

PLANNING OF SPECIFIC MEANS AND DYNAMICS OF ATHLETIC SHAPE IN PERFORMANCE WEIGHTLIFTERS' TRAINING

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Abstract

Purpose of the paper - planning of specific means and dynamics of athletic shape in performance weightlifters' training, for participating in Youth European Championships and Senior World Championships.

Methods and procedures. The study was conducted over a period (21.09 - 29.11.2009) formed of 10 micro-cycles, applied on a group of 7 athletes, of 20 to 24 years old, for Junior, Youth and Senior categories. The athletes' performances were monitored during the preparation stages in training sessions and competitions, using the statistical-mathematical method and plotting method.

Results

The results of the study point out the planning of the specific means of training as for the number of reps per each micro-cycle and the share of the technical and strength training means in the two mezzo-cycles of training. In terms of intensity of the specific training means, within this study were taken into account the values of 80%, 85%, 90%, 95%

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per training means in micro-cycles. Monitoring the athletes in training progress, we pointed out the significant differences between the number of reps with the intensity of technical and strength means at 80%, 85%, 90% and 95%. The effectiveness of planning the specific means and the athletic shape dynamics in the performance weightlifters training is highlighted by the performances got by the subjects of the study in the Youth European Championships and Senior World Championships, thanks to the results achieved per technical styles, their total value and the ranking.

Discussions

Regarding the planning of the technique and strength specific means applied during the performance weightlifters' training, this one was exemplified in the study throughout 10 micro-cycles in the competitive training periods of the mezzo-cycles no. 1 and 2. The review of the planning of training specific means content showed that the number of reps in mezzo-cycle no. 1 has an average of 340 reps in the case of the athletes that did not participate in the Senior World Championships and 275 reps in the case of the athletes that competed in the Senior World Championships. As for the intensity of the specific means during the training micro-cycles, one has highlighted the share of the technical and strength means at 80%, 85%, 90%, 95% and 100% during workouts. In terms of performances obtained by the study subjects in the two competitions, we noticed that the athletes achieved the following performances: 2nd and 3rd places at clean and jerk style, 5th place at total and two 6th places at snatch style in the Youth European Championships and 2nd place at snatch style, 3rd place at clean and jerk style and 4th place at total in the Senior World Championships.

Conclusions

1. The study results point out the efficiency of the specific means planning on the athletic shape dynamics during the performance weightlifters training.
2. The presentation of the planning of specific means depending on the intended objectives of the same training mezzo-cycle highlights the individualization of the training and ensures the continuity in training.
3. The intensity of application of the specific training means in the competitive mezzo-cycles show the share of the technical and strength means per each micro-cycle, with a greater stress on the strength exercises.
4. An optimum relationship of the specific training means, the number of reps per each micro-cycle and the share of effort intensity during two mezzo-cycles of competitive training points out the dynamics of the athletic form and the performances achieved in competitions.

Key words: athletic shape, weightlifting, means, performance, planning.

Introduction

The fast increase of weightlifting performances, a phenomenon that we are

permanently witnessing, is based on the improvement of technique and training methods.

The planning represents the activity of detailed and accurate elaboration of the training and performance objectives, of the organization means, methods and forms adequate to the intended goals as well (S. Teodorescu, 2009).

The training or lesson means are formed of the assembly of physical exercises meant to provide transformations and improvements at the level of different factors of performance. The specific means have a higher and higher share within macro-cycles, namely during the first micro-cycles their presence is reduced, then they are more and more repeated, as the middle of the pre-competitive stage is getting closer. In the competitive period, the specific means are diminished, leaving the main place to the means of competitive character (A. Dragnea, S. Mate Teodorescu, 2002).

Training organization on mezzo-cycles basis allows the systematization of the training in accordance with the main objective of the training period and stage, ensuring the optimum dynamics of the loads, the combination of different means and methods of training between the factors of pedagogical impact and the recovery activities. The number and structure of the competitive mezzo-cycles in athletes' training highlight the specific character of the sport branch, the features of the competitions calendar and the classification degree and level. The combinations and total amount of loads during the micro-cycles of the mezzo-cycles depend often on the stage of the multi-annual training (V.N. Platonov, 2004).

