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Original Article

Experimental argumentation of development of force and force-velocity abilities of judo players in the context of coaching process

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Abstract:
The paper presents the research regarding the study of the dynamics of ability development of judo players in the context of current and timely correction of the training process during the four years of pedagogical research. The force and force-velocity abilities of athlelets were studied based on following informative tests: the strength of the back lumbar muscles; thigh muscle strength; calf muscle force; biceps force; triceps force; leg muscle explosive force; five throws over the back; five throws back and front with an obstacle; climbing 4m on headfast. The prior pedagogical observations (performed during two years) have shown the formation of a trend regarding the positive influence of the timely correction process of training on effective growth of most indices that characterize the abilities of force and force-velocity of judo players. The final results of the pedagogical experiment confirmed the significant and continuous growth of the studied capacity in the context of timely correction of the training process.
Keywords: experimental group; judo player; training process; force ability; force-speed ability; dynamic indices.

Introduction

The management of the system of sports multianual training of judo players based on their actual metric abilities, as well as introduced in the training plans of appropriate and timely corrections, represent an effective organization of rational compartments of the preparation process which contributes to the achievement of high sports results [1, 2, 3, 5]. According to the opinions of several authors [4, 6, 7] the study of the driving force and force-speed capacity as the foundation of development, including specific physical qualities represents an actual objective.

Methods

During the four-year pedagogical research were used the following methods:

1. scientific-methodological analysis of specialised literature;
2.pedagogic observation;
3.pedagogical experiment;
4.motric capacity testing;
5 .statistical and mathematical method of tests processing.

In the pedagogical experiment were attended two experimental groups of judo player. The first group was composed of the judo player of CMS category (candidates for master of sports) and the second - MS (master of sports). In turn, the first group (category I and CMS) and group II were divided into the experimental and contro group.

The analysis of control indicators of force and power-velocity of judo players was performed once a year, within four years of observation. In the control groups, the training process was held traditionally, without introducing appropriate, timely corrections to the plans; in the experimental groups these were applied timely and effectively. It should be noted that, in order to simplify the presentation of statistical material regarding the results of pedagogical research, it hasn't been carried a comparative analysis of early indicators of force and force-velocity of judo players from the experimental groups, as they were statistically non - significant ($P > 0.05$). This confirms, statistically, the uniformity of relative level of force and force-velocity abilities of athletes from the experimental groups, which enabled the continuation of educational experiment.

Results

The results of the pedagogical research are presented in Tables 1 and 2. Also, it was useful to discover the level of development of force and force –velocity abilities of judo players during the four years of pedagogical research.

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Therefore, Table 1 presents the results of testing, in the experimental group, regarding the force and force-velocity abilities, already after two years of the experiment. According to Table 1, a superiority of the athletes from the experimental groups was manifested even in the firsts years of pedagogical experiment.

Table 1. The test results of judo players from the experimental group based on force and force- velocity abilities after two years of pedagogical experiment

Nr.	Test	Level of qualification	Experimental group	Control group	t	P
I			**force**			
1	Lumbar back muscle strength (kg)	c. I, CMS	101,46±6,20	93,29±5,80	3,84	< 0,01
		MS	127,90±5,20	118,20±4,10	4,20	< 0,001
2	Thigh muscle force (kg)	c. I, CMS	157,86±6,80	144,78±7,20	5,14	< 0,001
		MS	167,80±7,80	153,10±8,10	4,89	< 0,001
3	Calf muscle force (kg)	c. I, CMS	109,82±4,80	98,23±5,80	5,25	< 0,001
		MS	131,50±8,40	118,00±7,60	5,28	< 0,001
4	Biceps force (kg)	c. I, CMS	66,31±4,60	60,04±4,60	3,08	< 0,05
		MS	78,70±4,30	71,80±6,20	3,45	< 0,01
5	Tricep Strength (kg)	c. I, CMS	62,89±3,40	56,81±3,60	4,60	< 0,001
		MS	73,50±4,20	67,60±3,20	4,62	< 0,001
II			**force-velocity**			
1	Leg muscle explosive strength (kg)	c. I, CMS	208,62±8,80	191,14±8,00	4,88	< 0,001
		MS	230,70±6,60	214,90±7,40	6,28	< 0,001
2	Five throws over the back (sec.)	c. I, CMS	8,50±0,39	9,90±0,42	3,84	< 0,01
		MS	8,63±0,32	9,62±0,44	3,69	< 0,01
3	Five obstacle throws back and front (sec.)	c. I, CMS	9,20±0,42	10,60±0,46	3,68	< 0,01
		MS	9,56±0,61	10,45±0,39	3,27	< 0,01
4	Climbing 4 m on headfast (sec.)	c. I, CMS	12,20±2,20	13,90±2,24	1,81	> 0,05
		MS	11,76±1,80	13,02±1,60	1,43	> 0,05

Thus, comparing the test results from experimental groups (MS) and control (category I and CMS) in dynamics of two years, it was found that the indices of force and force-velocity, in both groups were improved and the results of players from the experimental group precedence over those from of the control groups (P <0.05 to 0.001). However, a marked superiority was manifested to force the thigh muscles (with 13,02kg, P <0.001 in the group category I and CMS, 14, 70kg, P <0.001 in group MS), force of the calf muscles (with 11,59kg, P <0.001 in Group I and CMS category, with 13,50kg, P <0.001 in group MS), force the of triceps (with 6,08kg, P <0.001 in Group I and CMS category, with 5.90 kg, P < 0,001 in category I and MS group), the explosive force of the muscles of the lower limbs (with 17.48 kg, P <0.001 in Group I and CMS category, with 15.80 kg, P <0.001 in group MS). An exception represents the comparison feature showed at the test "climbing on headfast", bearing an insignificant trade (P> 0.005) for both experimental groups. In our opinion, this is the logical manifestation of excessive force of resistance of the force-velocity of the tested athletes. Therefore, already after two years of pedagogical research, appeared a trend of the superiority of the experimental groups compared with control groups on most parameters of force and force-velocity.

