Middle-East Journal of Scientific Research 17 (3): 382-386, 2013
ISSN 1990-9233
© IDOSI Publications, 2013
DOI: 10.5829/idosi.mejsr.2013.17.03.12162

Muscular Strength Training Technique Peculiarities in Weightlifters Preparation

[1]*Stanislav Khaustov and* [2]*Ilya Ilyin*

[1]Doctor of Pedagogic Science, Kazakh Academy of Sport and Tourism, Kazakhstan
[2]Double Olympic Champion, Honored Master Sports of Kazakhstan,
Kazakh Academy of Sport and Tourism, Kazakhstan

Abstract: The given article is devoted to the research of theoretical and practical rationale of muscular strength training technique in weightlifters preparation. Based on the literary sources analysis, the author's own practical experience and experience of weightlifting specialists in many years' preparation for competitions at different levels, the author gives methodological recommendations in taking various factors which participate in strength training and influence the level of its development into account. The author also gives a strength training scheme which reflects strength's kinds, means and methods of its training including compound muscle-strengthening exercises.

Key words: Weightlifters · Strength training · Strength preparation factors · Methods and means of strength training

INTRODUCTION

In weightlifting, unlike other kinds of sport, results depend on muscular strength mainly. Weightlifters strength training should start in the very beginning of their work-outs. In accordance with it, it is necessary to give special attention to this quality.

Strength depends on many factors including in particular weightlifters morphological traits for instance. However, analyzing the interrelation between sport results and morphological traits of weightlifters, R.J. Raschand, W.R. Pierson [1] found out that the former depend on muscular strength more considerably than on body proportions.

Speaking about strength training methods, firs to fall, it is advisable to take into account that training load amount, orientation and regimen, optimal ratio of training to resting in micro and meso-cycles, also a choice of more effective training influence means a replanned in each of them [2].Besides, it is necessary to remember that when using any of the methods, a constant every day control over a weightlifter fitness shape, a change of his training degree and different components structure and also a process of his organism's adaptation to different factors of training influences should be exercised. It is necessary to have special knowledge, measuring equipment, physiologists' involvement for that purpose [3].

Nowadays advanced and progressive for their time theoretical and methodological basics of weightlifters training need more clarifications and improvements due to taking new knowledge and practical experience of sportsmanship perfection basic laws into account. In connection with it, we decided to meet this lack to some extent. And this fact defines the urgency of the given research. We believe that the Olympic Games (Beijing in 2008 and London in 2012) which were won twice by the author of the research give a moral right to it.

The aim of the research is a theoretical and practical rationale of highly-skilled weightlifters training.

The objectives of the research:

- To find out the problem state of highly-skilled weightlifters training based on the analysis of literary sources and practical experience of specialists in weight lifting.

Corresponding Author: Stanislav Khaustov, Kazakh Academy of Sport and Tourism, Kazakhstan,
E-mail: Stanislav.Khaustov@yandex.ru.

- To give practical recommendations concerning highly-skilled weight lifters training based on the author's own practical experience.
- To give practical recommendations concerning rational use of different muscular strength training methods in weightlifters preparation.

Methodology: The methods of the research. In order to fulfill the objectives, the following methods of the research were applied:

- Study and analysis of specialized methodological literature.
- Best practice generalization based on the discussions and weightlifting specialists (researchers, coaches) oral and questionnaire inquiry results.
- Pedagogic observations in the period of carrying out the team training sessions and weightlifters demonstration in the large-scale international competitions (Asian, European, World and Olympic Games championships).
- Analysis of training process planning documents, weightlifters preparation programmes, their training diaries and result lists.
- Author's practical experience generalization in preparation for the large-scale international competitions including the 2008 Olympic Games of the XXIX Olympiad in Beijing, the 2012 Olympic Games of the XXX Olympiad in London and the 2016 Olympic Games of the XXXI Olympiad in Rio de Janeiro.

Findings: The results of the research. Before speaking about muscular strength training, it is necessary to know which factors it depends on. Knowing it, it is possible to influence these factors there by increasing the level of strength development. Muscular strength is known to depend on biochemical processes which happen in muscles, energy potential, level of physical exercises technical skills and also muscles physiologic thickness and flexibility. The central nervous system activity and conation play an important part in muscular strength displaying. All these factors can be improved and developed in the training process.

