

INDEX ANALYSIS OF TECHNICAL-TACTICAL PREPAREDNESS OF OLYMPIC GAMES 2008 JUDO CHAMPIONS (MEN)

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Summary

In the present research parameters of technical-tactical readiness of Olympic Games-2008 champions in judo (men) in all weight categories have been defined. More than 200 competitive fights in seven weight categories were analyzed.

Keywords: modeling characteristics, efficiency, activity, productivity, variability, intensity, a level of readiness.

Introduction

Now the competition in judo on the European and world scene is aggravated. The athletes from more than 20 countries of the world (more than from 100 countries participating in the world championship and a little bit less on Olympic Games) apply for prize-winning places. In these conditions the experts who are carrying out preparation of a national team, have a hard problem in perfection of the preparation system.

Achievements in sport in single combats are defined by wide enough spectrums of the requirements that are much demanded to the athletes during the competitions. In this case it is almost impossible to set an unequivocal estimation of the major factors that limit the level of achievements in this group of kinds of sports ^[1, 9].

Data on technical-tactical readiness of some outstanding athletes of the world acting at various competitions allow creating of a «model of the champion» to which the athletes must aspire during the trainings and competitions ^[4, 5, 6].

The modeling characteristics are not only for their "prospecting" orientation, but also to carry out a problem in one separate training employment management ^[8, 11].

These data allow the trainer and the athlete to make comparison on technical-tactical readiness of the athlete and his opponents in the evident form, to define his strength and weakness. A number of the parameters describing readiness of the athletes are defined, though it is also indirectly possible to estimate the level of physical and psychological readiness ^[2, 3, 9, 10].

The Purpose of the Research

To define parameters of technical-tactical readiness of Olympic Games-2008 champions in judo (men) in all weight categories.

Methods

Pedagogical supervision was spent For defining the modeling parameters of judoists competitive activity. The video data with records of Olympic Games of 2008 was processed with application of shorthand record of actions by specially developed symbols ^[5, 6]. Actions and estimations (quality of performance)

and a number of other parameters were fixed. Results of supervision were mathematically processed for model quantitative parameters defining ^[5, 11].

Parameters of competitive activity were calculated: efficiency of an attack (Ea) and efficiency of defense (Ed), general efficiency (Eg), activity of an attack (Aa), activity of defence (Ad), general variability (Vg), variability of a productivity (Vp), productivity of an attack (Pa), productivity of defense (Pd), the general productivity (Pg).

In this work following parameters of technical-tactical readiness of judoists were used for the first time: factor of activity (Fa), factor of intensity (Fi), a level of readiness (L).

Efficiency is a correlation of successful attempts of technique performance to total number of attempts in percentage. This index allows to estimate quantitatively the qualitative changes of technical - tactical readiness, and that is expressed with the formula:

$$Ea = (x/X) \times 100 \%, \quad (1)$$

where Ea - an index of efficiency of an attack,

x - quantity of successful attempts (estimated),

X - total number of attempts of technical-tactical actions performance.

$$Ed = 100 \% - (y/Y) \times 100 \%, \quad (2)$$

where Ed - an index of efficiency of defense,

y - quantity of successful attempts of contenders (estimated);

Y - total of attempts of technical-tactical actions performance by contenders.

$$Eg = Ea + Ed \quad (3)$$

where Eg - an index of general efficiency,

Ea - an index of efficiency of an attack,

Ed - an index of efficiency of defense.

Activity is attempts quantity of performance of technical-tactical actions which are carried out by the judoist on the average in time unit (a minute). For defining the activity of an attack (Aa) the quantity of attack actions of the judoist on the average for a time unit (1 mines) is counted up:

$$Aa = X / t, \quad (4)$$

where x - quantity of attempts of technical-tactical actions performance,

t - the quantity of time spent for fights.

Activity of defense (Ad) is quantity of defensive actions of the judoist on the average for a time unit (1 min). The factor of activity (Fa), is the relation of activity of an attack and activity of defense.

$$Fa = Aa / Ad \quad (5)$$

where Fa - factor of activity,

Aa - activity of an attack,

Ad - activity of defense.

This parameter of model allows defining tactics selected by the athlete, his ability to be guided in situations of a fight, ability to create convenient situations for technical-tactical actions performance. This parameter always should be observed in combination with parameters of efficiency and productivity.

General variability (Vg) is defined by number of classic groups from which the judoist tried to perform techniques in fights at competitions.

