



Science, Movement and Health, Vol. XIV, ISSUE 2, 2014
June 2014, 14 (2): 292-297
Original article

STUDY ON THE USE OF THE C GROUP ELEMENTS – JUMPS AND LEAPS AND D GROUP ELEMENTS – BALANCE AND FLEXIBILITY IN THE WORLD CHAMPIONSHIPS OF AEROBIC GYMNASTICS

NICULESCU GEORGETA¹

Abstract

Problem statement. Aerobic gymnastics is not only a type of physical training but also a top-level competitive sport which attracted many practitioners. As sports discipline has evolved rapidly through spectacular accessibility, being an attraction and challenge for the athletes who have completed their competitive activity in artistic gymnastics. The harmonious combination of specific resources (basic steps, difficulty elements) and nonspecific means (technical elements of acrobatic gymnastics, rhythmic gymnastics, classical and modern ballet) led to improvement to the level of mastery of the motor content of this sport considered scene sport. In the composition of exercises at all competition levels in aerobic gymnastics are used elements from all four difficulty groups: group A – dynamic force, group B – static force, group C – jumps and leaps and group D – balance and flexibility.

Methods. The present paper aims to analyze quantitatively by comparing the used elements from the difficulty group C – jumps and leaps and D- balance and flexibility from the twelve editions of the World Championships of aerobic gymnastics. Note that the representative teams of Romania's aerobic gymnastics have participated at all editions in the world championships starting with the year 1995, Paris edition, and the last being in Sofia, year 2012, gaining valuable results, enshrining the gymnastics representative as a great force in this sportive discipline.

The working hypothesis is that the elements from group C – jumps and leaps – have a large percentage in the composition of exercises used in competition levels compared with the elements from group D – balance and flexibility. This is observed in all editions of the World Championships of aerobic gymnastics. The research method used was an ascertaining study based on video images.

Results. The obtained results confirm the working hypothesis.

The conclusions certify that at all competition levels: female individual, male individual, mixed pairs, trios and groups, the elements from the difficulty group C (jumps and leaps) have a higher percentage than the elements of the difficulty group D (balance and flexibility) in the World Championships of aerobic gymnastics. There is to be mentioned that this group C has the largest number of families of elements.

Key words: aerobic gymnastics performance, difficulty elements, jumps, balance, flexibility.

Introduction

Aerobic gymnastics was developed at the International Federation of Gymnastics (IFG) starting with the year 1994 when in Paris were unified all the international federations, under only one regulation. At the beginning the contests were organized after different regulations of their own, initiated by diverse international federations: International Aerobic Federation (IAF), Aerobic Sports and Fitness International Federation (ASFIF), American National Aerobics Commission (ANAC). Thus at the I.F.G. Congress, in 1994 was decided that all the structures and competition existent systems should be unified in only one system, with a unique regulation and then to organize the first World Championship of Aerobic Gymnastics, in 1995. It was difficult to reunite a big number of competitors from Brazil (one million practitioners), Argentina, Australia, New Zealand,

USA, Japan, Germany, Italy, Spain, which had their own regulations. Therefore at the first World championship that took place in Paris in 1995 had participated 34 countries and also Romania.

Till now there had been 12 editions of the World Championships starting with the one from 1995. They have been organized annually until the year 2000, and starting with the 2002 edition they took place biennially. The contests were: female individual, male individual, mixed pairs, trio, till the 2000 competition. At the Klaipeda World Championship (2002) was introduced the group contest, and at the 2012 edition in Sofia (Bulgaria) two more were introduced: aerobic step and aerobic dance. The International Federation of Gymnastics decided to give medals to teams, at Nanjing, in 2006.

