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#### **ТАУ-КЕН ӨНДІРУ БІРЛЕСТІК ЖҰМЫСШЫЛАРЫНЫҢ ОРГАНИЗМІНІҢ ПСИХОФИЗИОЛОГИЯЛЫҚ КҮЙІ**

**Түйін:** Айзенк тесті мен Спилберг-Ханин методикасы арқылы Соколов-Сарыбай кен-байыту өндірістік бірлестігінің (ССКӨБ) жұмысшыларына физиологиялық зерттеулер жүргізілді. Осы зерттеудің мақсаты болған ерлердің кәсіби қызмет динамикасындағы психофизиологиялық күйін бағалау үшін сауалнамалар құрастырылды.

Зерттелген ССКӨБ жұмысшыларының психофизиологиялық күйінің анализі мынаны анықтауға мүмкіндік берді:

Жұмыс ауысымындағы сұралған жұмысшыларының психофизиологиялық күйзелуі бас ми қабығының есту және

көру зоналарындағы тежелу процесстерінің басымдылығымен, тұлғалық мазасыздануының өсімімен айқындалады.

Сарыбай кен басқармасының жұмысшыларында (40,3 2,0 балл), кендайындау басқармасының жұмысшыларында (40,0 1,5 балл) және автокөлік басқармасының жұмысшыларында (40,8 1,9 балл) реактивті мазасызданудың жоғары көрсеткіштері белгіленген.

**Түйінді сөздер:** психофизиологиялық күй, реактивті мазасыздану, тұлғалық мазасыздану, күйзелу, нейротизм, вертирлену.

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#### **ПСИХОФИЗИОЛОГИЧЕСКИЙ СТАТУС ОРГАНИЗМА РАБОЧИХ ГОРНО-ПРОИЗВОДСТВЕННОГО ОБЪЕДИНЕНИЯ**

**Резюме:** Были проведены физиологические исследования с помощью теста Айзенка и методики Спилбергера-Ханина работающих на Соколовско-Сарбайском горно-производственном объединении (ССГПО). Разработаны анкетные карты для оценки психофизиологического статуса мужчин в динамике профессиональной деятельности, которая явилась целью данного исследования.

Анализ психофизиологического статуса обследованных рабочих ССПГО позволил установить, что:

Психофизиологическое напряжение опрошенных рабочих в динамике рабочей смены проявляется преобладанием

процессов торможения, как в слуховой, так и зрительной зоне коры головного мозга, нарастанием личностной тревожности.

Высокие показатели реактивной тревожности отмечены у рабочих Сарбайского рудоуправления (СПРУ) (40,3 2,0 балла), у рабочих управления рудоподготовки (УРПО) (40,0 1,5 балла) и у рабочих автотранспортного управления (АТУ) (40,8 1,9 балла).

**Ключевые слова:** психофизиологический статус, реактивная тревожность, личностная тревожность, торможение, нейротизм, вертированность.

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#### **THE EFFECT OF MOTOR ACTIVITY AND ENVIRONMENTAL FACTORS ON THE FUNCTIONAL STATE OF AN ORGANISM**

*Younger generations, especially schoolchildren, belong socially to the most vulnerable part of the population. In this article, the structure of the incidence of schoolchildren, the health status of schoolchildren depending on the year of study and academic performance is studied. An attempt was also made to justify independent additional physical exercises, selected taking into account the schoolchildren's illness and observing the didactic principles of physical education.*

**Keywords:** schoolchildren, health, physical activity, preparedness of the body.

#### **Relevance:**

Negative trends in the state of health of the population of the Republic of Kazakhstan are constantly noted in state reports of recent years. Anxiety is caused by the health status of children, adolescents and youth. Particularly relevant is the health problem of students. Schoolchildren are among the least socially protected groups of the population, while the specifics of the educational process and age-related features place increased demands on almost all organs and systems of their body. An

analysis of the scientific literature on the health of schoolchildren shows that during schooling, the health of schoolchildren not only does not improve, but also worsens in some cases [1].

**Objective:** to establish the peculiarities of the influence of physical activity and environmental factors on the molecular and physiological mechanisms of restore neuronal function.

