PHYSIOLOGICAL BASIS OF HIGHER NERVOUS ACTIVITY

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Abstract. *This article presents the results of a scientific study dedicated to the physiological foundations of higher nervous activity. Higher nervous activity refers to the process by which an organism interacts with the external environment, processes information received through sensory organs, and generates a response. The study explores the main principles of higher nervous activity, its physiological mechanisms, and biological significance.*

Keywords: *higher nervous activity, physiology, inhibition center, reflex, cortex, synapse, neuron, adaptation, inhibition, excitation.*

Introduction. The highest nerve activity is one of the most complex and perfect processes in the human body. The physiological mechanisms that are based provide the body's adaptation to the internal and external environment. These processes are managed by the central department of the Nervous system - the brain cortex. The concept of higher nervous activity is primarily the I.P. Developed by Pavlov and later developed in the subject of modern physiology. The urgency of the topic is the opportunity to identify the causes of diseases, especially psychological and neurological disorders through the physiological bases of higher education, and the development of effective treatment methods. The knowledge about this field is also widely used in pedagogy, sports and other practices.

Comprehensive methods of higher and multiling the physiological principles of higher education in the study were used. These methods include areas such as processing, experiment, observation and statistics. The role and importance of each method in the process of the study were considered separately. First of all, the method of literary analysis was used. Through this method, available scientific sources on the subject - Books, Scientific Articles, Monographs and dissemination work were analyzed. As a result of the literature analysis, the results of higher nerves were studied in depth. In addition, the evolution and development of the methods used in the study of the physiological bases of higher education is determined. The method of literature analysis created the research foundation and made methodological recommendations for experimental work. In second, experimental studies were conducted. Experimental was designed to evaluate the nerve activity in the human body. The experiments were tested in the selection of healthy people as an object by selecting the group of healthy groups as an object. For this purpose, reflexological tests, electropereaorde (EEP) and psycho-freeological methods were used. With the help of electricity titleography, the electrical activity of brain activity was noted, and its changes in various cases were analyzed. Reflexological tests, on the other hand, allowed conditional and unconditional reflexes, inhibition and ecological processes. In the third place, the observation method was applied. Parameters of the entities were observed during the observations, emotional status, sensory authorities, reactions and parameters of other nervous art. As a result of observations, the information was collected and was later analyzed. The observation method played an important role in enrichmental results and bring them closer to practice. First of all, the method of statistical data analysis was used. The data obtained was reworked with statistical programs, and the results were expressed in the form of graphs, tables, and diagrams. Through the statistical analysis, the reliability of the data, average values, standard devices and other indicators were identified. The statistical method ensured the mathematical provision of the results and allowed them to create a scientific approach.

Material and methods of research. A group of 50 healthy people aged 20 to 30 was chosen to conduct research. Among the selected people, men and women were almost divided by almost equal (men - 26%, women - 24%). Primary information on all participants' health was collected, including the status of a general medical examination, medical history and the nervous system. Individuals who identified symptoms of psychological and neurological disorder were disqualified for reliable results. A number of scientific methods were used to evaluate the nervous activity. First of all, reflexively tested was conducted. These tests were aimed at studying the automatic efforts in the body in response to external influences. For example, the catella reflex and skin reflexes were measured. In the second place, electricity-Falography (EEP) method was used. With the help of EUG, it was written in electrical activity of cerebral cortex, Beta, Alpha, Teta and Delta Ritms were analyzed. In the third place, psychoofysiological methods, in particular, the measurement of the time of the reaction, the Center for Memory Tests were performed. The resulting results were analyzed with statistical programs. SPSS and Excel programs were used to analyze data. The average values were calculated the standard deviations and correlation coefficients. The results were estimated at the level of 95% reliability. In addition, the Student T-crafty was used to check the results of the experiment. The ethical criteria were observed during the study, and all participants expressed their consent.

Results and discussion. According to the study, the following basic principles of higher education have been identified and physiological mechanisms. These principles explain the process of the body's associations with the external and internal environment, and the process of processing and answering information received through sensory organs. Each principle was studied separately, and its biological significance and practical application were deeply analyzed.

1. Reflector principle.

One of the most important principles of the higher nervous nervous activity is the reflector principle. Reflexes is an automatic movement that occurs in the body in response to the influence of an internal or internal environment. The refinor process plays an important role in managing all functions necessary for the body. For example, the thermoregulation (temperature regulation), the reflection of pain and reflection of the muscles is based on this principle. Reflexes can be two types: These are unconditional reflexes: these are congenital reflexes and is genetically predetermined. For example, processes such as eating, breathing and regulation of blood pressure.

