Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XIX, ISSUE 1, 2019, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengage Learning, Cabell's Directories

Science, Movement and Health, Vol. XIX, ISSUE 1, 2019
January 2019, 19 (1): 32 - 36
Original article

RELATIONSHIP OF THE NEW STRATEGIES AND TRENDS OF PLANNING AND CONTROL OF THE TRAINING IN MEN'S ARTISTIC GYMNASTICS

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Abstract

Objective. The main objective of this study is to find new solutions for the development of a strategy meant to improve the long and medium term training level in the Men's Artistic Gymnastics Olympic team.

Methods. A study was conducted to this end in the men's artistic gymnastics Olympic team from September 2017 to March 2018. Research methods used: review of specialized literature and analysis of the planning & control documents; method of pedagogical observation; method of tests for assessment of the training level; statistical-mathematical and graphical representation method. The assessment of the training level was based on the comparative analysis of the results achieved in the National Championships of Men's and Women's Club representative teams, Ploiești, 1-3.09.2017, the test competition World Cup Doha (21-24.03.2018 QAT) and the content of the individual training sheets.

Results. The planning and control of athletes' training was achieved throughout two macro-cycles of the calendar year 2018 in the Seniors Olympic team of Men's Artistic Gymnastics. It focused on the following elements: reorganization of the technical staff and athletes' team as well; sequencing of the preparation with specific objectives of training and performance; content of the scientific support consistent with the training stages; training volume for each type of indicator regarding the number of full exercises, number of days, training sessions and training hours; system of sustaining the effort and recovering after effort; materials and equipment necessary for the training organization and carrying out in order to participate in Tokyo 2020 Olympic Games; estimation of the relationship between the content of the training weekly cycles and the individual training sheets. The partial results of the study reveal the achievement of the performance and training objectives in conformity with the training stages, the level of technical training in terms of difficulty, accuracy of exercises execution and final score on apparatus obtained in competition.

Conclusions. The achievement of the performance and training objectives depending on the period and stages of training contributed to the creation of new medium and long term strategies of planning and control of the senior Olympic team in accordance with the current level and the modern trends of Men's Artistic Gymnastics development.

Key words: gymnastics, control, planning, training, performance.

Introduction

The international Men's Artistic Gymnastics has a very high training level aiming at the participation in team events and individual events as well. Nevertheless, the sports competition between the national teams revealed a series of issues in terms of sports training, such as: insufficient basic and special technical training, large volume of activity carried out during the initial and basic stages of the training, intensification (forcing) related to the sports results (Vieru, 1997; Rozin, 1997; Smolevsky, Gaverdovsky, 1999; Arkaev, Suchilin, 2004; Potop, 2014).

The efficiency of the training consists of the coach's capacity to organize the proper tools of training intended to lead to the achievement of maximum results in the very important competitions. Thus, the training is based on the documents of perspective planning, annual plan, stage plan, weekly cycle and training plan (Bompa, 2002; Platonov, 2013).

The training annual plan is the tool that guides the sports preparation throughout one year; it is based on the principles of sports preparation, depending on the level of athletes, on the competitions calendar and the intended objectives. It can be formed of one or several macro-cycles (Vieru, 1997).

The control and assessment of the training is a binding requirement for each coach. The record documents are very important because they are used in the analysis and the conclusions regarding the

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Received 1.11.2018 / Accepted 15.12. 2018

Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
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activity carried out and they help to create the activity program for the next training cycle.

The objective of this study is to identify new solutions for the elaboration of a strategy for the improvement of the long term and average term training level of the Olympic team of men's artistic gymnastics.

Methods

A number of 11 gymnasts – members of the youth and seniors Olympic team of men's artistic gymnastics of Romania – participated in this study carried out from September 2017 to March 2018. Research methods: review of specialized literature and documents for planning and control; method of pedagogical observation; method of assessment tests of the training level; statistical-mathematical and graphical representation method. The assessment of the training level of the gymnasts-subjects of the study was made on the basis of the comparative analysis of the results obtained in the National Championships of Men's and Women's Club Representative Teams, Ploiești, 1-3.09.2017 and the World Cup Doha (21-24.03.2018 QAT) try-out, in terms of difficulty, execution, penalties and final score on apparatus and the content of the individual training sheets.

