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Improvement of the methodology of strength and speed and power training of qualified judoists at the stage of sports

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Abstract

Purpose: To theoretically develop and experimentally substantiate the differentiated method of power and speed and strength training of qualified judoists 18-20 years old of different weight categories at the stage of sports perfection.

Methods: Analysis of special scientific and methodological literature, questionnaires, pedagogical observations, pedagogical testing, pedagogical experiment, mathematical and statistical analysis and processing of research results.

Results: Analysis of correlation relationships of starting strength Q revealed the following values: G-accelerating force (r=0.741) revealed a high correlation, 10 somersaults forward(sec) (r=0.369) revealed a moderate correlation, getting up from a stand on the bridge and leaving with a run to either side 5 times (sec) (r=0, 353) revealed a moderate relationship, running on the bridge 5 times to the left and 5 times to the right (sec) (r=0,372) revealed a moderate relationship, flips on the bridge 10 times (sec) (r=0,382) revealed a moderate relationship,

10 throws over the back (sec) (r=0,428) revealed a moderate relationship, 10 throws with flexion (sec) (r=0,409) revealed a moderate relationship, 10 throws with front foot (sec) (r=0,374) revealed a moderate relationship, 10 throws with back foot (sec) (r=0,319) revealed a moderate relationship. Observation of G-accelerating force revealed the following **values:**

10 forward somersaults(sec) (r=0.339) revealed a moderate relationship, getting up from a stand on the bridge and leaving with a run to either side 5 times (sec) (r=0.407) revealed a moderate relationship, , running on the bridge 5 times to the left and 5 times to the right(sec) (r=0.375) revealed a moderate relationship, flips on the bridge 10 times (sec) (r=0, 423) revealed a moderate relationship, 10 throws over the back (sec) (r=0,453) revealed a moderate relationship, 10 throws with flexion (sec) (r=0,391) revealed a moderate relationship, 10 throws with front foot (sec) (r=0,422) revealed a moderate relationship, 10 throws with back foot (sec) (r=0,413) revealed a moderate relationship.

Conlcusion: Analysis of the individual arsenal of technical and tactical actions of qualified judoists has shown that for each athlete it is necessary to select such exercises or sets of exercises, which would be more similar in their external manifestations to his 'crown' favourite techniques. In this regard, for this athlete it is necessary to develop a training programme on speed and strength training for those muscle groups that are more involved in the techniques. When increasing the level of speed and strength qualities of qualified judoists it is necessary to strive for individual diversity of choice of effective training means. In this regard, it is necessary to calculate not only the volume of work (tonnage) of speed-force training, but also the percentage mismatch of the intensity of the average weight on the exercises, as well as the intensity of performance (tempo) relative to the maximum results.

Keywords: method of power and speed and strength training of qualified judoists, stage of sports perfection, Analysis of correlation, focus of methods of improving technical skills and speed and strength training of qualified judoka.

Introduction

In developed countries, scientific research is being conducted on the issues of improving the skills and special performance of judoists, and their solution directly depends on the choice of methodological orientation of the training process, the rational use of means of general physical and special training. In the modern youth judo special importance is given to power and speed and strength training - one of the important factors in improving the skill and special performance of wrestlers. The problem of rationalisation of means and methods of strength and speed-force training of athletes is constantly in the field of view of scientists and practitioners of sport. Recently, a number of aspects concerning the optimal ratio of loads of different orientation, the sequence of their inclusion in the speed and strength training of judokas of different skill level and preparedness have been actualised.

Many modern programmes and recommendations are designed for highly qualified judoka. Most of them do not take into account the peculiarities of morphofunctional development, characteristic of the majority of wrestlers of sports improvement groups, so their use in the training process of qualified wrestlers is possible only after a significant preliminary revision.

At the present time in our republic has not yet received scientific substantiation of the method of development of strength and speed-force abilities taking into account the age peculiarities of development of judoists' organism in the conditions of long-term process of sports

training, the dynamics of the level of these abilities in judoists of 18-20 years old of different weight categories is poorly tracked, which does not contribute to the improvement of the quality of training process and competitive activity.

