***ҚМПИ ЖАРШЫСЫ №3 (47), 2017 ВЕСТНИК КГПИ №3 (47), 2017***

***ISSN 2310-3353 . ISSN 2310-3353***

## УДК 796.01

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## THE CHARACTERISTIC OF PHYSICAL FITNESS OF SCHOOL STUDENTS OF 13-15 YEARS PLAYING VOLLEYBALL

***Abstract***

*This article presents the analysis of the research of physical preparedness*

*of schoolchildren 13-15 years in volleyball.*

*The article argues that achieving the optimal level of physical fitness contribute to various sports. Volleyball in this regard is a very attractive because the lessons can be held both indoors and outdoors. Minimal requirements to the technical equipment of the Playground.*

***Keywords****: volleyball, physical fitness, training process.*

## Introduction.

The urgency of studying the dynamics of changes in the basic indicators of training activity of athletes is not in doubt, since the identification of the regularity of these changes is interrelated with the strategy of training, searching for effective ways for further improving sports training. The urgency of the work is to increase the effectiveness of the training process.

The importance of physical culture in the school period of a person's life is to create a foun- dation for comprehensive physical development, health promotion, and the formation of a variety of motor skills and skills. All this leads to the emergence of objective prerequisites for the harmonious development of the individual. Physical development is the process of formation, formation and subsequent changes throughout the life of an individual of the morphofunctional properties of his organism and physical qualities and abilities based on them.

Modern volleyball is characterized by high physical activity of volleyball players. Most tactical combinations are based on the speed of response and the speed of movement, which, summarized in the game, require high development of speed endurance. Effective execution of the jump game action depends on a well-developed jumping ability, hopping endurance and dexterity.

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The implementation of technical techniques in an unsupported position is impossible without the appearance of special agility, flexibility [1, p. 49-51].

However, human health can not be regarded as an independent phenomenon. Human health is a multifaceted system, consisting of complex relationships with various kinds of factors. Such factors include the conditions of the external meteorological environment, the factors of ecology and social groups, nutrition and one of the most important factors in the formation and maintenance of the state of human health – motor activity and the level of physical preparedness.

Achievement of the optimal level of physical preparedness is promoted by employment in various sports. Volleyball in this regard is a very attractive sport, since classes can be held both in the hall and in the open air. At the same time with minimal requirements to the technical equipment of the sports ground [2].

In the course of the research, more than sixty sources of scientific and methodological literature were analyzed. Among them, the work of such researchers Terovanesyan A.A., Zagvya- zinsky V.I., Galperin S.N., Babenko T.I., Krechmer EI.I., Badridze N.M., Baitukov A.A., Kaminsky I.I., Kagina O.V., Andreev M.P., Kaplun A.G., Leontieva N.N., Marilova K.V. and others.

## Materials and methods.

Approbation of the research methodology takes place on the basis of Sadchik secondary school and UTG-1 group (first-year training group).

The study was conducted in three stages.

At the 1st stage: (September 2016 – December 2016). We have analyzed the scientific and methodical literature on this issue. The methodological base of the research and the definition of the groups studied were formed. Writing the first chapter. Conducting an express assessment of the level of physical preparedness and level of physical health in the study groups.

At the 2nd stage: September January 2017 – February 2017gg. Analysis of literary sources on the research topic. Development of methodological recommendations.

At the 3rd stage: March 2017 – May 2017. Control sections of the level of physical readi- ness and physical health. Analysis and systematization of research results. Writing and protection of final qualifying work.

In the course of the study, two groups of young men were identified, 10 each. The first group – young men engaged in volleyball in the Youth Sports School № 2, engaged in an expanded motor mode (experimental group).

In the experimental group, during the school year, volleyball training sessions were held in the Youth Sports School No. 2. The frequency of classes was 2 times a week for 1.5-2 hours.

The second group of young men are students of the Sadchakovskaya secondary school, not actively engaged in sports (control). She was on the usual driving regimen, which included 3 classes of physical training per week for 45 minutes.

In the course of the study, control sections were made of the level of physical preparedness and level of physical health.

Analysis of the dynamics of the level of health revealed a positive dynamics in the experi- mental group and a negative dynamics in the control group. This fact indicates that volleyball activities contribute to improving the health of students.

Studies of the physiology of children are devoted to the work of such authors as, Galperin

* 1. Leont'eva N.N., Marilova K.V., Faber A.D. and etc.

