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OPTIMIZATION OF STRENGTH TRAINING FOR WRESTLERS - AS AN IMPORTANT EFFICIENCY FACTOR OF SPORT ACHIEVEMENTS

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Abstract: *The article presents retrospective and modern, theoretical and empirical information of analytical nature on existing views and approaches to the structure of the training process of highly qualified athletes-wrestlers, the effectiveness of which is directly related to the peculiarities of the formation of a set of strength abilities.*
Keywords: *physical preparation; strength abilities; the effectiveness of the training process; wrestling; optimization of sport preparation; analysis methodology.*

Introduction. In the modern world there is a large number of types of wrestling with a rich history, a diverse and distinctive composition of techniques, motor actions, tactical decisions. Many types of wrestling are widespread in many countries of the world and have wide international recognition. Along with them, numerous national kinds of wrestling and martial arts are successfully developing.

The events presented in the programs of the Olympic Games are particularly popular and widespread in most countries of the world. These events include: Greco-Roman (classical) wrestling (in the Olympics program since 1896), freestyle wrestling (in the Olympics program since 1904), judo - a type of Japanese martial art and combat sports that received international recognition (in the Olympics program since 1964), taekwondo - a type of Korean martial art and combat sports, widespread in the world (in the program of the Olympics since 2000). The presence of competitions in these types of martial arts in the programs of the Olympics largely contributes to their popularity and intensive development in different countries, the improvement of technical and tactical arsenal and methods of sports training. At the same time, an exceptionally high level of competition in martial arts and the importance of athletic success predetermines the continuing interest of specialists to the developing of technical and tactical arsenal of each type, improving the methods of physical and psychological training, planning the training process and competitive activity, organizational and managerial bases of training [1, 3, 5 and others]. The results of this interest are reflected in numerous textbooks and manuals, dissertations and scientific articles, reports and discussions at various scientific and practical conferences and seminars, program and regulatory documents governing the activities of sports schools, clubs and other organizations that prepare athletes [2, 3, 4, 6].

It is quite clear that the vast array of information accumulated as a result of all this activity is the basis not only for optimizing the process of athletes' training, but also reveals further reserves for expanding and developing knowledge in the field of the theory and practice of sports training. This applies to all aspects of training athletes - technical, physical, tactical, psychological, including physical, which, in our opinion, is important in terms of improvement of strength abilities.

Methodology and organization of research. During the one-year period, we carried out a preliminary, retrospective accumulation of a system of theoretical knowledge and practical experience with further analysis, which indicate the different levels of development and validity of the problems related to various types of athletes' training.

Research results and their analysis. The overwhelming amount of knowledge and experience of their practical implementation among professional trainers refers to sports equipment and tactics. In the main educational literature (textbooks and study guides), which numbers several hun-

dred fundamental works, which reflect the general fundamentals of training in different types of wrestling and martial arts, the knowledge presented in the vast majority is exclusively related to sports equipment and, to a lesser extent, tactics. Questions related to other aspects of the preparation in a significant part of the work are either not addressed at all, or extremely concisely and fragmentary, at a level absolutely incomparable to that one where knowledge related to physical training is presented. And that applies to the entire modern history of the development of various types of martial arts. For example, back in the 1940s and 1960s, a series of textbooks and tutorials on wrestling were published in the USSR, the authors of which were leading experts in these sports (Kharlampiev, 1949, 1964; Sorokin, 1964; Leni, 1964; Galkovsky, Katelin 1968 Hantau Ioan, Manolachi Veaceslav, 2000 and others). In all these and other works, either all or more than 90% of the material was exclusively related to sports equipment and methods of teaching techniques and motor actions. As for the physical qualities - strength, speed, agility, endurance, without which you can neither master nor realize technical skill (Zatsorsky, 1964; Matveyev, 1977, 2010; Enoka, 2001; Platonov, 1997, 2015, etc.), then, at best, several pages of the text were assigned to the determination of their significance and the method of development, with a primitive statement of the need for physical fitness. For example, in the voluminous book of A.A. Kharlampiev "Sambo Fight" (1964), which summarized the experience of the author's 40 years of work in developing this sport, the whole problem of development of physical qualities is reduced to the mentioning that during training sessions must take place exercises aimed at "general strengthening of the activities of the main body systems, increasing joint mobility and strengthening of the ligament apparatus, development of strength, speed, elasticity of muscles and the ability to relax them, development of posture, and in the work plan "it is necessary to consider schedule of preparation and passing the TRP standards ".