Productive variability (Vp) is defined by number of classic groups from which the judoist successfully performed techniques (which brought an estimated result).

Productivity of an attack (Pa) is an index of quality of technical-tactical actions performance in an attack. In judo it is expressed with the formula:

$$Pa = (10f_1 + 7 f_2 + 5 f_3 + 3 f_4 + 1 f_5)/m \quad (6)$$

where f_1 - quantity of fights with result 10:0,
 f_2 - quantity of fights with result 7:0,
 f_3 - quantity of fights with result 5:0,
 f_4 - quantity of fights with result 3:0,
 f_5 - quantity of fights with result 1:0,
 m - quantity of fights.

Productivity of defense (Pd) – is an index of quality of technical-tactical actions performance in defense. In judo it is expressed with the formula:

$$Pd = (10q_1 + 7 q_2 + 5 q_3 + 3 q_4 + 1 q_5)/m \quad (7)$$

where q_1 - quantity of the lost fights with result 10:0,
 q_2 - quantity of the lost fights with result 7:0,
 q_3 - quantity of the lost fights with result 5:0,
 q_4 - quantity of the lost fights with result 3:0,
 q_5 - quantity of the lost fights with result 1:0,
 m - total quantity of fights.

General productivity (Pg) is defined by a difference of productivity of an attack and productivity of defense:

$$Pg = Pa - Pd \quad (8)$$

For an estimation of a level of competitions the *index of intensity* offered by Svishchevym I. [9] was used. Intensity of competitions is defined by quantity of "pure" victories, which is quantity of fights finished with the score 10:0. The more "pure" victories, the more poor the level of participants is, and the less of them, the higher is the competition for achievement of the clear superiority over the opponent. Hence, the less fights finish with the score 10:0, the more intense the competitions are. The factor of intensity (f_i) has been offered:

$$F_i = g / i, \quad (9)$$

where F_i - factor of intensity of competitions;
 i - quantity of pure victories (ippon);
 g - total number of fights in the given weight category.

Product of general efficiency and factor of intensity allows to define a level of readiness (L) of the athlete for the given competitions:

$$L = E_g \times F_i \quad (10)$$

Where L - a level of readiness,
 E_g - general efficiency,

F_i - factor of intensity of competitions in the given weight category.

The given index allows to compare indirectly levels of athletes readiness from various weight categories taking into account the intensity of competitions in the given category and their own parameters of technical-tactical readiness (efficiency of an attack and defense).

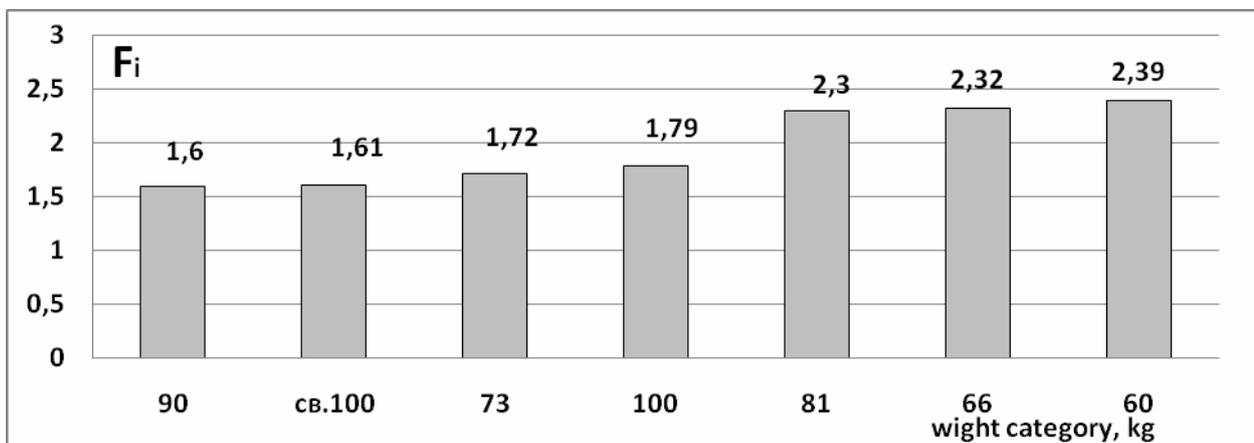
Results and Discussions

Indexes of technical-tactical readiness of the strongest judoists of the world (men), by results of Olympic Games of 2008, are presented in tab. 1.

