

PERIODIZATION OF TRAINING EFFORT IN JUNIOR FEMALE GYMNASTS' PREPARATION

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Abstract

The **purpose of the paper** is the periodization of the training effort during a macro-cycle of training and the presentation of the means contents along different stages of training of Junior III female gymnasts.

Methods and procedures. The study was carried out during a period (15.01.2007- 3.04.2007) formed of 3 mezzocycles (basic, pre-competitive and competitive), 11 micro-cycles of training, applied on 8 junior female gymnasts, aged from ten to twelve, category III. The gymnasts' progresses were monitored along the training periods in workouts and competitions, using the statistical-mathematical method and the graphical representation method.

Results

The study results show the order and the working schedule on apparatus during the training period, emphasizing the sequence of their carrying out in two training sessions per day, the effort characteristics and the contents of the means in different stages of training, also, last but not the least, the performances achieved in competition.

Discussions

In terms of training effort periodization, in our study are shown the features of the effort parameters in the basic, pre-competitive and competitive period, for training the female gymnasts for the School National Championship 1-3.IV.2007 Buzău.

The analysis of the training means content in different training stages showed the increase of the number of means from one stage to another, pointing out the share of the preparatory exercises during basic stage, the singular technical and artistic elements, with an optimum number of reps necessary for their learning and consolidation; in the pre-competitive stage was emphasized the share of the training means centered on links of technical elements and parts of the full exercise; in the competitive period were pointed out the features of the competitive effort through the training modeling for competition.

The efficiency of training effort periodization during the preparation of the junior female gymnasts was proved by the performances obtained in the School National Championship, illustrated by team results, individual all-around and apparatus finals results.

Conclusions

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The characteristics of training effort and the systematization of the training means on different apparatus, in various stages of training of junior female gymnasts, are extremely important. An optimum relationship provided between the effort characteristics administrated in the preparatory period, the specificity of effort parameters in the pre-competitive stage and the turning into good account of the technical training in accordance with the parameters of competitive effort lead to an efficient periodization of training effort and to better performances achieved in competitions.

Key words: artistic gymnastics, effort, means, periodization, training, performance

Introduction

Artistic gymnastics is currently experiencing a new level of development in terms of content and assessment of exercises. The new modifications of the Code of Points, related to the difficulty of technical elements, the granting of bonuses for the connections on each apparatus and last, but not least, the specific requirements of each apparatus will determine new guidelines and tendencies in the technical training on competition apparatus. The training effectiveness consists in the ability of the coach to organize adequate planning

instruments, with the final goal to obtain good results in major competitions (V. Potop, 2008).

The periodization is one of the most important concepts of planning and training. The term comes from the word "period", which is a slicing or splitting of time into smaller segments, easily controlled, called training stages. Periodization includes two important aspects: periodization of annual plan and periodization of bio-motor skills (T. Bompà, 2001).

The training effort represents the athlete's process of conscious overcoming of training requirements for physical improvement, for reaching

a higher technical and tactical level and also for enhancing the psychical and intellectual factors, whose results produce, intentionally, changes of the capacity for performance and adaptation of the organs and functional systems involved. For reaching the athletic shape, there are general rules applied throughout the three stages, respectively of the 3 periods of a macro-cycle: the preparatory period, corresponding to the stage of installing or reaching the fitness; the competitive period that corresponds to the stage of turning into good account or manifesting the athletic shape and the transition period, which corresponds to the stage of organized getting out of the peaking and recovery of the capacity for effort. (A. Dragnea, S. Mate-Teodorescu, 2002).

Therefore, the prognosis of gymnastics future development is crucial for approaching the training. In recent years there was a continuous „rush” after difficult elements and connections. The specialists of gymnastics were concerned with the „difficulties race” and the increase of executions quality (V. Grigore, 2001).

The large number of events, the rich and varied content of elements and exercises require skill and craftsmanship from coach's part in addressing the objectives of technical, physical, psychological, practical-theoretical and pedagogical nature (G. Niculescu, 2003).

