

Development of Motor Qualities Through the Specific Means of Gymnastics

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Abstract

Introduction: The study entitled “Development of motor skills through specific means of gymnastics” refers mainly to the specific means of artistic gymnastics used by the physical education teacher for physical training and development of motor skills of high school students considering that gymnastics discipline is one of the most important parts of the physical education class in school. **The aim** of this paper is to demonstrate the progress made in increasing the level of motor skills by using the means of artistic gymnastics and to present the effectiveness of these means in physical education. The experiment was performed at *the Vasile Goldiș National College Arad* for an interval of 6 months between January 15, 2019 and July 15, 2019. The classes subjected to the experiment were from the 5th A and 5th C classes from the above mentioned unit, 48 female students and boys between the ages of 11 and 12. The 5th A class comprises 23 students, of which 13 girls and 10 boys, and the 5th C class comprises 25 students, of which 14 girls and 11 boys. Both classes were subjected to the same group of tests at both the initial determination at the beginning of the experiment and the final one. The experiment consisted in applying a set of exercises to the experimental group, ie to class V A, different from the one applied to the control group, class V C. **The research methods** used were: bibliographic study, observation method, survey, experiment method, test method and statistical-mathematical method. Tests applied in the experiment: 1. Shuttle; 2. Lumbar mobility; 3. The bridge; 4. Antero-posterior cord; 5. Long jump from the spot; 6. Trunk lifts from supine to sitting and back. **Results** The average values obtained by the experimental

class in the tests were are following: - Shuttle I.T = $11,96 \pm 0,64$ and to F.T = $11,69 \pm 0,64$; - Lumbar Mobility I.T = $49,3 \pm 8$ and to F.T = $55,43 \pm 5,6$; - Bridge I.T = $46 \pm 10,4$ and to F.T = $43 \pm 11,2$; - Split A-P I.T = $17,6 \pm 9,4$ and to F.T = $14,8 \pm 9,5$; - Jump in length from sport I.T = $163 \pm 8,7$ and to F.T = $169 \pm 5,5$; - Abdomen I.T = $21 \pm 4,2$ and to F.T = $22 \pm 4,4$. Compared to those of the control class : - Shuttle I.T = $13,03 \pm 0,85$ and to F.T = $12,88 \pm 0,78$; - Lumbar Mobility I.T = $53,28 \pm 6,32$ and to F.T = $54,32 \pm 6,04$; - Bridge I.T = $50,8 \pm 8,9$ and to F.T = $50,1 \pm 9,3$; - Split A-P I.T = $23,6 \pm 8,2$ and to F.T = $23 \pm 9,2$; - Jump in the length I.T = $158 \pm 7,8$ and to F.T = $159 \pm 7,3$; - Abdomen I.T = $23 \pm 4,6$ and to F.T = $23 \pm 4,8$. The research conducted, through which we aimed to demonstrate the effectiveness of gymnastics in the physical education lesson in middle school classes, was confirmed, as can be deduced from the comparative table of results obtained, set out in the research annexes. **Conclusions:** Following the study, we can conclude that the means of gymnastics, used intensively in physical education classes, along with traditional means, increase students' attendance, increase their attractiveness, create a motivational framework for conscious and active participation of students, contributing largely to increase the level of development of motor skills in physical education lessons. Given the results obtained, we recommend physical education teachers in primary and secondary school to introduce in their lessons as many exercises and games specific to gymnastics both for the harmonious physical development of students and for maintaining their health and mental relaxation they need during school. In this way the physical education lessons do not seem to be boring, they become pleasant, attractive.

Keywords: *driving qualities, flexibility, mobility, speed, strength.*

Introduction

This material refers to the specific means of gymnastics that the physical education teacher uses in physical education classes for the physical training of students in secondary school.

The motor qualities represent "qualities of the organism, materialized in the capacity to perform movement actions with certain indices of strength, speed, skill, endurance" (I. Şiclovan, 1972).

Gymnastics is one of the most important means of physical education. Having an extremely rich content and a great variety of means, it fulfills an essential role in the harmonious physical devel-

opment, in the improvement of the motor qualities, in the formation of the basic and specific motor skills.

Gymnastics is mandatory for all school, the volume of activities being established according to the material endowment of the school. With the help of gymnastics we can train students in a correct posture, mobility, suppleness, strength, speed of execution and repetition, skill and endurance.

The topicality of the problem consists in the fact that by the intensive use of the gymnastics means that are numerous they will contribute to a very good psycho - motor training. We thought that through this work we can bring an improved methodical training in the gymnasium cycle, so that the students acquire new knowledge in this field.

