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Psychological Principles of the Formation of General Compensatory Reactions of the Patient with Ischemic Stroke in a Case of Physical Rehabilitation

Психологічні принципи формування загальних компенсаторних реакцій хворого з ішемічним інсультом під час здійснення фізичної реабілітації

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ABSTRACT

The objectives *of our article are: 1) to study the characteristics of disorders of psychomotor function and psycho-emotional state of patients with ischemic stroke according to the initial examination; 2) to develop the method of physical rehabilitation of patients with ischemic stroke at the inpatient stage of rehabilitation, depending on the severity of psychomotor functions and features of the psycho-emotional state; 3) to propose psychological principles of the formation of general compensatory reactions of the patient with ischemic stroke in a case of physical rehabilitation.*

Research methods*. There were used psychological and pedagogical research methods: the analysis of literature sources, the method of psychological and pedagogical observation, psychological and pedagogical experiment, providing the research of psycho-emotional state (M. Lucher's test is used (Lucher,2012)), determination of motor activity on the "Scale of psychomotor activity" by L.S. Rohovyk (Роговик, 2013).*

For our research we proposed "The author's methodology of measuring the amount of active movements in the joints of the patient's limbs" (Харченко & Михальчук, 2022a) and "Six-point scale for assessing muscle strength in the joints of the patient's limbs" (Харченко & Михальчук, 2022b).

The results of the research. *Patients showed increased tone in the flexion of the ankle joint and extension of the hip and knee joints. In other muscle groups, the tone was not increased, and in the upper extremities there was a decrease in muscle tone. Muscle strength was statistically significant ($p < 0.01$) decreased in all groups of muscles.*

In a case of the research of the limbs of the unaffected side, the following data were obtained: the volume of active movements was 55.68% ± 4.3 of the

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appropriate volume of movements and the values are significantly higher (at the level of reliability ρ<0.01 according to Student's t-test). The rate of passive movements was higher than the affected party (at the level of reliability ρ<0.01 according to the Student's t-test) and amounted to 63.06% ± 3.9 of the appropriate volume of passive movements and corresponded to the average values for the age group of respondents. The mean value of muscle strength was 61.28% ± 7.3 values are statistically significant (at the level of reliability ρ<0.01 according to Student's t-test) of the affected side. Muscle tone on the unaffected side was higher than normal and was 27.9% ± 3.6 of the maximum value (at a confidence level of ρ<0.05 according to Student's t-test).

It was proved that the amount of passive movements in the experimental group as a whole is slightly lower than in the control group.

***Conclusions.** Adequate tonal response of the muscular system leads to the formation of a pathological static stereotype. We proposed psychological principles for the formation of general compensatory reactions of the patient in a case of physical rehabilitation of patients with ischemic stroke: 1. The principle of actualization of the defect. 2. The principle of progressive mobilization of compensatory mechanisms of psychomotor activity. 3. The principle of continuous reverse concentration of compensatory mechanisms of the personality psyche. 4. The principle of authorizing the compensatory mechanisms of the individual psyche. 5. The principle of relative stability of the compensatory mechanisms of the individual psyche.*

***Key words:** ischemic stroke, psychological principles of the formation of general compensatory reactions, physical rehabilitation, the principle of actualization of the defect, the principle of progressive mobilization of compensatory mechanisms of psychomotor activity, the principle of continuous reverse concentration of compensatory mechanisms of the personality psyche.*

Introduction

A person, both an individual and a personality, the most fully is characterized by its functional and socio-psychological status, the integrativeness of which is the best manifested in the process of adaptation to living conditions. In order to assess the quality of the adaptation process, in addition to physical potential, a great role is given to the establishment (organization) of optimal compliance of the individual to the conditions of the en-

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vironment, such as the psychological adaptation of the subject (Hardeman, Medina & Kozhimannil, 2016).

