

INVESTIGATION OF THE COMPOSITIONAL STRUCTURE OF THE COMPETITIVE COMBINATIONS AT THE GROUPS IN THE MEN'S SPORTS ACROBATICS

Preliminary communication

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Abstract

The aim of this work is to identify the typical structural features of the final competitive combinations in men's groups in sports acrobatics. The object of the study are the routines performed by men's groups. The subject of the examination is the composite construction of the competitive routines. Contingent of the study are men's groups finalists in three World Championships in sports acrobatics - USA 2012, France 2014 and China in 2016. This study was conducted using the following research methods: video making, expert evaluation, pedagogical observation, systematization, analytic-synthetic methods and others. The main structural groups of exercises typical of men's fours are determined. A research on the composite structure of the video captured routines has done. In conclusion the analysis of the collected data allows us to make the following inferences: the study of the balance exercises in combined routines in men's groups has proved the existence of two opposing tendencies regarding some of the substructure groups. The para-static exercises and the transitions performed by the top acrobat reduce their quantitative part, in contrast to the mounts of the top acrobat and the transitions of the middle acrobat which increase its quantitative presence in the routine. The established dynamics of the diversity of the balance exercises present a tendency in reduction of the types of handstands and increase in the types of mounts in the routines.

Keywords: *sport acrobatic classification structure, acrobatic exercises and routines, acrobatic composite construction, expert estimation, pedagogical observation, sport analytical and synthetic methods*

INTRODUCTION

The sports acrobatic is a beautiful, hard and compelling sport. The sport routines are made from individual and group acrobatic exercises, choreographic movements and jumps. They are executed under the musical accompaniment which enhances the impact of their diversity and dynamics. Out of the five competitive acrobatic kinds, the one that can be distinguished with its attractiveness is the men groups, consisting of four acrobats. The competitive realisation is accomplished with the execution of three types of routines: balance, dynamic and combined. Their implementation requires broad movement culture and high level of developing of motor and psychomotor abilities.

According to the hypothesis of this research, the analysis of the empirical data for the structure of the competitive routines at the men's four will give an opportunity to determine the contemporary tendencies in the development of this acrobatic kind. It will help the specialists in studying of the technique and it will improve the teaching methodology of the acrobatic exercises typical for the men groups.

METHODS

The aim of this research is to establish the typical features of the structure of the combined routines in the men groups. For its implementation was done video recording of the competitive routines. The basic structural group of exercises from which the combinations are made are determined. A study of the compositional structure of the

recorded routines is done. An analysis of the collected data is accomplished.

The current study was conducted using the following research methods: video recording, expert estimation, pedagogical observation, systematization, analytical and synthetic methods etc.

The video recording was made during three Sports Acrobatic Gymnastics World Championships – USA 2012, France 2014 and China 2016. The three types of competitive routines executed from the acrobatic kinds are recorded. In the qualifications of the competition are executed balance and dynamic routines, and in the final round – combined routine.

The object of the current study is the combined routines that are executed by the men groups.

The *subject* of the study is the compositional structure of these routines.

The contingent of the study are the finalists in the men's four from the appointed three Sports Acrobatic Gymnastics World Championships from 2012 to 2016.

For the needs of the study, by using the experience of some specialists (Angelov (Ангелов), 2013; Angelov (Ангелов), 2015; Korkin (Коркин,) 1983; Mikov, Milev, Pavlov, Hristov (Миков, Милев, Павлов, & Христов, 1990) a classification of the exercises in the sports acrobatic is made (Fig. 2.). The main structural groups of exercises which build up the routines under study are determined (Fig. 1., 3.).