Table 1. Indexes of technical-tactical readiness of Winners of Olympic Games of 2008 (Beijing, China)

Weight	Surname, name (country)	E_a	E_d	E_g	A_a	A_d	F_a	V_g	V_p	P_a
60	CHOI Min Ho (KOR)	26	100	126	2,47	0,65	3,80	7	2	10,0
66	UCHISHIBA Masato (JPN)	31	97	128	1,95	1,45	1,35	9	3	8,0
73	MAMMADLI Elnur (AZE)	35	100	135	2,56	1,15	2,23	7	4	10,0
81	BISCHIF Ole (GER)	26	91	117	1,80	1,88	0,96	6	3	6,0
90	TSIREKIDZE Irakli (GEO)	30	93	123	1,64	1,07	1,57	7	4	7,0
100	NAIDAN Tuvshinbayar (MGL)	22	86	108	1,97	1,24	1,59	6	2	6,0
cb.100	ISHII Satoshi (JPN)	29	100	129	1,95	0,38	5,13	7	4	9,0

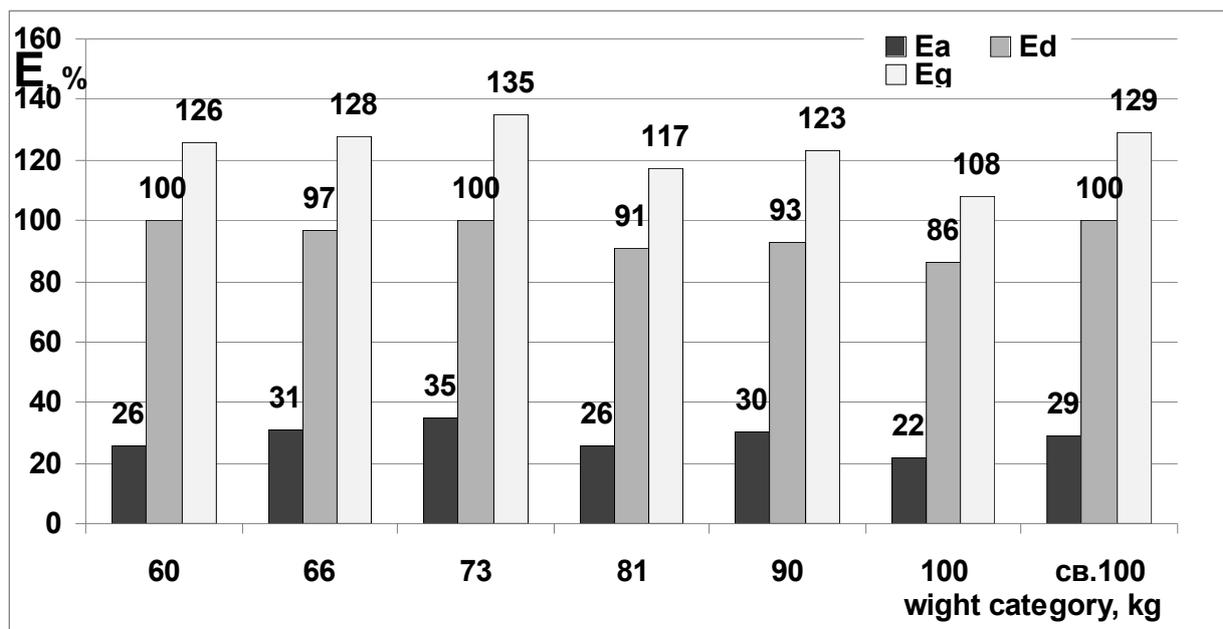
For an estimation of a level of a competition in various weight categories at judo tournament in Olympic Games – 2008 program in Beijing (China) index of intensity is defined. Graphically values of a level of intensity in weight categories are presented on pic. 1.



