

The State of Health of Female Students of a Special Medical Group: Factors of Deterioration and Educational Ways to Improve

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Abstract: The article talks about the state of health of girls who receive higher education and engage in physical education in special medical groups according to medical instructions. The authors prove that the health of young people is an urgent problem and a subject of primary importance because it determines the future of the country, the gene pool of the nation, the scientific and economic potential of society. The article has a theoretical character, but for factual confirmation of its relevance in the Ukrainian region, we assessed the physical health of female students on the main indicators of the circulatory system, respiration and functional ability of the autonomic nervous system by conventional methods. The article makes general suggestions for preserving and strengthening the students' health, forming the value of health by reforming or choosing the educational technologies, which are adequate to the modern challenges of society and the needs of the students. The novelty and international significance of the article lies in the fact that for the first time such multifaceted factors of living health have been analyzed. It will contribute to a broader understanding of female students' physical health and issues, from demotivation and gender stereotypes, to the prospects of being healthy through physical education influences.

Keywords: *student youth, educational technologies, respiratory state, spirometry and heart rate, functional status, nerve centers, sympathetic nervous system.*

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Introduction

Ukrainian and foreign teachers (mostly teachers of physical education) have long noticed the difference between young girls in relation to their health, physical activity, the need for an active lifestyle. For people with health problems of students with a deficit of physical activity, the process of their adaptation significantly increases when entering higher educational institutions, which is slow and difficult. The number of freshmen with various health disorders, chronic diseases, various mental and physical overloads, injuries, various diseases of the cardiovascular system is constantly increasing (Apanasenko, 2007, Maglyovanyi, 1999; Maglyovanyi et al., 2006). As studies of last decade show, our students of the 20-24s have a "biological" age that exceeds the passport age by 10-15 years (Apanasenko, 2007; Prysiazhniuk et al., 2018).

Researchers also found that of the total number of factors influencing the formation of student health, physical activity and sports account for 15-30%, sleep - 24-30%, nutrition - 10-16%, the combined effect of other factors - 24-51% (Galizdra, 2004).

A powerful negative factor, which deepens the already difficult situation, is the decrease in interest of young students in regular physical education, their lack of a stable need for active physical activity and a healthy lifestyle. There are many studies about the deficit of physical education and active transformative motivation (Galizdra, 2004; Maksymchuk et al., 2020a; Maksymchuk et al., 2020b; Mazurchuk & Rebrina, 2012). Most of the foreign ones are of covidic subjects. However, we noticed that it was this topic that revealed new aspects of procrastination, apathy lack of motivation and motor activity. The low valeological and physical condition of students all over Europe only multiplies the number of youth health problems, e.g. hypodynamia and mental disorders of students due to immersion in social networks. This fact, like knockdown, creates stressful but laboratory-organized closed locations in which the student's condition can be monitored through the Web; compare it with the pre-pandemic, modeling further change (Elmer et al., 2020). Psychological and social problems of long-term distancing and staying online in a specific educational environment are studied by scholars in Poland (Wieczorek et al., 2021). Most importantly, scientists began to pay attention to the demotivational factor of medical status or situation, so a girl's stay in a medical group relies on the development of her subjective inferiority and apathy (Griban et al., 2020). Consequently, the factors of raising the motivation of a teenager or young man to be healthy, as well as the potential of physical health is determined

not by the specifics of the disease, but by biological and volitional resources; the market consumer environment of freedom and sweets is bad for the health of young people. And most importantly, on the motivation and clear boundary of the norm of health, produces different attitudes of people to the same symptoms.

We believe that the health of girls who are in specific conditions (presence of chronic diseases, isolation from joint activities, comorbidity of somatic and neurotic disorders), and especially - the effective fight against these phenomena is a component of a previously unsolved problem.

The relevance of our chosen topic is determined by many factors: near and far. Among the first are all named the covid-19 pandemic. Thousands of scientific publications have been written on this topic, so we will touch upon them only in passing. We are more interested in the "immediate" non-medical factors, since the authors of this article (educators by profession) can change the situation in non-medical ways.

We predict that this is a change in the attitude of female students to themselves, and secondly - to the valeological and fitness potential of the modern institution of higher education. Of course, the problem of health deterioration and getting into the so-called medical group cannot be considered in isolation, but only within the framework of the educational space. Therefore, in the first part of the article we made a brief overview of modern threats to the health of female students.

The purpose of the article is to prove the urgency and the need for immediate changes in the health of Ukrainian female medical students by selecting a number of arguments: generalized theoretical (public, regional, global trends); objective empirical (the results of measuring the main indicators of physical health) and to outline possible ways of pedagogical and organizational solutions to this problem.