It is a well-known fact that the influence of mental processes through the central and autonomic nervous system on the internal organs, the functioning of which, in turn, is mediated by the activity of the receptor apparatus, significantly affect the human psyche (Onufriieva & Ivashkevych Ed., 2021). These relationships are confirmed in the psychosomatic manifestations of a variety of diseases, which include cerebral circulatory disorders. Moreover, the transformation of personality, mental adaptation, etc. take place, to one degree or another one, in any disease, forming a continuous sequence of symptoms, which is called the psychosomatic continuum. According to scientists (Kharchenko & Kurytsia, 2021; Kharchenko & Komarnitska, 2021), in this continuum cerebral stroke occupies a leading place, second only to paroxysmal arrhythmias and coronary heart disease. In this regard, functional disorders, expressed by different sensations of the disease, can be caused by disorders of mental adaptation, especially if it is manifested in the inadequacy of psychophysiological relationships, somatic health disorders.

Ischemic stroke is a disease that leads not only to disorders in the psychomotor sphere, to speech disorders, but also to disorders of other higher mental cortical functions: cognitive disorders (decreased memory, intelligence, concentration), emotional and volitional disorders, praxis (disorders that are manifested in the performance of quite complex psychomotor acts in the absence of paresis, disorders of sensitivity, coordination of movements), in the mathematical calculation of numbers (acalculia), disorders in gnostic activity, more often – spatial, disorientation in space and some others (Kharchenko & Vashchenko, 2021). The appearance of such disorders, in turn, does not contribute to the rapid recovery of lost functions as a result of the disease, causing impaired initiation of movements and dysfunction of psychomotor programs (Mykhalchuk, Pelekh, Kharchenko, Ivashkevych, Ivashkevych, Prymachok, Hupavtseva & Zukow, 2020). Patients

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show symptoms of decreased mental and psychomotor activity, anognosia (underestimation of fixed psychomotor defect), passive and indifferent attitude to their psychomotor defect, lack of activity in overcoming it, against which there is a decrease or complete loss of motivation to exercise. As a result, this attitude of the patient to the process of his/her recovery leads to significant social maladaptation, and it is difficult to get out of this state (Khwaja, 2012).

Therefore, the speed of recovery of impaired motor functions largely depends on the psychological state of the patient. The development of such processes is largely associated with the localization of certain gaps in the lesion. If the foci of lesions in the frontal area are focused, apathetic-abulic syndrome may develop, which is characterized by a lack of self-motivation (spontaneity), interest in life (apathy), decreased functioning of volitional functions, intelligence and criticism. Restoration of self-care, walking skills in this group of patients is greatly complicated, many of them remain completely helpless in everyday life (Onufriieva, Chaikovska, Kobets, Pavelkiv & Melnychuk, 2020).

It is well known that the left hemisphere of the brain is the basis of logical, abstract, verbal thinking, a space for the realization of speech functions of the individual. The right hemisphere of the brain is functionally related to the perception and processing of auditory, visual, somato-sensory and motor material of non-verbal nature. In this case, the right hemisphere is characterized not so much by dismemberment and logical analysis of the reality, as the perception of holistic images. It is more characteristic not for conceptual, verbal perception, but for sensory and figurative ones.

According to empirical data (Hayden, Farrar & Peiris, 2014), under the diagnosis of such lesions recovery of psychomotor deficit occurred better for patients with left hemispheric lesions (despite the presence of aphasia) than for patients with right hemispheric localization of the process. According to sci-

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entists, this can be explained by concomitant disorders of higher brain functions (spatial-constructive disorders, spontaneity, slowness of mental processes) for patients with right hemispheric localization of stroke. The relationships between the degree of recovery of psychomotor functions and skills (walking, self-care, household and work skills) and the state of emotional-volitional, intellectual-gnostic spheres of personality were empirically confirmed.