#### **Introduction:**

A significant decline in health is observed at the age of 15-17 years, when that complex, independent period of life is only



beginning, requiring the activity of all internal reserves of the person for which preparation has been going on all previous years. According to experts (doctors, psychologists, teachers), the state of physical and mental health of young people causes serious concerns. More than 50% of boys and girls who graduated from school already have 2-3 chronic diseases. Only 15% of graduates can be considered healthy. More than 30% of youths cannot be drafted into the army [2].

**Materials and methods:**

The study of the morbidity structure of students in Almaty allows us to identify a wide range of diseases and a tendency to increase the number of young people with various deviations in physical and mental development. The highest average annual growth rates for morbidity and prevalence of young people are noted for diseases of the nervous system (35%). According to L.N. Semchenko (2011), by the second course of study, the number of cases of diseases increases by 23%, and by the fourth - by 43%. A quarter of schoolchildren, when defining health groups for physical training, goes into a lower - special medical group (SMG).

And in the ranking of schoolchildren's values, they put health in second place after education, fully understanding that a high level of health gives competitive advantages in the labor market. The problem of strengthening the health of schoolchildren at the present stage is extremely urgent for the state and society. The health status of young people depends on many factors, among which lifestyle is of great importance. Academician Yu.P. Lisitsyn at the end of the last century scientifically substantiated the model of social conditionality of health, which was approved and recognized by experts of the World Health Organization. According to this model, the population's health level is more than 50% dependent on lifestyle and living conditions; 15-20% are occupied by hereditary factors and the state of the environment, and about 10-15% are accounted for by the work of health authorities and institutions.

One of the reasons for the negative phenomena associated with the health of the younger generation should be sought in the organization and conduct of the process of physical education. Particularly alarming are the students of SMG, whose number in some educational institutions exceeds 50%. Despite the order of the Ministry of Health No. 381 (2011), which instructs doctors to develop individual rehabilitation programs, to prescribe the necessary health and rehabilitation procedures, including physical therapy (physical therapy), a shaft of medical certificates collapses in the physical education clinic about the complete exemption of students from practical exercises on physical education. In some educational institutions, the number of such students exceeds the 20 percent threshold, i.e. every fifth student, in accordance with the conclusions of doctors, is forced to remain in a state of physical inactivity, which invariably leads to the risk of acquiring new diseases.

However, as the studies [2, 3, 5] show, the lifestyle of school youth cannot be called healthy. It is characterized by a high prevalence of negative behavioral stereotypes and low physical activity.

The health status of students is closely related to the year of study and school performance [3].

The number of healthy people among schoolchildren studying at the school with "good" and "excellent" is also significantly reduced. If in the whole sample every third is practically healthy, then among the "excellent students" and "good" is every fourth. This leads to the conclusion: for a certificate with good and excellent marks you need to pay to one degree or another with your health.

It should be noted that, despite the rather high prevalence of bad habits among schoolchildren, only half of them try to fight them. It is shown that schoolchildren insufficiently use effective components to ensure a healthy lifestyle. Thus, only 25.1% of schoolchildren regularly prevent fatigue and daily recovery after school, only 22.2% of schoolchildren follow a rational daily regimen, 25.9% use tempering procedures, and 18% use anti-stress measures.

Taking into account the above-mentioned negative phenomena, the State Educational Standard of Higher Professional Education (SESHPE) in the subject of "Physical Culture", as best practices

show, should provide for the implementation of the pedagogical process in the following areas: rehabilitation, preservation and enhancement of the health of young people through physical education and sports; formation and improvement of professionally applied physical fitness; increasing the sportsmanship of schoolchildren [4].

An immeasurable role in the current situation is rehabilitation treatment, an integral part of which is physical therapy (exercise therapy). The latter, having various scientifically substantiated methods for the therapeutic use of physical exercises, constitutes the most active and effective part of the rehabilitation system. At the same time, an active, strong-willed, purposeful participation of a schoolchild, assigned for health reasons to a special medical group (SMG), in performing physical exercises is a prerequisite for rehabilitation. Physical activity, regulated in accordance with the didactic principles of accessibility, individualization, systematicity, a gradual increase in dynamism and other pedagogical canons, is the most important condition for the formation of a healthy lifestyle, it is also the basis of the rehabilitation process [5,6].

