INDIVIDUAL PSYCHOLOGICAL PREDICTORS OF THE ADAPTATION

AND DISADAPTATION AMONG SPECIALISTS OF EXTREME PROFILE

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The study results of individual and psychological predictors of adaptation and disadaptation in specialists of extreme profile are presented. The main group included 65 males – law enforcement agencies (Federal Service for the Execution of Sentences and the Ministry of Interior). The experimental group included 70 males, whose professional activity lied outside the extreme and emergency situations. Diagnostic complex included the following questionnaires: the formal and dynamic properties of individuality
by V. M. Rusalov; temperament character by G. Eysenk; inventory of anxiousness by C. D. Spealberger; «The style of self­regulation» by V. I. Morosanova; aggression questionnaire by Buss ­ Perry, self­control questionnaire by Grasmic.

It was found that the specialists of extreme profile were characterizes by higher rates of short­stopping behavior, psychomotor and communication tolerance and flexibility, psychomotor and intellectual speed, indexes of general activity and adaptability, extroversion, general level of self­regulation and the stages of self­regulation process, physical activity, physical assault , and lower rates of psychomotor, communicative and intellectual emotionality, state and personal anxiety, neuroticism, preferences for simple tasks and hostility.

Based on the identified variable predictors associated with the length of service, 2 clusters were identified classifying the cases of high and low adaptability. The results of the analysis of significant differences in the selected clusters allowed determining significant adaptedness conditions. They are: higher indices of short­stopping behavior, psychomotor and communication tolerance, psychomotor, intellectual, communicative flexibility and physical activity speed. Less «adaptive» cluster was characterized by higher indices of psychomotor, intellectual, communicative emotionality, neuroticism, state and personal anxiety, and preferences of simple tasks. The predictive classification models of extreme profile specialists’ adaptation were constructed. They included variable predictors: flexibility, communication tolerance, psychomotor, intellectual, communicative flexibility, psychomotor speed and total adaptability index.

**Keywords:** adaptation, disadaptation, specialists of extreme profile, individual and psychological peculiarities

RATES OF BIOLOGICAL AGING AND ITS RELATIONSHIP TO NEUROPSYCHOLOGICAL PECULIARITIES IN PATIENTS WITH OCCUPATIONAL NEUROINTOXICATIONS

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This paper presents a quantitative assessment of the aging process in the occupational neurotoxicosis. Acceleration rate of biological aging has been demonstrated in trained workers of a chemical factory exposed to vinylchloride, metallic mercury vapor in patients with newly proven diagnosis ­ chronic elemental mercury intoxication and chronic elemental mercury intoxication in the long­term period in 1.9; 2.8; 7.2; 7.5 times compared to the rate of a control group. Six­time increase in the proportion of patients with acceleration rate of aging compared to the norm (70 % vs. 12 %) has been found out among fireman­liquidators. To study the interdependence of indicators characterizing the state of cognitive sphere and the rate of biological aging in patients with occupational neurointoxication a correlation analysis of the data of neuropsychological and clinical and physiological studies has been carried out. Raising of biological age and acceleration rate of biological aging in patients with neurointoxications are accompanied by disorders of categoric, conceptual, analytical ­ synthetical thinking, audio­verbal (short­term) and the visual image memory, spatial and dynamic praxis, objective gnosis, impressive and expressive speech, caused by deficiency of functioning of the frontal, parietal­temporal, parietal­occipital lobes, premotor and parietal regions of the left brain, overlap zone (tertiary temporo­parietal­occipital cortex).

**Keywords:** occupational neurointoxication, rate of biological aging, exposure to neurotropic toxic substances, cognitive disorders

LENGTH OF EMPLOYMENT AS A RISK FACTOR FOR HEALTH PROBLEMS IN MINERS OF THE KOLA POLAR REGION

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It is known that an increase in the exposure duration of occupational hazards associated with the extraction of ore raw materials negatively influences miners’ health. The purpose was to study the peculiarities of employment length influence on the health disorders formation in 1558 underground apatite miners in the Kola Polar region. It was found that length of employment which exceeded
3 years was a significant risk factor for health problems in apatite miners in the Kola Polar region. Comparison of different five­year employment periods (≤5 years to 20 years) has showed that after every five years there had been a decrease in the number of healthy individuals and an increase in the number of cases in one employee. The earliest (length ≤5 years) pathological changes affected the musculoskeletal system, while the cardiovascular and nervous disorders occured at a later stage of a professional career (11­15 years of service). In general, the most evident negative dynamics in the miners’ state of health developed within the first 15 years of service. With increasing seniority, risks for musculoskeletal (RR = 1.80; CI, 1.55­2.10), cardiovascular (RR = 4.14; CI 3,14­5,47) and nervous (RR = 3.34; CI 1,78­6,28) diseases increase significantly. The conclusion: there is a necessity to use active targeted prevention of musculoskeletal, cardiovascular and nervous diseases at the earliest stages of miners′ professional careers in the Kola Polar region.

