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Functional Features Of The Nervous System In The Context Of Regular Physical Education.

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ABSTRACT

Physical exercise is able to exert a diverse influence on the body through nervous and humoral mechanisms. In this case, the nervous mechanism is of particular importance, since it determines the reaction of the whole organism and determines the behavior of a person in the process of regular exercise. Feasible physical exertion can have not only a positive effect on the cardiovascular, respiratory and muscular systems. During these sessions, the volume of circulating blood increases, the blood circulation of the brain increases, the outflow of lymph and venous blood from its tissues improves, the metabolism is activated in it, and brain redox processes are accelerated. In addition, exercise can improve the tone of the central nervous system and help restore any disturbances in its functions. Against the background of regular performance of dosed physical exercises, afferent impulses arise, causing positive changes in the excitability of the cerebral cortex. In this case, short and intense physical stress increases the excitability of the cortex, and prolonged muscle tension leads to a decrease. In any case, the restoration of brain function, impaired by the pathological process, by the method of physical exercises is very effective if you use a clear system that provides for the conscious and active participation of the patient in the process of performing the exercises.

Keywords: physical activity, muscular activity, nervous system, nervous processes, recovery.

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INTRODUCTION

Ontogenesis can be accompanied at all stages by the appearance of dysfunctions and pathologies in all internal organs. Their development inevitably leads to a decrease in overall viability and loss of adaptation [1-3]. The current situation may weaken the body and lead to the emergence of a new pathology, seriously increasing the risk of death of the body. To prevent the current situation, modern science has developed a whole arsenal of tools, a prominent place among which is occupied by options for regular and orderly muscular activity [4].

Physical exercise is able to exert a diverse influence on the body through nervous and humoral mechanisms. Apparently the nervous mechanism is of great importance, because it determines the reaction of the whole organism, and determines the behavior of a person in the process of doing exercises [5]. Regular exercise helps to normalize the relationship between body systems [6]. In these conditions, the clarity of the relationship between its individual systems increases, the efficiency of various organs increases. This allows us to consider the dosed muscular work as a regulator of the activity of internal organs [7,8].

Feasible physical exertion can have a positive effect on the state of the cardiovascular, respiratory and muscular systems. At the same time, during these exercises, the volume of circulating blood increases, blood circulation in the brain increases, lymph and venous blood outflow from its tissues improves, metabolism is activated, redox processes are accelerated, and physical exercises are able to correct the activity of the central nervous system, increasing its tone. and contributing to the restoration of any violations in its functions [9].

In this regard, the effect of physical exercise should be considered as a healing effect of an external stimulus acting mainly through the locomotor system, increasing the tone, which in turn affects other brain regions. Increasing the tone of the cerebral cortex with a favorable effect on the nervous processes [10,11].

Regular exercise increases the effectiveness of any complex treatment [12]. Systematic performance of physical exercises improves proprioceptive afferentation and thereby contributes to the normalization of cortical activity and motor-visceral interrelations, contributes to the alignment of the ratio of the two signaling systems eliminating various symptoms of diseases. In this regard, this article aims to: consider the possibility of regular exercise in terms of health effects on the neuro-mental processes in humans.

Etiology of neurosis

Neuroses are functional disorders of the central nervous system, in which there are no anatomical structural lesions of the nervous system, but there is a violation of its functions. The scientific theory of the development of neurosis was created by I.P. Pavlov [13]. By neurosis, he understood the chronic deviations of higher nervous activity from the norm, which occurred as a result of overstraining the nervous processes of arousal and inhibition or changes in their mobility [14].

Currently, neurosis is one of the most common type of mental disorders (anxiety, fear, phobias, hysterical manifestations), in the presence of somatic and autonomic disorders. Neurotic reactions usually occur on relatively weak, but long-lasting stimuli, leading to constant emotional stress. Neurosis occurs as a result of the cumulative effect of the hazards of mental and somatic origin, with constitutional predisposition on the basis of the innate weakness of the nervous system [15].