Results

Table 1 presents the results of the difference between the means for the difficulty of the exercises on apparatus as shown in the individual training sheets and the difficulty of the exercises executed in National Championships of Men's and Women's Club Representative Teams(NCCR) Ploiești 2017, calculated by means of the parametric method Simple Factor ANOVA test.

Table 1. Differences between difficulty in the individual sheets and competition

Variables	Difficulty; M ± SD: Individual sheets (n = 11)	NCCR, Ploiești 2017 (n = 11)	F	P - value	P	F(0,05)
Floor (points)	5.46±0.65	5.51±0.30	0.036	0.851	>0.05	4.494
Pommels (points)	5.06±0.69	4.74±0.55	0.526	0.476	>0.05	4.351
Rings (points)	5.00±0.76	4.96±0.63	0.011	0.918	>0.05	4.413
Vault (points)	4.93±0.51	5.13±0.16	0.824	0.378	>0.05	4.543
P-Bars (points)	4.58±0.98	5.01±0.57	0.072	0.791	>0.05	4.381
High Bar (points)	4.96±0.70	4.83±0.59	0.217	0.646	>0.05	4.381

F - Single factor ANOVA; P – significance threshold; NCCR –National Championships of Club Representative Teams

The analysis of the differences between difficulty means from the individual training sheets and the difficulty values achieved in NCCR reveals the initial level of training, compared with the one demonstrated in competition.

Floor - there is an increase of the mean by 0.05 points and insignificant differences at P>0.05.

Pommels – a decrease by 9.32 points and insignificant differences at P>0.05.

Rings – a decrease by 0.04 points and insignificant differences at P>0.05.

Vaults – an increase by 0.20 points and insignificant differences at P>0.05.

Parallel bars – an increase by 0.43 points and insignificant differences at P>0.05.

High bar - a decrease by 0.13 points and insignificant differences at P>0.05.

Table 2 shows the results of gymnasts' training level based on the comparative analysis of the scores obtained in competitions at difficulty, execution and final score.

Table 2. Results of the training level of the gymnasts who participated in this study

Variables	mean ± SD; n: NCCR, Ploiești 2017- All-around finals, (N = 11)					Finals app., N = 10		WC, Doha 2018 (N = 4)				
	n	D	E	Pen	FS	n	FS	n	D	E	Pen	FS
Floor (points)	7	5.51	8.01	0.32	13.29	3	14.45	2	5.70	7.35	-	13.05

		±0.30	±0.54		±0.81		±0.72					
Pommels (points)	10	4.74 ±0.55	7.74 ±0.55	4*	12.07 ±2.44	6	11.58 ±1.23	2	5.65	7.68	-	13.33
Rings (points)	8	4.96 ±0.63	7.41 ±0.74	-	12.37 ±0.94	4	12.77 ±0.75	1	6.10	8.66	-	14.76
Vault (points)	6	5.13 ±0.16	8.64 ±0.49	0.1	13.75 ±0.58	4	13.48 ±0.56	1	5.20	8.90	0.1	14.00
P-Bars (points)	10	5.01 ±0.57	7.65 ±0.56	-	12.66 ±0.83	4	12.30 ±0.67	2	5.85	7.64	-	13.50
High Bar (points)	10	4.83 ±0.59	6.85 ±0.64	-	11.68 ±0.91	5	12.46 ±0.91	1	5.60	7.80	-	13.40

P-Bars – parallel bars; SD, standard deviation; N – total number of subject; n, number of subjects; D – difficulty; E – execution; FS – final score; NCCR –National Championships of Club Representative Teams.

The results of the comparative analysis regarding the performances achieved in competitions reveal the following matters:

In the floor event of the National Championships of Club Representative Teams (NCCR) participated 7 athletes who had a mean and standard deviation (mean ± SD) of 5.51±0.30 points for difficulty while in the World Cup Doha (WC) participated 2 athletes with a mean of 5.70 points; they received for execution in NCCR – 8.01±0.,54 points and in WC Doha – 7.35 points; in terms of penalties, in NCCR, a number of 5 athletes were penalized with 0.1, 0.5 and 0.6 points, with a mean of 0.31±0.22 points; final score in NCCR – 13.29±0.81 points; a number of 3 athletes took part in the apparatus finals, with a mean of 14.45±0.72 points while in WC Doha – 13.05 points.

