

boys, the slow aging rate has been found in 20,5% of the young girls, and 16,7% of the boys; the biological age has been determined by the passport, 13,6% of the young girls and 16,7% of the young boys; the accelerated aging pace has been diagnosed at 4,5% of the girls and at 8,3% of the boys.

This is consistent with the general view of the gerontologists that the young women age is practically much slower, and they are living longer for 6–8 years (e.g. 72–96 months) that it is reflected a quite slow decline at the first ones vitality, with their aging on. In this regard, under the assumption on the mutual correspondence of the relative and the absolute estimates of the BA, it can be considered the consistent facts. The calculation of the students' biological age (BA) was shown, that it had exceeded the calendar age (CA), on average, at the young men for 9,15 years (e.g. 108,15 months), and at the young women for 9,26 years (e.g. 81,26 months).

So, the index of the subjective estimate of the health (SEH) at the students, mostly, is quite good. Then, the SEH lowest rate has been determined $2,98 \pm 1,16$ at the young men, and the longest one $2,65 \pm 1,13$ at the young women. At the end, the BA has been shown that there are no students, who have dramatically the accelerated aging pace. The young men in the area of their calendar age are only 10% of the boys EG and 5,9% KG. The 16,7% of the young men and 13,6% young women have accelerated pace of aging. The main part of the examined students have the slow rate of their aging: 71,9% at the young women and 58,2% at the young men. Thus, the results of the study, which has been carried out by us, have been shown, that the students' biological age indicators are completely depended on their gender.

This technique using has been intensified the preventive direction of the work in the Orenburg State University. The automated system of the monitoring health (ASMOH) has already been created in the Orenburg State University on the initiative of the Federal Service Management of the Russian Federation for the control of the drug trafficking in the Orenburg Region with the participation of the management control of the modern information technologies in the Orenburg State University and the Center of the Information Technologies organization. This study has been carried out through the «Internet». Each student has his login and the password, through which they contribute their data to the various sections of this system. These are the special sections on the somatic health, the psychological health, the stress tolerance, and the social adaptation in the process of the leaning in the University. Just after the complete filling out all the necessary sections, the students will be received two types of their recommendation – the general character on the healthy lifestyle creation and the individual one formation, with due regard for his personal characteristics and also the life circumstances. Thus, the biological age determination by the V.P. Voytenko

technique is practically and completely included into the ASMOH for the individual health and the modern student's quality of life monitoring.

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THE STUDENT'S INDIVIDUAL PERSONALITY PROFILE ON THE EMOTIONAL TENSION LEVEL AND ADAPTATION IN GENERAL

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The main methods of the students' physiological state determination, having studied individual characteristics, and the students' adaptation mechanisms to the educational activities, the emotional intensity dynamics, that is depended on the individual's some individual properties in the special environments have been discussed in the paper. All these studies' results, despite of the high stress load, have been shown no adverse physiological reactions at the students. The human organism, through various adaptive response, has been compensated the high load during training at the University.

The one – time cross sectional study and examination of 254 young men and women, the students, at the age of 17–21 years, having studied at the first and the fifth courses in the city of Orenburg, and in the Orenburg State University branch in the town of

Buzuluk, not having had the somatic pathology, and also having matched for their age and sex groups, have been carried out by us. So, the examined students have been divided into the special groups: the 1-st group – the young girls of the I course (e.g. $n = 36$); the 2-nd group – the young girls of the 5-th course (e.g. $n = 32$); the 3-rd group – the young men of the 1-st course (e.g. $n = 28$); the 4-th group – the young men of the 5-th course (e.g. $n = 36$); the 5-th group – the urban students (e.g. $n = 74$); the 6-th group – rural students (e.g. $n = 48$); the 7-th group – the total sample (e.g. $n = 254$). The students' cross sectional study and examination have been consistent with the Declaration of Helsinki by the ethical standards [5]. So, the exclusion criterion has been the student's illness during the period of the cross sectional study and examination. The computer «NS – Psychotest» complex (e.g. LLC «Neurosoft», Ivanovo, Russia) has been used for the integrated assessment of the efficient psychophysiological state. A number of the psychophysiological techniques has been used: the simple visual – motor reaction (SVMR), the complex visual – motor reaction (CVMR), the response to a moving object (RMO); the noise immunity, the Schulze – Platonov test has been used for the reaction and the attention rate assessment, the G. Izing test – enquiry, it has made it possible to be estimated the extroversion, the introversion performance, and the individual's personal characteristics. The eight – color Lusher test in the adaptation of L. Sobchik has been included in the diagnostic battery, mainly, in order to be provided the relations color test [4], the results of which will be considered, as much more significant and the informative ones, than the actually color – preference [1, 2].

The «physiological response to the stress» test has also been used in the study, by which it has been revealed, that the occurrence average frequency of the physiological responses to the stress is characterized for all the groups, and there is the small chance of the occurrence for the psychosomatic illnesses for the students. So, the low incidence of the physiological responses to the stress has been found in the young men groups of the first and the fifth courses, namely, they do not have any risk of the occurrence for the psychosomatic illnesses for the students. So, the correlation analysis results at the students have already been demonstrated the quite unfavorable influence and the adverse effect of the psychophysiological parameters changes on the affective status, the physiological response to the stress, and also the attention. So, the total deviation index from the standard (TD) has been shown the unproductive tensions increased level at the overwhelming majority of the students quite in all the groups with the excitation excess level, and with the unbalanced nervous processes. And that in the stressful situations is the prerequisite for the psychophysiological deviations emergence from the sample average performance standard rates, and it quite may be the disadaptation manifestation.

