

The development of female students' flexibility engaged in choreography

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Abstract

Background and Study Aim Choreographic exercises for the development of flexibility are a complex component of training students of the department of folk dance in the specialty "Choreography". Among such exercises are exercises of ballet gymnastics, which take into account the specifics of mobility of the joints. The aim of the study was to identify the level of general and special mobility ("en dehors") in students who are engaged in choreography.

Material and Methods The study involved students (n = 20) of 1 year of study in the specialty "Choreography" (Faculty of Arts, Department of Folk Dance, H.S. Skovoroda Kharkiv National Pedagogical University, Ukraine). The duration of the study is 6 months: from January 2020 to June 2020. The curriculum provides the study of the discipline "Gymnastics in Choreography" (1st year of study, summer semester), a total of 3 credits (including 36 classroom hours). During distance learning (from 13.03.2020 to 31.05.20) students performed a set of exercises independently. Also through video conferences Zoom with a teacher - once a week, lasting 40 minutes.

Results It was found that students of the department of folk and stage choreography mostly have higher scores. This is due to the presence and complexity of acrobatic elements that are present in folk dances. During the study, there were more significant differences between the indicators in the groups. There was a noticeable development of active flexibility in the girls of the department of folk and stage choreography.

Conclusions The used test indicators are recommended to be used in classes as control standards. The use of the author's program will ensure the development and maintenance in the proper state of the achieved level of flexibility ("en dehors"). To do this, it is necessary to adhere to the regular use of exercises, taking into account the individual capabilities and abilities of students.

Keywords: physical fitness, choreography, folk dances, choreography teacher.

Specific terms [1]:

- en dehors** "Outside." A move when the leg moves circularly clockwise, or "outward." This can be done on the floor (*à terre*) or in the air (*en l'air*) [2].
- adagio** In a classical ballet class, an *adagio* combination or lesson will concentrate on slow movement to help improve a dancer's ability to control leg movement and extension, all while keeping the entire body controlled and aligned.
- rond** Rond is a ballet term meaning "round" or "circular." It is often seen at the beginning of other steps and simply describes their circular or rounding movement.
- passé** Passé is a classical ballet term meaning "passed". It refers to the movement when a dancer goes through a retiré position, which is when one leg is bent so it looks like a triangle with the foot placed near the other leg's knee.
- exercice** (fr. exercice - «exercise», from Latin. exercitium) - a set of training exercises that form the basis of a classical dance lesson.

Introduction

Problems of physical training of modern student

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youth are quite relevant. The level of development of physical qualities depends on the following: well-being, self-confidence, health, prevention of occupational diseases, injury prevention, professional suitability. Physical training should

be a mandatory part of the cycle of professional training of future choreographers [3].

Tkachenko [4] points out that the musculoskeletal system of choreographed students can withstand significant physical exertion every day. And this requires the inclusion in the educational process of gymnastics, which should be aimed at maximum preservation and strengthening of the body; development of physical qualities. Antipova et al. [5] note that flexibility makes efforts easier, protects muscles from excessive tension, prevents sprains, injuries, serious injuries to muscles, tendons and ligaments.

The term "flexibility" is widely used in many studies. Thus, Osipova [6] emphasizes that "flexibility" is defined as a person's physical ability to perform motor actions with the required amplitude. Flexibility characterizes the degree of mobility in the joints and the state of the muscular system. In complex coordination sports, mobility in the joints can reach 85-95% of anatomical one. Another study [7] adds: the term "flexibility" is used to assess the total mobility of the joints of the whole body. Mobility in the joints is a necessary basis for effective technical improvement. Insufficient flexibility complicates the process of mastering motor skills, and some of them can not be mastered at all. Researchers of Turkish folk dances Vladova et al. [8] note that a dancer with underdeveloped flexibility has a reduced ability to stretch muscles. This leads to coordination stress in the process of performing dance movements.

To develop flexibility, various stretching protocols are offered. del Castillo et al. [9] investigated the effects of flexibility training on range of motion and joint mobility in girls jazz dancers. The authors found that static exercises are an effective strategy for developing range of motion. Such exercises increase flexibility and stretch in lower extremities. Another study [10] also confirms that static flexibility is the most defining aspect of physical fitness in the talent selection process in young male artistic gymnasts.

