



# The formation of components of a healthy lifestyle and functional state of students majoring in education

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## Abstract

**Objective of the study** is to compare the formation of healthy lifestyle components and the functional state of systems in students of pedagogical specialization with different levels of physical activity.

**Methods and structure of the study.** A total of 101 1st-year students from Vyatka State University in Kirov participated in the research project, studying life safety, physical education and foreign languages. A comparative analysis of the components of a healthy lifestyle was conducted between the groups using the ProZOZh questionnaire and indicators of the functional state of the body, characterized by vital lung capacity, hand dynamometry, the functional state of the cardiovascular system and its adaptation to physical exertion. The reliability of the differences was determined using the non-parametric Mann-Whitney criterion. Statistical analysis of the data was performed using the Jamovi program (Version 1.6).

**Results and conclusions.** The data obtained indicate a satisfactory level of healthy lifestyle components among 1st-year students with different levels of physical activity. High scores were found for internal growth and interpersonal relationships, while attitudes towards health and proper nutrition were rated lower. Statistically significant differences between the groups were found in physical activity, internal growth and interpersonal relationships, with the group studying life safety and physical education showing significantly higher values compared to those studying foreign languages. Assessment of the functional state of students in the study groups revealed higher statistically significant indicators in boys and girls in the life safety and physical education group in terms of hand dynamometer development, cardiovascular system response to physical activity, and adaptation to it. Thus, a healthy lifestyle and physical activity contribute to the preservation of physical health and emotional well-being of students.

**Keywords:** *healthy lifestyle, physical activity, signs, functional state, students.*

**Introduction.** The problem of insufficient attention paid by students of pedagogical disciplines to maintaining and strengthening their health is particularly relevant today, as it has a further impact on the results of a teacher's professional activity. The most important condition for maintaining health is adherence to the principles of a healthy lifestyle, including physical culture (physical activity) as the leading preventive factor for cardiovascular diseases [2, 4]. According to WHO data, 27.5% of adults and 81% of adolescents do not follow recommendations for physical activity due to prolonged use of social media, physical inactivity during school hours, and failure to follow hygiene requirements in their daily routine, which ultimately leads to a deterioration in their overall health, a reduction in their adaptive resources, negative consequences, and dis-

ease [3]. Thus, insufficient attention to health and its preservation leads to a decline in quality of life, which subsequently affects the effectiveness of teachers' work and requires further study.

**Objective of the study** is to compare the formation of healthy lifestyle components and the functional state of systems in students of pedagogical specialization with different levels of physical activity.

**Methods and structure of the study.** First-year students majoring in education at Vyatka State University (VSU) in Kirov (n=101) participated in the study. A comparative analysis was conducted between students with different levels of physical activity studying life safety and physical education (group 1) and foreign languages (group 2). To assess the components of a healthy lifestyle (HL), we used the 'Healthy Life-



style Profile' ('Pro HL') questionnaire, which includes questions-statements distributed across six scales [7]. We measured vital lung capacity (VLC, ml) and muscle strength of the dominant hand (MS, kg) using standard methods and calculated the indices (VC, ml/kg and SI, %). The functional state of the cardiovascular system (CVS) was determined by the body's response (%) and the time it took to restore the heart rate (HR, s) to a measured physical load (Martine test). To assess the degree of adaptation of the circulatory system, the adaptive potential (AP) was calculated using the formula of R.M. Baevsky [1]. To prove reliable differences in the severity of healthy lifestyle indicators and functional indicators between groups, the non-parametric Mann-Whitney criterion was used. Statistical analysis of the data was performed using the Jamovi program (Version 1.6).

**Results of the study and discussion.** The data obtained indicate a satisfactory level of healthy lifestyle components among students in groups 1 and 2 (Table 1).

