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Nondrug Means of Health Improvement of Student Youth in Regions of High Anthropogenic Activity

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***Abstract* - A human health is the basis of his life and a key factor determining the success in all spheres of human activities. Its level identifies the range of realization of the psychophysical potential of young people, which depends on the economic well-being and prosperity of the state, which are priorities in the national security policy. In this regard, setting hopes on the younger generation as a driver of economic growth of the country, the management of higher education must pay special attention to the preservation and strengthening the students' health, the formation of physical culture of their personality as a priority in the training of highly intelligent specialists. This socio-demographic group of the population is the most exposed to the aggressive impact of numerous risk factors of environmental problems that accompany the recent large-scale industrial development of the country. Therefore, offering the development of health-forming competencies, the higher educational establishments are obliged to pay special attention to the search for innovative technologies to optimize the learning process in the health care system in combination with environmental education of young people, and the most important and significant components in providing the health serving services for students and the formation of their healthy lifestyle. The relevance of this research is due to the needs of modern society for highly qualified specialists who have not only a basic platform of fundamental knowledge and are able to actively and expediently apply them in solving practical problems, but also aware of the importance and value of health and physical culture as fundamental factors in the success of their future professional activities.**

Keywords: ***environmental education, physical health, monitoring, students***

I. INTRODUCTION

One of the factors that have a significant impact on human health, his physical development and physical fitness is the state of the environment. It has a special impact on the health of the young organism that is the most sense not only to adverse environmental factors but also to the level of socio-economic development, lifestyle, quality and availability of medical care. As the most dynamic social group students, being in the period of formation of physiological and social maturity, are at high risk of developing disorders in the state of physical and psychological health. Moreover, students are most exposed to changes in the climatic and geographical living conditions [1, 2, 3], and this situation also affects their physical development and physical fitness.

In recent years, dealing with problems related to the information, environment and resource security, as well as the global international competition for intellectual resources orientate the socio-economic development of the Russian Federation to the dynamic industrial development of its territories. This makes actual the issues of strengthening and preserving the health of the population of these regions and, especially, of students since the latter ones are the most socially active group and a powerful economic, labour and defence potential of the country, the guarantor of the future well-being of the state.

Application of the modern methods of complex assessment of anthropogenic load on the environment and methods of risk assessment for public health showed that one of such factors is industrial development of Voronezh territories [4]. The anthropogenic load on the environment in the city is much higher in areas with a predominantly negative impact of the industrial sector and traffic flows concerning the relatively prosperous territory of the metropolitan city. Moreover, in the formation of its level in the urban area, the most significant contribution is made by the aerotechnogenic factor (it corresponds to 58.1% in the territory with the predominance of the influence of the industrial sector; in areas with the highest traffic flows - 58.5%; in a relatively prosperous territory, the contribution to the value of the complex anthropogenic load of the city is 33.0%) [5].

The leading role of the aerotechnogenic factor is evidenced by other studies conducted, for example, in the Irkutsk region, which also showed that the residents of the urbanized regions of the region are exposed to the greatest carcinogenic risk, and the inhalation route of exposure to carcinogenic chemicals is the main among the numerous indicators of the aggregated carcinogenic risk. Causing lung cancer and other respiratory tract lesions, the gastrointestinal tract and the central nervous system diseases, lead and hexavalent chromium are at the top list of their constituents [6, 7].

The system of monitoring the state of the environment and the health of the population of Voronezh allowed to reveal the causal relationship between the indicators of child morbidity and anthropogenic pollution of the environment (the correlation coefficient for individual nosological groups varies from 0.35 to 0.96). An increase in the disease incidence of children suffered from congenital anomalies, neoplasms, diseases of the endocrine and genitourinary systems in the areas that are anthropogenically loaded compared to environmentally unloaded ones was statistically confirmed [8].

