Physical Education of Different Groups

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THE PECULIARITIES OF PHYSICAL PREPAREDNESS OF 5TH-6TH FORM PUPILS IN THE CONTEXT OF THE PRIVATE NORMS OF EVALUATION

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Abstracts

The article is devoted to the topic of the study of the peculiarities of the preparedness of the students of 5–6 grades of the secondary school and the modern approaches to its evaluation. ***Relevance of the Research Topic.*** Physical preparedness is one of the factors that characterizes the ability to work, the state of both physical and mental health. The low level of physical preparedness of the growing-up generation is a problem that is inherent in most European countries, including Ukraine. According to the Academy of Medical Sciences of Ukraine, a significant number of students in secondary schools have a low level of health, which to a certain extent is due to insufficient level of their physical fitness. The state of health undergoes appropriate changes in this regard. Leading Ukrainian scientists advise to consider physical preparedness more widely, not limited only to the level of development of motor qualities and the mastery of certain motor activities. They insist on the mandatory consideration of the morpho-functional capabilities of organs and systems of the body, which will allow holistic and projective approach to the somatic formation of personality. ***The purpose of the study*** is to determine the level of physical preparedness of students of 5–6 grades. ***Research Methodology.*** The experiment was attended by 194 children, aged 10–12, of which 90 boys and 104 girls. The research was conducted on the basis of a specialized school № 269 in Kyiv with a profound study of the French language. The following motor tests were used to study the physical preparedness of schoolchildren of grades 5–6: «standing long jump» (speed-power qualities); «Push-up exercises» (strength of the muscles of the arms) for the girl; «Pull-up exercises» for the boys (strength of the muscles of the arms); «Shuttle run 9m x 4» (agility); «Run 30m» (speed quality); «Running 1000 m» (endurance); «Bending forward from sitting position» (flexibility). The strength of the muscles of the hand was measured with the help of a children's hand dynamometer. The data of the researches were subjected to mathematical and statistical processing in order to interpret the results of pedagogical experiments, as it required by similar studies in the field of physical culture and sports. ***Results of Work and Key Conclusions.*** The testing data analysis allows to conclude that the results of the students correspond to sufficient and high levels of competence in accordance with the school program «Physical Culture». (Grades 5–9), as well as the State Testing System of Ukraine. However, in our opinion, certain positions of the State Tests need to be revised, since they are slightly understated. Taking into account the fact that the level of physical fitness is interrelated with the level of somatic health of children, we believe that such «correction» of norms will not promote optimization of physical culture and health work in secondary schools.

Key words: physical preparedness, state of health, 10–12 years old students.

Софія Власова. Особливості фізичної підготовленості учнів 5–6 класів у контексті сучасних норм оцінювання. У статті розкрито тему питання вивчення особливості підготовленості

учнів 5–6 класів загальноосвітньої школи й сучасних підходів до її оцінки. ***Актуальність теми дослідження.*** Фізична підготовленість є одним із чинників, що характеризують працездатність, стан як фізичного, так і психічного здоров'я. Низький рівень фізичної підготовленості підростаючого покоління є проблемою, що притаманна більшості країн Європи, у тому числі Україні. За даними Академії медичних наук України, значна кількість учнів загальноосвітніх шкіл мають низький рівень здоров'я, що певною мірою зумовлене недостатнім рівнем їхньої фізичної підготовленості. Відповідних змін у зв'язку з цим зазнає стан здоров'я. Провідні українські науковці фізичну підготовленість радять розглядати ширше, не обмежуючись лише рівнем розвитку рухових якостей та опануванням певних рухових дій. Вони наполягають на обов'язковому врахуванні морфофункціональних можливостей органів і систем організму, що дасть змогу цілісно й проекційно підходити до соматичного формування особистості. ***Мета дослідження*** – визначити рівень фізичної підготовленості учнів 5–6 класів ЗОШ м. Києва. ***Методологія дослідження.*** В експерименті взяли участь 194 дитини, 10–12-річного віку, із них 90 – хлопчики і 104 – дівчаток. Дослідження проводили на базі спеціалізованої школи № 269 м. Києва з поглибленим вивченням французької мови. Для дослідження фізичної підготовленості школярів 5–6 класів застосовано такі рухові тести, як «стрибок у довжину з місця» (швидкісно-силові якості); «згинання-розгинання рук в упорі лежачи» (сила м'язів рук) дівчата; «підтягування у висі» хлопці (сила м'язів рук); «човниковий біг 4х9 м» (спритність); «біг 30 м» (швидкісні якості); «біг 1000 м» (витривалість); «нахил тулуба вперед із положення сидячи» (гнучкість). Силу м'язів кисті вимірювали за допомогою дитячого кистьового динамометра. Результати досліджень піддано математично-статистичній обробці з метою інтерпретації результатів педагогічних експериментів, як того вимагають подібні дослідження в галузі фізичної культури й спорту. ***Результати роботи та ключові висновки.*** Аналіз отриманих результатів тестування дав підставу зробити висновки про те, що результати учнів відповідають достатньому й високому рівням компетентності згідно з навчальною програмою «Фізична культура. (5–9 клас)», а також Державною системою тестів України. Проте, на нашу думку, певні позиції Державних тестів потребують перегляду, оскільки є дещо заниженими. Ураховуючи той факт, що рівень фізичної підготовленості взаємопов'язаний із рівнем соматичного здоров'я дітей, уважаємо, що така «корекція» нормативів не буде сприяти оптимізації фізкультурно-оздоровчої роботи у ЗОШ.

