“IMPROVING THE PHYSICAL PREPAREDNESS OF HIGHLY QUALIFIED JUDO ATHLETES THROUGH ADVANCED TRAINING METHODOLOGIES”

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Abstract. The results achieved by Uzbek athletes in major international competitions over the past two years were summarized, and their significance in improving technical and tactical mastery was demonstrated. It can be concluded that the competitive potential of Uzbek judokas can be further enhanced through the integration of innovative approaches and international experience into the national training system.

Keywords: judo, technical training, tactical training, annual cycle, randori, uchikomi, competition results, Uzbek athletes, individual training, psychological preparation, workload and recovery.

Introduction

Physical preparation is considered one of the fundamental factors in achieving high sports performance in the training process of highly qualified judo athletes. As is well known, the sport of judo is distinguished by complex technical and tactical movements, constantly changing conditions during combat, and high levels of competitive demands. Therefore, the level of physical preparedness of highly qualified judokas plays a decisive role in their success in competitions and the stability of their sports performance.

Physical preparation is not limited only to the development of physical qualities but also includes special physical preparation that most closely corresponds to competitive activity. For highly qualified judokas, it is important that such physical

qualities as strength, speed, agility, coordination, endurance, and flexibility are developed harmoniously. The optimal development of these qualities determines technical and tactical effectiveness as well as activity in changing competition situations.

Currently, scientific research conducted worldwide in the field of judo is aimed at identifying physical preparedness criteria, studying the dynamics of their development, and developing the most effective training systems. At the same time, it would not be an exaggeration to state that optimizing the training process while taking into account the individual characteristics of each athlete has become an urgent issue.

Studies show that methodological approaches such as measuring the level of physical qualities, determining their influence on technical and tactical actions, and analyzing existing training standards play an important role. Research findings possess significant scientific and practical importance not only for practicing coaches but also for sports science.

A deep and systematic study of the physical preparedness level of highly qualified judokas, the identification of standard indicators of preparedness, and the development of proposals aimed at improving them are considered among the priority tasks of modern sports science.

As theoretical foundations of physical preparation in judo, the most important physical qualities are identified as follows. According to theoretical sources, Matveyev (2019) and Bompa (2020) state that an athlete’s physical preparedness should be formed through an optimal balance between general preparation (basic development) and special preparation specific to judo. Especially during the preparation of highly qualified athletes, when general and special physical training processes are harmoniously integrated, they serve as the primary means for performing technical-tactical actions and complex tactical movements effectively.

In addition, the following main principles of sports training should be taken into consideration during the development of athletes’ physical qualities:

1. **Systematic training** — training sessions should be planned, regular, and progressively increased step by step.

2. **Individualization** — training methods should be adapted according to each athlete's age, gender, level of preparedness, and physiological characteristics.

3. **Progressive overload** — workloads should gradually increase so that the athlete's body can adapt to changes.

4. **Special orientation** — training sessions should be designed according to judo techniques and competition conditions.

5. **Recovery and rest** — sufficient recovery opportunities should be provided after high-intensity physical loads.

Factors such as athletes' age, sports experience, weight category, and competition experience also play an important role in the formation of physical preparedness in judo. For example, greater attention is paid to the development of general physical qualities in young athletes, whereas in highly qualified athletes, special preparation and the correlated development of physical qualities are considered priorities.

When describing the level of physical preparedness of highly qualified judokas, these athletes are characterized by the harmonious combination of excellent technique, tactical mastery, and outstanding physical preparation throughout their sports careers. Their physical preparedness is distinguished not only by strong general development but also by the high level of development of special physical qualities specific to judo.

Practical experience gained as a national team athlete and head coach before organizing the research demonstrated that the level of physical preparedness of highly qualified judokas can appropriately be determined through the following main aspects:

1. **Manifestation of maximal strength** — highly qualified judokas possess the maximal strength necessary for gripping opponents on the tatami, moving while

maintaining grips, unbalancing opponents, and executing throws. The strength level of the entire muscular system is extremely important.