Internationally Romania's aerobic gymnastics became a road opener and a model in defining the

¹Faculty Of Physical Education And Sports – Spiru Haret University, ROMANIA
E-mail address: getanic52@yahoo.com
Received 16.04.2014 / Accepted 27.05.2014



concept of this new sportive discipline (Niculescu, 2000). Thus in female individual was won 1 gold medal, 3 silver medals, 3 bronze medals at all World Championships. The male individual won 3 silver medals and 3 bronze medals. In mixed pairs our gymnasts won the first place twice, the second place twice, the third place five times. The contest that brought us the biggest satisfactions was the trio where the fifth gold medals, the fourth silver medals and the fourth bronze medals made the Romanian trio the best in the world. Also the group contest brought the Romanian gymnasts three gold medals and one bronze medal. It must be mentioned the fact that in the team contest introduced in 2006, Romania won the first place.

Methods

In the performance gymnastics the elements are divided in four difficulty groups: Group A – Dynamic strength, Group B – Static strength, Group C – Jumps and Group D – Balance and mobility. This diversity of elements offers multiple possibilities of composition, the exercises having a balance between the aerobic movements (combinations of up and down movements) and difficulty elements, and the arms and legs movements must be strong and well shaped by total use of space. All this ensures harmony and esthetics to the movements impressing the audience through interpretation, difficulty and dynamism in exercise execution.

The base model of the exercise in aerobic gymnastics must contain combinations of basic steps specific to aerobics, passing and transitions among levels, difficulty elements whose number varied depending on the regulations of the Code of Points and of the contest. In the composition of exercises the number of the difficulty elements was permanently changed, initially being of 20, then dropping to 16, then to 12 and now is 10 (www.fig-gymnastics.com).

Since 1994 till now the Code of Points was enriched with almost 200 elements from which half are of superior value. The group with the most substantial evolution regarding the new elements were: group A- dynamic strength, group B- static strength and group C – jumps (www.fig-gymnastics.com).

The biggest group is C group - jumps, that through volume, number of families, possibilities of execution, detachment, finalization (standing, split, push up) it offers the most numerous and spectacular composition solutions. In all the contests the elements from the jumps group bring a touch of spectacle, especially in mixed teams, trio and groups, because are made synchronically. The optimal parameters of execution of each jump highlight driving qualities like: detention, mobility, balance, coordination, strength.

Group C is the whole set of difficulties and ways of execution, starting from one leg (Leap) or two legs (jump), on the spot, in two steps with moose, with diverse shapes of free expression, landing on the floor, in push up, in split, or in push up in one arm or on both arms, the jumps becoming means, forces of content, artistic and technical departing. In gymnastics the strength is found under different forms of manifestation: dynamic strength, static strength, explosive strength (Vieru, N., 1997) being considered basic driving quality, because any movement means muscular contraction, tightly correlated with others (Potop, V., 2008).

Jumps in aerobic performance gymnastics have 4 phases: preparation for impulse or moose, the impulse, the flight and landing. Thus the moose is specific by tightening the jumps with the basic steps or by executing 2 steps of walking or running. Jumps can also be made from standing without moose.

The impulse is made from one leg or both, it must be full of energy, short, strong and must ensure an optimal height for flight as to execute different actions in the air (leg scissors, detachments in split, turns of the body around main axes, combined movements) and the landing can be finalized in: standing on one leg, standing, push up (push up in hick split, frontal prone).

Depending on the body position in air there are vertical jumps, vertical to horizontal and horizontal.

The D group elements are those that highlight articulations' mobility of gymnasts, the aptitude to execute movements with the highest amplitude possible, actively and passively (Manno, R., 1996) and balance capacity that implies maintaining positions on a support floor as reduced as possible (Macovei, S., 2007) and restoring it after the displacements and high amplitude solicitations. In the technical execution of elements and in maintaining the balance, the kinesthetic, vestibular and force aptitudes have a major role.

The elements from the Code of Points have values from 0.1 to 1 point. In the composition of exercises, the coach introduces elements with higher values so as the gymnasts gain a big grade in difficulty and a good position in world championships and cups.

