

THE DEVELOPMENT OF PHYSICAL ACTIVITY OF GIRLS OF 5–9 GRADES BY MEANS OF RHYTHMIC GYMNASTICS

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РОЗВИТОК ФІЗИЧНОЇ АКТИВНОСТІ ДІВЧАТ 5–9 КЛАСІВ ЗА ДОПОМОГОЮ РИТМІЧНОЇ ГІМНАСТИКИ. **Анатолій ВОЙНАРОВСЬКИЙ, Наталія ВОЙНАРОВСЬКА.** *Східноєвропейський національний університет імені Лесі Українки, Луцьк, Україна, e-mail: van2600@mail.ru*

Анотація. У статті розглянуто реалізацію методології дослідження художньої гімнастики в різних формах фізичного виховання дівчат 5–9 класів для підвищення їхньої фізичної активності, фізичної культури і мотивації до регулярних фізичних вправ. Графічно подані результати досліджень фізичного розвитку дівчат 11–15 років, стан їхньої фізичної підготовленості та функціональний стан серцево-судинної системи показали дівчаток у їх повсякденній фізичній активності.

Ключові слова: фізична активність, фізична підготовка, гімнастики, навантаження, серцево-судинна діяльність.

Formulation of research problem:

1. To reveal the level of girls' physical state of 5–9 grades and factors that determine it.
2. To implement the experimental verification of the efficiency of the developed methods of teaching.

The purpose of the research is to justify the introduction of rhythmic gymnastics in various forms of physical culture of girls of 5–9 grades for increasing of their physical activity, physical fitness and motivation to regular exercise.

An object of the research: the development of physical activity of the girls from 5–9 grades in secondary schools.

Achieving the significant results in solving the issue of improving the students' health requires the new approaches to the means and technologies of physical education. For programming an recreational orientation of doing the exercises it is suggested to use a comprehensive approach that provides training effects on the main components of the motor or predominant influence on undeveloped physical qualities.

An important role in improving the efficiency of students' physical education belongs to the rhythmic gymnastics. In the current research the general pedagogical and medico-biological bases of rhythmic gymnastics are substantiated; the applications are worked out. However, there are the contradictions over the amount of physical exercises, the pace of their implementation and the performance criteria according to the level of the physical condition of students (Voynarovska, 2010, Bondarenko, 2009).

Foregoing updates the need for further studying of the implementation techniques of rhythmic gymnastics in secondary schools.

Research and experimental work was carried out on the basis of secondary schools number 9, 14 of Lutsk. 595 students participated on the stages of the research.

The conducted analysis of the references allowed to determine the physical condition as an integrated sign of life of the organism, that is defined by physical development, physical preparedness, functionality of the organism and the healthy conditions of a person.

The results of the survey of the physical development of girls who are 11–15 years old show that, depending on age, the body length is 145–165 cm, the weight is 36–58 kg, a chest circumference at rest is 64–72 cm. In general the anthropometric values are within age norms. Simultaneously for the ratio of length and body mass there is a tendency to a deficiency of body weight. The indicators of physical development of pupils rise permanently but unevenly, causing the physiological mechanisms of puberty (Table 1).

Table 1

Physical development of girls

Index	Age, years old				
	11	12	13	14	15
Body length, cm	145.2±1.22	149.3±1.8	155.7±2.0	159.4±1.56	165.1±2.18
Body weight, kg	36.07±1.25	38.73±1.5	42.14±1.5	47.55±2.23	58.87±2.75
Chest circumference (at rest), cm	63.95±0.68	67.47±0.8	68.25±0.9	69.84±0.79	72.67±1.05
Circumference of the chest (inhale), cm	68.18±0.72	71.36±0.9	72.54±0.8	74.39±0.98	76.82±0.95
Circumference of the chest (exhale), cm	62.03±0.61	65.84±0.7	66.39±0.9	67.01±0.87	71.38±0.95

There is a tendency of reductioning the level of the physical preparedness among the girls of secondary school age. The worse situation is found because of the indicators of endurance, flexibility and strength qualities. Agility and speed are better developed. While studying in the middle school age a level of girls' physical qualities generally increases to 13 years, after which some stabilization and even reduction of test results come (Table 2).

