SLOBOZHANSKYI HERALD OF SCIENCE AND SPORT

UDK [796.4:796.015.82]-053.5

ISSN (English ed. Online) 2311-6374
2020, Vol. 8 No. 1, pp. 54-58

Selection of female athletes 10–11 years old in group exercises in rhythmic gymnastics

Alla Mullagildina[1]
Inna Krasova[1]
Nadiia Avdasova[2]

[1]*Kharkiv State Academy of Physical Culture, Kharkiv, Ukraine*
[2]*Karazin Kharkiv National University, Kharkiv, Ukraine*

Purpose: *to identify effective directions for the selection of athletes 10–11 years old in group exercises in rhythmic gymnastics.*

Material & Methods: *ten athletes of 10–11 years old, who train at the Children's Sport School in rhythmic gymnastics in Kharkov, took part in the study. Using sixteen generally accepted tests for rhythmic gymnastics, the level of development of flexibility, strength, speed, jumping ability, balance, coordination and endurance of athletes was monitored. The level of technical preparedness was determined in nine tests to fulfill the difficulties of the body in each group of elements: jumping, rotation, balance.*

Results: *gymnasts showed a high level in the tests: "forearm bridge" – (–18 cm), angle retention (65,7 s), double jumps (110,6 times). The average level was shown in the tests: "right twine" (59,7 cm), "raising legs in the hang" (13 times), "leaning to the side" (1,1 min), "lifting the body" (10,8 times), "Lifting the torso back" (11,8 times), "pass on the left" (62,6 s), "juggling the right" (22 times). The female athlet made the least mistakes in the tests: "forward balance" (0,2 points), in the jump "step into the ring" (0,9 points), rotation "in the ring" (1,0 points). The gymnasts demonstrated an average level in the technique of working with the body with a deduction of 1,2 points in the tests "Jet Boucle," "Jet Anturnan", "90° rotation with the foot forward".*

Conclusions: *the selection of athletes for the acquisition of a team for group exercises in rhythmic gymnastics was carried out according to the results of technical and physical preparedness; six gymnasts were selected, who showed a high and medium level of testing of motor qualities and body work techniques.*

Keywords: *selection, artistic gymnastics, group exercises, body work, preparedness.*

Introduction

Group exercises represent an independent Olympic type of rhythmic gymnastics, where five gymnasts are in a single system of interactions [2]. The results of competitive activity in this sport depends on the teamwork, the compliance of all sides of preparedness, the state of the sports form of each gymnast [1; 6]. The rapid growth of sports achievements, early specialization in an individual program and group exercises makes it necessary to improve the training system of gymnasts [4; 7; 9].

Currently, the problem of improving the process of training gymnasts who specialize in group exercises is being diversely studied. The authors consider issues of technical training of athletes, which are associated with the need to perform joint technical actions [1]. Attention is paid to improving team performance due to a similar level of physical, technical and tactical fitness of gymnasts [3; 6; 8].

The dissertation by I. S. Sivash is devoted to the formation of specialization of young athletes based on the material of group exercises of rhythmic gymnastics at the stages of initial and preliminary basic training [4]. In the dissertation research V. Lenishin [2] substantiated the improvement of special training in group exercises of rhythmic gymnastics at the stage of specialized basic training. G.A. Topol [6] developed a comprehensive system for assessing the preparedness of qualified gymnasts, which is based on the identified leading factors and types of training that ensure the effectiveness of competitive activity in group exercises.

Studying the peculiarities of training athletes in group exercises in rhythmic gymnastics, the authors emphasize the relevance of improving the process of selecting gymnasts to perform group exercises based on identifying complex indicators of their special preparedness [3; 5; 6].

Purpose of the study: to identify effective directions in the selection of athletes 10–11 years old for group exercises in rhythmic gymnastics.

Objectives of the study: 1) determine the level of special physical preparedness of athletes; 2) determine the level of technics of work with the body.

