

STATE OF FUNCTIONAL, MOTOR AND PSYCHOLOGICAL ABILITIES OF THE HIGH CLASS JUDOISTS WITH LIMITED VISUAL ABILITY DURING THE PRE-CONTEST PERIOD

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Abstract

In this article is described the study on the functional- motor and psychological potential of high class judoka with limited visual ability.

Materials and methods: There were used rapid instrumental and computer methods for the rapid diagnosis of their readiness before very important competitions. The use of instrumental and computer means and methodologies of control allow for the diagnosing on a high level of the motor, psychological and motor state of judoka at different stages of the training process.

Results and discussions: According to the majority of the studied characteristics of psychological, functional and motor potential the judokas are close to the standard characteristics of the competition manifestation. At the same time some sportsmen showed insufficient time parameters of movement (movement reaction, development quality of swiftness of movement, tempo characteristics), and a relatively insufficient formation of precision of perception and reproduction of space entity according to muscular sensation.

Introduction

At the present time a special attention is paid to the integration of people with limited abilities into sport activity on the international and paralympic level. Not an exception is judo, the sport in which are involved more and more sportsmen with limited abilities of different types, including the persons with visual distortions. It is well – known that at the basis of a successful motor activity of the sportsman is the optimal body state, named “competition form”. Furthermore, every type of sport and also every preparation stage requires the formation of its optimal functional and motor state [4]. It should be also noticed that the

available research and methodology literature pays special attention to the problem of preparation of the high class sportsmen with limited physical ability in judo [3,4,6,9].

At the same time, the analysis of the research and methodology literature is indicative of the fact that the problem of the preparation of high class sportsmen with limited visual abilities is built mainly on the selection system of the strongest and the most talented judoists. But the majority of the researches are dedicated to the problem of preparing the young judoists with visual disorders [2, 10].

Also, in our opinion are under investigated the aspects of specification and identification of the optimal preparation of the high class sportsmen with visual distortions on the basis of modern instrumental and computer means of investigation [7,8]. Therefore, the study of the functional and motor state of the high class sportsmen with limited visual ability in judo, that characterizes the optimal “competition form” during the pre-contest period with the help of the rapid modern instrumental and computer methods is a **relevant** objective.

The goal of research is the study of the psychological and motor abilities of high class judoists with limited visual ability with the use of instrumental and computer tests at the study and training camp during the pre-contest period. Before the research the following task was set: study and identify the functional and motor instrumental computer tests which due to their indicators offer a fact –based appreciation of the sport condition of judoists with limited visual ability before international competitions. The sportsmen with limited visual ability are identified by classes in conformity with their functional abilities and taking into consideration the requirements of the medical sport qualification commission **IBSA**.

Material-method

For the research of the motor and functional state of judoists we used the unified modular hardware and software system that allows for a rapid appreciation of the motor assurance of the motor activity according to the parameters of time, space and effort, and also according to the parameters that reflect the perceived, motor and vegetative components of the mental state.

Results and discussions

At the basics of this methodology is the concept of state and readiness of the sportsman to make certain movements and actions that can be more successfully learnt and used at important competitions.

This methodology corresponds to the requirements of standardization for the appreciation of motor and psychological assurance of the activity irrespective of its type, gender and age of the person practicing it. The survey was made with the use of the unified computerized system for the appreciation of the sportsman's state (UCSASS), elaborated in the Saint-Petersburg institute for scientific research of physical culture.

The system offers the possibility to analyze a big variety of the used tests. At the stage of study and training camp (STC) we were interested in the development of the motor, psychological and functional state of the judoists with limited visual abilities according to the following tests:

- **RT_{mo}, RT sec.**: time of simple motor response;
- **T-T_{max}, nr.** of times: number of hand movements at maximal rate (in 15 seconds);
- **T-T_{dosed}, %**: rate of movement at low amplitude in 10 sec. with the orientation to use 50% of the maximal rate (made for right and left hand);
- **RT sec**: reaction time;
- **L, cm**: perception and presentation as a kinesthetic feel of linear space dimension;
- **D_{max}, kg**: maximal dynamometry (right and left hand);
- **D₅₀, %**: differentiation of muscular effort (50% dynamometry of right and left hand);
- **C_{asym}, D** relative units: asymmetry factor of dynamometry;

More than that, in addition to this there was made a psychological testing with the appreciation of the following subjective: self – esteem (**S-e**): general state (**G s**), mood (**M**), will for training (**WT**), clearness of purpose (**CP**), confidence in the objective achievement (**COA**), readiness for maximal result (**RMR**), scales of state anxiety according to Spielberger and Hanin (**SH -1**), motivation scale according to Sopov (**MS**). The presented psychological tests were studied at the end of the study and training camp (STC).

For all the studied motor and psychological tests were elaborated the criteria or the so called model responses of the optimal motor and psychological state of the judoists for whom this comparison was applied. In the research were included 5 judoists with limited visual ability, high class (on the level of Master of Sport).

In the 1 table are presented the results of testing the motor and functional abilities of judoists with limited visual abilities in the dynamics of the study and training camp.