To this end, we solved a number of partial **tasks**: a) to review mainly foreign literature of recent years and establish a variety of factors affecting the health of modern non-educational conditions that would encourage female students with poor health to engage in physical activity students and female students; b) to measure, present in tables and briefly interpret the health of girls of student age; c) to formulate on the basis of the analysis of the latest literature, diagnostic data on the health of female students and on the basis of Ukrainian realities and our own experience framework recommendations. The latter will concern educational changes.

Research methods. We divide them into methods of data collection and methods of their analysis with appropriate generalizations. The first group includes: problem-thematic analysis of relevant literature,

selection of valid factors, conditions, causes and methods and measurement of physical health of female students by the main indicators in order to prove the relevance of the problem on actual data. The second group of methods is modeling and reforming, although they were not intended to be practical when the article was written. These include: selection of existing or modern appropriate principles of methods and techniques of physical improvement and rehabilitation. Information resource for providing recommendations were the ideas of pedagogical innovators, the experience of foreign specialists, and most importantly projecting the essence of the problem to the essence of objective realities (opportunities, determining data and readiness of all subjects).

The work is based on general and partial (current and regional) generalizations about the condition of educated girls. Therefore, before processing scientific sources, we adopted the initial principles and settings of their selection and analysis: to take into account the latest foreign publications of different countries; to analyze the sources demonstrating a variety of health factors (age, gender health conditionality of female students; stressogenic demotivational factors, exacerbated recently, etc.); when searching for methodological solutions - to rely primarily on Ukrainian sources: legal provisions, statistical data, partial models of solving the problem in the Ukrainian educational realities.

In the following chapters the reader will encounter completely different factors of girls' health, and will be able to understand their relevance or their historical or permanent nature. In the second chapter, the bold and unemotional diagnosis of the female students' state of physical health pulls the reader away from metaphysics and confronts the reader with glaring facts. After comprehending the generalized segmented and concrete objective, the authors in chapter three will present a series of mostly educational suggestions for minimizing the poor health of female medical students.

Ethical aspects. We involved medical specialists and valeologists of the center of medical care of the National Pedagogical University named after M. Drahomanov and 72 female students of the Faculty of Philology (48 of them are engaged in medical groups) to obtain objective data on the state of health of female students. Students gave voluntary consent to participate in the measurements with the condition of anonymity of personal data storage.

Factors affecting the health of contemporary female students. A review of contemporary discourse

In analyzing the literature, we want to take a deductive path. Among the more general factors of maternal health, we are interested in describing

regional and global trends in the population under study. We were helped to begin our deductive analysis by a publication by P. Weber and colleagues on gendered health norms based on global proxy data (Weber et al., 2019). The author makes valuable general observations about health factors for women and men that touch on gender inequality, social status, region, age factors, etc. But we are most interested in four fundamental generalizations about gendered health norms:

1. Gender is so complex that it determines health in correlation with other factors and changes over a lifetime.
2. Early life factors, especially gender-specific ones, in most cases bring negative health consequences in the future.
3. Gender inequalities, and more specifically the presence of gender-specific health norms, predominantly negatively affect women.
4. The dependence of health on gender is not absolute, but depends on social, political and other changing contexts.

We assume that these extremely valuable data can act as a methodological and epistemological basis for our study, since the problems of women's health relevant to Ukraine can be derived deductively or factually represent partial cases of general trends.

Epistemologically complements the previous article by the scientific work of wellness researchers R. Paffenbarger and S. Olsen (1999). They calculated and reflected life curves indicating the probability of reaching the age of 90 under different patterns of motor activity, different bad habits, etc. They found that physically active individuals have a higher probability of living longer compared to less active individuals. Researchers noted that the difference between the most and least active study subjects begins to emerge at a young age, and it becomes more pronounced over the years. For example, only 81 percent of the least active individuals can expect to live to age 70, compared with 90 percent of the most active. Consequently, the problem is global in both spatial and resource (time) dimensions. We are talking only about quantitative indicators, and the subjective experience of quality of life should be discussed separately.

We have analyzed the relevant literature from foreign educators, valeologists, rehabilitators, and medical professionals, and in the process of this analysis we have compiled a factor range of changes in the health of female students to present and identify non-medical ways to address them. Therefore, in the following review we will list the influencing factors and remotely discuss with the authors of the relevant articles.

1. Natural age factors of destructive changes in the health of female students. In the methodical literature at one time much has been said about

the natural weakness of women, the incompleteness of their maturation in high school and junior college age, the presence of emotional and hormonal fluctuations during the lunar cycle. and so on. These factors cannot be dramatically influenced, they can only be corrected.