Results

Regarding the analyzed content, the paper aims to comparatively and quantitatively evaluate the entire content of C group difficulty elements (jumps) and D group elements (balance and mobility), in finalist gymnasts of all 12 World Championships organized till now. Also it will be presented the frequency of elements with 0.8, 0.9, 1 point value from the last two world championships in the fifth contests.

The results obtained in C group of difficulty – jumps (table 1.1)

Table 1.1. Dynamics of the elements in category C- Jumps and leaps

Round Year	Individual women's	Individual men's	Mixed pairs	Trio	Group
1995 Paris	33,00%	34,75%	26,16%	26,60%	



1996	Haga	35,50%	35,00%	27,00%	26,90%	
1997	Perth	36,80%	38,20%	28,30%	28,10%	
1998	Catania	37,50%	34,00%	29,27%	29,16%	
1999	Hanovra	39,10%	35,40%	30,00%	27,70%	
2000	Riesa	39,80%	37,10%	31,13%	29,36%	
2002	Klaipeda	33,75%	33,89%	26,00%	24,66%	22.40%
2004	Sofia	26,60%	25,40%	25,50%	25,50%	26,22%
2006	Nanjin	25,90%	25,17%	24,79%	26,85%	26,30%
2008	Ulm	50,99%	47,91%	44,78%	46,87%	47,91%
2010	Rodez	48,75%	43,75%	51,04%	47,91%	47,91%
2012	Sofia	53,50%	47,50%	50,00%	51,04%	48,61%

Analyzing the elements' dynamics from this group in the content of the exercises presented in the contest finals from all 12 World Championships, being confirmed that there are big variations in using the elements from this group, caused by the modification of the Code of Points. Thus the biggest percentage of

elements from group C was obtained in the individual women contest (53,50%) in the World Championships in 2012 in Sofia. The smallest percentage was obtained in group contest (22.40%) in Klaipeda in 2002.

The results obtained in the D group of difficulty - balance and mobility (table 1.2)

Table 1.2. Dynamics of the elements in category D – Balance and flexibility

Round Year	Individual women's	Individual men's	Mixed pairs	Trio	Group
1995 Paris	30,48%	18,84%	26,16%	15,01%	
1996 Haga	28,33%	20,00%	16,66%	20,00%	
1997 Perth	26,67%	10,31%	12,76%	12,50%	
1998 Catania	24,18%	18,76%	13,33%	26,31%	
1999 Hanovra	25,00%	15,67%	14,28%	26,66%	
2000 Riesa	18,66%	13,33%	15,34%	14,28%	
2002 Klaipeda	24,70%	16,00%	20,30%	24,66%	20,83%
2004 Sofia	25,00%	25,00%	25,90%	25,50%	25,40%
2006 Nanjin	25,00%	16,66%	16,66%	14,80%	20,30%
2008 Ulm	17,70%	16,66%	18,74%	16,66%	17,70%
2010 Rodez	20,00%	21,25%	17,70%	15,62%	18,75%
2012 Sofia	17,50%	17,50%	18,75%	14,58%	15,27%

Regarding the use of D group elements, the biggest percentage were obtained in female individual (30,48%) in the first World Championship in Paris, in 1995, and the smallest (10,31%) in 1997 in Perth in male individual.

The frequency of elements from group C (jumps) and D (balance and mobility) had the value 0.8-1 in the World Championships in Rodez and Sofia – women's individual (table 1.3)