Results and discussion

Scientific and methodical substantiation of speed and strength training of qualified judoists of sports improvement groups taking into account their competitive activity is a necessary condition in the long-term training system of athletes. Despite the fact that a large number of scientific studies on this problem there are still a lot of unsolved problems in determining informative and reliable tests for strength and speed and strength training of qualified judoists of sports improvement groups. Many specialists use various control exercises and tests to determine the general physical and special physical training of qualified judoists of sports improvement groups, but these criteria in most cases are one-sided or subjective. Very often these tests are used spontaneously, and specialists can not accurately determine the initial level of physical capabilities of the athlete and do not observe the rate of growth of physical qualities in different stages of the multi-year training process. That is why at the present stage of judo development there is a necessity to use scientifically substantiated tests for control of general physical and special physical training of qualified judoists of sports improvement groups.

The effectiveness of training in judo depends mainly on the rational selection of control exercises and tests, corresponding to the age and fitness level of each athlete. The main criterion for assessing the effectiveness of used tests and control exercises is the growth of sports results.

The prospectivity of an athlete is determined on the basis of his motor potential, the possibility and necessity of further development of physical qualities, improvement of functional capabilities of the organism, formation of new motor skills, ability to endure high training and competitive loads. Most specialists believe that the methodology of speed and strength training of judoists is a system of organisational and methodological measures of a complex nature, including pedagogical, sociological, psychological and medical and biological methods of determination, on the basis of which are identified the tasks and abilities of athletes for specialisation in a particular sport. At the same time, speed and strength training is an important and organic part of the educational and training process, as it contributes to the solution of the main task of sports training - to achieve high sports results. When determining the prospectiveness of athletes, it is necessary to be guided not only by the presence of high potential physical abilities, but also necessarily have in mind the assessment of his ability to mobilise reserve capabilities, to effectively implement the motor potential in extreme conditions - responsible sports competitions

In our research we determined correlations between the following speed and strength indices: (Fmah)- Maximum value of explosive force of muscles in explosive isometric mode, J - speed and strength index, coefficient characterising explosive force of muscles in isometric mode, Q - starting force, G-accelerating force and the following indicators of special physical fitness of judoists: 10 somersaults forward (sec), getting up from the stand on the bridge and leaving with running in any direction 5 times (sec), running on the bridge 5 times to the left, 5 times to the right (sec), flips on the bridge 10 times (sec), 10 throws over the back (sec),
10 throws with a bend (sec),10 throws with a front foot (sec),10 throws with a back foot (sec).

As can be seen from Table 2 where the correlations between speed-force indices and indicators of special physical fitness of qualified judoists of sports improvement groups are presented, high correlations are revealed:

Table 2 presents the analysis of correlations between the speed-force indices obtained with the help of a special simulator and the indices of special physical preparedness of
judoists. The experiment involved 62 qualified judoists of sports improvement groups.

So the index (F_{mah})- Maximum value of explosive force of muscles in explosive isometric mode has the following correlations with J speed-strength index (r=0,717) revealed a high relationship, Q-starting force (r=0, 709) revealed a high correlation,G-accelerating force (r=0,726) revealed a high correlation, 10 forward somersaults(sec) (r=0,452) revealed a

Table 1. Correlation relationship of speed and strength training indicators and tests of special physical training of judoists in groups of sports co-improvement (n-21)

	Показатели ССП и СФП	Speed and strength				Specialised physical training							
		Fmax	J	Q	G	1	2	3	4	5	6	7	8
	F max	//////											
	J – power index	0,717	//////										
	Q – starting power	0,709	0,635	//////									
	G – accelerating force	0,726	0,619	0,741	/////								
1	10 forward somersaults (sec)	0,452	0,321	0,369	0,339	/////							
2	Getting up from the rack to the bridge and leaving from a place with a run in any direction 5 times (sec)	0,431	0,343	0,353	0,407	0,432	/////						
3	Bridge run 5 times to the left and 5 times to the right (sec)	0,382	0,368	0,372	0,375	0,417	0,613	/////					
4	Turns on the bridge 10 times (sec)	0,368	0,354	0,382	0,423	0,382	0,538	0,567	//////				
5	10 throws over the back (seo-nage) (sec)	0,447	0,419	0,428	0,453	0,426	0,618	0,622	0,635	//////			
6	10 deflection throws (ura-nage) (sec)	0,518	0,433	0,409	0,391	0,431	0,721	0,638	0,618	0,635	/////		
7	10 front foot (tay-otoshi) throws (sec)	0,416	0,384	0,374	0,422	0,398	0,535	0,574	0,585	0,511	0,622	///////	
8	10 backstroke (osoto-otoshi) (sec)	0,387	0,372	0,319	0,413	0,432	0,601	0,526	0,529	0,534	0,591	0,726	