Current gymnastics is developed in terms of technical training in all its branches, providing the most varied means of action to solve many tasks in the lesson including the development of coordination abilities (skill), speed, strength, endurance and mobility-flexibility.

After (A. Dragnea and A. Bota, 1979) the term skill, used by many authors in specialized works, seems restrictive in relation to the richness (complexity) of the manifestation of these abilities. The same authors define the coordinative capacities “a complex of predominantly psycho-motor qualities, which implies the ability to quickly learn new movements, fast and efficient adaptation to various conditions, specific to different types of activities, by restructuring the existing motor resources.”

With the help of the means of artistic gymnastics, the speed that represents “the capacity of the human organism to perform motor acts or actions, with the whole body or only with certain segments (parts) of it in a short time, with maximum rapidity (speed, quickness), depending on the existing conditions”. (I. Șiclovan, 1972).

We can say that no other branch of sport develops flexibility as gymnastics does, being defined as “the ability of an athlete to perform movements with great amplitude, in one or more joints by itself or under the action of extreme forces” (J. Weineck, 1992). Some authors also use the term mobility.

It can be stated that without the exercises and exercise structures offered by gymnastics, a project of didactic technology cannot be conceived. From those 10-12 minutes that the preparatory part of the lesson lasts, 70-80% is gymnastics. If this part of the lesson is well structured, harmonized and dosed with gymnastic elements, the body will be brought into an optimal state of excitement, ready to approach the fundamental part of the lesson.

Gymnastics benefits from a large number of hours, 1/3 of the total volume of hours. It is practiced in all schools, regardless of the material base or geographical area in which it is located and is accessible to all students regardless of age or gender. It is practiced in the form of acrobatic, rhythmic, artistic gymnastics (jumping) and aerobics.

Through its great variety, gymnastics enables all students to find the means of expression that will bring them satisfaction. The elements of acrobatic gymnastics provided in the curriculum are accessible to all students. Once understood and learned correctly, they are repeated with great interest by the vast majority of students. In general, at this age gymnastics “likes” and enjoys a lot of interest and a wide popularity among students (V. Grigore, G. Niculescu, 2009).

The permanent modernization of the physical education and sports activity in school requires the finding of new methods, procedures and means to act in practice as well as the continuous improvement of the existing ones, of the so-called classic, traditional ones, based on the new objectives. In front of this educational object. In accordance with this task of great importance for physical education and school sports, we have developed this paper that aims at physical training in high school through specific means of gymnastics.

We chose this topic to show how effective the means of gymnastics are in psycho - motor training for the development of speed, strength and mobility. In the first part of the paper we presented the main characteristics of motor skills (speed, strength and mobility) and driving exercises for their development through gymnastics. In the second part of the paper we tested experimentally the devel-

opment of speed, strength and mobility before and after training through acrobatic gymnastics.

The aim of this paper is to obtain a progress of the level of motor qualities involved in order to show the efficiency of the gymnastic means in the physical education class.

If exercises and means specific to gymnastics are used in physical education lessons, a better physical training will be obtained, improving the motor qualities: speed, strength, dexterity, endurance, mobility - suppleness.

In accordance with the general docimology, applicable to all educational objects, so also to the subject “physical education”, the efficiency of teachers’ activity is appreciated mainly by the progress made by students in acquiring knowledge, training skills and abilities, development motor skills.

The objectification of the training process refers to the establishment of concrete ways of quantitative assessment of the progress on the basis of which the value of the methods, procedures and means used can be evaluated.

The development of motor skills is a field that offers us broad and concrete possibilities for objective assessment of the progress made by students, the quality of work performed by students and teachers.

The objectification of the process of development of motor qualities requires the teacher:

- to know the level of preparation of the students, from which study starts
- to establish tests and norms specific to each motor quality and to apply them periodically in the students' activity (at the beginning of the school year, at the end of the semester and at the end of the school year)
- to elaborate the final model regarding the development of the motor qualities and the exercise structures used.
- to keep a precise record of all the data obtained and to use it accordingly, for the critical appreciation of the activity carried out, retaining the necessary lessons.

Research methods used

To prepare a paper, it is natural to use as many methods, techniques and procedures as possible, but it is not enough for the results to be real. Some general conditions of scientific research must be observed

The main ways of action for the development of motor qualities

a) the use of basic motor skills and technical procedures specific to different branches of sport with the change of their dominance ;

b) the use of methods, procedures and means specific to the development of motor qualities .