In their studies, the question of the level of health and physical preparedness was raised by such authors as Babenko T.I., Badridze N.M., Baitukov A.A., Kaminsky I.I., Kagina O.V., Polya- kova R.S., Khrushchev, S.D., et al.

## Results.

**Mathematical processing of data.**

In assessing the state of physical development, the following indicators were taken into account:

* + - Growth standing (cm);

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* + - Weight (gr);
    - Indices of the respiratory system (ml);
    - Dynamometry (kg);
    - Pulse in a state of rest and after a load (bpm);
    - Arterial pressure at rest and after a load (mmHg).

The calculation of indices, which together determine the physical health of the organism, was made.

Weight – Growth Index (Quetelet); The Robinson index (double product); Definition of the Skibinsky index; Index Shapovalova (ISH);

Definition of the Ruffier index.

Since the above indicators are measured in different units, we, in our work, following the example of other authors (Rufieu, Godik M.A., Apanasenko G.A., Shapovalova V.A.), apply a for- malized assessment of each indicator in scores.

In the spring of 2017, the control phase of the experiment was conducted to study the health level of the control and experimental groups.

In the spring, a second study was conducted. As at the forming stage, our measurements were reduced to tables, according to which the health indices were subsequently calculated.

Consider the indicators of physical health of young men aged 14-15 years of the control and experimental groups.

Our measurements were summarized in tables (see Appendix A and Appendix B), on which the health indices were subsequently calculated. The indicators of the clinical evaluation of the health level of the experimental group are given in Appendix A.

In Table 1, we give the calculated data – indices of the health indicators of the experimental

group.

*Table 1 – The results of a health assessment of the health level of 14-15 year olds engaged in volleyball. (The ascertaining stage of 2016, CYSS No.2, Experimental group)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| С.N. | **Indexes** | | | | |
| The Quetelet index | The Robinson index | The Skibinsky index | The Shapovalova index | The Ruthier Index |
| Alimbaev Zh. | 365,168539 | 63,86 | 3225,80645 | 219,101124 | 8,7 |
| Bauyrzhanuly D. | 384,615385 | 82,5 | 2820 | 269,230769 | 9,1 |
| Belov A. | 395,480226 | 77 | 2764,28571 | 296,610169 | 9,5 |
| Dmitrienko M. | 341,176471 | 68,25 | 3101,53846 | 244,509804 | 8,5 |
| Isinghausin S. | 353,26087 | 90 | 2760 | 323,822464 | 10,6 |
| Mukhamedgaliev R. | 403,225806 | 88,55 | 2441,55844 | 336,021505 | 9,8 |
| Nabiyev S. | 347,058824 | 84,7 | 3389,61039 | 208,235294 | 8,7 |
| Pastushenko E. | 394,736842 | 90 | 3446,66667 | 263,157895 | 8,9 |
| Hakimov Zh. | 325,842697 | 87,5 | 2858,57143 | 222,659176 | 9 |
| Yarygin N. | 383,333333 | 89,7 | 2771,79487 | 281,111111 | 9,8 |
| **Average group indicators** | 369,389899 | 82,206 | 2957,98324 | 266,445931 | 9,26 |

On the basis of the data obtained, we will calculate the results of a dispensary assessment of the health level of the students in the control group.

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*Table 2 – The results of a health check-up of the health status of 14-15 year olds in the control group (Stage 2016, Sadchikovskaya SS, Control group)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| C.N. | **Indexes** | | | | |
| The Quetelet index i | The Robinson ndex | The Skibinsky index | The Shapovalova index | The Ruthier Index |
| Beresnev I. | 390,532544 | 79,2 | 2500 | 234,319527 | 8,7 |
| Bekmayev O. | 392,045455 | 86,25 | 2160 | 261,363636 | 9,1 |
| Valiullin D. | 403,508772 | 91,2 | 2715,78947 | 275,730994 | 9,5 |
| Garaev T. | 428,571429 | 86,25 | 2820 | 228,571429 | 8,5 |
| Dizkhalayev A. | 405,714286 | 81,65 | 2816,90141 | 216,380952 | 10,6 |
| Murtazbekov M. | 327,777778 | 79,2 | 2566,66667 | 191,203704 | 9,8 |
| Shakhaev I. | 309,52381 | 82,5 | 1988 | 175,396825 | 8,7 |
| Sharafiev F. | 323,529412 | 65 | 2504,61538 | 242,647059 | 8,9 |
| Fattahov G. | 343,558282 | 88,55 | 2618,18182 | 251,94274 | 9 |
| Urazmardanov E. | 365,714286 | 88 | 2250 | 249,904762 | 9,8 |
| Average group indicators | 369,047605 | 82,78 | 2494,01548 | 232,746163 | 9,26 |

The results of the study suggest that the level of health in both study groups is above the average (according to IV Gushturova). However, in the control group of students not engaged in purposefully sporting health index has a higher value than in the experimental group. The indices were 17.6 points in the experimental group and 18.4 points in the control group.

