

An effectiveness analysis of a developed differentiated program for dancer's motor quality development at the stage of specialized basic training

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Purpose: practical substantiation of the effectiveness of using the developed differentiated program for the development of motor qualities of skilled dancers in sports dances at the stage of specialized basic training.

Material & Methods: in the study involved 30 athletes, dancers aged 14–18 years who were engaged in a differentiated program for the development of motor qualities (experimental group) and the generally accepted program of a sports and dance club (control group). Methods: analysis and generalization of information of special literature, method of pedagogical observation, method of pedagogical experiment, method of pedagogical testing, method of mathematical statistics.

Result: analysis of the state of special physical preparation of dancers before and after using the developed differentiated program for the development of motor qualities is presented and obtained results of the values of the indices of their leading motor qualities.

Conclusion: the efficiency of application of the developed differentiated program for the development of motor qualities of qualified dancers has been proved at the stage of specialized basic training.

Keywords: special physical preparation, physical readiness, motor qualities, dancers.

Introduction

Analysis of scientific and methodological literature indicates that a sport dancing has become a sport that urgently needs the development of scientific foundations for organizing the training process, a critical rethinking of the means currently used, the forms and methods of physical training [2; 3; 4; 5–7].

Studies of past years found that the achievement of mastery in sports associated with the art of movement requires the athlete special physical preparedness, including the use of such exercises, which in their structure are similar to sports movements (G. A. Chikalova, M. A. Terekhova, 2001).

Rational organization of the training process aimed at fostering the physical qualities and abilities of dancers is designed to provide the necessary conditions for the creation of an appropriate technical base of motor activity during the execution of competitive variations in all types of competitive sports dancing program.

Physical training in sports dances is needed not only as a basic component of successful technical training, but also must be built taking into account the specific requirements of competitive activity. Each of the structural components is provided by the level of development of such integral qualities as speed, strength, coordination abilities, endurance and flexibility.

In the practice of sports dances, education and training are most often conducted by the method of repeated repetition of specific compositions, i.e., in practice of competitive exercises, which reduces the quality of their development. At the same time, sports training does not provide for a purposeful basic improvement of the physical and functional capabilities of the athlete.

Therefore, one of the topical problems of sports dances is the development of simple and affordable complexes or blocks of exercises that allow the competent training of qualified dancers in sports dances on a scientific basis.

Purpose of the study: practical substantiation of the effectiveness of using the developed differentiated program for the development of motor qualities of skilled dancers in sports dances at the stage of specialized basic training.

Material and Methods of the research

In the study, 30 dancers from 14-18 years old took part in the «Aurora» CSD (Kyiv). Athletes were divided into control (n=15) and experimental (n=15) groups, which are identical in age and physical development. Athletes of the control group (CG) were engaged in the generally accepted program of the club. Athletes of the experimental group (EG) were engaged in the developed differentiated program for the development of motor qualities of qualified dancer's.

In the work such methods were used: analysis and generalization of the information of special literature, method of pedagogical observation, method of pedagogical experiment, method of pedagogical testing, and method of mathematical statistics.

Pedagogical testing used in the process of pedagogical research allowed the use of quantitative methods for assessing physical preparedness, as well as assessing the driving qualities of dancer's [4]. In our study with the help of tests such as "standing long jump" and "running at 30 m", we evaluated the speed-strength abilities of dancer's. Strength, strength and special endurance assessed with the help of such tests: "lifting the trunk from the prone position with bent knees", "lifting and lowering the straight legs for 1 min", "push-ups," "jumps with a rope for 1 min".

Coordination, ability to maintain static and dynamic balance, we evaluated with the help of tests: “shuttle run 3x10 m”, “M. E. Romberg’s test”, “walking on the gutter gymnastic bench”. Summarizing the practical experience of foreign professional sports dance trainers (Roberto Villa (Italy), Roberto Giuliano (Italy), Vaidotas Lacitys (Lithuania), Marak Kosatu (Poland), etc.), we evaluated the ability to maintain a static balance using tests that are more specifically suitable for dancer’s: “holding the standard European position in the lines of the body, standing on the heel, opening your eyes,” “holding the standard European position in the lines of the body, standing on the toe, opening your eyes,” “holding the standard European position in the lines of the body, standing on the heel, closing your eyes”, “Keeping the standard European position in the lines of the hull, standing on the toe, closing your eyes”.

Flexibility of the spinal column, shoulder girdle, hip joints, ankle joints is estimated using such tests: “tilt forward from the starting position, standing on the bench”, “connect hands behind the back”, “legs apart” (right and left forward split, middle split), “maximum taking a foot on yourself, leaning it against an even wall”, “maximum tension of the foot, sitting on the floor”.