In the process of preparation for the 2008 Olympic Games in Beijing and the 2012 Olympic Games in London, we were guided by the methods given in Table 1 and also the strength training technique scheme given in Figure 1. Depending on the objectives, all four methods were applied.

We were paying a great attention to compound strength training as it was a basis for special strength preparedness of a weightlifter. We speak about those physical exercises which must be included in every training set in certain numbers. Such exercises performing requires greater expenditure of energy because they, as a rule, involve large muscle groups in work. That is why compound strength exercises considerably favour muscular mass increase that in its turn ensures muscular strength increase. At the same time, the whole training set must not consist of compound exercises only because a sportsman may not have enough strength to perform the last exercises due to his big energy expenditure.

Table 1: Methods of education of strength

The name of the method	Task	The value of the maximum effort,%	The number of repeats in one approach	The number of approaches	Break rest, min
TRADITIONAL METHODS					
method of repeated medium effort on the average rate	a) improvement of neuromuscular coordination b) an increase in muscle mass	50-70	10-12	5-8	2
method of repeated efforts to the maximum average rate ("dynamic effort")	increasing muscle mass	50-70	10-12	5-8	3
method of repeated maximal effort on the average rate	education of ability to exercise the greatest absolute strength	90-100	1-3	2-3	5-6
EXPERIENCED METHODS					
method of repeated efforts on the average middle rate	a) improvement of neuromuscular coordination b) an increase in muscle mass	60-70	8-10	2-3	1,5

