up easily from noise				
28	People bore me				
29	When I'm worried I break out in sweat				
30	Restless thoughts keep me awake				

Data processing. The points are summed up, and 1 point is awarded for the (+) sign in the “no, incorrect” column, 2 points in the “perhaps so” column, 3 points in the “true” column, and 3 points in the “absolutely true” column. 4 points. The entire range of the scale includes from 30 to 120 points. The average value of the asthenia index is 37 ± 6 points.

- 0–50 points — “absence of asthenia”;
- 51–75 points — “weak asthenia”;
- 76–100 points — “moderate asthenia”;
- 101–120 points — “severe asthenia.”

2.2. Methodology “Self-assessment scale of anxiety level”

The technique is a reliable and informative way of self-assessment of the level of anxiety at a given moment (reactive anxiety as a state) and personal anxiety (as a stable characteristic of a person). The technique was developed by Ch. D. Spielberger (USA) and adapted in our country by Yu. L. Khanin.

Personal anxiety characterizes a stable tendency to perceive a fairly wide range of events as threatening and react to such situations with a state of anxiety. Reactive anxiety is characterized by tension, worry, and nervousness at the moment. Very high reactive anxiety causes disturbances in attention and sometimes fine coordination. Very high personal anxiety can cause a neurotic conflict with emotional and neurotic breakdowns and psychosomatic diseases.

The self-esteem scale consists of two parts, separately assessing reactive anxiety (RA, statements No. 1–20) and personal anxiety (PA, statements No. 21–40).

The scale for measuring anxiety as a personality trait includes 20 statements in the first person, to which the subject must determine his attitude by choosing one of the four options offered. The technique is performed on special forms. Operating time 5 min.

Instructions: “Read each of the sentences below carefully and cross out the number in the appropriate column depending on HOW YOU FEEL AT THIS

MOMENT. Don't overthink the questions because there are no right or wrong answers."

Assessment of reactive anxiety (RA)

№	Judgment	No (wrong)	Probably not	Most likely yes	Yes (that's right)
1	I am calm	1	2	3	4
2	Nothing threatens me	1	2	3	4
3	I'm stressed	1	2	3	4
4	I'm internally constrained	1	2	3	4
5	I'm calm inside	1	2	3	4
6	I'm sad	1	2	3	4
7	I'm worried about possible failures	1	2	3	4
8	I feel peace of mind	1	2	3	4
9	I'm worried	1	2	3	4
10	I feel satisfied	1	2	3	4
11	I'm confident in myself	1	2	3	4
12	I'm nervous	1	2	3	4
13	I can't find a place for myself	1	2	3	4
14	I'm excited	1	2	3	4
15	I don't feel stiffness or tension	1	2	3	4
16	I'm happy	1	2	3	4
17	I'm concerned	1	2	3	4
18	I'm too excited and uneasy	1	2	3	4
19	I'm joyful	1	2	3	4
20	I'm pleased	1	2	3	4

Assessment of person anxiety (PA)

№	Judgment	Never	Sometimes	Often	Almost always
21	I'm in high spirits	1	2	3	4
22	I get irritable	1	2	3	4
23	I get upset easily	1	2	3	4
24	I wish I could be as lucky as others	1	2	3	4
25	I'm very worried about troubles and can't forget about them for a long time	1	2	3	4
26	I feel a surge of energy and a desire to work	1	2	3	4
27	I'm calm, cool and collected	1	2	3	4
28	I'm worried about possible difficulties	1	2	3	4
29	I worry too much about little things	1	2	3	4
30	I'm quite happy	1	2	3	4
31	I take everything to heart	1	2	3	4
32	I lack self confidence	1	2	3	4
33	I feel defenseless	1	2	3	4
34	I try to avoid critical situations and difficulties	1	2	3	4
35	I get blues	1	2	3	4
36	I'm happy	1	2	3	4
37	All sorts of trifles distract and worry me	1	2	3	4

38	There are times when I feel like a failure	1	2	3	4
39	I'm a balanced person	1	2	3	4
40	I feel anxious when I think about my own affairs and worries	1	2	3	4

RA and PA indicators are calculated using the formulas:

$$RA = RA_1 - RA_2 + 50,$$

where RA_1 — sum of points (crossed out numbers on the form) by points 3, 4, 6, 7, 9, 12, 13, 14, 17, 18;

RA_2 — sum of points by points 1, 2, 5, 8, 10, 11, 15, 16, 19, 20.

$$PA = PA_1 - PA_2 + 35,$$

where PA_1 — sum of points on scale points 22, 23, 24, 25, 28, 29, 31, 32, 34, 35, 37, 38, 40;

PA_2 — sum of points by steps 21, 26, 27, 30, 33, 36, 39.

When interpreting indicators, the following indicative estimates can be used:

- less than 30 – low anxiety;
- 31–45 — moderate anxiety;
- 46 or more – high anxiety.