The structure of the training process within some mezzo-cycles present topical issues in athletes' strength specific training. In their previous studies, the authors have dealt with some methodological approaches concerning the use of mezzo-cycles centered around strength development. The particular interest of the authors has been oriented towards the features of strength training within a longer training period. The analysis of specialty literature made possible to establish that this part of the sport theory and practice had been a subject matter very carefully approached by the specialists of this field. The settled goals, the structure and content of mezzo-cycles show the place of each one in different stages of training (V.V. Bojko, 1987; Y. Verhoshanskij, 1985; V.V. Marchenko, V.N. Rogozjan, 1995; Y. Matveev, 1991).

One of the basic conditions in the planning of workout loads is variety. The gradual increase of loads volume can be made at beginners and children categories, also for the ranked athletes after the transition period, when a new annual cycle of training begins (P.A. Roman, 1986).

To find correctly the main result in the strength exercises of the following mezzo-cycle, it is a must to grant the objective grade for the special training level reached by the athlete. It is very

important to understand the characteristics of recovery indicators in different exercises. At this stage is achieved the decision-making on the athlete's adaptive capacity and on its classification in accordance with the results obtained by selecting the means with best results, presented earlier (V.V. Marchenko, L.S. Dvorkin, V.N. Rogozjan, E.V. Rudenko, 1997).

The effort parameters show the growth of effort intensity from one micro-cycle to another by increasing the load, the number of series and reps; the progressive increase of effort parameters, keeping these ones at maximum level and the volume diminution before the competitive period; dynamics of effort parameters, related to the relationship between the technical and physical training (V. Potop, S.Toma Urichianu, M.V. Ulăreanu, 2010).

The analysis of weightlifters' long-term training at various levels of athletic training allows the discovery and study of individual characteristics. The data of the pedagogical control are the basis for decision-making in organizing the process of athlete's training. By applying them, the prognosis of sports results improvement becomes more accurate, the best models characteristic of both specific physical training and elaboration of the transition stage of athlete's body status are highlighted, models that serve as checkpoints in the main objectives achievement. The effectiveness of coach's work in developing the training program has significantly increased. This fact is manifested in the selection of training cycles structures, of physical exercises, their use in training sessions and loads dosing. (V.V. Marchenko, L.S. Dvorkin, V.N. Rogozjan, 1998).

Regarding the number of reps throughout two macro-cycles of training of Weightlifting Olympic team in 2008, it was found out that the equal number of reps during both training macro-cycles highlights the number of micro-cycles within the training mezzo-cycles, days of training and number of reps in each micro-cycle; the decrease of number of reps and the increase of effort intensity at maximum level from one training micro-cycle to another contributes to reaching the peak athletic shape during the competitive period in macro-cycle no.1. An optimum number of reps provided in training macro-cycle no.2 has helped to maintain the athletic shape necessary for their turning into good account during the next competition. (M.V. Ulăreanu, V. Potop, 2010).

Purpose of the paper: planning of specific means and dynamics of athletic shape in performance weightlifters' training.

Hypothesis

We consider that an optimum relationship of the specific training means, the number of reps

per each micro-cycle and the share of effort intensity during two mezzo-cycles of competitive training will point out the dynamics of athletic shape and the performances achieved during competitions.

Methods of research and procedures

The study dealt with the competitive training programs throughout two training mezzo-cycles, analyzing statistically the evolution of performance parameters. The statistical processing was made in Word and „KyPlot” programs,

calculating the usual statistical indices and the linear correlation test.

Subjects, protocol of conduct.

For highlighting the contents of specific training means in the planning of performance weightlifters’ training, a study was conducted within the Weightlifting Olympic Team.