The flexibility of the joints in classical and folk and stage dances is associated with "en dehors" (Fig. 1a,b). Martinenko [11] believes that "en dehors" is the ability to turn the legs in the ankle and hip joints in the "en dehors" position (outward). "En dehors" depends on the structure of the hip joint and the structure of the legs.

"En dehors" is an important condition for performing "exercice" at the barre in folk and stage dance, as well as methods of performing individual elements and exercises. Folk and stage "exercice" is a special training seminar, different from the classical "exercice". It continues the development of the dancer's musculoskeletal system in the specifics of folk dance plasticity [12].

Methods of developing general [13] and special [7, 11] flexibility in the hip joints make it possible

to identify a set of exercises aimed at improving the flexibility ("en dehors") of the future choreographers. Testing the flexibility of students [5, 6, 13, 14] allows the selection of adequate tests to assess the "en dehors".

In this context, the development of "en dehors" is an important component of the training of dancers. Therefore, teachers of folk dance pay attention to the inversion of each lesson. The effectiveness of the process of developing this quality depends on the right choice of exercises. It should be noted that gymnastics (general development and ballet) is a component of comprehensive professional training of a choreographer. The basis of gymnastics is muscle tension, strengthening of all parts of the body, coordination of movements, development of flexibility in the joints, work on the correction of physical defects.

The aim of the study was to identify the level of general and special flexibility ("en dehors") in students who are engaged in choreography.

Material and Methods

Participants

The study involved students (n = 20) of the 1st year of study in specialty "Choreography" (Faculty of Arts, Department of Folk Dance, H.S. Skovoroda Kharkiv National Pedagogical University, Ukraine). The duration of the study is 6 months: from January 2020 to June 2020. The students were divided into two groups: experimental (n = 10; EG – engaged in folk and stage choreography) and control (n = 10; CG – engaged in modern and ballet choreography). The study was conducted in accordance with the World Medical Association Declaration of Helsinki [15] and approved by the University Ethics Committee. Written consent was obtained from the participants of the experiment to make their photos publicly available.

Research Design

EG students were engaged in the author's program for the development of mobility of the hip joints, and students of CG mastered the course "Gymnastics in Choreography" according to the usual program [16].

The curriculum for the specialty "Choreography" provides for the study of the discipline "Gymnastics in Choreography" (1st year of study, summer semester): the total number – 3 credits (including 36 classroom hours).

During distance learning (from 13.03.2020 to 31.05.2020) students performed a set of exercises independently. Also through video conferences Zoom talked to the teacher – once a week, lasting 40 minutes.

The author's program is based on the basic principles: gradualness, regularity, complexity. The physiological features of the structure of the hip

joint, muscles, ligaments and tendons are taken into account when creating the program.

Also during the classes in the related discipline “Workshop on choreographer’s performance” (2 hours per week of practical classes and 2 hours of individual classes) students of EG (Department of Folk Choreography) had the opportunity to perform exercises developed by us.

Testing was performed at the beginning and end of the study.

Test Protocols

It was used the following tests:

Test № 1. “Seated Forward Bend”, cm;

Test № 2. “Cross split from the support h=50 cm”. (Figure 1).

Test № 3. Test “Flag” (on the right and on left leg). (Figure 2).

The program for the development of “en dehors” (EG) is shown in the Table 1.

