Dynamics of Physical Development and Physical Fitness of Fresh-Year Students Depending on the Sports Orientation of the Educational and Training Process

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Annotation. The article presents the results of pedagogical experiments to study the influence of value motives for physical exercise on the health status of students in the process of physical education. Based on this, it becomes possible to determine the lagging link (physical quality) and identify the main training strategy characteristic of this group of students, because One of the tasks of physical education of students is the diversified development of physical qualities.

Key words: Physical culture, values, motives, psycho-emotional state, physical fitness, strengthening of physical health, dynamics, Quetelet index, Gabs, Baldwin, Kursan and Richards formulas.

Reforms in the higher education system of the Republic of Uzbekistan, in accordance with the requirements of the time, impose comprehensively strengthened requirements on the student's personality, the content of his theoretical knowledge, the level of practical qualifications and skills, his adaptation to dynamic and rapidly changing living conditions, improving the level of health, achieving high performance and further increased physical activity [1].

Numerous studies indicate the acceleration of the younger generation, the consequence of which is heterochronicity in the maturation of various body systems, which can manifest itself in the functional insufficiency of the vegetative support of the body during physical activity. This should be taken into account when organizing physical education in universities and revising the criteria for assessing the physical development and physical preparedness of students.

It is not for nothing that much attention is paid to the physical education of students. Because it is precisely this layer of the country's population that should have the greatest physical and intellectual capabilities for the further progress of society in the process of obtaining education in higher educational institutions. However, many years of work experience and the results of scientific research [6] have shown that a certain percentage of students do not have the necessary level of physical education and physical fitness during their studies. Therefore, the importance of studying the motives of students' activities in physical education, the level of their physical development and mental state is high.

Analysis of comparative data shows that according to most indicators, students of Berdakh KSU are not inferior in physical development to students of other universities in the city of Nukus. Thus, the average growth rate of students from Berdakh KSU and NGPI is higher than that of students from the Nukus branch of the Agrarian University and is approximately equal to the growth rate of students from the Institute of Culture of the Nukus branch and Karakalpak State Medical Institute. The indicators of mass and chest circumference were higher than in the listed universities, and the indicators of hand strength and vital capacity (VC) were slightly lower in the girls of KSU named after Berdaha.

The physical development and physical preparedness of applicants should be taken into account primarily when distributing them into study groups in the 1st year, since correct distribution allows you to select the optimal dosage of physical activity, take into account predisposition to the sport and correct deficiencies in physical development.

In our opinion, the optimal distribution of first-year students can only be carried out using ICT.

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However, this is complicated by the fact that criteria have not yet been developed on the basis of which it is possible to create programs for computational methods for assessing physical development and physical fitness. A large number of testing methods have been developed to assess the physical development of athletes. However, they are based on the predisposition, or rather, the suitability of the student to engage in a particular sport. In addition, it is not known by what criteria (morphological, functional or sports testing) it is more correct to distribute students into study groups. When assessing their physical development, we used the parameters that are entered into the athlete's medical checklist: standing height, weight, chest circumference during pause, during inhalation and exhalation, spirometry, dynamometry.

Currently, the physical development of an athlete is assessed mainly by the method of correlation and a system of standard multiple regression equations or the method of multivariate factor analysis. However, the correlation method in assessing the physical development of students and distributing them into groups is still unpromising, since connections are revealed between the characteristics desirable for the chosen sport and their changes during the training process. Therefore, to assess the level of the studied signs of physical development, we used less accurate, however, and less labor-intensive methods of indices and standards. We calculated standard, or proper, values using formulas and compared actual values with them. So, we calculated the required mass using the Habs formula:

P=56+4/5 (L-150)

where L is height, cm.

Proper vital capacity (VLC) was calculated using the formulas of Baldwin, Kursan and Richards. These formulas relate JEL to a person's height, age and gender.

The formulas are as follows:

JEL (men) = (27.63 - 0.112 V) N;

JEL (women) = (21.7 - 0.101 V) N, where V is age; H - height, cm.

For an approximate assessment of the ratio of height and weight, the Quetelet weight-height index was calculated.

Using standard methods, body weight, standing height, chest circumference, its excursion, vital capacity, dynamometry of the strength of the left and right hands were measured in 1,300 first-year students of the 2017/18 academic year. At the same time, 917 women and 383 men aged 17 to 26 years were examined. Comparing the physical development indicators presented in Table 1, it can be noted that the height of students, both men and women, increased by approximately 1.4-1.5%, while the body weight of men decreased by 1.48 %, women - by 10.7%. Hand strength in men decreased by 11.8%, in women - by 21%. Chest circumference also decreased slightly, but chest excursion and vital capacity increased slightly. When compared with the proper values of vital capacity in women it is 5% lower than expected, in men it is 8.6% more than calculated. All this indicates uneven development, which is characteristic of the so-called non-harmonic acceleration. According to research results [2], in persons classified as a variant of non-harmonic acceleration, motor qualities (strength, speed, endurance), as a rule, were at the level of average or even below average indicators for this age group. In some cases (3.87%), the examined individuals lagged behind their peers in all studied morphofunctional indicators, and in 9, In 78% of cases, a lag was observed in the development of certain indicators or in the manifestation of one of the motor qualities (strength, speed, endurance).

