

Relationship of Specific Training Means and Effort Parameters in Performance Weightlifters' Training

¹Potop Vladimir and ²M.V. Ulareanu

¹Ecological University of Bucharest, Faculty of Physical Education and Sport,

²Department of Teaching Staff Training, Romania

Abstract: Problem statement: The researchers introduce the contents of specific training means and the reps number during the training micro-cycles along preparatory and competitive period of the performance weightlifters. **Approach:** This approach has led to the organization of a study in Olympic team of weightlifting. The scientific argument is the introduction of the content of the means specific to the performance weightlifters' training in the preparatory and competitive period, which, by ensuring optimal relations between technical and physical training during workouts, will help to boost sports performances in competitions. **Results:** The analysis of the specific training means content during the competitive period shows that training was made with an average of 270 reps and the relation between the means of technical and physical training is 45% technique (46 snatch and 54% clean and jerk) and 55% strength (67 squats and 41.25% back exercises). As for the contents of strength specific means within the training period it is obvious that the strength exercises are divided into two groups: for squats, the share is 35% chest squats and 72% back squats, while the share for back squats is 57.5 pulls and 42.5% bending. The study highlights the contents of specific means in the training micro-cycles of preparatory and competitive periods in performance weightlifting. **Conclusion:** The effort parameters indicate the growth of effort intensity from one micro-cycle to another by increasing the load, the number of reps; the gradually increasing effort parameters, kept at their maximal level and diminution of the volume before competitive period; the dynamics of effort parameters, regarding the relationship of technical and physical training. These characteristics of effort and specific training means during workouts contributed to training improvement and to achievement of better performances in competition.

Key words: Technical training, physical training, computer programs, micro-cycles, arbitration and display equipment, effort parameters, olympic games

INTRODUCTION

The rapid growth in the weightlifting performances, a phenomenon that we are continuously witnessing, is based on the improvement of the technique and training methods. The modernization of the materials and equipment for training and competition (stage, platform, podium, barbells, arbitration and display equipment, computer programs for competitions carrying out) has imposed the emancipation and selection of the lifting styles, of the arbitration regulations and resulted in the increased performance and spectacular character of this sports branch News Bulletin, Romanian Federation of Weightlifting, 2009.

Coaches and athletes use two training variables for the creation of efficient strength training programs: volume and intensity. Volume and intensity change

depending on competition program and on training objective (Bompa and Carrera, 2005).

To increase the efficiency of learning styles in learning process, firstly, it may be beneficial to explain illustratively how athletes benefit from learning styles. In addition, methods-techniques and materials taking the learning styles of athletes into consideration can be used by the teachers. Teachers can also guide the parents in providing learning conditions suitable for the athletes' learning styles (Kazu, 2009).

Altered mechanical joint stability due to repeated disruptions to ankle integrity with resultant perceived and observed deficits in neuromuscular control has been described as Chronic Ankle Instability (CAI). The Muscular Fatigue (MF) that is defined as any reduction in the neuromuscular ability to produce strength is a usual phenomenon in resistance sports and is a common experience in the daily activities. Although it is not

Corresponding Author: Potop Vladimir, Ecological University of Bucharest

realistic to expect a coach to stop practice or decrease practice times because someone is experiencing fatigue which may lead to injury, this topic needs attention (Hosseinimehr *et al.*, 2010).

Abusing anabolic androgenic drugs by athletes is a serious negative phenomenon which is documented by a number of investigators in many countries around the world including: USA, Canada, UK, Australia and in some Arab countries as well. Unfortunately, many athletes, specially in the power sports like bodybuilding and weight lifting, administrate illegally high doses of these drugs to obtain huge increasing in the muscles mass and also to improve their performance during the international sport competitions (Ameen and Bisher, 2009).

As a first component of training, the volume represents the quantitative prerequisite for high technical, tactical and physical achievements. As an athlete is able to reach high levels of performance, the total volume of training becomes increasingly important.

The specific means can be found under the form of technical elements and procedures, of technical and tactical actions; these means are planned within a macro-cycle, both in the pre-competitive stage of the training period, when they provide significant intensity increases and make possible to reach the physical fitness and during the competitions period too, when they help to maintain the training level achieved.

The increase of the specific physical training (SPT) level can be attributed to one of the primary tasks the weightlifters of different qualifications are dealing with. Improving muscle strength creates favorable conditions to increase the speed-strength indicators and to make better the snatch and clean and jerk techniques. While the athlete achieves sport mastery, the effectiveness of using the previous training variants gradually decreases

The effort parameters in the performance weightlifters' competitive training show the growth of effort intensity from a micro-cycle to another one by increasing the load, the number of sets and reps, gradually increasing effort parameters, kept at a maximum level and the volume diminution before the competition period; dynamics of effort parameters related to the relationship between technical and physical training.