Many years have passed since then, during which a large number of works published in the USSR, countries located on its territory after the collapse of the country, were published. However, the improvement of the content of numerous educational publications has not led to a change in their methodological orientation. Again, the overwhelming amount of the text is exclusively related to the technique of techniques and motor actions, the method of technical improvement, while ignoring or frank simplification of knowledge in the field of physical training (Kuptsov, 1978; Tumanyan, 1998; Ivanov et al., 2004; Semenov, 2005; Shulika and et al., 2006; Shestakov, Yeregina, 2011; Avilov, Kharakhordin, 2017; Manolachi Veaceslav 2003, 2015, 2018 etc.).

A similar picture is observed when studying the literature devoted to the method of training foreign athletes specializing in different types of martial arts - judo (Otaki, 2003; Harrington, 2003; Kidzo, 2017, etc.), taekwondo (Song Man Li, 2002; Choi Sung Mo, 2005; Shulika, 2007, etc.), aikido (Tamura, 1994; Brand, 1997; Ruloni, 2010; Rudakov, 2016, etc.), kickboxing (Kulikov, 1997; Kleschev, 2006; Karamov, 2009; Shegrikovich, 2012 and other); Karate (Ivanov-Katansky, 1997; Yamaguchi, 1998; Katansky, 2010; Heely, 2015, and others.); Wushu (Ji Jiancheng, 1992; Hongjun Lei, 2007; Zhongshen Li, Xiaohui Li, 2017; Medvedev, 2017, etc.).

Such attitude to knowledge in the development of motor skills and physical preparation of athletes, in our opinion and according to the statements of some authors, is in conflict with the general principles of sports training (Ozolin, 1970; Matveyev, 1977, 2010; Nagge, 1982; Platonov, 1997, 2015; Manolachi Veaceslav, 2018 and others), as well as with the results of numerous local studies in the field of physical preparation of wrestlers, the development of their various motor qualities, first of all, the strength ones.

Insufficient attention to physical training and its most important part - strength training could

not but affected the ideas of specialists in this field, the scientific level of problem development, and led to a discrepancy between the level of knowledge, typical not only for the general theory of sports training, sports anatomy, physiology and morphology, but also for many other sports, which are characterized by the same serious attitude to the development of motor skills, as well as to the improvement of technical skills.

Summarizing the content of literary sources, which are the result of research and practical activities in the field of physical training and, in particular, related to the development of strength, we are surprised to find the lack of analysis of the structure of physical fitness of wrestlers, which is extremely complex, requiring the manifestation of different types of strength qualities in concentric, eccentric, isometric, plyometric, ballistic modes of muscle work with their constant change and sequence. It is clear that without such an analysis, there is no reason to talk about the current level of strength training (Greig, 2009; Nansen, 2014; Platonov, 2017; Manolachi Veaceslav, 2018).

There is no reflection and understanding of the fact that strength training of athletes-martial artists should be carried out mainly due to neuroregulatory components that are not significantly related to muscle hypertrophy (Komi, Ishikawa, 2009; Berm et al., 2010), since muscle hypertrophy leads not only to a significant increase in body weight, but also to the non-specific development of strength (the so-called slow strength), limiting the speed-strength and coordination capabilities of athletes (Gamble, 2013; Potach, Chu, 2016). However, extremely important issues related to the methodology of development of strength qualities by means of synchronization of muscle activity of agonists, synergists, stabilizers, antagonists (Wilmore, Costill, 2004; Kenney et al., 2012), activation of the maximum amount of motor units of muscles carrying the main load while performing a specific technique or motor action (Stone et al., 2002; Moir, 2012), are not given due attention in the specialized literature on wrestling.

This also applies to many other processes associated with the development of specific types of strength typical for the competitive activity of athletes in martial arts. For example, the high significance of intense pulsation of motor units to achieve the maximum level of development of strength (Hoffman, 2002; Beachke, Earle, 2008), optimization of the process of muscle activation in response to the reaction of muscle and tendon mechanoreceptors, as an important factor in the manifestation of strength qualities (Seeley et al., 2007; Wilmore et al., 2009) or as of great importance for effective motor actions of postural muscle strength (Hibbs et al., 2008; McGile, 2010).

All these important issues are generally left without attention of specialists who are developing the problem of strength preparation of athletes specializing in wrestling, judo, taekwondo.

It should be noted that all the issues related to the structure of strength preparation of wrestlers, methods of development of various strength qualities, presented in the specialized literature, are separated from the potential of the athletes' energy supply systems - the capacity and volume of alactate and lactate systems of energy supply, workability and aerobic system capacity. Although it is absolutely obvious that the level of explosive power of athletes, manifesting itself in short-term actions with the maximum available power, is in such dependence with the amount of energy released as a result of the splitting of ATP and CP (Wilmore, Costill, 2004; Kenney et al., 2012), and similar strength manifestations in a state of fatigue are largely related to the power and capacity of anaerobic glycolysis, the speed of deployment of aerobic reactions, and the level of oxygen consumption (Edge et al., 2006; Swank, 2008; Bishop et al., 2011). It is clear that research in this area can seriously improve the process of special strength preparation of wrestlers.