2. **Manifestation of explosive power** — explosive power is applied during continuous execution of techniques and combinations in combat situations. Highly qualified judokas demonstrate a well-developed ability to exert maximum force within a short period of time.

3. **Endurance** — highly qualified athletes are capable of maintaining high intensity during prolonged matches. Their cardiovascular and respiratory systems are resistant to heavy competition loads and possess rapid recovery abilities.

4. **Speed and agility** — the movements of elite judokas are characterized by agility, high precision, and the ability to make rapid decisions. They are capable of anticipating the opponent's technical actions and responding quickly and effectively.

Special tests and measurements were used to evaluate the level of physical preparedness of judokas.

Physical Preparation Tests:

1. Bench press, squats, deadlift, abdominal press exercises, suspension exercises, jerk lifting, rope exercises;

2. Running tests;

3. Shoulder throws using resistance bands, double-sleeve throws, long jumps, hand-supported jumps, pull-ups, parallel bars;

4. Strength endurance tests including bench press, squats, abdominal press, suspension exercises, and bar exercises;

5. Forward throws, backward throws, wave-style arm flexion and extension, jumping across the hall, hand-supported jumping across the hall, abdominal press, resistance-band exercises;

6. **Explosive speed tests:** forward uchikomi, backward uchikomi, two-sided uchikomi, forward throws, backward throws, two-sided throws;

7. **Explosive power tests:** bench press, pull-ups, parallel bars, abdominal press, standing bar lifting and throwing, standing chest press with a barbell, knee-lift jumps.

In order to determine the physical condition of judokas before the beginning and improvement of the annual training cycle, the following assessment tests were conducted to identify the average physical indicators of highly qualified judokas. According to the classification, there are seven weight categories in judo; considering the similarity of athletes' physical condition and technique, these categories were divided into four groups (60–66 kg, 73–81 kg, 90–100 kg, and +100 kg).

Before the research

Running test

General physical fitness test															
№	Weight category	"Lifting the barbell while lying down"		"Sit-up with a barbell"		"Lifting the barbell from the ground"		Abdominal exercises		"Trunk Flexion and Extension with Shoulder Load at a 45% Bent Position"		"Standing Barbell Press from the Chest"		"50-Meter Rope Pull with Additional Weight"	
		kg	Number	kg	number	kg	number	Kg	number	kg	number	kg	number	kg	number
1	60-66	80	10	90	10	110	10	10	25	10	30	30	10	20	20
2	73-81	80	10	90	10	115	10	10	21	15	35	40	7	40	25
3	90-100	90	10	100	10	125	10	15	23	20	37	60	10	60	30
4	+100	80	10	100	10	135	10	20	12	20	30	60	15	60	25

№	Weight category	60m/sec	100m/sec	1km/min	10km/min
1	60-66	9	13	3,34	47,15
2	73-81	9,3	12,3	4,15	45,05

3	90-100	9,5	12,5	3,45	53,4
4	+100	10	13	3,4	57,05

Explosive strength test

№	Weight category	"Forward Uchikomi (Repetitive Technique Entry)"		"Back Uchikomi (Introduction to Repetitive Technique)"		"Bilateral Uchikomi (Repetitive Technique Entry Practice on Both Sides)"		"Forward Throwing (Throwing the Opponent Forward)"		"Throw back (Throw opponent back)"		"Throwing to both sides (Throwing the opponent to both sides)"	
		time	reps	time	Reps	time	reps	time	reps	time	reps	time	reps
1	60-66	10 sec	15	10 sec	16	10 sec	11	20 sec	15	20 sec	14	20 sec	15
2	73-81	10 sec	14	10 sec	15	10 sec	11	20 sec	14	20 sec	15	20 sec	14
3	90-100	10 sec	13	10 sec	13	10 sec	10	20 sec	12	20 sec	11	20 sec	11
4	+100	10 sec	11	10 sec	11	10 sec	9	20 sec	11	20 sec	12	20 sec	10