The control phase of the experiment on the study of the level of health

In the spring of 2017, the control phase of the experiment was conducted to study the health level of the control and experimental groups.

In the spring, a second study was conducted.

The second part of our experiment was to analyze the level of physical preparedness of the control and experimental groups.

To do this, we used the tests indicated at the beginning of the second chapter of our study.

The assessment of the level of physical readiness was determined by the functional level of speed, strength, strength and endurance. The tests described above were used as evaluation criteria.

This study was also conducted twice. The first section was conducted in autumn 2016. And the second cut in the spring of 2017. The results were processed and reduced to primary protocols.

The table shows the results of testing students 14-15 years of the experimental group (CYSS number 2) – the experimental group (The ascertaining stage).

*Table 3 – The results of testing students 14-15 years of the experimental group*

*(The ascertaining stage, autumn 2016, Children's Sports School No. 2, experimental group)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| C.N. | Running  for 100 m. | A long jump from  the place. cm. | Shuttle run.  Sec. | Pulling.  Time. | Endurance |
| Alimbaev Zh. | 13,3 | 225 | 6,7 | 15 | 13,47 |
| Bauyrzhanuly D. | 13,9 | 220 | 7,0 | 12 | 13,00 |
| Belov A. | 13,2 | 225 | 7,3 | 12 | 12,38 |
| Dmitrienko M. | 14,2 | 205 | 7,8 | 16 | 13,00 |
| Isinghausin S. | 13,6 | 190 | 7,9 | 20 | 13,36 |
| Mukhamedgaliev R. | 13,9 | 190 | 8,2 | 12 | 14,00 |
| Nabiyev S. | 14,0 | 220 | 7,6 | 12 | 13,47 |
| Pastushenko E. | 13,9 | 190 | 9,2 | 10 | 14,40 |
| Hakimov Zh. | 13,4 | 220 | 6,9 | 12 | 13,17 |

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Yarygin N. | 13,7 | 220 | 7,2 | 11 | 13,35 |
| Average value | 13,71 | 210,5 | 7,58 | 13,2 | 13,36 |
| δ | 0,29 | 11,3 | 0,811 | 2,9 | 0,65 |
| m | 0,09 | 3,78 | 0,27 | 0,98 | 0,21 |

The table shows the autumn results of testing students 14-15 years of the control group, Sadchikovskaya S.S. (control group, 2016).

*Table 4 – The results of testing the students of 14-15 years of the control group (staging stage, autumn 2016, Sadchikovskaya secondary school, control group)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| C.N. | Running  for 100 m. | A long jump from  the place. cm. | Shuttle run.  Sec. | Pulling.  Time. | Endurance |
| Beresnev I. | 14,0 | 200 | 7,2 | 11 | 15,47 |
| Bekmayev O | 14,9 | 200 | 7,6 | 12 | 13,00 |
| Valiullin D | 14,2 | 215 | 7,3 | 12 | 14,38 |
| Garaev T | 14,6 | 205 | 7,8 | 6 | 13,00 |
| Dizkhalayev A | 15,6 | 190 | 7,6 | 12 | 13,36 |
| Murtazbekov M | 13,9 | 180 | 8,6 | 12 | 13,00 |
| Shakhaev I | 14,0 | 210 | 7,1 | 12 | 13,47 |
| Sharafiev F | 15,9 | 190 | 9,2 | 10 | 14,40 |
| Fattahov G | 14,4 | 210 | 9,9 | 11 | 15,17 |
| Urazmardanov E. | 13,7 | 176 | 8,2 | 11 | 13,35 |
| Average value | 14,52 | 197,6 | 8,05 | 10,9 | 13,86 |
| **δ** | 0,61 | 2,06 | 0,16 | 1,94 | 0,74 |
| **m** | 0,2 | 0,68 | 0,05 | 0,64 | 0,24 |

Next, we calculated the average results for the experimental and control groups for each indicator. In this paper, we only consider average data.