Means used in the experiment:

We used during the whole experiment a number of 15 exercises general physical development and the combination of these exercises contributes to the development of motor qualities such as: speed, explosive force, skill, endurance, mobility.

We used in the experimental class combined exercises in the form of applications as follows:

Movement 1

Materials : four gym benches Exercise

Description of the exercise: the benches are zigzagged, the middle ones being parallel, at a distance of one meter from each other. On the first bench there are jumps from squatting in the distance, grabbing the edges of the bench with your hands; on the next two benches that are parallel, lateral movement in a supine position with the hands on one bench and the legs on the other. At the fourth bench, jumps are performed over the bench, on either side of it.

Indications: when jumping on the first bench, the weight of the body will alternately pass from the legs to the arms.

Movement 2

Materials : two benches, a vaulting horse, a mattress

Description of the exercise: running with the back forward four meters, stepping over the first bench sitting transversely, stepping over the second bench sitting parallel to the first, at a distance of one meter from it, running four meters, passing under the vaulting horse, standing up, turning 180 °, rolling back from squatting to squatting on the mattress, rolling forward, climbing the vaulting horse, running, jumping over the benches, running and returning to training.

Indications: when running with your back forward, your gaze will be directed forward toward the device..

Movement 3

Materials: a gym bench, trampoline, crate, a mattress placed at the end of the box.

Description of the exercise: crawling on the bench sitting longitudinally, running, beating on the trampoline, jumping in a squat on the crate, stepping on it, landing by jumping with a 180° turn, running in formation.

Indication: when jumping the box, help will be given where appropriate.

Movement 4

Materials: fixed ladder, a gym bench, a mattress .

Description of the exercise: the gym bench is supported with one end of a slat of the fixed ladder, at a height of 50-70 centimeters, thus achieving an inclined plane. In front of the bench, in length, a mattress is placed. At the running signal, rolling forward on the mattress with standing up, running on the sloping bench, free climbing on the fixed ladder to the last slat, descending from slat to slat with arm and leg opposite to the ground, turning 180 ° and running in formation.

Indications: the course can be done in the form of a race: which string ends first. Those who lose their balance on the bench are allowed to continue the race.

Games used during the experiment :

1. *Cockfighting*: In pairs: jumping on one leg with imbalance by pushing with the hands. The one who puts his first free foot on the ground loses.

2. *Wheelbarrow*: Two teams divided into two adjacent rows. A partner grabs the performer's ankles who are lying face down and moves on his arms for a distance of 5-10 meters. Places are exchanged on return. The team that finishes the route faster wins.

3. *Rabbits*: The team is divided into two teams lined up: at the signal, the first players in each team, with the medicine ball between their ankles, move by jumping on both legs to a line 10 meters away, return and teach the ball of the next. The team that finishes the course faster without losing the ball wins.

4. *The flight of the bench*: 4 performers at a gym bench, sitting sideways to it. At the signal, the executors grab the edge of the bench, lift it above their heads and place it on the other side, returning to their feet. Performers step over the bench and repeat the exercise 5 times.

The team that finishes faster wins.

In addition to these means, in the experimental class I insisted on the acrobatic elements provided in the curriculum for the fifth grade. I mainly used exercises to develop mobility and strength in the joints and muscles involved in performing these acrobatic elements.

Ground exercise for 5th grade

Initial position: Sitting

Raising the arms up, step added forward with the arms lowered, pirouette, squatting, rolling forward from squatting to squatting, turning 180 °, rolling forward from distance to distance, rope forward with the support of the palms on the ground, crossing the leg back, forward, lying on the back, lower bridge, returning to lying on the back, sitting on the shoulder blades, crossing the scales on one knee, jumping in a squat and lifting in the standing body wave forward.

Methods used :

a) observation method; **b)** experimental method; **c)** survey; **d)** test method; **e)** statistical – mathematical.

Results obtained

The experiment was performed at *the Vasile Goldiș National College Arad* for an interval of 6 months between January 15, 2019 and July 15, 2019. The classes subjected to the experiment were from the 5th A and 5th C classes from the above mentioned unit, 48 female students and boys between the ages of 11 and 12.

The 5th A class comprises 23 students, of which 13 girls and 10 boys, and the 5th C class comprises 25 students, of which 14 girls and 11 boys. Both classes were subjected to the same group of tests at both the initial determination at the beginning of the experiment and the final one. The experiment consisted in applying a set of exercises to the experimental group, ie to class V A, different from the one applied to the control group, class V C.