Table 2

Physical fitness condition of girls of 11–15 years

Index	Age, yearsold				
	11	12	13	14	15
Bodylength, cm	145.2±1.22	149.3±1.8	155.7±2.0	159.4±1.56	165.1±2.18
Bodyweight, kg	36.07±1.25	38.73±1.5	42.14±1.5	47.55±2.23	58.87±2.75
Chest circumference (at rest), cm	63.95±0.68	67.47±0.8	68.25±0.9	69.84±0.79	72.67±1.05
Circumference of the chest (inhale), cm	68.18±0.72	71.36±0.9	72.54±0.8	74.39±0.98	76.82±0.95
Circumference of the chest (exhale), cm	62.03±0.61	65.84±0.7	66.39±0.9	67.01±0.87	71.38±0.95

An increase in women's heart rate under the age norms is observed. Blood pressure is in the average age limits. One reason for the slight fluctuations of heart rate and its small changes in the average school age is the gradual improvement of the regulatory mechanisms of the functioning of the heart and the sexual maturation of girls. The magnitude of a delay of the breath is on 21,7–32,02% higher than on the exhalation. From 11 to 15 years the results of the test are gradually increasing (Table 3).

Table 3

Functional state of the cardiovascular system of girls 11–15 years

Index	Age, yearsold				
	11	12	13	14	15
Systolic blood pressure, mm Hg	95.7±2.65	100.5±2.34	118.7±3.22	128.1±3.16	131.8±3.74
Diastolic blood pressure mmHg	50.21±1.55	53.75±1.69	71.08±1.83	72.26±1.57	79.82±1.93
Heart rate at rest, beats per minute	87.39±2.67	85.17±3.09	85.23±2.49	80.77±3.32	81.02±2.48
Holding your breath for breath, sec	31.18±2.05	27.59±2.63	34.27±2.85	31.49±1.93	32.52±2.48
Holding the breath on exhalation, sec	24.56±1.56	22.67±1.36	28.95±2.16	25.03±1.85	26.36±1.59

Index of daily physical activity of girls is within 32,41–33,65 points. Structure of the daily physical activity of girls consists of basic mode (8,37–8,52 hours), sitting (6,34–6,48 h), low (6,25–6,56 h), middle (2,25–2, 56 hod) and high (0,34–0,41 h).

Scientific studies have shown that students are recommended daily two-hour volume of physical activity which would provide a physiological body's need for physical exercise. Simultaneous-

ly to our specially organized physical activity of girls is only 0,34–0,42 h, which is 65–75 % lower hygienic standards. (Table 4), (Voynarovska, 2010).

Table 4

Indicators of daily physical activity of girls 11–15 years

The level of physical activity	Age, years				
	11	12	13	14	15
Basic, h	8.46±0.02	8.39±0.05	8.26±0.04	8.52±0.06	8.37±0.04
Sitting, h	6.34±0.28	6.42±0.31	6.52±0.43	6.47±0.52	6.48±0.63
Low, h	6.25±0.31	6.28±0.45	6.54±0.35	6.37±0.29	6.56±0.37
Middle, h	2.56±0.19	2.49±0.22	2.27±0.38	2.28±0.19	2.25±0.23
High, h	0.39±0.05	0.42±0.06	0.41±0.04	0.36±0.03	0.34±0.05
Index of physical activity, points	32.89±0.52	32.92±0.49	32.74±0.61	32.47±0.55	32.44±0.46
Daily energy consumption, kcal per kg	42.38±0.34	42.4±0.41	42.24±0.29	41.88±0.33	41.86±0.39

The results showed that the overwhelming majority of students of all age groups have average, above average or high level of interest in the physical. With age, students observed a downward trend in interest in physical culture.

At the same time, interest in physical culture of a significant portion of respondents is missing (2%). Negative attitudes towards physical education was formed in some girls (2.5%). The trend is observed in schoolchildren with age.

Sustained interest in physical culture makes the desire for systematic physical exercise. At the same time, only 14.53–23.07% of respondents 3–4 times a week do physical exercise. Training effect has only a high level of physical activity, which includes organized physical exercise and intensive sports and outdoor games. But this component of physical activity is available in many girls just as mandatory physical education classes. These data are confirmed by the results of timing. 77–85% of students according to age limit their physical mode only by mandatory physical education lessons in school (Table 5).

Table 5

The level of interest in physical education for girls, %

The level of interest	Age, years				
	11	12	13	14	15
High	14.7	20.47	19.37	15.75	10.43
Above middle	35.24	31.12	25.24	27.15	23.08
Middle	45.49	44.76	48.82	46.85	52.24
Below middle	3.25	2.57	3.64	6.32	5.83
Low	1.32	1.08	2.94	2.85	3.39
Interest is missing	-	-	-	1.08	2.47
Addicted is negative	-	-	-	-	2.56

The results showed that the overwhelming majority of students of all age groups have middle, above middle, or high level of interest in physical culture. At the same time, interest in physical culture of a significant portion of respondents is missing (2%). Negative attitudes towards physical education was formed in some girls (2.5%), (Romaniyk, 2010, Voynarovska, 2010).

Sustained interest in physical culture makes the desire for systematic physical exercise. At the same time, only 14.53–23.07% of respondents 3–4 times a week do physical exercise. The fact causes concern that 76.93–85.47% of girls according to age limit their motor mode only by mandatory physical education lessons at school. Considering biological laws of physical exercise on physical fitness and health of girls, two-hour classes of exercise per week are not enough.