Table 1. The results of testing of the motor and functional abilities of the judoists with limited visual ability within the dynamics of the study and training camp

Sptsmen	TESTS											
	RT _{no} , RT (sec)	T-T _{max} (nr. of times)	T-T _{doest} % (left)	T-T _{doest} % (right)	RT (sec)	L, (cm)	D _{max} ,kg ,(left)	D _{max} ,kg ,(right)	D ₅₀ % (left)	D ₅₀ % (right)	C _{asym} .D (relative units)	
A	0,20	63	12,5	21,00	0,77	14,8	52	54	32,5	35,0	1,04	
	0,16	65	21,0	23,00	0,67	10,0	55	58	40,0	43,5	1,05	
B	0,30	50	31,0	36,50	0,58	15,4	56	56	41,0	45,0	1,00	
	0,27	52	40,5	48,50	0,43	13,0	67	69	44,0	48,0	1,03	
B	0,32	51	35,0	31,00	0,37	8,80	66	67	51,5	50,0	1,01	
	0,28	55	36,0	37,00	0,30	7,80	65	63	48,5	56,0	1,03	
Г	0,25	53	39,5	38,00	0,73	8,20	53	56	41,0	38,0	1,06	
	0,18	58	42,0	43,00	0,67	7,60	62	64	49,0	48,0	1,03	
Д	0,32	53	34,5	36,00	0,47	9,80	58	60	48,0	49,0	1,03	
	0,26	66	37,0	39,00	0,35	7,80	66	69	56,5	49,5	1,04	

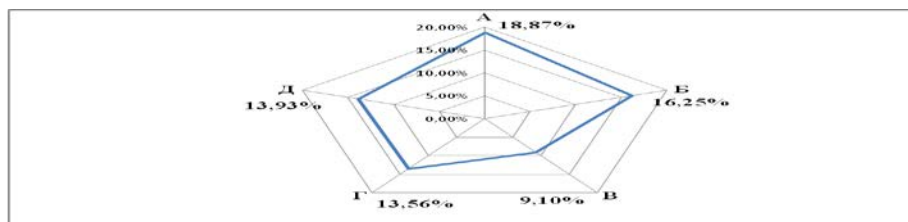
Note: in the upper line are presented the initial values of the tests (before STC). In the lower line are presented the final results of the tests (at the end of the STC).

In the 2 table are presented the values that reflect the qualitative percentage level to which had increased the initial test results of the test subjects at the end of the study and training camp, and also the average overall performance for all the studied tests (\bar{X}_{11}).

Table 2. Quantitative progress level of the tests results

Graph 1. Diagram of the complex progress of the preparedness of judoists with limited visual abilities for the period of the study and training camp

Sportsmen	Tests and progress level indicators for the specialized motor abilities of judoists (%)												
	RT _{no} RT _{sec}	T-T _{max} (nr. of times)	T-T _{doest} % (left, nr. of times)	T-T _{doest} % (right, nr. of times)	RT (sec)	L (cm)	D _{max} ,kg ,(left)	D _{max} ,kg ,(right)	D ₅₀ % (left) kg	D ₅₀ % (right) kg	C _{asym} .D (relative units)	\bar{X}_{11}	
A	20,00	3,17	68,00	9,52	13,00	32,43	5,77	7,41	23,08	24,28	0,96	18,87	
Б	10,00	4,00	30,64	32,88	25,86	15,58	19,64	23,21	7,32	6,67	3,00	16,25	
B	12,50	7,84	2,86	19,35	18,92	11,36	1,51	5,97	5,82	12,00	1,98	9,10	
Г	28,00	9,43	6,33	13,16	8,22	7,32	16,98	11,11	19,51	26,31	2,83	13,56	
Д	18,75	24,53	7,25	8,33	25,53	20,41	13,79	15,00	17,71	1,02	0,97	13,93	



In Table 3 are presented the indicators of the studied psychological tests of the high class judoists with limited visual ability at the end of the train and study camp.

Table 3. Indicators of the studied psychological tests of high class judoists with limited visual ability at the end of the study and training camp

Sp-men	Tests								
	S-e	G s (C-e)	M	CP	WT	COA	RMR	SH-1	MS
A	6	7	7	7	8	7	8	11	24
	10	6	7	10	9	5	5	10	16
B	8	9	9	10	10	10	10	8	22
Γ	8	7	7	10	10	10	10	11	20
Δ	8	10	8	10	10	10	10	16	21

Analysis of testing results.

Judoists A. Psychology. The sportsman is in a state of emotional stability. The subjective perception of his state and abilities is on a good level. The state anxiety is not present; the surrounding factors do not affect his motivation.

Motor, psychological and functional components. The sportsman showed a certain level of appreciation of his actions in conformity with the set schedule for both power and tempo characteristics. During training it is recommended to pay attention to the development of movement speed in complex motor manifestations.

Specifics of the dynamics during STC. It was noticed an improvement of all indicators that reflect the control over his tempo and power characteristics. On a stable high level is the time of simple reaction. There was a redistribution of the readiness for maximal realization of power characteristics. It was identified an improvement of the general development level of motor and functional components, with some approach to the corresponding standard characteristics for judoists.

