

# Improving the technical training of female athletes 10–11 years in rhythmic gymnastics in exercises with clubs

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**Purpose:** to prove the expediency of using training combinations to increase the level of knowledge of young athletes with basic skills in exercises with clubs.

**Material & Methods:** study was attended by nine athletes of 10–11 years old who train at the Children's and Youth Sports School of Rhythmic Gymnastics in the training group of the 2nd year of study. Using the method of expert evaluation and video analysis, the level of technical preparedness of athletes in the exercises with clubs and discounts for the technique of the subject in competitions was determined.

**Results:** training combinations with clubs were developed, which consisted of exercises involving the combination of various technical work with the subject and body work with difficulty, as well as elements and connections from competitive programs.

**Conclusion:** as a result of the introduction of training combinations, the discounts on the components of the equipment used by the object at competitions decreased: for performing "mills" – from 1,7 to 1,0 points; when making small throws and catching clubs – from 3,8 points to 2,7 points; in non-fundamental (non-specific) work – from 2,5 points to 1,7 points.

**Keywords:** gymnastics, clubs, exercise combinations, discounts, competitions.

## Introduction

Currently, in rhythmic gymnastics, the complications of competitive compositions of athletes [14] continue, which is largely due to the expansion of the gymnast's interaction with the subject and emphasizes the specifics of the sport [8]. Specialists in rhythmic gymnastics point to the original combination of work with an item with elements, dance tracks, at transitions from one element to another [3; 13].

Modern technology of training athletes in rhythmic gymnastics is based on the results of scientific research and has a scientific and methodological rationale [1; 6; 10, 16]. Specialists have developed a technique for consistent training of gymnasts with complex coordination actions with objects [2; 9]. The work of N. A. Andreev [3] is devoted to the study of the specifics of athletes performing exercises with objects; V. V. Bayer [4]; N. V. Bochkarnikova, A. V. Gaskova, E. I. Ovchinnikova [5]; A. Ya. Mullagildina [12].

The high complexity of competitive exercises in rhythmic gymnastics determines the search for effective pedagogical approaches to the process of improving the technical training of athletes in exercises with objects [3; 7]. The traditional way of successive mastery of a number of elements, accelerated in which movements are combined without a subject and with a subject, cannot provide the necessary basis for the creation of modern programs [8; 11].

The essence of the proposed method is programming the improvement of the basic elements, using the most appropriate number of connection options, creating the necessary stock of technical readiness and conditions ensuring the reliability of the performance of competitive compositions.

**Purpose:** to prove the expediency of using training combinations to increase the level of knowledge of young athletes with basic skills in exercises with clubs.

**Objectives of the study:** 1) to develop training combinations to increase the level of basic skills in exercises with gymnasts 10–11 years old; 2) determine the effect of the use of training combinations with clubs on the competitive outcome of young athletes.

## Material and Methods of the research

The study was attended by nine athletes of 10–11 years old who train at the Children's and Youth Sports School of Rhythmic Gymnastics in the training group of the 2nd year of study. Using the method of expert evaluation and video analysis, the level of technical preparedness of athletes in exercises with clubs and discounts for the technique of the subject at competitions was determined.

## Results of the research

According to the generally accepted scheme of building lessons with clubs and the results of an earlier analysis [13] of an analysis of the level of fitness of gymnasts, a set of exercises with clubs 40 minutes in duration was developed. The exercises were aimed at the correct formulation of the hand and the differentiation of muscular efforts with successive small shots, at the correct formulation of the hand on the issues of the clubs, at consolidating the experience of working with a brush in different planes when performing "mills". The ability to differentiate muscular effort without visual control, the static dynamical stability of gymnasts, and the coordination of work of the body and the subject, and the combination of

asymmetric work with maces are improved. The following exercises with clubs were developed (Table 1).