Material and Methods of the research

The study involved ten athletes 10–11 years old, who train at a sports school in rhythmic gymnastics in Kharkov. Using sixteen generally accepted tests for rhythmic gymnastics, the level of development of flexibility, strength, speed, jumping ability, balance, coordination and endurance of athletes was monitored. The level of technical preparedness was determined by nine tests, the exercises of which included fulfilling the difficulties of the body in each group of elements: jumping, rotation, balance.

Results of the research

In athletes, the level of development of flexibility, strength, speed, jumping ability, balance, coordination and endurance was determined (Table 1).

To determine the flexibility in the vertebral column, athletes from a standing position performed the maximum tilt back with the advancement of the arms beyond the line of legs. The average value of the distance from the heels to the end of the third finger in the group – (–18 cm) corresponds to a high standard level. The amplitude of the twine with the support of

Table 1

Statistical indicators of the results of testing the level of development of physical qualities of female athletes

Female athletes	Average value (X)	Standard deviation (σ)	Coefficient of variation (V)	Average level standard	High level standard
Bridge stand, cm	–18	17,3	96	from 10 cm to –10 cm	(–11) and more
Twine right, cm	59,7	13,7	23	50–69	70 and more
Twine left, cm	28,6	14,2	49	50–69	70 and more
Transverse twine, cm	34,9	13,1	37	19–10	9 and less
Pike seat, s	65,7	19,8	30	28–58	59–90
Abdominal raise, the number of	13	4,44	34	11–15	16–20
Side bends, min	1,1	0,8	73	1–2	2–3
Front handspring, s	1,2	0,37	31	1,0–1,1	0,6–0,9
Torso lifting, the number of	10,8	0,78	7	11	12
Torso lifting back, the number of	11,8	2,5	21	13	14
Jump up, cm	44,4	6,9	15	45–54	55–60
“Passe” on the left, s	62,6	22	35	56–89	90 and more
“Passe” on the right, s	48,7	20	41	51–84	85 and more
Juggling the right, the number of	22,0	9,3	42	22–34	60–65
Juggling the left, the number of	7,9	4,1	52	10–15	20–25
Double jumps, the number of	110,6	32,4	29	75–100	101 and more

the right on the gymnastic wall – 59.7 cm corresponds to the average level, and with the support of the left – 28.6 cm, which is much worse than even the low level (49 cm or less). The gymnasts did very poorly in performing the transverse twine between two chairs 44 cm high, the average result was 34.9 cm (low level – 20 cm or more).

The strength of the abdominal muscles was determined by the time of holding the pike seat by an angle (legs together raised by 135°) and by the number of leg lifts in the hanging on the gymnastic wall for 20 s. The gymnasts coped with the first exercise at a high level with a result of 65.7 s, the second – on average with a result – 13 times. The strength of the lateral back muscles was determined by the time the body was held in an inclined position to the horizontal side with arms up to the castle. The result in this test – 1.1 min – corresponds to the average level.

The assessment of the development of speed in young gymnasts was determined by the time of the forward turn and by the number of torso lifts for 10 s. Average rates of speed development are low. So, the athletes performed a forward turn in 1.2 s (low: 1.2–1.3 s). The torso was raised by 60° from the supine position, hands behind the head into the “lock”, knees bent, feet fixed, average result 10.8 times (low level 10 times). Lifting the body back 60°, the gymnasts performed from the supine position, hands behind the head into the “lock”, the feet were fixed, the average result was 11.8 times (low level – 12 times). The average value of the height of the jump up (according to Abalakov) in the studied group of athletes is 44.4 cm, which corresponds to a low standard level (30–44 cm).

The degree of development of the equilibrium function was determined by maintaining the “pass” pose on the right and left foot. The gymnast maintained her balance by rising to the toe of the supporting leg, while the second leg was bent to touch the supporting leg at the level of the knee and set aside. The balance result on the left foot – 62,6 s corresponds to the average standard level, on the right foot – 48,7 s – to the low standard level (50 s or less).