A similar relationship was found in other regions of Russia [9, 10]. The studies conducted in the Irkutsk region confirmed the highest correlation coefficients that associate the morbidity with the value of gross emissions of harmful substances into the atmosphere in the adjacent age group of adolescents and corresponds to r = 0.96, p = 0.00 (for comparison: in adults r = 0.87, p = 0.000; in children r = 0.83, p = 0.001). As a rule, these cases are diseases of the cardiovascular system, and also a decrease in its adaptive capabilities (the study was conducted with the participation of adolescents at the age of 11-17), blood pressure disorders, tachycardia, lagging behind the age norm of the pumping function of the heart [11,12,13].

Thus, it is necessary to find out the ways to improve the health of students, as a rule, living in environmentally unsafe industrial areas and being especially exposed to adverse environmental factors.

As in other educational establishments [14, 15, 16, 17, 18], in the Russian State University of Justice (RSUJ) for the last decade, the number of healthy students is decreasing from year to year, the number of young people referred to the Function Group III (FG) is growing. If in 2009 this group comprised 23.6% of applicants enrolled in the first year, then in 2014, according to the results of five-year observations, their number corresponded to 36.8%. The situation changed by the beginning of the academic year in 2018, when the part of Functional Group III accounted for 23.04% of first-year students. The largest quantitative composition of this group was recorded in 2012 (39.1%).

For all years of observations, a significant increase in the number of students of the 3rd year of the basic department (Function Group I - FG I) was registered in 2018, and due to the reduction in the number of students of the "preparatory" (FG II) and Function Group III (FG III) Health Groups.

TABLE I. DISTRIBUTION OF 1ST AND 3RD-YEAR STUDENTS BY THE FUNCTIONAL HEALTH GROUPS

The 1st year					
Year	***Total surveyed (people)***	***Functional health group***			
		I	*II*	*III*	*IV*
2009	203	109	43	48	3
	%	53.7	21.2	23.6	1.5
2014	201	97	27	75	2
	%	48.3	13.4	37.3	1.0
2018	194	102	42	47	3
	%	52.6	21.6	24.2	1.6
The 3rd year					
2009	196	102	36	56	2
	%	52.0	18.4	28.6	1.0
2014	199	96	34	67	2
	%	48.2	17.1	33.7	1.0
2018	191	114	31	44	2
	%	59.7	16.2	23.0	1.0

Analyzing the diseases of students, it was found that, as in 2009, and nine years later, the leading diseases are the respiratory system diseases, and it is explained by adverse effects of aerotechnogenic changes in the atmosphere and the natural lagging of the adaptive capacity of the human body. In 2009, the number of the RSUJ's students with pulmonary pathology corresponded to 23.7% (the studies on the distribution of disease types in the structure of the overall morbidity of students of other universities in Voronezh in the period from 2010 to 2015 also indicated the leading position of the respiratory diseases (38.5%) [19]), in 2018 their number was 28.8%. In most cases, the RSUJ's students suffer from chronic bronchitis (14.6%), chronic rhinitis (19.9%), bronchial asthma (18.1%) and other respiratory diseases (RD), the proportion of which corresponds to 47.4%.

The pollution of the air basin is manifested in the functional stress of the cardiovascular system (FSCC) among the RSUJ's students. In 2009 the number of students suffered from this disease corresponded to 19.9%. In 2018 their number increased to 27.8 %.

In the structure of primary disease incidence of the University's students, the pathologies of the musculoskeletal system (MSS) occupy the third place. These are mainly flat-foot (19.3%), scoliosis (26.9%), osteochondrosis (17.4%),

arthritis (7.4%), osteoarthritis (3.3%) and other diseases of the musculoskeletal system (25.7%).

Anthropogenic pollution has a significant impact on the development of this pathology. This result was confirmed by the studies conducted in several other regions, in particular, in the Irkutsk region (the causal relationships between the negative impact of the industrial sector, the pollution of soil basins and the health of children and adolescents were studied) [20]. The authors propose to consider these pathologies as environmentally caused ones in the city and they confirm the dependence of the increase in the overall incidence and increase in the pathology of the musculoskeletal system in children (5.6 times) and adolescents (12 times) from the level of anthropogenic pressing on the urban environment. This, of course, affects the health of the adjacent age group of students.