Pic. 1 Values of a level of intensity in different weight categories of Olympic Games - 2008 (judo, men)

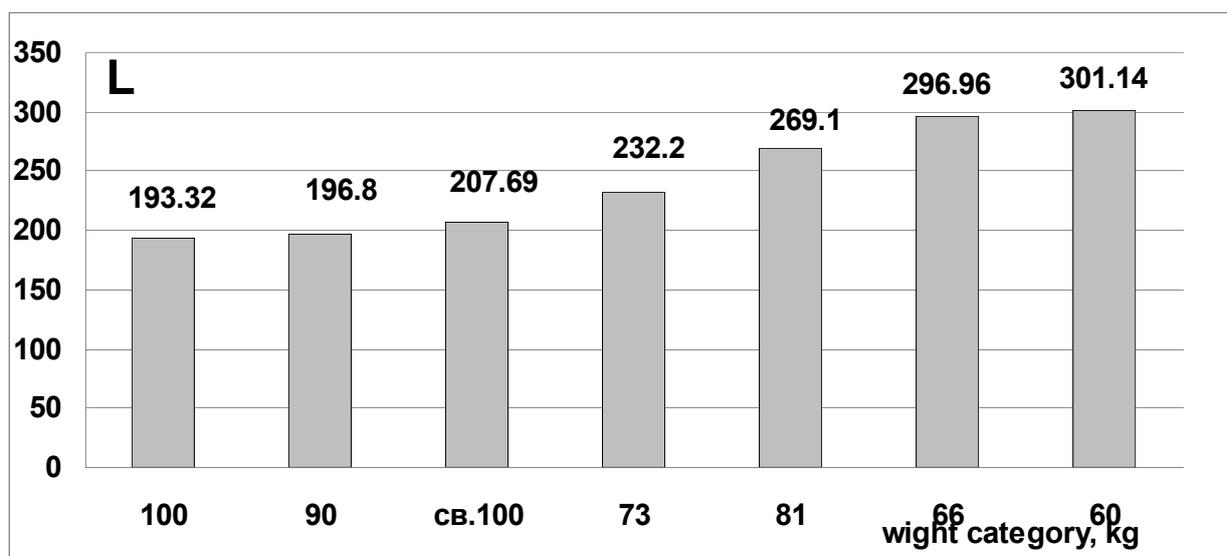
Estimating a level of intensity of competitions (pic.1) we can note essential difference of parameters in weight categories up to 60, 66 and up to 81 kg (2,39; 2,32 and 2,3 - accordingly).

The parameter of efficiency testifies to a correlation of athlete's readiness. Using this parameter it is possible to predict the orientation of the further perfection of the motor skill. Indexes of efficiency of an attack (E_a) of Olympic Games–2008 winners (pic.2, table 1) are close to modeling characteristics (30-40 %) practically for all champions. The lowest value of the given index is noted for the representative of Mongolia (up to 100 kg) - 22 %, and not much below norm for representatives of Korea (up to 60 kg) and Germany (up to 81 kg) - 26 %.



Pic. 2 Efficiency of technical-tactical actions of Olympic Games-2008 champions (judo, men)

Parameters of efficiency of defense (Ed) of the champions (pic.2, table 1) are also close to modeling characteristics (90-100 %). The lowest value of the given index is noted for the representative of Mongolia (up to 100 kg) - 86 %.