An important factor that conditions the performance in artistic gymnastics is the training process whose quality can be influenced by the ability and activity of the coach. Ensuring the training continuity should be taken into account throughout the entire sports career, meaning that the training annual cycles must not have big interruptions of workouts, leading to a decrease of the capacity for effort. Modern practice confirmed by its results that the increase of body capacity for effort and the peaking for competition is achieved by a large volume with increasing intensity for certain periods (N. Vieru, 1997).

The current issues related to training loads in sports and gymnastics in particular, are explained by the human native capacities, regarding his possibilities of self-improvement, his physiological, biomechanical, anatomical, psychological capacities and the performance limit process. The main indicators of load in gymnastics are the technical elements, the connections and combinations. In planning and recording the load in various stages of training one can use different features, depending on training objectives. It is important that the gymnast performs a maximum amount of work (V.M. Smolevskij, Ju.K. Gaverdovskij, 1999).

Table no. 1. Work order and number of apparatus per training session

Apparatus	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	Y	Y	AY	Y	Y	

Purpose of the paper: periodization of training effort throughout a training macro-cycle and presentation of means content in various training stages of junior III female gymnasts.

Hypothesis

We consider that the assurance of an optimum relationship between the features of the effort made in preparatory period, the specificity of effort parameters in the pre-competitive stage and the turning into good account of the technical training in accordance with the parameters of competitive effort will lead to an efficient periodization of the training effort and to the achievement of better performances in competition.

Methods of research and procedures

The study dealt with the workout plans within a training macro-cycle, analyzing statistically the content of training means and the parameters of workout effort in various stages of training. The statistical processing has been made in Word and „KyPlot” programs.

Subjects, protocol of conduct

To emphasize the periodization of training effort in different training stages of junior gymnasts, a study was organized in Junior female gymnasts national team of Onești.

The study was conducted over a period (15.01.2007 – 3.04.2007) including 11 training micro-cycles, applied on 8 junior gymnasts, 10-12 years of age, category III. The gymnasts' progresses were monitored along the training periods in workouts and competitions, using the statistical-mathematical method and the graphical representation method.

Training macro-cycle 2007:

1. Training period, basic stage (15.01.2007-10.02.2007)
2. Training period, pre-competitive stage (12.02.2007 – 10.03.2007)
3. Competitive period, 12.03.2007- 3.04.2007

Work schedule per apparatus/ shifts:

Morning training session:

- Apparatus no.1: 10³⁰ - 11⁰⁰
- Apparatus no.2: 11⁰⁰ - 11³⁰
- Apparatus no.3: 11³⁰ - 12⁰⁰
- Apparatus no.4: 12⁰⁰ - 12³⁰
- Apparatus no.5: 12³⁰ - 13⁰⁰

Afternoon training session:

- Warm-up : 17⁰⁰ – 17³⁰
- Apparatus no.1 : 17³⁰ – 18¹⁰
- Apparatus no.2 : 18¹⁰ – 18⁵⁰
- Apparatus no.3 : 18⁵⁰ – 19³⁰

Morning training session	Artistics	1	1	1	1	1	Warm-up
	Vaults	2	-	2	-	2	1
	Uneven bars	3	4	3	4	3	2
	Beam	4	3	4	3	4	3
	Floor	-	2		2	-	4
	Phys.traing.	5	5	P.T.+mobilt	5	5	P.T.+mobility
Afternoon training session	Vaults	-	1	D	1	-	D
	Uneven bars	-	2	A	2	-	A
	Beam	2	-	Y	-	2	Y
	Floor	1	-	O	-	1	O
	Phys.traing.	3	3	FF	3	3	FF

Table no. 1 shows the work order and the number of apparatus per two workouts/a day during a training micro-cycle

Table no. 2. Features of effort parameters during basic and pre-competitive stage, preparatory period

No.	Effort parameters	Morning training:	Afternoon training	Total	
1	No of preparatory training sessions	24	16	40	
2	Work on apparatus	Vaults	12	8	20
		Uneven bars	24	8	32
		Beam	24	8	32
		Floor	12	8	20
3	Warm-up (minutes)	20	20	40	
4	Artistic training + mobility (minutes)	50+10	-	50- 60	
5	Physical training (minutes)	30	30	60	

In table no. 2 are shown effort features in basic and pre-competitive stage, during a preparatory period, emphasizing effort parameters in training session no. 1, 2 and their total value.

