

Improvement of technical training of sportswomen in rhythmic gymnastics by means of acrobatics at the stage of preliminary basic preparation

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Purpose: to prove experimentally the technique of improvement of technical training of sportswomen in rhythmic gymnastics by means of acrobatics at the stage of preliminary basic preparation.

Material & Methods: the following methods of the research were used: analysis and synthesis of references, pedagogical observations, pedagogical testing, pedagogical experiment, method of expert assessment (qualimetry), methods of mathematical statistics.

Results: the level of technical skill of performance of pre-acrobatic elements by sportswomen of rhythmic gymnastics before carrying out the pedagogical experiment is determined. The dynamics of indicators of the level of technical preparedness of sportswomen of rhythmic gymnastics is defined.

Conclusions: it is established that additional resources of acrobatics influence significantly the level of technical preparedness of sportswomen of rhythmic gymnastics at the stage of preliminary basic preparation.

Keywords: technical training, technical skill, pre-acrobatic elements, acrobatics.

Introduction

Technical skill of sportsmen is one of the important requirements to the program of competition in modern rhythmic gymnastics, where the need for the improvement of method of execution of difficulties of body (jumps, turns, balances) and expressiveness of performance of these movements occurs, as it is possible to increase a competition composition cost due to performance of difficult and "expensive" elements of difficulties of body. Harmony between complexity, composition, performance has to be in rhythmic gymnastics as well as in any difficult coordination sport [1; 2; 4; 6; 7]. The growing competition on rhythmic gymnastics on the international scene provides in competitions that the superiority will be kept for those sportswomen who will be able to combine different and structural complexity in extraordinary compositions with masterly performance and special expressiveness, emotionality, virtuosity [3; 5; 8; 9]. Therefore, today it is necessary the better approach to technical training, which is based on the principles of individualization and the advancing development in constantly changeable conditions, in which rhythmic gymnastics functions, that became the relevance of our research.

Communication of the research with scientific programs, plans, subjects

The research was conducted in the implementation of the complex scientific project of MES of Ukraine for 2015–2017. "Theoretic-methodical bases of formation of culture of physical health at student's youth" (number of the state registration is 0115U0066767).

The purpose of the research:

to prove experimentally the technique of improvement of technical training of sportswomen in rhythmic gymnastics by means of acrobatics at the stage of the previous basic preparation.

Research tasks:

1. To learn the problem of improvement of technical training of sportswomen in rhythmic gymnastics by means of acrobatics at the stage of the previous basic preparation.
2. To prove the efficiency of technique of improvement of technical training of sportswomen in rhythmic gymnastics by means of acrobatics at the stage of the previous basic preparation and to analyze the dynamics of indicators of level of their technical preparedness.

Material and Methods of the research

The researches were conducted from October, 2015 till April, 2016. The following methods of the research were used in the research: analysis and synthesis of references, pedagogical observations, pedagogical testing, pedagogical experiment, method of expert assessment, methods of mathematical statistics. 16 gymnasts are tested at the performance of pre-acrobatic elements before and after the pedagogical experiment.

8 sportswomen of rhythmic gymnastics of 8–9 years old of the control group (CG) and 8 sportswomen of rhythmic gymnastics of 8–9 years old of the experimental group (EG) participated in the researches. The research was conducted for the identification of the level of technical skill of performance of pre-acrobatic elements by sportswomen in rhythmic gymnastics.

Results of the research and their discussion

The pedagogical experiment on the improvement of technical training of gymnasts with use of purposeful complex of acrobatic exercises was made during half a year, from October, 2015 till April, 2016, among sportswomen of rhythmic gymnastics. Classes on acrobatics, which are aimed at the development of technical skill of performance of pre-acrobatic elements, were given three times a week for 6 months in the experimental group which is consisted of 8 sportswomen of 8–9 years old.

Technical training of gymnasts was estimated by the tests, which were pre-acrobatic elements, which join in programs of competitions. The quality of performance of exercises was estimated at all pre-acrobatic elements, in total technical errors of the movement of body were also estimated. The testing was carried out by the group of experts, which consists of coaches of rhythmic gymnastics [10]. The maximum assessment made 10.0 points for correctly executed pre-acrobatic element, and were applied the reduction for technical mis-

takes agrees with international competition regulations.

