

R. V. Sluhenska, Higher State Educational Establishment of Ukraine "Bukovinian State Medical University"

T. V. Pasko, Higher State Educational Establishment of Ukraine "Bukovinian State Medical University"

O. S. Pashkova Chernivtsi Secondary School № 11

THEORETICAL BASES OF INVESTIGATION OF CONTROLLED PHYSICAL LOADINGS IN PREVENTION OF OCCURRENCE OF CHRONIC STRESS

Sluhenska, R. V., Pasko, T. V., Pashkova, O. S.

Theoretical Basics of Investigation of Controlled Physical Loadings in Prevention of Occurrence Chronic Stress

The article is dedicated to analysis of historiography and theoretical basics of role of chronic stresses in life and health of people, their probability of occurrence significantly increased in modern conditions of life. Leaning on investigation of physiologists, psychologists, doctors, psychotherapists with regard to interaction between emotional, physical and other components of health, we have tried to show that impact of different physical exercises on people's organism can serve as prevention of chronic stresses and form skills of stress stability. Investigation is designed to consider abilities of controlled motor activity (including physical education and sport) in warning about occurrence psychological over loadings, in improvement of social interaction, adaption, expansion of possibilities to confront conflicts. As it is visible from the analysis of theoretical basis and historiography of question, there are a lot of different investigations of movement physiology as well as a lot of different approaches to investigation and understanding of stress nature and emotional tension.

There are even methods of control tension through work with body (method of «progressive muscles relaxation», autogenic training, method of biological reverse connection); also possibility of releasing of emotions through physical activity in psychotherapy (bodily-oriented and dancing-motor direction of psychotherapy). This investigation is the first (theoretical) part of two-blocks one, that is designed to consider and introduce on practice complexes of cyclic and acyclic exercises, that has the aim to struggle with chronic stress.

Key words: stress, stress resistance, physical exercises, historiography, physical activity.

Setting the problem in general form and its connection with significant scientific and practical tasks. Modern people live under special conditions, that often require excessive psychological tension, use of additional resources of organism during insufficient abilities of its restoration. Increasing of conflicts at the state level, as well as at schools and families, at all levels of social life is additional factor that can intensify feeling of stress and its consequences and also reduce stress stability. Staying at conflict situations leads to increasing of psychological loadings, violation of balance of nervous processes and is accompanied with reducing of stress stability. The article is intended to investigate theoretical and historiographical bases of possibility of controlled motor activity (including physical culture and sport) in prevention of occurrence of psychological loadings, in improvement of social interaction, adaptability, expansion of possibilities to confront conflicts.

Analysis of recent investigation and publications. Large amount of psychologists investigated role of stress states in people's life. Concept of «stress», main stages, phases of stress were revealed by H. Selie in his researches. In 1935, American physiologist U. Kennon first determined active relaxation that is protective reaction during stress, as reaction of fight or escape. Doctors T. Holms and R. Rahe (the USA) studied dependence of diseases from different stress genetic vital events in more than 5 thousand patients (90s, XX century). They came to conclusion, that significant changes in people's lives precede psychological and physical diseases [1, p. 8]. Mentioned problem was investigated by such native and foreign scientists: O. Kocharian, V. Mozhovyi, S. Anohina, B. Vardanian, B. Zylberman, V. Merlin, Ch. Sherrynhton, etc.

Aim: to cover theoretical and historiographical bases of influence of psychological (emotional and social) stressogens on physical health of people, to show possibilities of controlled physical loadings in prevention of occurrence of chronic stress. This investigation is the first one (theoretical) part of two-blocks research, that is designed to consider complexes of cyclic and acyclic exercises, which aim to struggle with chronic stress and introduce these complexes on practice.

