

Physical and technical preparation control of athletes aged 7-9 years at the stage of preliminary basic preparation in dance sport

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Abstract:

Nowadays, control criteria in sport dances are not defined, and the estimating of dance couples' skill level in sports competitions has a subjective-comparative character. In connection with this, there is a need to develop and experimentally substantiate some informative criteria to control athletes' physical and technical fitness. The correlation between the technical and physical fitness of young dancers was revealed, which allowed determining the structure of sports training at the stage of preliminary basic training. On the basis of factor analysis, the main factors that determine the skill level of dancers aged 7-9 years engaged in sports dances are distinguished.

Key words: sports dancing, control, technical and physical training, stage of preliminary basic training.

Introduction

Implementation of a scientifically based system for monitoring sportsmen's preparedness level - the basis of effective management of the training process at all stages of long-term sports improvement is one of the ways to improve a methodology of athletes' training [Volkov L., 2006; Platonov V., 2004]. Since "juveniles 1" category (8-9 years old) is the first competition category in sports dances, trainers should pay special attention to the indicators of physical and technical fitness of athletes for rational construction of training process at the stage of preliminary basic training. Due to the fact that dance sport has not clearly defined the control criteria until nowadays, as well as evaluating of the skill level of dance couples on competitions is really subjectively comparative, it becomes necessary to develop and found the informative criteria to control physical preparation of young dancers.

Training types, content and structure of sport dance trainings during the long-term training normally vary according to age characteristics and technical improvement of dance couples [Volkov L., 2006; Koshelev S., 2006; Platonov V., 2004]. When we speak about the training process in Ukrainian dance clubs, it's easy to notice that it has different approaches, methodology and evaluation of its effectiveness. According to authorities data, level of physical fitness in sports dances may increase only by optimal development of basic technical skills, as even on the early stages of long-term training well prepared physical fitness basement of athletes have a positive effect on the improvement of other components of the training system [Volkov L., 2006; Koshelev S., 2006; Platonov V., 2004; Sergienko L., 2001 and others]. Analysis of scientific and methodological literature has revealed the lack of scientific materials devoted to the improvement and control of physical fitness of dancers [Koshelev S., 2006]. Physical training as one of the main components of the training process of dance couples has not received sufficient consideration in scientific and methodological researches.

It should be noted that due to the early specialization in sports dances, trainers are already interested not only in the model of the perfect couple, but also in the dynamics of the model characteristics of talented young dancers, which can become a real guide for comparing the results of students and forecasting their sports achievements. It is obvious that monitoring system development of the most important indicators of physical and technical readiness will improve the effectiveness of sports training process at different stages and bring out the dancers to the higher level.

Methods and organization of the research

Theoretical analysis and generalization, pedagogical observation, method of expert evaluation, methods of mathematical statistics. The received material was processed using the package of programs «STATISTICA» [Borovikov V., 2003].

In the course of study 40 children aged 7-9 years, involved in dance sport groups were examined in dance sport club "Flamingo" in Lviv. Applied tests were equal to the requirements of sports metrology. Physical fitness was evaluated through a set of 10 generally accepted tests that determined the development level of plasticity, strength endurance and coordination skills. These particular qualities, according to the data of analyzed authors and respondents, have the greatest impact on sport skills of young dancers in the phase of preliminary basic training [Volkov L., 2006; Koshelev S., 2006; Sergienko L., 2001]. In the course of the study, the following indicators were determined: static and dynamic equilibrium, vestibular tolerance, abdominal strength endurance, back muscles and upper shoulders strength endurance, lumbar-spine mobility, sense of rhythm.

The assessment of technical skills of young dancers was based on the experts' judgment. The research was joined by 5 experts (coaches of the highest national category and judges of the international category of WDSF), who were invited to evaluate the level of preparedness of each dancer in 8 dances (4 of European and 4 of Latin American program). Each dance was evaluated with a 5-point scale, by five generally accepted sports criteria's: musicality (artistry); rhythm; balance (lines of the body); technique and dynamics of the dance (energy of dance movements).