Ключові слова: фізична підготовленість, стан здоров'я, учні 10–12 років.

София Власова. Особенности физической подготовленности учащихся 5–6 классов в контексте современных норм оценивания. В статье раскрывается тема вопроса изучения особенностей подготовленности учеников 5–6 классов общеобразовательной школы и современных подходов к ее оценке. ***Актуальность темы исследования.*** Физическая подготовленность является одним из факторов, характеризующих работоспособность, состояние как физического, так и психического здоровья. Низкий уровень физической подготовленности подрастающего поколения является проблемой, присущей большинству стран Европы, в том числе Украине. По данным Академии медицинских наук Украины, значительное количество учеников общеобразовательных школ имеют низкий уровень здоровья, в определенной мере, это обусловлено недостаточным уровнем их физической подготовленности. Соответствующие изменения в связи с этим испытывает состояние здоровья. Ведущие украинские ученые физическую подготовленность советуют рассматривать шире, не ограничиваясь только уровнем развития двигательных качеств и овладением определенными двигательными действиями. Они настаивают на обязательном учете морфо-функциональных возможностей органов и систем организма, что позволит целостно и проекционно подходить к соматическому формированию личности. ***Цель исследования*** – определить уровень физической подготовленности учеников 5–6 классов ООШ г. Киева. ***Методология исследования.*** В эксперименте приняли участие 194 человека, 10–12-летнего возраста, из них 90 мальчики и 104 – девочки. Исследование проводилось на базе школы № 269 г. Киева с углубленным изучением французского языка. Для исследования физической подготовленности школьников 5–6 классов использованы следующие двигательные тесты: «прыжок в длину с места» (скоростно-силовые качества); «сгибание-разгибание рук в упоре лежа» (сила мышц рук) девушки; «подтягивание в висе» ребята (сила мышц рук) «челночный бег 4х9 м» (ловкость)

«бег 30 м» (скоростные качества); «бег 1000 м» (выносливость) «наклон туловища вперед из положения сидя» (гибкость). Силу мышц кисти измеряли при помощи детского кистевого динамометра. Результаты исследований подвергнуты математически-статистической обработке с целью интерпретации результатов педагогических экспериментов, как того требуют подобные исследования в области физической культуры и спорта. ***Результаты работы и ключевые выводы.*** Анализ полученных результатов тестирования позволил сделать выводы о том, что результаты учащихся соответствуют достаточному и высокому уровням компетентности соответственно учебной программе «Физическая культура (5–9 класс)», а также Государственной системе тестов Украины. Однако, по нашему мнению, определенные позиции государственных тестов требуют пересмотра, поскольку они несколько занижены. Учитывая тот факт, что уровень физической подготовленности взаимосвязан с уровнем соматического здоровья детей, считаем, что такая «коррекция» норматив не будет способствовать оптимизации физкультурно-оздоровительной работы в ООШ.

Ключевые слова: физическая подготовленность, состояние здоровья, ученики 10–12 лет.

Introduction. Physical preparedness is one of the factors that is the result of human motor activity, its integral indicator that characterizes the state of both physical and mental health [2; 4; 7; 11].

The low level of physical preparedness of the growing up generation is a problem that is widely spread in most European countries, including Ukraine. According to the Simple Random Sampling, conducted by the Ukrainian Academy of Medical Sciences, 36.4% secondary school students have a very low level of physical preparedness, 33.5% have below average level of preparedness, 22.6% - average level, 6.7% – above average level and only 0.8% have the high level of preparedness [14].