2. Natural and social. These are factors related to the status of women in society, in our case - the attitude towards girls in the educational institution, assessment in the team and self-esteem, professional orientation of training, etc. That is, modern authors focus on more specific, narrow factors, but prove their correlation. For example, scientists recently conducted a study in an Asian country and found: almost forty percent of female students experience menstrual deterioration for more or less assumed physiological reasons. At the same time, almost ninety percent experienced deterioration "on women's special days" for secondary reasons - social (discomfort, insecurity about comfort and hygiene) and psychological (stress, depression, apathy). Interestingly, the highest percentages of stress were found among female medical students who were predominantly cognitive (excessive knowledge of physiology) and female students who were ill (iatrogenic, caused by not always appropriate or excessive medical interventions) (Rafique & Al-Sheikh, 2018). This is just one example of where the specialization of female students can affect their health.

3. Education and values. Current qualimetric and instrumental advances allow us to measure and establish the relationship between somatic and functional health indicators and many educational and non-educational factors, including those that did not exist before. Recently developed innovative vital signs have made it possible to experimentally prove the dependence of wellness literacy and individual somatic and functional indicators (Sychova, 2012). For example, S. Olyani used methods recommended by the World Health Organization and found a correlation between body weight and wellness literacy (Olyani et al., 2020). Unfortunately, most girls had a mediocre score, but female students with an optimal BMI and sufficient or high wellness literacy showed a high level of self-efficacy and recognition of the value of health conservation as a goal and an ongoing process.

4. Technogenic. The abuse of digital devices has swept the world, so there are highly specialized studies in this area. As it turned out, gadget addiction indirectly affects girls' health. Analysis of cross-sectional questionnaire data revealed a dependence of sleep duration and quality on smartphone use time (Wang et al., 2019). But a deeper logistic regression analysis revealed a number of disruptive relationships in female students. Smartphone abuse also impaired important functional measures: stress

tolerance, self-actualization, eating, and communication behaviors. The study was conducted in colleges in Taiwan, but we believe a similar pattern can be observed in most countries.

The list of factors could go on. The latest publications describe many specific influences on maiden health, which used to be less significant or absent. To argue the relevance of the problem in the next chapter we will present factual data on the physical health of students in a Ukrainian institution of higher education.

Assessment of the general functional state of the organism of female students of the special medical group

In the study of the topic "Health of female students of the special medical group: problems and solutions" we cannot rely on someone else's generalized experience. All the more so because the statistical data available in the sources are outdated. To make a strong argument for the urgency of the topic, to prove its objective basis, we conducted functional assessments of three parameters - respiratory organs, cardiovascular system and autonomic vascular system.

The study was conducted in three groups of students (Faculty of Philology, National Pedagogical University named after M. Drahomanov), where each has the same number of female students - 24 each. Two groups are special medical (SMG1 and SMG2), one is a control regular (CG).

Thus, when conducting tests to determine the functional state of the respiratory system, it was found that the SMG1 and SMG2 female students were characterized by a shorter timed inspiratory capacity (IIC) (Stange's test) in comparison with the same parameter of CG ($p < 0.05$) (Table 1).

Table 1. *Parameters of the functional state of the respiratory organs ($M \pm m$)*

Parameters	CG (n=24)	SMG1 (n=24)	SMG2 (n=24)
Respiratory rate per minute	20,00±0,73	21,67±0,83	19,17±0,80
Stange test/ sec.	44,08±2,83	30,08±3,15*	32,08±2,10*
Gench test, sec.	26,70±2,32	22,83±1,68	21,58±1,96

Note: * - statistically significant difference in relation to the values of the specific indicator of CG ($p < 0,05$)

Source: Authors' own conception

Violation of the ventilatory function of the lungs in students of special medical groups was also confirmed on the basis of computer

spirometry. The studied parameters of the function of external respiration, namely its velocity, such as the volume of forced expiratory in the first second, forced vital capacity of the lungs and the modified Tiffno index (or the so-called Genstar index - the ratio of FEV1 / FVCL) are given in Table 2.

At functional research of female students of CG any essential changes are not revealed. Thus, the FEV1 and FVCL indicators in the representatives of this group were, respectively, $95.60 \pm 2.89\%$ and $93.47 \pm 3.35\%$ of the norm; at the same time, the FEV1 / FVCL ratio was $85.67 \pm 3.08\%$ of the norm.

During the spirometric examination of female students of special medical groups, a decrease in FEV1 and FVCL was observed in comparison with control analogues ($p < 0.05$) against the background of unchanged Hensler index ($p > 0.05$). There were no statistically significant differences between the average values of external respiration of female students SMG1 and SMG2.