The coordination abilities of athletes were determined by juggling with two clubs. The number of rolls in the first loss of the item was calculated. The number of throws with the leading right hand corresponds to the average standard level – 22 throws, with the leading left hand – to the low standard level – 7.9 throws (low level from 3 to 9 throws). Athletes showed high results in testing speed endurance, the number of jumps with a double circle of a rope for each jump, the average value in the group was 110.6 jumps.

Thus, it was determined that the gymnasts have well developed flexibility in the spinal column, but compared with the requirements of the sport, the mobility of prisoners in the hip joint is not enough. The strength of the muscles of the body meets the requirements of the sport. In tests for speed, gymnasts showed a low result. The average value of the height of the jump in the group also corresponds to a low level. Athletes are given better balance on their left foot than on their right foot. And the gymnasts perform juggling with clubs with their leading right hand much better than with their left. It should be noted that the coefficients of variation according to the test results are quite large; only two (7% and 15%) of them indicate homogeneity of the group.

The following table presents the individual results of testing the physical qualities of ten athletes (Table 2).

When selecting athletes for a team from group exercises, preference is given to gymnasts who have a high as well as an average level of special physical preparedness. The best results in the testing were shown by athletes under No. 4, 5 and 9. Athletes under No. 1, 6 and 8 also showed sufficient results. Other athletes (under No. 2, 3, 7, 10) were tested at a low level.

The next stage of the study was to identify the level of technical preparedness of gymnasts when performing body difficulties. Athletes performed three test tasks in each group of elements: jumping, rotation, balance. Evaluation was carried out in accordance with the rules of the competition in a group exercise. According to the rules of judging for techniques of working with the body, the maximum reduction is 0.5 points. To control the gymnasts, each exercise was performed from the right and left legs, and the best version was evaluated. The table below shows the individual reduction of athletes for each test, the sum of discounts of all gymnasts for each test and the sum of discounts of each gymnast for all tests (Table 3).

Three jumps were investigated: Jete Boucle, step in the ring, Jete Anturnan. To assess the gymnasts performed each jump in a row three times. Before each series of jumps, the gymnasts did the preparatory exercise "shose". Typical errors during all jumps were not enough repulsion, which resulted in a small amplitude of the jump, lack of fixation of the pose in flight, landing with an error (heavy landing). In almost all gymnasts, the amplitude of leg dilution was less than 180°.

According to the technology jump performance Jete Boucle the gymnast after rotation of 360° pushing off with

Table 2

Results of the testing of physical qualities of athletes

Test	Result									
Female athletes	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Bridge stand, cm	**–31**	10	0	**–32**	**–35**	**–20**	8	**–28**	**–31**	**–21**
Twine right, cm	**74**	*40*	52	**74**	**74**	60	*35*	60	65	63
Twine left, cm	52	*20*	*20*	52	*10*	*25*	*15*	*30*	*35*	*27*
Transverse twine, cm	18	*50*	*44*	12	*34*	*44*	*50*	*40*	*30*	*27*
Pike seat, s	58	50	**90**	**88**	**75**	**69**	*23*	**59**	**79**	**66**
Abdominal raise, the number of	12	*8*	14	**17**	**16**	**20**	*5*	13	15	*10*
Side bends, min	*0,49*	*0,44*	1	**2,3**	**2,01**	1, 50	*0,5*	1, 45	1, 57	1
Front handspring, s	1,0	*1,3*	1,1	**0,9**	1,1	1,0	*1,5*	*1,2*	**0,9**	1,0
Torso lifting, the number of	11	*10*	**12**	11	11	*10*	11	*10*	**12**	*10*
Torso lifting back, the number of	**14**	*7*	*10*	**14**	13	13	*8*	13	13	13
Jump up, cm	46	*36*	*40*	**55**	52	50	*34*	45	47	*39*
"Passe" on the left, s	*40*	*33*	57	**95**	78	60	*33*	66	85	79
"Passe" on the right, s	*32*	*27*	*48*	**85**	66	*43*	*20*	*42*	64	60
Juggling the right, the number of	22	*14*	*19*	30	31	*8*	*8*	28	33	26
Juggling the left, the number of	*7*	*5*	*4*	11	10	*4*	*2*	12	15	*9*
Double jumps, the number of	80	88	75	**170**	**150**	100	79	**110**	**124**	**130**
Levels	**Number of results by level**									
High	3	–	2	11	6	3	–	3	5	3
Average	9	3	7	5	8	7	3	8	9	7
Low	4	13	7	–	2	6	13	5	2	6