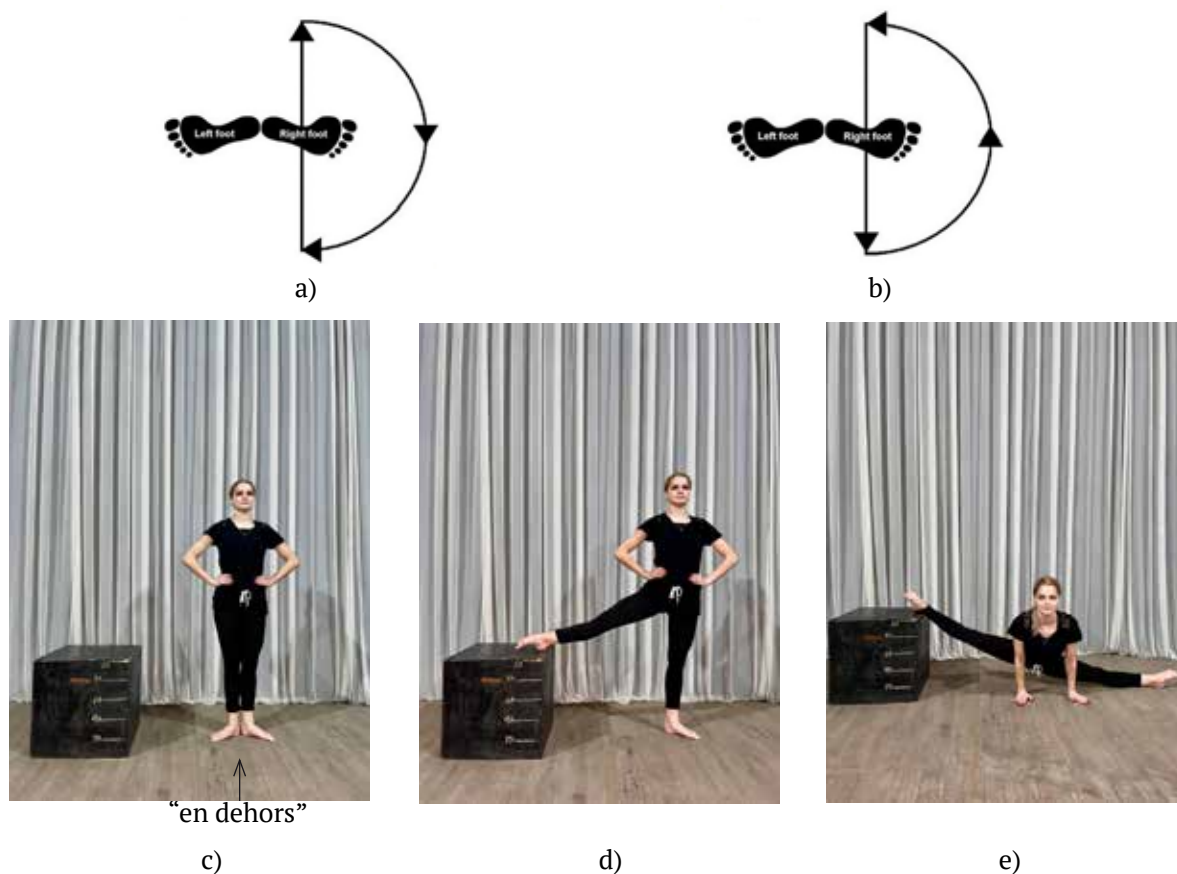


Figure 1. Test “Cross split from the support h=50 cm”: a) En Dehors “To the outside” [2]; b) En Dedans “To the inside” [2]; c) position 2; d) position 3; e) position 4

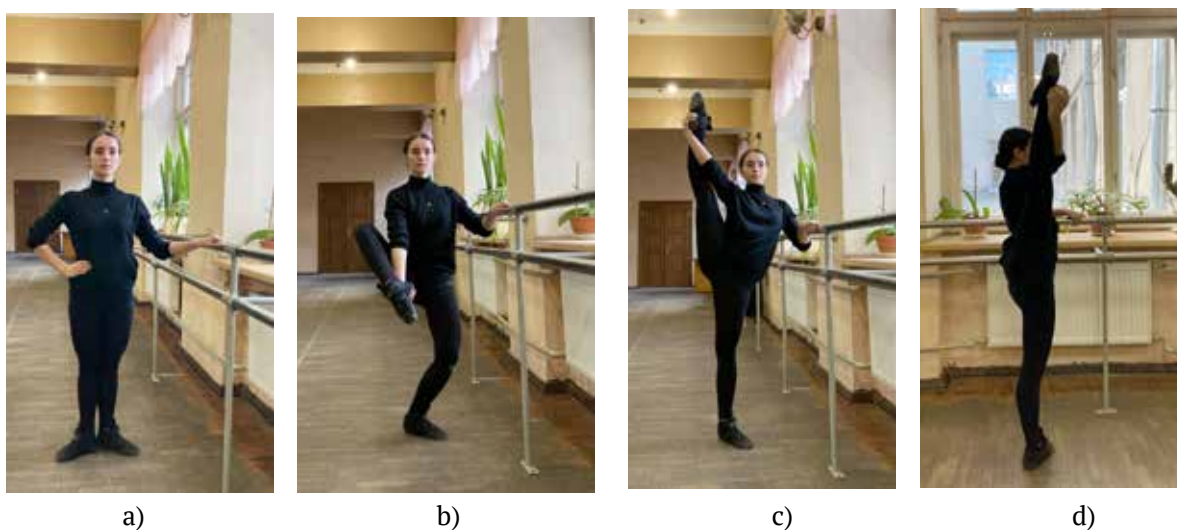


Figure 2. Test “Flag”: a) position 1; b) position 2; c) position 3; d) position 4

Statistical analysis.