Table 2. Indicators of the function of external respiration ($M \pm m$)

Parameters	CG (n=24)	SMG1 (n=12)	SMG2 (n=12)
FVCL /liter	3,49±0,13	3,29±0,12	3,20±0,14
FVCL, %	93,47±3,35	84,26±3,26*	82,90±3,45*
FEV1/liter	2,99±0,09	2,70±0,11*	2,50±0,23*
FEV1/%	95,60±2,89	86,65±3,46*	83,56±3,39*
FEV1/ FVCL, %	85,67±3,08	82,06±3,61	84,12±3,22

Source: Authors' own conception

At the same time, there was a statistically significant difference compared to the value of the corresponding index in the CG ($p < 0.05$)

With the help of computer spirometry it was established that in female students of SMG1 and SMG2 such indicators as FEV1 and FVCL are at the level of the lower limit of the norm. Analyzing the data, we concluded that the identified changes in external respiration are characteristic of restrictive disorders, which may be due to detraining of the respiratory system and reduced resistance to hypoxia, and a decrease in respiratory excursion of the chest, which was found during anthropometric studies.

To identify the possible consequences of violations of external respiration, the degree of oxygenation of arterial blood of female students was studied (SpO_2). Let us specify that this is a diagnosis of the degree of

arterial blood hemoglobin oxygenation and heart rate (hereinafter referred to as HR). It is used for safety monitoring of patients of all ages in all cases related to the possibility of hypoxia, as well as for functional diagnostics of the respiratory and cardiovascular systems.

The study showed that students of both special groups are characterized by significantly lower rates of arterial blood oxygenation compared to the control group ($p < 0,05$). Thus, if the average SpO_2 of the control group was $99.5 \pm 0.13\%$, then in girls of SMG1 it was $93.25 \pm 0.18\%$, and in SMG2 - $94.3 \pm 0.27\%$. (Fig. 1)

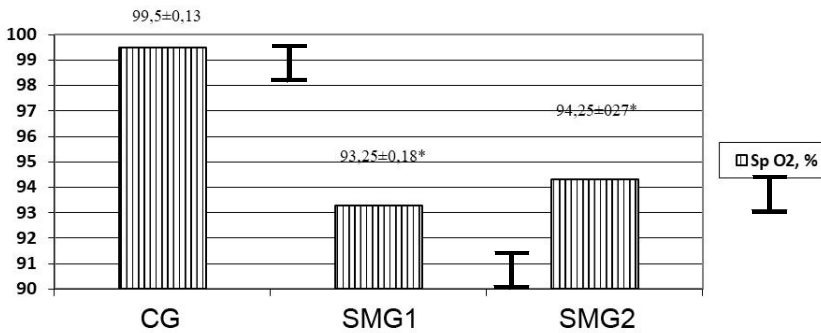


Fig. 1. The degree of oxygenation of the arterial blood of the surveyed female students (* - statistically significant difference in comparison with the value of the corresponding indicator of the CG ($p < 0,05$))

Source: Authors' own conception

The parameters of the functional state of the circulatory system are given in table. 3. The average resting heart rate in girls of SMG1 and SMG2 was statistically significantly higher than the control analogue. They were respectively 90.9 ± 2.45 beats / min. and 90.1 ± 1.79 beats / min. against 82.9 ± 2.93 beats / min. in representatives of the control group ($p < 0.05$).

Table 3. Parameters of the functional state of the circulatory system ($M \pm m$)

Parameters	CG (n=24)	SMG1 (n=24)	SMG2 (n=24)
Heart rate at rest, beats / min.	82,9±2,93	90,9±2,45*	90,1±1,79*
SBP, mm Hg	116,6±3,1	111,3±3,49	114,2±4,85
DBP, mm Hg	76,1±1,89	78,8±1,88	74,6±3,36

Note: * - statistically significant difference in comparison with the value of the corresponding CG indicator ($p < 0,05$), where DBP is diastolic blood pressure and SBP is systolic blood pressure

Source: Authors' own conception

The increase in heart rate at rest can be explained as a compensatory response of the cardiovascular system, which occurs in response to dysfunction of external respiration and a decrease in the degree of oxygenation of arterial blood in the examined contingent of special medical groups.

The examined groups of female students did not differ statistically in terms of the mean values of systolic and diastolic blood pressure.

Given the decisive role of the autonomic nervous system in ensuring the internal homeostasis of the organism, we conducted a series of tests to assess its functional capacity (Table 4; 5).