Table no. 3. Features of effort parameters during competitive period

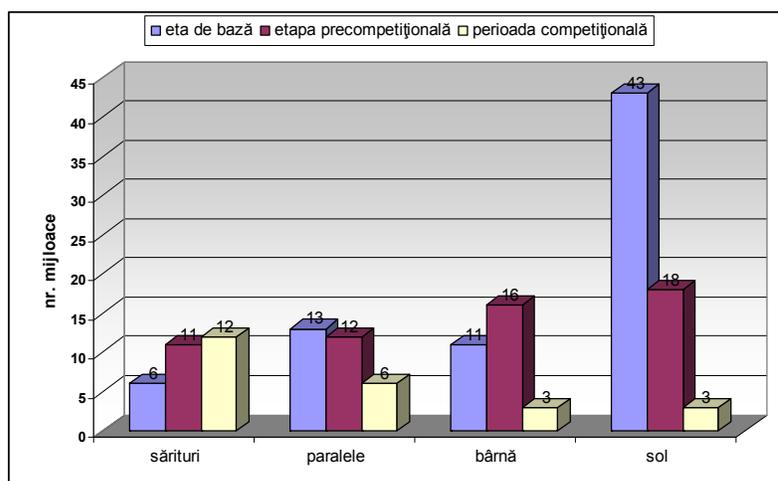
No.	Morning training:	Afternoon training	Afternoon training	Total	
1	No of preparatory training sessions	20	12	32	
2	Work on apparatus	Vaults	16	6	22
		Uneven bars	20	6	26
		Beam	20	6	26
		Floor + artistic training	11	6	17
3	General and specific warm-up (minutes)	20	20	40	
4	Physical training (minutes)	30	30	60	

In table no. 3 are shown effort features in competitive period, pointing out effort parameters, number of training sessions per stage, number of apparatus and, last but not least, duration of physical training.

Table no. 4. Content of training means – preparatory period, basic stage

Apparatus		No. of means	No of reps / training sess.	Total no of reps
Vaults	Preparatory exercises	5	3-10	720
	Vault	2	5	120
	Total	6		840
Uneven bars	Technical elements	10	2-5	960
	Connections of 2-3 elements	3	5	384
	Total	13		1344
Beam	Elements	4	5	576
	Connections of acrobatic	5	2-5	584

Floor	elements			
	Artistic elements	2	5	320
	Total	11		1480
	Acrobatic lines on acrobatic path	13	1-5	760
	Total of means	13		760
Total of training means		43		4424



Graph no. 1. Content of training means on apparatus

In table no. 4 and graph no. 1 is shown the content of training means in the preparatory period-basic stage , regarding the means volume on each apparatus, number of means, optimum number of reps per each training session, total number of reps and total number of training means.

Table no. 5. Content of training means – preparatory period, pre-competitive stage

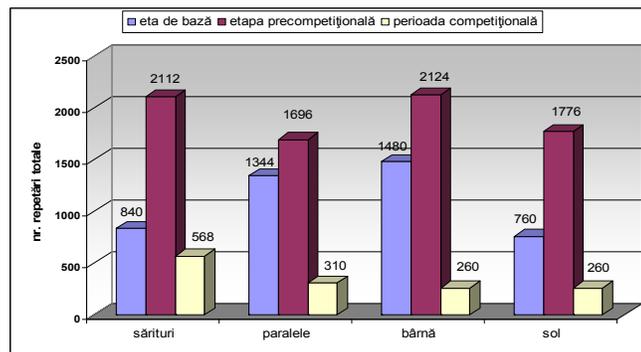
Apparatus		No. of means	No of reps / training sess.	Total no of reps
Vaults	Preparatory exercises	6	3-10	1152
	Vaults	5	5-10	960
	Total	11		2112
Uneven bars	Technical elements	9	1-10	1216
	2-3 elements linking	3	5	480
	Total	12		1696
Beam	Elements	7	3-5	844
	Acrobatic elements linking	7	5-7	960
	Artistic elements	2	8	320
	Total	16		2124
Floor	Acrobatic lines on acrobatic path	15	1-5	1296
	Artistic elements	2	5	240
	1 st and 2 nd part	1	5	240
	Total of means	18		1776
Total of training means		57		7708

