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THE DEVELOPMENT OF MOBILITY AND COORDINATION IN RHYTHMIC GYMNASTICS PERFORMANCE AT CHILDREN AND HOPES LEVEL

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Abstract:*.Mobility is a quality which has a great role in obtaining results in rhythmic gymnastics, both from the point of view of artistic and technical committee. This skill should fit in perfectly with coordination, a quality indispensable for the acquisition of the specific technique to each apparatus. The aim of this work is to experimentally demonstrate that, by implementing some training programs of specific character, there will be a positive influence on the development of hip joint mobility and spine and will be recorded an improvement in the quality of execution of the elements of balance that are imposed by age. The program aims to develop the skills on the coordination of the body movements with characteristic objects, by using them in the introductory part of the training; so gymnasts simultaneously receive information from both directions. The results of this type of program are transposing in the ability to reconstruct various movements, both of the body and apparatus within the compositions of rhythmic gymnastics, on the basis of experience gained.*

Key words: *mobility, coordination, rhythmic gymnastics.*

1. Introduction

Rhythmic Gymnastics is a sport that requires many hours of training, especially because selection is made at an early age, and getting the performances of sports is achieved only through continuous improvement of all those involved in the educational process: athletes, coaches, referees.

The complexity of this sport is given by the combination of the essential technical body difficulties with the elements of handling the objects and features of form and content of the musical accompaniment. All these characteristics make rhythmic gymnastics a unique sport and distinguishes it from all other branches of gymnastics.

Flexibility and musical interpretation are important in an exercise of rhythmic but the risk that a gymnast takes, often by throwing the device at several meters into the air and loss of sight while performing

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jumps, turns and acrobatic movements before to restore it - often in ways seemingly impossible - this turns it into something very special. [5]

Top gymnasts must possess the following qualities: balance, flexibility, coordination and strength are some of the most important. It also needs to have certain psychological attributes such as ability to compete under intense pressure, discipline and work ethic to execute the same movement again and again. [6]

Coordination with multiple components and subcategories reprezents the highest requested component in rythmic gymnastics. Through a study conducted by Professor Sabina Macovei [1] the coordonative components the most nominated by the specialists in rhythmic gymnastics are: overall coordination, Static and dynamic coordination, Kinesthetic differentiation capacity, the ability to control the actuation of objects, targeting ability - respectively fineness coordination of hand-foot, body-object in relation with music, ability of spatial orientation, capacity of perception and to restore the special features of the rhythm and tempo of music.

In this sport, mobility represents along with coordination, a representative motor quality both in terms of technique as well as driving performance. At the level of body difficulties, ensure amplitude and plasticity and in terms of handling object provides agility in movement and contributes to the manifestation of body expression. [2]

In rhythmic gymnastics, the duration of the entire preparation coincides with the period of childhood, puberty and adolescence, periods which are defining for the manifestation of processes of growth, development and education of the entire body. In these conditions, directing the effort must take into account the fact that the gymnasts are represented either by children at different stages of age and biological development, either by the teenagers who in parallel with the sporting activity can be found in the different stages of the perfection of the socio-cultural education. [2]

2. Research Objectives

Based on the assumption that using a training program that addresses both mobility optimization of different joint systems and processing coordination at a higher level, we assume that the articular amplitude of the group will be improved and will get better results both for technical body elements and in handling.

- Identification by bibliographic study method, how that motric qualities manifest in rhythmic gymnastics and the way in which effort is stated in this sport;
- The development of joint mobility;
- The extent of back and front side of muscle from legs;
- Develop coordination of body movements with the object;
- Improving coordination by strengthening and improving technical elements of balance required by Technical Regulations of the Romanian Federation of Rhythmic Gymnastics.

3. Material and Methods

The scientific research has been carried out in the framework of the Universitary Sport Club of Brasov, on the period of 8 months, and the research subjects were 6

athletes aged 8 to 10 years, from the division of rhythmic gymnastics. The training program has been implemented with the aim of improving the mobility of the hip joint and vertebral column of the subjects, and with a view to improve static coordination, by consolidating and improving technical elements of balance imposed by the Internal Technical Regulation of the Romanian Rythmic Gymnastics Federation.