Thus, the issue of recovery of patients with cerebral ischemic stroke is the subject of much attention of many specialists dealing with this category of patients at different stages of rehabilitation treatment. The complex task of mental and physical activation of psychomotor functions of the patient, social and labor adaptation of the heavy contingent of post-stroke patients, in our opinion, is the most successfully solved in the system of comprehensive physical and psychological rehabilitation.

It should be noted that comprehensive rehabilitation measures are reflected in the researches of many scientists (Villar, Blanco & del Campo, 2015). There are many different methods of psychodiagnostics, covering all known psychological processes, characteristics and conditions of a man. There are psychodiagnostic techniques as those ones that directly appeal to the consciousness of the respondent (for example, questionnaires). These techniques are called explicit. There are also so-called "implicit" techniques, which have the aim of unconscious human reactions (or projective techniques). The main disadvantage of techniques that appeal to the phenomenon of consciousness is the possibility of intentional distortion of test results (behavioral play), while studies of involuntary human reactions are more reliable. M. Luscher's color test is one of the most common projective techniques. The advantages of this test are the independence of the results from the age, gender and educational characteristics of the respondents, the ability to identify both stable personality traits and features of the current psycho-emotional state, which is especially important in monitoring the effective-

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ness of treatment. However, in the analyzed scientific literature we did not find data from studies of the psychological sphere of patients with ischemic stroke using a projective test, in particular, of the Methodology of M. Lucher (Lucher, 2012).

Thus, taking into account the theoretical and methodological analysis of the scientific literature in our research, ***the objectives*** of it are:

1. To study the characteristics of disorders of psychomotor function and psycho-emotional state of patients with ischemic stroke according to the initial examination.

2. To develop a method of physical rehabilitation of patients with ischemic stroke at the inpatient stage of rehabilitation, depending on the severity of psychomotor functions and features of the psycho-emotional state.

3. To propose psychological principles of the formation of general compensatory reactions of the patient with ischemic stroke in a case of physical rehabilitation.

Methods of the research

Research methods. The following research methods were used to solve the tasks having been set in our research:

Psychological and pedagogical research methods:

1. The analysis of literature sources.

2. The method of psychological and pedagogical observation.

3. Psychological and pedagogical experiment.

4. Providing the research of psycho-emotional state (M. Lucher's test is used).

For our research we proposed "The author's methodology of measuring the amount of active movements in the joints of the patient's limbs" (Харченко & Михальчук, 2022a) and "Six-point scale for assessing muscle strength in the joints of the patient's limbs" (Харченко & Михальчук, 2022b).

Medical and biological research methods:

1. Investigation of functional status (according to autogenic training, determination of heart rate; method of functional tests: test with comfortable respiratory arrest on exhalation,

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test with hyperventilation, orthostatic test using sitting position).

2. Goniometry.

3. Manual muscle testing.

4. Determination of muscle tone.

5. Determination of motor activity on the "Scale of psychomotor activity" by L.S. Rohovyk (Роговик, 2013).

Methods of mathematical statistics:

1. Analysis of variance (Fisher's test).

2. Cluster analysis.

The determination of muscle tone. Muscle tone was assessed under patients' conditions that performed rather passively on the Modified by us Ashworth's Scale of Muscle Spasticity (see Table 1).

Table 1

Modified Ashworth's Scale of Muscle Spasticity

Points	Muscle tone
0	Increased tone is not diagnosed
1	A slight increase of the tone is felt when bending or unbending the limb segment in the form of low resistance at the end of the movement
2	Moderate increase of tone, which is detected throughout the movement process, but does not diagnose complications in the presentation of passive movements
3	Significant increase of the tone, which complicates the presentation of passive movements
4	The affected segment of the limb is fixed in the position of flexion or extension

The empirical research was provided at the Department of Human Health and Physical Therapy of the International University of Economics and Humanities named after Academician Stepan Demianchuk on the basis of Ternopil Regional Municipal Clinical Psychoneurological Hospital, Neurological Department for Patients with Cerebral Circulatory Disorders (Neuroreability Unit).