Table no. 6. Content of training means – competitive period

Apparatus	Content of means	No. of means	No of reps / training sess.	Total no of reps
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Vaults	Preparatory exercises	5	1-3	254
	Vaults	4	5	274
	Series of competition vaults	4	2	40
	Total	12		568
Uneven bars	Warm-up technical elements	2	1	40
	1 st part	1	5	38
	2 nd part	1	5	38
	Integral exercise	1	3-5	94
	Correction of failed elements	1	5	100
	Total	6		310
Beam	30 seconds warm-up elements	1	3-5	60
	Integral exercise	1	5	100
	Correction of failed elements	1	5	100
	Total	3		260
Floor	Acrobatic lines on acrobatic path	1	3-5	60
	Integral exercise	1	5	100
	Correction of failed elements	1	5	100
	Total of means	3		260
Total of training means		24		1398

In tables no. 5 and 6 is detailed the content of training means in pre-competitive stage and competitive period as for the volume of means on each apparatus, number of means, optimum number of reps per training session, total number of reps and total number of training means.



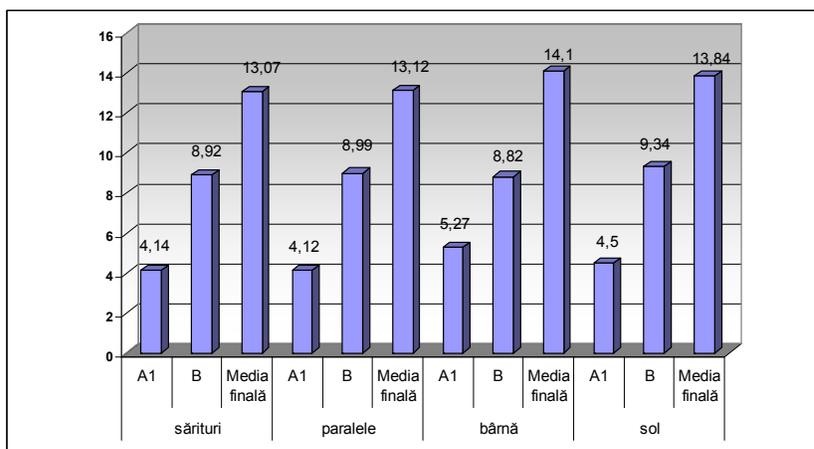
Graph no. 2. Contents of total number of reps

Graph no. 2 shows the total number of reps regarding the number of reps on each apparatus, in different stages of training

Table no. 7. School National Championship for Juniors, all-round results, 1-3.IV.2007 Buzău

Categ. Place	N.M.													Total Score
		A1	B	Final mean	A1	B	Final mean	A1	B	Final mean	A1	B	Final mean	
III.3	B.A.M.	4.000	9.000	13.000	5.000	8.850	13.850	5.300	8.800	14.100	4.600	9.400	14.000	54.950
III.15	B.B.	4.000	8.650	12.650	3.100	8.650	11.750	4.800	8.150	12.950	4.400	9.300	13.700	51.050
III.2	B.D.	4.400	9.200	13.600	4.000	9.400	13.400	5.500	9.00	14.500	4.800	9.300	14.100	55.600
III.5	D.M.	4.200	8.600	12.800	4.100	9.100	13.200	5.200	9.050	14.250	4.400	9.300	13.700	53.950
III.7	G.G.	4.000	9.000	13.000	4.100	9.250	13.350	4.800	8.350	13.150	4.300	9.350	13.650	53.150
III.1	I.L.	4.200	9.050	13.250	4.200	8.950	13.150	6.000	9.150	15.150	4.700	9.400	14.100	55.650
III.4	Ș.C.	4.200	9.000	13.200	4.400	8.750	13.150	5.300	9.300	14.600	4.300	9.350	13.650	54.600
Mean		4.14	8.92	13.07	4.12	8.99	13.12	5.27	8.82	14.1	4.5	9.34	13.84	54.13
S.E.M.		0.0567	0.082	0.118	0.213	0.102	0.246	0.156	0.16	0.29	0.075	0.017	0.08	0.61