In the development of neurosis, overwork and nervous activity are essential. Neurosis usually occurs on the ground, negative emotions and experiences associated with a number of social, household and family relationships. They can develop again, against the background of past diseases, injuries. They lead to a decrease in the ability to work, and in some cases to its loss [16].

The main manifestations of neurosis

In neuroses, changes in higher nervous activity are expressed in a decrease in the strength of the nervous processes. This occurs mainly in cases of over-voltage of one of the processes [17]. At the same time, weak stimuli are perceived by nerve cells as superstrong. Nervous processes are made inert, slow-moving. As a result, the foci of the inhibitory or irritable process remain in the cortex for a long time, dominating all the

body's activities due to the weakness of the cortical cells carrying out higher nervous activity, the cortex loses the function of a higher regulator over the subcortex. Disintegration of the function of the nonspecific system of the brain occurs, which leads to a violation of the adaptive abilities of a person, the emergence of vegetative-endocrine and other disorders [18].

When neuroses often suffer the activity of the heart, blood vessels and gastrointestinal tract. The patient is disturbed by heartbeat, interruptions in work of heart. Blood pressure becomes unstable [19]. Appetite is disturbed, there is heartburn, nausea, unstable chair. Due to the weakening of the cortical processes and their mobility in patients, the change of excitation by inhibition occurs slowly. As a result, at one and the same time, the cells of the cortex can be in a hindered state, or on the verge of transition from one state to another, or in a state of excitement. This intermediate between wakefulness and sleep, causes a change in their reactivity to various stimuli [20].

In mild cases, both strong and weak stimuli give a reaction of the same magnitude; in severe cases, weak stimuli can cause a more violent reaction than strong ones. Disorders of higher nervous activity observed with neurosis are manifested differently depending on the type of higher nervous activity [21].

In persons with an average type (without the predominance of one or another signaling system) neurasthenia often develops; in persons of an artistic type (with a predominance of the first signal system in the higher nervous activity) - hysteria; in people of the mental type, with a predominance of the second signaling system, psychasthenia may occur [22].

Most often, neurosis occurs in individuals with a weak type of nervous processes. Of course, they can develop in people with a strong manifestation of nervous processes, mostly unbalanced, in which arousal dominates a little over the processes of inhibition. Less commonly, neuroses are observed in individuals with a strong and balanced type of higher nervous activity [23]. Such people become ill if the stimulus turns out to be excessively strong or their nervous system was weakened against the background of a serious illness or severe fatigue [24]. At the same time, it has been proven that even a very serious illness cannot cause changes characteristic of the neurosis. It can only make the nervous system more vulnerable. Especially often such disorders occur with the disease of the endocrine glands [25].

Influence of medical physical culture on mental processes

When neurosis is noted, the depression of the psyche and lethargy under the influence of performing physical exercises weaken with the development of inhibition caused by increased excitability of the nervous system. Under the influence of systematic training, conductive nerve pathways and peripheral receptors are activated [26]. Training, eliminating peripheral braking, increases efficiency. The neuromuscular apparatus becomes more stable [27]. When performing physical exercises, reflex connections (cortico-muscular, cortico-vascular, cortico-visceral, muscular-cortical) are enhanced, which contributes to a more consistent functioning of the main body systems. Regular therapeutic exercises increase the lability of the nervous system [28]. Regular training leads to a decrease in the consumption of energy substances in the central nervous system during the period of muscular activity, improving redox processes. This is further promoted by the increase in hemoglobin and red blood cells in the blood, increased phagocytic function of blood arising under the influence of physical exercises [29].

Against the background of regular exercise, the coordinating activity of the nervous system is improved, which increases the body's adaptation to the load [30]. In the course of regular physical training, the processes of arousal and inhibition are balanced, which leads to the improvement of the state of all body systems, and first of all, the nervous system. This is due to the fact that in their background redox processes in the nervous tissue are more completely proceeding. Regular exercise leads to increased musculo-visceral-cortical connections and contributes to a more consistent functioning of the main systems of the body [31].