Low girls' interest in physical culture, in our opinion, due to weak organizational and methodological and logistical support of the educational process, deficiencies in the organization

of physical education in schools, the underestimation of the importance of the direction of teachers, insufficient propaganda work.

For students of middle age the main source of information about physical education and sports is a teacher of physical education, television, computer, mass sports activities, meetings with famous experts, coaches from different sports. Obviously, this situation is due to the practice of physical education in secondary schools. (Table 6), (Voynarovska, 2010).

Table 6

Sources of information about students physical education, %

Sources of information	Age, years				
	11	12	13	14	15
Meeting with famous sportmens	15.75	14.64	15.83	14.07	14.55
Meeting with famous experts in the field of physical culture and sports	9.73	10.32	12.57	9.44	11.67
Mass sporting events	18.38	15.63	17.25	15.03	12.93
Physical Education's teachers	55.48	53.17	57.02	50.46	53.03
Sports coaches	1.48	3.85	4.75	3.59	5.75
TV	47.49	52.33	58.29	50.28	51.14
Radio	1.23	-	1.36	2.43	-
Special Sports Literature	1.04	2.47	2.91	1.58	2.15
Newspapers	2.43	1.63	1.94	3.07	2.49
Computer	14.72	15.83	16.95	15.48	17.36

Among the types of physical activity for girls middle school age prefer rhythmic gymnastics (29–35%). In addition, students are showing great interest to gymnastics, tourism, tennis, swimming, volleyball. This division of interests of students to exercise provides a solid base to increase their physical activity by means of rhythmic gymnastics (Table 7).

Table 7

Children's interest in a sports section, %

Sports	Age, years				
	11	12	13	14	15
Callisthenics	29.54	29.95	32.08	34.25	35.31
Gymnastics	21.67	21.99	20.87	16.22	18.79
Tourism	9.94	10.47	9.25	8.43	7.04
Tennis	5.43	6.72	9.39	11.47	12.35
Tabletennis	1.38	-	2.64	1.38	1.25
Volleyball	8.83	9.32	9.95	5.24	7.12
Basketball	2.55	1.48	2.39	2.78	1.56
Football	1.55	1.48	3.07	1.29	1.05
Handball	0.75	-	1.29	1.48	1.25
Swimming	10.35	10.74	12.52	9.81	9.35
Cycling	1.25	2.37	2.12	1.93	-
Struggle	2.47	-	1.07	-	-
Notdefined	4.29	5.48	5.39	5.72	4.93

Thus pedagogical experiment showed high efficiency of the proposed means and methods of rhythmic gymnastics girls, which is the basis for its widespread implementation in the practice of general education.

Conclusion. This study demonstrated the positive impact of training on the body rhythmic gymnastics girls of 5–9 grades, defined methodological features perform these exercises. Determined that the physical development of girls generally meets the age requirements. Defined indications of physical development of pupils permanently but uneven rise, which is caused by physiological mechanisms of puberty. Also it is found increased rates of heart rate in girls of 5–9 grades according to age norms.

The results showed that the level of physical condition of girls of 5–9 grades is conditioned by their activity.

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РАЗВИТИЕ ФИЗИЧЕСКОЙ АКТИВНОСТИ ДЕВУШЕК 5–9 КЛАССОВ С ПОМОЩЬЮ РИТМИЧЕСКОЙ ГИМНАСТИКИ

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Аннотация. В статье показана реализация методологии исследования художественной гимнастики в различных формах физического воспитания девочек 5–9 классов для повышения их физической активности, физической культуры и мотивации к регулярным физическим упражнениям. Графическое представление результатов исследований физического развития девочек 11–15 лет, состояние их физической подготовленности и функционального состояния сердечно-сосудистой системы показали девочек и их повседневную физическую активность.

Ключевые слова: физическая активность, физическая подготовка, гимнастики, нагрузки, сердечно-сосудистой деятельности.

THE DEVELOPMENT OF PHYSICAL ACTIVITY OF GIRLS OF 5–9 GRADES BY MEANS OF RHYTHMIC GYMNASTICS

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Abstract. The paper shows the implementation methodology study of rhythmic gymnastics in various forms of physical education of girls 5–9 grades to increase their physical activity, physical fitness and motivation to regular exercise. Graphical representation of the research results of physical development of girls 11–15 years, the state of their physical fitness and functional status shown cardiovascular system of girls and their daily physical activity were represented.

The percentage interest of girls to physical education was determined in schools and shows the sources of information about students' physical culture in Ukraine.

Keywords: physical activity, physical training, girls rhythmic gymnastics, load, cardiovascular activity.