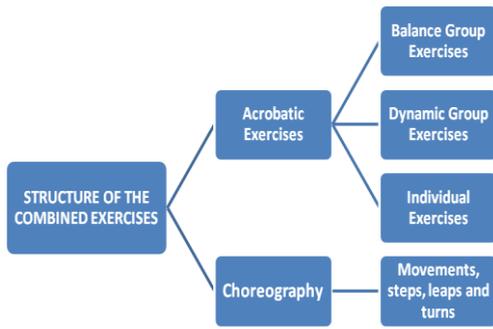


Fig. 1. Structure of the combine exercises

It's important to note that, the Code of Points divide the acrobatic exercises in three main groups: balance, dynamic and individual. The offered classification in this research doesn't contradict the Code of Points. The study aims further systematization of the exercises on the basis of the biomechanical criteria.

The structural diversity of acrobatic exercises are complemented by the numerous variations for their execution from the standpoint of biomechanical features such as axes and direction of rotation, volume of rotation, position of the

body, starting and ending position, type of the support, etc. This research focuses on the quantitative analysis of the exercises that build up the studied routines and on their diversity.

The results are interpreted depending on the basic structural groups of exercises that are described in the research methodology (Fig. 1., 2.,3.).

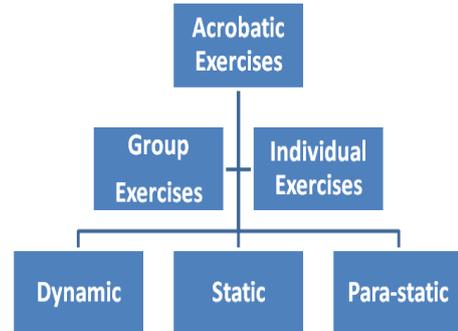


Fig.2. Classification of acrobatic exercises

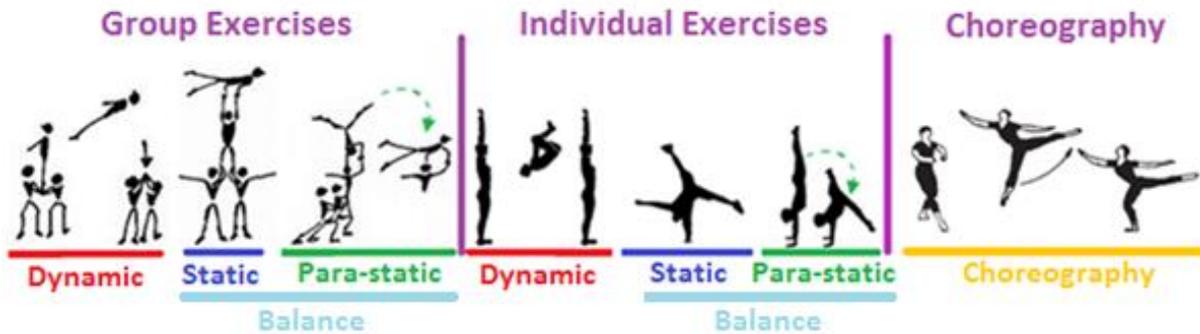


Fig. 3. Main structural groups of exercises in the competitive routines of sports acrobatics

RESULTS

The data with regard to the structure of the competitive routines are systematized and presented in summary form on the diagrams in Figures 4., 5. and 6.

Information about the number of exercises, the number of transitions of balance exercises and the number of the li-

nks of dynamic exercises in each combination are gathered. The average values of these indicators are determined (Fig. 4., 6.). The quantitative results about the diversity of the exercises are registered (Fig. 5.).