A comparative analysis of healthy lifestyle indicators among the study groups with different levels of physical activity revealed high ratings for internal growth and interpersonal relationships, indicating a positive atmosphere within the groups and student satisfaction with opportunities for development. Responsibility for health, nutrition and stress management are generally rated lower by students, which highlights the need for more effective inclusion of health maintenance and stress reduction programs (Table 1). At the same time, in group 2, the mean and median values for health responsibility and stress management are slightly higher, which may be due to more active health care and

better stress management skills. The assessment of healthy lifestyle components showed statistically significant differences between the groups in terms of physical activity ( $U = 581$ ,  $p < 0.001$ ), internal growth ( $U = 982$ ,  $p < 0.05$ ) and interpersonal relationships ( $U = 977$ ,  $p < 0.05$ ). At the same time, the values in the group of students majoring in life safety and physical education were significantly higher. The standard deviations in the group of students majoring in foreign languages are higher according to these indicators, which indicates a greater diversity of opinions on these issues. The groups do not differ significantly in terms of responsibility for health, nutrition, and stress management ( $p > 0.05$ ). The results of our research are partially consistent with the data of V.P. Maltsev et al. [5].

The results of the study showed statistically significant differences in most of the functional indicators studied between groups 1 and 2 (Table 2). Significant differences were found among boys in groups 1 and 2 in terms of VI, SI, Martine test, and AP indicators; in groups 1 and 2 of girls – in terms of VI, SI, Martine test, AP indicators, and recovery time after exercise.

The results obtained in boys and girls with greater motor activity show higher development of respiratory muscles, development of hand muscle strength, and adaptation of the cardiovascular system to physical exertion. It was found that the average SI values for boys and girls in group 1 were higher than those for boys and girls in group 2 by 18.85% and 11.22%, respectively ( $p < 0.01$ ). A decrease in hand dynamometer values indirectly indicates a decrease in muscle strength throughout the body.

*Table 1. Descriptive statistics of healthy lifestyle indicators in the compared groups*

Healthy lifestyle indicators	Group	Average	SD	Median	95% confidence interval		Shapiro–Wilk	
					Lower	Upper	W	p
Responsibility for health	1	2,21	0,60	2,11	2,04	2,37	0,92	0,002
	2	2,25	0,52	2,33	2,10	2,39	0,95	0,045
Physical activity	1	2,86	0,52	2,88	2,71	3,00	0,94	0,012
	2	2,19	0,65	2,13	2,01	2,37	0,95	0,023
Nutrition	1	2,31	0,46	2,22	2,18	2,44	0,96	0,106
	2	2,30	0,47	2,22	2,17	2,43	0,97	0,28
Personal growth	1	3,27	0,41	3,33	3,16	3,38	0,96	0,09
	2	3,05	0,55	3,00	2,90	3,21	0,96	0,079
Interpersonal relationships	1	3,48	0,46	3,67	3,36	3,61	0,88	0,001
	2	3,29	0,52	3,44	3,15	3,43	0,94	0,016
Stress management	1	2,42	0,61	2,38	2,25	2,58	0,98	0,561
	2	2,51	0,55	2,50	2,36	2,66	0,97	0,202

Note: SD – standard deviation.



Таблица 2. Средние значения функциональных показателей юношей и девушек в сравниваемых группах

Indicators	1 group (n=24) M±m	2 group (n=20) M±m	p	1 group (n=26) M±m	2 group (n=31) M±m	p
	Boys			Girls		
Strength index (SI, %)	65,34±2,26	46,49±1,62	<0,01	47,07±1,99	35,85±1,57	<0,01
Vitality index (VI, ml/kg)	60,55±0,85	50,38±1,69	<0,01	50,55±0,55	49,72±1,68	>0,05
Recovery time (s)	75,0±3,12	83,15±7,57	>0,05	66,15±0,97	90,0±4,84	<0,01
Reaction to load (Martine test, %)	33,3±2,57	40,25±3,14	<0,01	31,46±2,01	48,56±2,81	<0,01
Adaptation potential, units	1,72±0,10	2,37±0,11	<0,01	2,10±0,03	2,44±0,08	<0,01

Note: p – statistically significant differences.