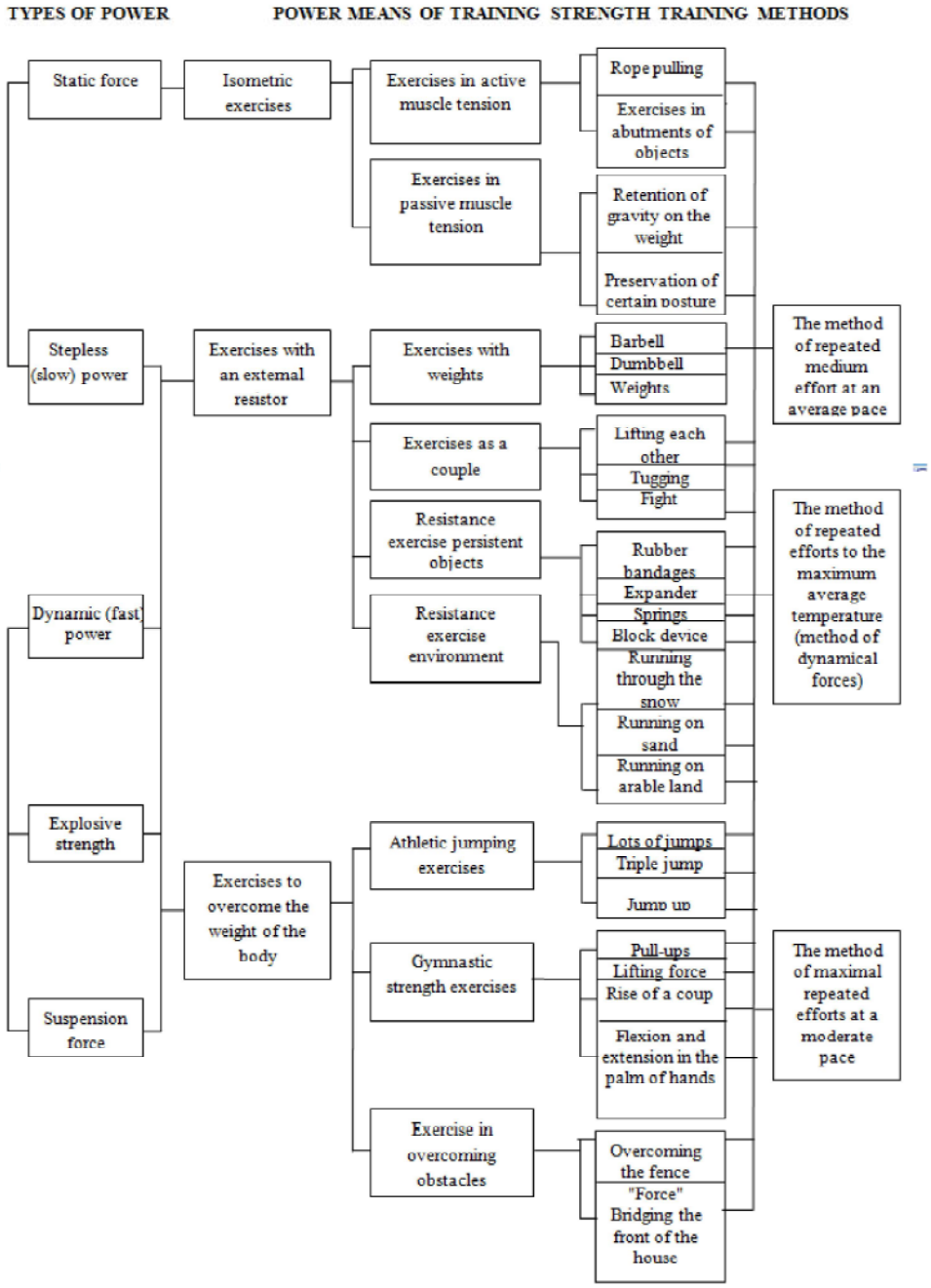

Fig. 1: Types of forces, means and methods of education

But if they are nevertheless performed, their effectiveness will be low. That is why compound exercises should be included only in training those muscles strength of which "falls behind" at the moment.

Strength of different muscles never can be at a constantly high level even if it is strength of a highly-skilled weightlifter. In accordance with it, a training set should be more or less emphasized. An emphasis is put on weak muscles. It is better to put such an emphasis by applying compound exercises. An example of such compound exercises is given below:

- Average-grip pull-ups exercise. A belt can be weighted (influence on slats).
- Wide-grip barbell bench press exercise (influence on pectoral muscles).

- Bent-over barbell row exercise (depending on technical skills performing, it influence slats and traps).
- Barbell dead lift exercise (influence on traps and long back muscles).
- Wide-grip seated behind-the-neck press exercise (influence on shoulder muscles).
- Wide-grip standing barbell curl exercise (influence on medium and internal biceps muscles).
- Average-grip French press standing or isolation French press (influence on medium and lower triceps muscles).
- Bars arm-pumping exercise (influence on lower muscles of thorax and triceps).
- Full back squatting exercise (influence on quadriceps).
- Donkey calf raises exercise with a dip belt or with a partner (influence on calf muscles).

Focusing on certain muscles, it is not recommended to confine yourself to a compound exercise only. Your effect will be bigger if an isolation exercise is performed after a compound one. For instance, performing a thigh exercise, you can do 3-4 sets sitting down on a leg press machine. When training a triceps, after French press exercise, you can perform arms extension exercise with an upper grip.

In training different groups of muscles, it is necessary to remember that when performing compound exercises, different injuries often can be and that should be strongly discouraged as they make a sportsman depressed, become areas on for bad competition form and suppress a wish to train. The most effective prevention from any possible injuries is an elaborate warm-up, gradual increase of training load and regular work-outs. It is also advisable to see that there is enough calcium in a sportsman's organism. It is necessary to stop training injured ligaments or muscles if an injury occurred. One must not perform any exercises through pain in this period and it is advisable to turn to a doctor. Sometimes for quick healing of an injured spot it is enough to use anti-inflammatory ointments. A weightlifter should always remember about his health. And even a perfect body development does not mean a splendid health if only strength physical exercises with weights are performed during work-outs. There is a misleading opinion that strong muscles and splendid health are the same. That is why a weightlifter should train muscular strength, velocity, endurance, dexterity and flexibility with the help of different physical exercises.

If we want to increase a strength level of first-time weightlifters in a weightlifting exercise, first of all, we need to focus on making a well coordinated system of processes which determine neuromuscular coordination. First of all, we speak here about acquiring perfect technical skills in performing exercises. And it requires a great amount of strength. Then it is necessary to start physical exercises which mainly strengthen and increase muscular mass. After that it is recommended to do all these exercises by focusing on increasing an ability to display strength, especially maximum one. As a result, the coach's mental set, attention focusing and conations of the sportsman are the main factors in maximum strength displaying.

Muscles are known to influence all muscular fibers (motor units) in contraction. The stronger conations are, the more intensive muscle tension is and the greater number of its fibers participates in contraction. Maximum strength can be displayed only by involving as many muscular fibers as possible in work. In order to acquire this ability, we were using physical exercises with different weights and resistances which maximum or about maximum physical strength and conations had been displayed in (85-100% of the maximum).