Results

To develop a system of controlling in dance sport it was necessary to determine the interrelations between the physical fitness indicators of young dancers that were obtained in a result of testing. It is known that quality and success of the training process is determined not much by number of the indicators used in controlling process as by the informativeness of each of them. On this purpose a correlation analysis of physical fitness indicators of children 7-9 years was carried out. It allowed us to analyze and to show interconnections of a significant number of parameters, which are indicating the level of physical and technical preparedness, functional stage and morphological status.

The average score selected by 5 experts during the evaluation of eight dances was selected as a criterion that determined the level of technical preparedness of dancers aged 7-9 years. Other criteria's, such as competitions results and world ranking position do not fully reflect the level of technical skills. Interrelations between technical skills and physical fitness indicators were based on correlation analysis. In a result of the correlation analysis, was received data, which confirmed the importance of the physical qualities development in order to achieve mastery in chosen sport (Table 1).

Table 1. Interrelations between physical qualities indicators and technique of dancers at the stage of preliminary basic training ($p < 0.05$).

| Physical quality | Physical fitness indicators | Correlation coefficient |
|--------------------|---|-------------------------|
| Flexibility | Lumbar spine bending | 0,34 |
| | Passive mobility of hip joints | 0,73 |
| | Spine extension | 0,72 |
| Strength endurance | Shoulder muscles strength endurance | 0,61 |
| | Abdominal muscles strength endurance | 0,52 |
| | Static strength endurance of back muscles | 0,55 |
| Balance | Static balance | 0,64 |
| | Orientation ability and static balance | 0,73 |
| | Vestibular tolerance | 0,75 |

The values of the correlation coefficients, obtained as a result, indicate a strong statistical interrelations between the experts' evaluation of technical skills and the indicators of passive mobility of hip joints ($r = 0.73$), spinal column mobility during extension ($r = 0.72$), dynamic equilibrium ($r = 0.73$) and vestibular tolerance ($r = 0.75$). The average statistical interrelations were found between the indicators of technical skill and strength endurance of the abdominal muscles ($r = 0.52$), static strength endurance of the back muscles ($r = 0.55$), strength endurance of the shoulder girdle muscles ($r = 0.61$), as well as static equilibrium ($r = 0.64$). Weak statistical interrelations were found between the indicators of technical skill and lumbar spine mobility during bending ($r = 0.34$) (see Table 1).

On the basis of the results of the factor analysis there were found 5 factors with the value of eigenvalues higher than one, their contribution to the overall variation was 81.0%. Results of the factor analysis are presented in table 2.

Table 2 Factor analysis of physical fitness indicators of young dancers at the stage of preliminary basic training