Remark. *Results that correspond to the high level are marked in bold, the results correspond to the low level in italics.*

Table 3

Reduction gymnasts when performing body work techniques

Test	Reduction when performing body work techniques, points										
Female athletes	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Σ**
"Jete the Boucle"	0	0,2	0,2	0	0	0,1	0,3	0	0,1	0,3	1,2
"Step into the ring" jump	0,1	0,2	0,1	0,1	0,1	0	0,1	0	0,1	0,1	**0,9**
"Jete Anturnan"	0	0,3	0	0	0,1	0,1	0,3	0,1	0	0,3	1,2
90 feet forward rotation	0,2	0,2	0,1	0,1	0,1	0	0,2	0	0,1	0,2	1,2
Rotation "into the ring"	0,1	0,4	0,1	0	0	0	0,3	0	0	0,3	**1,0**
Rotation "Panshe"	0	0,3	0,4	0	0	0,2	0,2	0,1	0,1	0,4	*1,7*
"Front" balance	0	0	0,1	0	0	0	0	0	0	0,1	**0,2**
"Lateral" balance	0	0,3	0,3	0	0,1	0,2	0,3	0,1	0	0,3	*1,6*
"Back" balance	0,1	0,4	0,1	0,1	0,1	0,1	0,4	0,3	0,3	0,1	*2,0*
Total reduction	**0,5**	*2,3*	*1,4*	**0,3**	**0,5**	0,7	*2,1*	0,6	0,7	*2,1*	

one foot, the toe of the bent leg of the second summing performed simultaneously perform a swing back. When performing the Jete Boucle jump, most gymnasts made the following mistakes: insufficient amplitude of the jump, lack of fixation of the pose in flight, legs apart less than 180°, bent fly leg. To perform the "step into the ring" jump, the gymnast, pushing with one foot, opened her legs 180°, while the second leg performed the "ring". During the "step in the ring" jump, there was an extra "swing" movement, the amplitude of leg extension was less than 180° and their opening was not simultaneous, the legs were not touching the head, and the back deflection in the last phase of the flight before landing. In the "Jet Anturnan" jump, which was performed with the legs split into twine after 180° rotation, the legs were less than 180° apart, the knees bent, and the "swing" movement was unnecessary.

The sportswomen performed three 360° rotations: with 90° feet forward, "into the ring", "Panshe". To assess the gymnasts, each rotation in a row was performed three times in a row. Typical errors of all calls were: insufficient amplitude of rotations, it was not fixed, that body shape was not retained, support on the heel, bouncing, extra steps at the end of rotation. When performing the rotation with the leg set forward 90°, it turned out that most gymnasts allowed resistance to the heel, did not always keep the leg 90° and the shape of the body at the end of the rotation. The rotation "into the ring", which the gymnasts performed with the swing of the legs back with its grip above the head, was better than the other rotations, but the gymnasts observed an irregular body shape with a slight deviation, bouncing without moving and with it. During the execution of the Panshe rotation (in which the legs open into twine, the body is held in a horizontal position or lower) the body shape was not fixed and the rotation was not contained and at the end of the rotation the gymnasts took extra steps, but all the rotations should end the legs together.