In the works of many authors (V. Kashuba, 2016; N. Moskalenko, 2014, N. Pangelev, 2017, etc.) the causes of low level of health and physical preparedness of young generation are studied. Thereby, the studies show that people's health is more than 50% dependent on the lifestyle, 20% – on the environment, 20% – on the inheritance and 10% – on the health system [10; 14; 17].

The negative effect of children's health and socio-psychological factors are: tobacco addiction in 71% of families, where the father smokes and in 6.1% of families, where the mother smokes; bad living conditions; medical and social factors of demography; irresponsible parental attitudes towards children [14; 21].

The motor activity investigations conducted by O. Yaremenko Ukrainian Institute of Sociological Studies show that more than 50% of children practiced physical activity only up to 30 or 60 minutes within a week. Besides, the physical activity of girls is 2-4 times lower than the physical activity of boys. Although it is known that the adaptive changes of children`s organism happen in conditions of at least 15-16-hour special oriented activity per week [9]. Such an approach and the children`s attitude to motor activity worsens their health and causes some of chronic pathologies.

Foreign experts claim that for today's children and teenagers there is a steady negative tendency in their level of physical preparedness. It is influenced by an era, external factors of the modern life-style (informatization, addiction to gadgets, computer games, etc.). O. Bar-Or, T. Rowland state that «the low level of physical preparedness also leads to hypoactivity, and that becomes a part of a closed circle» [1; 25].

Ukrainian scholars T. Krutsevych [12], Y. Prystupa [18] suggest that the physical preparedness should be investigated more broadly, not just limiting by the level of the motor qualities development and the mastery of certain motor actions. They insist on the consideration of the morpho-functional capabilities of organs and systems of the body, which will allow in a holistic and an projective way observe the formation of the physical health of the individual.

The statements given above provided by the expediency of the physical preparedness studying in of 5-6 grades students. For this purpose pedagogical testing was used, the results of which testified the level of the physical qualities development.

Physical preparedness of the 5-6 grades students was determined by the results of pedagogical testing, which state the level of the basic physical abilities development – speed, strength, dexterity, flexibility and endurance.

Physical preparedness, basically, is evaluated on the basis of absolute indicators, the percentage of compliance with the requirements, norms or by setting differentiated assessments for the implementation of educational norms or scored points.

The purpose of the research is to set the level of physical preparedness of the 5-6 grades students in Kyiv.

Materials and methods of research:

Participants: 194 10-11 years old students of 5-6 grades, including 90 boys and 104 girls participated in the experiment. An approval to participation in this experiment was agreed with the students beforehand.

The research organisation: the study was conducted on the basis of a specialized school № 269 with a profound study of the French language in Kyiv. The following motor tests (traditional control exercises) that met the regulatory requirements and testing conditions were used to study the physical preparedness of the 5-6 grades students: The standing broad jump (speed power qualities); Flexion extension arms in emphasis lying (the strength of the arm muscles) for girls; The front lever (the strength of the arm muscles) for boys; Shuttle run 9 x 4m (agility); 30-m running speed test (speed quality); 1000m running test (endurance); A *forward tilted sitting position* (flexibility). The strength of the hand muscles was measured with the help of a hand dynamometer.

Statistical analysis. The results of the research were subjected to the mathematical and statistical processing in order to interpret the results of pedagogical experiments, as required by the similar studies in the field of physical culture and sports [8; 24]. The following mathematical procedures were carried out:

– estimation and characteristics of the various parameter series of different age and gender groups, control and experimental representatives, namely – an arithmetic sequence ($\overline{x}$),the root-mean-square deviation (S). The rates of an increment of the result were calculated according to the Brody index:

$IB = \frac{100(V2-V1)}{0,5(V1+V2)}$ in which:

V1 is the initial result,

V2 is the end result.

The method of mathematical and statistical processing of the obtained research results was carried out with the help of MS Excel and «Statistica 6.0», which allowed to conduct a measurement analysis and the calculation of baseline values.

The justification of the results obtained: The level of physical preparedness of 5-6 grades students was determined by the comparison of the testing results with the normative indicators, which are presented in the curriculum «Physical Education (for 5-9 grades students)» (approved by the decree of the Ministry of Education and Science of Ukraine dated by 23.10.2017 № 1407), as well as by the Ukraine State test system [15; 23].