It should be noted that when performing consecutive small throws of both clubs per 1 turn at an increasing pace, the correct formulation of the hand, the differentiation of muscular efforts, and the preservation of the rhythm of the ejection of the clubs were worked out. Four counts were thrown at the same speed, then backing up with an increase in the rotation speed of the mace. When making small throws right and left hands for 2 turns practiced the skill of a slight increase in muscle effort without an increase in the rate of movement. The correct setting of the hand on the issues of the maces was also worked out: a throw with a straight hand with a fixation on the release.

When performing "mills" in different planes and with a change in direction, the skill of working the brush in different planes was improved (also the rotation of the mace through the thumb). "Mills" was accompanied by a preparatory exercise: "interfere with the porridge", in which the ball of the clubs should rotate freely in the closed palm. When performing throws of one mace over the shoulder with his right and left hand, the skill of differentiating muscular efforts was improved without visual control. When making throws of both clubs from the shoulder with rotation in the horizontal plane, the right and left hands worked out the skill of making the throw by straightening the hand and rotating the object with the help of a hand. When performing "mills" in the rotation of 180° by stepping in different planes and in different directions, the combination of working with a brush in different planes was practiced.

With the content of one club over the other right and left hand with a rotation of 360° in both directions, the static-dynamic stability of the gymnast's body was improved. In side flips on one hand with the content of one mace over the other, the static-dynamic stability of the body was improved when exposed to the vestibular apparatus and the coordination of the body and the object. When performing various circles in different planes, skills of complex asymmetric movements of the body and the subject were acquired. When "juggling" athletes

acquired the skills of rhythmic movements during the ejection of clubs, acquired the ability to quickly respond to a moving object.

When performing large shots, gymnasts perfected the accuracy of muscular effort and spatial coordination when releasing the object up and forward. When performing large shots of one club with the right hand, with the transfer of another club from the left hand to the right, followed by the fishing mace left arm behind him, the gymnasts trained a combination of different work with the right and left hand.

At each training session, gymnasts, as instructed by the trainer, conducted a warm-up at an intense, fast pace, thereby reducing it. Thanks to this, 15 minutes were released for additional work with clubs. Systematic performance of exercises with clubs allowed to adjust the technique and increase the reliability of performing basic exercises with clubs. A weighty advantage in conducting lessons on subjects was the regulated number of repetitions with a high intensity of work of the whole group. Depending on the period of preparation, the duration of the lesson varied from 15 to 45 minutes. Movement was performed in both directions, with the right and left hand. The number of repetitions was multiple or even with a predominance of elements for non-dominant hands. In some cases, the exercise began with the left hand. In the beginning, exercises were performed with an object with minimal body movement, then a combination of body and object movements took place.

Considering that gymnasts train at the stage of preliminary basic training, special attention was paid to mastering training combinations. The basic principle of developing such combinations was to concentrate the basic elements and the main components of the technical actions necessary for the successful mastering of more and more complex exercises of the main structural groups. Training combinations were the foundation for individual competition programs, which is especially important for rhythmic gymnastics, since athletes must demonstrate in their programs not individual elements, but the so-called "blocks" of difficulty elements. Such "blocks"

**Table 1**  
**Training exercises with clubs**

Exercises	Dosage
1. Alternate small flips of both clubs (1 turn). Pace - increasing	30 times
2. Small throws with the right hand (2 turns). Same left	20 times
3. "Mill" in the horizontal plane to the right and left; "Mill" in the frontal plane (behind the head) to the right and left; "Mill" in the vertical plane back and forth	1 min for every "mill"
4. Throwing one club over the shoulder with the right and left hand	20 times
5. Throw both clubs from the shoulder with rotation in the horizontal plane with the right and left hand	10 times
6. "Mills": a mill in a vertical plane with the rotation of the clubs on themselves; mill in the frontal plane (behind the head) mill in a vertical plane with the rotation of the clubs forward and overturning to the semi-toes by 180°	10 times
7. Hold one club over the other right and left hand with a 360° rotation by stepping.	5 times in both directions
8. Coupling sideways on one hand with the content of one club over the other	10 times
9. S.P. – left hand forward, right to the side: small circles with the clubs forward in the lateral plane, small circles in the horizontal plane above the arm and under the arm	1 min with a change in the position of the hands
10. "Juggling": sequential release of both clubs with one hand	1 min right and left hand
11. Big throws of clubs from right and left hands	20 times
12. Large throw of one club with the right hand, transfer of the other mace from the left hand to the right, followed by catching the mace with the left hand behind the back	10 times each hand

were developed in order to form skills for combining elements of the same or different structural groups of exercises without an object and with objects. The "blocks" of such elements of difficulty were combined into training combinations.