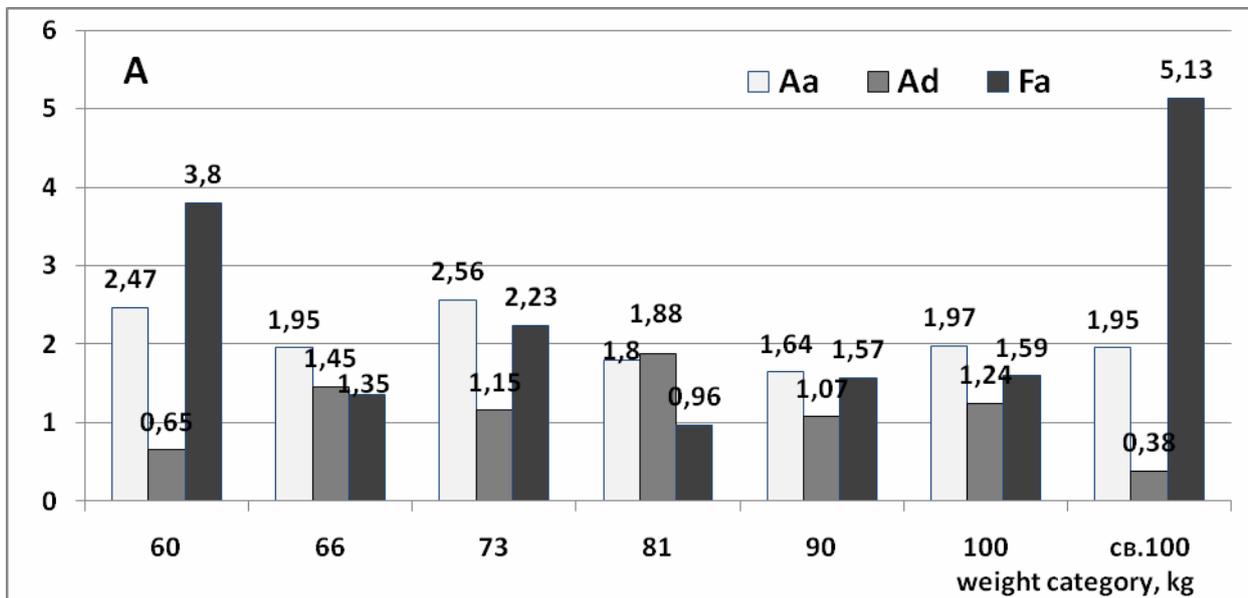


Pic. 3 Level of champions readiness in various weight categories on Olympic Games - 2008 judo competitions (men) (Beijing, China)

Taking into account the calculated indexes of intensity of each weight category and indexes of general efficiency of each champion indexes of a level of readiness (pic. 3) were calculated. Comparing a rank of weight categories on factor of intensity on pic.1 and a rank of champions in weight categories on a index of readiness on pic.3 it is possible to note an essential difference especially after the top three athletes (categories up to 60, 66 and 81 kg).

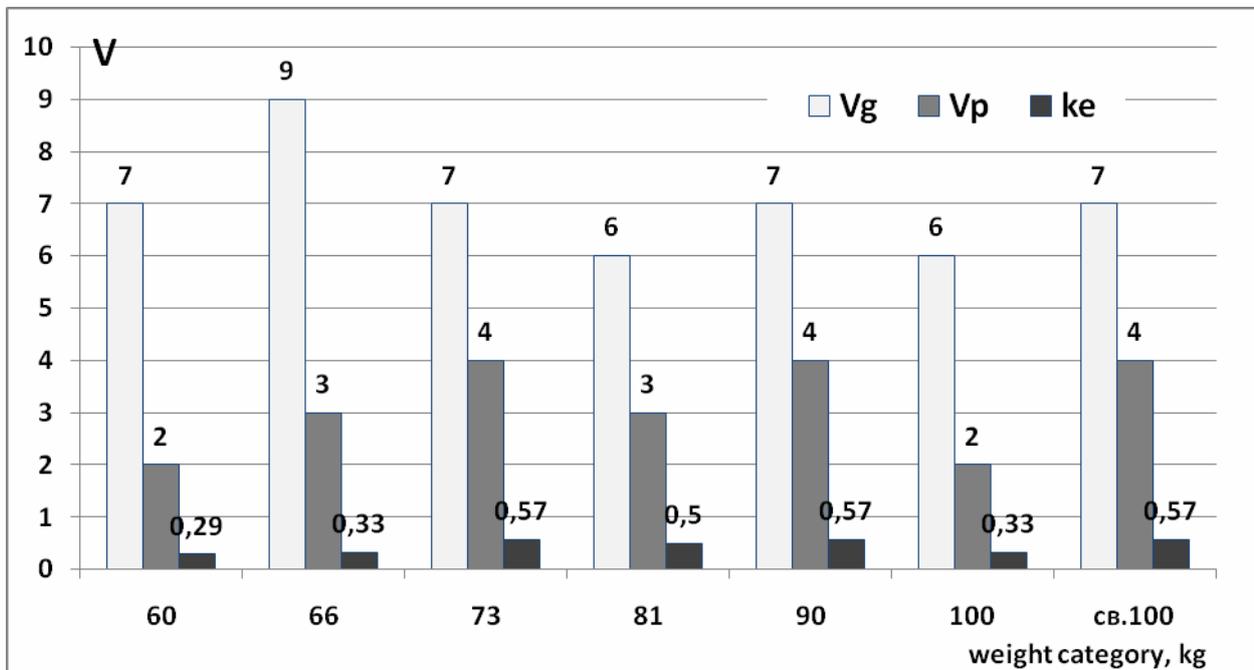
At an estimation of activity of an attack (Aa) of leaders (pic.4, tabl.1) it is possible to note the conformity of the given index to modeling values (> 2,0) for the majority of athletes. Georgian athlete's (up to 90 kg) index is below norm - 1,64. It is very important to consider the index of efficiency of an attack in the ratio with activity of defense, i.e. how much the athlete dominates during the fight, destroying intentions of the opponent. The clear picture of this advantage is given with factor of activity (Fa).