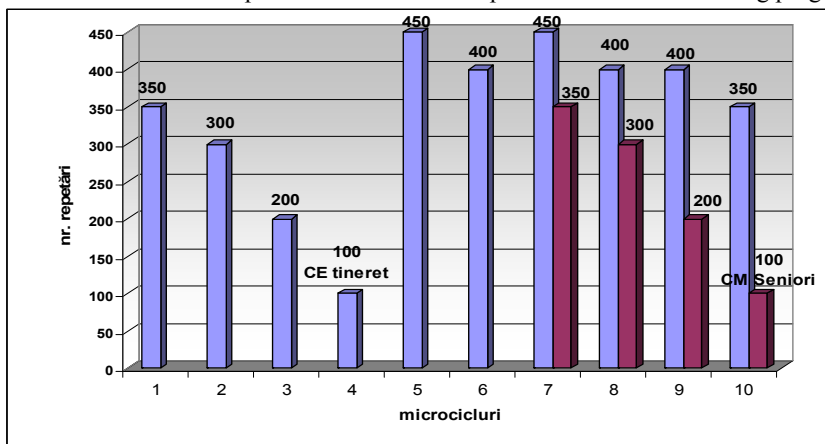
The study was carried out over the period (21.09 - 29.11.2009) formed of 10 micro-cycles, applied on a group of 7 athletes, aged from 20 to 24, juniors, youth and seniors categories.

Table no 1. Contents of specific training means

MZ	MC	Calendar of competitions	No. of reps	TECHNICS	SNATCH	SQUATS	CHEST SQ.	PULLS
				STRENGTH	Clean&Jerk	BACK EXER.	BACK SQ.	BENDING
Mezzo-cycle 1	1	21-27.09.2009	350	40 60	40 60	50 50	30 70	55 45
	2	28.09-4.10.2009	300	40 60	40 60	50 50	40 60	55 45
	3	5-11.10.2009	200	45 55	50 50	55 45	40 60	60 40
	4	12- 18.10.2009 Youth E.C. –October, 12-18. Wladyslawowo (POL)	100	50 50	50 50	100 -	- 100	- -
	5	19-25.10.2009	450	35 65	45 55	55 45	50 50	55 45
Mezzo-cycle 2	6	26.10-1.11.2009	400	35 65	50 50	50 50	45 55	50 50
	7	2-8.11.2009	450	35 65	45 55	50 50	50 50	50 50
		2-8.11.2009	350	40 60	40 60	50 50	30 70	55 45
	8	9-15.11.2009	400	35 65	50 50	50 50	45 55	50 50
		9-15.11.2009	300	40 60	40 60	50 50	40 60	55 45
	9	16-22.11.2009	400	40 60	50 50	55 45	40 60	50 50
		16-22.11.2009	200	45 55	50 50	55 45	40 60	60 40
	10	23-29.11.2009	350	40 60	40 60	50 50	30 70	55 45
		World Senior Championships – November, 17-27 Goyang City (KOR)	100	50 50	50 50	100 -	- 100	- -
	Mean			340	39.5 60.5	46 54	56.5 43.5	41.1 63
			275	42 58	45 55	61.5 38.5	39.3 68.5	55.6 55.5
			35.6	1.57 1.57	1.45 1.45	4.89 4.89	2.46 4.66	1.17 5.43
SEM			38.1	1.69 1.69	1.49 1.45	6.45 6.45	2.39 5.58	1.13 7.47
			112.5	4.97 4.97	4.59 4.59	15.4 15.4	7.4 14.7	3.53 17.1

SD	12+0.7	5.37	4.7	20.4	6.78	3.20
	0.33	0.12	0.09	0.27	0.18	0.06
Coeff. Var.	0.43	0.12	0.10	0.33	0.17	0.05
		0.09	0.08	0.53	0.25	0.42
Sum	3400	395	460	565	370	480
	2750	420	450	615	315	445
		605	540	435	630	520
		580	540	3.85	6.85	555

Note: the values written in blue represent the number of reps of the athletes who did not participated in World Senior Championship; the values written in red represent the number of reps of the athletes in training progress for WC.



Graph no. 1. Number of reps per micro-cycles throughout training

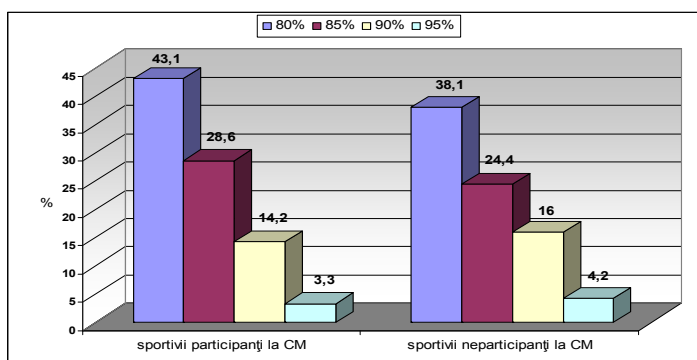
Note: the number of reps written in red show the athletes who participated in World Senior Championships.