Presentation of main material. Impact of physical trainings on psycho-emotional and as a result, on physical state is known in many cultures. Beginnings of autogenous trainings come from practice of Indian yogis, who could influence a lot of psychological and physiological processes of their organisms with the help of self-suggestion. Nowadays it is found, that autogenous training (AT) is pretty effective way of correction of psycho-emotional tension (V.S. Lobzyn, M.M. Reshetnikov, 1986; A.M. Sviatosh, 1997; Yu.V. Shcherbatyh 1998). At the beginning of the century, «peripheral theory of emotions» occurred by James-Lange, that has significant meaning for understanding processes that connect our thoughts and our body. According to this theory, each physiological state of organism responds certain state of consciousness, herewith, impact of these states is specular. This theory affirms, that with the effort of will it is possible firstly, to change character of movement of skeletal musculature, making it appropriate to another emotion, and secondly, change thoughts, having made assumption, that needed emotion has already existed in the organism. It increases probability of existence of needed emotion. Example of the first mentioned approach about impact on own body can serve method of Jacobson, while the example of the other one – method of Ye. Kue [2, pp. 66–89; 267–276].

Scientists O. Kocharian and V. Mozhovyi proposed structural approach to analysis of phenomenon of stress stability. They considered stress stability as personal symptom-complex that has certain structural organization, which is developed in ontogenesis and detects deviations during various pathologic states. Specific features of absence of stability to stresses are: low differentiation, reduction of adaptation potential, etc. conflict situations often lead to occurrence of stress. They determined stress stability as basic element of conflict stability, as quality of personality that is characterized by ability to confront stress factors during a period of time that is needed for organization of new conditions, where given stressor would not be threatening, and provides high efficiency of activity, saves health of young people [1; 2; 4].

Many researchers studied the concept of stress stability of people. S. Anohina considers stress stability as dynamic process of adequate reaction that constantly changes depending on situation, stressor, etc. stress stability of young people appears in ability to adjust to stress situations keeping high efficiency and livelihoods. Adaptation may adopt form of stressor resistance, avoidance or adjustment to influence of stress. That's why, it is necessary to study peculiarities of adaptation to various impacts of environment and acquirement of adaptation skills. B.Vardanian, B.Zylberman, V. Merlin and others highlighted following attributes of stress stabilities: connection of stability with change, adaptively-activity mechanism, regulation, protection, etc. [5; p. 542–543].

In frames of psycho-physiological approach susceptibility of organism to distress, that is exhaustion of physical and psychological adaptive abilities and is determined as a given. That's why, main task of prevention of stress disorders is thought to be creation of possibilities for timely psycho-muscles relaxation of people who suffer excessive stresses. Learning about physiological nature of moves is being developed for many decades. English physiologist Ch. Sherrynhton developed idea about integrative functions of nervous system, by studying mechanisms of nervous activity. Studying of L.A. Orbeli became significant contribution in physiology of motor activity of people; it was about universal character of adaptively-trophic impacts of sympathetic nervous system on metabolism, on physiological mechanisms of support of optimal state of tissues and cells of organism, depending on processes that occur there. Under conditions of deployment of physiological activity, its efficiency is provided by various interactions of functional and morphological peculiarities of organism as well as peculiarities of their integration with leading roles of neuroendocrine mechanisms.

T.K. Karston created laboratory of physiology of physical loadings at the University of Illinois state in 1941. He continued doing exploratory activity and taught a lot of present leading scientists in branch of physical loading till his retirement in 1971. Programs in physical preparation developed by T.K. Karston with his students and also the book of Kennet Kooper «Aerobics» published in 1968,

physiologically grounded expediency of using physical loadings for providing healthy lifestyle.

From the middle of XIX century, there was opinion about necessity of regular physical activity for support optimal state of health, but it became admitted only at the end of 60's years of XX century. Next investigations have proved significance of physical loadings for resistance of physical decline, conditioned by process of aging. Awareness of the need of physical activity promoted understanding of importance of preventive medicine and necessity of development programs for health supporting and strengthening. However, physiology of physical loadings cannot be put on the merit modern movement for health preservation, but it provided main complex of knowledge and grounding of including physical loadings as inseparable component of healthy lifestyle, and also laid foundations into science about significance of physical loadings for ill and healthy people.