*Table 5 – The results of the first testing of the level of physical preparedness of the control and experimental groups*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Study group | Physical properties | | | | |
| Running for 100 m. | A long jump from the place. cm. | Shuttle run. Sec. | Pulling. Time. | Endurance, min |
| Experimental group | 13,71 | 210,5 | 7,6 | 13,2 | 13,36 |
| Control group | 14,52 | 197,6 | 8,05 | 10,9 | 13,86 |

As can be seen from the results at the initial stage of testing the level of physical fitness, the students of the experimental group are at a much higher level of preparedness. Students from the control group are significantly inferior to the experimental group. This we can see for all physical qualities.

In the spring of 2017, repeated control testing was conducted in both groups. The results of the testing are given in tables.

*Table 6 – The results of testing students 14-15 years of the experimental group (Control phase, Spring 2017, CYSS # 2, experimental group)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| C.N. | Running  for 100 m. | A long jump from  the place. cm. | Shuttle run.  Sec. | Pulling. Time. | Endurance |
| Alimbaev Zh. | 13,2 | 225 | 6,7 | 15 | 13,40 |
| Bauyrzhanuly D. | 13,8 | 220 | 6,9 | 13 | 12,55 |
| Belov A. | 13,0 | 225 | 7,2 | 12 | 12,25 |
| Dmitrienko M. | 14,0 | 210 | 7,6 | 19 | 13,00 |

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Isinghausin S. | 13,5 | 190 | 7,7 | 20 | 13,35 |
| Mukhamedgaliev R. | 13,8 | 195 | 8,2 | 12 | 13,45 |
| Nabiyev S. | 14,0 | 220 | 7,6 | 10 | 13,50 |
| Pastushenko E. | 14,5 | 190 | 9,0 | 11 | 14,35 |
| Hakimov Zh. | 13,3 | 225 | 6,4 | 12 | 13,10 |
| Yarygin N. | 13,6 | 230 | 7,1 | 12 | 13,30 |
| Average value | 13,67 | 213,0 | 7,44 | 13,6 | 13,2 |
| **δ** | 0,42 | 12,9 | 0,84 | 3,24 | 0,66 |
| **m** | 0,14 | 4,3 | 0,28 | 1,08 | 021 |

Table 7 shows the autumn results of testing the students of the control group of 14-15 years of the Sadchik S.S. (control group, 2017).

*Table 7 – Results of testing of students of 14-15 years of the control group (Control phase, spring 2017, Sadchikovskaya SS, control group)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| C.N. | Running for 100 m. | A long jump from the place. cm. | Shuttle run.  Sec. | Pulling. Time. | Endurance |
| Beresnev I. | 13,7 | 205 | 6,7 | 11 | 15,20 |
| BekmayevO. | 14,8 | 200 | 7,0 | 13 | 12,55 |
| Valiullin D. | 14,5 | 213 | 7,3 | 12 | 14,25 |
| Garaev Т. | 14,2 | 210 | 7,8 | 8 | 13,00 |
| DizkhalaevА. | 15,5 | 195 | 7,9 | 12 | 13,35 |
| Murtazbekov М. | 13,8 | 183 | 8,2 | 12 | 13,00 |
| Shahaev I. | 14,0 | 210 | 7,6 | 12 | 13,50 |
| Sharafiev F. | 15,5 | 190 | 9,2 | 11 | 14,35 |
| Fattahov G. | 14,3 | 210 | 6,9 | 12 | 15,10 |
| Urazmardanov E. | 15,6 | 179 | 7,2 | 11 | 13,40 |
| Average value | 14,59 | 199,5 | 7,58 | 11,4 | 13,77 |
| **δ** | 0,55 | 3,06 | 0,18 | 1,32 | 0,38 |
| **m** | 0,11 | 0,77 | 0,08 | 0,78 | 2,5 |

After the second testing, which took place in the spring of 2017, the results in the groups changed. However, as in the first case, the experimental group far exceeds the physical fitness of their peers who are not systematically engaged in sports. This is a negative factor and requires intervention from teachers and parents. As yesterday's students, who are now 14-15 years old, tomorrow will join the ranks of defenders of the fatherland. And problems with the level of physical preparedness can significantly complicate the performance of civic duty by the guys.