**Keywords:** length of service, health, miners, Kola Polar region

PRESENT ALTERNATIVE STUDY METHODS USED IN PRODUCT SAFETY ASSESSMENT

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Alternative toxicological methods used in Russia to assess safety of food and non­food products have been reviewed. Along with traditional toxicological methods of monitoring various alternative toxicological study techniques are used to assess product safety. Those are methods using biological test­objects, so­called biological test methods, or in vitro methods which are allowed to be used from the legislative viewpoint. Alternative toxicological methods are based on risk degree assessment of the studied object by response of living organisms (test­objects) to adverse factor exposure. Information resulting from applied bio­testing methods represents combined toxic effect of all toxicants present in the given medium and their simultaneous presence. When assessing product safety by toxicological indices using alternative biological models, general toxic and irritating effects are to be studied and the test­objects are cattle semen, luminescent bacteria, chick egg chorioallantoic membrane, human and animal cell cultures and isolated organs. In vitro methods with cattle semen and luminescent bacteria playing the role of test­objects are also used to assess alcohol product toxicity, in particular spirits and vodkas. Thus, alternative study methods are widely known and commonly used in practice to prove safety of consumer goods and alcohol­containing foodstuffs.

**Keywords:** biotesting, adverse factors, toxicity, biological test­object, test­response

SELENIUM STATUS OF PRESCHOOL CHILDREN IN YAROSLAVL REGION

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The article presents the assessment results of the selenium status of children living in Yaroslavl city which is situated in a selenium deficient area of the European part of Russia. Hair samples of 201 preschool children (1­6 year­old ) were collected in 2011­2015. Bio­substrate analysis has revealed that median of the essential selenium content in the hair of 1­3 year­old children was 0,67 µg/g, of 4­6­year­old children ­ 0,78 µg/g, which was at the lower edge of the centile intervals for the central part of Russia. 46 % of the surveyed children had low hair selenium content. Additionally, in order to study the role of drinking water in supply of children’s body with selenium, concentration of this micro­element in drinking water of the examined preschools was determined. Besides, average daily dose of selenium ingestion with drinking water has been calculated. As a result, it was stated that selenium ingestion with drinking water in preschool children’s organism in Yaroslavl was lower than 1% of the essential daily demand.

**Keywords:** children, bio­substrates, selenium, drinking water

FEATURES OF HEART RATE VARIABILITY IN WORKERS OF MINING PRODUCTION
OF THE KOLA POLAR REGION

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The article provides the evaluation results of the body functional state of mining production workers associated with the extraction and processing of loparite ore. The complex influence of the work conditions on appearance of autonomic dysfunction in the regulation of heart rate variability (HRV) was revealed in workers employed in the ore mining and processing. This dysfunction manifests in the stress indices increasing, earlier exhaustion of the adaptive reserves in comparison to the experimental group, decrease of the total autonomic nerve system effect on heart rate and the increase of the sympathetic nerve system impact to the HRV regulation. High contribution of the very low­frequency component to the spectral range of HRV of the surveyed shows the hyper adaptive state of the mining production workers. The failure of adaptation and a high degree of vulnerability to the environmental factors are the next stage of the body state. It was shown that the functional state of the body of underground miners (in the group of persons under 45 years of age) differed from functional state of ground workers. Furthermore the systolic and diastolic pressure were higher in a group of persons over 45 years old associated with underground work and work with high personal responsibility for production than in the group of persons working in the ground conditions. The obtained results showed that certain values of the HRV in miners group aged <45 years were typical for the older age group.

**Keywords:** functional state of the body, employees of mining production, the Arctic and the work environment, heart rate variability, age features

THE TREMOR PARAMETERS OF FEMALE WITH DIFFERENT PHYSICAL TRAINING
IN THE RUSSIAN NORTH

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The paper presents the results of the tremor analysis carried out in two groups of women living in the North of Russia, aged 30 to 32 years old regularly engaged in physical training and not engaged in physical training. On the basis of methods for calculating the parameters of quasi­attractor in two­space dimension as a quantitative measure of real changes in neuromuscular system parameters of women with different fitness level, spaces of the quasi­attractors were used. In simplistic terms the indicator of quasi­attractor areas has already shown differences between trained and untrained individuals. It has been stated that the range of values of quasi­attractor’s squares in trained women varies from 0,02×10­6 to 0,96×10­6 (a.u.) and in women without physical training – 0,14×10­6 to 5,60×10­6 (a.u.). Statistical data processing has revealed differently directed changes of the studied parameters depending on the degree of women’s physical training. The median values of the quasi­attractor squares were 0,82 (a.u.) in the group of women without physical training and 0,15 (a.u.) in trained women.