Unique value of factor of activity - 5,13 – was shown by the athlete from Japan (over 100 kg). Possessing not high activity of an attack (1,95) nevertheless, he destroyed any intentions of opponents, and the average index of activity of an attack of his opponents in relation to him was only 0,38. The athletes from Korea (up to 60 kg) and Azerbaijan (up to 73 kg) were distinguished by high indexes of factor of activity - 3,8 and 2,23, accordingly.



Pic. 4 Index of activity, activity of an attack and defense of Olympic Games - 2008 champions (judo, men)

The arsenal of athletes' applied actions and its productivity are defined by indexes of variability (pic. 5, tab. 1). The range of attack actions of champions was from 6 up to 9 technical groups.



Pic. 5 Variability of techniques of Olympic Games – 2008 champions (judo, men)

The low index of productive variability, that is that techniques which has brought advantageous estimations, is shown by the champion in weight up to 60 kg (KOR) - 2 (the factor of profitability was 0,29). At first sight this fact represents lack of readiness of the given athlete. However at the analysis it is

necessary to consider efficiency of an attack and productivity of attacks of the judoist, and in this case they have made: efficiency of an attack - 26 % (hardly less than norm) and productivity - 10 (the greatest possible value). Thus, the athlete achieved victories, productively using techniques only from 2 classification groups.

Bringing an intermediate result, it would be desirable to note three athletes from the list of Olympic Games - 2008 winners in judo. The indexes of technical-tactical readiness of these athletes are resulted in table 2.

Table 2. Winners of Olympic Games o- 2008 (Beijing, China), whose indexes of technical-tactical readiness are best correspond to modeling characteristics

Weight	Surname, name (country)	E _a	E _d	E _g	A _a	A _d	F _a	V _g	V _p	P _g
60	CHOI Min Ho (KOR)	26	100	126	2,47	0,65	3,80	7	2	10,0
73	MAMMADLI Elnur (AZE)	35	100	135	2,56	1,15	2,23	7	4	10,0
Over 100	ISHII Satoshi (JPN)	29	100	129	1,95	0,38	5,13	7	4	9,0

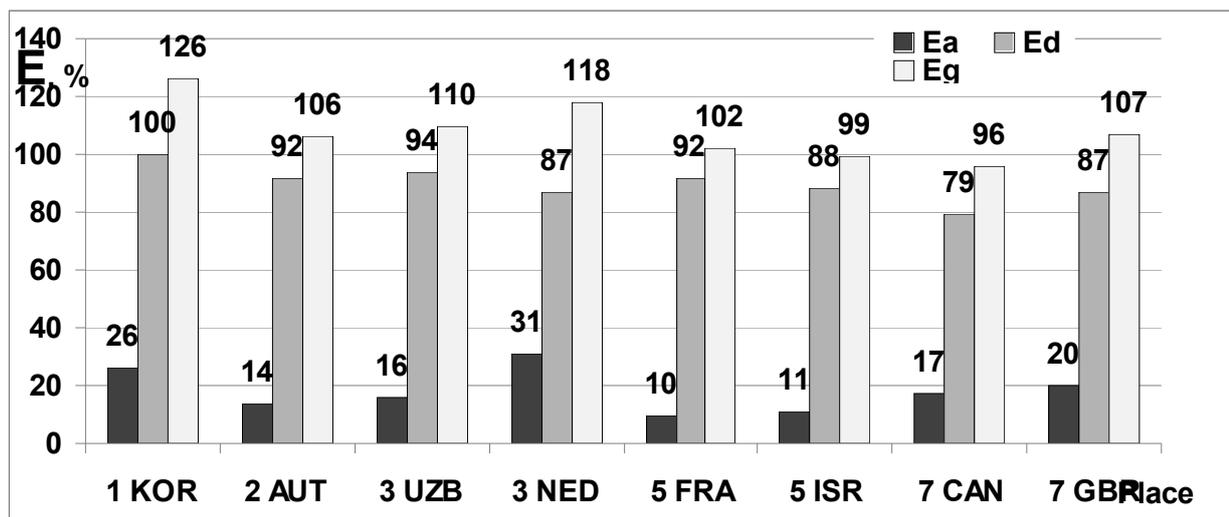
The color in table 2 notes values which are of interest for development of modeling indexes of technical-tactical readiness. During competitions the given athletes have shown unique results of readiness. Moreover, for all 5 fights champions in weight categories up to 60 and 73 kg have spent hardly more than 7 minutes. All of the noted athletes possess 100 %-s' defense (i.e. have not passed any technical action and have not received preventions), have high indexes of efficiency of an attack, factor of activity and the general productivity.