Protocols of assessments of commission of experts of the first and second testing of pre-acrobatic elements were made. Experts carried out the analysis of results and aggregated the average mark. The average mark on each test pre-acrobatic element was recorded in tables (tab. 1–4). The comparative characteristic of results of tests and the created conclusions were carried out at this stage.

The results of control standards by the level of technical skill of performance of pre-acrobatic elements by sportswomen of rhythmic gymnastics of CG and EG before carrying out the pedagogical experiment are presented lower (tab. 1 and 2).

We carried out and tested the control standards in CG and EG in half a year (tab. 3 and 4).

We compared the results of the performance of the same test pre-acrobatic elements on the end of the experiment with the received results in the control group (CG) of the performance

Table 1

The protocol of assessment of performance of pre-acrobatic elements by sportswomen of rhythmic gymnastics of CG by the beginning of the pedagogical experiment (n=8)

Tests	Sportswomen							
	1	2	3	4	5	6	7	8
Pre-acrobatic element "Turnover aside (Wheel)" (points)	9,20	9,36	9,25	9,21	9,27	9,24	9,17	9,22
Pre-acrobatic element "Spin" (points)	9,55	9,26	9,23	9,17	9,32	9,28	9,24	9,33
Pre-acrobatic element "Fish" (points)	9,21	9,25	9,14	9,22	9,32	9,41	9,43	9,30

Table 2

The protocol of assessment of performance of pre-acrobatic elements by sportswomen of rhythmic gymnastics of EG by the beginning of the pedagogical experiment (n=8)

Tests	Sportswomen							
	1	2	3	4	5	6	7	8
Pre-acrobatic element "Turnover aside (Wheel)" (points)	9,21	9,35	9,21	9,22	9,25	9,21	9,19	9,18
Pre-acrobatic element "Spin" (points)	9,54	9,25	9,23	9,15	9,33	9,27	9,23	9,31
Pre-acrobatic element "Fish" (points)	9,22	9,23	9,13	9,23	9,34	9,39	9,42	9,28

Table 3

The protocol of assessment of performance of pre-acrobatic elements by sportswomen of rhythmic gymnastics of CG after the pedagogical experiment (n=8)

Tests	Sportswomen							
	1	2	3	4	5	6	7	8
Pre-acrobatic element "Turnover aside (Wheel)" (points)	9,33	9,50	9,4	9,29	9,36	9,29	9,25	9,3
Pre-acrobatic element "Spin" (points)	9,6	9,32	9,27	9,23	9,4	9,39	9,36	9,41
Pre-acrobatic element "Fish" (points)	9,27	9,31	9,26	9,3	9,41	9,47	9,51	9,39

Table 4

The protocol of assessment of performance of pre-acrobatic elements by sportswomen of rhythmic gymnastics of EG after application of the experimental technique (n=8)

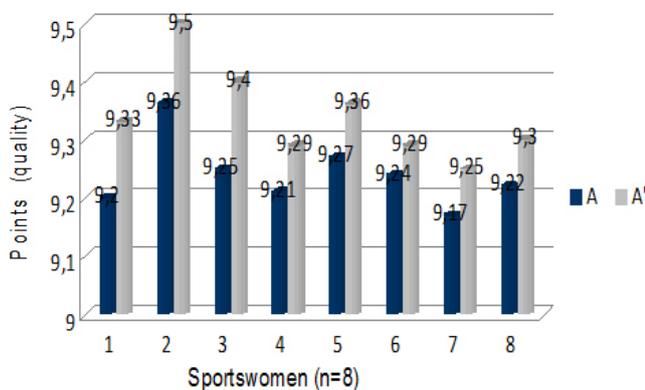
Tests	Sportswomen							
	1	2	3	4	5	6	7	8
Pre-acrobatic element "Turnover aside (Wheel)" (points)	9,64	9,77	9,58	9,44	9,76	9,78	9,66	9,53
Pre-acrobatic element "Spin" (points)	9,77	9,83	9,66	9,52	9,74	9,53	9,57	9,62
Pre-acrobatic element "Fish" (points)	9,6	9,82	9,48	9,42	9,54	9,52	9,76	9,84

of test pre-acrobatic elements before the pedagogical experiment. The comparative characteristics of the performance of test pre-acrobatic elements are submitted by gymnasts of the control group in pic. 1–3.