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In accordance with the purpose of the research and in order to solve the tasks, in our experiment 50 patients with ischemic stroke were participated who had disturbances in the area of the internal carotid artery in the acute and residual period, who were treated at the Ternopil Regional Communal Clinical Psycho-neurological Hospital during the period from January to December, 2021. The diagnosis of ischemic stroke was made in the neurological department for patients with cerebral circulatory disorders on the basis of the characteristic of clinical picture, data of the laboratory and instrumental research methods according to the "International Statistical Classification of Diseases and Related Health Problems".

The criteria for inclusion into the empirical study were: a clear consciousness with sleep disturbance, sufficient to maintain and follow instructions during providing exercises; the absence of severe somatic pathology, acute systemic disease, uncontrolled sinus tachycardia above 120 beats per minute, diabetes mellitus, musculoskeletal defects that in a great degree complicated exercises, a lack of gross sensory aphasia and cognitive disorders patients in the process of providing rehabilitation measures.

Results and their discussion

Patients showed increased tone in the flexion of the ankle joint and extension of the hip and knee joints. In other muscle groups, the tone was not increased, and in the upper limbs there was a decrease in muscle tone. Muscle strength was statistically significant ($\rho<0.01$) decreased in all groups of muscles having been studied.

In a case of the research of the limbs of the unaffected side, the following data were obtained: the volume of active movements was $55.68\% \pm 4.3$ of the appropriate volume of movements and the values are significantly higher (at the level of reliability $\rho<0.01$ according to Student's t-test). The rate of passive movements was higher than the affected party (at the level of reliability $\rho<0.01$ according to the Student's t-test) and

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amounted to 63.06% ± 3.9 of the appropriate volume of passive movements and corresponded to the average values for the age group of respondents. The mean value of muscle strength was 61.28% ± 7.3 – values are statistically significant (at the level of reliability $\rho<0.01$ according to Student's t-test) of the affected side. Muscle tone on the unaffected side was higher than normal and was 27.9% ± 3.6 of the maximum value (at a confidence level of $\rho<0.05$ according to Student's t-test).

Data on the initial state of motor function in patients with ischemic stroke of subgroup "hemiparesis" are shown in Table 2.

Table 2

Research data of the volume of active and passive movements, strength and of muscle tone of the affected extremities of patients of the subgroup "hemiparesis" (n = 20) at the beginning of the experiment (M ± т)

Motor acts being tested	**The amount of active movements, in points, a scale from 0 to 200**	**The amount of passive movements, in points, a scale from 0 to 200**	**Muscle strength, in points, a scale from 0 to 20**	**A muscle tone**
Flexion and extension in the shoulder joint (the main group)	16.8±2.1	42.7±2.2	6	Reduced
Flexion and extension in the shoulder joint (the control group)	18.7±0.5	36.9±4.1	5	Reduced
Withdrawal of the arm at the shoulder joint (the main group)	29.4±7.0	38.2±4.7	6	Reduced
Withdrawal of the arm at the shoulder joint (the control group)	28.1±2.8	31.5±0.6	5	Reduced
The external and internal rotation in the shoulder joint (the main group)	19.5±2.1	28.4±5.3	5	Reduced