Table 1 and graph 1 show the contents of specific training means, regarding the number of reps per each micro-cycle, the share of technical and strength training means.

Table no. 2. Intensity of training specific means

Micro-Cycle	INTENSITY														
	TECHNIQUE				SQUATS				PULLS			BENDING			
	-%				-%				-%			-%			
	80	85	90	95	80	85	90	95	100	80	90	100	80	90	100
1	24	13	13	2	23		23		14	20	20		31	31	15
	23	14	12	5	27	27	10	6		28	28				
2	24	13	13	2	23		23			20	20		31	31	15
	23	14	12	5	27	27	10	6		30	20				
3	24	24	12	2	27		18			20	20		32	25	
	23	14	12	5	27	27	11			25	25				
4															
					35	10									
5	25	10			16		16			30	20	10			
	26	15	3		24	16	10	6		40	30		28	28	16
6	22	20	4		28		24	2		30	30	10			
	26	15	5		25	20	10			28	28	16	28	28	14
7	25	10			16		16			30	30	10			
	26	15	3		24	16	10	6		30	30	10	28	28	16
	24	13	13	2	23		23		14	20	20		31	31	15
	23	14	12	5	27	27	10	6		28	28				
	22	20	4		30		30		10				28	28	14
	26	15	5		25	20	10			28	28	16			

8	24	13	13	2	23		23		20	20				
	23	14	12	5	27	27	10	6	30	20		31	31	15
9	21	20	8	3	28		30		16	15	15			
	21	27	11	2	34	22	10		28	28	16		27	27
	24	24	12	2	27		18		20	20				
	23	14	12	5	27	27	11		25	25			32	25
10	24	13	13	2	23		23		14	20	20			
	23	14	12	5	27	27	10	6	28	28		31	31	15
					35	10								
Mean	43.1	28.6	14.2	3.3										
	38.1	24.4	16	4.2										
SEM	4.86	3.88	3.29	1.11										
	6.36	4.34	3.62	1.14										
SD	15.3	12.2	10.4	3.52										
	20.1	13.7	11.4	3.61										
Coef. Var.	0.35	0.42	0.73	1.06										
	0.52	0.56	0.71	0.86										
Sum	431	286	142	33										
	381	244	160	42										



Graph no. 2. Average of training intensity

Table no. 3. Correlation of reps number with the intensity of technique and strength means (without the athletes who participated in World Championships)

Statistical Indices	Intensity of means 80%	Intensity of means 85%	Intensity of means 90%	Intensity of means 95%
R Coefficient of correlation	0.78	0.53	-0.09	-0.22
tStatistical	3.527 (P<0.01)	1.79 NS P>0.05	0.26 NS P>0.05	0.66 NS P>0.05
P- Value	0.007	0.11	0.79	0.52

Table no. 4. Correlation of reps number with the intensity of technique and strength means (with the athletes who participated in World Championships)

Statistical Indices	Intensity of means 80%	Intensity of means 85%	Intensity of means 90%	Intensity of means 95%
R Coefficient of correlation	0.79	0.56	0.24	-0.35
tStatistical	3.644 (P<0.01)	1.939 NS P>0.05	0.714 NS P>0.05	1.07 NS P>0.05
P- Value	0.006	0.08	0.49	0.31

Tables 3 and 4 show the correlation of the number of reps with the intensity of the technique and strength means at 80%, 85%, 90% and 95% of the athletes who participated in the Senior World Championship and of the athletes who did not compete in this Championship.