To obtain indicators of the level of physical preparedness of dancers in the established groups and their homogeneity, we used the generally accepted statistical indicators: arithmetic mean (\bar{X}), standard deviation (S), level of statistical significance (p) [1].

Processing of the above indicators was carried out in accordance with the recommendations of specialists and with the use of a package for the processing of statistical data “Statistica 10”.

Results of the research and their discussion

Analyzing the initial values of all the indices of the dancers of the CG and EG dancers to the passing of the experiment, we can conclude that they are characterized by homogeneity and do not have statistically probable differences.

In EG, the values of the speed-strength training indicators after the passing of the experiment improved. Therefore, we can speak about the effectiveness of the proposed differentiated program for the development of motor qualities, Comparing the values of the indicator of speed training “running at 30 m” before and after the experiment, which was statistically proved ($p \leq 0,05$). By this indicator, the value improved by 33,3%. Value of the “standing long jump” indicators increased by 4,9%, but this value was statistically unreliable ($p \geq 0,05$).

Values of speed strength after preparing CG passing experiment remained at the same level, comparing to their initial values, and the differences between the indices before and after the experiment was not statistically proven – $p \geq 0,05$ (Figure 1).

Comparing the parameters of CG and EG with each other after passing the experiment, according to the values of the speed training indicator “running at 30 m”, there are obvious differences between their values, which is statistically proved ($p \leq 0,01$).

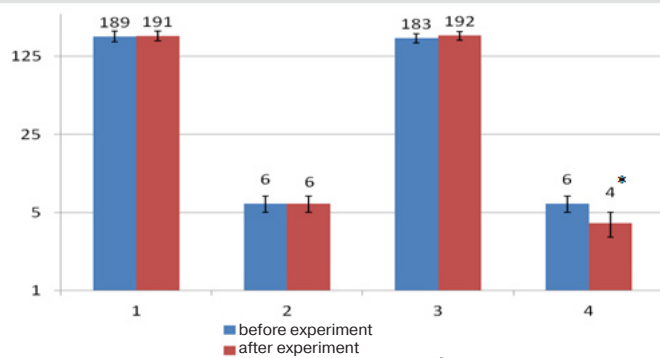


Fig. 1. Values of the rates of speed-strength preparation of EG and CG before and after the experiment:
 1 – standing long jump CG (cm); 2 – running at 30 m CG (s); 3 – standing long jump EG (cm); 4 – running at 30 m EG (s);
 * – values before and after the experiment are significantly different when $p \leq 0,05-0,01$.

Analyzing the values of strength, strength and special endurance of the EG of dancers after the experiment, we can conclude that the values for all four indicators, comparing with the initial ones, improved and were statistically proved (Figure 2). Namely, the value of the indicator “lifting the trunk from the prone position with bent knees” improved by 13.7% and was statistically proven ($p \leq 0,05$). Value of the “raising and lowering of straight legs for 1 min” improved by 30.8% and was statistically proved when $p \leq 0,01$. Value of the indicators “push-ups” improved by 60% and was statistically significant when $p \leq 0,01$. Indicators of special endurance (“jumping with a rope for 1 min”) showed an improvement of 16.7% and was statistically proved ($p \leq 0,05$).

Values of strength, strength and special endurance CG after the passing of the experiment showed statistically unreliable differences in comparison with the initial values prior to the beginning of the experiment, since $p \geq 0,05$. Values of the strength and strength endurance indicators of the CG (“lifting the trunk from the prone position with bent knees”, “raising and lowering the straight legs for 1 min”, “push-ups”) improved slightly by 2%, 3,8%, 11,5% respectively. Indicators of special endurance (“jumping with a rope for 1 min”) increased its value by 2,4%.

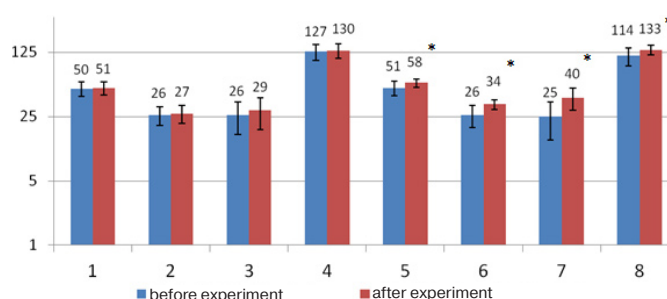


Fig. 2. Values of strength, strength and special endurance of EG and CG before and after the experiment:
 1 – lifting the trunk from the prone position with bent knees CG (times); 2 – raising and lowering the straight legs for 1 min CG (times); 3 – push-ups CG (times); 4 – jumping with a rope for 1 min CG (times); 5 – lifting the trunk from the prone position with bent knees EG (times); 6 – raising and lowering the straight legs for 1 min EG (times); 7 – push-ups EG (times); 8 – jumping with a rope for 1 min EG (times).