Organizing workouts on the basis of mezo-cycles allows the training systematization in line with the main objective of the training stage and period, providing optimum dynamic loads, the combination of different training means and methods with the pedagogical impact factors and recovery activities. The number and structure of competitive mezo-cycles in athletes' training point out the specific character of the sport branch, the particulars of competition calendar, the degree and level of classification training. The combinations and the total load in the micro-cycles that form a mezo-cycle often depend on the long-term training stage.

The main goal of the study is to present the relation of the specific training means and the effort parameters in the performance weightlifters' training.

Hypothesis: We believe that an optimum relationship between the specific training means and the workouts effort parameters will help to improve the training and to get better performances in competitions.

MATERIALS AND METHODS

The study has used the training programs within 12 micro-cycles; the progress of the performance parameters has been monitored statistically. The statistical processing has been made in Word and „KyPlot” programs.

In order to highlight the number of reps in different training mezo and micro-cycles, we have conducted a study within the Romanian Olympic weightlifting team.

The study was conducted over a period of 17 micro-cycles (21.04-16.08.2008), with a group of 4 athletes, of 17-31 years old, whose performance target is the participation in the Olympic Games (J.O.) of Beijing 2008.

RESULTS

In Table 1 and Fig. 1 is given the content of the specific training means during the preparatory period, regarding the share of the technical and power exercises and the calculations of the usual statistical indices.

Table 2 and Fig. 2 show the content of the specific training means during the competitive period and the usual statistical indices calculations as well.

In Table 3 and Fig. 3 is listed the number of reps during the training and competitive periods, as for the relation of the statistical calculations on the reps number between periods.

Table 1: Share of the specific training means in training period (21.04-13.07.2008)

No. of micro-cycles	No. of reps	Technique	Power	Snatch	Clean and Jerk	Squats	Back exercises	Squats front	Back squats	Pulls	Bending
1	400.00	20.00	80.00	45.00	55.00	60.00	40.00	30.00	70.00	60.00	40.00
2	450.00	20.00	80.00	45.00	55.00	50.00	50.00	35.00	65.00	60.00	40.00
3	500.00	20.00	80.00	45.00	55.00	50.00	50.00	35.00	65.00	50.00	50.00
4	500.00	30.00	70.00	45.00	55.00	50.00	50.00	50.00	50.00	50.00	50.00
5	500.00	30.00	70.00	50.00	50.00	55.00	45.00	40.00	60.00	55.00	45.00
6	500.00	30.00	70.00	50.00	50.00	55.00	45.00	40.00	60.00	55.00	45.00
7	450.00	30.00	70.00	40.00	60.00	40.00	60.00	45.00	55.00	55.00	45.00
8	450.00	35.00	65.00	40.00	60.00	55.00	45.00	50.00	50.00	55.00	45.00
9	400.00	35.00	65.00	40.00	60.00	55.00	45.00	60.00	40.00	50.00	50.00
10	400.00	35.00	65.00	40.00	60.00	60.00	40.00	40.00	60.00	50.00	50.00
11	400.00	35.00	65.00	50.00	50.00	55.00	45.00	40.00	60.00	50.00	50.00
12	400.00	40.00	60.00	50.00	50.00	50.00	50.00	40.00	60.00	50.00	50.00
Mean	445.83	30.00	70.00	52.91	47.09	52.91	47.09	42.08	57.92	53.30	46.70
S.E.M.	12.99	1.94	1.94	1.56	1.56	1.56	1.56	2.34	2.34	1.12	1.12
S.D.	45.01	6.74	6.74	5.41	5.41	5.41	5.41	8.10	8.10	3.89	3.89
Coeff. var.	10.10	22.50	9.63	10.20	11.50	10.20	11.50	19.20	13.90	7.29	8.34

Table 2: Share of the specific training means during competitive period (Olympic Games, Beijing) (14.07-17.08.2008)