Three training combinations with clubs were developed, which consisted of exercises involving the combination of various technical work with the subject and the work of the body, as well as elements and communication with the competition programs. The training combinations included the implementation of an unstable balance, the contents of one mace of another. Combined elements of the body's difficulty with the work of the subject. Included were elements of the difficulty of the item worth 0,3 points, where such criteria were combined without hands, visual control and rotation. Included elements of the difficulty of the item in value of 0,4 points, where the object was trapped under the above conditions from medium and high throws [4; 5; 9; 15]. The training combinations included from four to six consecutive exercises. Each of the following combinations was distinguished by an increase in the technical complexity of the exercises (Table 2).

Training combinations were applied at each training session, with dosage as it was learned 10–15 times. In the future, 2–3 times in each training session. The combinations were made in accordance with the requirements for the indivisibility and dynamic implementation of the elements in the competition have the right. The end of the previous exercise served as the starting position for the next one. The movements were selected in a logical sequence, the dynamism of which consisted in increasing the amplitude of movements of the gymnast's body, changing the angles, levels, amplitude of movements on the platform, increasing the speed of movements of the links of the gymnast's body and the subject.

When comparing the average test results at the beginning and at the end of the pedagogical experiment, it was determined that for all nine tests in exercises with clubs there were positive changes: from 0,8 points to 1,2 points (Table 3).

The most significant improvements occurred when performing the unstable balance of the subject (by 1,2 points) and asymmetric motions in the maces on the dance track, with the domination of the right-handed hand (by 1,1 points), with the execution of "mills" in turn by 180 degrees (by 1,1 point). The results in juggling with the right and left hand (by 0,8 points) have not improved sufficiently. Under the influence of the experimental technique, there were positive shifts in the technique of performing small transfers and "risks", but these improvements are not sufficient.

The objective indicator of the quality of educational work is the competition. An analysis of videotapes of gymnasts' performances in exercises with maces in competitions was conducted to detect errors in the technique of work by the subject. Figure 1 shows the comparative results of the discounts for the technique of work by the subject at the beginning and at the end of the academic year after the application of the experimental method. It should be noted that the sum of all discounts at competitions at the end of the school year was 15,4 points, which is considerably less than at the beginning of the year – 24 points (Figure 1) [13].

It was determined that all components of the technique of work on the subject were positive changes. The highest number of discounts, as before, was observed when performing "skill" (4,3 points) and "risks" (4,1 points). The athletes confirmed sufficient basic skills in the execution of small circles of maces (0,5 points), significantly improved the quality of the "mills", the discounts for which decreased from 1,7 points to 1,0 points. Athletes had problems when performing small throws and catching bulls, discounts decreased from 3,8 points to 2,7 points. In non-fundamental (nonspecific) work discounts have decreased from 2,5 points to 1,7 points (Figure 1).

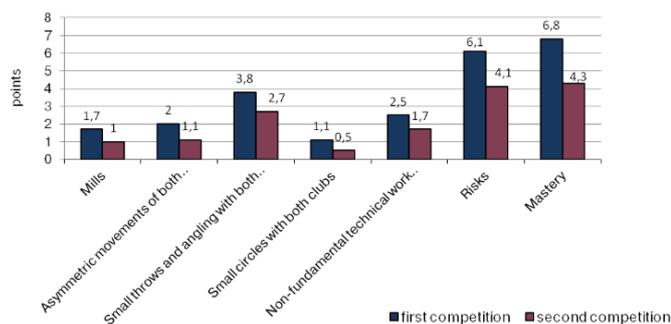
In the context of the study, the assessment of the brigade E (max – 10,0 points) was considered, namely, discounts for the technique of work by the subject [14]. The assessment