3.1. Tests

The bridge is a static acrobatic element, which represents a reference position in rhythmic gymnastics, in order to reveal the degree of mobility of the backbone and scapulare belt. To record the evolution of this element was measured on the floor the distance from the hands to heels.

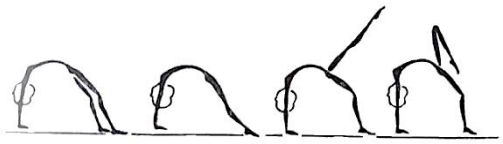

Fig.1. *Variants of posture while running the bridge* [4]

The split is a static acrobatic element that represents the mobility movement of the hip joint and the elasticity of the leg muscles. In accordance with the author Adinei Stroescu: "split is considered an important element in the gym sports, because its possess provides comprehensive execution and aesthetic of many movements, essential requirement in gymnastics performance". [4]

At sagittal split, a leg is stretched forward, the ground contact being made on the back, over the entire length, and back foot is turned upside down, making contact with the ground on the front side. Trunk and arms may have different positions.

Fig.2. *Positions of the trunk and legs while running split element* [4]

Side split is more difficult than the sagittal, because it requires more ligaments and muscles around the hip joint. Therefore, this form requires long and more work to achieve the correct position; contact with the ground is made on the front part of the foot, throughout their length, reaching basin on the ground.

For the monitoring of hip joint mobility (split with one foot on the bank of gymnastics) and spine, the coaches Nadejda Jastrjembskaia and Yuri Titov propose the following scale of assessment (Table 1).

Table 1

Rating scale for mobility items [3]

Test	**Evaluation**			
	Very good	Good	Satisfying	Weak
Bridge (cm.)	0-5 cm.	6-15 cm.	16-30cm.	31 cm. or more
Split	The thigh and the shin touch the floor; the body is straight and the arms are laterally extended	The thigh and shin touch the floor; The arms are laterally extended	The thigh and shin touch the floor; the body is bent forward	Just the thigh touches the floor, the body is bent forward and the hands are resting on the floor

According to the rhythmic gymnastics Code of Points, the balance represents a fundamental group of technical body elements. It is necessary to pay particular attention to the technical execution of these elements, because in addition to the fact that they are included in different compositions, they are also parts of other technical elements. In order to be able to be validated, the balance must have a clearly defined form and fixed (without additional movements at the level of the base leg or the active one) throughout the period of the difficulty.

Because this technical group includes a wide variety of items, within the framework of this project were chosen for the survey balances representative for category of children and hopes (Fig.3), imposed by the Internal Technical Regulation, namely:

- Side split with hand support, executed on flat foot
- Ring with hand support, executed on flat foot
- Split with trunk forward at horizontal without hand support, executed on flat foot.

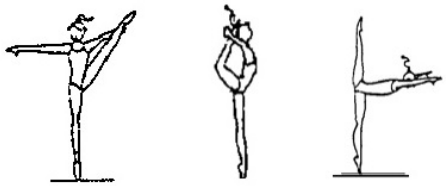

Fig.3. *Balance elements [7]*

To acquire the skills to secure and hold the body on vertical elevation and the attitude of the trunk, the positions have been learned first on flat foot with support at the ballet bar, then executed on the toes (relevé). After this step, the elements were repeated at the center of the floor.

Within the framework of research it was intended that these balances should be carried out as far as technically possible, in order to eliminate errors of execution, as well as: wrong shape, shape not held for a minimum of 1 second, body segments incorrectly held during the body movement, asymmetrical position of the shoulders and/or trunk during the body difficulty.

4. Results

To evaluate the mobility of the spine, we measured the distance between the gymnasts' hands and heels during the execution of the bridge element. During

tests and of course during the preliminary work, we followed the correct execution of this difficulty.

Following this test, it was found that the mobility of the spine can evolve over time through specific exercises and especially executed correctly. There are also subjects endowed with native mobility, and for them the progress of this quality is much faster in comparison with the others.

Assessment of the hyper-mobility of the hip joint, represented in this case by performing the element sagittal split and side split with one foot on the bank of gymnastics was carried out by measuring the distance from the superficial inguinal level up to floor level, the height of the apparatus being 45 cm.