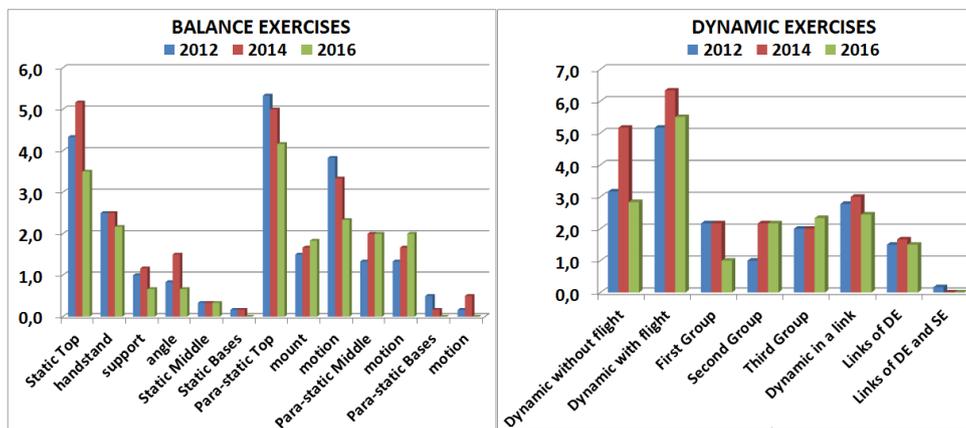


Fig.4. Average number of the kinds of balance and dynamic exercises in the combined routine

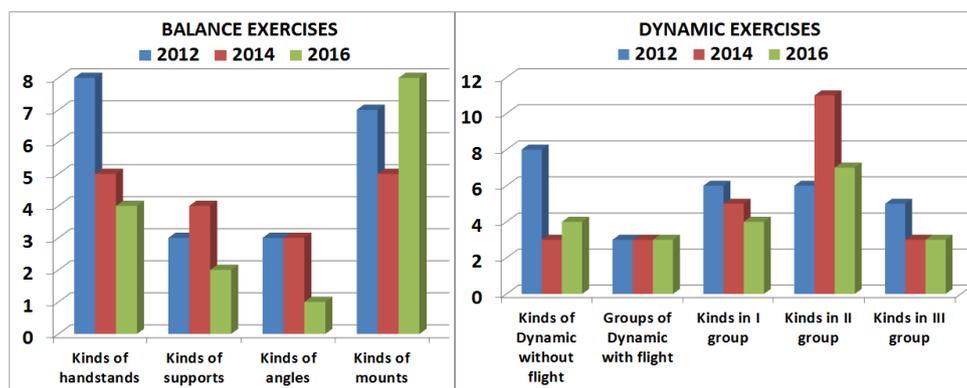


Fig.5. Number of the different kinds of balance and dynamic exercises by the top acrobat

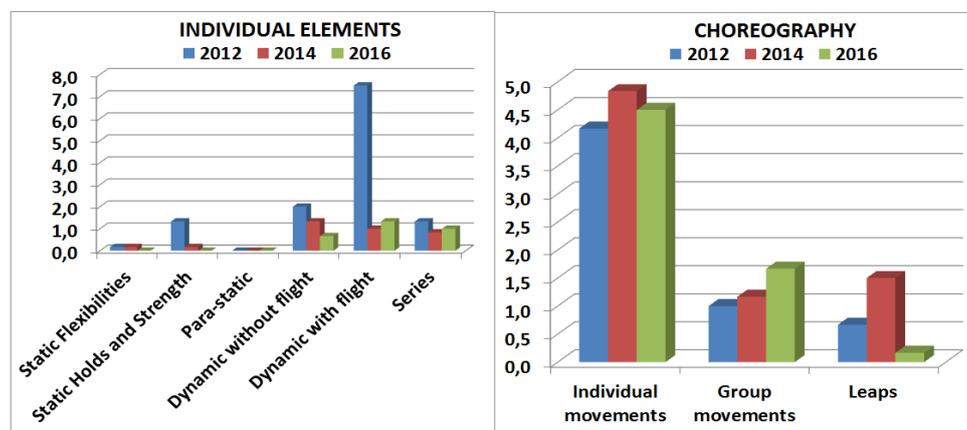


Fig. 6. Average number of the kinds of individual exercises and choreographic elements in the routine

DISCUSSION AND CONCLUSION

The competitive appearance in sports acrobatics includes three types of exercises: balance, dynamic and combined which are performed under musical accompaniment. They are assessed based on three criteria - execution, difficulty and artistry. According to the Code of Points the structure of the routines is one of the criteria used to form the score for artistry. In the Code of Points are determined special requirements about the compositional structure of the three types of routines in the different acrobatic kinds. In this regard the reviewed combined combinations have to include three types of acrobatic exercises: balance, dynamic and individual. Each exercise that belongs to a particular group, have difficulty value, which is determined by the relevant criteria of the Code of Points. The total value of difficulty of the exercises in a routine pursuant to its type and skills of the competitors are regulated.

