Dance fitness means in the training process of gymnasts of 6-7 years old

Tatyana Kravchuk\textsuperscript{ABCD\*}, Nina Sanzharova\textsuperscript{ABCD}, Anastasia Semenova\textsuperscript{ABCD}

Department of sports and pedagogical disciplines and fitness, H.S. Skovoroda Kharkiv National Pedagogical University, Kharkiv, Ukraine

Authors’ Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

\* - Correspondent author

DOI: https://doi.org/10.58962/HSTRPT.2023.4.1.70-80

How to site

Abstract

Purpose
In this paper, we highlight the interactions of dynamic postural stability (DPS) and running agility of ice hockey players in Slovakia.

Material and methods
Postural stability was assessed using the Star Excursion Balance Test (SEBT) and agility by the 6x9m running test. We expected significant interactions between agility test performance and DPS for both legs in all directions tested.

The level of DPS was characterized by descriptive statistics. Laterality between right and left standing leg was assessed by Student’s t-test. The relationships between DPS and agility were investigated by Pearson correlation coefficient “r”. Statistical significance of differences and relationships was assessed at the 5% significance level.

Results
The results of the correlation analysis pointed to interactions of movement performance in the agility of hockey players with DPS predominantly with all tested directions (p<0.05). Non-significant interactions (p>0.05) were demonstrated only with the AnterioMedial direction in the right standing leg and in the Anterior position for the left standing leg. Differences in laterality between the right and left standing leg were found only in the AnterioMedial and PosteroMedial directions (p<0.05). Stepwise regression showed the highest tightness of agility on the left leg in the Medial direction (average values \( r = 0.665, \text{Beta}^*r = 44.23\% \)) and Posterolateral direction (maximum values \( r = 0.665, \text{Beta}^*r = 44.23\% \)). On the right leg, in the Posteromedial direction (average values \( r = 0.658, \text{Beta}^*r = 44.01\% \)) and the Posterior direction (maximum values \( r = 0.663, \text{Beta}^*r = 43.90\% \)).

Conclusions
The positive interactions of agility and DPS in hockey players highlight the importance of a balanced and stable stance of both feet in all directions. Perfect balance and stability of hockey players eliminates fluctuations created by running or skating movement in all directions and facilitates their execution without major changes in dynamic performance. It also significantly increases the chances of reducing the activation time of the muscle chains involved in the test execution technique, or in the structure of hockey players’ skating technique itself.

Key words: hockey, postural stability, agility, differences, interactions
Анотація

Тетяна Кравчук, Ніна Санжарова, Анастасія Семенова. Засоби танцювального фітнесу в тренувальному процесі гімнасток 6-7 років

Обґрунтування і мета
У художній гімнастиці використовуються найрізноманітніші музичні твори для супроводу програм змагання, тому використання засобів танцювального фітнесу набуває особливої актуальності. Мета: застосування методики поєднання дитячого та танцювального фітнесу в навчально-тренувальному процесі гімнасток на початковому етапі навчання.

Матеріал і методи
12 спортсменок віком 6-7 років (дівчата), які займаються у КПНЗ СДЮСШОР з гімнастики художньої ДМР, м. Дніпро. Усі учасники та їх батьки дали згоду про участь у експерименті. Експеримент проводився з жовтня 2022 року по квітень 2023 року. аналіз літературних джерел, тестування фізичної підготовленості (стрибки зі скакалкою за 15 c, нахил тулуба вперед з положення сидячи, тест «Міст», рухливість у гомілковостопному суглобі, Човниковий біг 2x10, Підйом тулуба в сід за 30 с, тест «Біг змійкою», тест «Три перекиди вперед»), методи математичної статистики.

Результати
Розроблено та впроваджено в тренувальний процес вправи з елементами дитячого фітнесу, танцювальні комбінації та кроки Kid’s Plastic Art та танцювальних напрямів Zumba, Hip-Hop Body ballet, Афро Джаз, Латино-аэробика у поєднанні з програмою спортивної підготовки юних гімнасток початкового етапу навчання. Виявлено, після проведення дослідження у спортсменок обох груп підтвердилося статистично значуще покращення показників тестів (р <0,05; р <0,01; р <0,001), при проведенні міжгрупового порівняння результатів в кінці дослідження було виявлено в експериментальній групі показники тестів достовірно вище в порівнянні зі спортсменками контрольної групи (р <0,05).