Table no.5. Youth European Championship – October , 12-18, Wladyslawowo (POL)

Full name	Birth year	Class of weight (kg)	Weight in competition	Snatch (Kg)	Clean & Jerk (kg)	Total (kg)	Ranking		
							Snatch	Clean & Jerk	Total
Olaru Gabriel	23.11.1988	56	55.74	96	135	231	9	2	5
Stoichiță Paul	10.01.1989	69	68.65	130	171	301	6	3	5
Roșu Alexandru	30.04.1987	77	76.10	142	173	315	8	7	8
Sâncrăian Gabriel	21.12.1988	85	83.55	150	170	320	6	10	7
Danciu Marius	05.12.1989	85	84.10	145	170	315	8	11	10

Table no.6. World Senior Championships – November, 17-27, Goyang City (KOR)

Full name	Birth year	Class of weight (kg)	Weight in competition	Snatch (Kg)	Clean & Jerk (kg)	Total (kg)	Ranking		
							Snatch	Clean & Jerk	Total
Miculescu Ninel	15.05.1985	69	68.92	155	178	328	2	6	4
Calancea Valeriu	20.07.1980	94	93.42	0	211	0	0	3	0

In tables no. 5 and 6 are highlighted the performances achieved by the subjects of the study at the Youth European Championship and the Senior World Championship regarding the results obtained by the subjects of the study at Youth European Championship and Senior World Championship, as for the results per technical styles, total amount of these ones and the place in ranking.

Discussions

Regarding the planning of the specific means of technique and strength applied within the training of performance weightlifters, these ones

were exemplified in this study during 10 micro-cycles in the competitive training periods of the mezzo-cycles 1 and 2.

The analysis of the planning of specific training means contents showed that the number of reps in mezzo-cycle no. 1 changes with an average of 340 reps in the case of athletes who did not compete in Senior World Championships and 275 reps in the case of athletes who participated in Seniors Worlds Championship, the share of training means for the non-participating athletes is 39.53% of technique and 60.5% of strength and for the

participating athletes is 42% technique and 58% strength.

In terms of intensity of the specific means during the training micro-cycles, we notice the share of the technique and strength means at 80%, 85%, 90%, 95% and 100% during the training, having an average of 43.1% at 80%, of 28.6% at 85%, 14.2% at 90% and 3.3% at 95% in the case of the athletes who did not participate in the Seniors World Championship; in the case of the athletes who participated in the World Championship, the average is 38.1% at 80%, 24.4% at 85%, 16% at 90% and 4.2% at 95%.

Concerning the correlation of the number of reps with the intensity of the technical and strength means at 80%, 85%, 90% and 95% for the athletes subject matter of the study, it can be noticed significant differences at $p < 0.01$ at the intensity of 80% and insignificant differences at 85%, 90% and 95%.

Analyzing the performances obtained in competitions by the subjects of the study at Youth European Championship, it was noticed that the athletes achieved the following performances: 2nd and 3rd places at clean and jerk style, 5th place at total and two 6th places at snatch style (table no. 5).

As for the performances achieved at Senior World Championship, an improvement of the performances has been observed: the athletes obtained the 2nd place at snatch style, 3rd place at clean and jerk style and 4th place at total (table no. 6).

Regarding the efficiency of training specific means planning and the dynamics of athletic shape, these ones were materialized by the performances obtained by the subjects of the study during competitions.

Conclusions

1. The results of the study demonstrate the effectiveness of specific means planning on athletic shape dynamics in performance weightlifters' training.
2. The presentation of the specific means planning depending on the objectives had in view during the same mezo-cycle of training highlights the individualization of the training and the ensurance of the continuity in training.
3. The planning of the specific means and the share of these ones during two competitive training mezo-cycles varies depending on the intended goal.
4. The parameters of the effort show the increase of effort intensity from one micro-cycle to another by the growth of the load and the decrease of reps number.
5. The intensity of application of training specific means in the competitive mezo-cycles emphasizes the share of technique and strength means per each micro-cycle, with a higher stress on the strength exercises.

6. Pointing out the significant differences between the reps number and the intensity of the technique and strength means at 80%, 85%, 90% and 95% at the athletes in training progress.

7. An optimum relationship of the specific training means, the number of reps per each micro-cycle and the share of effort intensity during two mezo-cycles of competitive training emphasizes the dynamics of athletic shape and the performances achieved during competitions.

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