Physiology of physical exercises studies changes of structures and functions of organism under the influence of short and long continued physical loadings. It studies physiological adaptation of organism to stress of urgent loading during execution of physical exercises and chronic stress of long continued loading.

Organism as a unit realizes its livelihoods with morpho-functional unity of interaction of cells membranes, organs, tissues, physiological and functional systems, that are consolidated by hierarchical principle, when any part is subjected to execution of one or another function of the highest systems of regulation that lie in the basis of the function of more general integral parts.

H. Selie selected among consequences of stress: at physical level: psychosomatic diseases, at emotional one – state of anxiety, internal conflicts, emotional disorders. Except of it, to distress consequences such states as fatigue, over fatigue, psychoneurotic reactions, acute stress disorders and adaptation violations, reduction of work capacity, appearance of aggression and depressive states, professional and personal deformation, decreasing of efficiency of social functioning; increasing of conflicts, appearance of apathy, pessimism, etc., which create risk of violation of physical and psychological health. Action of these factors is increasing

with lack of sleep, physical and emotional exhaustion, after disease, with continuous action of stress gens, etc. [6, p. 11]. Physical exercises are very diverse, and differently impact on people's organisms. Emotional stress does significant impact that appears through individual estimation of situation, stress gen, attitude towards them, comparison with previous experience of overcoming stress situations and can intensify or strengthen action of stress gens on organism. Health preservation mostly depends on «zone of stability» – scope of events, in frames of which nervous system keeps ability to self-regulation [4, p. 5–7].

Inability to disentangle negative emotions, to get rid of them, lead to emotional tension. Emotions are accumulating and gradually cause different neurotic disorders – from light depression to serious psychological disease. Physical health also suffers, as loading on organism is increasing during strong stress. Tendency to active overcoming of obstacles in combination with intense inner anxiety generates state of tension, that can be accompanied with spasms of smooth muscles of wall of digestive organs and their vessels; deterioration of their blood supply lead to reduction of their resistibility, digestion of gastric juice and till next formation of ulcer [7].

In our opinion, successful and timely application of physical loadings, development of individual programs, that would include different types of motor activity can promote in the most efficient way expansion of zone of stability and release of negative emotions, caused by stressors, and therefore, maintenance of physical and psychological health. Physical exercises are very diverse and differently impact on people's organism. Static work with tonic tension of muscles can be supported continuous time. In addition, muscle fibers slowly shorten, less energy is wasted there and products of decay are accrued, which would cause development of fatigue. In our opinion, such peculiarity of static loadings let gradually take off non-expressed emotions that are being accumulated during a day or a week, products of activity of which can lead to distress. Also small outlays of energy allow simultaneously keep physical resources for overcoming stressors' actions and enough support of work of organism at physical level. Strengthening of circulation occur mostly with the help of increasing of frequency of cardiac contraction, that can

increase up to 180–200 beats per minute with static efforts, that by professional approach can promote training of vessels and prevention of cardio-vascular diseases as possible consequences of chronic stresses [8].

Taking into account, that large and continuous static efforts negatively impact on the work of cardio-vascular, respiratory and other systems, they are contraindicated for children of junior and secondary school ages, and also for people with weakened state of health. However, application of static efforts of moderate intensity has positive significance. Also, negative impact of static exercises on vegetative functions considerably decreases if they had been applied in complex with exercises of dynamic character. Including static efforts into cyclic dynamic work intensifies shift in cardio-vascular system and processes of metabolism of some organs, especially in children. It gives the grounds to more actively introduce into training process exercises of static character for developing static endurance for pupils of senior school age. Development of physical endurance is closely connected with development of forceful endurance, that accordingly, allow to overcome stress situations more simply, without negative consequences.