Table 4. Test results to assess the functional capacity of the autonomic nervous system ($M \pm m$)

Indexes	CG (n=24)	SMG1 (n=24)	SMG2 (n=24)
Kerdo index	0,10±0,03	0,13±0,03	0,23±0,03
Test with isometric loading: increase in DBP at the 3rd minute, mm Hg	13,75±0,79	6,75±1,13*	7,00±0,91*

Note: * - statistically significant difference in comparison with the value of the corresponding CG indicator ($p < 0,05$)

Source: Authors' own conception

The average values of the Kerdo index were comparable in all the studied groups, and their values, which were close to zero, did not give grounds to state the presence of a pronounced autonomic imbalance in the surveyed students. And yet the positive value of this indicator showed a slight advantage in the tone of the sympathetic part of the autonomic nervous system.

The results of the test with isometric load were also indistinct. In girls of the control group, the increase in DBP at the 3rd minute of the load was 13.75 ± 0.79 mm Hg, which gives grounds to regard it as an indicator of the lower limit of the norm. In representatives of special medical groups 1 and 2, the increase in DBP at the 3rd minute of the sample was 6.75 ± 1.13 and 7.00 ± 0.91 mm Hg, respectively, that is, they were statistically significantly less ($p < 0.05$). Such values of DBP increases give reason to interpret them as indicating the presence of a slightly pronounced autonomic imbalance in girls SMG1 and SMG2.

When conducting an orthostatic test, the average values of heart rate increase after changing the position of the body from horizontal to vertical

in the representatives of the surveyed groups did not differ statistically (Table 3.12). However, their value, which in CG was 15.79 ± 0.91 beats / min., and in SMG1 and SMG2 reached, respectively, 19.42 ± 1.98 beats / min. and 18.33 ± 1.61 beats / min., confirms the presence of autonomic imbalance.

Table 5. *The results of the orthostatic test ($M \pm m$)*

Index	Initial horizontal position of the body	Vertical position of the body (3/min)	Difference
Control group (n=24)			
Heart rate at rest, beats / min.	70,42±1,84	86,21±2,07	15,79±0,91
SBP, mm Hg	106,25±2,36	113,13±4,88	10,25±1,07
SMG1 (n=24)			
Heart rate at rest, beats / min.	78,42±3,43	98,33±4,74*	19,42±1,98
SBP, mm Hg	108,75±2,29	130,42±2,39*	21,67±3,45*
SMG2 (n=24)			
Heart rate at rest, beats / min.	75,17±2,30	94,00±2,27*	18,33±1,61
SBP, mm Hg	105,83±3,62	129,17±2,99*	22,50±2,53*

Note: * - statistically significant difference in comparison with the value of the corresponding CG indicator ($p < 0,05$)

Source: Authors' own conception

In addition, we have established a statistically more distinct increase in SBP during the transition from a horizontal position to a vertical one in representatives of special medical groups ($p < 0,05$). In SMG1 girls it was 21.67 ± 3.45 mm Hg, in SMG2 representatives - 22.50 ± 2.53 mm Hg. These values are statistically significant larger than the control analog, which was equal to 10.25 ± 1.07 mm Hg ($p < 0,05$).

Thus, the surveyed female students, according to some indicators, have signs of the advantage of the sympathetic link of the autonomic nervous system, which is more expressive in the SMG representatives.

Disorders of the functional parameters of the activity of internal organs were found to adversely affect the ability to endure physical activity, Ruffier's test showed (Fig. 2).

Thus, the Ruffier index among the representatives of the SMG1 and SMG2 was statistically significantly higher than the same indicator for the CG: 16.53 ± 0.89 and 16.40 ± 1.09 versus 13.20 ± 0.84 .

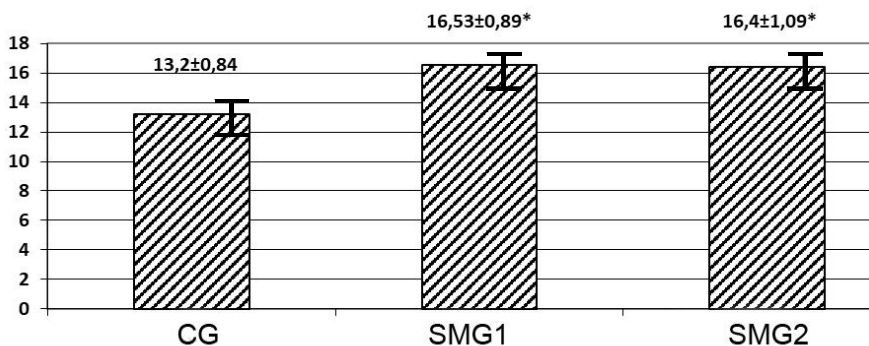


Fig. 2. The results of the Ruffier test (* - a statistically significant difference compared to the value of the corresponding CG ($p < 0,05$))

Source: Authors' own conception

In SMG1 and SMG2 there were no girls who would show an excellent and good result, while in the CG excellent results showed 4.2%, and good - 8.3% of respondents. At the same time, 54.2% of CG girls and only 33.3 and 36.6% of SMG representatives achieved a satisfactory test result. With the result "bad" performed the test 33.3% of girls CG and twice as many representatives of the SMG (Fig. 3).