No. of micro-cycles	No. of reps	Technique	Power	Snatch	Clean and jerk	Squats	Back exercises	Front squats	Back squats	Pulls	Bending
1	350.00	40.00	60.00	40.00	60.00	50.00	50.00	30.00	70.00	55.00	45.00
2	350.00	40.00	60.00	40.00	60.00	50.00	50.00	40.00	60.00	55.00	45.00
3	300.00	45.00	55.00	50.00	50.00	55.00	45.00	40.00	60.00	60.00	40.00
4	250.00	50.00	50.00	50.00	50.00	80.00	20.00	30.00	70.00	60.00	40.00
5	100.00	50.00	50.00	50.00	50.00	100.00	-	-	100.00	-	-
Mean	270.00	45.00	55.00	46.00	54.00	67.00	41.25	35.00	72.00	57.50	42.50
Sem	46.36	2.23	2.23	2.44	2.44	9.94	7.18	2.88	7.34	1.44	1.44
S.D.	103.60	5.00	5.00	5.47	5.47	22.20	14.36	5.77	16.43	2.88	2.88
Coeff. var.	38.40	11.10	9.10	11.90	10.10	33.20	34.80	16.40	22.82	5.02	6.79

Table 3: Relation of reps number during training and competitive periods

Statistical indices	X1-training period	X2-competitive period	Total
N (micro-cycles)	12.00	5.00	17.00
Mean	445.83	270.00	394.11
Var	2026.51	10750.00	10900.74
Median	450.00	300.00	400.00
Rank sum	138.00	15.00	153.00
Rank mean	11.50	3.00	9.00
Kruskal-wallis statistic			
Chi^2	10.448	P<0.01	
Df	1.000		
Probability	0.0012		

Table 4: Results of the performances achieved in Beijing 2008 J.O.

Full name	Birth year	Weight class	Snatch	Clean and jerk	Total	Ranking
Buci Antonio	1990	62	130	165	295	IV
Martin Razvan	1991	69	130	158	288	XIX
Roşu Alexandru	1987	69	136	-	-	-
Rusu Razvan	1988	77	140	170	310	XVIII

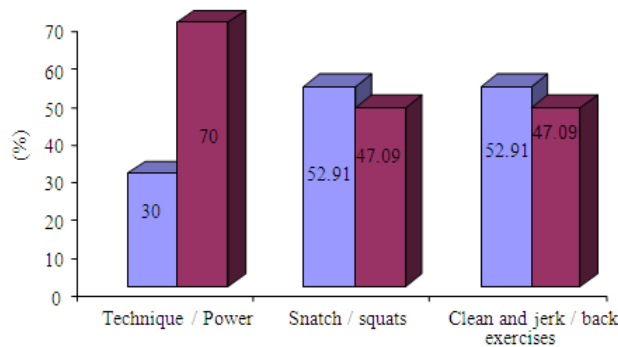


Fig. 1: Relation of technical and physical training means in preparatory period

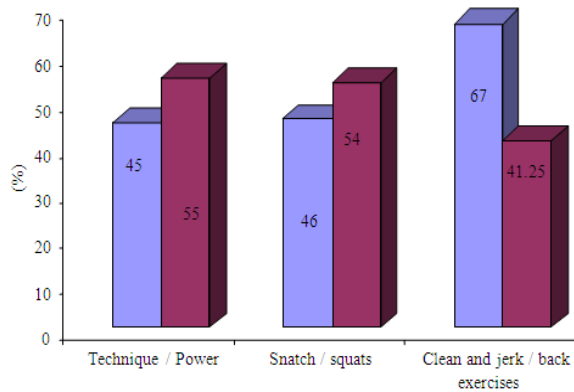


Fig. 2: Relation of technical and physical training means in preparatory period

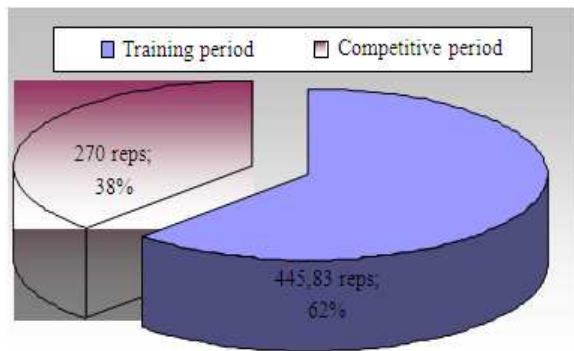


Fig. 3: Relation of reps number between the training and competitive period

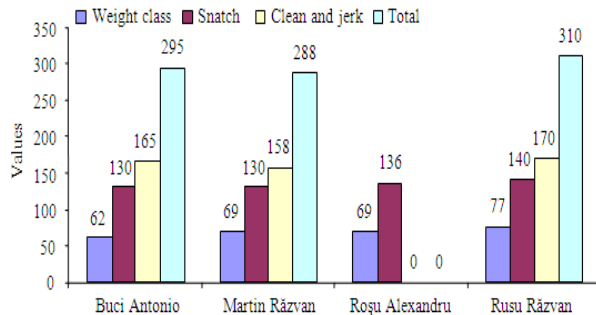


Fig. 4: Results of the performances achieved in Beijing 2008 J.O

DISCUSSION

In this study, the contents of the specific training means applied in the performance weightlifters' training was exemplified with 12 training micro-cycles in the preparatory stage and with 5 micro-cycles in the competitive stage.