For the comparative analysis of indexes of technical-tactical readiness of champions and the athletes who have ranked at given competitions places from 2 up to 8, in the present work data for a weight category up to 60 kg (which has the highest factor of intensity as it was marked earlier) (tabl.3) is presented.

Table 3. Indexes of technical-tactical readiness of judoists of a weight category up to 60 kg, entered the top 8 on Olympic Games - 2008 (Beijing, China)

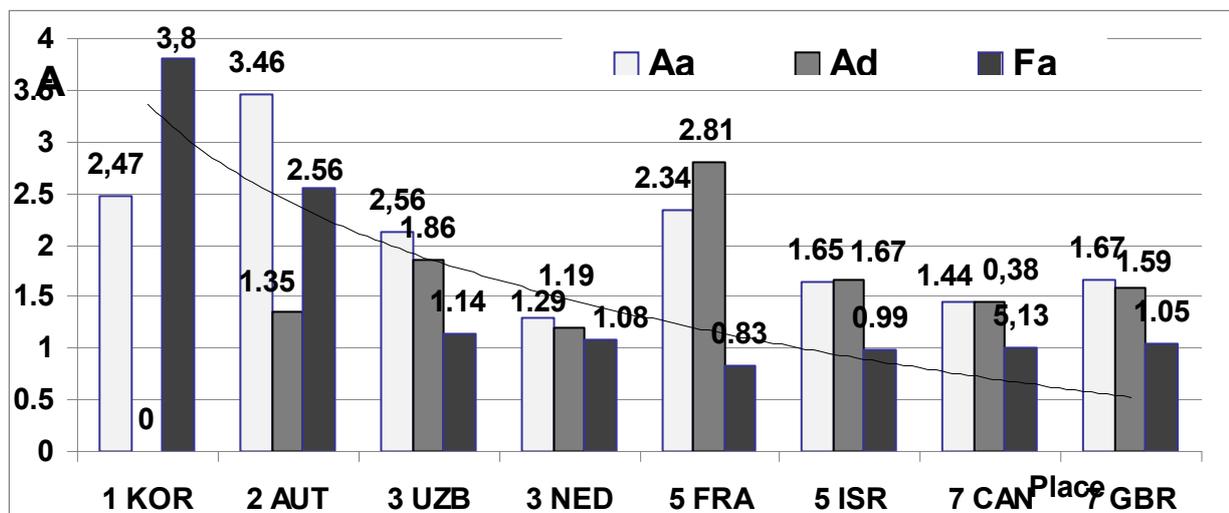
Weight	Surname, name (country)	E _a	E _d	E _g	A _a	A _d	F _a	V _g	V _p	P _g
1	CHOI Min Ho (KOR)	26	100	126	2,47	0,65	3,80	7	2	10,0
2	PAISCHER ludwig (AUT)	14	92	106	3,46	1,35	2,56	8	3	4,6
3	SOBIROV Rishod (UZB)	16	94	110	2,12	1,86	1,14	11	3	2,6
3	HOUKES Ruben (NED)	31	87	118	1,29	1,19	1,08	6	3	2,1
5-6	DRAGIN Dimitri (FRA)	10	92	102	2,34	2,81	0,83	12	5	1,4
5-6	YEKUTEL Gal (ISR)	11	88	99	1,65	1,67	0,99	8	3	-0,1
7-8	WILL Frazer (CAN)	17	79	96	1,44	1,44	1,00	6	3	2,5
7-8	FALLON Craig (GBR)	20	87	107	1,67	1,59	1,05	8	4	1,8

At an estimation of a level of efficiency of technical-tactical actions of athletes of a weight category up to 60 kg, entered the Olympic Games - 2008 top 8 (judo, men) (pic. 6) the advantage of the winner in the given weight category in all versions of this index is noticeable. The high index of efficiency of an attack is shown by the world champion Houkes R. from Netherlands (corresponding to modeling parameters), but low efficiency of defense (87 %) has not allowed him to rise above neither.