moderate correlation, getting up from a stand on the bridge and leaving with a run to either side 5 times (sec) (r=0, 431) revealed a moderate connection, running on the bridge 5 times to the left, 5 times to the right (sec) (r=0,382) revealed a moderate connection, flips on the bridge 10 times (sec) (r=0,368) revealed a moderate connection, 10 throws over the back (sec) (r=0, 447) revealed a moderate association, 10 deflection throws (sec) (r=0.518) revealed a significant association, 10 front foot throws (sec), (r=0.416) revealed a moderate association, 10 back foot throws (sec) (r=0.387) revealed a moderate association.

Analysis of J-velocity-force index, coefficient characterising explosive muscle strength in isometric mode The conducted correlation analysis of J-velocity-force index, coefficient characterising explosive muscle strength in isometric mode revealed the following values: Q-starting force (r=0,635) revealed a marked relationship, G-accelerating force (r=0,619) revealed a marked relationship, 10 somersaults forward(sec) (r=0,321) revealed a moderate relationship, getting up from the stand on the bridge and leaving with a run in any direction 5 times (sec)(r=0, 343) revealed a moderate relationship, running on the bridge 5 times to the left and 5 times to the right (sec), (r=0,368) revealed a moderate relationship, flips on the bridge 10 times (sec) (r=0,354) revealed a moderate relationship,

10 throws over the back (sec) (r=0.419) revealed a moderate relationship, 10 throws with flexion (sec) (r=0.433) revealed a moderate relationship, 10 throws with front foot (sec), (r=0.384) revealed a moderate relationship, 10 throws with back foot (sec) (r=0.372) revealed a moderate relationship.

Analysis of correlation relationships of starting strength Q revealed the following values: G-accelerating force (r=0.741) revealed a high correlation, 10 somersaults forward(sec) (r=0.369) revealed a moderate correlation, get-

ting up from a stand on the bridge and leaving with a run to either side 5 times (sec) (r=0, 353) revealed a moderate relationship, running on the bridge 5 times to the left and 5 times to the right (sec) (r=0,372) revealed a moderate relationship, flips on the bridge 10 times (sec) (r=0,382) revealed a moderate relationship,

10 throws over the back (sec) (r=0,428) revealed a moderate relationship, 10 throws with flexion (sec) (r=0,409) revealed a moderate relationship, 10 throws with front foot (sec) (r=0,374) revealed a moderate relationship, 10 throws with back foot (sec) (r=0,319) revealed a moderate relationship.

In order to increase the effectiveness of speed and strength training of qualified judoists it is advisable to implement on the basis of training groups on the principle of the annual cycle. Priority should be given to competitive activity, as a condition for increasing motivational attitude to training sessions. Realisation of this in the process of training allows to significantly increase the interest of judoists to classes. Competitions and competitive exercises should be accessible, feasible for all students, interesting and emotionally organised.

The process of sports training of qualified judoists of sports improvement groups of different weight categories should include means of special physical training, aimed at the development of necessary in the fight qualities of speed, special endurance and speed and strength abilities, increasing the overall physical performance.

Conclusion

As a result of the conducted questionnaire it was revealed that among judo coaches there is still no consensus on the organisation and conduct of training sessions on speed and strength training, in this regard, the study of this problem is relevant and requires further comprehensive research. The system of training of judo coaches in higher educational institutions requires further improvement.

Studies in recent years have shown that the most significant factors influencing sports results and which should be taken into account are speed and strength abilities. The introduction of speed and strength training allows to create favourable prerequisites for the full disclosure of the athlete's potential abilities and their improvement.

The focus of methods of improving technical skills and speed and strength training of qualified judoka should correspond to the features of competitive activity. It is necessary to identify the most promising attacking technical actions for judokas in each weight category and determine accordingly effective programmes of speed and strength training for them. When developing an effective methodology for selecting the direction of means of speed and strength training, it is necessary to take into account the individual arsenal of attacking and defensive actions of this or that judoka, with the help of which he achieved a certain level of sports results.

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