**Table 2**  
**Training combinations with clubs**

Combination No.	Content
1 combination – 20 s	small unlike circles with clubs in two small jumps on the right and left foot; asymmetrical movement of the clubs in the balance in the "pass" of the right: right hand to the side - small circles above the hand, at hand in the horizontal plane; left hand down – small circles back; rotate in a 360° "ring" with the contents of one mace on the inside of the hand; a high parallel throw of both clubs, two "Shens", catching in both hands.
2 combination – 35 s	360° rotation in "attitude" with tapping with maces over the head on the jump, "touching, bending with the push of two", a throw from the shoulder of both clubs in a horizontal plane, catching in both hands 360° rotation in "attitude" with tapping with maces over the head 2 jump touching the "ring", big circles of maces in the side plane back; semicircular mill; big throw of one club, "goat" on 360° with transfer of mace, catching behind.
3 combination – 40 s	equilibrium in the front twine with a twist was one turn in different sides; reverse wave with "ingot"; side swing on one hand with the contents of one club over another release of the right clubs on the side step in the jump, catching the mace on the jump "Jett Anthurnan" touching; going backwards in half-toes with opposite circles (in front of a large facial circle, behind the head – medium) – 4 steps; throwing the clubs with the right hand under the shoulders, catching on the floor with a mace (pressing the clubs to the floor with another clubs).

**Table 3**  
**Changes in test results when performing basic clubs exercises**

Test	Results, scores (max – 10 points)		
	Initial (X <sub>1</sub> )	Repeat (X <sub>2</sub> )	Difference (X <sub>1</sub> –X <sub>2</sub> )
1. Small opposite circles with two clubs in the lateral plane (right hand back)	7,2	8,2	1,0
2. Small opposite circles with two clubs in the lateral plane (right hand forward)	7,0	7,9	0,9
3. The content of two clubs on the neck and shoulders in horizontal equilibrium on the half-toes	6,1	7,3	1,2
4. Right hand big circle back, left – small circles in the horizontal plane above the hand and at hand, moving forward in a dance step	6,7	7,8	1,1
5. With the left hand a large circle back, with the right hand - small circles in the horizontal plane above the arm and under the arm moving along a dance step forward	6,2	7,2	1,0
6. "Mills" in 180° turnaround	6,3	7,4	1,1
7. "Juggling": alternately throwing both clubs with the right hand four times with catching in both hands	5,3	6,1	0,8
8. "Juggling": alternately throwing two clubs with his left hands four times with catching in both hands	3,5	4,3	0,8
9. Big throw of both clubs, two spins with advancement (shene), catching in both hands	4,6	5,6	1,0



**Figure 1. Dynamics of discounts in the subject matter technique at competitions at the beginning and at the end of the school year**

of the competitive exercise with the maces was calculated by both teams of judges and entered into the protocol of the competitions (Table 4).

According to the results of the analysis performed, it is safe to say that the individual results of gymnasts in a competitive exercise with clubs are inversely proportional to the amount of discounts received for the technique of the subject. So, the best result for a gymnast under the number 2 is 10,75 points, and in her the same amount of discounts for the technique of working with the subject is 0,6 points. The greatest amount of discounts for the technique of work with the subject is – 3,8 points for a gymnast at number 7, and in her the last result is 6,65 points and the same relationship in other athletes (Table 4).

Thus, the essential role of the number of discounts for the technique of the subject in the final assessments of gymnasts in competitions was determined. A comparative analysis of the performances of gymnasts in competitions at the beginning and at the end of the school year can be concluded that

after applying the experimental methodology in gymnasts the technique of performing basic exercises with clubs has significantly improved.

## Conclusions / Discussion

The results of the studies completed are supplemented by the theoretical positions formulated in the papers by I. A. Wiener [6] and L. A. Karpenko [10], who note that the important precondition for technical training in exercises with subjects is the development of specific coordination abilities of gymnasts [7; 12], the means of development of which experts include competitive and special training exercises [4].