One of the objectives of the study was to justify the influence of independent additional physical exercises, selected taking into account the illness of the student and observing the didactic principles of physical education. This study showed the following.

**Results:** for 6 years, pedagogical supervision was carried out in No. 120 of the Mazhit Begalin Gymnasium under the conditions of the implementation of the training load in the amount of 408 hours (for grades 10 and 11 for 4 hours per week) of classroom activities when doing homework in the amount of 1-2 hours in a week. It showed that the physical and functional preparedness of schoolchildren is increasing from class to class. At the same time, the number of schoolchildren regularly involved in sports annually exceeds the 25% barrier of the total number of schoolchildren studying on 1 shift. The share of schoolchildren of a special medical group (having health deviations) transferred to a preparatory or primary medical group according to the conclusion of medical workers is about 70%. A reliable positive correlation of schoolchildren's performance with the level of their physical fitness was revealed.

During the study of schoolchildren of the experimental group (EG), the following requirements were made: writing and defending an essay in which a student with any deviation in health condition listed the possible causes of the disease as a whole according to the diagnosis, physiological negative changes in the body observed with this disease using literary sources, he selected physical therapy exercises and methods of their implementation for a given deviation in health with the disclosure of didactic principles of physical education; fulfillment of the full volume of classroom hours on the subject "Physical Culture", in accordance with the curriculum; self-study on average about 2 hours a week with a gradual wave-like increase in load, agreed with the teacher during the development, maintenance and monthly practical protection of a self-monitoring diary, which contains 6-8 control exercises available to the student, with a mandatory monthly improvement in their performance; passing a repeated semester medical examination with an assessment of the dynamics of the state of health [7].

A characteristic feature of the rehabilitation process of EG schoolchildren was the use of physical exercises, which together put the student in the conditions of active participation in the healing process. As our observations have shown, the active participation of schoolchildren in the rehabilitation process contributes to the mobilization of reserve factors of the body. Exercise therapy exercises and self-study in accordance with the diary of self-control served for students of the EG not only to improve their health, restore the affected system, but also as a means of healing the whole body, increasing its adaptive capabilities. A clear evidence of this situation are reliable positive changes in indicators of physical fitness and functionality at the beginning and at the end of the pedagogical experiment, presented in the table. As can be seen from the table, the tested students of the CG, judging by the average data, recorded positive shifts only in certain indicators of physical fitness and functionality at the end of the pedagogical experiment. However,



these positive changes were unreliable or unreliable. Over the 3 academic years of the pedagogical experiment, only 8% of schoolchildren from the CG were transferred to the preparatory group according to medical control. These were mainly students with health deviations as a result of injuries before entering the university.

Classes in the control group (CG) were held with students of the SMG in accordance with the curriculum. Rehabilitation measures were used in accordance with the approximate program of physical education for higher education institutions approved by

the Ministry of Education and Science. The pedagogical experiment was carried out for 3.5 years, starting from the academic year 2017–2018 and the academic year 2019–2020.

As a result of focused work of an individual orientation, taking into account the diagnosis and the state of physical fitness of each, in close contact with the medical staff of the university's health center, 68% of EG students who entered the 11th grade during the course on the discipline "Physical Culture" were translated according to medical reports in preparatory or primary medical groups (table. 1).

**Table 1- indicators of the functional state and physical fitness parameters of schoolchildren from the CG and the EG before and after the pedagogical experiment ( $X \pm \delta$ , confidence level 0.85)**