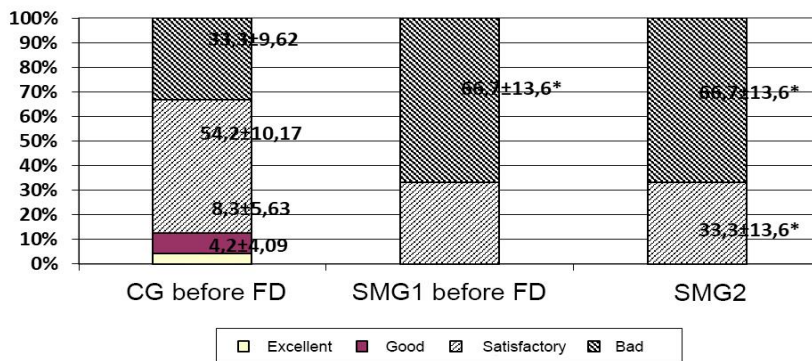


Fig. 3. The results of the Ruffier test (* - a statistically significant difference compared to the value of the corresponding CG ($p < 0,05$))

Source: Authors' own conception

Consequently, we can summarize the results of the measurements. Examination of the functional state of the respiratory system showed decreased parameters of the Stange test, values of FEV1 ($83,56 \pm 3,39\%$) and FVCL ($82,90 \pm 3,45\%$) of SMG female students in comparison with their control counterparts ($p < 0,05$). Impaired external respiration indices resulted in decreased degree of arterial blood oxygenation of SMG female students ($94,3 \pm 0,27\%$).

Examination of the cardiovascular system state showed: that the average of Kerdo index were comparable in representatives of all groups under study, and their values approaching zero gave no grounds to state the presence of a distinct autonomic imbalance in the examined female students. Yet the positive value of this index showed a slight advantage of the tonus of the sympathetic link of the autonomic nervous system.

The results of isometric exercise test were similarly unclear. In girls of the control group the increase of DBP at the 3rd minute of exercise was 13.75 ± 0.79 mmHg, which gives grounds to consider it as an indicator of the lower limit of the norm. The representatives of special medical groups 1 and 2 had the DBP increase at the 3rd minute of exercise test 6.75 ± 1.13 and 7.00 ± 0.91 mm Hg respectively, i.e. were statistically significantly less ($p < 0.05$). Such values of elevated DBP give grounds to interpret them as indicative of insignificantly expressed vegetative imbalance in SMG1 and SMG2 girls.

While carrying out tests to establish the functional state of the autonomic nervous system (orthostatic with isometric load, determination of Kerdo index) in female students of SMG1 and SMG2 the balance of its parts was detected, which can be a subjective sign of autonomic dysfunction and other non-infectious chronic diseases.

Extrapolation of the data on the motivation and mode of classes in medical groups allows us to conclude: traditional compulsory forms of classes, attendance of which is often achieved due to the motive of "position", do not acquire the necessary health effectiveness and do not contribute to the involvement of students in systematic motor activity. As a result, the state of health of students not only does not improve, but, on the contrary, reveals a tendency to progressive deterioration. Further training increases the number of persons belonging to the special medical group, worsens the indicators of morphofunctional state, physical fitness and work ability of students.

The experience of the practical work of the institution shows that often female students with different pathological abnormalities are combined into one special group, which prompts a further search for a

common criterion for evaluating their initial functional state, as well as the development of programs to improve it.

Directions of educational problem solving, the dialectic of external and internal

Medical indicators have exacerbated the relevance of finding non-medical ways to improve the health of female students, so we will reflect on the specifics of the educational (including physical education) conditions of their development make some observations on our specific topic. Let us note that there is little English-language literature on the topic of the state and dynamics of physical health of female students of special medical groups. The topic is analyzed mainly in Eastern Europe, in the Slavic-speaking discourse.