Висновки
Впровадження засобів дитячого та танцювального фітнесу в тренувальний процес юних гімнасток, має позитивний вплив на фізичну підготовленість та емоційний стан спортсменок 6-7 років.

Ключові слова: художня гімнастика, танцювальний фітнес, фізичні якості, дитячий фітнес, етап початкової підготовки
Introductions

Rhythmic gymnastics makes it possible to study compliance with the rules of aesthetic behavior, to form the concept of body beauty, to cultivate musicality and taste. Music and dance are of great importance in rhythmic gymnastics [1, 2]. Musical accompaniment is designed to develop a sense of rhythm, musical ear, and coherence of movements with music. Dance elements help broaden the gymnasts' general horizons, introduce them to folk art, and develop their love for the art of the peoples of the world and their own nation [3]. They contribute to the development of coordination of movements, rhythmicity, dancing, emotionality, relaxation, and improvement of motor skills. Rhythmic gymnastics combines the already existing aesthetic gymnastics, which is based on the expressiveness of the body, as well as rhythmic gymnastics, in which the main thing is the tempo or rhythm of the musical accompaniment. Exercises in rhythmic gymnastics are usually characterized by arbitrary movement control [4]. That is why one of the main goals of technical training in rhythmic gymnastics is associated with the art of controlling one's body, which also determines the structure of physical qualities necessary for rhythmic gymnastics. The complexity of the structure of the gymnasts' motor processes makes it necessary to memorize a large volume of movements that are independent of each other. The quality of the exercises (artistry, expressiveness) dictates the need to develop the ability to correct and self-control muscle efforts, the ability to distribute and concentrate attention, and the ability to think and react quickly [5].

Rhythmic gymnastics uses a wide variety of musical pieces to accompany competition programs, which, depending on the individual characteristics of the gymnasts, may have different semantic interpretations. The nature and emotional content of a piece of music should correspond to the physical, technical, psychological, expressive, and age-specific characteristics of the athletes [6, 7].

Dance fitness is a dynamic combination of two areas: dance and fitness. This concept emerged as a response to the growing demand for exciting, effective and fun forms of physical activity. The theories and concepts that describe dance fitness take into account its physical, psychological, expressive, and sociocultural aspects [8, 9, 10].

The variety of dance-style exercises to modern music with a high emotional load, aimed at the interaction of rhythm and movements, makes dance fitness programs extremely popular among other types of physical education and health activities. This arouses interest among methodologists in the development of methodological aspects and organizational and pedagogical conditions for the introduction of such classes in the pedagogical process with young gymnasts, as well as the study of the impact of these classes on their physical health[11, 12]. From personal experience, it became clear that dance fitness programs offer great opportunities for encouraging a healthy lifestyle, introducing them into the culture of movement, developing motor skills and abilities, as well as physical qualities[13, 14].

Many researchers argue that in modern conditions the effectiveness of the training process in rhythmic gymnastics is due to the use of means and methods of complex education of physical qualities. In this regard, the use of dance fitness in the training process of young gymnasts is a very relevant issue [15, 16].

Therefore, the purpose of our research is to apply the methodology of combining children's and dance fitness in the educational and training process of gymnasts at the initial stage of training.

Material and methods

Participants

12 athletes aged 6-7 years (girls) who train at the in rhythmic gymnastics of the Dnipro City Council, Dnipro. All the athletes and their parents agreed to participate in the study.