Judoist **B. Psychology.** The sportsman is in a state of emotional stability. The subjective perception of his states and abilities is on a high level, we can distinguish clarity, objectives, desire to train and show maximal result at the given stage of STC and confidence in the achievement of the set objectives. The state anxiety is not visible; the external factors do not influence the motivation of the sportsman.

Motor, psychological and functional components. In was identified, that the ability to launch quickly the muscular mechanism of the body part (hand), which allows to see how the sportsman uses his capacity of swiftness at movement production and also the muscular effort distribution are insufficiently developed. It was identified a low precision of perception and reproduction of space entity according to muscular sensation. Also it was identified a general improvement of the development of the motor and functional component, with some a certain proximity to the corresponding standard characteristics for judoists.

Specifics of the dynamics during STC. On a stable high level is the time of complex motor response. There was a redistribution of the readiness for maximal realization towards power characteristics development. At the same time, there is no sufficient improvement of the time of the simple movement reaction and of the ability to determine a space entity, which suggests paying more attention to the development of time parameters of movements and space characteristics of the movement during training.

Judoist **B. Psychology.** The sportsman is in a state of emotional stability. The subjective perception of his state and abilities is on a high level, all the appreciations are on a maximal level. At the same time it is necessary to pay attention to the level of self – esteem, which for some reasons is not sufficient. The state anxiety is not present; the surrounding factors do not affect his motivation. It can be identified “readiness” for achieving results.

Motor, psychological and functional components. In was identified, that the ability to launch quickly the muscular mechanism of the body part (hand), which allows to see how the sportsman uses his capacity of swiftness at movement production and also the muscular effort distribution are insufficiently developed. It was shown an insufficient result for the time of simple movement reaction which determines the swiftness of perception and signal conduction velocity and is one of the movement quality components of swiftness. On the given stage it was identified a “concealment” of his power abilities, which shows big reserve for this indicator. During training it is

recommended to take into consideration the high development according to the following criteria: time of a singular movement that characterizes the ability to produce a swift movement on the account of a better muscle contractibility. It is highly recommended to pay attention to the insufficient appreciation of the distribution of the muscular effort for the left hand, perception and reproduction of a linear space entity according to muscular sensation.

Specifics of the dynamics during STC. For the STC it was identified that according to all the indicators the sportsman reached the average “competition condition” with readiness for maximal realization of his motor abilities. At the same time during the training process it is necessary to pay attention to the development of power and tempo characteristics (left hand) and their distribution. A general improvement of the development level of all motor and functional components still allows for a certain approach to the corresponding standard characteristics for judoists.

Judoist Г. Psychology. The sportsman is in a state of emotional stability. The subjective perception of his state and abilities is on a good level. A high level of self esteem is identified as well as the clarity of the set objective. The state anxiety is not present; the surrounding factors do not affect his motivation.

Motor, psychological and functional components. In was identified, that the ability to launch quickly the muscular mechanism of the body part (hand), which allows to see how the sportsman uses his capacity of swiftness at movement production and also the muscular effort distribution are well developed. It is also worth noticing the insufficiently high result of the time for a singular movement that characterizes the ability to produce a swift movement. Despite an evident right –handedness of the sportsman the evaluation precision of his movements of the left hand surpasses the right hand.

Specifics of the dynamics during STC. During STC there was a significant improve of the tempo indicators of the movement and also the frequency of the movement, spatial sense and power abilities with differentiation of muscle efforts. At the same time, at this stage there is a certain low development of tempo characteristics of the movement. A generally stable level of the development of all motor and functional components corresponds to a good development level of standard characteristics for judoists.

Judoist Д. Psychology. The sportsman is in a state of emotional stability. The subjective perception of his state and abilities is on a good

level, it can be pointed out the clarity of purpose, desire to train and readiness to show maximal result at the given stage, and also confidence that the set objective will be achieved. The sportsman appreciates on a high level his state of health. The state anxiety is not present; the surrounding factors do not affect his motivation.

Motor, psychological and functional components. In was identified, that the ability to launch quickly the muscular mechanism of the body part (right hand), which allows to see how the sportsman uses his capacity of swiftness at movement production and also the muscular effort distribution are insufficiently developed. The development of power and tempo characteristics, on the whole, is close to the highest point of his “competition condition”

Specifics of the dynamics during STC. It was identified, that the readiness of the sportsman to the realization of his motor abilities is on a stable good level. Generally speaking the condition of the sportsman corresponds to a good development of the standard characteristics for judoists.

Conclusions. The use of instrumental and computer means and methodologies of control allow diagnosing on a high level the motor, psychological and motor state of judoists at different stages of the training process. The majority of the studied characteristics of psychological, functional and motor potential of judoists are close to the standard characteristics of the competition manifestation. At the same time some sportsmen showed insufficient time parameters of movement (movement reaction, development quality of swiftness of movement, tempo characteristics), and a relatively insufficient formation of precision of perception and reproduction of space entity according to muscular sensation. A timely information about the functional, motor and psychological potential of high class judoists with limited visual abilities allows for a reorganization of the study and training process for the formation of back up and compensation abilities of complex motor manifestation that are good for achieving success in competitions.

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