Three equilibria were studied: front, lateral, and back. To assess the gymnasts, each balance was performed three times with a content of 2 s. Typical errors of all equilibria were the fuzzy and non-fixed form of the body. The "front balance" (in which the body is tilted forward to the horizontal or lower), most gymnasts performed without obvious errors, but two athletes could not demonstrate the position of the twine. The "lateral balance" (the leg rises to the side of the splits, the torso parallel to the floor) turned out to be more difficult for the girls, the gymnasts made mistakes, namely, a fuzzy and unfixed body shape was observed. To perform the "back balance", the gymnast did a forward roll with the content of the position of the twine, the body tilted backward, her hands did not touch the floor. During the performance of the "back balance" the gymnasts made the most mistakes: the irregular shape of the body with medium and large deviation, loss of balance, extra steps at the end of the exercise.

Analyzing the number of discounts on tests, it can be noted that most of the mistakes were made when performing the "back balance", the total amount of discounts is 2.0 points. Also, a significant number of errors turned out to be during Panshe rotation (1.7 points) and when performing "lateral balance" (1.6 points). It should be noted that from each subgroup of body work: jumping, rotation, balance, you can identify the basic elements that gymnasts are at a sufficient level. Analyzing the number of discounts received by each gymnast, it can be argued that it was better for the athletes under No. 1, 4 and 5. The athletes under No. 6, 8 and 9 showed sufficient results. In other athletes (under No. 2, 3, 7, 10) a low result.

Thus, an analysis of the individual results of testing athletes found that according to the indicators of special physical fitness, the leading athletes were No. 4, 5, and 9, and the indicators of technical fitness were No. 1, 5, and 4. The athlete No. 1 took the fourth place in testing motor qualities , and when performing the body work technique, she shared the second place with the athlete under number 5. A low level of special physical and technical preparedness was determined in gymnasts under number 2, 3, 7, 10.

Conclusions / Discussion

The studies confirmed the information of V. Lenishin [2, 3] that for group exercises it is necessary to develop a special program on SPP, which reflects the specifics of training in this type of rhythmic gymnastics. The level of physical fitness of gymnasts in group exercises was determined using integrated control of the motor qualities of athletes. Gymnasts showed a high level in the tests: "bridge stand" – (–18 cm), angle holding (65.7 s), double jumps (110.6 times). The average level was shown in the tests: "right twine" (59.7 cm), "raising legs in the hang" (13 times), "leaning to the side" (1.1 min), "lifting the body" (10.8 times), "Lifting the torso back" (11.8 times), "passe on the left" (62.6 s), "juggling the right" (22 times). Recent tests showed a low level.

Most rhythmic gymnastics trainers put forward the criteria for the selection of athletes in group exercises in the first place the level of technical skill of athletes, in the second – the level of development of physical qualities [5; 6]. In the course of the work, information on the technique of working with the body of gymnasts 10–11 years old was supplemented. The female athletes made the least mistakes in the tests: "forward balance" (0.2 points), in the jump "by step in the ring" (0.9 points), rotation "in the ring" (1.0 points). The most mistakes were made in the tests: "back balance" (2.0 points), "Panshe" rotation (1.7 points), "lateral balance" (1.6 points). The gymnasts demonstrated an average level in the technique of working with the body at a discount of 1.2 points in the tests "Jete Boucle", "Jete Anturnan" "rotation with the foot forward 90".

Due to the fact that this age of gymnasts is the main stage in the formation of a reserve of national teams with subsequent orientation towards individual and group exercises, the need to control the individual motor potential of gymnasts increases, and the most important selection criteria for group exercises are the level of development of physical qualities and the degree of technical skill of athletes [4]. The selection of athletes to recruit the team from group exercises in rhythmic gymnastics was carried out according to the results of the revealed level of their technical and physical preparedness. To prepare group exercises, six gymnasts were selected, who showed a high and average level of testing of motor qualities and body work techniques. The last four gymnasts showed low results.

Prospects for further research in this direction include the identification of the level of technical readiness of work with objects, as well as the compatibility of gymnasts for team formation.

Conflict of interests. The authors declare that no conflict of interest.
Financing sources. This article didn't get the financial support from the state, public or commercial organization.