After the reserch

Running test

№	Weight category	60m/sec	100m/sec	1km/min	10km/min
1	60-66	8,7	12,8	3,2	43
2	73-81	8,5	12	3,5	42,3

3	90-100	9,2	12	3,3	47,1
4	+100	9,1	12,5	3,3	50,05

General physical fitness test

№	Weight category	"Lifting the barbell while lying down"		"Sit-up with a barbell"		"Lifting the barbell from the ground"		Abdominal exercises		"Trunk Flexion and Extension with Shoulder Load at a 45% Bent Position"		"Standing Barbell Press from the Chest"		"50-Meter Rope Pull with Additional Weight"	
		kg	number	kg	number	kg	number	kg	number	kg	number	kg	number	kg	number
1	60-66	100	10	100	10	120	10	10	40	10	50	40	10	20	40
2	73-81	100	10	120	10	125	10	10	50	15	55	50	10	40	40
3	90-100	130	10	130	8	160	10	20	50	20	50	80	12	60	50
4	+100	140	10	150	8	160	10	20	30	20	40	80	15	60	50

Explosive strength test

№	Weight category	"Forward Uchikomi (Repetitive Technique Entry)"		"Back Uchikomi (Introduction to Repetitive Technique)"		"Bilateral Uchikomi (Repetitive Technique Entry Practice on Both Sides)"		"Forward Throwing (Throwing the Opponent Forward)"		"Throw back (Throw opponent back)"		"Throwing to both sides (Throwing the opponent to both sides)"	
		time	reps	time	reps	time	reps	time	reps	time	reps	time	reps

1	60-66	15 sec	17	15 sec	24	15 sec	28	15 sec	20	15 sec	18	15 sec	19
2	73-81	15 sec	17	15 sec	24	15 sec	24	15 sec	21	15 sec	19	15 sec	20
3	90-100	15 sec	16	15 sec	20	15 sec	20	15 sec	24	15 sec	17	15 sec	20
4	+100	15 sec	13	15 sec	18	15 sec	16	15 sec	19	15 sec	16	15 sec	16

As an effective method of increasing the level of physical fitness of highly qualified judoists, further increasing the level of physical fitness of highly qualified judoists requires a complex and scientifically based training system. This system should be aimed at further developing general and special physical qualities, taking into account individual characteristics.

Effective methods and principles include the development of an individual training program based on the physical condition, functional capabilities and sports experience of each member of the national team in the process of an individual approach. It is no exaggeration to say that this approach prevents overloads and helps to achieve maximum results. During balanced development, the qualities of strength, endurance, speed, agility and flexibility should be developed in harmony with each other.

One-sided development can reduce the overall level of the athlete and increase the risk of injury. During special training, exercises should correspond to the technical and tactical requirements of judo: special exercises to develop strength, power endurance and explosive power in a wrestling situation. Exercises that develop reaction to quickly adapt to the opponent's movements. Continuous special exercises to increase special endurance.

The cyclic training method should be organized into clear stages: the preparatory stage, the special preparation stage, the pre-competition stage and the

recovery stage. The volume and intensity of the loads are determined in an appropriate manner at each stage.

In addition, during the functional control and monitoring of highly qualified judo players, it is necessary to regularly monitor the athlete's physical and functional state. Based on the results obtained, the loads and training forms are adjusted. For example, it is necessary to analyze heart rate, lactate level and recovery indicators. When using modern technologies, the training process is optimized using high-tech equipment, sensors, video analysis, heart monitors and other tools.

Determining and analyzing the athlete's movement technique and energy costs is currently the most global issue in the world sports community, and their use is of great importance. Psychophysical training, on the other hand, is necessary for highly qualified athletes to achieve good results in competition activities, in which psychological stability and quick thinking ability must be developed together with their physical capabilities. Special psychological training is conducted to make the right decisions in stressful situations and adapt to the opponent's movements.

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