The vegetative factor (e.g. KB) quite in all the groups has had the positive sign from $0,98 \pm 0,12$ up to $1,57 \pm 0,05$. This is indicated the sympathetic nervous system tonus predominance, that is the all the functions mobilization, the preparation for the active protection at the students of all the examined and the studied groups. So, the personal properties balance (JБ) has had the positive sign from $0,85 \pm 0,49$ up to $2,91 \pm 0,7$ ($p_{1-4} < 0,05$) quite in all the groups, however, it has been statistically higher in the young men group of the first $2,66 \pm 0,87$ ($p_{1-3} < 0,05$) and the fifth courses $2,91 \pm 0,7$ ($p_{1-4} < 0,05$), that is has been indicated the individual's instability, and his inconsistency, exactly, at the males. So, the comparative evaluation of the emotional status has been shown, that the young men's emotional status has been quite more unstable. Thus, the carried out examination has been allowed to be revealed the students risk group, who, at this stage, are outlined the adaptation failure processes. That is why, it is required the additional monitoring for all these students' physiological state.

Thus, different degree of the adaptation to the Institute of higher education, the College and the University education has been revealed, during the indicators study of the students' psycho – emotional state just in the period of the learning process adjustment. This is, apparently, connected with the quite different and the various levels of the nervous system maturity, which is indicated the individual approach need to the learning process, the psychological state correction, the starting conditions variety creation for each student's development and the further his learning. Thus, our researches are resulted in the hypothesis, that the affective psychophysiological status disorders are the well – known dependence reflection of the higher integrative functions constructions realization. The features and the specific characters, such as the brain performance, the nervous processes mobility, the emotionality, and the anxiety are being played the significant role in the adaptive response organization. They are largely determined the psychophysiological adaptation forms and the coping strategies shapes at all the stages of the adaptation process of the students' learning activities.

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THE KIDNEYS' CYTOMORPHOLOGICAL STATE UNDER THE INDUSTRIAL POLYMETALLIC DUST INFLUENCE

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The structural condition research of the experimental animals' kidney tissue (e.g. rats) under the inhalation influence of the polymetallic ore dust of Temirtau has been conducted. The non-purebred white rats-males and pregnant females, in quantity of 108, weight is 180–220 grams, have been used in the experimental work, the animals have been on a standard diet. The level control of the rats' kidneys defeat has been carried out under the cytomorphological condition. The chronic illness of kidneys model (which has been caused) reproduced, according to the standard techniques, has been used in the work. These animals have been contained under the vivarium conditions of the National center of hygiene and occupational diseases factory in Karaganda. The level control of the rats' kidneys defeat has been carried out under the cytomorphological condition. The experiment has been lasted for 3 days, 70 days and 4 months, the experiment duration has been defined by time of the tissues' cellular updating.

The Central Kazakhstan – is the large and the major industrial Region, where a lot of companies and the enterprises have already been concentrated on the metals' mining and its processing [1].

So, the anatomical and physiological peculiarities and their characteristics of the kidneys: the high blood flow, the complex and the renal tubular transport processes, the renal route of the elimination of a large number of the metabolites – they are made the human organ extremely vulnerable at the prolonged exposure to dust on the human organism.

In this connection, it is necessary to be determined the etiological significance of the dust factor in the occurrence of the renal disease and their pathology under the experimental conditions, and up to date there is no any information on the early stages of the cytomorphological changes of the

kidney tissue cells, when they are exposed to the adverse and the quite unfavorable factors of the industrial dust.

The purpose of the work is the structural condition of the kidneys tissue study of the experimental animal (e.g. rats) under the inhalation influence of the of the polymetallic ore dust of Temirtau.

The Materials and Methods of the Study. The study of the possible adverse influence and the unfavorable effects of the metal complex in the dust composition on the children organism of the Temirtau town has been held during the special toxicological experiment. So, the special feature and its peculiarity of this dust is that it is highly fibrogenic (e.g. $\text{SiO}_2 > 70\%$), it, moreover, is contained more than 30 metal compounds and the natural radionuclides of the uranium and the thorium families, in excess of ПДЧ in 3 times [2].

So, the level control monitoring of the kidneys damage in the rats has been carried out on the cytomorphology state. Then, the animals of the I-st experiment have already been divided into 2 main groups:

The 1-st group – is the control one, it has been included 16 animals (e.g. the intact ones), the 2-nd group – 20 animals, which have been administered the Temirtau dusk by the intratracheal way, at 50 mg/ml a dose. The term – is 3 days (e.g. 72 hours) (it is the acute experiment). So, the control group has also been consisted of the 16 intact animals in each subsequent experiment

The II experiment – the 20 animals, which have been poisoned by the subacute industrial dust of the Temirtau town, at 50 mg/ml a dose by the intratracheal way. The term – is 3 days (e.g. 72 hours).

The III experiment had been lasted 4 months (e.g. 120 days), when the rats received the dust in the inhalation chamber at the concentration of $0,25 \text{ mg/m}^3$, that it is exceeded the daily average dust concentration in 5 times (MPC – $0,05 \text{ mg/m}^3$), and it is corresponded to the real dust load for the residential areas of the town. The study group has been consisted of 20 animals.

The powder substances dispensers, having permitted to be taken into account the aerodynamic laws of the dust flow distribution and simultaneously to be subjected exposure to the large group of the animals, have been used for the dust low concentration to be created in the chamber poison.

So, the kidney tissues of the experimental animals have already been by the cytomorphological study material.

Thus, the experimental part of the work has been conducted at the National Center for the Occupational Health or the Labor Hygiene and the Occupational Diseases in the Karaganda town in the framework of the R & D SC HT (GT) and CT on the theme: GR № 0106PK00241 «The Medico – Biological Monitoring Biomarkers Development for Hygienic Safety of the Population Provision in the Terms of the Ecological Trouble».