Table 2. Results of the testing of force and force-velocity abilities of judo players from the experimental groups at the final stage of pedagogical research

Nr.	Test	Level of qualification	Experimental group	Control group	t	P
I			**force**			
1	Lumbar back muscle strength (kg)	c. I, CMS	106,80±6,60	98,20±6,40	3,10	< 0,01
		MS	134,60±5,60	124,40±4,30	4,79	< 0,001
2	Thigh muscle force (kg)	c. I, CMS	166,20±7,20	152,40±7,40	4,44	< 0,001
		MS	176,60±8,40	161,20±8,70	4,23	< 0,01
3	Calf muscle force (kg)	c. I, CMS	115,60±4,20	103,40±5,40	5,89	< 0,001
		MS	138,40±8,70	124,20±7,80	4,03	< 0,01
4	Biceps force (kg)	c. I, CMS	69,80±4,40	63,20±4,60	3,44	< 0,01
		MS	82,80±4,50	75,60±6,40	3,05	< 0,05
5	Tricep Strength (kg)	c. I, CMS	66,20±3,20	59,80±3,40	4,57	< 0,001

		MS	77,40±4,40	71,20±3,60	3,63	< 0,01
II			**force-velocity**			
1	Leg muscle explosive strength (kg)	c. I, CMS	219,60±9,40	201,20±8,40	4,84	< 0,001
		MS	242,80±6,80	226,20±7,80	5,27	< 0,001
2	Five throws over the back (sec.)	c. I, CMS	8,10±0,42	10,52±0,44	7,89	< 0,001
		MS	8,22±0,36	10,56±0,47	5,22	< 0,001
3	Five obstacle throws back and front (sec.)	c. I, CMS	8,80±0,44	10,06±0,46	6,63	< 0,001
		MS	8,11±0,67	10,56±0,46	5,40	< 0,001
4	Climbing 4 m on headfast (sec.)	c. I, CMS	11,60±3,60	13,20±3,40	1,50	> 0,05
		MS	11,20±4,60	12,40±4,40	1,88	> 0,05

Table 2 shows the results of the testing of force and force-velocity abilities of judo players from the experimental groups on the final stage of pedagogical research

Analysis of the data from the Table 2 demonstrates the superiority and maintaining of judo players from the experimental group compared to athletes from the control groups. This superiority was observed towards all indices of force and force-velocity: power lumbar muscles of the back (with 8.60 kg, P <0.01 in group I and CMS category, with 10.20 kg, P <0.001 in the MS group), thigh muscle strength (with 13.80 kg, P <0.001 in Group I and CMS category, with 15,10kg, P <0.01 in group MS), leg muscle strength (with 12,20kg, P <0.001 in CMS group and category, with 14,19kg, P <0.01 in group MS), biceps force (6.60 kg P <0.01 in group I and CMS category, with 7,20kg, P <0 , 05 in group MS), triceps strength (with 6,40kg, P <0.001 in Group I and CMS category, with 6,20kg, P <0.01 in group MS), muscle explosive force of lower limbs (18, 40kg, P <0.001 in Group I and CMS category, with 16,60kg, P <0.001 in group MS), test "five throws over backwards" (2.42 sec, P <0.001 in Group I and CMS category, with 2.34 sec, P <0.001 in group MS) test "five throws back and front with drag" (1.26 sec, P <0.001 in Group I and CMS category, with 2.45 sec., P < 0,001 in MS group).

The results of the test "climbing on headfast " shows also some improvements, but insignificant in both experimental groups,due to major realeases of individual indices within the group.

These data demonstrate superiority of the experimental groups of Category I, CMS and MS at the development of force and force-velocity abilities compared to the control group,as a result of the timely and effective correction during the training process.

Conclusions

1. Thus, the timely and effective correction in the training process, already after the first two years of pedagogical research, shows a growth tendency of the most tested parameters of force and force-velocity of judo players from the experimental groups compared to those of athletes in control groups.

2. The results obtained at the end of the pedagogical research demonstrate the essential and indisputable superiority of judo players from the experimental groups of category I, CMS and MS in the context of development index of capacities of force and force-velocity compared to athletes from the control groups, which constitute the result of effective correction in the training process.

3. Corrections will be introduced in the volume of force and force-velocity efforts with the purpose of settling the psycho - physiological state of athletes and exclusion of unfounded saturation of the female body, optimizing, thus, the workout.

References

Verkhoshansky Y. (1985). Programming and organization of the training process. Moscow, "Physical culture and sport" ,. 176.

Zaporozhanov VA Platonov VN (1987). Forecasting and simulation in sport. Kiev: "Vyshcha school" 371.

Matveev LP (1991). Theory and Methods of Physical Education. Moscow, "Physical culture and sport", 543 pp.

Platonov VN (1986). Preparation of highly skilled athletes. Moscow, "Physical culture and sport", 286.

Platonov VN (2004). The system of training athletes in Olympic sports. The general theory and its practical applications. Kiev: "Olympic literature", 808.

Shynkaruk OA (2011). The selection of the athletes and the orientation of their training in improving the long-term (based on Olympic sports). Dis. Doctor of Science. Kiev, 523 pp.

Shulika YA, Koblev YK (2006). Judo. The system and the fight. Rostov-na-Donu: "Phoenix", 800.