We also agree with the statement of specialists [2; 10] that transfer of difficult coordination from one exercise to another is very slight. In connection with this, training combinations were developed with clubs to connect various technical work with the subject and with difficulty of body work, as well as with elements and connections from the competitive programs of gymnasts.

The conclusions of A. Sumenkov, I. Nakonechnaya, A. Rudenko [15], A. Ya. Mullagildina, I. V. Krasova [13] and other scientists are confirmed, the insufficient level of relatively simple, but basic actions with objects is one of the reasons many technical mistakes made by gymnasts in competitions.

Thus, the results of the study showed the effectiveness of the use of training combinations to increase the level of basic skills of young athletes in exercises with clubs. The data we have cited is confirmed by a decrease in discounts for components of the equipment used as a subject at competitions: for performing "mills" from 1,7 points to 1,0 points; when making small throws and catching clubs – from 3,8 points to 2,7 points; in non-fundamental (non-specific) work – from 2,5 points to 1,7 points. Gymnasts have confirmed sufficient ba-

**Table 4**  
**Results of gymnasts in the exercise with clubs in competitions**

Components of competitive exercise evaluation	Discounts, points								∑ discounts
	Female athletes:								
	1	2	3	4	5	6	7	8	
Mills	0,1	0	0	0,4	0	0,1	0,3	0,1	1
Asymmetric movements of both clubs	0,1	0	0	0,2	0	0,1	0,4	0,1	1,1
Small throws and angling with both clubs	0,1	0,3	0,3	0,2	0,4	0,4	0,6	0,1	2,7
Small circles with both clubs	0	0	0	0	0	0	0,3	0	0,5
Non-fundamental technical work subject	0,1	0	0,2	0,2	0,2	0,3	0,4	0,1	1,7
Risks	0,3	0	0,3	0,8	0,5	0,5	1,0	0,3	4,1
Mastery	0,3	0,3	0,5	0,6	0,7	0,6	0,8	0,3	4,3
The amount of discounts for the technique of the subject	1	0,6	1,3	2,4	1,8	2	3,8	2,5	15,4
Score from competitive exercise with clubs, points (max – 15 points)	9,75	10,8	9,15	8,2	8,95	8,85	6,65	9,75	8,79

skills in performing small circles with clubs and asymmetric movements of clubs, but the athletes still have problems in performing elements of risk and skill.

Prospects for further research. It is planned to determine the main directions of improving the technical training of athletes in other forms of all-around.