The positive emotions that arise during exercise increase the efficiency of the entire nervous system and the stability of its control over the internal organs [32].

Positive emotions that are formed during physical exertion distract the patient from painful experiences, improve the performance of the heart, lungs and other internal organs [33]. In addition, regular

physical exercises have a positive effect on the human psyche, strengthen his volitional qualities and improve organization. During exercise, the interaction of mental, vegetative, and kinesthetic factors is enhanced [34].

It has been observed that a verbal impact on the patient during the sessions may affect the function of the internal organs and the metabolism [35]. Such an impact during therapeutic physical culture can be considered as one of the methods of active psychotherapy [36]. In this case, physical exercise has the most pronounced general hygienic, fortifying and tonic effect on the patient's body, and also helps to normalize the vegetative functions, distract the patient's attention from his painful sensations [37-39].

Increased afferent impulses from the proprioceptors of the musculoskeletal system during exercise in the central nervous system [40]. Alignment of the dynamics of the main nervous processes, normalization of the cortical-subcortical relationship, as well as the restoration of the nervous trophism [41,42]. The upcoming activation of various parts of the motor analyzer, including spinal cord motoneurons, increases the biopotential of the muscles, their performance, normalizing their tone. This is especially important with the weakening or complete absence of voluntary movements [43,44]. The active volition of the patient in physical exercises contributes to the mobilization of the reserve capacity of the body, the improvement of conditioned reflex activity [45,46]. For this reason, the value of therapeutic physical culture increases after discharge from the hospital during treatment supporting remission in outpatient settings [47.48]. In addition, at this time, physiotherapy exercises are an excellent means of involving patients in work processes by actively destroying the painful stereotype [49].

CONCLUSION

Regular performance of dosed physical exercises contributes to a serious recovery of the nervous system. It was proved that the increase in afferent impulses arising on the background of physical exertion causes positive changes in the excitability of the cerebral cortex differentially. In this case, short and intense physical stress increases the excitability of the cortex, and prolonged muscle tension leads to a decrease. Some exercises stimulate mainly cortical processes with the participation of the second cortical signaling system, while others stimulate the extrapyramidal and cortical signaling systems. It depends not only on physical culture, but on the method of its application. In any case, the restoration of body functions, disturbed by the pathological process, by the method of physical exercises is very effective if it is a clear system that provides for the conscious and active participation of the patient in the exercise process.

REFERENCES

[1] Zavalishina SYu. (2018) Functional Features Of Platelets In Newborn Calves With Iron Deficiency. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 1153-1158.
[2] Apanasyuk LA, Soldatov AA. (2017) Socio-Psychological Conditions for Optimizing Intercultural Interaction in the Educational Space of the University. Scientific Notes of Russian State Social University. 16(5-144) : 143-150. doi: 10.17922/2071-5323- 2017-16-5-143-150.
[3] Pozdnyakova ML, Soldatov AA. (2017) The Essential and Forms of the Approaches to Control the Documents Execution. Contemporary problems of social work. 3 (1-9): 39-46. doi: 10.17922/2412-5466-2017-3-1-39-46.
[4] Zavalishina SYu. (2018) Functional Properties Of Hemocoagulation In Calves Of Dairy Nutrition. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) :1016-1022.
[5] Zavalishina SYu. (2018) Functional Activity Of Anticoagulant System In Calves During Early Ontogeny. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 837-843.
[6] Zavalishina SYu. (2018) Functional Activity Of Thrombocytes In Newborn Calves. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 919-924.
[7] Bikbulatova AA, Andreeva EG. (2018) Restoration Of The Profile Of Bioregulators Of Blood Plasma In People Of Second Adulthood With Osteochondrosis Of The Spine Against The Background Of Daily Wearing Of Medical And Preventive Clothing. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(4) : 413-419.
[8] Alifirov AI, Mikhaylova IV. (2018) Physical Education Of Highly Qualified Chess Players. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(4) : 1725-1730.
[9] Zavalishina SYu. (2018) Functioning Of Platelets In Milk And Vegetable Nutrition Calves. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 943-949.