The obligatory requirements of the Code of Points about composition and difficulty of the routines doesn't stultify the study of their structure. On the contrary, following the different solutions trough which are executed the regulated requirements, there is opportunity to determine the current tendencies connected to the compositional structure of the routine. The analysis of the structure of the routines is accomplished on the basis of the collected data for each of the main categories of exercises (Fig. 1.). Key components of the structure of the combined routines are: balance, dynamic, and individual acrobatic exercises together with the choreographic movements and leaps.

A typical and distinctive characteristic of the balance exercises in groups in sports acrobatics are the pyramids. In men's fours, they can be executed with one or two base

partners. Moreover, the Code of Points classifies these exercises by dividing them into three types. Type 1 - pyramid with a static exercise with 3 seconds hold. Type 2 – pyramids containing 2-3 static exercises and 3 seconds hold. Type 3 - pyramids with transitions of the middle and base partners. The precise requirements for the number and the ratio of the various pyramids in the routines are regulated. Because of this, our focus is to study the diversity of balance exercises which are used in the routines and their relation with the final result.

The average number of performed static and para-static exercises in a routine of top, middle and base partners are established (Fig. 4.). Logically, the largest part of these exercises is for the top acrobats. The static exercises in the three examined competitions are in the range of 3.5 to 5.2. The maximum value was registered in 2014 and the minimum in 2016. Three substructure groups of the static exercises performed from the top were established: handstands, supports and angular supports. From them the largest part is for the handstands which average number is similar in the three competitions. Less used are the supports and angles supports which maximum values were established in 2012, and the minimum values were established in 2016. Now is the moment for an analysis of the diversity regarding the application of handstands, supports and angle supports in the routines (Fig. 5.). The greatest number of different handstands are registered in 2012 – 8. The most types of supports were implemented in 2014 – 4. The diversity of these exercises are executed in 2012 and 2014 and only one type in 2016. It can be concluded that the handstands are the most widely used static exercise by the top acrobat. Al-

so, not only as an average value in a routine, but as a diversity. The static exercises of the middle and base partners are less occurring in the combined routines.

The average value of the para-static exercises in a routine is within the range of 4.2 to 5.3. In them the highest level was registered in 2012, and the lowest in 2016. This fact can be interpreted as a tendency of decreasing their part in the routines. The tendency is similar in the transitions executed by the top acrobat. Their average number in a routine is in the range of 2.3 to 3.8. The reversed trend, of increasing, is established in the mounts from the top partner which average number in a routine is in the range of 1.5 to 1.8. In this substructure group, the biggest diversity was registered in 2016 and 2014 – respectively 8 and 7 kinds of mounts. Pattern of growth in the average number in a routine has been found in the para-static exercises and in the transitions performed by the middle acrobat in the group.

The analysis of the dynamic group exercises follows the application of the exercises with and without the flight phase (Fig. 4. and 5.). The dynamic exercises without a flight phase involve kinds of dynamic mounts to different ending positions and movements of the top acrobat accompanied by base partners. Their average number in a routine is in the range of 2.8 to 5.2. The greatest diversity within them was established in 2012 – 8 types of exercises. Of more interest for the structure of the combined routines are the dynamic exercises with flight phase. The established average values for them are in the range of 5.2 to 6.3 exercises in a routine. The lowest and the highest value were registered respectively in 2012 and 2014.