Conditional reflexes: This is formed on the basis of the experience of the body. For example, the cat strengthens the instructor for food to see or hear the voice of the food. I.P. According to a pavlov classic conditional theory, the body will have a new conditional reflex when the conditional signal (eg, the sheet) and unconditional effects. The importance of the reflector principal is that it allows the body's quick and effective answer. This ensures constant contact with the external environment.

2. Sympti transmission.

The performance of the nervous system is based on the exchange of information between neurons. The data transmission between neurons occurs through syaps. SINAPS is a specializing place between neurons (for example, acetator substances (for example, acetylkolin, dopamine, serotonin). Media works as chemical signals and transmits nerve impulses to Denron of Nuron after Neuron. There are several features of synapsic transmission:

• Chemical processes: During the synapsia transmission process, electric signals become chemical signals and vice versa. This process provides the speed of information.

• Transfer rate: Symptomatic transmission rate is determined by various factors (for example, the mediator amount, number of receptors). Some synaps are very quickly (in millisneconds) and some work more slowly.

• Plastic: Symps have a plasticity, and their transmission can change as a result of their transmission and experience. This process is critical because it plays a key role in the formation of learning and memory.

A negative impact on the nervous activity of synapsian transmission (e.g., Parkinson's disease or depression). Therefore, it is focused on the research of this sector.

3. Inhibition and ecositation.

Two main processes that occur in nerve cells are ecosis (activation) and inhibitioning (braking). These processes play an important role in the regulation of nervous impulses. Exciting activates the nerve cell, i.e. it is ready to create impulses. In this case, neuron is activated activeally. The inhemplate, on the other hand, reduces the activity of the nerve cell or stops completely. The energy system ensures the sustainability of the nervous system through the balancing each other. For example:

• EXCITITATION: Increases the activity of the nervous system during a strong emotion or stress.

• Introduction to the inhibition: to brake the nerve cells to reduce excess stimulation.

If these processes are uneven, the nervous system can emerge (for example, insomnia, anxiety, an epilepsy). The refore, the enthusiasm and ecological mechanisms are a topical issue for modern research.

4. Adaptation.

Adaptation is the process of adaptation of the body to the external and internal environment. The higher nervous activity plays an important role in the management of the adaptation process. Through the adaptation process, the organism quickens the new conditions and makes the changes needed to save.

For example:

• Sensor Adaptate: Seating bodies such as eye or skin adapt to permanent effects. For example, when entering into a strong light, the eye admits the light after a while.

• Psychological adaptation: The adaptation of a person to new social or working conditions is also the result of adaptation. Violation of the adultation process can make the body an inconvenient situation. For example, if there is enough adaptation mechanisms in the stress, the body may experience illness. Therefore, the study and use of adaptification processes is of great importance in biology and medicine.

Physiological basis of higher nervous activity

Brain structure	Number of neurons in human brain	100 billion neurons:10x30 more gllal oel cell	Turn Oserch
Neuroplasticity &exercise	Increase in gray matter volume (prefrental cortex, hippoca-impuls) after months of exercise	Moderate to significant increases, correlated with improved executive function	Turn Oserch 19
Autenomic physiology	Changes in BDNE IGF-1 due to aerobic exercise	Significant elevations observed	Turn Oserch 25
Sympatho adrenal response	Heari-rate variability (HRV) and emotional / cognitive regulation	Higher resting HRV-) improved emotion regulation & dectsion-making	Turn Oserch 24
Neural oveillation (ESO bands)	Increase in epmeprrine/ norepinephrine during exercise	Elevated hormone levels linked with light-or-fight' response	Turn Oserch 20
Exetiation-inhibe, exlance	Correlations in cocortical processes applied to	Mininaned in awake & sleep states, dicrupted in seizures	Turn Oserch 22
Golvanic skin response (GSR)	Biof edback efficacy: GSR-based bioleedb achievel	Biofeedback led to a 60% reduction in selzure frequcency	Turn Oserch 18
Big-data in neuro disorders	Data-driven neuroscience: Big Data methodologics. Are being used to map	Applied al cheimer's, stroke, depression, Parkinscn's, and addiction	Turn Oserch 5

Summary & Interpretation

• **Massive neuronal infrastructuture:** The human brain's ~ 100 billion neurons and glial network underpin comples nervous activity!

Exercise-driven neuroplasticity: Aerobic training enhances brain structure- and function-especially executive function and memory-via increased BDNF and growth factorst.