Procedure

At the first stage of the study, the athletes underwent physical fitness testing. The training in the study groups took place 4 times a week for 90 minutes, for 6 months. At the second stage, the experimental group was offered a children's fitness methodology using Kid's Plastic Art, which was combined with Zumba, Hip-Hop Body ballet, Afro Jazz, and Latin aerobics. The control group used special motor training with the use of rolling games, exercises aimed at developing coordination and flexibility, choreography exercises for the development and improvement of jumping, and balance exercises. At the third stage, the physical fitness of young female athletes was re-tested, and the results of the study
were compared and interpreted. The training of the experimental group included: a preparatory part (5 minutes of warm-up, 25 minutes of mastering the introduced technique), the main part (55 minutes) and the final part (5 minutes). Table 1 shows a 6-month training schedule by week.

**Description of the experimental methodology**

<table>
<thead>
<tr>
<th>Month</th>
<th>Week</th>
<th>Focus of work in training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the month 1</td>
<td>Week 1</td>
<td>Basic exercises: squats or lunges under the guidance of a trainer; simple movements used in children's fitness to warm up and prepare for the main part of the class. Mastering the elements of the Kid's Plastic Art training program. The main focus of the introduced movements is the development of flexibility.</td>
</tr>
<tr>
<td></td>
<td>Week 2</td>
<td>Introduction of various standard children's fitness exercises to develop coordination, agility and endurance of gymnasts to music. Mastering basic and more advanced elements of the Kid's Plastic Art training program. The main focus of the introduced movements is the development of flexibility. Overview of video materials</td>
</tr>
<tr>
<td></td>
<td>Week 3</td>
<td>Combining the basic elements of rhythmic gymnastics with children's fitness movements. Strengthening the Kid's Plastic Art training program.</td>
</tr>
<tr>
<td></td>
<td>Week 4</td>
<td>Fixing the training program Kid's Plastic Art. Demonstration performance for parents. Summarizing the results</td>
</tr>
<tr>
<td>Name of the month 2</td>
<td>Week 1</td>
<td>Familiarization with the leading dance fitness program - Zumba. Learning basic movements, familiarization with the main directions of this program, review of video materials (outside of training time).</td>
</tr>
<tr>
<td></td>
<td>Week 2</td>
<td>Familiarization with one of the Zumba styles. Mastering basic movements.</td>
</tr>
<tr>
<td></td>
<td>Week 3</td>
<td>Mastering basic and advanced elements of Zumba. Combination of the basic elements of rhythmic gymnastics with Zumba movements in order to develop critical thinking of young gymnasts and the ability to adapt to non-standard situations.</td>
</tr>
<tr>
<td></td>
<td>Week 4</td>
<td>Consolidation of the Zumba training program. Demonstration performance for parents. Summarizing the results.</td>
</tr>
<tr>
<td>Name of the month 3</td>
<td>Week 1</td>
<td>Introduction to the dance fitness program - Latino Aerobics. Learning basic movements, familiarization with the main directions of this program, review of video materials (outside of training time).</td>
</tr>
<tr>
<td></td>
<td>Week 2</td>
<td>Mastering Latino Aerobics moves that combine Latin American dances with aerobic exercises.</td>
</tr>
<tr>
<td></td>
<td>Week 3</td>
<td>Mastering basic and advanced elements of Latino Aerobics. Combining the basic elements of rhythmic gymnastics with Latino Aerobics movements to develop the critical thinking of young gymnasts and the ability to adapt to non-standard situations.</td>
</tr>
<tr>
<td></td>
<td>Week 4</td>
<td>Fixing the Latino Aerobics training program. Demonstration performance for parents. Summarizing the results.</td>
</tr>
</tbody>
</table>
### Familiarization with the fitness program - African Jazz.

1. **Week 1**
   - Learning basic movements, familiarization with the main directions of this program, review of video materials (outside of training time).

2. **Week 2**

3. **Week 3**
   - Mastering basic and advanced elements of African Jazz. Combination of the basic elements of rhythmic gymnastics with African Jazz movements in order to improve the emotional state of athletes.

4. **Week 4**
   - Consolidation of the African Jazz training program. Demonstration performance for parents. Summarizing the results.

### Basic exercises: movements with Body ballet elements used to warm up and prepare for the main part of the class.

1. **Week 1**
   - Basic exercises: exercises performed with support on a barre and with the help of leg movements at various simple ballet elements.