There is an opinion that the health of female students in special groups depends more on artificially created factors and conditions than natural ones. This is due to special programs of individual physical training (Griban et al., 2020); the targeting of such programs and recommendations. This limited focus does not benefit everyone. More often than not, medical groups get into specific goals: rehabilitation after serious illnesses, correction of the musculoskeletal system, etc., (Prysyazhnyuk et al., 2018). Although female students are embarrassed to admit that they study in a medical group, the targeted quality of correction of an individual defect is higher than that of representatives of general groups. Researchers explain this by the interference of multidisciplinary specialists, from teachers to medics, in the planning of classes. Control over such students is increased, the standards of classes are more clearly observed, but they are stretched in time and intensity of load (Bodnar et al., 2016). Another positive factor is that hearing-impaired students are more often examined by a doctor, and teachers and rehabilitologists closely monitor the dynamics of the students' valeological state (Malimon & Volchynskyi, 2005). However it was proved in the previous section: the functional state of the main body systems of the female students of the general groups is higher, which makes it necessary to look for the feasible ways of physical and valeological optimization for the female students of the medical groups.

We have analyzed the general experience of recuperation and rehabilitation, studied domestic traditions and partial models of work with children with poor health, considered methodological and organizational (administrative and political) factors and formulated directions of optimization of educational influence on maiden youth and their activities.

For concreteness, brevity, and the variety of reforming resource, let us consider modeled or selected optimization factors by group.

1. **Organizational.** This is the fight against exclusivity. The presence of medical groups in Ukrainian universities is a remnant of a segregative attitude, by which it is advisable to separate the weaker ones. We need administratively and resource-supported management of the educational process, in which marketing, moral, ideological and informational (technologized) encouragement of girls to go to the active part of the world's population takes place regularly. A population that naturally tries to ensure not only a healthy lifestyle and disease prevention, but also a healthy future gene pool of mankind.

2. **Values.** Consists in the popularization of relatively easy non-game (no competition) sports in the mode of physical activity (running, swimming, fitness). It is even an element of style in the world now. Despite gender equality and the inexpediency of declarative promotion of gender preferences, including women's, it is possible to use gender-specific mechanisms of motivation to engage in motor exercises (for example, the sample of somatic perfection and its permanent aesthetic value - a harmonious figure, slender posture, flexible body).

3. **Political.** It is necessary to treat ensuring the health of Ukrainians as a top priority of state policy, to current, key areas of national interests of the state. The policy should promote the paradigm of gender equality and fight against stereotypes about male strength and female weakness, gender-specific sports, activities, etc.

4. **Psychological.** Comprehensively promote the transformation of each individual into a subject of recreational activities, Apanasenko (2007). This will break the stereotype common among women that they are the object and not the subject of most social influences. The four-step principle of wellness: "I know a lot about health", "I want to be healthy", "I know how to be healthy", "I do everything to be healthy". Negative incentives and motivations should also be avoided. Encourage free in time and manner of physical education activities and even motor activity. After all, it is proven: the traditional compulsory forms of classes, attendance of which is often achieved through the motive of "position", do not acquire the necessary health effectiveness and do not contribute to the involvement of students in systematic motor activity. It should be actively practiced in the classes of the programs of correction of emotional-behavioral disorders in students to increase tolerance to physical load, optimize the functioning of the autonomic nervous system, eliminate affective and somatic symptoms, improve the indicators of social and psychological adaptation, reduce social

frustration, positive reinforcement of the feeling of emotional comfort, Moseichuk (2007).

5. **Resources.** Stimulation of motor activity by modernizing and technologizing its conditions and methods (modern equipment, branded sports equipment, clothing, accessories). Girls instinctively reach for the beautiful, fashionable and comfortable.

6. **Methodological.** These are to provide access to the author's methods of using step-aerobics, fitness, regulated breathing, relaxation, which help to improve significantly the levels of physical fitness, physical performance, functional state of cardiorespiratory system and physical health of students, to develop a method of physical activity and assessment of its energy cost, which allows selecting rational parameters of multiplicity and duration of exercise in accordance with the individual way of regulating the intensity of exercise. It is important to use in the classroom express-screening of the level of somatic health of students with a low level of somatic health, taking into account the specifics of the implementation of methodological principles of health training Pylnenky & Leonova (2004); use the program of physical rehabilitation using lifestyle modification, kinesitherapy, mass, which had a pronounced positive effect on the functional performance of the student body, A. Lewandowski (2006); to implement scientifically grounded programs to improve quantitative indicators of the functional state of the musculoskeletal system (dynamic endurance of abdominal muscles, flexibility of the posture profile (head tilt angle, visual angle, acromion asymmetry angle), Kolos (2009). The parameters obtained were used as the basis of the program for the correction of posture disorders, the distinctive features of which were the stages and the presence of the computer information and methodological system "Harmony of the Body".