| Physical fitness indicators | | Factors | | | | |
|---------------------------------------|---|--------------|-------------|-------------|-------|-------|
| | | 1 | 2 | 3 | 4 | 5 |
| Technical preparedness | Technique | -0,93 | 0,15 | 0,04 | -0,27 | 0,05 |
| | Rhythm | -0,92 | 0,13 | 0,12 | -0,31 | -0,06 |
| | Musicality | -0,91 | 0,03 | 0,12 | -0,33 | -0,02 |
| | Dynamics in dancing | -0,89 | 0,21 | -0,07 | -0,31 | 0,03 |
| | Balance | -0,83 | 0,21 | 0,15 | -0,33 | -0,04 |
| Physical preparedness | Strength indicators | | | | | |
| | Shoulder muscles strength endurance | -0,39 | -0,38 | -0,50 | 0,16 | 0,54 |
| | Abdominal muscles strength endurance | -0,61 | -0,03 | -0,31 | 0,02 | 0,42 |
| | Static strength endurance of back muscles | -0,56 | 0,16 | -0,64 | 0,31 | 0,01 |
| | Indicators of flexibility | | | | | |
| | Passive mobility of hip joints | 0,67 | -0,13 | -0,03 | -0,21 | 0,40 |
| | Spine extension | -0,17 | 0,16 | 0,77 | 0,26 | 0,11 |
| | Coordination skills | | | | | |
| | Static balance | -0,61 | -0,43 | -0,03 | 0,37 | -0,37 |
| morphological ind. | Dynamic balance | 0,49 | 0,65 | -0,14 | -0,16 | -0,05 |
| | Vestibular tolerance | -0,62 | -0,53 | -0,04 | 0,38 | -0,27 |
| | Sense of rhythm | -0,55 | -0,31 | 0,33 | 0,07 | 0,13 |
| | Body length | -0,21 | 0,88 | -0,24 | 0,21 | -0,07 |
| | Body weight | -0,16 | 0,82 | -0,15 | 0,37 | -0,06 |
| Own numbers | 7,18 | 2,91 | 2,05 | 1,43 | 1,04 | |
| Contribution to the total variation,% | 40,0 | 16,0 | 11,0 | 8,0 | 6,0 | |

Note. Correlation coefficients, which characterize the significant statistical interrelationship $p < 0.05$, are highlighted in a bold type

The result of the dancer was determined by the total effect of five factors with the different influence. In the general factor 1 (40.0%), the values of technical skills, such as musicality, rhythm, balance, technique and dynamics of dance ($p < 0.05$), are more important. This factor is named "technical skill". As we can see from the table, strong statistical relationship with the first factor is related for such indicators: technique of dance elements, rhythm and musicality of the dance performance ($r = 0.91-0.93$) dynamics of the dance and balance ($r = 0.83 -0.89$) (see Table 2). This factor also includes indicators of vestibular tolerance and static equilibrium, which indicate the ability of athletes to keep balance after rotating movements, which affects the level of performing skills, and the rate of passive mobility of the hip joints, which characterizes the flexibility of dancers, which are directly connected with such parameters as balance and technique of performing dance elements. In addition, abdominal muscles strength endurance and static strength endurance of back muscles help to maintain correct posture during the dance performance. This fact is very important for judges, as a component of technical skill. All of these indicators (vestibular tolerance, static balance, passive mobility of hip joints, strength endurance of abdominal muscles and static strength endurance of back muscles) have an average statistical interrelation in factor 1. A sense of rhythm, which is a part of technical skills, with an index $r = 0.55$ has an average statistical interrelation.

In factor 2 (16.0% variation), system-forming indicators are the ones that reflect primarily the anthropometric data of children aged 7-9 years, as well as the dynamic equilibrium ($p < 0.05$). As we see from the table, in factor 2, anthropometric indicators of athletes have strong statistical interrelations ($r = 0.82-0.88$). This factor also included the indicator of dynamic balance, which has an average statistical interrelation ($r = 0.65$).

Factor 3 (11.0%) with its the most significant contribution contains only one indicator (mobility of spine during extension), which has a high level of statistical interrelations ($r = 0.77$) at $p < 0.05$.

Average and strong statistical relationships were not detected in factor 4. However, taking 8.0% of the overall variation at significant level $p < 0.05$, five indicators had weak statistical interrelations (the correlation coefficient of each indicator was within $r = 0.2-0.4$). Data analysis shows that the vestibular tolerance and static balance of an athlete, together with his weight, static strength endurance of back muscles and spine mobility during extension, have weak statistical interrelations.

Factor 5 (6.0%), with significant level $p < 0.05$, combined two strength indicators (strength endurance of abdominal muscles and shoulder muscles). Strong interconnections were not detected; average statistical interrelations included abdominal muscle ($r = 0.42$) and shoulder muscles strength endurance ($r = 0.54$), as well as the rate of hip joints passive mobility ($r = 0.40$).