In the experimental class, exercises and means specific to gymnastics were used. The tests were performed during physical education classes, in which students participated with appropriate equipment. The material base of the school consists of a gym with a rich and varied range of tools and working sports equipment; In the school yard there is a basketball court, a volleyball court, a sand pit, a running track.

Tests applied in the experiment

1. Shuttle; 2. Lumbar mobility; 3. The bridge; 4. Antero-posterior cord; 5. Long jump from the spot; 6. Trunk lifts from supine to sitting and back.

We also applied three complexes of exercises for the physical development of the body that we used in different periods of the experiment, their difficulty gradually increasing.

Table 1. Table representing the individual values recorded at the initial and final tests Experimental Class.

Nr. crt.	Initial name and sur-name	W	B	Shuttle		Lumbar Mobility		Bridge		Split A - P		Jump in length from the spot		Abdomen force	
				T.I.	T.F.	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.	T.I.	T.F.
1	A.T.		X	12,0	11,8	54,2	49,1	48,2	46,1	30	28	150	150	28	30
2	B.I.		X	12,1	11,7	56,1	54,1	50,3	38,2	30	32	158	160	30	30
3	C.A.		X	11,5	11,7	54,4	49,5	50,1	48,3	30	30	175	175	26	25
4	C.D.	X		11,7	11,6	53,6	48,9	48,4	42,2	22	22	160	160	16	14
5	C.T.	X		11,2	11,4	56,1	52,4	48,3	42,1	23	20	154	152	16	16
6	D.A.	X		12,2	12,1	60,2	58,5	54,5	42,4	32	33	154	156	20	18
7	I.T.	X		12,5	12,5	42,7	41,8	54,6	43,3	30	30	152	150	20	20
8	K.D.		X	11,5	11,3	49,9	42,7	48,4	40,5	30	34	170	167	24	26
9	N.E.		X	11,4	11,3	58,6	46,9	50,3	42,2	42	40	168	170	28	28
10	N.L.	X		12,1	12,3	50,5	49,6	42,2	40,1	24	24	158	160	25	25
11	O.B.	X		11,5	11,4	55,4	54,1	45,1	35,3	38	36	172	170	30	30
12	O.L.	X		11,3	11,2	62,1	60,1	50,2	48,2	20	20	158	158	28	20
13	P.F.	X		12,2	12,0	66,7	55,3	32,3	32,1	14	14	163	160	26	28
14	P.S.		X	11,6	11,6	50,6	48,1	45,4	44,4	18	20	154	150	30	26
15	R.A.	X		11,8	11,7	53,5	52,2	48,5	40,5	12	8	155	153	20	18
16	R.T.		X	11,6	11,3	54,3	44,6	48,1	38,2	20	28	170	168	24	26
17	S.I.	X		11,6	11,4	54,6	52,1	38,2	40,3	8	4	156	160	14	16
18	S.T.		X	12	12,5	48,6	48,2	50,2	42,1	20	24	170	170	22	24
19	T.D.	X		11,4	12,2	56,1	52,2	48,4	38,4	14	12	150	162	18	20
20	T.G.	X		12,3	12,5	52,2	48,5	50,3	46,3	16	10	155	156	20	18
21	U.D.	X		11,4	11,2	54,4	51,6	52,2	42,2	25	24	165	160	22	20
22	V.O.	X		12,8	12,2	55,6	50,7	38,1	40,1	26	20	148	150	20	20
23	V.D.		X	12,3	12,0	58,3	50,1	48,5	46,2	30	30	158	160	28	28
		X		11,96	11,69	49,3	55,43	46	43	17,6	14,8	163	169	21	22
	Am			0,009	0,001	0,004	0,004	0,08	0,04	0,008	0,06	0,08	0,34	0,03	0,03
	S			0,64	0,64	8	5,6	10,4	11,2	9,4	9,5	8,7	5,5	4,2	4,4
	CV			5,35	4,27	16,22	10,1	22,6	26	53,4	64,1	5,3	3,2	19,9	19,6

Table 2. Table representing the individual values recorded at the initial and final tests at the control class.