Methods of mathematical statistics give us the chance to compare the tendency of changes of results of testing in CG (tab. 5).

After the analysis of statistical comparative results of the primary testing with the repeated in the educational-training process of the control group (CG), we can draw conclusion that the level of technical skill of performance of pre-acrobatic elements at gymnasts grew up a little. It is confirmed by the table of comparative results of the primary testing with the repeated (see tab. 5). Using methods of mathematical statistics, we came to such conclusions:

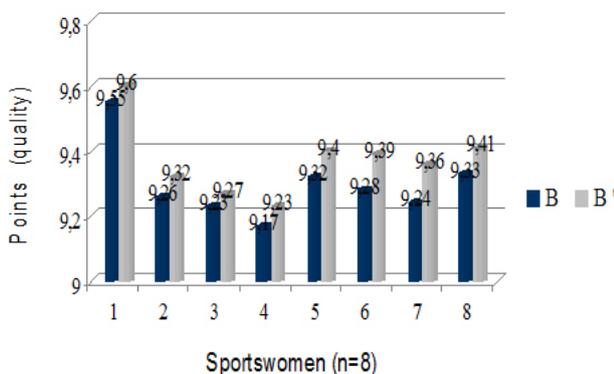
1) the average value of performance of test pre-acrobatic elements at all the group grew slightly;



Pic. 1. The comparative characteristic of performance of pre-acrobatic element "Turnover aside (Wheel)" by gymnasts of CG:

A – performance of pre-acrobatic element "Turnover aside (Wheel)" by sportswomen before the pedagogical experiment;

A' – performance of pre-acrobatic element "Turnover aside (Wheel)" by sportswomen after the pedagogical experiment.



Pic. 2. The comparative characteristic of performance of pre-acrobatic element "Spin" by gymnasts of CG:

B – performance of pre-acrobatic element "Spin" by sportswomen before the pedagogical experiment;

B' – performance of pre-acrobatic element "Spin" by sportswomen after the pedagogical experiment.

2) the indicator of the test "Turnover aside" (Wheel) – changed for 1,1%;

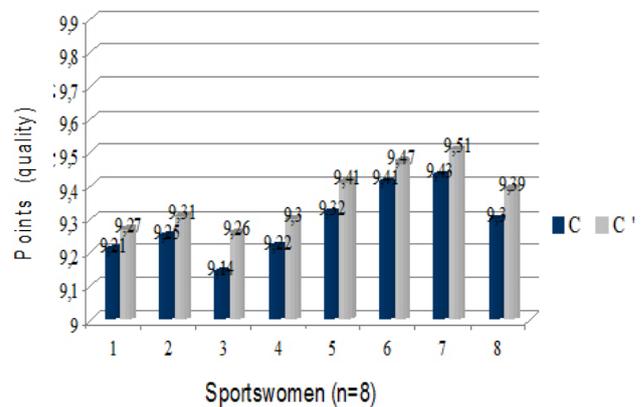
3) the indicator of the test "Spin" – increased by 0,8%;

4) the indicator of the test "Fish" – grew by 0,8%.

The criterion of Student showed that the difference between results of control tests before the experiment and after its termination in indicator of the test "Turnover aside" (Wheel) authentically. In indicators of tests of "Spin" and "Fish" are doubtful. The control group was uniform.

We compared the received results in the experimental group (EG) of performance of test pre-acrobatic elements to the application of the experimental technique with the results of performance of the same test pre-acrobatic elements after the application of the experimental technique. The comparative characteristics of performance of test pre-acrobatic elements are submitted in pic. 4–6.