References

1. Kozhanova, O.S. Nesterova, T.V., Hnutova, N.P. & Hnutov, Ye.I. (2015), "Using a Methodological Approach in the Selection of Female Athletes in Team Rhythmic Gymnastics Team Exercises with a Considering Factor", *Pedahohika, psykholohiia ta medyko-biolohichni problemy fizychnoho vykhovannia i sportu*, No. 4, pp. 27-32. (in Ukr.)

2. Lenyshyn, V.A. (2016), *Udoskonalennia spetsialnoi pidhotovky u hrupovykh vpravakh khudozhnoi himnastyky na etapi spetsializovanoi bazovoi pidhotovky: avtoref. dys. kand. nauk z fiz. vykhovannia ta sportu* [Improving Special Training in Rhythmic Gymnastics Group Exercises in the Specialized Basic Training Phase: PhD thesis abstract], Lviv. derzh. un-t fiz. kultury, Lviv, 20 p. (in Ukr.)

3. Lenyshyn, V.A. (2016), "Relationship between indicators of special physical and technical fitness of female athletes of the national teams of Ukraine and Lviv region in the group exercises of rhythmic gymnastics", *Fizychna aktyvnist, zdorov'ia i sport*, No. 2, pp. 26-33. (in Ukr.)

4. Syvash, I.S. (2013), *Formuvannia spetsializatsii yunykh sportsmenok na etapakh pochatkovoi y poperednoi bazovoi pidhotovky (na materiali hrupovykh vprav khudozhnoi himnastyky): avtoref. dys. kand. nauk z fiz. vykhovannia ta sportu* [Formation of specialization of young female athletes at the stages of initial and preliminary basic training (on the material of group exercises of rhythmic gymnastics): PhD thesis abstract], Kyiv, 20 p. (in Ukr.)

5. Sosina, V. & Lenyshyn, V. (2014), "Analysis of the traditional technique of special physical training of female athletes in group exercises of rhythmic gymnastics (by the results of the survey of the strongest gymnasts in the world", *Molodyi vchenyi*, No. 7 (10), pp. 191-193. (in Ukr.)

6. Topol, H.A. (2017), *Kompleksna otsinka pidhotovlenosti kvalifikovanykh sportsmenok u khudozhnii himnastytsi* [Comprehensive assessment of preparedness of skilled female athletes in rhythmic gymnastics:], Nats. un-t fiz. vykhovannia i sportu Ukrainy,-Kyiv, 24 p. (in Ukr.)

7. Deyneko, A. & Krasova, I. (2018), "Improvement of special physical training of athletes 9–10 years old engaged in rhythmic gymnastics", *Slobozhanskyi Herald of science and sport*, No. 2 (64), pp. 26-29.

8. Kozhanova, O., Gavrilova N. & Tsykoza E. (2019), "Features of the tactical training of gymnasts performing in group exercises", *Slobozhanskyi herald of science and sport*, T. 7, No. 5 (73), pp. 43-47.

9. Mullagildina, A. (2017), "An influence of sensorimotor coordination at the technical preparedness of young athletes in rhythmic gymnastics", Slobozhanskyi herald of science and sport, No. 2 (58), pp. 44-47.

Received: 14.01.2020.
Published: 29.02.2020.

Information about the Authors

Alla Mullagildina: *PhD (Pedagogical), Associate Professor; Kharkiv State Academy of Physical Culture: Klochkivska 99, Kharkiv, 61058, Ukraine.*
ORCID.ORG/0000-0002-9232-6387
E-mail: mullagildinaalla@gmail.com

Inna Krasova: *Kharkiv State Academy of Physical Culture: Klochkivska 99, Kharkiv, 61058, Ukraine.*
ORCID.ORG/0000-0002-8111-3917
E-mail: gimnastics.krasova@gmail.com

Nadiia Avdasova: *Karazin Kharkiv National University: Sq. Svobody 4, Kharkiv, 61022, Ukraine.*
E-mail: avdasyova.n.v@gmail.com