2. **Week 2**
   - Barre exercises: exercises performed with support on a barre and with the help of leg movements at various simple ballet elements.

3. **Week 3**
   - Combining the basic elements of rhythmic gymnastics with elements of Body ballet.

4. **Week 4**
   - Complication of the mastered Body ballet movements, increasing the intensity of the training process.

### Introduction to one of the Zumba Hip-Hop styles. Learning basic movements, familiarization with the main types of this program, review of video materials (out-of-training time).

1. **Week 1**
   - Introduction to one of the Zumba Hip-Hop styles. Learning basic movements, familiarization with the main types of this program, review of video materials (out-of-training time).

2. **Week 2**
   - Mastering the basic elements of Hip-Hop aimed at developing coordination, agility and speed of movement.

3. **Week 3**
   - Mastering basic and advanced Hip-Hop moves. Adding artistry and emotionality to your training programs.

4. **Week 4**
   - Consolidation of the Hip-Hop training program. Demonstration performance in front of parents. Summarizing the results.

### Methods of testing the physical fitness of gymnasts

1. **Jumping rope for 15 s (number of times).**
   - It was performed at the signal of the coach, if the athlete made a mistake, the jumps were repeated again. The number of jumps was fixed.

2. **Torso tilt forward from a sitting position (cm).**
   - Sitting on a flat surface, for example, on a floor or on a mattress, stretch legs in front of you, putting them together, heels should be located one next to another. Measurement begins with the big toe on one of the feet. Place a ruler or measuring tape near the heel, making sure that your thumb touches it. You need to gradually tilt your torso forward, trying to touch the floor. Keep your legs straight and unbent at the knees. The indicator is recorded on a ruler or measuring tape where the thumb touched it during the bend. The recorded result is measured in centimeters (cm).

3. **Bridge (cm).**
   - The distance from the heels to the tips of the fingers was measured in girls. A decrease in this distance indicates a greater level of flexibility.

4. **Mobility in the ankle joint (cm).**
   - Mobility of the ankle joint was assessed when the foot was bent while sitting. The distance from the big toe to the floor was measured. A decrease in this distance indicates improved mobility in the ankle joint.

5. **Shuttle run 2x10 (s).**
   - Shuttle run was performed on a signal of a coach. On the start line there was a ring in which it was necessary to put two chips, which lay on the opposite line. Only one chip could be taken at a time. There was a distance of 10 meters between the start line and the line where the chips were placed. So, at the signal of the coach, the athlete started running, and the time was recorded by the last chip in the ring.

6. **Test "Three tumbles forward" (s).**
   - Performed on a gymnastic mat. The time is fixed.

7. **"Running by a snake" (s).**
   - Running 10 m by a snake through chips, which are located at a distance of 1 m is carried out. The time of running of the whole segment is fixed.

8. **Raising of a trunk in a saddle for 30 s, (number of times).**
Statistical analysis

The digital material was processed using the methods of mathematical statistics, the arithmetic mean, standard deviation S, representativeness error m, and the probability of differences between the parameters of the initial and final results were determined by Student's t-test with the corresponding probability level (p), and the Kolmogorov-Smirnov one-sample test was applied.

Results

At the beginning of the study, the control group of female athletes was tested for normal distribution using the Kolmogorov-Smirnov one-sample criterion. It was found that according to the indicators of physical fitness testing there is no significant difference (p>0.05) of the subjects from the normal distribution, and therefore it is possible to use statistical data for calculations in this group (Table 2).

According to Table 3, it is also possible to use statistical data for calculations in the experimental group.

After the study, the athletes of the control group showed a statistically significant improvement in 4 tests: “Shuttle run 2x10”, test “Three rolls forward”, test “Snake run”, lifting the torso in a sit-up for 1 minute, number of times (p < 0.05; p < 0.01), as indicated in Table 4.

Female athletes of the control group used special motor training aimed at developing physical qualities, namely increasing muscle strength, flexibility, coordination, speed, which is important for performing complex acrobatic movements and choreography elements. Therefore, an improvement in the performance of movement coordination tests demonstrates the effectiveness of these exercises, as the use of such complexes will help to improve the ability to control the movements of different parts of the body, perform smooth transitions and acrobatic combinations. Improved coordination skills contribute to the rapid learning of new technical elements, which has a positive effect on the athlete’s performance.