Autonomic correlates: High HRV significs strong emotional and cognitive regulation capacity, reflecting healtby autonomic-nervous conpling.

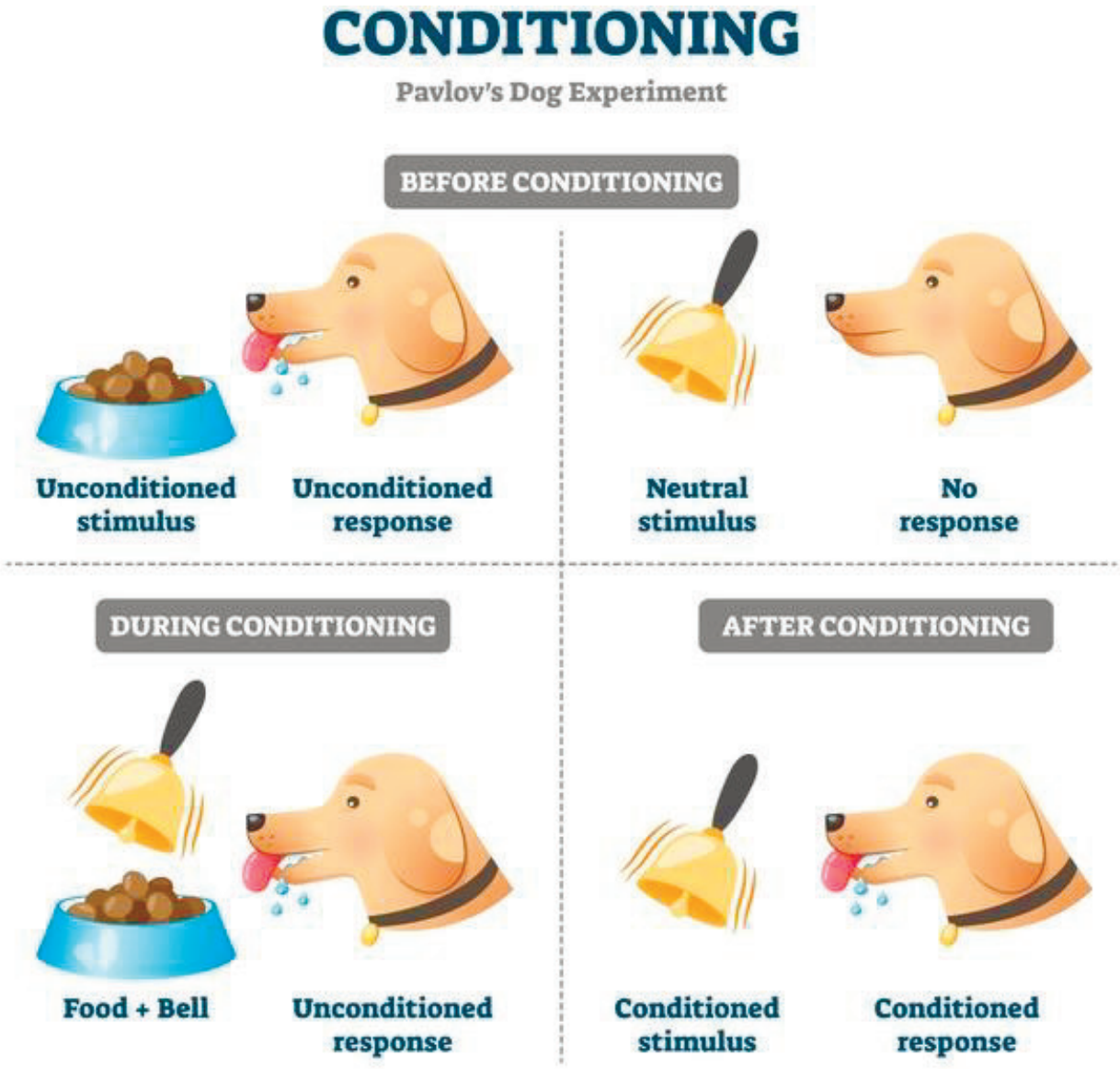
Stress and catecholamifies: Physical or psychological streess elevates-epinephrine/norepinephrine, augmenting alertness and physiological readiness.

Neural rhythms: Oscillatory brain activity across frequency bands is fundameral to cognition, perception, and mentory; distuptions can indicate pathology.

E/l halance: A consistent balance of excitatory and inhibliory neural signials defines stable brain activity--its disruption can trigger selzures.