S.D.	0.15	0.21	0.313	0.31	0.27	0.42	0.41	0.42	0.79	0.2	0.044	0.21	1.62
Coeff. Var.	0.036	0.024	0.023	0.136	0.031	0.049	0.078	0.048	0.056	0.044	0.01	0.015	0.03



Graph no. 3. School National Championship for Juniors, results at all-round finals, 1-3.IV.2007 Buzău

Table no. 8. School National Championship for Juniors, results at apparatus finals, 1-3.IV.2007 Buzău

N.M.								
	Place	Score	Place	Score	Place	Score	Place	Score
B.A-M.	3	12.925	1	13.850	6	14.100	4	14.000
B.B.							7	13.700
B.D.	1	13.550	2	13.400	3	14.500	1	14.100
D.M.			4	13.200	5	14.250	7	13.700
G.G.			3	13.350				
I.L.			5	13.150	1	15.150	1	14.100
Ș.C.	2	13.150	5	13.150	2	14.600		
Mean	2	13.21	3.33	13.35	3.4	14.52	4	16.92
S.E.M.	0.57	0.18	0.67	0.11	0.93	0.18	1.34	0.09
S.D.	1.0	0.32	1.63	0.26	2.07	0.4	3	0.2
Coef. Var.	0.5	0.02	0.48	0.019	0.61	0.027	0.75	0.01
N	3	3	6	6	5	5	5	5

Table no. 7 and graph no. 3 summarize the performances obtained by the female gymnasts included in the study at National Artistic Gymnastics Championship for Juniors held in Buzău, highlighting the technical training level at each apparatus by means of A1 score – exercise difficulty, B score – penalties for each execution and final score at each apparatus.

In table no. 8 are listed the results obtained in apparatus finals at National Artistic Gymnastics Championship for Juniors, held in Buzău, showing the place and the final score at apparatus.

Discussions

The subjects of the experimental group are represented by 8 junior gymnasts, aged from ten to twelve, category III, 1st and 2nd year of training,

members of Junior Olympic team within the Training Center of Onești.

In terms of training effort periodization, the study summarizes the features of effort parameters in the basic stage, pre-competitive one, and the competitive period for junior female gymnasts' training before their participation in School National Championship, 1-3.IV.2007, Buzău.

Throughout our study conduct, junior gymnasts' training has been made in two training sessions a day, namely 10 training sessions a week, 150 minutes/training session, 1500 minutes / week (25 hours).

Regarding the work order at apparatus, the activities on uneven parallel bars and on beam were monitored in both training sessions of the same day, while the apparatus for legs mainly – vaults and floor – were alternated, one in the morning and the

other one in the afternoon. All along the training period, the workout program and the apparatus order were maintained constantly, with some exceptions in special cases (injuries, preferences or other conditions).

The review of effort features during the preparatory period – basic stage- and the pre-competitive period, emphasized the fact that the preparation was performed with 40 training sessions per stage, out of which 24 sessions were carried out in the morning and 16 sessions in the afternoon; in terms of work on apparatus at vaults and on floor, this work was materialized in 20 training sessions, out of which 12 sessions in the morning and 8 sessions in the afternoon, at uneven bars and on floor with 32 training sessions, out of which 24 sessions in the morning and 8 sessions in the afternoon, the warm-up lasted 20 minutes per training session, the artistic training and the mobility development lasted 60 minutes per training session and the physical training - 30 minutes per training session.