After the research the sportsmen of the experimental group confirmed statistically significant improvement of indicators in 5 tests: jumping over a rope for 15 s, test “Bridge”, shuttle run 2x10, test “Three rolls forward”, trunk lifting in a sit for 1 min, number of times, (p <0,05; p <0,01; p <0,001), as it is shown in the table 5. The experimental technique had a positive influence on coordination and speed and power training, because these directions include intensive physical activity, develop coordination and balance, also promotes stretching of muscles and connective tissues, which can improve the ability to perform movements with a large amplitude.

Table 2
Results of physical fitness testing to test the hypothesis of normality of the distribution of the studied (n = 6) control group of gymnasts

<table>
<thead>
<tr>
<th>Test *</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal parameters</td>
<td>X</td>
<td>15.50</td>
<td>9.17</td>
<td>7.83</td>
<td>4.67</td>
<td>6.82</td>
<td>7.81</td>
<td>7.38</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>1.38</td>
<td>1.17</td>
<td>0.98</td>
<td>0.82</td>
<td>0.07</td>
<td>0.06</td>
<td>0.12</td>
</tr>
<tr>
<td>Differences of extremes</td>
<td>Module</td>
<td>0.20</td>
<td>0.22</td>
<td>0.30</td>
<td>0.29</td>
<td>0.27</td>
<td>0.16</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>0.20</td>
<td>0.22</td>
<td>0.30</td>
<td>0.29</td>
<td>0.27</td>
<td>0.16</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td>Negatives</td>
<td>-0.20</td>
<td>-0.16</td>
<td>-0.22</td>
<td>-0.21</td>
<td>-0.20</td>
<td>-0.13</td>
<td>-0.22</td>
</tr>
<tr>
<td>Statistics</td>
<td>0.20</td>
<td>0.22</td>
<td>0.30</td>
<td>0.29</td>
<td>0.27</td>
<td>0.16</td>
<td>0.22</td>
<td>0.27</td>
</tr>
<tr>
<td>Asymptotic value (two-sided)</td>
<td>0.200c,d</td>
<td>0.200c,d</td>
<td>0.094c</td>
<td>0.117c</td>
<td>0.199c</td>
<td>0.200c,d</td>
<td>0.200c,d</td>
<td>0.187c</td>
</tr>
<tr>
<td>Monte Carlo value</td>
<td>value</td>
<td>0.941e</td>
<td>0.865e</td>
<td>0.553e</td>
<td>0.591e</td>
<td>0.692e</td>
<td>0.992e</td>
<td>0.889e</td>
</tr>
<tr>
<td>Lower limit</td>
<td>0.94</td>
<td>0.86</td>
<td>0.54</td>
<td>0.58</td>
<td>0.68</td>
<td>0.99</td>
<td>0.88</td>
<td>0.67</td>
</tr>
<tr>
<td>Upper limit</td>
<td>0.95</td>
<td>0.87</td>
<td>0.57</td>
<td>0.60</td>
<td>0.70</td>
<td>0.99</td>
<td>0.90</td>
<td>0.69</td>
</tr>
</tbody>
</table>

*The description of the 8 tests is provided in the section ”Methods of testing the physical fitness of gymnasts”
 a. The tested distribution is normal. b. Calculated from the data. c. Lilliefors significance correction. d. This is the lower bound of true significance. e. A sample of 10,000 tables with an initial value of 200,000 is created.
### Table 3

Results of physical fitness testing to test the hypothesis of normality of the distribution of the studied (n = 6) experimental group of gymnasts