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## References

- Adashevskiy, V.M., Adashevskiy, V.M., Ermakov, S.S. & Lohvynenko, E.Y. (2014), "Individual biomechanical features of the interaction of athletes with objects in rhythmic gymnastics", *Pedahohika, psikhologhiia ta medyko-biologichni problemy fizychnoho vykhovannia i sportu*, No. 6, pp. 3-10. (in Russ.)
- Andrieieva, R.I. (2011), *Tekhnologhiia navchannia tekhniki vprav z obruchem na osnovi spetsialnoi fizychnoi pidhotovky yunykhn himnastok: atoref. dys. k. n. z fiz. vykhovannia i sportu* [Technology of training exercises with hoops on the basis of special physical training of young gymnasts: PhD thesis abstract], KhSAPC, Kharkiv, 21 p. (in Ukr.)
- Andreeva, N.O. (2014), "The Importance of Individual Components of the Subject Training of Gymnasts According to the Questioning of Coaches of Different Qualifications", *Pedahohika, psikhologhiia ta medyko-biologichni problemy fizychnoho vykhovannia i sportu*, No. 9, pp. 3-10. (in Russ.)
- Bayer, V.V. & Mullagildina, A.Ya. (2004), "Drawing up training combinations for various types of coordination abilities at the stage of preliminary basic training in rhythmic gymnastics (for example, exercises with clubs)", *Fizicheskoe vospitanie studentov tvorcheskikh spetsialnostey*, No. 2, pp. 31-34. (in Russ.)
- Bochkarnikova, N.V., Gaskov, A.V. & Ovchinnikova, Ye.I. (2018), "Development of the skill of subject manipulation in rhythmic gymnastics", *Problemy sovremennogo pedagogicheskogo obrazovaniya*, No. 59-3, pp. 113-118.
- Viner-Usmanova, I.A. (2013), *Integralnaya podgotovka v khudozhestvennoy gimnastike: avtooref. dis. d-ra ped. nauk* [Integral training in rhythmic gymnastics: DS thesis abstract], Sankt-Peterburg, 40 p. (in Russ.)
- Zaytsev, A.A. & Rozhkova, L.V. (2011), "Pedagogical and psycho-physiological aspects of technical training with subjects in rhythmic gymnastics", *Vestnik Baltiyskogo federalnogo universiteta im. I. Kanta. Seriya: Filologiya, pedagogika, psikhologiya*, No. 11, pp. 6-7. (in Russ.)
- Zayachuk, T.V., Shamgullina, G.R. & Romanchenko, O.A. (2016), "Trends in the development of rhythmic gymnastics at the present stage", *Wschodnioeuropejskie Czasopismo Naukowe (East European Scientific Journal). Naukiprzyrodcze*, No. 6, pp. 47-52. (in Russ.)
- Lisitskaya, T.S. & Novikova, L.A. (2017), "Training of complex throwing elements in rhythmic gymnastics", *Fundamentalnye i prikladnye issledovaniya fizicheskoy kultury, sporta: traditsii i innovatsii. Materialy I Vserossiyskoy nauchno-prakticheskoy konferentsii*, Moscow, pp. 485-493. (in Russ.)
- Karpenko, L.A. (2011), *Teoriya i metodika obucheniya upravleniyam s predmetami v khudozhestvennoy gimnastike: Uchebno-metodicheskoe posobie* [Theory and methods of teaching exercises with objects in rhythmic gymnastics], Belgorod. (in Russ.)
- Medvedeva, Ye.N. & Suprun, A.A. (2010), "Pedagogical innovations as a condition for improving the process of technical training in rhythmic gymnastics", *Obrazovanie cherez vsyu zhizn: nepreryvnoe obrazovanie v interesakh ustoychivogo razvitiya*, No. 8, pp. 606-610. (in Russ.)
- Mullagildina, A. (2017), "The Impact of Sensomotor Coordination on the Technical Preparedness of Young Female Athletes in Artistic Gymnastics", *Slobozhans'kij naukovno-sportivnij visnik*, No. 2(58), pp. 62-66, doi:10.15391/sns.v.2017-2.011. (in Russ.)
- Mullahyldina, A.Ya. & Krasova, I.V. (2018), "Tekhnichna pidhotovka sportsmenok 10-11 rokov v khudozhnii himnastytsi u vpravakh z bu-lavamy", *Naukovyi chasopys Natsionalnogo pedahohichnogo universytetu imeni M. P. Drahomanova. Seriya №15, Naukovo-pedahohichni problemy fizychnoi kultury (fizychna kultura i sport)*, Vypusk 4 (98) 18, pp. 114-118. (in Ukr.)
- FIG (2017), 2017–2020. Code of points. Rhythmic Gymnastics, available at: [http://www.fig-gymnastics.com/publicdir/rules/files/rg/RG\\_CoP%202017-2020\\_updated%20with%20Errata\\_February%202017\\_e.pdf](http://www.fig-gymnastics.com/publicdir/rules/files/rg/RG_CoP%202017-2020_updated%20with%20Errata_February%202017_e.pdf).
- Sumenkova, A., Nakonechnaya, I. & Rudenko, A. (2012), "Kinematic analysis of the technique of making mills with clubs of highly skilled gymnasts in competitive compositions of rhythmic gymnastics", *Molodizhnyi naukoviy visnik Skhidnoyevropeyskogo natsionalnogo universitetu imeni Lesi Ukrainki*, No. 8, pp. 133-136. (in Russ.)
- Terekhina, R.N. & Viner, I.A. (2006), "Integral training in rhythmic gymnastics", *Teoriya i praktika fizicheskoy kultury*, No. 10, pp. 28-29. (in Russ.)

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