Table 1.3. Women's Individual

Group	Family	Elements	Value	Frequency
C RODEZ	Straddle jump/leap	C348 1/1 Turn straddle leap to push up	0,8	7x
	Cossack jump	C488 1/1 Turn cossack jump ½ turn to split	0,8	1x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	4x
	Split jump/leap	C688 1/1 Turn split jump switch to split	0,8	1x
	Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	1x
C SOFIA	Straddle jump/leap	C348 1/1 Turn straddle leap to push up	0,8	7x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	5x
		C600 1/1 Turn pike jump ½ twist to push up	1,0	1x
	Split jump/leap	C688 1/1 Turn split jump switch to split	0,8	2x
D RODEZ	Illusion	D198 Free illusion to free vertical split	0,8	2x
		D200 Free illusion to 1/1 turn free vertical split	1,0	2x
D SOFIA	Illusion	D218 Free double illusion to vertical split	0,8	2x
		D219 Free double illusion to free	0,9	3x



vertical split

Discuss. Analyzing the two groups it can be observed the use of elements from the Straddle jump/ leap, Cossack jump. Pike jump, Split jump/leap, Scissors leap and illusion families used 7 times, the highest frequency at the C348 element, and the smallest frequency in the elements from the family Cossack jumps, Pike jump, Split jump/leap and Scissors leap in both world championships. Elements of 1 point we see in this contest in the Illusion and Pike jump elements.

The frequency of elements from group C (jumps) and D (balance and mobility) had the value

0.8-1 in the World Championships in Rodez and Sofia – men's individual (table 1.4)

Table 1.4. Men's individual

Group	Family	Elements	Value	Frequency
C RODEZ	Air Turn	C109 3/1 Air turn	0,9	2x
	Straddle jump/leap	C428 1/1Turn straddle jump to push up	0,8	2x
		C348 1/1Turn straddle leap to push up	0,8	1x
	Cossack jump	C478 1/1 Turn cossack jump 1/1 turn	0,8	2x
	Pike jump	C600 1/1 Turn pike jump ½ twist to push up	1.0	7x
	Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	7x
C SOFIA	Free Fall	C150 Free fall 3/1 twist airborne	1.0	1x
	Straddle jump/leap	C348 1/1Turn straddle leap to push up	0,9	1x
		A230 Straddle cut ½ twist to wenson	0,8	1x
	Cossack jump	C478 1/1 Turn cossack jump 1/1 turn	0,8	1x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	2x
		C600 1/1 Turn pike jump ½ twist to push up	1.0	6x
Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	7x	
D RODEZ	Illusion	D218 Free double illusion to vertical split	0,8	4x
		D219 Free double illusion to free vertical split	0,9	2x
D SOFIA	Illusion	D218 Free double illusion to vertical split	0,8	1x
		D219 Free double illusion to free vertical split	0,9	2x

In gymnasts competition the element C600, from the family Pike jump, having the value of 1 point was used 7 times in the World Championship in Rodez and 6 times in the World Championship in Sofia. This can be explained by the fact that the male gymnasts have a bigger strength than female gymnasts. The element C150 from the family Free Fall having the value of 1 point was used only one time. The frequency of C and D group elements have the value 0.8-1 point in the

world championships in Rodez and Sofia – mixed pairs (table 1.5)

Table 1.5. Mixed pairs

Group	Family	Elements	Value	Frequency
C RODEZ	Straddle jump/leap	C348 1/1Turn straddle leap to push up	0,8	6x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	8x
	Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	4x
C SOFIA	Straddle jump/leap	C348 1/1Turn straddle leap to push up	0,8	6x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	7x
		C600 1/1 Turn pike jump ½ twist to push up	1.0	1x
Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	2x	
D RODEZ	-	-	-	-
D SOFIA	Illusion	D218 Free double illusion to vertical split	0,8	2x

In mixed pairs (1f+1m) was introduced in the exercise only one element of maximum value because the gymnasts do not risk executing these elements. The highest frequency is found in Pike jump family, the C598 element with the value of 0.8, used 8 times in the Rodez world championship and 7 times in the Sofia world championship. The frequency of C and D group elements have the value 0.8-1 point in the world championships in Rodez and Sofia- trio (table 1.6)