It was used Excel. For each variable was calculated: X - arithmetic mean; s – the standard deviation; t - Student's criterion; p - level of significance. Significance of differences in groups was assessed using the level of significance ($p < 0.05$) and parametric indicators (Student's criterion).

Results

It was determined that at the beginning of the study, the vast majority of female students showed low and medium scores on all tests. It was also found that the groups are not equal in terms of indicators. Students of the department of folk and stage choreography mostly have higher scores. This

is due to the presence and complexity of acrobatic elements that are present in folk dances. That is why we studied the increase in qualitative changes in the tests in each group and compared the indicators between the groups at the end of the study. At the end of the study, there were mostly positive changes in all test indicators. The shift of indicators in EG and CG in the dynamics of 6 months is presented in Table 2.

According to the context of Table 2, there were no significant changes in tests in both groups. Although there is a tendency to positive changes in the indicators of the test "Flag" on the right leg in EG ($p < 0.1$). This may be due to the insufficient duration of the experiment and the partial transition

Table 1. The program of development of "en dehors"

Nº	Content	Timing
1.	Warm-up (types of walking and running, squats, forward and sideways inclines, wide forward and sideways lunges)	5-10 min.
2.	Exercises sitting on the floor:	
	Passé (right, left legs);	16 times
	"Butterfly" (Figure 3);	2 min.
	"Seated forward bend (position "Butterfly") (Figure 4);	1 min.
	"Boat" (right and left legs) (Figure 5);	16 times
2.	"Seated forward (position of cross split)" (Figure 6)	1 min.
	Exercises lying on the back or stomach:	
	"Butterfly" (on the back);	16 times
	"Frog" (on the stomach) (Figure 7);	2 min.
	"Watch" (Figure 8);	16 times
2.	"Grand demi-rond en dedans" (on the back) (Figure 9)	16 times
3.	Split (right, left, cross)	6 min.
4.	"Flag" (left and right legs)	10 sec.



a)



b)

Figure 3. Exercise "Butterfly": a) position 1; b) position 2



a)



b)

Figure 4. Exercise “Seated forward bend (position “Butterfly”)”: a) position 1; b) position 2



a)



b)



c)



d)

Figure 5. Exercise “Boat”: a) position 1; b) position 2; c) position 3; d) position 4



a)



b)



c)

Figure 6. Exercise “Seated forward (position of cross split)”: a) position 1; b) position 2; c) position 3