In the RSUJ the state of physical health of the students in addition to a medical examination is investigated throughout the whole course of training period according to the monitoring technologies that allow to determine the individual level of the development of each student and to develop an individual route of his recovery. The University has developed (since 2009) and annually analyzes the database of physical development and physical fitness of students, both individual values of their indicators and characteristics of the given samples are studied in the dynamics.

II. Results and Discussion

This study was conducted from 2017 to 2018 in the RSUJ of Voronezh. We studied both individual and group health characteristics of 97 students aged 17-20 years, distributed into Function Group III.

With the help of anthropometric characteristics (height, weight, chest circumference (CC)) of the students it was studied the level of their physical development (FD), the functional readiness (FR) was determined by the heart rate before (HRb^1) and after (HRa^2) the exertion and by the time of its recovery (TR) after 20 squats (table.2).

According to the examining of female students' body length conducted in September 2017, the range of its values ranged from 164.6±2.46 to 168.8±1.41 cm. In September 2018 its values ranged from 162.4±2.47 to 167.0±1.04 cm.

Body length is a predictor of vitality and a higher level of cardiovascular health [21] and one of the key indicators of total human health [22]. Since the values of body length of students suffered from respiratory and cardiovascular diseases decreased significantly during the study period ($P<0.05$), the girls of this sample tend to decrease the innate potential of viability and the total health of the life-supporting system of their organism.

Weight values significantly increased in girls with diseases of the endocrine (ES) and genitourinary systems (GUS, $P<0.05$). Moreover, the last nosological cluster presented significant differences in the values of the CC's characteristics.

In September 2017 the HRb^1 in female students of FG III ranged from 76.2 to 87.0 beats/min. In September 2018 all girls, except for students with diseases of the endocrine system, the HRb^1 increased significantly (from 87.6 to 93.6 beats/min, $p<0.05$). Besides, the greatest increase was observed in students with diseases of the Respiratory system, the Cardiovascular system (CVS), the Nervous system (NS) and the Genitourinary system (GUS). The increase of the HRb^1 may manifest the state of incomplete recovery of the body of female students in the process of educational activities. On behalf of the latter statement, it is the fact that the recovery of the heart rate after exertion in the vast majority of girls occurred in 1.5-2 minutes after its finishing.

In 2017 the heart rate values (HRa^2) in students of FG III corresponded to the interval from 126.0 to 132.6 beats/min. In 2018 the limits of values corresponded to the range from 129.6 to 145.8 beats/min. As the heart rate data before and after the exertion are known, it is possible to assess the reaction of the pulse of students to standard work: in 2017 the increase in the heart rate was 63.1%; in 2018 - 65.8%. Such reaction of the CCS is regarded as favourable and corresponds to the normotonic type of its reaction to a given exertion. However, the study of the HR^2in the dynamics showed that a significant increase in its values in girls with disease of the respiratory system (21.6±0.4 and 24.3±0,5 beats, $p<0.05$), the CVS (22.0±0,2 and 23.3±0.3 mm beats, $p<0.05$), pathology of the MSS (21.4±0,3; 23.0±0.2; $p<0.05$), any disorders of the GUS (21.4±0.4 and 23.6±0.4 beats $p<0.05$) and the diseases of the digestive system (21.0±0.2 and 22.7±0.3 mm UD, $p<0.05$) talks about the negative characteristics of the condition of the functional capacities of these students.

TABLE II. THE CHARACTERISTICS OF PHYSICAL DEVELOPMENT AND FUNCTIONAL READINESS OF STUDENTS TAKING INTO ACCOUNT THE TYPE OF DISEASES