As it is visible from the results of theoretical foundations historiography of question, there are a lot of separated investigations of movement physiology as well as enough different approaches to investigation and understanding of stress nature and emotional tension. There are even methods of control tension through work with body (method of «progressive muscles relaxation», autogenic training, method of biological reverse connection); also possibility of releasing of emotions through physical activity in psychotherapy (bodily-oriented and dancing-motor direction of psychotherapy). However, we didn't find specific examples of application of physical exercises for prevention of chronic (including emotional) stress in investigated literature; we have the aim to it in the next part of investigation, that is in the next article.

Conclusions and perspectives of further investigation. Consequences of distress – over fatigue, psycho-neurotic reactions, sharp stress disorders and violation of adaptation, reduction of efficiency, occurrence of aggression and depressive states,

professional and personal deformations, reduction of efficiency of social functioning, etc. – create significant risks for physical, social, emotional and even psychological health. Successful and timely application of controlled physical loadings promote releasing of negative emotions, caused by stressors, maintenance of physical and other types of health. We notice perspective of further investigation in development of preventive sanative programs for various age groups, aim of which is special selection and combination of various motor exercises, which would be alternative of deprivation of personality from chronic stresses.

References

1. **Berezin F. B.**, Miroshnikov M. P. Emotsionalnyy stress i psikhosomaticheskiye rasstroystva. Podkhody k terapii [Emotional stress and psychosomatic disorders. Treatment approaches]. Retrieved from http://berezin-fb.su/psychology_and_psychosomatic/jemocionalnyj-stress-i-psihosomaticheskie-rasstrojstva-podhody-k-terapii (rus).
2. **Ilin E.** Emotsii i chuvstva [Emotions and feelings]. Sankt-Petersburg, *Piter*. 2000. 752 p. (rus).
3. **Suchasna** psyholohiya: teoriya i praktyka [Modern psychology: theory and practice]. Mizhnarodna naukovo-praktychna konferentsiya (Kyiv, 27-28 bereznia, 2015 roku) International Scientific and Practical Conference (Kyiv, March 27-28, 2015. Kherson, *Vydavnychiy dim "Helvetyka"*. 2015. 112 p. (ukr).
4. **Selie G.** Stress bez distresa [Stress without distress]. Moskow, *Progress*. 1979. 123 p. (rus).
5. **Vardanyan B. Kh.** Mekhanizmy regulyatsii emotsionalnoy ustoychivosti [Mechanisms of regulation of emotional stability]. *Kategorii. printsipy i metody psikhologii. Psikhicheskiye protsessy – Categories, principles and methods of psychology. Psychological processes*. Moskow. 1983. Pp.542–543 (rus).
6. **Komarov K. E.** Psikhologicheskaya podgotovka k deystviyam v usloviyakh povyshennogo riska («Stress-menedzhment») [Psychological preparation to action in conditions of high risk («Stress-management»)]. Moskow. 2002. (rus).

7. **Shcherbatyh Yu.V.** Psiholohiya stressa [Psychology of stress]. Moskow, *Eksmo*. 2008. 304 p. (rus).

8. **Teoretyko-metodychni osnovy fizychnoyi kultury** [Theoretically-methodologically basics of physical education]. Ivano-Frankivk, *Plai*. 2008. 268 p. (ukr).

Слухенська Р. В., Пасько Т. В., Пашкова О. С.