Table 1

The statics indicator of 5–6 grades students` physical preparedness

Motor test	Statistical characteristics	The value of statistical indicators			
		boys		girls	
		The 5–th grade n = 46	The 6–th grade n = 44	The 5–th grade n = 51	The 6–th grade n = 53
30–m running speed test, sec	$\overline{X}$	5,70	5,53	6.23	6.25
	min	5,0	4,9	5.5	5,4
	max	6,9	6,9	7.2	7,4
	S	0,39	0,50	4.58	0,45

End of the Table 1

1000–m running speed test, min,sec	$\bar{X}$	4,92	4,93	5.78	5,59
	min	4,3	4,2	5.1	4,5
	max	5,5	5,4	7.2	7,1
	S	0,41	0,40	0.56	0,64
Shuttle run 4x9, sec	$\bar{X}$	10,8	10,6	10.9	10,9
	min	9,8	9,7	10.3	10,0
	max	11,8	11,6	12.3	12,1
	S	0,46	0,50	0.47	0,54
The standing long jump, m	$\bar{X}$	169,61	172,64	148.47	151,68
	min	140,0	150,0	132	135,0
	max	200,0	210,0	171	175,0
	S	11,87	13,66	10.53	11,23
Flexion–extension arms in emphasis lying, the number of times	$\bar{X}$	15,30	17,18	5.55	8,13
	min	8,0	10,0	2	3,0
	max	25,0	27,0	12	18,0
	S	4,56	3,65	2.17	3,39
The front lever, the number of times	$\bar{X}$	4,98	5,59	11.8	16,38
	min	0	2,0	4	6,0
	max	15,0	15,0	18	30,0
	S	3,38	2,85	3.87	6,13
Torso forward from the sitting position, cm	$\bar{X}$	4,02	4,86	9.88	10,92
	min	2,0	2,0	5	5,0
	max	8,0	9,0	15	16,0
	S	1,39	1,79	2.36	3,64

End of the Table 1

Hand grip strength (right hand), kg	$\bar{X}$	15,75	18,58	13.45	16,85
	min	13,1	14,2	9.8	10,7
	max	19,5	23,1	18	24,1
	S	1,62	2,29	2.26	2,84
Hand grip strength (left hand), kg	$\bar{X}$	14,87	17,65	12.57	15,89
	min	12,0	13,0	8.7	10,0
	max	18,1	22,1	17.1	23,6
	S	1,69	2,27	2.25	2,87

Test results correspond to the speed of a sufficient level of competence and suggest that boys have the slight growth rate (3%). Due to the beginning of the puberty period of girls, which is characterized by an imbalance in the functioning of the organism, the result desire to be much better (–0,3%) (Table 2).

Table 2

The growth rates indicators of physical fitness in 5–6 grades students

Motor test	**Competence**	**An increment, %**	
		boys	**girls**
		5–th— 6–th grade	**5–th— 6–th grade**
Running 30 m	The speed development	3	–0,3
Running 1000 m	An endurance development	–0,2	3,3
Shuttle run 4x9 m	Agility	1,3	0,3
Standing long jump, cm	The speed–strenghts development	1,8	2,14
Flexion–extension arms in emphasis lying, the number of times	The strengths development	11,6	37,7
The front lever, the number of times	The strengths development	11,5	32,5
Torso forward from the sitting position, cm	The flexibility development	18,9	10
Hand grip strength (right hand), kg	The strength of the hand muscles	16,5	22,4
Hand grip strength (left hand), kg	The strength of the hand muscles	17	23,3

The pace of growth in the level of endurance in girls is better than that of boys (3.3% – girls and 0.2 – boys). According to the curriculum of «Physical Education (in 5-9 grades)», this test carries out without any quantitative measurement. The opportunity to overcome the distance is estimated.

Analyzing the results of studies of physical preparedness of schoolchildren in grades 5–6, it should be noted that all indicators showed positive changes in the experimental and control groups, both in girls and boys, but with different rates of their growth.

The indicators of the two endurance tests correspond to a sufficient and high level of competence. The results of the study show that the indicators of the flexion extension arms in emphasis lying and the front lever tests have a significantly higher rate of development in both sex groups, especially in girls (boys – 11.6% and 11.5%, girls – 37.7 % and 32.5%).

The level of the development of the flexibility meets the average and sufficient level according to the Ukrainian State system of tests. Annual growth rate in boys was 18.9%; in girls 10% respectively.

The results of the research indicate a high rate of growth of the right hand muscle strength indicators(boys – 16.5%, girls – 22.4%), as well as the left hand muscle strength (boys – 17%; girls – 23.3%).