Comparing the values of the EG and CG values with each other after the experiment, significant differences ($p \leq 0,01$) were obtained in comparison with the initial values before the start of the experiment in terms of indicators: "raising and lowering the straight legs in 1 min", "push-ups". By the value of the indicator "lifting the trunk from the prone position with bent knees", statistically significant differences between the values ($p \leq 0,05$).

Values of the coordination indicators, the ability to maintain the static and dynamic equilibrium of the EG after the experiment, showed statistically significant differences in comparison with the values before the experiment in five of the seven indicators. On two indicators, the values were not statistically reliable ($p \geq 0,05$). Significance coordinate "shuttle run 3x10 m" improved by 25% and was statistically reliable ($p \leq 0,01$). Values of the indicators of the ability to maintain a static equilibrium have an improvement in three of the five indicators. Namely, the index "holding the standard of the European position in the hull lines, standing on the toe, opening the eyes" has improved its value by 42,5% and statistically proven at $p \leq 0,05$. Indicator "holding of the standard European position in the lines of the hull, standing on the heel, closing the eyes" improved its value by 51,6% and was proved statistically for $p \leq 0,01$. Indicator "holding of the standard European position in the lines of the body, standing on the toe, closing the eyes" improved by 100% with $p \leq 0,01$. Indicator of the ability to maintain a dynamic balance ("walking along the gutter of a gym bench") improved by 33,3% and is statistically significant when $p \leq 0,01$ (Figure 3).

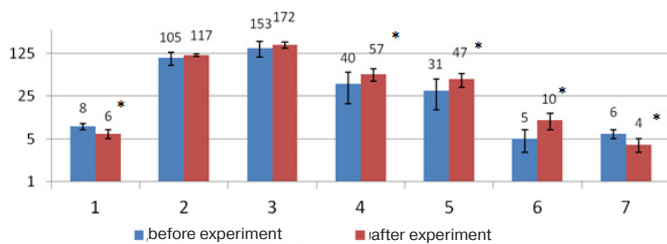


Fig. 3. Values of the coordination indicators, the ability to maintain the static and dynamic equilibrium of the EG before and after the experiment: 1 – shuttle run 3x10 m (s); 2 – M. E. Romberg test (s); 3 – holding the standard of the European position in the hull lines, standing on the toe, opening the eyes (s); 4 – holding the standard European position in the lines of the body, standing on the toe, opening the eyes (s); 5 – holding of the standard European position in the lines of the hull, standing on the heel, closing the eyes (s); 6 – holding of the standard European position in the lines of the body, standing on the toe, closing the eyes (s); 7 – walking along the gutter of a gym bench (s).

For indicators CG after the passing of the experiment it was observed improvement in values, but the change is not statistically proven at $p \geq 0,05$. Value of the coordination indicator "shuttle run 3x10 m" remained at the same level (Figure 4).

Comparing the parameters of CG and EG with each other after the experiment, statistically significant differences between the values of the groups for such indicators: "holding of the standard European position in the lines of the hull", "standing on the toe, opening the eyes" ($p \leq 0,05$), "holding the standard European position in the lines of the body, standing on the heel, closing the eyes" ($p \leq 0,05$), "holding the standard

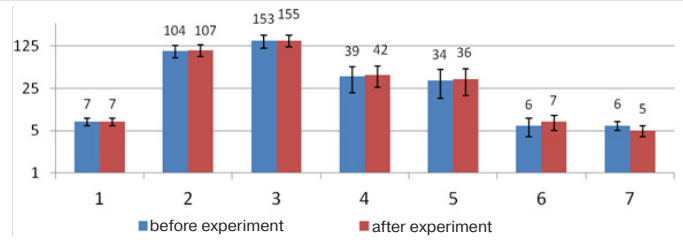


Fig. 4. Values of the coordination indicators, the ability to maintain the static and dynamic equilibrium of the CG before and after the experiment: 1 – shuttle run 3x10 m (s); 2 – M. E. Romberg test (s); 3 – holding the standard of the European position in the hull lines, standing on the toe, opening the eyes (s); 4 – holding the standard European position in the lines of the body, standing on the toe, opening the eyes (s); 5 holding of the standard European position in the lines of the hull, standing on the heel, closing the eyes (s); 6 – holding of the standard European position in the lines of the body, standing on the toe, closing the eyes (s); 7 – walking along the gutter of a gym bench (s).

European position in the lines of the body, standing on the toe, closing the eyes" ($p \leq 0,01$), "walking along the gutter of a gym bench" ($p \leq 0,01$). This shows the expediency of using the developed differentiated program for the development of the motor qualities of dancers to improve the coordination indicators, the ability to maintain static and dynamic balance.