<table>
<thead>
<tr>
<th>Test*</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal parameters a,b</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\bar{x}$</td>
<td>14.17</td>
<td>9.50</td>
<td>8.00</td>
<td>5.00</td>
<td>6.88</td>
<td>7.84</td>
<td>7.30</td>
<td>15.83</td>
</tr>
<tr>
<td>S</td>
<td>1.47</td>
<td>1.38</td>
<td>0.89</td>
<td>1.22</td>
<td>0.14</td>
<td>0.10</td>
<td>0.19</td>
<td>2.48</td>
</tr>
</tbody>
</table>

| Differences of extremes | Module | 0.21  | 0.20  | 0.20  | 0.30  | 0.20  | 0.19  | 0.18  | 0.15  |
|                         | Positive | 0.12  | 0.20  | 0.20  | 0.30  | 0.20  | 0.13  | 0.17  | 0.15  |
|                         | Negatives | -0.21 | -0.20 | -0.20 | -0.21 | -0.17 | -0.19 | -0.18 | -0.13 |
| Statistics              | 0.21  | 0.20  | 0.20  | 0.30  | 0.20  | 0.19  | 0.18  | 0.15  |
| Asymptotic value (two-sided) | 0.200c,d | 0.200c,d | 0.200c,d | 0.161c | 0.200c | 0.200c | 0.200c,d | 0.200c,d |
| Monte Carlo             | value   | 0.896e | 0.943e | 0.93e | 0.659e | 0.940e | 0.948e | 0.974e | 0.994e |
| Upper limit          | 0.90   | 0.95   | 0.94   | 0.67   | 0.95   | 0.95   | 0.98   | 1.00   |

*The description of the 8 tests is provided in the section "Methods of testing the physical fitness of gymnasts". The tested distribution is normal.

b. Calculated from data.

c. Lilliefors significance correction.

d. This is the lower limit of true significance.

e. Based on a sample of 10000 tables with an initial value of 957002199.

### Table 4

Indicators of testing the special physical fitness of gymnasts of the control (n = 6) group before and after the experiment

<table>
<thead>
<tr>
<th>Name of the test</th>
<th>Group</th>
<th>Statistical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$\bar{x}$</td>
</tr>
<tr>
<td>Jumping over a rope for 15 s, number of times</td>
<td>C_1</td>
<td>15.50</td>
</tr>
<tr>
<td></td>
<td>C_2</td>
<td>16.50</td>
</tr>
<tr>
<td>Torso tilt forward from a sitting position, cm</td>
<td>C_1</td>
<td>9.17</td>
</tr>
<tr>
<td></td>
<td>C_2</td>
<td>10.00</td>
</tr>
<tr>
<td>test “Bridge”, cm</td>
<td>C_1</td>
<td>7.83</td>
</tr>
<tr>
<td></td>
<td>C_2</td>
<td>7.00</td>
</tr>
<tr>
<td>Mobility in ankle joint, cm</td>
<td>C_1</td>
<td>4.67</td>
</tr>
<tr>
<td></td>
<td>C_2</td>
<td>4.00</td>
</tr>
<tr>
<td>Shuttle run 2x10, s</td>
<td>C_1</td>
<td>6.82</td>
</tr>
<tr>
<td></td>
<td>C_2</td>
<td>6.43</td>
</tr>
<tr>
<td>Test Three forward rolls, s</td>
<td>C_1</td>
<td>7.81</td>
</tr>
<tr>
<td></td>
<td>C_2</td>
<td>7.53</td>
</tr>
</tbody>
</table>
Table 5