Table 1.6. Trio

Group	Family	Elements	Value	Frequency
C RODEZ	Straddle jump/leap	C348 1/1Turn straddle leap to push up	0,8	4x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	8x
	Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	3x
C SOFIA	Straddle jump/leap	C348 1/1Turn straddle leap to push up	0,8	3x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	5x
		C600 1/1 Turn pike jump ½ twist to push up	1.0	2x
	Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	5x
D RODEZ	-	-	-	-
D SOFIA	Illusion	D218 Free double illusion to vertical split	0,8	2x

In the trio contest the Pike elements have the highest frequency in both world championships, used 8 and 5 times. The maximum value (1 point) was the element C600 used 2 times and also from the Pike family. In the Rodez world championship was not used any element of difficulty from D group (value 0.8-1 point).

The frequency of C and D group elements have the value 0.8-1 point in the world championships in Rodez and Sofia- group (table 1.7)

Group	Family	Elements	Value	Frequency
C RODEZ	Straddle jump/leap	C348 1/1Turn straddle leap to push up	0,8	4x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	8x
	Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	2x
C SOFIA	Straddle jump/leap	C348 1/1Turn straddle leap to push up	0,8	2x
	Pike jump	C598 ½ Turn pike jump ½ twist to push up	0,8	5x
		C600 1/1 Turn pike jump ½ twist to push up	1.0	1x
	Scissors leap	C828 Scissors leap ½ turn 1/1 turn	0,8	3x
D RODEZ	-	-	-	-
D SOFIA	-	-	-	-

Table 1.7. Grup

In the group contest, the most spectacular, the elements of 1 point were introduced only one time and the one having 0.8 value were introduced 24 times. The highest value is found in the Pike family used 8 times in the Rodez world championship. The D group elements (value 0.8-1 point) are not found in any of the analyzed championships.

Conclusions

- analyzing the gymnasts exercises along the World Championships it can be confirmed that the elements from group C are found with a percentage of over 44% in the last three editions in all 5 contests. The highest percentage was found in the edition in Sofia at female individual (53,50%);

- regarding the balance and mobility exercises from group D it can be observed the dropping tendency of using the elements of balance and mobility in the

composition of exercises at all editions of world championships compared with the use of C group elements, because these need special qualities from the competitors;

- in the female individual contest it can be observed a balanced use of 5 and 4 families of elements from group C, in the two editions studied in terms of use and values. From D group the female gymnasts have used elements only from Illusion family with values from 0.8, 0.9 to 1 point;

- in the male individual contests are mostly used elements with maximum value of 1.0 from Pike jump family, the gymnasts having a higher explosive strength;

- in the composition of the exercises from mixed group pairs are used for 35 times elements with the value 0.8;



- the trio and group contests introduced in 2002 in the world championships are the most spectacular and the highest use have the elements with the value 0.8, because the timing has to be perfect.

References

Codurile de punctaj fig. www.fig-gymnastics

Dragnea, A., Teodorescu-Mate S. 2002. Teoria sportului. Editura FEST, București

Hahn, E., 1996. Antrenamentul sportiv la copii. SCJ nr. 104-105, București

Macovei, S., 2007., Manual de gimnastică ritmică. București: Editura Bren pp.107

Manno, R. 1996. Les bases de l'entraînement sportif. SDP nr. 371-374. București, 127, 142

Niculescu, G. 2008. Gimnastica aerobică – aprofundare. Editura Fundației România de Măine, București, 11

Popescu, G., 2005. Impact aerobic. București. Editura Elisavaras

Potop, V. 2008. *Gimnastica artistică feminină*. Editura Bren, București, 31

Pradet, M. 2000. *Pregătirea fizică partea I*. MTS-CCPS, București

Tudor, V. 1999. *Capacitățile condiționale, coordinative și intermediare-componente ale*

capacității motrice. Editura RAI, București

Vieru, N. 1997. *Manual de gimnastică sportivă*. București: Editura Driada, 40.