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Determining the Level of Physical Condition in Students' Bodies

Dilafruz Rakhmonberdievna Tajibayeva
Fergana Medical Institute of Public Health, Lecturer, Department of Histology and Biology, dilytadjibaeva@gmail.com.

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Abstract: The article discusses how the physical condition of organized youth affects the quality of training for future specialists and the development and use of society's intellectual potential. A study was conducted among 22 male and female second-year students from the Dentistry and Pediatrics faculties of the Fergana Medical Institute of Public Health. The research examined the physical condition of the cardiovascular system during their studies. The level of physical condition was calculated using Ye. L. Pirogova's formula, which considers pulse rate, mean arterial pressure, height, weight, and age. The results were analyzed using the nonparametric Van der Waerden X-test.

Keys words: morphofunctional development, physical condition, morphological and functional characteristics, pulse, mean arterial pressure, height, weight, age, nonparametric X-test.Определения уровеня физического состояние в организме студентов

Introduction

Scientists link the process of improving health with the body's endurance, as this quality ensures a multifaceted adaptation of internal organs and the expansion of the reserves of the cardiovascular and respiratory systems responsible for oxygen supply. The level of endurance is used to assess physical health, and its equivalent is the individual's physical condition [1].

The components of morphofunctional development include the physical development and functional state of the body, which represent the set of morphological and functional features determining the organism's physical reserve of strength [2].

Objects and Methods of Research: The research involved 22 students aged 18–24 from the second year of the Pediatrics (10 students) and Dentistry (12 students) departments of the Fergana Medical Institute of Public Health. The obtained data were analyzed by dividing them into two groups.

Preserving and strengthening the health of the younger generation is a key state priority. Physical health significantly affects the quality of training of future specialists and the development and application of society's intellectual potential [3]. Scientific studies continually focus on developing methods that make it possible to predict the body's responses during dynamic work based on results obtained at rest. The ability to evaluate general and aerobic indicators based on muscle measurements at rest is of particular scientific interest. To calculate the level of physical condition, Ye. L. Pirogova's formula was applied, considering pulse rate, mean arterial pressure, height, weight, and age. After the necessary calculations, the result was evaluated according to a standardized scale [1].

Discussion and Experimental Results: The correct use of parametric tests for statistical criteria is based on the assumption of normal distribution of compared samples. However, when this assumption is not valid, nonparametric tests are used. Among them, rank-based criteria play an important role, as they rely on the ranks rather than raw data of compared groups.

The Van der Waerden X-test belongs to this group and is used to test the null hypothesis when comparing independent samples. The calculation method is as follows: the values of compared samples are arranged in ascending order into a single sequence, each member is assigned a rank number, and the ratio R/(N + 1) is determined, where $N + 1 = n_1 + n_2 + 1$. Using special tables, φ[R/(N + 1)] values are determined for each rank. The sum of these values, $Xf = \sum\varphi[R/(N + 1)]$, is then compared with the critical value Xst for the chosen significance level.

If Xf < Xst, the null hypothesis cannot be rejected, meaning there is no statistically significant difference between the compared samples [4] is found for each value using. Generalizing the results (taking into account the features), the value $Xf=\beta\varphi[R/ (N+1)]$ is obtained, which is the critical point for the accepted level of significance

№	Yosh	Vazn	Yurak qisqarish chastotasi	Sistolik bosim (SB)	Diastolik bosim (DB)	Bo‘y	JH
1	18	60	72	110	70	176	0.717
2	18	58	76	110	70	165	0.662
3	18	78	70	110	70	182	0.746
4	18	70	80	120	80	175	0.581
5	18	58	85	120	90	180	0.475
6	19	72	75	110	80	189	0.648
7	19	69	75	120	80	170	0.623
8	19	66	72	110	70	180	0.718
9	19	60	78	120	80	176	0.587
10	19	50	80	120	80	155	0.568
11	19	56	76	110	70	168	0.679
12	19	82	75	110	70	193	0.698

of the criterion Xst and is compared with the total number of members of the compared samples, i.e., N= n1+ n2. Critical points for 5% and 1% significance levels of the X-criterion test and the total number of N=n1+ n2 members in two samples (taking into account the difference between n1-n2) are determined using the table. The null hypothesis is based on the assumption that the samples being compared are taken from objects with the same distribution functions. If Xf is found to be Xst, the null hypothesis must be rejected at the accepted significance level. [4]

Indicators of the cardiovascular system and LV values of students in the dental program Jadval 1.

№	Age	Weight	Heart rate	Systolic	Diastolic (DB) pressure	Height	JH
1	18	50	70	120	80	169	0,655
2	18	55	75	110	80	168	0,640
3	18	48	75	110	80	167	0,635
4	18	45	75	110	80	160	0,635
5	18	72	85	120	70	180	0,586
6	18	61	85	110	70	183	0,601
7	19	62	80	120	70	182	0,618
8	19	68	85	110	70	181	0,603
9	19	50	73	100	75	168	0,700
10	19	54	85	100	70	169	0,621

Based on the results obtained on the cardiovascular system of 2nd-year students studying at the Fergana Medical Institute of Public Health, the values of the results of JH analysis for unequal samples were determined using the formula of E.A. Pirogova. Analysis of nonparametric complexes was carried out using the Van der Waerden X-test. $n_1 \neq n_2$;

students studying in the field of dentistry: $n_{=}12$;

students studying in pediatrics $n_{=}10$;

$X_f = 1,2$; $X_{st} = 4,08$

X – van der Waarden boundary point is reliable when $n_1 - n_2 = 2$ or 3 $X_f = 1,2 < X_{st} = 4,08$.

Analysis of the level of physical condition in the organism of organized youth using the E.A. Pirogova formula Analysis using Van der Varden X-criteria.

№	pediatrics	dentistry				R/N+1	φ (R/N+1)
1	0.586	0.475		0.475	1		
2	0.601	0.568		0.568	2		
3	0.603	0.581		0.581	3		
4	0.618	0.587	0.586		4	4/23=0,173	-0,94
5	0.621	0.623		0.587	5		
6	0.635	0.648	0.601		6	6/23=0.260	-0,64
7	0.635	0.662	0.603		7	7/23=0.304	-0,51
8	0.640	0.679	0.618		8	8/23=0.347	-0,39
9	0.655	0.698	0.621		9	9/23=0.391	-0,28
10	0.700	0.717		0.623	10		
11		0.718	0.635		11	11/23=0.478	-0,06
12		0.746	0.635		12	12/23=0.521	+0,05
13			0.640		13	13/23=0.565	+0,16
14				0.648	14		
15			0.655		15	15/23=0.652	+0,39
16				0.662	16		
17				0.679	17		
18				0.698	18		

19			0.700		19	19/23=0.826	+0,94
20				0.717	20		
21				0.718	21		
22				0.746	22		
			n=10	**n=12**	**-**		+1,2
X_f =1,2< X_{st} =4,08							

Conclusion: The results of the study, obtained from 2nd-year students No. 22 of the Fergana Medical Institute of Public Health, Dentistry and Pediatrics, who participated in the study, showed the following indicators. Physical condition reflected the level of physical activity, functional reserves of life-supporting organs and systems, and primarily the cardiovascular system, the level of physical development, and physical fitness. The results of the level of physical condition when measuring the indicators of the cardiovascular system are equal to Xf =1.2< Xst =4.08 compared to the results of students in dentistry and pediatrics.

The health conditions of students do not differ significantly, since there are the same conditions in the educational process and in everyday life.

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