From the physiologic point of view, muscular strength is known to be in direct ratio to its physiological thickness all other conditions being equal. Roughly speaking, the thicker muscle is, the stronger it is. In our work-outs we were taking this important role of muscular mass increase into account solving problems of training muscular strength. During all various changes which happen in muscles, specific features of used strength exercises are reflected. Besides, it should be pointed out that all morphological and other changes in muscles which largely increase their efficiency may not favour their physiologic thickness increase. It can be explained by inadequate influence of physical exercises which are long performed without big manifestations of strength. But, as a rule, under the influence of strength exercises, all sportsmen have muscular mass increase. However, different sports men have different level of increase. The biggest muscular mass and strength increase can be achieved by those sportsmen who perform heavy muscle loading exercises with purpose fullness and industriousness.

It is natural that muscles cannot thicken all the time. When they reach a certain limiting point which corresponds to specific features of applied physical exercises, their physiological thickness will not increase. Mostly weightlifters are not interested in increasing

muscular mass. In this case, they refuse to do slow physical exercises which are completely performed. They mainly apply fast movements with ultimate or about ultimate efforts. We were paying attention to strength training during the whole period of many years' preparation, even in the case when it was not necessary to increase physiologic thickness of muscles. It was necessary to do it in order not to let it decrease.

For increasing physiologic thickness of muscles, we were using the strength exercises which included as many muscular fibers as possible. And we were making them tired. In this case, a sportsman's body weight was intensively increasing (sometimes it is necessary for a weightlifter in becoming of higher weight category for example). It was happening only with those sportsmen who were constantly training and had not had excessive depot fat. In this case, one should not be concerned that due to muscular mass increase, a sportsman's body weight increase can lead to diminution of strength in fast movements as during physiologic thickness increasing, muscular strength increases more greatly than his body weight.

Muscular strength is known to be increased more greatly due to the use of muscles flexibility. Muscles ball is tic features play an important role in displaying muscular strength. Having good flexibility, a preliminary stretched muscle can be contracted better. Effectiveness of such a regime of muscles work increases because there is reflexive tension in muscles during their stretching. The faster stretching was performed, the stronger influence are flex had. It means that work's effect becomes bigger. It is also important to take into account that this reflex especially makes stronger not because of relaxed muscles stretching but due to tensed ones. That is why if to stretch a muscle by a certain magnitude and keep holding it in this position, its resistance to stretching softens and work's effectiveness decreases.

Biochemical analysis of physical exercises shows that ballistic character of muscle work is more or less used in each of them. It especially should be taken into consideration during key motions which area sportsman's success criterion. And in accordance with it, it is necessary to develop ballistic features of muscles and their volitional use by performing proper physical exercises to this purpose. However, muscles work in ballistic regime is not performed of its own accord. It can be performed only with the help of using muscles flexibility and reflexive tension in them. Impulses of CNS, optimal coordination movements, readiness for coming actions and, of course, conations play an important role in an effective strength work of muscles and in contraction strength displaying. Even during performing simple bouncing on the toes, it is necessary to display certain skills and conations. Sportsmen's muscles are considered to be firmer with work-outs. It means that sportsmen can make the best use of it.

CONCLUSION

In weightlifters strength training, it is necessary to take into account that during increasing physiological thickness of muscles, neuromuscular coordination coherence becomes better and a sportsman shows more strength. And, on the contrary, he impacts muscle mass by learning an ability to make more efforts. Besides, it is necessary to choose these or those physical exercises in such a manner that it would be possible to increase either muscular mass or enhance an ability to display strength depending on a current task in this or that phase of preparation.

REFERENCES

1. Rasch, P.J. and W.R. Pierson, 1960. Relationship between maximum isometric tension and breaking strength of fore _arm flexors. "Res.Quart," 31: 3.
2. Buss, O.T., Hakkinen K. Pakarinen, H. Kauhanen, P.V. Komi and J.R. Lacour, 1992. Hormonal adaptations and modeled responses in elite weightlifters during 6 weeks of training. European Journal of Applied Physiology, pp: 381-386.
3. Hoffman J., 2002. Physiological Aspects of Sport Training and Performance. Human Kinetics, pp: 343.