In the pommels event of NCCR we had 10 athletes who obtained a mean (mean ± SD) of 4.74±0.55 points for the difficulty of their exercises while in WC Doha we had 2 athletes – 5.67 points; for execution in NCCR – 7.74±0.55 points and in WC Doha – 7.68 points; in terms of penalties, in NCCR one athlete was penalized with 4.0 points for non-fulfillment of the technical requirements; final score in NCCR – 12.07±2.44 points; in apparatus finals(in which 6 athletes participated) – 11.58±1.23 points and in WC Doha – 13.33 points.

Rings event: 8 participated in NCCR and they received for difficulty (mean ± SD) – 4.96±0.63 points while in WC Doha only one athlete was qualified – 6.10 points; for execution in NCCR – 7.41±0.74 points and in WC Doha – 8.66 points; final score in NCCR - 12.37±0.94 points; 4 athletes were qualified for apparatus finals – 12.77±0.75 points and in WC Doha – 14.76 points.

Vaults event: 6 athletes participated in NCCR and they received (mean ± SD) for difficulty – 5.13±0.16 points while in WC Doha only one athlete qualified and had 5.20 points; for execution in NCCR – 8.64±0.49 points and in WC Doha – 8.90 points; in terms of penalties, in NCCR and WC Doha one athlete was penalized by 0.1 points; final score in NCCR - 13.75±0.58 points ; 4 athletes participated in apparatus finals and obtained – 13.48±0.56 points while in WC Doha – 14.00 points.

Parallel bars event: 10 athletes participated in NCCR and they received for difficulty (mean ± SD) 5.01±0.57 points while in WC Doha two athletes were qualified – 5.85 points; for execution in NCCR – 7.65±0.56 points and in WC Doha – 7.64 points; final score in NCCR -12.66±0.83 points; 4 athletes participated in apparatus finals and received - 12.30±0.67 points while in WC Doha – 13.50 points.

High bar event: 10 athletes participated in NCCR and they received for difficulty (mean ± SD) – 4.83±0.59 points and one athlete was qualified in WC Doha and obtained 5.60 points; for execution in NCCR – 6.85±0.64 points while in WC Doha – 7.80 points; final score in NCCR -11.68±0.91 points; in apparatus finals we had 5 qualified athletes who received 12.46±0.91 points while in WC Doha – 13.40 points.

Figure 1 shows the variation of effort parameters during the period of the study in terms of sequencing the training, the volume of training for each type of indicator: number of training days, number of training sessions, number of training hours and number of integral exercises.

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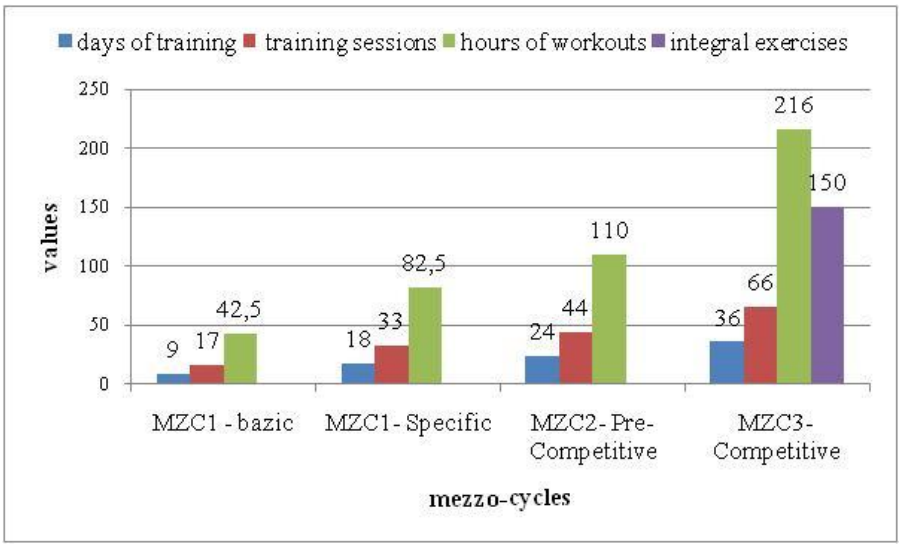