<table>
<thead>
<tr>
<th>Name of the test</th>
<th>Group</th>
<th>Statistical indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>( \bar{x} )</td>
</tr>
<tr>
<td>Jumping over a rope for 15 s, number of times</td>
<td>( E_1 )</td>
<td>14.17</td>
</tr>
<tr>
<td></td>
<td>( E_2 )</td>
<td>17.00</td>
</tr>
<tr>
<td>Torso tilt forward from a sitting position, cm</td>
<td>( E_1 )</td>
<td>9.50</td>
</tr>
<tr>
<td></td>
<td>( E_2 )</td>
<td>10.33</td>
</tr>
<tr>
<td>test “Bridge”, cm</td>
<td>( E_1 )</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>( E_2 )</td>
<td>5.83</td>
</tr>
<tr>
<td>Mobility in ankle joint, cm</td>
<td>( E_1 )</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>( E_2 )</td>
<td>3.83</td>
</tr>
<tr>
<td>Shuttle run 2x10, s</td>
<td>( E_1 )</td>
<td>6.88</td>
</tr>
<tr>
<td></td>
<td>( E_2 )</td>
<td>6.48</td>
</tr>
<tr>
<td>Test Three forward rolls, s</td>
<td>( E_1 )</td>
<td>7.84</td>
</tr>
<tr>
<td></td>
<td>( E_2 )</td>
<td>6.96</td>
</tr>
<tr>
<td>Test &quot;Snake run&quot;, s</td>
<td>( E_1 )</td>
<td>7.30</td>
</tr>
<tr>
<td></td>
<td>( E_2 )</td>
<td>6.96</td>
</tr>
<tr>
<td>Raising of a trunk in a seat for 1 minute, number of times</td>
<td>( E_1 )</td>
<td>15.83</td>
</tr>
<tr>
<td></td>
<td>( E_2 )</td>
<td>20.50</td>
</tr>
</tbody>
</table>

* \( E_1 \) – experimental group before the experiment; \( E_2 \) – experimental group after the experiment

Discussion

As shown in scientific studies [11,12,14,15], among the wide range of methods and means of sports training for gymnasts, dance fitness classes have gained particular popularity today. This approach includes a variety of activities aimed at developing all physical qualities during the learning process. Dance fitness classes for athletes are often organized in the form of various games, which makes the learning process even more interesting and meaningful for young participants. These classes necessarily adhere to the principle of adaptation to children’s capabilities: the content of each lesson, the methods and approaches used take into account the age characteristics of children and their level of physical development. To objectively assess the relationship between exercise and physical development, it is important to systematically monitor their physical fitness [17].

Dance fitness is a dynamic combination of two areas: dance and fitness. This concept emerged as a response to the growing demand for exciting, effective, and fun forms of physical activity. The theories and concepts that describe dance fitness take into account its physical, psychological and sociocultural aspects [18,19].

The variety of exercises in dance style to modern music with a high emotional load, aimed at the interaction of rhythm and movements, makes dance fitness programs extremely popular among other types of physical culture and recreation activities. This arouses interest among methodologists in the development of methodological aspects and organizational and pedagogical conditions for the introduction of such classes in the pedagogical...
process with young gymnasts, as well as the study of the impact of these classes on their physical health [11,20]. From personal experience, it became clear that dance fitness programs offer great opportunities for encouraging a healthy lifestyle, developing motor skills and abilities, as well as physical qualities [21].

The data of scientists on the impact of dance fitness on athletes of different ages has been supplemented, as this direction helps to increase heart rate and breathing, which improves the cardiovascular system, improves overall endurance, and makes different muscle groups work, including the muscles of the legs, arms, abs, and back. Such loads make the muscles stronger and more enduring, which is important for the proper development of the child's body [11,15]. In addition, dancing and rhythmic movements help improve coordination and flexibility. Gymnasts learn to perform a variety of movements that require precision and agility, which in turn develops neuromuscular interaction. Dance moves help strengthen bones and joint mobility.

Introducing dance fitness at an early stage has many advantages. First, different types of physical activity will help enrich the training regimen, improve overall development, and increase the level of physical fitness of gymnasts by strengthening muscles, improving flexibility and endurance [18,19]. Secondly, the variety of dance fitness styles will add uniqueness to each training session, which will help make classes more interesting and create more motivation for gymnasts to go in for sports [2,10,17].

In addition, well-organized fitness programs can help avoid injuries and maintain the overall health of gymnasts. To introduce different types of dance fitness into the training process of gymnasts, coaches carefully and qualitatively analyze the needs and capabilities of the contingent of athletes, taking into account physical abilities, age, level of training and interests [21,22]. A specially designed program should be suitable for young gymnasts in all respects.

Scientists also draw attention to the importance of proper training planning. They note that the schedule of dance fitness classes should not conflict with the main part of gymnasts' training. That is, the intensity of the classes is based on the focus of the lesson. It is important to monitor children's reactions and training results. If necessary, adapt the program and training approaches [23].