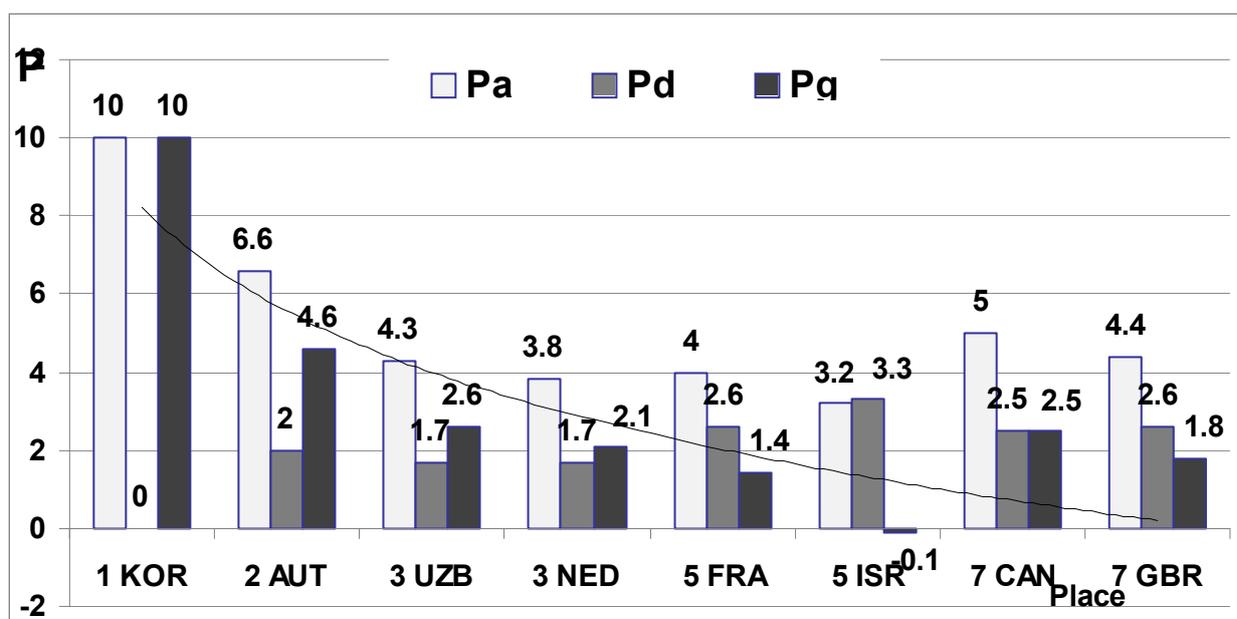
Pic. 6 Efficiency of technical-tactical actions of athletes of a weight category up to 60 kg, entered the Olympic Games - 2008 top 8 (judo, men)

The similar tendency is kept and at the analysis of factor of activity, activity of an attack and defense (pic. 7). Prevalence of finalists of the given weight category is noticeable. Index of activity of an attack of the athlete from France who won the 5 place – 2,34 - stands out of the general range. But in spite of high activity of an attack the given athlete allowed his opponents to attack himself actively what has neutralized his advantage and factor of activity mattered less than 1 - 0,83.



Pic. 7 Index of activity of factors, activity of an attack and defense of athletes of a weight category up to 60 kg, entered the Olympic Games - 2008 top 8 (judo, men)

Estimating a level of productivity of technical-tactical actions of athletes of a weight category up to 60 kg, entered the Olympic Games-2008 top 8 we should notice the advantage of the winner in the given weight category (pic. 8). It is possible to note a negative index of the general productivity (-0,1) the athletes from Israel who has won the 5 place. Among the other athletes of the top eight indexes of productivity of an attack surpassed productivity of protection.



Pic. 8 Productivity of technical-tactical actions of athletes of a weight category up to 60 kg, entered the Olympic Games-2008 top 8 (judo, men)

Conclusion

1. As a result of research the basic indexes of technical-tactical readiness of Olympic Games - 2008 champions in judo competitions among men have been defined: efficiency of an attack and efficiency of defense, general efficiency, activity of an attack, activity of defense, general variability, productive variability, productivity of an attack, productivity of defense, general productivity.

2. In the given work indexes of technical-tactical readiness of judoists have been defined for the first time: factor of activity, factor of intensity of competitions and a level of readiness of athletes.

3. The modeling indexes presented above can serve as a reference point in training construction. Thus it is necessary to take into account that these indexes can benefit in construction of one training, or a week cycle. Attempts to follow the modeling indexes in each training fight cannot to bring benefit. These parameters are reference points for regulation of training. They are a measure of "centrality" for training optimization.

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