[10] Zavalishina SYu. (2018) Physiological Features Of Coagulation In Calves Of Plant Nutrition. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 899-904.
[11] Zavalishina SYu. (2018) Physiological Features Of Vascular Hemostasis In Calves Of Dairy-Vegetative Food. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 1137-1143.
[12] Bikbulatova AA, Andreeva EG. (2018) Achievement of psychological comfort in 5-6-Year-Old children with scoliosis against the background of daily medicinal-prophylactic clothes' wearing for half a year. Bali Medical Journal. 7(3): 706-711. DOI:10.15562/bmj.v7i3.947.
[13] Gusarov AV, Kornev AV, Kartashev VP, Nekrasova MV (2018) Effect Of Static Exercises With A Deflection On The Tone Of The Skeletal Musculature Of Middle-Aged Women. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(4) : 1716-1724.
[14] Tkacheva ES, Zavalishina SYu. (2018) Physiological Features Of Platelet Aggregation In Newborn Piglets. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 36-42.
[15] Zavalishina SYu. (2018) Functional Activity Of Plasma Hemostasis In Neonatal Calves With Iron Deficiency, Who Received Ferroglucin And Glycopin. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 1186-1191.
[16] Bikbulatova AA, Matraeva LV, Erokhin SG, Makeeva DR, Karplyuk AV. (2018) Methodical Foundations Of Carrying Out Competitions Of Professional Skill Among People With Disabilities. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 243-247.
[17] Zavalishina SYu. (2018) Deficiency Of Iron As A Cause Of Dysfunction In Calves And Piglets. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 978-983.
[18] Zavalishina SYu. (2018) Functional Properties Of Fibrinolysis In Calves Of The First Year Of Life. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 870-876.
[19] Zavalishina SYu. (2018) Physiology Of Vascular Hemostasis In Newborn Calves. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 1037-1044.
[20] Zavalishina SYu. (2018) Functional Properties Of Anticoagulation And Fibrinolysis In Calves Of Plant Nutrition. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 1082-1087.
[21] Zavalishina SYu. (2018) Functional Antiaggregatory Properties Of Blood Vessels In Calves During Transition From Dairy To Plant Type Of Nutrition. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 1110-1116.
[22] Bikbulatova AA. (2018) Peculiarities of abnormalities of locomotor apparatus of children at preschool age with scoliosis of I-II degree living in Central Russia. Bali Medical Journal. 7(3): 693-697. DOI:10.15562/bmj.v7i3.738.
[23] Bespalov DV, Kharitonov EL, Zavalishina SYu, Mal GS, Makurina ON. (2018) Physiological Basis For The Distribution Of Functions In The Cerebral Cortex. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5): 605-612.
[24] Tkacheva ES, Zavalishina SYu. (2018) Physiological Aspects Of Platelet Aggregation In Piglets Of Milk Nutrition. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 74-80.
[25] Tkacheva ES, Zavalishina SYu. (2018) Physiology Of Platelet Hemostasis In Piglets During The Phase Of Newborns. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 1912-1918.
[26] Skoryatina IA, Zavalishina SYu. (2017) Ability to aggregation of basic regular blood elements of patients with hypertension anddyslipidemia receiving non-medication andsimvastatin. Bali Medical Journal. 6(3):514-520. DOI:10.15562/bmj.v6i3.553.
[27] Maloletko AN, Yudina TN.(2017) (Un)Making Europe: Capitalism, Solidarities, Subjectivities. Contemporary problems of social work. 3 (3-11) : 4-5.
[28] Zavalishina SYu, Makurina ON, Vorobyeva NV, Mal GS, Glagoleva TI. (2018) Physiological Features Of Surface Properties Of The Erythrocyte Membrane In Newborn Piglets. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(4):34-38.
[29] Bikbulatova AA, Karplyuk AA, Parshin GN, Dzhafar-Zade DA, Serebryakov AG. (2018) Technique for Measuring Vocational Interests and Inclinations in High-School Students with Disabilities. Psikhologicheskaya nauka i obrazovanie-psychological science and education. 23(2) : 50-58.doi: 10.17759/pse.2018230206.
[30] Bikbulatova AA, Pochinok NB, Matraeva LV, Erokhin SG, Makeeva DR, Karplyuk AV.(2018) Formation Of International Practice Of Holding Competitions Of Professional Skills Among Professionals With Disabilities. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 296-302.