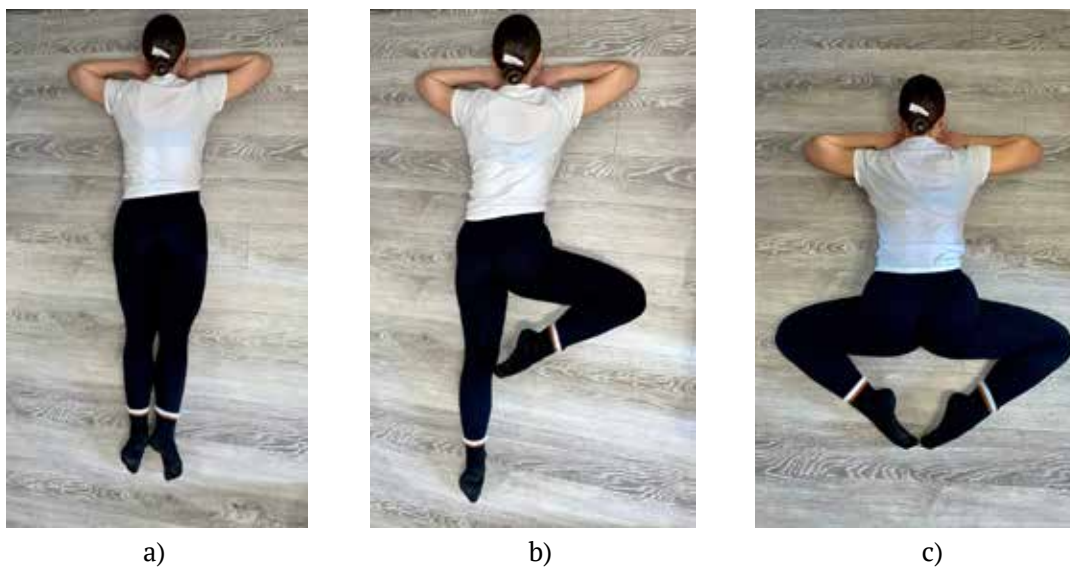


Figure 7. Exercise “Frog”:) position 1; b) position 2; c) position 3

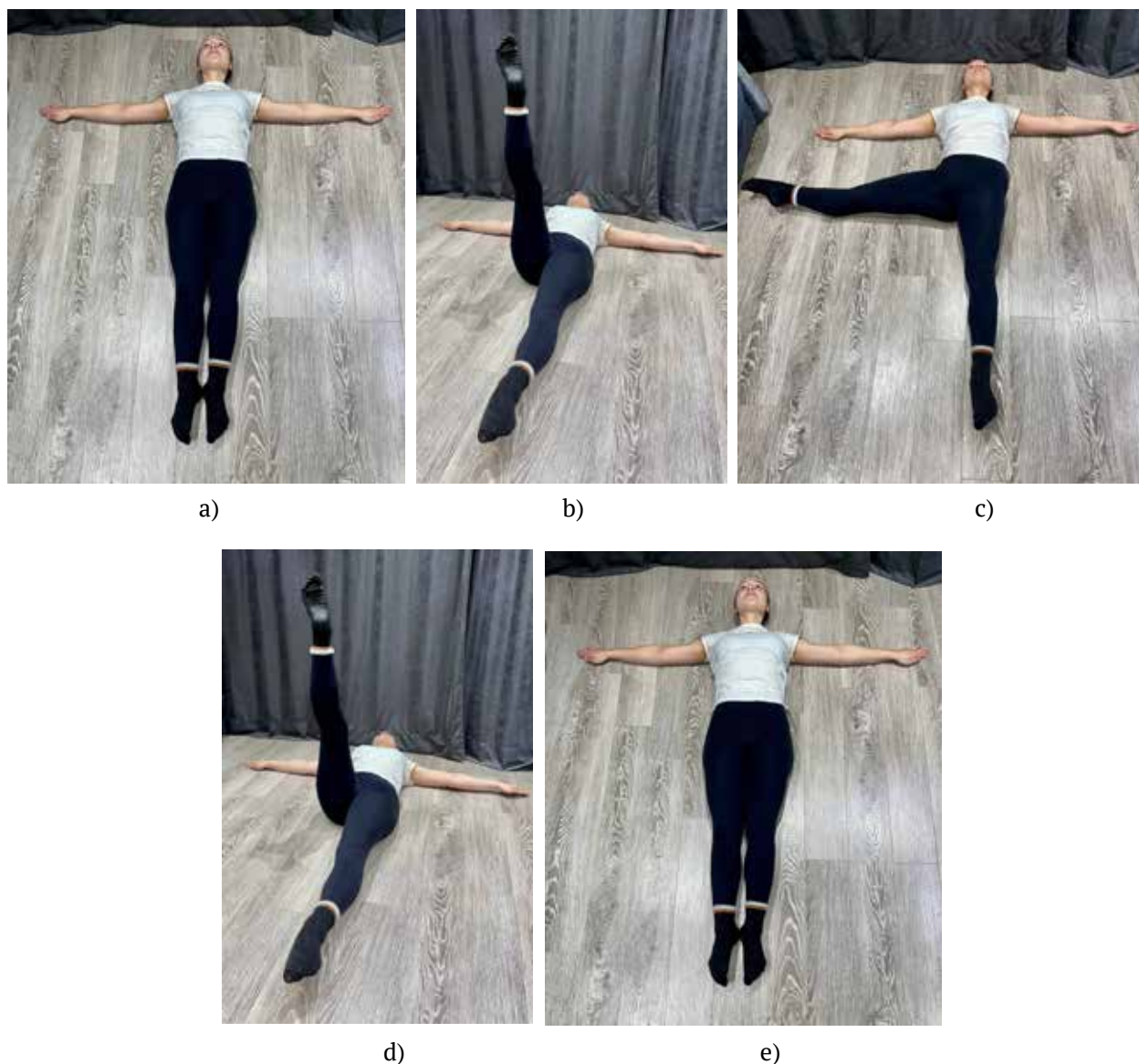


Figure 8. Exercise “Watch”: a) position 1; b) position 2; c) position 3; d) position 4; e) position 5