Our data do not correspond to the research of L.V. Volkova [4] (Table 3).

Table 3

Age pace of the growth of the physical abilities in schoolchildren of younger age (L.V. Volkova, 2002)

Age	Sex	Physical competences, %			
		The speed–strenghts	Speed	Flexibility	Agility
10 –11	boys	18	7	4	–8
	girls	18	3	3	9

We are curious about comparing our data with the results of professionals, who studied the problem of physical preparedness of pupils of secondary school in various aspects.

N. Hrabyk compares the physical preparedness of modern students of 10-12 years old rural schoolchildren of 10 to 12 years of age with a similar research in 1985. Comparative analysis of the physical preparedness of 10-12 year old students of the village school of the present and their peers in 1985 in the Ternopil region revealed the common tendencies, namely: 1) according to the speed, agility, speed-power capabilities criteria, modern generation students dominate their peers in 1985. This advantage varies in the range of 3.8 – 15.2%; 2) in boys–schoolchildren of the age of 10-12 years in 1985, the strength dynamometers are on the highest level (4,5 – 20,8%); 3) 10-12-year schoolgirls in 1985 dominate modern generation girls by the results of the « standing long jump « test. The advantage rural students today of their peers in 1985 in physical preparedness in most tests may be due to the fact that the students of previous generation started school from the age of 7, and now they start it from the age of 6. Therefore, nowadays, the purposeful process of physical education at school is one year longer [5].

The study of S. Hrytsyliak [6], which was devoted to the study of the dynamics of physical fitness during one year, showed that the level of physical preparedness of younger teens (10-11 years) at the beginning of the school year is lower, compared to the end of the year. That fact indicates a lack of motor activity in the summer. The questionnaire showed that children spent most of their time during the summer holidays playing computer games – 45%. About 22% of children who had spent the time in summer camps, where the planned program for children with diverse entertainments was conducted, received positive emotions and energy from active recreation. 20% of the students were actively involved with the nature by playing sport games with their family and friends. Only 13% of children who did not go to rest at all were left without attention and active rest in the summer.

The research of A. Napadiy [16] also showed that during the summer holidays the level of physical fitness, physical health and well being decreased, which necessitates to look up the physical education curriculum in September to create some favorable conditions for adaptation children`s body to the learning

process and workability. According to the experiment made by V. Pustovalov, Y. Petrenko, O.Menshykh [19], the lowest level indicators of the of development of physical abilities were determined in 11-year old students. Posivive results were obtained during the performance of strengths, speed strenghts activities, that were completed by boys and during the flexibility and endurance activities, made by girls.

Discussion. The results of the students` physical preparedness tests correspond to sufficient and a high level of competence. However, if we compare it with the norms and with the results obtained by the scientists in previous years [4; 13; 14], we will receive a low and average level of preparedness of students.

O. Sainchuk suggested revising the test on flexibility as well as other tests, because the requirements of the same tests abroad are twice simplified [20]. The endurance test does not take into account the time spent on it, therefore it is difficult to assess this ability in students.

V. Pustovalov, Y. Petrenko, O.Menshykh [19] claim that there is a need to improve the modern system of student`s testing and assessing the success of learning. According to experts, the idea of recommending a number of innovative pedagogical control technologies in Ukrainian schools is justified. By the same time that could improve the quality and objectivity of assessing the physical preparedness of students and would increase the motivation to take classes both at physical education lessons and at the free time.

M.V. Stefanyshyn [22] notes that the current assessing system of the physical preparedness of students contradicts the modern and declared requirements of the normative foundations of the physical education system. The contradictions are: 1) the purpose of the pedagogical process and the system of students` achievements assessment; 2) the curriculum inconsistency with the level of physical development; 3) the prevalence of the traditional assessment system of physical abilities and the current need for the application of innovative assessment methods; and other.

Conclusions and prospects of further research. The analysis of the results of the test, made it possible to conclude that the results correspond to sufficient and high levels of competence in accordance with the curriculum «Physical Education» (grades 5-9)», as well as the State Testing System of Ukraine. However, in our opinion, certain positions of the State tests need to be revised, since they are somewhat underestimated. Taking into account the fact that the level of physical preparedness is interrelated with the level of somatic health of children, we believe that such «correction» of norms will not promote optimization of physical culture and health work in secondary schools.

The results obtained are the basis for the development of the innovative project, called «Roller skates: an innovative an innovative health forming branch in physical education».

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