Thus, training sessions with dance fitness means have a positive effect on the physical fitness and emotional state of gymnasts aged 6-7 years. After all, dance fitness includes intensive physical activity, movement combinations, and a combination of different types of steps, which helps to improve physical endurance, coordination, and flexibility of gymnasts, which is useful for sports training. Dance elements raise the mood of young athletes who feel joy and pleasure from dancing, which helps in training sessions when practicing some flexibility exercises that can be uncomfortable or painful. Dance fitness develops expressiveness and coordination of movements, which can improve the technique of young athletes. This type of fitness promoted emotional rest and relaxation, helped to relieve tension and improve emotional state.

Conclusions

It has been shown that the introduction of children's and Kid's Plastic Art dance styles Zumba, Latino Aerobics, Body ballet, African Jazz, Hip-Hop in the training process of young gymnasts has a positive effect on the physical fitness and emotional state of athletes aged 6-7 years.

Conflict of interest

The authors declare that they have no conflict of interest.

References

1. Nechitailo MV. Variability of physical fitness, which corresponds to the physical development of children 5 - 6 years old, engaged in fitness dance orientation. Physical culture, sport and health. 2016. 53-58.


8. Elias AC; Cardozo DAD, Oliveira BA, Manochio-Pina, Franco GS. Nutritional profile, body composition and sexual maturation of adolescents from rhythmic gymnastics. RBne-revista brasileira de nutricao esportiva, 2019, 13(80):565-572


10. Shepelenko TV, Cieslicka M, Prusik, K, Muszkieta R., Osiptsov AV, Kostiukevych VM, ... & Ilnickaya AS. Structure of a year cycle of athletes training in aerobics (woman) with various psychophysiological and functional features. Pedagogics, psychology, medical-biological problems of physical training and sports,2018; (1):35-43.

11. Ilnitskaya AS, Kozina ZhL, Barybina LN, Kolomiez NA, Cieslicka M, Stankiewicz B, Pilewska W. Author’s internet blog as information and communication technologies in the educational space within the physical education students. Physical education of students. 2014;18(1):22-26


Information about the authors

Tatyana Kravchuk
tatyana1409@gmail.com
https://orcid.org/0000-0002-6370-4000
Department of sports and pedagogical disciplines and fitness,
H.S. Skovoroda Kharkiv National Pedagogical University
Alchevskikh st. 29, Kharkiv, 61002, Ukraine

Nina Sanzharova
ninasanzarova@gmail.com
https://orcid.org/0000-0003-0916-4100
Department of sports and pedagogical disciplines and fitness,
H.S. Skovoroda Kharkiv National Pedagogical University
Alchevskikh st. 29, Kharkiv, 61002, Ukraine

Anastasiia Semenova
nastya.semenova20001.2001@gmail.com
https://orcid.org/0009-0002-1203-1229
Department of sports and pedagogical disciplines and fitness,
H.S. Skovoroda Kharkiv National Pedagogical University
Alchevskikh st. 29, Kharkiv, 61002, Ukraine

Інформація про авторів

Тетяна Кравчук
tatyana1409@gmail.com
https://orcid.org/0000-0002-6370-4000
кафедра спортивно-педагогічних дисциплін та фітнесу,
Харківський національний педагогічний університет імені Г.С. Сковороди,
вул. Алчевських 29, Харків, 61002, Україна

Ніна Санжарова
ninasanzarova@gmail.com
https://orcid.org/0000-0003-0916-4100
кафедра спортивно-педагогічних дисциплін та фітнесу,
Харківський національний педагогічний університет імені Г.С. Сковороди,
вул. Алчевських 29, Харків, 61002, Україна

Анастасія Семенова
nastya.semenova20001.2001@gmail.com
https://orcid.org/0009-0002-1203-1229
кафедра спортивно-педагогічних дисциплін та фітнесу,
Харківський національний педагогічний університет імені Г.С. Сковороди,
вул. Алчевських 29, Харків, 61002, Україна

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0)