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Table 2 continuation

The external and internal rotation in the shoulder joint (the control group)	16.1±0.4	10.9±2.2	4	Reduced
Bending the arm in elbow joints (the main group)	16.8±2.2	29.4±5.4	5	Reduced
Bending the arm in elbow joints (the control group)	28.1±3.5	24.0±2.6	5	Reduced
The supination of forearm (the main group)	28.6±2.8	30.1±2.6	5	Reduced
The supination of forearm (the control group)	34.9±2.7	39.5±1.5	5	Reduced
The pronation of forearm (the main group)	29.8±4.0	17.3±5.6	4	Reduced
The pronation of forearm (the control group)	37.1±5.2	28.9±2.1	5	Reduced
Flexion and extension in the wrist (the main group)	38.0±1.1	20.1±4.2	4	Reduced
Flexion and extension in the wrist (the control group)	31.7±8.3	19.1±6.5	5	Reduced
Bending in hip joints (the main group)	47.9±9.8	55.9±7.8	7	Reduced
Bending in hip joints (the control group)	45.6±0.4	48.2±2.9	7	Reduced
The extension in hip joints (the main group)	41.1±6.3	33.2±2.6	5	Reduced
The extension in hip joints (the control group)	39.7±1.7	30.9±5.4	5	Reduced
The assignment in hip joints (the main group)	30.7±4.7	37.2±1.1	5	Reduced
The assignment in hip joints (the control group)	38.4±1.8	30.4±6.7	6	Reduced
Bringing in hip joints (the main group)	38.3±3.0	31.9±6.1	5	Reduced
Bringing in hip joints (the control group)	30.3±2.5	40.9±1.4	5	Reduced

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Table 2 continuation

The external rotation in the hip joint (the main group)	37.7±0.4	37.1±4.8	4	Reduced
The external rotation in the hip joint (the control group)	35.9±7.2	39.0±8.6	5	Reduced
The internal rotation in the hip joint (the main group)	48.6±6.1	37.7±5.5	5	Reduced
The internal rotation in the hip joint (the control group)	48.3±6.4	35.8±4.2	6	Reduced
Bending in knee joints (the main group)	58.6±5.0	71.2±5.3	7	Reduced
Bending in knee joints (the control group)	60.2±4.2	58.7±4.0	7	Reduced
Bending in ankle joints (the main group)	39.1±5.7	42.8±1.8	5	Reduced
Bending in ankle joints (the control group)	32.9±7.6	34.0±7.2	5	Reduced
The extension in ankle joints (the main group)	40.6±5.1	42.4±6.0	5	Reduced
The extension in ankle joints (the control group)	51.5±2.4	45.8±2.0	6	Reduced

It was proved that in the studied groups of patients with hemiparesis there is a decrease in the volume of active movements of the affected side (in the experimental group there were more such movements, which were less pronounced, than in other subgroups). The amount of passive movements in the experimental group as a whole is slightly lower than in the control group.

Muscle strength is greatly reduced in a case of all respondents compared to the average situation. The weakest muscles are those ones which are responsible for extending the arm, such as copying, providing supinator movements, flexors of the arm under conditions of pronounced tone, flexors of the thighs and extensors of the ankle joint. The average muscle tone of the af-

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fected side is slightly higher than in the previous subgroup "plesia + paresis". Increased tone is observed in the flexor muscles of the shoulder, elbow, supinators of the hand, in the flexors of the ankle joint and extensors of the hip and knee joints.

In a case of the research of the muscles of the unaffected side in this group of patients, the volume of active movements was lower than the appropriate volume of movements and amounted ones to 73.44% ± 5.3 – these values are statistically significant at a confidence level of $\rho<0.01$ according to Student's t-test. The index of the volume of passive movements of the unaffected party was higher (at the level of reliability $\rho<0.01$ according to the Student's t-test) than the index of the affected party and amounted to 77.83% ± 2.1 compared with normal data. The mean muscle strength of the unaffected side was 70.65% ± 4.2 (at a confidence level of $\rho<0.01$ according to Student's t-test). The mean muscle tone of the unaffected side was also higher than normal and it was 2.4 ± 0.4 points (41% of maximum) (at a confidence level of $\rho<0.01$ according to Student's t-test).

Thus, the research of the initial state of voluntary motility of patients with ischemic stroke at the beginning of the course of physical rehabilitation showed the presence of disorders of static and dynamic motor function of arms, legs, were coordinated action of arms and legs, head, torso, but they were quite different in different groups of patients.