As research subjects have a higher affinity for working with the right leg, results achieved on this item with the left foot on the gym bench are weaker compared to those on the right foot, and this can be seen in Figure 4.

For balance elements, the evaluation was made after a thorough video analysis. In this part of the research has pursued the correct execution of the difficulties proposed for study and have been validated only those executed without large technical mistakes (asymmetry between segments of the body, wrong shape with high deviation, loss of balance with support on one hand and so on). Gymnasts have carried out every element of difficulty for 10 times. According to the Code of Points, to be valid a body difficulty need to have a defined and fixed shape; this means that the trunk and the rest of the body segments should be positioned in the correct order so the element to be identified. [6]

In the progress of this test, a decisive factor has been the evolution of the previous samples, mobility of the backbone and hip joint. Therefore, the subjects have done these difficulties only after a good heating. The evolution of the balance elements are shown in Figure 5.

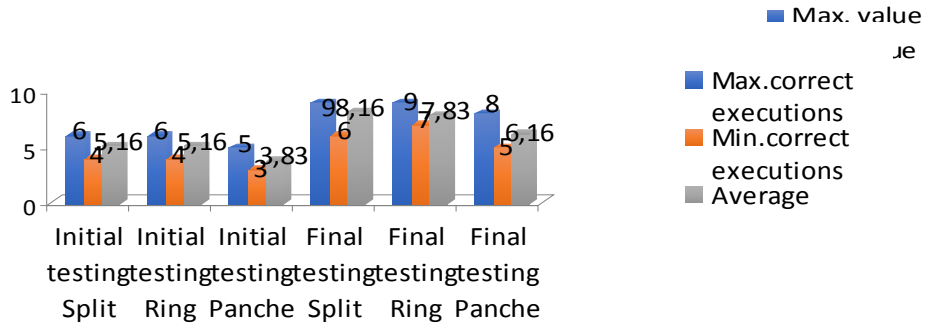

Fig. 5 Graphic results for Balance test

5. Conclusions

Following the conducted experiment, followed by interpretation and evaluation of results, some conclusions can be drawn, which outline some theoretical and methodical aspects. After the results from the study, the most important conclusions

are:

1. Developing operational objectives is an important part in the modernization of the training program; also are a necessary condition for improving the results of each age group.
2. By using a specific training program, the targeted qualities in research have developed faster.
3. It is important to place particular emphasis on a proper acquiring for the mobility elements (in this case, the bridge and split) because those are the basis for all the specific body difficulties of rhythmic gymnastics. Only after the correct performance of these elements can begin the preparation for complex technical elements.
4. For the balance elements we must pay particular attention to postural attitude of the gymnasts. Technical performance is an important factor in rhythmic gymnastics and is evaluated by a separate brigade of judges.
5. The progress of the evaluated samples was seen in time, after the implementation of the specific training program and after a close monitoring of the evolution of gymnasts.
6. The results from the control tests reveal the dynamic process involved in the technical learning and, in turn, show the individual progress throughout the training period.
7. The samples of assessment in rhythmic gymnastics may cover both elements of physical training and technical elements, and these are then reflected in the individual or group compositions.
8. Permanent monitoring of the athletes improves both the activity during the training as well as the competition one.

References

1. Macovei, S.: *Gimnastica ritmică și suplețea (Rhythmic gymnastics and suplenness)*. București, Editura A.N.E.F.S, 1999.
2. Macovei, S.: *Antrenamentul în gimnastica ritmică – repere teoretice și metodice (Rhythmic gymnastics training - theoretical and methodical reference).* București, Editura Bren, 2007.
3. Nadejda, J., Titov Y.: *Rhythmic Gymnastics*. Human Kinetics, USA Gymnastics
4. Stroescu, A.*: Gimnastica (Gymnastics*). București, Editura Didactică și Pedagogică, 1968.
5. http://www.fig-gymnastics.com/site/page/view?id=261 accessed in 24 April 2018
6. https://en.wikipedia.org/wiki/Rhythmic_gymnastics accessed in 24 April 2018
7. http://www.fig-gymnastics.com/publicdir/rules/files/rg/RG_CoP%202017-2020_updated%20with%20Errata_February%202017_e.pdf accessed in 27 April 2019