As a result of the physical and technical preparedness control of young athletes-dancers, was obtained data that allowed developing a system of their evaluation with a five-point scale.

Discussion

The main didactic task at the phase of preliminary basic training in scientific and methodological literature, which is devoted to the theoretical and methodological principles of athletes' preparation is the harmonization of different types of training, the establishment of a proper basis of physical and technical preparedness, providing optimal opportunities for the development of functional systems and improving the level of body efficiency [Volkov L., 2006; Koshelev S., 2006; Platonov V., 2004]. It increases the adaptive potential of special intensive training and competitive loads, creates the proper ground for the improvement of technical actions appropriated to the dance sport at all stages of long term training [Koshelev S., 2006]. Since the specific competitive activity of dancers makes it necessary to perform various motor actions which are difficult by their biomechanical and coordinating structure, the effectiveness of their assimilation and performance depends on physical fitness level of young athletes [Koshelev S., 2006; Platonov V., 2004; Sergienko L., 2001].

Right selection of sports training methods can provide an optimal level of special technical skills and physical qualities development, which are very important for competitive activity [Volkov L., 2006; Platonov V., 2004]. This is possible only if the information about the level and interrelations of physical fitness indicators is available [Koshelev S., 2006]. At the same time, changes in dance sports that have taken place in recent decades (the adoption of sports dances in 1997 by an associate member of the International Olympic Committee (IOC), changes of the competition rules, expanding the range of dance elements, etc.), led to a significant increase in intensity of training and competitive loads [Volkov L., 2006; Koshelev S., 2006; Platonov V., 2004; Sergienko L., 2001]. One of the ways to solve this problem is the identification of the leading factors that determine physical fitness of young dancers and the development of its control system.

Conclusions

Control of physical and technical preparedness plays a leading role in the effectiveness of competitive activity of athletes-dancers at the stage of preliminary basic training. The analysis of scientific and methodological literature made it possible to reveal that for now sports training, being an important component of training process of dance couples have not received a sufficient scientific foundation.

On the basis of correlation analysis results, we can conclude that the technique indicators of children 7-9 years engaged in sport dancing at the stage of preliminary basic training depend to a great extent on the level of the following physical fitness parameters: passive mobility of hip joints ($r=0.73$), spine mobility during extension ($r=0.72$), and also on the development level of dynamic equilibrium indicators (orientation ability) ($r=0.73$) and vestibular tolerance ($r=0.75$). A medium statistical correlation was found between technique indicators and abdominal muscles strength endurance ($r=0.52$), static strength endurance of back muscles ($r=0.55$), shoulder muscles strength endurance ($r=0.61$), and static equilibrium ($r=0.64$), weak statistical correlation between the indicators of technical skill and spine mobility while bending ($r = 0.34$).

Obtained data from the results of factor analysis of the indicators of young dancers' sports preparedness, allowed determining the most significant factors with the influence on skills level of dancers at the stage of preliminary basic training. According to the results of the factor analysis, five factors, contribution of which in the overall variation was equal to 81.0% were highlighted. It was found, that in factor 1 (40.0% of the sample) the stronger importance has indicators of technical readiness, such as musicality, rhythm, balance, technique and dynamic of dance. Factor 2 (16.0%), showed strong statistical correlation of anthropometric indicators of dancers (body length and weight). Factor 3 (11.0%) with the most significant contribution contained an index of spine mobility during expansion. There were no strong statistical interrelations in factor 4 (8.0%) and factor 5 (6.0%).

According to the results of the factor analysis of indicators of sport readiness of young dancers, the assessment and control of such physical qualities as static and dynamic equilibrium, vestibular stability, strength endurance of abdominal muscles, shoulder muscles and static strength endurance of back muscles, as well as spine mobility during extension acquires a special significance. As a result of the physical and technical preparedness control of young athletes-dancers, was obtained data that allowed developing a system of their evaluation with a five-point scale.

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