TD (the Types of Diseases)	PD (Physical Development)	Date of examination		P	FR (Functional Readiness)	Date of examination		P
		September 2009 M±m	*September 2018 M±m*			*September 2009 M±m*	*September 2018 M±m*	
I	Height	168.8±1.4	165.4±1.3	**P<0.05**	HRb[1]	14.1±0.3	15.6±0.4	**p<0.05**
	Weight	57.4±1.8	57.6±1.7	p>0.05	HRa[2]	21.6±0.4	24.3±0.5	**p<0.05**
	CC (chest circumference)	83.9±1.3	84.5±1.1	p>0.05	TR (Time Recovery)	2.18±0.1	2.01±0.1	p>0.05
II	Height	164.7±1.0	167.0±1.0	**P<0.05**	HRb[1]	13.9±0.1	15.4±0.2	**p<0.05**
	Weight	58.8±0.8	58.1±0.9	p>0.05	HRa[2]	22.0±0.2	23.3±0.3	**p<0.05**
	CC (chest circumference)	85.3±0.6	84.4±0.9	p>0.05	TR (Time Recovery)	2.17±0.1	2.04±0.1	p>0.05
III	Height	166.6±0.6	166.4±0.6	p>0.05	HRb[1]	12.7±0.1	14.9±0.2	**p<0.05**
	Weight	58.7±0.8	57.2±0.7	p>0.05	HRa[2]	21.4±0.3	23.0±0.2	**p<0.05**
	CC (chest circumference)	83.8±0.6	84.1±0.5	p>0.05	TR (Time Recovery)	1.52±0.1	2.07±0.1	p>0.05
IV	Height	166.1±0.8	165.6±0.9	p>0.05	HRb[1]	12.9±0.2	14.9±0.3	**p<0.05**
	Weight	57.1±1.2	56.8±1.0	p>0.05	HRa[2]	21.5±0.4	21.9±0.5	p>0.05
	CC (chest circumference)	84.0±0.9	84.5±0.8	p>0.05	TR (Time Recovery)	2.32±0.1	2.10±0.1	p>0.05
V	Height	167.5±1.8	165.4±1.4	p>0.05	HRb[1]	14.5±0.3	14.9±0.5	p>0.05
	Weight	58.7±3.1	68.8±3.2	**P<0.05**	HRa[2]	22.1±0.4	23.4±0.7	p>0.05
	CC (chest circumference)	86.0±2.3	92.2±2.8	p>0.05	TR (Time Recovery)	1.76±0.2	2.01±0.1	p>0.05
VI	Height	164.6±2.5	162.4±2.5	p>0.05	HRb[1]	13.2±0.7	15.2±0.9	**p<0.05**
	Weight	55.5±1.8	56.4±2.3	p>0.05	HRa[2]	22.0±1.0	21.6±1.2	p>0.05
	CC (chest circumference)	81.1±1.4	82.3±1.5	p>0.05	TR (Time Recovery)	2.28±0.4	2.04±0.3	p>0.05
VII	Height	166.8±0.5	166.2±0.5	p>0.05	HRb[1]	13.1±0.2	15.6±0.3	**p<0.05**
	Weight	53.9±1.1	59.6±1.6	**P<0.05**	HRa[2]	21.4±0.4	23.6±0.4	**p<0.05**
	CC (chest circumference)	82.8±0.8	85.2±1.1	**P<0.05**	TR (Time Recovery)	2.12±0.1	2.20±0.1	p>0.05
VIII	Height	168.1±0.4	166.7±0.4	p>0.05	HRb[1]	12.9±0.1	14.6±0.2	**p<0.05**
	Weight	57.2±0.7	57.2±0.6	p>0.05	HRa[2]	21.0±0.2	22.7±0.3	**p<0.05**
	CC (chest circumference)	86.2±0.5	85.3±0.5	p>0.05	TR (Time Recovery)	2.02±0.1	1.77±0.1	p>0.05

Notes: TD- Types of Diseases: I- DRS (Diseases of the Respiratory System); II-DCVS (Diseases of the Cardiovascular System); III- DMSS (Diseases of the Muskuloskeletal System); IV- Eye Diseases (ED); V-DES (Disease of Endocrine System); VI-Disease of the Central nervous system (DCNS); VII-DGUS (Disease of Genitourinary System); VIII- DDS (Diseases of the Digestive System).