Biofeedback efficacy: GSR-bared biofeedbask achieved a -64% selzure reduction in epilepsy patients, demonstrating autonomic influence on neural stability.

Data-driven neurescience: Big Data methodelogies are being used to map neural connectivity and improve out understandling of brain disorders.



Discussion. Scientific research and theoretical approaches play an important role in the study of the physiological bases of higher education. Development of this industry I.P. Pavlov's classic conditional reflex theory and A.A. Relyes on fundamental ideas such as the dominant theory of Ukhtomomsky. At the same time, modern research allows to study the genetic and biochemical aspects of higher education. This section analyzes the importance of these theories based on the results of their practical research and modern research. I.P. Pavlov's classic conditional theory represents one of the basic principles of the superior nervous nervous. According to the Pavlov'sue, conditional reflexes reflect the body's connection with the external environment and the adaptation process. The conditional reflex is an automatic movement based on the previous experience of the organism. For example, viewing the image of food or sensation of an arcular smell of fragrances enforces the food. This indicates the body's ability to respond quickly to the external environment. Pavlov's experiments have been created conditioned reflection by allowing light or voice as signal before feeding dogs. As a result, the dogs learned to connect the signal with food and only began to distinguish between signal or listening to the signal. This process explains the fact that the process will learn new efforts on the basis of experience and warning of the organism. Pavlov's theory is now widely used in psychology, pedagogy and sports. For example, it is possible to train new qualifications to them by creating a positive effect (conditional reflection) in children.

A.A. The Dominant theory of Ukhtomomsky describes another important principle of higher nervous nerves. According to the Dominant Theory, the dominant centers of existing centers can explain to the body. The dominant center is a group of nerve cells that attract all other nerve processes within a certain period of time. For example, when a person has a strong emotion or need, for example, other activities can slow down. Thus, the dominant center focuses the body's resources to the main task. This process is necessary to save the body's energy and focus on the most important tasks. An example can be said that the human is only to seek health or focus only on important tasks in stressful situations. The theory of Ukhtomsky plays an important role in explaining the integrat advice of the superior nervous nervous. Modern research will also allow the genetic and biochemical situations of higher nervous nervous nervous activity. Normers and genetic factors play an important role in creating individual characteristics of nervous activity. Neumondegators are chemicals involved in the data transmission process between neurons. The main types of them are: acetylkoline, dopamine, serotone, gaaba and glovamat. Each neuromediator's mission is separate. For example, Dopamine affects emotions related to the award provided, while serotonin affects emotional stability and joy. Modern research is shown that the disorders in the system of neuromadizators can lead depression, Anexiethe and other psychological diseases. In addition, genetic factors also play an important role in determining the individual characteristics of nervous activity. Genetically, the mechanisms that regulate the activities of the body's nerve cells may differ. For example, in some people, the higher the level of stress resistance may depend on genetic factors. The process of syrups transmission is also important in the study of physiological bases of higher education. SINAPS is a gap between neurons, in which information is transmitted through chemical and electrical signals. The main stages of synapsic transmission are: the removal of neurotansmitters from syinent, connection to the receptors and then transmission of the signal to postsynap neces. In the process of synapsia transmission, such as acetylkoline or dopamine. Violation of this process can lead to various diseases of the nervous system, such as Parkinson's disease or alzheimer disease. The adaptation process is also one of the main principles of higher education. Adaptation is a process of adaptation of the body to the external and internal environment. The plastic features of the nervous system play an important role in the organism to adapt to the new conditions. For example, in response to a human temperature change, thirst for thermisimon glands or the narrowing of the blood vessels is examples of the process of adaptation. Adaptation is necessary to maintain and continue the organism life. EXPLATION, on the other hand, prepares the organism to active action. Inhibition and ecological processes come true in different parts of the cerebral bark, for example, neurons in Cortex. The principles of higher and

ecositating of the higher activity also play a special place. An inhibition is the process of slowing down the activities of nervous cells, and eclectem is their activation. These two processs play an important role in the regulation of nervous impulses in the body. For example, through the inhabitation process, the organism can limit unnecessary or excessive movement.

Conclusion. The physiological bases of higher education is a complex process that ensures the body's adaptation to the external and internal environment. According to the results of the study, the reflector is the basic principles of the reflector, syrupclim, inhibition and ecivilization, as well as the highest nervous activity of adaptation. Knowledge in this area can be widely used in medicine, pedagogy and sports. It is necessary to study a deeper study of the individual features of higher nervous activity in the future.

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