Let's consider in more detail the test results for individual indicators of physical qualities.

As can be seen from the obtained data, the results of the experimental group exceed the indices. If the average test result was 13.71 seconds for the first test in the 100m run, the average group result was 14.52 seconds for the control group.

After the spring cut of velocity qualities, the results were 13.67 seconds for the experimental group, and 14.59 seconds for the control group.

The results indicate that the experimental group experienced an improvement in speed, while in the control group, the results in the group even decreased. This fact is alarming, since despite the fact that positive changes in the majority of students in the control group still occurred, some children have found a significant drop in speed. And it should not be forgotten that at this age there is a natural increase in speed.

Indicators of speed of power qualities. Here we see that the students of the experimental group also exceed their peers. The autumn results were 210.5 cm. In the students of the experi- mental group and 196.7 cm. In the control group.

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In the spring, the indices were 213.0 cm. In the experimental group and 199.5 cm. In the control group. In both groups there is an improvement in the results.

In the results of the shuttle run (coordination qualities), we also see that in the fall and in the spring the students of the experimental group outperform the control group. The results of the first test were 7.6 seconds. In the experimental group and 8.05 sec. In the control group.

During the spring cut, the results were 7.4 seconds. In the experimental group and 7.58 in the control group.

Strength and endurance show an increase in both groups.

Autumn endurance testing revealed the results of 13.36 minutes in the experimental group and 13.86 minutes in the control group. Spring data revealed 13.22 minutes in the experimental group and 13.77 in the control group.

However, as in the first case, the parameters of the experimental group exceed those that we found in the control group.

## Conclusions.

The results of the research make it possible to put forward a number of practical recommendations:

1. We recommend that teachers of physical culture and trainers, on the basis of the results of annual clinical trials, keep a systematic record of the students' health level, which will allow them to promptly diagnose and introduce corrective measures at the stage of initial negative changes in the health status of students.
2. Complex application of methods for assessing the level of physical preparedness and the level of physical health allows teachers to determine the most optimal forms and directions of physical training of students.
3. Studies of the level of physical health and the level of physical fitness should be of a longitudinal nature.

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*Article received by the editorial office: 15.06.2017*

**СОЛЮКОВ, A.A., ЕГОРОВА, A.M., БЕКМУХАМБЕТОВА Л.С.**

**ВОЛЕЙБОЛМЕН ШҰҒЫЛДАНАТЫН 13-15 ЖАСАР МЕКТЕП ОҚУШЫЛАРЫ ДЕНЕ ДАЙЫНДЫҒЫНЫҢ СИПАТТАМАСЫ**

*Бұл мақалада талдау жүргізілген зерттеулер дене шынықтыру дайындығының оқушылар- дың 13-15 жасқа айналысатын волейбол.*

*Бапта бекітеді, бұл қол жеткізу оңтайлы дене шынықтыру дайындығының деңгейін ықпал етеді айналысу спорт түрлерімен. Волейбол осыған байланысты білдіреді өте тартымды түрі бол- ғандықтан, сабақтар өткізуге болады ретінде залында, сондай-ақ ашық ауада. Бұл ретте, ең аз талаптарға сәйкес техникалық жарақтандыру спорт алаңы.*

***Мақаланың мәнін ашатын сөздер:*** *волейбол, дене дайындығы, жаттығу процесі.*

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**СОЛЮКОВ, A.A., ЕГОРОВА, A.M., БЕКМУХАМБЕТОВА Л.С.**

**ХАРАКТЕРИСТИКА ФИЗИЧЕСКОЙ ПОДГОТОВЛЕННОСТИ ШКОЛЬНИКОВ 13-15 ЛЕТ, ЗАНИМАЮЩИХСЯ ВОЛЕЙБОЛОМ**

*В данной статье представлен анализ проведенного исследования физической подготовлен- ности школьников 13-15 лет, занимающихся волейболом.*

*В статье утверждается, что достижению оптимального уровня физической подготовлен- ности способствуют занятия различными видами спорта. Волейбол в связи с этим представляет собой очень привлекательный вид, поскольку занятия можно проводить как в зале, так и на откры- том воздухе, при этом с минимальными требованиями к технической оснащенности спортивной площадки.*

***Ключевые слова:*** *волейбол, физическая подготовленность, тренировочный процесс.*

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