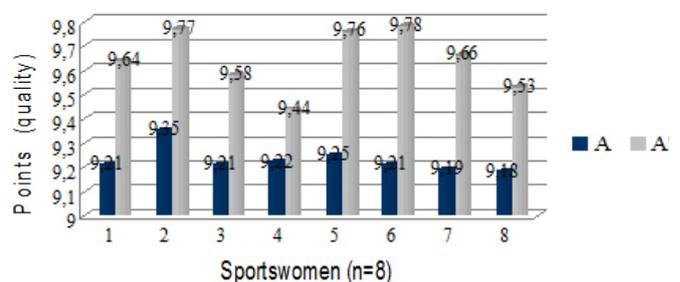
Thus, having applied the experimental technique in the educational-training process of the experimental group (EG), we can draw conclusion that the level of technical skill of performance of pre-acrobatic elements at gymnasts grew up considerably. The table of comparative results of the primary testing with the repeated one testifies to it (tab. 6).



Pic. 3. The comparative characteristic of performance of pre-acrobatic element "Fish" by gymnasts of CG:

C – performance of pre-acrobatic element "Fish" by sportswomen before the pedagogical experiment;

C' – performance of pre-acrobatic element "Fish" by sportswomen after the pedagogical experiment.



Pic. 4. The comparative characteristic of performance of pre-acrobatic element "Turnover aside (Wheel)" by gymnasts of EG:

A – performance of pre-acrobatic element "Turnover aside (Wheel)" by sportswomen before the application of the experimental technique;

A' – performance of pre-acrobatic element "Turnover aside (Wheel)" by sportswomen after the application of the experimental technique.

Table 5

Statistical comparative results of the primary testing with the repeated testing (CG, n=8)

Tests	\bar{X}		σ		m		V%		t	p
	before	after	before	after	before	after	before	after		
“Turnover aside (Wheel)” (points)	9,24	9,34	0,05	0,07	0,02	0,02	0,5	0,7	3,53	<0,05
“Spin” (points)	9,29	9,37	0,11	0,11	0,04	0,04	1,2	1,1	1,41	>0,05
“Fish” (points)	9,28	9,36	0,1	0,09	0,03	0,03	1,1	0,9	1,88	>0,05

Table 6

Statistical comparative results of the primary testing with the repeated testing (EG, n=8)

Tests	\bar{X}		σ		m		V%		t	p
	before	after	before	after	before	after	before	after		
“Turnover aside (Wheel)” (points)	9,23	9,64	0,05	0,12	0,02	0,04	0,5	1,2	9,16	<0,05
“Spin” (points)	9,28	9,65	0,11	0,11	0,04	0,04	1,2	1,1	6,54	<0,05
“Fish” (points)	9,28	9,62	0,09	0,16	0,03	0,06	0,9	1,6	5,06	<0,05

Table 7

Statistics of testing of sportswomen of rhythmic gymnastics of CG and EG before carrying out the experiment (n1=n2=8)

Tests	EG	CG	t	$t_{rp.}$	p
“Turnover aside (Wheel)” (points)	9,23±0,02	9,24±0,02	0,35	2,31	>0,05
“Spin” (points)	9,28±0,04	9,29±0,04	0,17	2,31	>0,05
“Fish” (points)	9,28±0,03	9,28±0,03	0	2,31	>0,05

Table 8

Statistics of testing of sportswomen of rhythmic gymnastics after carrying out the experiment (n1=n2=8)

Tests	EG	CG	t	$t_{rp.}$	p
“Turnover aside (Wheel)” (points)	9,64±0,04	9,34±0,02	6,70	2,31	<0,05
“Spin” (points)	9,65±0,04	9,37±0,04	4,94	2,31	<0,05
“Fish” (points)	9,62±0,06	9,36±0,03	3,87	2,31	<0,05

Using methods of mathematical statistics, we came to such conclusions:

- 1) the average value of performance of test pre-acrobatic elements at the whole group grew;
- 2) the indicator of the test “Turnover aside” (Wheel) – changed for 4,4%;
- 3) the indicator of the test of “Spin” – increased by 3,9%;
- 4) the indicator of the test “Fish” – grew by 3,6%.