Nr. crt.	Initial name and surname	W	B	Shuttle		Lumbar Mobility		Bridge		Split A-P		Jump in length from the spot		Abdomen force	
				T.J.	T.F.	T.J.	T.F.	T.J.	T.F.	T.J.	T.F.	T.J.	T.F.	T.J.	T.F.
1	A.R.		X	12,2	11,5	50,1	50,2	50,1	50,2	20	18	160	170	18	20
2	A.V.		X	12,1	11,8	50,3	54,3	60,2	58,3	20	22	178	180	20	24
3	C.F.		X	12,5	12,2	54,4	54,3	60,3	58,4	23	10	175	185	26	27
4	C.L.	X		12,8	14,8	50,1	58,1	48,2	42,2	16	12	160	170	17	18
5	C.Ş.	X		12,2	14,4	52,6	52,6	48,4	48,1	13	10	164	167	16	16
6	I.A.	X		12,2	14,2	60,2	58,5	64,3	62,2	22	13	164	167	20	21
7	I.D.	X		14,5	13,5	42,1	46,4	64,5	60,3	20	10	152	157	21	22
8	L.D.		X	12,5	12,3	40,6	42,3	58,5	60,1	20	14	170	173	22	23
9	M.D.		X	12,4	12,3	48,3	46,2	60,4	62,4	12	10	168	170	23	24
10	M.L.	X		13,0	13,3	50,2	52,3	62,4	60,3	14	14	155	162	22	25
11	O.P.		X	13,5	12,4	50,6	54,4	65,3	65,2	18	16	174	171	24	25
12	O.R.	X		11,4	13,2	62,2	60,5	50,4	48,5	10	10	155	158	18	20
13	P.E.	X		14,2	12,8	66,4	70,4	32,6	36,3	14	14	167	167	23	24
14	P.J.		X	12,6	12,6	50,5	48,3	45,7	44,2	18	20	158	159	20	26
15	R.E.	X		12,8	12,7	50,2	52,1	48,4	50,0	12	8	156	158	20	22
16	R.F.		X	12,6	12,8	54,5	54,8	48,3	48,12	20	28	170	178	22	23
17	S.D.	X		12,6	12,4	54,7	56,5	38,5	40,4	8	4	159	160	14	16
18	S.H.		X	12,1	13,5	48,4	48,6	50,6	52,6	20	14	170	173	22	23
19	Ş.D.	X		13,4	13,2	56,2	56,3	48,2	48,7	14	12	160	162	18	19
20	Ş.G.	X		14,2	14,5	52,1	58,5	50,1	46,2	16	10	165	167	20	21
21	T.D.		X	13,4	13,2	54,4	52,2	52,5	52,1	25	14	165	165	21	24
22	T.O.	X		13,8	13,2	58,3	58,1	38,4	40,3	16	20	158	159	20	23
23	T.D.		X	12,5	12,5	58,2	56,7	48,6	46,2	10	20	168	169	21	23
24	U.G.	X		13,2	13,3	66,1	64,4	44,3	38,5	16	12	150	1502	20	24
25	V.C.	X		13,8	14,4	58,7	60,9	40,2	40,3	20	14	160	154	21	26
		X		13,03	12,88	53,28	54,32	50,8	50,1	23,6	23	158	159	23	23
	Am			0,015	0,016	0,1	0	0	0,4	0,008	0	0,92	0,24	0	0,02
	S			0,85	0,78	6,32	6,04	8,9	9,3	8,2	9,2	7,8	7,3	4,6	4,8
	CV			6,52	6,05	11,86	11,1	17,5	18,5	34,7	40	4,9	4,5	19,6	20,7

Conclusions

After the presentation and interpretation of the research results it can be stated that the type of lesson in which specific means of gymnastics are used, in this case the experimental class a V-a A within *the Vasile Goldiș National College Arad* has achieved its goal, achieving a development of motor qualities, a much better physical training than in the control class.

The means of gymnastics, used intensively in physical education classes, along with traditional means, increase students' attendance, increase their attractiveness, create a motivational framework conducive to the conscious and active participation of students, greatly contributing to increasing the effectiveness of lessons.

Throughout the work program we aimed to use the specific means of gymnastics with special emphasis on the development of motor skills. The statistical indicators obtained, especially the arithmetic means, indicate an ascending evolution confirming the initial hypothesis, according to which the gymnastics means used in the lessons contribute to the development of morpho-functional indices and to an achievement with an obvious progress in the development of motor qualities. Following the experiment, I noticed, in the experimental class, that the physical education lessons became more attractive, engaging and enjoyable for the students.

Given the results obtained, we recommend physical education teachers in primary and secondary school to introduce in their lessons as many exercises and games specific to gymnastics both for the harmonious physical development of students and for maintaining their health and mental relaxation they need during school. In this way the physical education lessons do not seem to be boring, they become pleasant, attractive.

These data showed us clearly that, after using the exercises and games specific to gymnastics, we obtained good results and an obvious progress in terms of motor skills in students and it is also a sure way to achieve the goals of normal growth and harmonious physical development. the students.

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