III. CONCLUSION

Thus, in order to resist the impact of adverse factors of anthropogenic load, to cope with a huge information flow, the dynamization of the life rhythm, a modern student needs to be in good physical state, be healthy and, as a consequence, be successful in the learning process, and then in the subsequent professional activity [23], [24]. Apart from all available means of improving the physical culture is the most effective and the only means promoting not only preservation, but also increase, both physical, and mental health. The factor of improvement is at its core and should be based on an individual assessment of the physical development and fitness of each student. The diversity of nosological groups, the presence of conjugate diagnoses, different levels of disease manifestations, physical development and physical fitness required to differentiate and individualize the approach to determining the optimal load of students, the choice of correctional means of their physical education, the formation of attitudes to the formation of a healthy lifestyle based on an acquisition of health-forming competences and ecological education by them in the course of training.

Since in many regions the priority of adverse effects of air pollution on the health of students has been proved, it is necessary to pay special attention to measures to protect it from pollution. Classes in physical culture to prevent disease and to promote students' health at indoor stadiums to carry out taking into account the data on their conditions.

The management of higher educational establishments, fulfilling the social order to provide the state with highly qualified personnel, should form a conscious need for each student to lead a healthy lifestyle, to be healthy to ensure

their future professional activity, to form environmental responsibility for sustainable development of the society. Every future professional should understand the consequences of the applied modern technologies for their health and proceed from the ecological expediency in any activity of anthropogenic activity.

REFERENCES

[1] I.V. Averyanova, and V.N. Zaytseva, "Regional Features of Morphophysiological Characteristics and Physical Fitness in Students of the Northeastern University," in Human Sport. Medicine, vol. 18, no. 3, pp. 60-68, 2018.

[2] G.N. Gotovtsev, V.Y. Germanov, I.V. Romanova, and I.V. Mashoshina, "Monitoring of Health and Physical Readiness of Students as the Methodology of the Analysis and Estimation of Efficiency of Physical Education," in Scientific notes of the University P.F. Lesgaft, vol. 83, no. 1, pp. 40-45, 2012.

[3] L.M. Bezhentseva, "Health Improvement Technologies in Physical Education of Special Health Group Students," in Theory and Practice of Physical Culture, no. 12, pp. 79-81, 2016.

[4] P.M. Vinogradov, S.A. Kurolap, and O.V. Klepikov, "Geoinformation Maintenance of Medical and Ecological Monitoring of Urban Environment (Evidence from Voronezh city)," in Bulletin of Volgograd State Medical University. Geography. Geoecology, vol. 4, pp. 39-48, 2014.

[5] O.V. Klepikov, S.A. Kurolap, and N.P. Mamchik, "The Results of a Comprehensive Assessment of the State of the Environment and the Risk to the Health of the Population of an Industrial City)", Collection of scientific articles. "Ecological Situation and Risks to the Health of the Population of the City of Voronezh," Voronezh, pp. 18-34, 2018.

[6] N.V. Efimova, "Problems of Environmental Health: Retrospective analysis on the example of the Irkutsk region," in Acta Biomedica Scientifica, vol. 91, no. 1, pp. 57-61, 2013.

[7] N.F. Kravchenko, and O.N. Yakovenko, "The Role of Respiratory Disease in Causes of Mortality in the Irkutsk Region," in Acta Biomedica Scientifica, vol. 87, no.5-1, pp.95-96, 2012.

[8] S.A. Kurolap, O.V. Klepikov, P.M. Vinogradov, T.I. Prozhorina, and L.O. Sereda, "Integrated Assessment and Gismapping of the Environmental State of the City of Voronezh (Russia)," in Geography, Environment, Sustainability, vol. 4, no. 8, pp. 42 - 53, 2015. DOI: 10.24057/2071-9388-2015-8-4-42-53

[9] L.A. Stepanenko, M.F. Akimov, S.V. Ilyina, E.V. Anganova, and E.D. Savilov, "The Assessment of the Immune Status of the Children Population as a Marker of Technogenic Pollution of the Environment," in Hygiene and Sanitation, vol. 95, no.12, pp. 1129-1133, 2016.

[10] M.F. Savchenkov, and N.V. Efimova, "Analysis and Strategies for Securing Sanitary and Epidemiological Welfare of the Population of Siberia," in Acta Biomedica Scientifica, vol. 3, no. 6, pp.156-163, 2018.