Figure 1. Variation of effort parameters throughout the period of the study

The analysis of the training period content throughout the study reveals that this period is divided into three training mezzo-cycles (MZC):

MZC1 is formed of two stages: 1 – period (04.01-14.01.2018) training camp, Cheile Grădiștei: 9 days of training, 17 training sessions and 42 h 30 min of workouts and stage 2-a – (15.01-04.02.2018) – basic technical training: 18 days of training, 33 training sessions and 82 h 30 min of workouts.

MZC2 – pre-competitive stage (05.02-04.03.2018), aiming at the improvement of the new elements for all the members of the team; gradual passage to practicing some parts of the exercises with new elements and combinations of these ones. The volume of training specific to this stage includes 24 days of training, 44 training sessions and 110 hours of workouts.

MZC 3 (5.03-14.4.2018) – competitive period, especially for the athletes who participated in WC Doha 2018. It includes 36 days of training, 66 de training sessions, 150 integral exercises (3 integral exercises /training session out of 5 days of training) and 216 hours of workouts.

Discussion

The poor results, more exactly the non-qualification for the Olympic Games of Rio de Janeiro 2016 and the colorless evolution in the latest World Championships in Canada (Marian Drăgulescu excepted, who succeeded to range the fourth in the vaults event) entitle us to take measures meant to bring us back in the elite international performances.

Therefore, the Romanian Gymnastics Federation decided to build a new technical team which will try to find new solutions for creating an improvement strategy of the long term and medium-term training level.

The planning and control of athletes' training was made in two macro-cycles during the calendar year 2018 of the men's artistic gymnastics Olympic team of Seniors and Youth. Attention was given to the following issues: reorganization of the technical team and of the athletes as well; sequencing of the training taking into account the objectives of performance and instruction; content of the technical assistance in conformity with the stages of training; volume of training for each type of indicator, in terms of integral exercises, number of days, training sessions and hours of training; system meant to support the effort and to ensure the recovery after effort; materials and equipment necessary for the organization and carrying out of the training and participation in the Olympic Games of Tokyo 2020 and estimate of the relationship of the training weekly cycles and the training individual sheets.

The analysis of the specialized literature regarding the planning and control in artistic gymnastics highlights the coaches' concerns related to aesthetics and nutrition, in the case of female athletes and to physical and technical training in the case of male athletes (Côté, Salmela, 1996); there were also observed the problems regarding the coaches' involvement in the preparation of gymnasts in training sessions and competitions (Côté, Salmela, Russell, 1995); problems concerning the methods of control, the training plans, the training effort of the gymnastics team of China (Shao, Huang, 2001; Huang, Shao, 2001; Huang, Shao, 2003); the

specialists studied the efficiency of the training sessions before the important competitions, the particularities of the training sessions in the artistic gymnastics national team of China, the annual plan of training, the structure, content and control of the training effort (Shao, Huang, 2001) and the system of control and planning of the training process in identifying the affective-attitudinal traits of the female gymnasts aged 12 to 15 years (Buftea, 2017).

Conclusions

The results of the study reveal the training level of the athletes by comparing the performances achieved in the two official competitions in terms of difficulty, execution, penalties and final score.

The parameters of the training effort throughout the research period show the number of training days, training sessions, full exercises and training hours in each training mezzo-cycle.

The achievement of the performance and instruction objectives depending on the training period and stages contributed to the identification of new medium-term and long-term planning and control strategies for the Seniors Olympic team lung according to the current level and the modern trends of development in Men's Artistic Gymnastics.

The study that we conducted entitles us to draw the conclusion that the current technical training level of the seniors' team of artistic gymnastics requires the learning of new elements, the increase of exercises difficulty on apparatus and the execution improvement and safety.

Acknowledgments

We express our gratitude to the athletes of the Olympic team of Men's Artistic Gymnastics and particularly to the head coach Marius Urzică for his kind support in the achievement of the research. No funding was used for this study.

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