

Adaptation of Students to the Educational Process and Levels of Physical Condition

Tadjibayeva Dilafruz Rakhmonberdiyevna ¹

Isroiljonov Saminjon ²

Abstract

In a study conducted at the beginning and end of the academic year among 16 first-year students of the medical direction of the Fergana Medical Institute of Public Health, the adaptive potential and physical condition of the students' bodies were studied. In the obtained results, the primary analysis showed that the physical condition of the student's body was below average, and the indicators of adaptation mechanisms were in a state of tension. When conducting a repeated analysis at the end of the year of the educational process, the physical condition of the student's body was average and above average and satisfactory indicators of adaptation were shown. A one-factor analysis of the variance of the obtained results showed that the physical condition index $F_{f>Fst}; 27.49>4.17$; the level of reliability $P<1.17$. was equal to the Adaptation index $F_{f>Fst}; 25.56>4.17$; the level of reliability was $P<1.98$.

Key words: adaptation, physical condition, educational process, health, dispersion, satisfactory, unsatisfactory.

¹ Teacher of the Department of Histology and Biology, Fergana Medical Institute of Public Health

dilytadjibaeva@gmail.com

² Associate Professor, Department of Zoology and General Biology, Fergana State University

saminisroilov@gmail.com

Introduction: Humans, like all living organisms, are capable of adaptation, that is, adapting to environmental conditions. Adaptation is a dynamic process in which the mobile systems of living organisms, despite the variability of conditions, maintain the stability necessary for survival, development, and reproduction. Such a state is an adaptive mechanism developed as a result of a complex process of long-term evolution of the organism, which ensures the organism's ability to exist in constantly changing environmental conditions. The adaptation of a person to a new natural and social environment

can be characterized as a set of socio-biological characteristics necessary for the stable existence of an organism in the environment. Every person's life is considered a constant adaptation. Also, a person's ability to restore physical and mental strength is not limitless.[1] One of the main characteristics of human health depends on the physical condition of the organism. In this case, a person is determined by their readiness to perform various types of muscle and work loads within a certain time. This condition depends on the level of physical qualities of the body, the characteristics of physical development, the functionality of individual body systems, and the presence of diseases. [2]

The object and methods of research: Depending on environmental conditions, a number of conditional levels of functional state are distinguished, determined by the degree of adaptation of the body in the period between complete health and the first specific manifestations of cardiovascular pathology. In ensuring the necessary level of adaptability, under the influence of negative conditions, protective, compensatory, and adaptive mechanisms are activated in the body. The organism's adaptation is determined by the level of tension and mobilization of functional reserves, as a result of which the main vital indicators are heart rate, cardiac output, and arterial blood pressure, which are maintained in clinical normal for a long time. The transition from health to disease, from normal to pathology is a gradual decrease in the degree of adaptation of the organism to environmental conditions (decrease in adaptive potential), as a result of which various borderline conditions, including nosologic and premorbid ones, appear. [3] Researchers associate the development of endurance with the process of developing health, since this quality ensures the adaptation of many facets of internal organs, expands the reserves of the cardiovascular and respiratory systems responsible for supplying tissues with oxygen. The level of endurance development is used to assess physical health, the equivalent of which is a person's physical condition. Health implies a fairly high level of physical fitness, physical development, and performance. [4]

Results obtained during the discussion and experiment: In the research work, along with relatively simple methods of simultaneous comparison of one sample with another, if necessary, it is possible to perform more complex tasks, i.e., to compare several samples by combining them into a single statistical complex. Taking this into account, R.Fisher (1925) proposed a method of comprehensive assessment of comparable instruments, called dispersion analysis. This method is based on the separation of the total variance of the statistical complex into its components, and by comparing them with each other using the F-criterion, it is possible to determine which ratio of the total change in the considered (resulting) characteristic is determined by the influence of regulated and unregulated factors in the experiment. Dispersion analysis is characterized by rigorous logic and a sequence of computational operations. The significance of this method lies in the fact that it allows determining the overall effect of the factors and the individual effect of each factor regulated in the experiment, as well as the influence of various combinations of factors on the resulting trait. [5]

Values of indicators of the cardiovascular system and AP and WC of students in the field of therapeutic work at the beginning of the 1st academic year

Table 1.