2.3. Depression scale

The questionnaire was developed by V. Zung (1965) for the differential diagnosis of symptoms of depressive states and conditions close to depression, for screening diagnostics during mass examinations and for the purpose of preliminary prenosological diagnosis. The test was adapted in the Department of Narcology of the V.M. Bekhterev Research Institute T.I. Balashova. Full testing with processing takes 20–30 minutes. The subject marks the answers on the form.

Instructions: “Read each of the sentences below carefully and cross out the appropriate number on the right depending on how you have been feeling lately. Don’t overthink the questions because there are no right or wrong answers.”

№	Judgment	Never (occasionally)	Some- times	Often	Almost always
1	I feel depressed	1	2	3	4
2	I feel best in the morning	1	2	3	4
3	I have periods of crying or close to tears	1	2	3	4
4	I have a bad night's sleep	1	2	3	4
5	My appetite is no worse than usual	1	2	3	4
6	I enjoy looking at attractive women (men), talking to them, being around them	1	2	3	4
7	I notice that I'm losing weight	1	2	3	4
8	I'm worried about constipation	1	2	3	4

№	Judgment	Never (occasionally)	Some- times	Often	Almost always
9	Heart beats faster than usual	1	2	3	4
10	I get tired for no reason	1	2	3	4
11	I'm thinking as clearly as ever	1	2	3	4
12	It's easy for me to do what I can do	1	2	3	4
13	I feel restless and can't sit still	1	2	3	4
14	I have hope for the future	1	2	3	4
15	I'm more irritable than usual	1	2	3	4
16	It's easy for me to make decisions	1	2	3	4
17	I feel useful and needed	1	2	3	4
18	I live a fairly full life	1	2	3	4
19	I feel that other people will feel better if I die	1	2	3	4
20	What still makes me happy is what always made me happy	1	2	3	4

Depression level (DL) is calculated using the formula:

$$Y_{\Delta} = \sum \text{dir.} + \sum \text{rev.},$$

where:

$\sum \text{dir.}$ — the sum of crossed out numbers to “direct” statements № 1, 3, 4, 7, 8, 9, 10, 13, 15, 19;

$\sum \text{rev.}$ — the sum of the numbers “reverse”, crossed out, to the statements № 2, 5, 6, 11, 12, 14, 16, 17, 18, 20.

For example: statement No. 2 (“reverse statement”) has the number 1 crossed out, we put 4 points in the total; For statement No. 5, answer 2 is crossed out, we put 3 points in the total; For statement No. 6, answer 3 is crossed out – we add 2 points to the total; For statement No. 11, answer 4 is crossed out - we add one point to the total, etc.

As a result, we get DL (depression level), which ranges from 20 to 80 points:

- up to 50 points – state without depression;
- 51–59 — mild depression of situational or neurotic origin;
- 60–69 — subdepressive state or masked depression.

A true depressive state is diagnosed when the DL is more than 70 points.

Questions for the test (exam) on the cycle “Psychophysiology of stress”

1. Characteristics and classification of extreme factors.
2. Spatio-temporal characteristics of extreme factors (adaptation, intensity, time, energy expenditure, degrees of extremeness, summation).
3. Functional states of a person, classification, levels.
4. Functional systems (academician P.K. Anokhin), diagram, classification.
5. Human adaptation to extreme operating conditions. Physiological mechanisms (structural trace of adaptation), stages.
6. Human adaptation to extreme operating conditions. Professional and socio-psychological adaptation, stages.
7. Criteria for the completion of adaptation processes, readaptation, disadaptation.
8. Psychology and psychophysiology of emotions. Functions and components of emotions.
9. Theories of emotions (James-Lange, Freud, Cannon-Bard, Papes).
10. Post-traumatic stress reactions, primary and secondary symptoms.
11. Post-traumatic stress reactions, phases of development, types of mental disadaptation.
12. Psycho-emotional stress (PES). Classification. Syndromes. Signs of PES.
13. Life stress, professional stress.
14. Correction of functional states. Rationale. Schemes and indications for use.
15. Means and methods of correction (physiological, vitamin therapy, pharmacological).
16. Means and methods of correction (psychological, psychophysiological).
17. Methods for assessing functional state. Parameters of sensory activity.
18. Methods for assessing functional state. Parameters of activity of physiological systems.
19. Psychological methods for assessing the functional state and performance.
20. Mathematical methods for assessing physical and mental work.
21. Specific functional states. Monotony, fatigue, mechanisms, diagnostics.
22. Specific functional states. Hypokinesia. Neuro-emotional tension, mechanisms, diagnostics.
23. Characteristics of the human respiratory system from the standpoint of its participation in stress reactions.
24. The importance of energy consumption in extreme conditions. Basic concepts.
25. Thermal damage to the body and its prevention. Heat stress index.
26. Adaptive reactions of migrants in high latitudes.
27. Socio-psychological adaptation and performance in the conditions of the Far North.
28. Adaptive reactions of migrants at low latitudes.
29. Biological significance of pain. Classification. Assessment methods.
30. Chemical theory of pain. Portal pain system.
31. Pain system. Approaches to pain relief.

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Educational and methodological manual

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