[11] I.V. Mylnikova, "Comparative Evolution of the Functional State of Cardiovascular System in Adolescents Living in Conditions of Various Ambient Air Pollution", inHygiene and Sanitary, vol. 96, no. 1, pp. 47-52, 2017.

[12] I. Mylnikova, and N. V. Efimova, "The Informativity of Indices of the Heart Rate Variability for the Identification of the Adverse Effect of Environmental Factors on the Health of Adolescent Girls," in Hygiene and Sanitation, vol. 94, no. 1, pp. 121-124, 2015.

[13] E. Milashechkina, T. Dzhandarova, and E. Kunitsina, "Adaptation Abilities in Female Students with Cardiovascular Disorders," in Human Sport. Medicine, vol. 18, no. 4, pp. 123-129, 2018.

[14] N.V. Efimova, I.V. Mylnikova, V.M. Kuzmina, L.G. Lisetskaya, and Ye.Ye. Loznevaya, "Carcinogenic Risk Assessment in Population Living in the Ecologically Problematic Areas of Irkutsk Region", in Medicine of Work and Industrial Ecology, vol. 2, pp. 117 - 121, 2019.

[15] O.I. Kuzmina, "Deviation in Physical Development and Health State of Youth of the Special Medical Group Studying at the Technical University of the Baikal Region and the Ways for their Correction," in Scientific notes of the University P.F. Lesgaft, vol. 139, no. 9, pp. 84-91, 2016.

[16] O.I. Kuzmina, V.Yu. Lebedinsky, and M.D. Kudryavtsev, "Monitoring of Students' Health of Function Group III in Technical Institutions," in the European Proceedings of Social & Behavioural Sciences EpSBS, pp. 683-687, 2018.

[17] A.I. Rakhmatov, G.N. Germanov, and L.G. Annamyradova, "Monitoring of Health, Physical Progress and Physical Readiness of Girls Aged 17-20 years Under Transition From School to the Higher Educational Institution and by Years of Training in Higher Educational Institution," in Scientific notes of the University P.F. Lesgaft, vol. 129, no. 11, pp. 223-229, 2015.

[18] O.I. Kuzmina, Y.V. Germanov, A. Rakhmatov, and O.A. Shvachun, "Monitoring of Physical Development, Physical Fitness and State of Health of Students of Special Medical Group as Instrument of Control and Basis for Design of the Sports Environment Students in Technical University," in Standards and Monitoring in Education, vol. 6, no.3, pp.12-17, 2018.

[19] A.A. Rogachev, and T.E. Fertikova, "Dynamics of Morbidity among Voronezh Students in Terms of Health-Preserving Technologies," in Bulletin of Volgograd State Medical University, vol. 63, no. 3, pp. 118-121, 2017.

[20] T. Shalina, L.A. Nikolaeva, M.F. Savchenkov, N.Y. Bykov, and R.S. Manueva, "Environmental Pollution with Fluoride Compounds and Influence on Children Health, " in Hygiene and Sanitation, vol. 95, no. 12, pp. 1133 - 1137, 2016.

[21] T.T. Samaras, and H. Elrick, "Height, Body Size, and Longevity: Is Smaller Better for the Human Body?", in West J. Med, vol. III, no.176, pp. 206-208, 2002.

[22] G.A. Makarova, and S.A. Loktev, "Medical Reference Book of the Trainer," in Soviet Sport, Moscow, 2006, pp. 587.

[23] N.L. Shamne, and E.V. Shishkina, "The vocabulary of science-popular medical discourse (as exemplified in German online media)", in Vestnik Volgogradskogo Gosudarstvennogo Universiteta-Seriya 2-Yazykoznanie, vol. 17 (4), pp. 170-179, 2018.

[24] N.L. Shamne, and E.V. Shishkina, "German popular scientific medical online media: structural and functional aspects", in Vestnik Volgogradskogo Gosudarstvennogo Universiteta-Seriya 2-Yazykoznanie, vol. 16 (2), pp. 143-151, 2017.