Analyzing the indices of flexibility of the spinal column, shoulder girdle, hip joints, ankle joints of the EG after the experiment, statistically significant values for six indicators out of seven were revealed (Figure 5). Indicator of flexibility of the spinal column ("forward bend from the starting position, standing on the bench") increased by 40%, with a reliable value $p \leq 0,01$. Flexibility index of hip joints: "right forward split" improved on 50% ($p \leq 0,01$), "left forward split" – on 46,2% ($p \leq 0,05$), "middle split" – on 50% ($p \leq 0,01$). An improvement in the flexibility of ankle joints was also noted. In terms of "maximum take a foot on yourself, leaning it against an even wall," you can see an improvement of 20% $p \leq 0,01$. According to the indicator "maximum tension of the foot, sitting on the floor" – on 50% ($p \leq 0,05$). Value of the flexibility indicators of the shoulder joints ("connect hands behind the back") improved by 21,4%, but was not statistically proven ($p \geq 0,05$).

Values of CG have a slight increase in improvement after the passing of the experiment, but none of the flexibility indica-

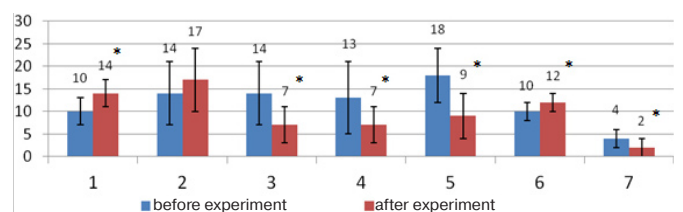


Fig. 5. Values of flexibility indices of the spinal column, shoulder girdle, hip joints, ankle joints of the EG before and after the experiment: 1 – forward bend from the starting position, standing on the bench (cm); 2 – connect hands behind the back (cm); 3 – right forward split (cm); 4 – left forward split (cm); 5 – middle split (cm); 6 – maximum take a foot on yourself, leaning it against an even wall (cm); 7 – maximum tension of the foot, sitting on the floor (cm).

tors of the control group has been statistically proved, since $p \geq 0,05$ (Figure 6).

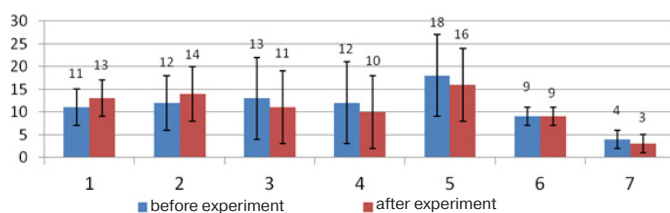


Fig. 6. Values of flexibility indices of the spinal column, shoulder girdle, hip joints, ankle joints of the CG before and after the experiment: 1 – forward bend from the starting position, standing on the bench (cm); 2 – connect hands behind the back (cm); 3 – right forward split (cm); 4 – left forward split (cm); 5 – middle split (cm); 6 – maximum take a foot on yourself, leaning it against an even wall (cm); 7 – maximum tension of the foot, sitting on the floor (cm).

Comparing the values of the indicators of CG and EG between themselves after the experiment, it can be concluded that there are statistically significant differences in comparison with their baseline values for the flexibility of the hip and ankle joints: “middle split” ($p \leq 0,05$) and “maximum take a foot on yourself, leaning it against an even wall” ($p \leq 0,01$).

Conclusions

1. Analyzing the indicators of speed-strength training, strength and special endurance, coordination, ability to maintain static

and dynamic balance, indicators of flexibility of the spinal column, shoulder girdle, hip joints, ankle joints, we can conclude that in most cases, the experimental group that worked on a differentiated program for the development of motor qualities had statistically significant values ($p \leq 0,05-0,01$). Compared with this, the control group had a positive tendency to increase the values of the indicators, but they were not statistically proven ($p \geq 0,05$).

2. Before the experiment, the parameters of the experimental group of athletes were almost identical with those of the physical training of the control group of dancers. But after passing the experiment, statistically significant differences between the control and experimental groups were obtained in comparison with their initial values prior to the start of the experiment ($p \leq 0,05-0,01$).

3. Highest average percentage of statistically significant improvement in the values of the experimental group after passing the experiment was noted for coordination, the ability to maintain static and dynamic equilibrium – 50,5%. Indicators of flexibility of the spinal column, hip and ankle joints showed an improvement of 42.7%, strength and strength endurance – on 34,8%, the rate of speed abilities – on 33,3%.

4. Comparison and analysis of physical readiness indicators of the control and experimental groups of dancers during the research showed the effectiveness of the application of the developed differentiated program for the development of the motor qualities of dancers in sports dances at the stage of specialized basic training.

Conflict of interests. The author declares that no conflict of interest.

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