From the analysis of effort parameters throughout the competitive period, it was noticed that the training was made in 32 preparatory training sessions, out of which 20 sessions were held in the morning and 12 sessions in the afternoon; as for the work on apparatus, at vaults were made 22 training sessions, out of which 16 sessions were held in the morning and 6 in the afternoon, at uneven bars and beam - 26 training sessions, out of which 20 in the morning and 6 in the afternoon, while on floor the target was the improvement of artistic training along 17 training sessions, out of which 11 sessions in the morning and 6 in the afternoon, with general and specific warm-up 20 minutes, specific physical training of 30 minutes per workout.

During the check-up training sessions, held either in the morning or in the evening, the number of apparatus according to the established program was no more respected; the goal was the modeling of the preparation for competition, observing all features of competition effort parameters.

Concerning the content of training means in the preparatory period – basic stage – we can notice 5 training means per workout and 840 total reps in the case of vaults, 13 training means per workout and 1344 total reps in the case of uneven parallel bars, 11 training means per workout and 1480 total reps in the case of the beam, while on the floor there were 13 training means per workout and 760 total reps; in terms of total number of training means per workout, there are 43 training means per workout and 4424 reps per stage.

As for the content of the training means throughout the preparatory period, pre-competitive stage, one can notice the following values: vaults - 11 training means per workout and 2112 total reps; uneven bars - 12 training means per workout and 1696 total reps; beam - 16 training means per workout and 2124 total reps; floor - 18 training

means per workout and 1776 total reps; in terms of total amount of training means per workout, we find out 57 training means and 7708 reps per stage.

In terms of content of training means in the competitive period, the following elements can be noticed: vaults - 12 training means per workout and 568 total reps; uneven parallel bars - 6 training means per workout and 310 total reps; beam - 3 training means per workout and 260 total reps; floor - 3 training means per workout and 260 total reps; as for the total amount of training means per workouts, there are 24 training means and 1398 reps per stage.

A comparative analysis of the training stages and periods highlights the increase of means number per workout and the increase of total reps from the basic stage to the pre-competitive stage, while in the competitive stage – where the training means are represented by parts and integral exercises on apparatus - the training means number per workout and the total reps number diminish.

The assessment of gymnasts' technical training level has been made on the basis of the results obtained in competition related to the content of the qualifying program for category III concerning the difficulty requirements for each apparatus, penalties and execution mistakes (***, 2007).

Analyzing the performances achieved in competition by the subjects of the study at the National Artistic Gymnastics Championship for Juniors, held in Buzău, we noticed the level of technical training at each apparatus, regarding the average of score A1 at vaults: 4.14 points., score B : 8.92 and final score of 13.07 ; at uneven bars, the average of score A1 is 4.12 points., score B : 8.99 points and the final score of 13.12 points ; at beam, the average pf score A1 is 5.27 points, score B is 8.82 points and the final score is 14.1 points; on floor, the average of score A1 is 4.5 points, score B is 9.34 points and the final score is 13.84 points and the average of the total score is 54.13 points.

Conclusions

1. The results of the study emphasize the influence of the training means in various stages and the dynamics of effort parameters in the training of junior female gymnasts category III.
2. The relationship of training means and effort parameters during the basic mezzo-cycles, the pre-competitive and competitive period, highlights the following matters: preparatory exercises, technical and artistic elements at each apparatus, the optimum number of reps necessary for learning and enhancing these ones within the preparatory period of the basic stage; the training means, centered around the connections of technical elements and parts of the integral exercise, the optimum number of reps needed to the improvement of these ones within the preparatory period of the pre-competitive stage; means of training modeling for competition during

the check-up workouts, the optimum number of reps required for the improvement of integral executions and the increase of the capacity for effort in the competitive period.

3. The effectiveness of training effort periodization in the preparation of junior female gymnasts was highlighted by the performances achieved at School National Championship, namely the results per teams, all-around and apparatus finals.

The assurance of an optimum relationship between the features of the effort used along the preparatory period, the specificity of effort parameters in the pre-competitive stage and the turning into good account of the technical training in accordance with the parameters of competitive effort will lead to an efficient periodization of the training effort and to the achievement of better performances in competition.

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