Indicators and control exercises	Subject groups			
	CG (53 people)		EG (49 people)	
	before the experiment	upon completion	before the experiment	upon completion
Fat percentage to musculoskeletal tissue (%)	24,6±0,8	25,2±1,3	24,8±1,1	21,4±0,9
Proof of Ruthier (index of cardiac activity) (conventional units)	16,8±1,7	16,3±1,4	16,2±1,9	8,3±1,2
Relative level of physical health PWC170 (kgm / min)	1,36±0,08	1,41±0,12	1,39±0,11	1,8±0,17
Rods test (s)	38,4±2,3	43,2±2,5	39,3±2,6	48,8±2,1
Forward tilt (cm)	3,2±0,9	5,6±1,3	2,8±1,2	8,3±1,9
Flexion-extension of the arms with support on the knees (times)	8,4±1,7	12,6±2,2	8,7±1,9	18,2±2,6
Lowering the legs to the right, left (pendulum) lying on your back, arms to the sides (number of times)	7,5±1,6	12,3±1,8	7,3±1,9	18,5±2,1
Jumping out of a low squat at the Swedish wall (number of times)	11,3±1,7	14,2±1,4	11,8±1,9	18,6±2,4
Raising the torso from a supine position hands behind the head (number of times)	17,4±3,2	25,6±2,5	18,2±2,7	35,8±3,4
Jogging in place, lifting the thigh high 180 bpm (s)	13,6±2,3	19±2,4	35,3±3,2	25,6±2,5
Assessment of the level of health by G.L. Apanasenko (points)	-0,6±0,04	1,6±0,03	-0,7±0,06	6,2±1,3

Conclusions: the results obtained allow us to conclude that in achieving success in the physical rehabilitation of students of SMH in the system of higher professional education, independent exercise in physical exercises, selected taking into account the disease and systematically performed with a gradual wave-like increase in load, with active participation in the treatment and rehabilitation process of the individual, is of paramount importance. Rehabilitation classes within the curriculum, in conjunction with independent additional classes in the amount of about 2 hours a week, contribute to the development of processes of adaptation of the body to physical activity, increase the level of functionality, physical fitness and health.

Classes on the subject "Physical Culture" for students of the SMG in the amount of 4 hours a week as part of the educational process of higher professional education do not have the proper rehabilitation effect.

As a result of the analysis of the physical and psychological state of youth health, its dynamics, we can draw the following conclusions:

- 2/3 of the students are constantly or occasionally unhealthy;
- 4 of them suffer from chronic or protracted diseases.

A number of reasons associated with their education have a negative impact on the health status of young people in higher education institutions:

- up to 63% of schoolchildren believe that one of the factors affecting the state of health is the lack of well-organized, high-quality nutrition at affordable prices;
- the lack of adaptation of the educational process as a whole to the individual physical and psychophysiological characteristics of schoolchildren, indifferent attitude of teachers towards students;
- the practical absence at the place of study of a system of diagnostics, disease prevention and wellness services at affordable prices;
- according to 63% of schoolchildren, medical examinations conducted at the university are an empty formality: nothing

specific is said about the state of health of the examined during the examinations;

- More than 60% of students in need of intensive, diverse treatment and not receiving assistance from medical personnel independently use various forms and means to maintain their health;
- lack of psychological service within the walls of the university, capable of providing assistance, giving advice on problems of study, relationships, family life of students;
- One of the factors affecting the state of health, 58% of boys and 29% of girls (mainly schoolchildren of the 10th and 11th grade) consider an ineffectively organized system of physical education at the university;
- schoolchildren assigned to the main medical group for health reasons, in the 10th and 11th grade, positively change their attitude to healthy living. At the 12th grade, with a halving of the number of hours stipulated by the State Standard for physical education, the intensity of their attitude to health drops sharply, the cognitive and practical nature of the relationship changes to emotional, signaling the continuing need for physical activity. In schoolchildren with poor health, interest in physical education continues until the 11th grade, and then the same decline occurs as in students of the 10th grade of the main medical group;
- the most important indicator of a person's culture level, as well as a factor affecting a good mood, state of health and a positive attitude of young people to a healthy lifestyle, is an active form of spending leisure time - active leisure sports (however, the percentage of schoolchildren who prefer outdoor activities has decreased from 31 in recent years up to 17%);
- 29.5% of schoolchildren living in a dormitory believe that unsettled life not only takes the lion's share of time from rest and self-development, but also forms a culture of needs, creates a certain material and moral-psychological atmosphere that determines the physical and mental state of health of schoolchildren;
- In general, students are characterized by an indifferent-passive attitude to their health and the lack of a culture of maintaining it;



it is not disease prevention and recovery that dominates, but

treatment as necessary.