№	Pulse	Systolic pressure	Diastolic pressure	Age	Weight	Height	AP	JX
1	80	120	90	18	56	1.72	2,218	0,521
2	70	110	80	18	55	1.74	1,861	0,682
3	85	130	90	18	71	1.68	2,584	0,466
4	78	120	85	18	48	1.58	2,327	0,562
5	84	120	80	18	45	1.62	2,173	0,530
6	85	120	85	18	58	1.70	2,269	0,504
7	86	120	90	18	95	1.75	2,608	0,507
8	82	120	85	18	65	1.75	2,254	0,535
9	87	120	85	18	44	1.60	2,255	0,478
10	88	120	80	19	59	1.70	2,352	0,499
11	85	120	85	19	60	1.65	2,313	0,504
12	90	120	80	19	60	1.65	2,687	0,483
13	85	120	88	20	56	1.78	2,231	0,477
14	83	130	85	21	62	1.70	2,465	0,489
15	80	120	80	21	48	1.65	2,171	0,480
16	80	130	90	25	98	1.80	2,762	0,500

Values of indicators of the cardiovascular system and AP and WC of students in the field of therapeutic work at the end of the 1st academic year

Table 2.

№	Pulse	Systolic pressure	Diastolic pressure	Age	Weight	Height	AP	JX
1	78	110	70	18	56	1.72	1,896	0,662
2	74	110	70	18	55	1.74	1,825	0,696
3	76	110	70	18	71	1.68	2,045	0,605
4	80	100	70	18	48	1.58	1,832	0,668
5	85	120	80	18	45	1.62	2,184	0,521
6	87	110	70	18	58	1.70	2,030	0,585
7	86	120	80	18	95	1.75	2,528	0,549
8	80	110	70	18	65	1.75	1,972	0,651
9	87	90	60	18	44	1.60	1,635	0,676
10	78	90	60	19	59	1.70	1,594	0,761
11	89	100	70	19	60	1.65	1,99	0,592
12	90	110	70	19	60	1.65	2,141	0,558
13	70	110	70	20	56	1.78	1,782	0,725
14	73	110	70	21	62	1.70	1,955	0,704
15	73	90	60	21	48	1.65	1,513	0,796
16	80	120	90	25	98	1.80	1,92	0,526

One-factor analysis of the variance of adaptive potential of students in the field of therapeutic work $n=16/16$. The arithmetic mean value $\bar{x}$, results in group A of medical students -2.35; in group B of medical students -1.92. Dispersion D, in group A of medical students - 0.051; in group B of medical students - 0.060. Group variability CC, variability between groups -1.43; intragroup variability -1.67; total variability -3.11. Division of the sum of squares by the number of free impurities MS, between

groups - 1.43; within groups - 0.055; F-frequency - separation of two variances, between groups - 25.56; The P-value assesses the validity of the null hypothesis and is equal to 1.98; F-critical permissible value is equal to 4.17.

One-factor analysis of the variance of the level of physical condition of students in the field of therapeutic work=16/16. Arithmetic mean $\bar{x}$, in group A of medical students - 0.51; in group B of medical students - 0.64. Dispersion D, in group A of medical students - 0.0026; in group B of medical students - 0.0069. Group variability SS, between groups - 0.13; within groups - 0.14; total variability - 0.27. Division of the sum of squares by the number of free impurities MS, between groups - 0.13; within groups - 0.004. F-frequency separation of two variances, between groups 27.49. The P-value assesses the validity of the null hypothesis, which is 1.17. F-critical tolerance is equal to 4.17.

$F_f > F_{st}$; $27.49 > 4.17$; reliability level $P < 1.17$.

Conclusion: The results of the study and the tables of objects obtained from students of the 1st year No. 16 of the Therapeutic Faculty of the Fergana Medical Institute of Public Health showed the following indicators. In the values of the results obtained at the beginning of the academic year, changes in the living conditions of students and the breadth of the educational database obtained during the educational process showed below-average indicators of adaptation mechanisms and physical condition according to the adaptation and physical state of the organisms. At the end of the academic year, a repeated analysis of the students' body showed satisfactory adaptation to the educational process and average and above-average indicators of physical condition.

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