Analyzing the number of reps in two macro-cycles of the Olympic weightlifting team during 2008, it was found out that the equal number of reps in both training macro-cycles highlights the number of micro-cycles within the training mezzo-cycles, training days and number of reps in each micro-cycle. The decrease of reps number and the increase of effort intensity at maximal level from a training micro-cycle to another contribute to reaching the peak shape during competitive period of the macro-cycle No. 1; an optimum number of reps assured in the training macro-cycle No.2 has helped to maintain the physical shape necessary for their turning into good account during the following competition.

After analyzing the content of the specific training means it was noticed that the training had been made with an average of 445.83 reps and the relation between the means of technical training and those of physical training is of 30% technique (52.91% snatch and 47.09% clean and jerk) and 70% strength (52.91% squats and 47.09% back exercises).

In terms of strength specific means content during the preparatory period, one can notice that the power exercises are divided into two groups: for squats, the share is 42.08% chest squats and 57.92% back squats while in the case of the back exercises the share is 53.3% pulls and 46.7% bending.

The analysis of the specific training means content during the competitive period shows that the training was made with an average of 270 reps and the relation between the means of the technical and physical training is 45% technique (46% snatch and 54% clean and jerk) and 55% strength (67% squats and 41.25% back exercises).

As for the contents of the strength specific means within the training period it is obvious that the strength exercises are divided into two groups: for squats, the share is 35% chest squats and 65% back squats, while the share for back squats is 57.5% pulls and 42.5% bending.

A comparative analysis of the technical and physical training means relationship as for the reps number during the training and competitive period, it was noticed that the share of the strength specific methods (squats and back exercises) in the training period is 100% and during the competitive period the relationship between them is no more 100% because the stress is laid more on the technical training means.

Analyzing the results obtained by the subjects of the study in competition at Beijing 2008 Olympic Games it has been observed that the performances achieved in the competition were better than during the European Championship, fact proved by the fourth place ranking in the competition (Table 4 and fig.4).

CONCLUSION

The findings of this study highlight the relation of the specific training means and the effort parameters during the training and competitive periods of the performance weightlifting.

An optimum relationship of the specific means and the effort parameters obtained by using the gradual training method during the preparatory period and the decreasing method during the competitive period helped to reach the peak physical shape in competition.

The effort parameters indicate the growth of the effort intensity from one micro-cycle to another by increasing the load, the number of reps; the gradually increasing effort parameters, kept at their maximal level and the diminution of the volume before the competitive period; the dynamics of the effort parameters, regarding the relationship of the technical and physical training.

These characteristics of effort and specific training means during workouts contributed to the training improvement and to the achievement of better performances in competition.

REFERENCES

- Ameen, S.A. and B. Bisher, 2009. The physiological effects on hormones levels and kidneys functions induced by the anabolic androgenic drug (Sustanon) in male guinea pigs. *Am. J. Applied Sci.*, 6: 1036-1042. DOI: 10.3844/ajassp.1036.1042
- Bompa, T.O. and M. Carrera, 2005. *Periodization of Sport Training*. 2nd Edn., Human Kinetics, ISBN0736055592, pp: 259.
- Hosseinimehr, S.H., H. Daneshmandi and A.A. Norasteh, 2010. The effects of fatigue and chronic ankle instability on dynamic postural control. *Phys. Int.*, 1: 22-26. <http://www.scipub.org/fulltext/pi/pi1122-26.pdf>
- Kazu, I.Y., 2009. The effect of learning styles on education and the teaching process. *J. Soc. Sci.*, 5: 85-94. http://perweb.firat.edu.tr/personel/yayinlar/fua_35/35_59283.pdf
- Ulareanu, M.V. and V. Potop, 2010. Comparative analysis of the reps number within two training macro-cycles of the weightlifting olympic team. *J. Phys. Educ. Sport*, 29: 86-89. <http://www.doaj.org/doi/func=abstract&id=681256>