The study has found application of three substructure groups of the category of dynamic exercises with flight phase in the three competitions. The first group include „Partner to Partner Catch“ exercises, second group – „Flight elements“ and third group include „Dismounts“. Exercises from substructure group „Floor to Partner Catch“ weren't registered. In the group of the Flight elements are included all the exercises where the throwing and the catching is carried out by various partners. It is noteworthy that the exercises of the first group were most widely used in 2012 and 2014, while those in the second group were used the most in 2014 and 2016. The maximum average value of the exercises in a routine in both groups is 2.2. The number of exercises from a third group is regulated by the special requirements of the Code of Points. The study has found a higher average value for these exercises in 2016, which means that more dismounts are used than the required minimum. Regarding the diversity of the exercises in the three substructures groups, it was established that it is the highest in the first and third group in 2012 - respectively 6 and 5 types of exercises. A standout diversity was registered in the second group in 2014 – 11 types of exercises.

Other important indicators for the structure of the routine are the average number of links of dynamic exercises in a routine and the average number of exercises in one link. The average number of links in a routine in the three studied competitions is similar. The maximum average value was established in 2014 – 1.7. The number of exercises in a link has a great informational value on the compositional structure of the routines. The maximum average value of this indicator was recorded in 2014 – three exercises in a link.

Next, the collected data for the place of the individual acrobatic exercises in the routine was analysed. The Code of Points 2013-2016 has revoked the special requirement

for their mandatory inclusion in the competitive routines of all acrobatic kinds. Nevertheless, the current study shows that their presence in the acrobatic compositions is necessary. They add attractiveness and intensity to the routines. The collected data for this indicator are shown in Fig. 6. From the chart it is apparent that the most widely used are the dynamic individual exercises with and without flight phase. As a separate group, the average number of the employed acrobatic series, which by their biomechanical nature are dynamic exercises with flight phase, was registered. It is noteworthy that the individual exercises of all subgroups of the competitions in 2012 had a wider application. This fact is logical since at that point the old rules were applied. It can be concluded that there is a tendency to reduce the usability of static and dynamic individual exercises without flight phase. The reverse trend for the increased application is noticeable in the dynamic individual exercises with flight phase and acrobatic series.

The compositional analysis of the competitive routines in men's groups ends with interpretation of the results about the usage of choreographic elements that have their logical place because of the musical accompaniment. Their significance is enhanced by a mark for the artistry, which is one of the component of the final score. It is important to emphasize that the choreographic component of the routines is least used within the men's groups in comparison to the other acrobatic kinds. From the diagram in Fig. 6. can be seen that the most used choreographic movements are the individual ones, and the least executed are the choreographic jumps. As a tendency can be determined the increase of the average number of group choreographic movements in the routines.

The analysis of the compositional structure of the competitive routines would be more complete and of a full value, if it is supplemented with facts and their interpretation of the position of the exercises in the routine depending on their difficulty and regimen of muscle work. The discussion on this topic is interesting and useful, but it's advisable to conduct another research, with focus on the qualitative analysis of the compositional structure.

CONCLUSIONS

In conclusion the analysis of the collected data allows us to make the following inferences:

1. The study of the balance exercises in combined routines in men's groups has proved the existence of two opposing tendencies regarding some of the substructure groups. The para-static exercises and the transitions performed by the top acrobat reduce their quantitative part, in contrast to the mounts of the top acrobat and the transitions of the middle acrobat which increase its quantitative presence in the routine. The established dynamics of the diversity of the balance exercises present a tendency in reduction of the types of handstands and increase in the types of mounts in the routines.

2. The analysis of the collected data of the dynamic exercises in men's fours is not giving a base to determine the tendency about the use of this category of exercise. The dynamics of variability allows to display the tendency of reducing the diversity type of exercises from Partner to Partner Catch and its increase in the group of the Flight elements.

3. The study found that despite the decrease in the part of Individual acrobatic exercises, dictated by the change in the Code of Points, they have their place in the competitive routines. The tendency, in this respect, is to use mainly dyn-

amic individual exercises. In the choreographic elements a natural increase of the group movements was found.

4. In conclusion, it can be summarized that the current tendencies of the structure of the combined routines in men groups have relatively short temporal validity due to the greater dynamics in the development of the sports acrobatics.

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