Table 1

Indicators of physical development of first-year students for the 2017/18 and 2023/24 academic years

Indicators of	Men	Women

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physical development	2017/18 г.	2023/24 г.	Разница, %	2017/18 г.	2023/24 г.	Разница, %
Standing height, cm	170,8	173,4	+1,58	160,8	162,6	+1,12
Body weight, kg	67,4	66,4	-1,48	59,9	53,5	-10,7
Chest circumference at rest, cm	87,6	82,7	-5,6	78,1	77,6	-0,6
Hand strength, kg (right)	44,9	40,7	-9,3	32,1	25,6	-20,2
Hand strength, kg (left)	40,9	36,2	-11,5	29,9	23,3	-22,1
Vital capacity, ml 108	4640	4800	3,4	2980	3053	12,5

When characterizing physical development, it is customary to evaluate such indicators as mass, density and body shape. In this case, mass (absolute weight) and density (specific gravity) are given almost the main importance as factors determining the strength of the body.

In table Figure 2 shows the ratio of the expected and actual body weights of students. As can be seen from the table, only 43.2% of male students have actual body weight that corresponds to the proper one, calculated using the Gabs formula, 49% have less than the proper weight (from 15 to 30%), and 7.8% have an actual body weight that exceeds the proper weight by 5% or more. According to the BMI Classification [3], there are 4 degrees of obesity: 1st degree - excess of proper body weight by 5 - 29%; 2nd degree - by 30 - 49%, 3rd degree - by 50-99%, 4th degree - more than 100%.

Table 2

The ratio of proper and actual body weights of first-year students for the 2023/24 academic year

Floor	Quetelet index X	With normal weight%	With a mass less than expected, %	With a mass greater than expected, %	Obese classification according to BMI (WHO)		
					1st degree	2nd degree	3-nd degree
Husband	347	43,2	49,0	7,8	24	6	0
Women	329	36,1	56,7	7,2	51	14	1

Of the 383 men in the 1st year, 24 were with the 1st degree of obesity and 6-00 with the 2nd. Analyzing the weight indicators in women, it can be noted that only 36.1% of 1st year students had it consistent with the proper weight, in 56.7% the actual weight was below the norm by more than 15%, and in 7.2% it exceeded the proper weight by more than 5%. Female students who were overweight according to BMI classification were distributed as follows: 1st degree of obesity - 51 people, 2nd - 14, 3rd - 1 person.

Being overweight or obese can have significant health impacts. The increased risk associated with obesity is largely due to the high incidence of coronary and cerebral disorders in obese people, in particular, coronary artery disease (angina, myocardial infarction) and ischemic diseases of the brain (stroke and chronic cerebrovascular diseases) [4].

In table Figure 2 also presents the numerical values of the Quetelet weight-height index. According to the literature, this index for men is on average 370-400 g per 1 cm of height, for women - 325-376 g per 1 cm of height. However, it increases in sprinters, wrestlers, and weightlifters and decreases in long-distance runners. The average value of the weight-height index of male students is lower than the average values given in the literature and is equal. 347 g per 1 cm of height. This value is close to the index of marathon runners (350 g per 1 cm of height). There is also a tendency for female students to decrease their weight and height. It is equal to 329 g per 1 cm of height.

An increase in chest excursion and vital capacity compared to what should be suggests good physical

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fitness in terms of the functional capabilities of oxygen transport systems. N.M. Lyubimova [5,9] formulated the energy rule of skeletal muscles, according to which energy processes in different age periods, as well as changes and transformations in the activity of the respiratory and cardiovascular systems in the process of ontogenesis depend on the corresponding development of skeletal muscles. At the same time, he emphasized that the degree of development of the chest correlates with the relative mass of the lungs and heart and directly depends on the corresponding development of skeletal muscles, and not vice versa. Comparative data on physical development, physical fitness and performance of students (PWC170 test, an indicator of the functional state of the heart, 12-minute Cooper IGST test, work on a bicycle ergometer until "failure" at a heart rate of 170 beats/min, etc.) showed that the actual parameters differ significantly from the due. The most prepared were students engaged primarily in cyclic exercises (running, cross-country, etc.).

It should be noted that the development of endurance is determined, first of all, by the functional capabilities of the nervous, cardiovascular, respiratory systems and the level of metabolic processes. At the initial stage of preparation, the development of endurance plays a major role. With optimal planning, this level can be significantly increased after 10-12 regular training sessions.

Thus, pedagogical and physiological control methods, taking into account the main parameters of the physical development of young people, confirm the assumption about the insufficient level of functional capabilities of the body of first-year students. In this regard, the physical education of students at the first stage of preparation should be aimed at expanding the functional capabilities of their body, and not at sports specialization, which is quite physiologically justified.

Taking into account the functional capabilities of the body of student youth, it is possible to purposefully plan optimal physical activity that will help improve their mental and physical performance. By fulfilling a set of these conditions, it is possible to successfully solve the tasks set for higher education at the present stage, contained in the university program and the requirements of the "Level of Physical Fitness" complex [7,8].

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