The VI values in boys in group 1 are 10.17% higher than in boys in group 2 ( $p < 0.01$ ). At the same time, the time required for VI recovery after a measured physical load in girls differed by an average of 23.85 s ( $p < 0.01$ ), which indicates a decrease in the reserve capacity of the cardiovascular system in group 2. This indicator shows a favorable response to the load in both groups, among both boys and girls.

At the same time, the slower the heart rate recovers after moderate physical activity, the lower the functional state of the CVS and the higher the stress on the regulatory systems. Reaction to load to physical exercise (Martine test) in boys and girls in group 1 is on average 6.95% and 17.1% lower than in boys and girls in group 2 ( $p < 0.01$ ), which is associated with the systematic physical activity of students majoring in life safety and physical education.

AP CVS showed satisfactory adaptation to physical exertion in students in group 1 and strain on adaptation mechanisms in students in group 2 ( $p < 0.01$ ). Data [6] confirm the results of our studies.

**Conclusions.** The studies conducted showed a satisfactory level of development of healthy lifestyle components. Students with increased physical activity have better communication skills, a greater desire to work in a team, higher social activity, and a desire for self-improvement. The development of respiratory and hand muscles and the adaptive capacity of the cardiovascular system to physical exertion are better developed in students with higher motor activity, which contributes to maintaining health and is a guarantee of successful professional activity.

#### References

1. Baevskiy, P.M. Otsenka i klassifikatsiya urovney zdorov'ya s tochki zreniya teorii adaptatsii [Assessment and classification of health levels in terms of adaptation theory]. Vesti AMN SSSR. 1989. No. 8. Pp. 73-78.
2. Gorbatkova, E.Yu., Ahmadullina, H.M., Ahmadullin, U.Z., et al. O nekotorykh voprosakh zdorov'esberezheniya sovremennoy studentcheskoy molodyozhi [About some health issues of modern students]. Sovremennye problemy zdavoohraneniya i medicinskoj statistiki. 2024. No. 3. Pp. 1-20.
3. Gur'yanova, A.A. Otnoshenie sovremennoy molodezhi k formirovaniyu tsennostey zdorovogo obraza zhizni [Attitude of modern youth towards formation of healthy lifestyle values]. Nauka i sport: sovremennye tendentsii. 2024. No. 12(2). Pp. 164-168.
4. Eremushkin M.A., Malsagov Yu.M. Konceptsiya etno-zozh, kak sovremennyy global'nyy trend zdorov'ezberezheniya [The concept of ethnicity as a modern global trend of health saving]. Medicina i Iskusstvo. 2024. No. 2(4). Pp. 27-38.
5. Maltsev V.P., Govorukhina A.A., Lozhkina-Gamet-skaya N.I. Harakteristika komponentov zdorovogo obraza zhizni studentov pervokursnikov pedagogicheskogo vuza v kontekste lichnostnykh osobennostey [Characteristics of healthy lifestyle components of first year pedagogical students in the context of personal peculiarities]. Azimut nauchnykh issledovaniy: pedagogika i psikhologiya. 2021. No. 10(4). Pp. 348-351.
6. Mikhaylova, S.V. Osobennosti fiziologicheskikh pokazateley, formiruyushchih fizicheskoe zdorove u studentov s razlichnoy dvigatelnoy aktivnostyu [Features of physiological indicators forming physical health in students with different level of motor activity]. Sovremennye voprosy biomeditsiny, 2022. No. 6(4). Retrieved from [https://elibrary.ru/download/elibrary\\_49922800\\_57823159.pdf](https://elibrary.ru/download/elibrary_49922800_57823159.pdf).
7. Petrash M.D., Strizhitskaya O.Yu., Murtazina I.R. Validizatsiya oprosnika «Profil zdorovogo obraza zhizni» na rossiyskoy vyborke [Validation of the health-promoting lifestyle profile in the russian sample]. Konsul'tativnaya psikhologiya i psiho-terapiya. 2018. No. 26(3). Pp. 164-190.