**Keywords:** tremorogram, women, physical fitness, quasi­attractor, chaos, self­organization, the North.

HEALTH RELATED QUALITY OF LIFE OF ADOLESCENTS LIVING

IN THE YAMAL­NENETS AUTONOMOUS AREA

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Intensification of oil and gas has led to socio­economic development of the Yamal­Nenets Autonomous Area (YaNAO) ­ one of the most northern regions of Russian raw materials, which contributed to improving life standard of living here people, and the reduction of social well­being and quality of life (QOL) of indigenous people. Development of the YaNAO was followed by mass inflow of human resources of mainly fertile age that led to rapid growth of the children's and adolescent’s population – labor potential of the region’s strategic development. Purpose: to give an assessment of risks of health problems and health­related QOL of the adolescents living in the Yamal’s territory. Objects: 58 adolescents ­ the indigenous Nenets and the 26 – rooted inhabitants. The assessment of risks of health problems was carried out by means of the automated system of a quantitative assessment of risks of the major pathology syndromes (MPS). The PedsQL 4.0 Generic Core tool was used for the health­related QOL assessment. Mathematical­statistical data processing was carried out by means of Statistica 8. In the group of Nenets, proportion of individuals with low MPS exceeded the proportion of individuals with high and extremely high (53,5% against 31,0 and 15,5p = 0.014 and p=0,000 correspondingly). Nenets differed in lower levels of risks of arterial hypertension (0,12 and 0,34 in young men, p=0,004); coronary heart disease, functional violations of respiratory organs, neurologic violations, and boundary mental disorders (0,22 and 0,53 in young men, p=0,012; 0,48 and 0,79 in girls, p=0,027; 0,36 and 0,66 on the whole, p=0,002). The MPS levels at young men were lower, than at girls regardless of an ethnic origin: among Nenets­ arterial hypertension (0,12 and 0,36, p=0,001), liver functional disease (0,14 and 0,37, p=0,021), boundary mental disorders (0,22 and 0,48, p=0,013), among rooted inhabitants­ functional gastrointestinal disorders (0,19 and 0,49, p=0,021). The QOL of all examined adolescents was characterized by high indicators of physical and social functioning. In general indices of the health­related QOL were higher in Nenets adolescents, than in rooted inhabitants. Further research is necessary and the attention should be paid not only on subjective but also an objective assessment of health status to analyze their interactions.

**Keywords:** Yamal, adolescents, health­related quality of life, the risks of the major pathology syndromes

QUALITY OF OUTPATIENT MEDICAL SERVICES IN OUTPATIENT FACILITIES RECEIVED BY ONCOLOGICAL PATIENTS IN SOUTHERN KAZAKHSTAN

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This article presents the results of a survey of 1734 outpatient patients with oncological diseases from South Kazakhstan region. Altogether, 34 multidisciplinary outpatient medical institutions were included into the survey. 72.1 (95 % CI: 70,0­74,2) % of the patients were satisfied with outpatient medical care. 15.7 % of the patients (95 % CI 14,1­17,5) were unsatisfied. Binary logistic regression revealed the factors which influenced dissatisfaction with outpatient medical care. These were problems with making an appointment with a physician (OR 24.5 (95 % CI: 16.4; 36.7)), waiting time for more than 30 min (OR 1.6 (95 % CI: 1.0; 2.4)), male gender (OR 1.4 (95 % CI: 1.0; 2.0)) and rural residence (OR 2.7 (95 % CI: 2.0; 3.8)). According to results of the survey we highlighted the importance of the outpatient medical care optimization in Kazakhstan.

**Keywords:** quality of medical care, primary health care, outpatient clinics, oncology, Kazakhstan

THE FIRST POPULATION­BASED INJURY REGISTER IN RUSSIA: ESTABLISHMENT, LOGISTICS AND ROLE IN THE MUNICIPAL INJURY PREVENTION PROGRAMME

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From 1 January 2015, the first Russian population­based injury register has been routinely used for registration of all traumas requiring medical assistance in the municipality of Shenkursk, Arkhangelsk region. It was built up on the injury registration model that was used in Harstad, Norway. The aims of the injury registry are to monitor injury rates and develop evidence­based preventive measures at the municipal level. The source of information about injures is an injury registration form which includes sections on type, place, time, preceding circumstances, mechanisms of accident, mechanisms of injury, alcohol consumption and socio­demographic characteristics of the injured. Inclusion criteria of the injury register are the ICD­10 codes S00­Т78. Data registration is performed using EpiInfo 7 platform. Introduction of the injury register allows to observe, forecast and minimize the harm caused by injuries on a population level as well as to increase knowledge about factors contributing to the burden of injuries Identifying removable and modifiable factors which act as parts of mechanisms of accidents and injuries allows development of targeted preventive measures to decrease the burden of injuries among the population of the Shenkursk district.

**Key words:** injuries, register, Shenkursk, prevention