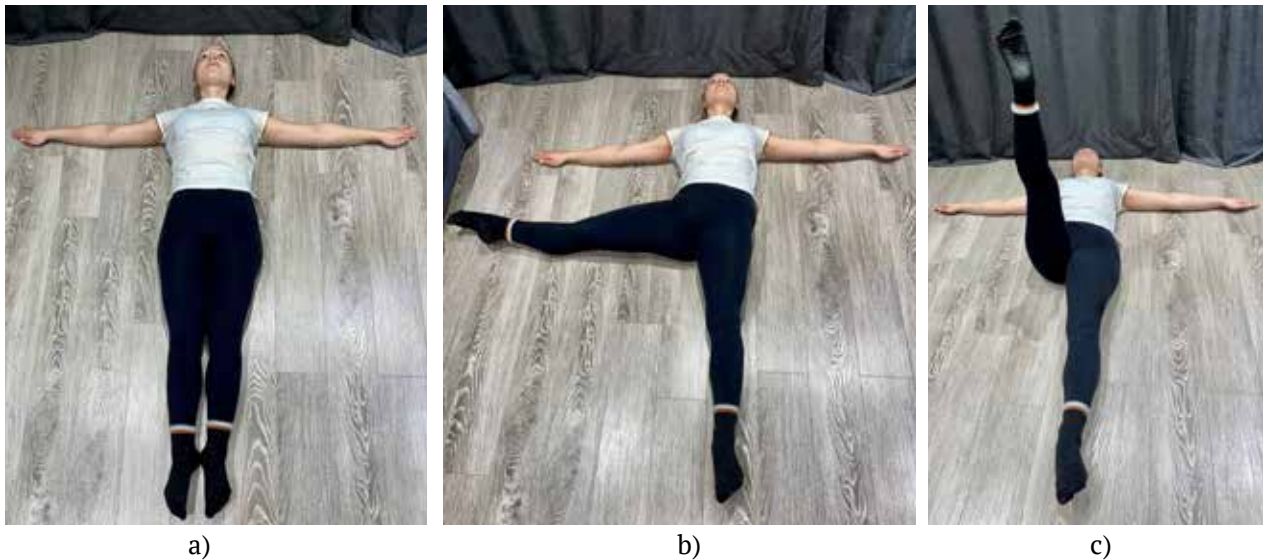


Figure 9. Exercise “grand demi-rond en dedans”: a) position 1; b) position 2; c) position 3

Table 2. Dynamics of test indicators in groups

Tests	Girls EG (n = 10)				Girls CG (n = 10)			
	Beginning of the experiment	End of the experiment	t	p	Beginning of the experiment	End of the experiment	t	p
Seated forward bend, cm	9.1±3.88	9.8±3.63	0.47	>0.1	7.5±3.04	8.0±3.26	0.35	>0.1
Cross split, cm	24.3±13.96	19.9±13.84	0,71	>0.1	35.6±10.78	34.0±10.68	0.33	>0.1
«Flag» on the right leg, cm.	9.57±3.54	15.71±7.36	1.99	<0.1*	4,28±3.57	5.29±5.01	0.43	>0.1
«Flag» on the left leg, cm.	8.86±7.24	14.0±9.49	1.14	>0.1	3.14±3.03	3.29±3.08	0.09	>0.1

* - differences have a positive trend

Table 3. Comparison between indicators in groups

Tests	Beginning of the experiment				End of the experiment			
	Girls EG (n = 10)	Girls CG (n = 10)	t	p	Girls EG (n = 10)	Girls CG (n = 10)	t	p
Seated forward bend, cm	9.1±3.88	7.5±3.04	1.03	>0.1	9.8±3.63	8.0±3.26	1.17	>0.1
Cross split, cm	24.3±13.96	35.6±10.78	2.03*	<0.1*	19.9±13.84	34.0±10.68	2.55*	<.05**
«Flag» on the right leg, cm.	9.57±3.54	4.28±3.57	2.78**	<.05**	15.71±7.36	5.29±5.01	3.10**	<.01**
«Flag» on the left leg, cm.	8.86±7.24	3.14±3.03	1.93*	<0.1*	14.0±9.49	3.29±3.08	2.84**	<.05**

* - differences have a positive trend; ** - differences are significant

to distance learning.