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**ҚИМЫЛ БЕЛСЕНДІЛІГІ ДЕҢГЕЙІМЕН ҚОРШАҒАН ОРТА ФАКТОРЛАРДЫҢ АҒЗАНЫҢ  
 ФУНКЦИОНАЛДЫ ЖАҒДАЙЫНА ӘСЕРІ**

**Түйін:** Жас ұрпақ, әсіресе мектеп оқушылары әлеуметтік жағынан халықтың әлсіз бөлігіне жатады. Бұл мақалада оқушылардың сырқаттанушылық құрылымы, оқу жылына және оқу үлгеріміне байланысты мектеп оқушыларының денсаулық жағдайы зерттелген. Оқушылардың

сырқаттылығын ескере отырып және дене шынықтырудың дидактикалық қағидаларын сақтай отырып, жеке қосымша физикалық жаттығуларды ақтауға талпыныс жасалды.  
**Түйінді сөздер:** мектеп оқушылары, денсаулық, дене белсенділігі, дененің дайындығы.

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**ВЛИЯНИЕ ДВИГАТЕЛЬНОЙ АКТИВНОСТИ И ФАКТОРОВ ОКРУЖАЮЩЕЙ СРЕДЫ НА  
 ФУНКЦИОНАЛЬНОЕ СОСТОЯНИЕ ОРГАНИЗМА**

**Резюме:** Юные поколение, особенно школьников, относится в социальном плане к наиболее незащищенной части населения. В данной статье изучена структура заболеваемости школьников, состояние здоровья школьников в зависимости от года обучения и успеваемости. Также предпринята попытка обоснования

самостоятельных дополнительных занятий физическими упражнениями, подобранных с учетом заболевания школьника и соблюдения дидактических принципов физической культуры.  
**Ключевые слова:** школьники, здоровье, физическая нагрузка, подготовленность организма.

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**ЖАҢАЖОЛ МҰНАЙ-ГАЗ КЕШЕНІ АЙМАҒЫНДАҒЫ ЕЛДІ-МЕКЕН ТҮРҒЫНДАРЫНЫҢ  
 ПСИХОЛОГИЯЛЫҚ ЖАҒДАЙЫН БАҒАЛАУ**

Елімізде әлеуеті жоғары 25 мұнай-газ кен орынының бірі Ақтөбе облысының оңтүстік-батысында орналасқан Жанажол мұнай-газ кешені. Зерттеуде негізгі аймақ ретінде Ақтөбе облысындағы Жаңажол мұнай-газ өндіруші аймағынан 15-20 км қашықтықта орналасқан Саркөл, Кенкияқ, Саға, Шенгельши ауылдары және бақыланушы аймақ ретінде Қобда ауылдарының 18-60 жас аралығындағы 384 тұрғыны респондент ретінде алынды. Респонденттердің мазасыздығын, депрессия мен стресс анықтау мақсатында «General Anxiety Disorder-7» (GAD-7), «Patient Health Questionnaire-9» «Холмс және Рага» сауалнамалары жүргізілді. Зерттеу нәтижесінде мұнай-газ өндіруші аймақ елді-мекеніндегі тұрғындардың мазасыздық деңгейін анықтау бойынша респонденттер ортасында патологияның болу ықтималдығы бақыланушы аймаққа қарағанда 18.8% жоғары. Депрессия деңгейі бойынша да мұнай-газ өндіруші аймақ елді-мекеніндегі тұрғындар ортасында бақыланушы аймақпен салыстырмалы түрде депрессияның ауыр түрі кездесті 1.2%. Стресс бойынша бақыланушы аймақта ғана аурудың ықтималдығы 90%-ға дейін 0.5%±1.0 артқаны анықталды.  
**Түйінді сөздер:** мұнай-газ, тұрғындар, психология, денсаулық, мазасыздық, депрессия, стресс

**Өзектілігі.** Мұнай өндірісі тұрғындар өмірінің әлеуметтік-экономикалық өзгерісі және қоршаған ортаны ластаушы, яғни аймақ тұрғындары денсаулығының жанама әсерлері

болып табылады. Бұл жағдайда әлеуметтік-экономикалық жағдай біртіндеп қоршаған ортаның сапасын төмендетіп,