These numerous points are most organic to the Ukrainian low-resource traditional educational space, but at the end we want to make a few generalizations that can determine for an individual student the effectiveness or ineffectiveness of the above tips, models and optimization. First, in order to introduce optimizing factors, it is necessary to get rid of destructive ones; harmoniously combine control, regulations and internal desire to study. Scientists have proved: as a result of forced, regulated by the schedule, class time, the authority of the teacher student health not only does not improve, but, on the contrary, reveals a tendency to progressive deterioration. With further training the number of persons transferred to the special medical group increases, the indicators of morpho-functional state, physical fitness

and work ability of students deteriorate (Galizdra 2004; Kuts & Leonova, 2004).

No wishes, admonitions, punishments can make a person lead a healthy lifestyle, protect and strengthen their own health, if all this is not managed by a conscious health motivation. It is formed on the basis of two important principles - the age principle, according to which the education of health motivation should begin in early childhood, and the activity principle, according to which the health motive should be created through health activity in relation to themselves (Zakharina, 2015).

Thus, the process of forming motivation of female students with impaired health to a healthy lifestyle is advisable to consider as an organic part of a holistic pedagogical process, the interaction of external and internal factors. Internal factors are the needs-motivational sphere of the student, his value orientations, attitudes, self-esteem, interests, individual properties. The external factor in this case is the pedagogical process. Thus, the implementation of the process of formation of students' motivation for a healthy lifestyle implies such a system of tools, which, on the one hand, is aimed at changing the conditions of the educational process, in particular, the valeology of the content of academic disciplines. On the other hand, focused on the change of intrapersonal sphere by means of conscious volitional work on comprehension and rethinking by students attitude to healthy lifestyle, to their life style (Galizdra, 2004; Zakharina, 2015).

Studentship as a stage of life is characterized by an increase in independence, the emergence of an increasing number of situations in which it is necessary to make a choice. Starting from this period the determining factor of behavior becomes the internal orientation of the person, rather than external influence. That is why motivation for a healthy lifestyle is especially important.

Conclusions

The first, theoretical conclusion of our article is the fact that in addition to the current problems of covid-19, low physical condition of urban youth, analytical review of the literature on the health of young people in Ukraine and the world has identified independent negative factors (they can not be influenced pedagogically), and dependent on student trends (hypodynamia, poor diet, changes in youth values, lifestyles, low interest in leading a healthy lifestyle). Outdated and stereotypical physical education programs and student assessment criteria add challenges that do not meet the physical capabilities of today's youth, especially students in special medical groups.

In addition, from the analysis in the second section of the article sources it is noticeable that the problem of physical education in medical groups has a regional character, because this form of classes is traditional for post-Soviet countries. This limits the geographical relevance of the article, but allows the author of the article (citizens of Ukraine) to directly observe and measure the physical condition of female students of such groups. We assume that with the development and spread of inclusion its practice of medical groups will become a thing of the past, but as long as in Ukraine and its neighboring republics the final reform of education has not taken place, the optimization of physical education of female students of medical groups will be delayed for several years.

The most important argument for urgent changes is the result of measuring the functional state of female students. The state of the respiratory organs of the examined female students of the SMG was characterized by the reduced TIC and TEC relative to the CG, spirometry parameters of FEV1 and FVCL, a decrease in the degree of arterial blood oxygenation ($p < 0.05$) against the background of a constant Gensler index ($p > 0.05$). The mean resting heart rate in all SMG girls was statistically significantly higher than the control counterpart. When conducting tests to establish the functional state of the autonomic nervous system (orthostatic test, with isometric load, determination of the Kerdo index) in students of SMG1 and SMG2 found an increase in the tone of the nerve centers of the sympathetic nervous system.

In the third chapter, we staffed 6 areas to improve the physical health of female students. The most voluminous was the methodological arsenal, and the least potential was the political and resource components. This reflects the socio-economic state of Ukraine. However, young people should remember the main thing: a healthy lifestyle is a system of individual manifestations of personality (moral, spiritual, physical) in the areas of various activities (educational, domestic, social, communicative), which reflects the attitude to themselves, the social environment, nature from the position of health values and contributes to the preservation of the corresponding age stability of the body, the maximum activity of personality in everyday life and professional activities. Its components include, first of all, active motor activity, balanced diet, sufficient sleep, optimal daily routine, absence of bad habits and positive emotions. The implementation of these principles begins with the natural desires of female students, which can be subtly and delicately used - to motivate girls to follow an active and healthy lifestyle as a guarantee of their beauty, attractiveness and femininity.

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Limitation of the study

Although the study contains a fairly complete set of directions and ways to optimize the health of maiden medical student youth, but these recommendations require at least empirical testing, and at most a reform of physical education and valeological work in Ukrainian institutions of higher education.

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