The results of the comparison of indicators at the beginning and end of the study between the groups are shown in Table 3.

Table 3 shows that when comparing the test results in both groups at the beginning of the study there is a higher readiness in girls of EG. In the test

“Cross split” the differences are significant ($p < 0.05$). In the tests “Seated forward bend” and “Flag on the left leg” there is a tendency to differences ($p < 0.1$). The test “Seated forward bend” at the beginning and end of the study has no significant differences ($p > 0.1$).

There are more significant differences between

the indicators in the groups. There was also a noticeable development of active flexibility in the girls of the department of folk and stage choreography. Significant changes between EG and CG ($p < 0.01$) occurred in the test “Flag on the right leg” in the tests “Cross split” and “Flag on the left leg” ($p < 0.05$).

Discussion

Our study was aimed at determining the level of general and special mobility of joints (“en dehors”) in girls who are engaged in choreography. We focused on the development of the author’s program. The basis of the program are exercises of ballet gymnastics taking into account the specifics of mobility of the hip joints. The set of exercises included: exercises on the floor (sitting and lying); active and passive stretching exercises (split, rond) and static exercises (“Flag”).

In this work, we relied on the common practice among teachers [4, 7, 11] that exercises on the floor allow you to quickly achieve the following goals with the least energy expenditure: increase joint flexibility; improve the elasticity of ligaments and muscles; increase muscle strength. Our research confirms the results of Wu [17], that a significant place in the education of correct posture, “en dehors”, dance step, flexibility is given to ballet gymnastics. Tkachenko [4] defines ballet gymnastics for choreographers as an independent set of exercises on the floor in different positions (back, abdomen, side). The purpose of ballet gymnastics is to strengthen and develop the musculoskeletal system, stretching the muscular system.

We agree with the results of a study by other authors [6, 18, 19] that flexibility is better developed in children: their relationships can be extended by 6-10%. For students (age - 20 years) this figure is 4-6%, and for 60-year-old adults - 1-3%. It is known that flexibility decreases greatly with age. This is due to certain age-related changes in the joints: the emergence of bone growths, loss of elasticity of cartilage, changes in intervertebral discs, muscle weakness. In turn, the systematic implementation of exercises to develop flexibility slows down these processes.

In creating the author’s program, we took into account the results of the study Sosina [7]. The author notes that it is important to develop passive and active flexibility in choreography. It is emphasized that active flexibility is more important when performing dance exercises with a large amplitude. Also, methods of training athletes can be successfully used in choreography to develop active and passive mobility of various joints.

The inclusion of static stretching in the flexibility program is confirmed by the Nuzzo study [20]. The author notes that such stretching (2 times a week or more for several weeks) increases the figures by

9-43%.

Specialists pay great attention to the independent work of students on the development of joint mobility [5, 13, 14, 21, 22]. We focused on the features of students’ independent activities on the development of flexibility. EG students had to perform a set of exercises on their own during distance learning, which was controlled by video recordings.

The effectiveness of the practice of using the potential of related special disciplines for the training of choreographers has been repeatedly proven in previous studies [3, 23].

Practical recommendations

In order to improve the mobility of the joints of choreographers we propose to include in the process of training choreographers:

A). Exercises for the development of “en dehors” and mobility of the joints:

- “Butterfly”;
- Seated forward bend (position “Butterfly”);
- “Frog”;
- “Boat”;
- “Butterfly” (on the back).

B). Exercises to stretch the inner thigh muscles, “en dehors”:

- “Watch”;
- “Grand demi-rond en dedans” (on the back).

C). Exercises for the development of the dance step:

- Cross split;
- Longitudinal split.

Conclusions

Means of developing flexibility are divided into three types: strength exercises; muscle relaxation exercises; muscle and ligament stretching exercises. Among the known methods of flexibility development are the following: the method of dynamic (ballistic), static and mixed stretching; method of joint development of strength and flexibility.

The used test indicators are recommended to be used in classes as control standards. The use of the author’s program will ensure the development and maintenance in the proper state of the achieved level of flexibility (“en dehors”). To do this, it is necessary to adhere to the regular use of exercises, taking into account the individual capabilities and abilities of students. The program can be used in the educational process of other creative specialties, whose professional activities are related to stage movement.

Conflict of interest

The authors declare no conflict of interest.

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