Теоретичні засади дослідження керованих фізичних навантажень у профілактиці виникнення хронічного стресу

Стаття присвячена аналізу історіографії та теоретичним засадам ролі хронічних стресів в житті та здоров'ї людей, імовірність виникнення яких суттєво зросли в сучасних умовах життя. Спираючись на дослідження фізіологів, психологів, лікарів та психотерапевтів щодо взаємозв'язку між емоційною, фізичною та іншими складовими здоров'я, ми спробували показати, що вплив різних фізичних вправ на організм людини може слугувати профілактикою хронічних стресів та формувати навички стресостійкості. Дослідження покликане розглянути можливості керованої рухової активності (у тому числі фізичної культури і спорту) у попередженні виникнення психічних перевантажень, у покращенні соціальної взаємодії, адаптивності, розширенні можливостей протистояти конфліктам. Як видно з аналізу теоретичних підвалин та історіографії питання, існує багато розрізнених досліджень фізіології руху, так само, достатньо розрізнених підходів до дослідження та розуміння природи стресу та емоційного напруження. Існують навіть методи керування напруженням через роботу з тілом (метод «прогресивної м'язевої релаксації», аутогенне тренування, метод біологічного зворотного зв'язку), а у психотерапії згадується можливість вивільнення емоцій через фізичну активність (тілесно-орієнтований та танцювально-руховий напрямки психотерапії). Ця розвідка є першою (теоретичною) частиною двоблокового дослідження, яке покликане розглянути та впровадити на практиці комплекси циклічних та ациклічних вправ, які мають на меті боротись із хронічним стресом.

Ключові слова: стрес, стресостійкість, фізичні вправи, історіографія, фізичні навантаження.

Слухенская Р. В., Пасько Т. В., Пашкова А. С.

Теоретические основы исследования управляемых физических нагрузок в профилактике возникновения хронического стресса

Статья посвящена анализу историографии и теоретических основам роли хронических стрессов в жизни и здоровье людей, вероятность возникновения которых существенно выросли в современных условиях жизни. Опираясь на исследования физиологов, психологов, врачей и психотерапевтов о взаимосвязи между эмоциональной, физической и другими составляющими здоровья, мы

попытались показать, что влияние различных физических упражнений на организм человека может служить профилактикой хронических стрессов и формировать навыки стрессоустойчивости. Исследование призвано рассмотреть возможности управляемой двигательной активности (в том числе физической культуры и спорта) в предупреждении возникновения психических перегрузок, в улучшении социального взаимодействия, адаптивности, расширении возможностей противостоять конфликтам. Как видно из анализа теоретических основ и историографии вопроса, существует много исследований физиологии движения, так же, достаточно подходов к исследованию и пониманию природы стресса и эмоционального напряжения. Существуют также методы управления напряжением через работу с телом (метод «прогрессивной мышечной релаксации», аутогенная тренировка, метод биологической обратной связи), а в психотерапии упоминается возможность высвобождения эмоций через физическую активность (телесно-ориентированный и танцевально-двигательный направления психотерапии). Эта статья является первой (теоретической) частью двоблокового исследования, которое призвано рассмотреть и внедрить на практике комплексы циклических и ациклических упражнений, которые имеют целью бороться с хроническим стрессом.

Ключевые слова: стресс, стрессоустойчивость, физические упражнения, историография, физические нагрузки.

Information about the authors

Sluhenska Ruslana Vasylivna – Candidate of Pedagogical Sciences, Teacher at the Department of Internal Medicine, Physical Rehabilitation, Sports Medicine at Higher State Educational Establishment of Ukraine "Bukovinian State Medical University". Circle of scientific interests: pedagogical technologies, interactive methods of education, etc.

Pasko Tetiana Vasylivna – Teacher at the Department of Internal Medicine, Physical Rehabilitation, Sports Medicine at Higher State Educational Establishment of Ukraine "Bukovinian State Medical University". Circle of scientific interests: pedagogy of higher school, pedagogy of tolerance, etc.

Pashkova Olha Serhiyivna – Practical Psychologist, Teacher of Health Basics at Chernivtsi Secondary School №11. Circle of interests: pedagogy, sports and psychological rehabilitations, etc.

The article was received by the Editorial Office on 20.02.2018.

The article was put into print on 30.03.2018.
Reviewer – M. I. Piren, Doctor of Sociological Sciences of, Professor