The recent extending of the arsenal of tools for the development of motor skills, the emergence of many special devices, simulators that make the process of motor skills development much more

effective, in particular, strength ones, selective, targeted, connected with competitive activities have not found the reflection in specialized literature on the physical preparation of athletes-martial artists (Behm et al., 2010; Platonov, 2017).

Still, in most of the works, in the development of strength qualities and the assessment of strength preparation, such means as pulling up on a crossbar, push-ups on bars, rope climbing, long jumps and high jumps are recommended, which unacceptably simplifies the approach to the development of this important quality.

All these and many other facts indicate the discrepancy of ideas and approaches in the field of physical preparation, strength preparation as its important part, established in the scientific and educational literature on sports martial arts, the modern level of knowledge in the field of theoretical, methodological and biological bases of the development of athletes' motor skills.

Unfortunately, this has become a serious problem for the content of the program-regulatory documents defining the structure and content of the process of preparation of athletes in the systems of junior, reserve and sports of higher achievements. For example, in the "Federal Standard of Sports Training in Sports Wrestling" in the Russian Federation, an exceptionally high importance of physical training is noted, which at different stages of many years of improvement amounts to 50% of the total time spent on the training process, with an emphasis on the speed development abilities, strength and endurance. The content of the process of physical training is not defined, however, the attitude towards it becomes clear if we refer to the presented standards of general and special physical fitness required for enrollment in training groups. For example, even for enrollment in groups of higher sportsmanship for the evaluation of strength, the following tests are recommended: bending and unbending arms in the prone position (at least 48 times), throw of a padded ball (3 kg) back (at least 9 m), throw of a padded ball (3 kg) forward from behind the head (at least 8 m).

A similar approach is used in the formation of standards in other sports. In judo, athletes applying for enrollment in groups of higher sportsmanship should have a level of strength that allows you to pull up on the crossbar at least 20 times, bend and fold your arms 35 times on the floor, lift at least 20 times straightened legs from hanging on the gym wall-bar in angle position; in taekwondo it is enough to pull up on the crossbar at least 20 times. Such an approach does not withstand a critical analysis from any position: first, these tests are complex and very poorly related to the different power qualities characteristic of a fight; secondly, they are not specific and extremely weakly correlate with the level of sportsmanship of athletes (Matveyev, 2010; Platonov, 2015).

However, the very existence of such tests as a regulatory basis for enrollment in training groups orients the **process of strength training of wrestlers** to a wrong way that is not related to the specifics of competitive activity and has long been rejected by the results of serious research (Wilmore, Costill, 2004; Stone et al, 2007; Gamble 2013).

There is no difference in the program-normative requirements for the physical training of highly qualified single combat athletes adopted in other countries located on the territory of the former USSR - Ukraine, Belarus, Kazakhstan, Moldova, etc.

Conclusions. In general, it is enough to state that the body of knowledge in the field of training of athletes specialized in wrestling was formed in a relatively narrow, mainly specific for these sports, subject area without proper interconnection with the basic provisions of the general theory of sports training and the accumulated volume of biological knowledge.

If with respect to the basics of motor control, technical training of athletes, methods of mastering techniques, this problem is not acute, then with respect to the development of motor skills, especially strength ones, there is a huge gap between the ideas prevailing in wrestling and the corresponding practice and opportuni-

ties, achievements of the general theory of sports training, sports sections of physiology, morphology, biochemistry and biomechanics.

It is important to note that such studies should be based on an appropriate methodology, focused mainly on theoretical and analytical analysis, understanding of the knowledge accumulated both in wrestling and a number of mixed disciplines that are capable of their modern content to transfer the problem of physical fitness. athletes, in particular, strength ones to a fundamentally new level of understanding and development. This, of course, not only does not exclude, but also involves the carrying out of private experiments that contribute to optimizing the process of introducing related knowledge into the direction of the theory and methodology of training of athletes specialized in wrestling. This fundamental methodological approach predetermined the content of this work.

Thus, in connection with the above, the problems of physical training, including the development of such an important quality as strength, in relation to the process of athletes' training specialized in martial arts, require a deep understanding of the relevant achievements of the general theory of sport and special sections of biological disciplines, study and improvement, both in general theoretical terms, and in sports and methodological. Such studies will undoubtedly be a major contribution to the development of sports science and an important factor for improvement of the skills of coaches and the quality of athletes' training.

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