The state of motor function of patients with ischemic stroke is characterized in such a way: on the affected side, the maximum values of active, passive movements of muscle strength and the tone are diagnosed in the subgroup "hemiparesis", the lowest – in the subgroup "hemiplegia". On the lacuna side of the lesion, the most pronounced muscle strength and tone are diagnosed in the subgroup "hemiparesis", the largest volume of active and passive movements, in turn – in the subgroup "plesia + paresis", "hemiparesis".

The greatest asymmetry in the state of muscle tone of the affected side is observed in the subgroup "hemiplegia". In the

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most amount of patients, goniometry was difficult due to difficulties in understanding the content of the commands given to them. As a result of the research of the volume of active movements, we can say that its reduction depends on the duration of the disease preceding the psychomotor experience. The change in the volume of active movements affects both the affected and unaffected side, but also to varying degrees.

The results of the research of the amount of passive movements suggest that the restriction of passive movements of patients with this disease may be caused by age-related changes in the musculoskeletal system. So, high muscle tone was associated with the underlying disease, sprains, and consequence – acute pain. Thus, the largest amount of passive movements is observed in the subgroup "plesion + paresis" and "hemiparesis". Some decrease in passive movements of the unaffected side is diagnosed in the subgroup "hemiparesis", and this is probably due to higher muscle tone.

Analyzing the data on muscle strength, we can say that with increasing duration of the disease the rate of strength increases. The smallest asymmetry of the affected and unaffected parties is observed in the subgroup of patients with hemiparesis, the largest one – in the subgroup of hemiplegia. The data of the conducted researches show that the patients had pronounced disturbances of both postural and corrective function of the muscles, which were manifested by disturbances in the tone, muscle strength, volume of movements in the joints. This combination of pathological processes led to a violation of the patient's social adaptation and significantly reduced the level of his/her daily activity.

Conclusions

Psychological principles of the development of general compensatory reactions of the patient in a case of physical rehabilitation of patients with ischemic stroke were proposed in this research. These principles are: 1) the principle of actualization

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of the defect; 2) the principle of progressive mobilization of compensatory mechanisms of psychomotor activity; 3) the principle of continuous reverse of concentration of compensatory mechanisms of the psyche of the person; 4) the principle of sanctioning compensatory mechanisms of the psyche of the person; 5) the principle of relative stability of the compensatory mechanisms of the psyche of the patient.

Adequate tonal response of the muscular system leads to the formation of a pathological static stereotype. The laws of constructing a psychomotor stereotype are based on uninhibited innate reflexes, but they are adaptive in the nature and sanogenetic in their direction. According to the theoretical analysis of the scientific literature, we proposed the psychological principles for the formation of general compensatory reactions of the patient in a case of physical rehabilitation of patients with ischemic stroke:

1. *The principle of actualization of the defect* (feedback of psychomotor action, which originates from various receptors, informs the integrative centers about the existence of a certain defect).

2. *The principle of progressive mobilization of compensatory mechanisms of psychomotor activity* (compensation is carried out with the gradual connection of the nervous system until the doctor achieves the desired effect).

3. *The principle of continuous reverse concentration of compensatory mechanisms of the personality psyche* (the impulse to the impact of the defect enters the central nervous system continuously).

4. *The principle of authorizing the compensatory mechanisms of the individual psyche* (compensatory mechanisms begin to work in the conditions of achieving a pathological impulse of a certain threshold).

5. *The principle of relative stability of the compensatory mechanisms of the individual psyche* (compensatory mechanisms are activated and slowed down gradually).

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Compensation of certain function that had disorders is based on the restructuring of the old stereotype and the development of a new dynamic stereotype. The most important point of compensation for structural and functional disorders in the case of psychomotor pathology is active participation in the rehabilitation process and the patient himself/herself, who should seek to activate the body's systems, which are not affected at all or suffered insignificantly. It has been shown that due to new unaffected parts of the central nervous system, it is possible to rearrange the innervation between the antagonists.