[31] Zhalilov AV, Mironov IS. (2018) Identification Of The Most Significant Shortcomings Of Sports Competitions In Sambo Among People With Hearing Impairment In A Separate Region Of Russia. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(3) : 672-677.
[32] Zavalishina SYu. (2018) The Functional State Of Vascular Hemostasis In Calves During The Neonatal Phase. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) :1507-1512.
[33] Zavalishina SYu. (2018) Physiology Of Antiaggregatory Manifestations Of The Vascular Wall In Newborn Calves With Iron Deficiency, Receiving Metabolic Significant Effects. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1530-1536.
[34] Zavalishina SYu. (2018) The Functional State Of Primary Hemostasis In Newborns Calves With Dyspepsia. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1543-1549.
[35] Zavalishina SYu. (2018) Dynamics Of The Functional State Of Platelet Functions In Newborn Calves Receiving Correction For Dyspepsia. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1566-1572.
[36] Zavalishina SYu. (2018) Physiological Control Of The Vascular Wall Over Platelet-Induced Aggregation In Newborn Calves With Iron Deficiency. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1601-1606.
[37] Zavalishina SYu. (2018) Functional Features Of Primary Hemostasis In Newborns Calves With Functional Disorders Of The Digestive System. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1630-1636.
[38] Zavalishina SYu. (2018) Elimination of platelet dysfunctions in newborn calves with functional digestive disorders. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1650-1656.
[39] Zavalishina SYu. (2018) Prevention Of Violations Of The Functional Status Of Platelet Hemostasis In Newborn Calves With Functional Disorders Of The Digestive System. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1672-1678.
[40] Zavalishina SYu. (2018) Physiological Properties Of Platelets In Newborn Calves With Functional Disorders Of The Digestive System, Treated With The Sorbent "Ecos". Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1697-1702.
[41] Zavalishina SYu. (2018) The Dynamics Of The Physiological Properties Of Hemostasis In Newborn Calves With Functional Disorders Of The Digestion Against The Background Of Their Consumption Of Needles Extract. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1726-1731.
[42] Zavalishina SYu. (2018) Functional Features Of Vascular Hemostasis In Calves Of Dairy Nutrition. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1754-1759.
[43] Zavalishina SYu. (2018) Functional Activity Of Vascular Hemostasis In Newborn Calves With Iron Deficiency. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1490-1496.
[44] Zavalishina SYu. (2018) Physiological Features Of Primary Hemostasis In Newborns Calves With Functional Digestive Disorders. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1514-1520.
[45] Zavalishina SYu. (2018) Functional Features Of Hemostasis In Calves Of Dairy And Vegetable Nutrition. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1544-1550.
[46] Zavalishina SYu. (2018) Functional Activity Of Primary Hemostasis In Calves During The First Year Of Life. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1575-1581.
[47] Vorobyeva NV, Mal GS, Zavalishina SYu, Glagoleva TI, Fayzullina II. (2018) Influence Of Physical Exercise On The Activity Of Brain Processes. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 240-244.
[48] Bikbulatova AA. (2018) Functional Features Of Microcirculatory Processes In Obese Women Against A Background Of Long Daily Wearing Of Corrective Clothing. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 785-793.
[49] Bikbulatova AA. (2018) Creating Psychological Comfort In Women Who Wear Corrective Clothing For A Long Time. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(6) : 1112-1121.