The criterion of Student showed that the difference between results of control tests in the experimental group after the experiment and after its termination is reliable.

The dynamics of indicators of the level of technical preparedness of sportswomen of rhythmic gymnastics of the control group CG (n=8), the experimental group EG (n=8), before and after the pedagogical experiment is shown in tables 7 and 8.

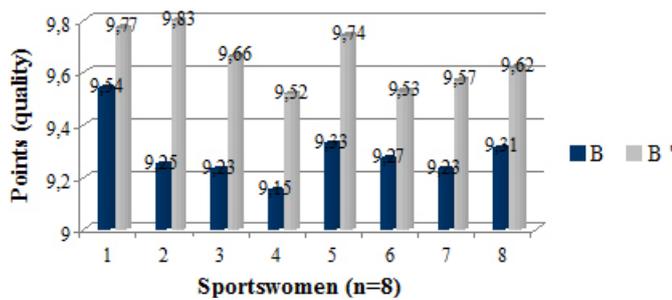
Using methods of mathematical statistics, we can say that:

- difference of average values on the whole experimental group (EG) grew by 3,9%;
- difference of average values at the whole control group (CG) grew by 0,9%.

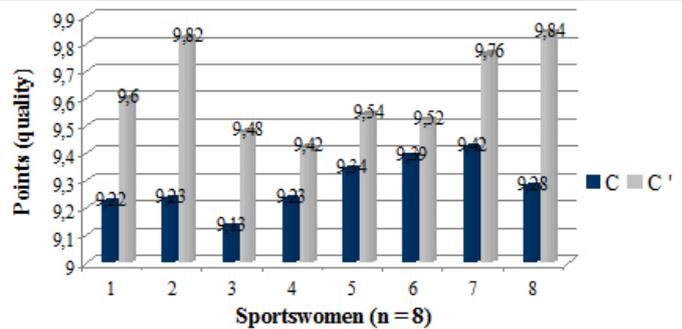
The efficiency of the offered technique of improvement of technical training of sportswomen of rhythmic gymnastics by means of acrobatics in the experimental group at the stage of the previous basic preparation is shown in the difference of differences of average values of the experimental group and the control group of the pedagogical experiment, which makes 3,0%.

Conclusions

1. The analysis of scientifically-methodical literature allowed generalizing and systematizing data on the problem of method of execution of pre-acrobatic elements by sportswomen of rhythmic gymnastics at the stage of the previous basic preparation.



Pic. 5. The comparative characteristic of performance of pre-acrobatic element “Spin” by gymnasts of EG:
B – performance of pre-acrobatic element “Spin” by sportswomen before the application of the experimental technique;
B' – performance of pre-acrobatic element “Spin” by sportswomen after the application of the experimental technique.



Pic. 6. The comparative characteristic of performance of pre-acrobatic element “Fish” by gymnasts of EG:
C – performance of pre-acrobatic element “Fish” by sportswomen before the application of the experimental technique;
C' – performance of pre-acrobatic element “Fish” by sportswomen after the application of the experimental technique.

2. The application of the offered technique of improvement of technical training of sportswomen in rhythmic gymnastics by means of acrobatics worked effectively on technical preparedness of gymnasts. The use of this technique showed the considerable results:

- 1) the average value of performance of test pre-acrobatic elements at the whole group grew;
- 2) the indicator of the test “Turnover aside” (Wheel)– changed for 4,4%;
- 3) the indicator of the test of “Spin” – increased by 3,9%;
- 4) the indicator of the test “Fish” – grew by 3,6%.

The difference of average values on the whole experimental group (EG) grew by 3,9%;

– difference of average values on the whole control group (CG) grew by 0,9%.

The efficiency of the offered technique of improvement of technical training of sportswomen of rhythmic gymnastics by means of acrobatics in the experimental group at the stage of the previous basic preparation is shown in the difference of differences of average values of the experimental group and the control group of the pedagogical experiment, which makes 3,0%.

Prospects of the subsequent researches will be sent to the search for new means and methods of special physical and technical training of sportswomen in rhythmic gymnastics.

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