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Харченко Євген, Комарніцька Людмила. Психологічні принципи формування загальних компенсаторних реакцій хворого з ішемічним інсультом під час здійснення фізичної реабілітації.

Мета статті: *1) вивчити особливості розладів психомоторної функції і психоемоційного стану хворих на ішемічний інсульт за даними первинного обстеження; 2) розробити методику фізичної реабілітації хворих на ішемічний інсульт на стаціонарному етапі реабілітації залежно від тяжкості ураження психомоторних функцій і особливостей психоемоційного стану; 3) запропонувати психологічні принципи формування загальних компенсаторних реакцій хворого з ішемічним інсультом під час здійснення фізичної реабілітації.*

Методи дослідження. *Використано такі психолого-педагогічні методи дослідження: аналіз літературних джерел, психолого-педагогічне спостереження, психолого-педагогічний експеримент, дослідження психоемоційного стану (використано тест М. Люшера (2012)), визначення рухової активності за «Шкалою психомоторної активності» Л.С. Роговик (Роговик, 2013).*

У дослідженні було використано авторську "Методику вимірювання обсягу активних рухів у суглобах кінцівок хворого на ішемічний інсульт" (Харченко & Михальчук, 2022а) та "Шестибальну шкалу оцінки м'язової сили в суглобах кінцівок хворого на ішемічний інсульт" (Харченко & Михальчук, 2022б).

Результати дослідження. *У хворих спостерігався підвищений тонус в згинаннях гомілковостопного суглоба та розгинанні тазостегнового і колінного суглобів. В інших групах м'язів тонус не підвищений, а у верхніх кінцівках спостерігалося зниження м'язового тонусу. Сила м'язів була статистично ($p<0,01$) знижена у всіх досліджених м'язах.*

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У випадку дослідження кінцівок неураженого боку було отримано наступні дані: показник обсягу активних рухів склав 55,68% ± 4,3 від належного обсягу рухів і значення є достовірно вищими (на рівні достовірності ρ<0,01 за t-критерієм Стьюдента) ураженої сторони. Показник обсягу пасивних рухів виявився вищим за показник ураженої сторони (на рівні достовірності ρ<0,01 за t-критерієм Стьюдента) і склав 63,06% ± 3,9 від належного обсягу пасивних рухів і відповідав середнім значенням за віковою групою респондентів. Середнє значення сили м'язів склало 61,28% ± 7,3 – значення є статистично значущими (на рівні достовірності ρ<0,01 за t-критерієм Стьюдента) показника ураженої сторони. Тонус м'язів на неураженій стороні виявився вищим за нормальне значення і склав 27,9% ± 3,6 від максимального значення (на рівні достовірності ρ<0,05 за t-критерієм Стьюдента).

Доведено, що обсяг пасивних рухів в експериментальній групі в цілому є дещо нижчим, ніж у контрольній групі.

Висновки. *Доведено, що адекватна тонусна реакція м'язової системи призводить до формування патологічного статичного стереотипу. Запропоновано психологічні принципи формування загальних компенсаторних реакцій пацієнта у випадку проведення фізичної реабілітації хворих з ішемічним інсультом: 1. Принцип актуалізації дефекту. 2. Принцип прогресивної мобілізації компенсаторних механізмів психомоторної діяльності. 3. Принцип безперервного зворотного концентрування компенсаторних механізмів психіки особистості. 4. Принцип санкціонування компенсаторних механізмів психіки особистості. 5. Принцип відносної стійкості компенсаторних механізмів психіки особистості.*

Ключові слова: *ішемічний інсульт, психологічні принципи формування загальних компенсаторних реакцій, фізична реабілітація, принцип актуалізації дефекту, принцип прогресивної мобілізації компенсаторних механізмів психомоторної діяльності, принцип безперервної зворотної концентрації компенсаторних механізмів психіки особистості.*

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