

Original Article

**Dynamic of indexes of technical and tactical actions of qualified kickboxer individual fighting style**

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**Abstract.** The analysis of scientific and methodological literature showed that a number of publications were devoted to the problem of using an individual approach in the training process of athletes of high qualification, among them only a small part of data are devoted to the preparation system of kickboxing. Implementation of the method of individualization training means the process of management based on the collection of information, its preliminary processing and next transfer for analysis to the decision maker, in our case, this is coach. Purpose. Improve the technical and tactical approach of qualified athletes of different individual styles of fight in competitive activity. Results. The analysis of the competitive activity of qualified kickboxers allowed to identify the four most common fighting styles such as "Points Fighters", "Continuous Fighters", "Knock out Fighters" and "versatiles". Improvement of the results of the technical and tactical actions in the experimental group of kickboxers after the experiment was indicated. According to the indicators of technical and tactical actions in the control group, improvement was observed only at the level of insignificant tendency ( $p > 0,05$ ). Implementation of the method of individualization training of qualified kickboxers in the training process of the Ukrainian kickboxing team during its preparation for the Championship of Ukraine 2016 allowed to achieve high competitive performance (7 gold, 1 silver and 3 bronze medals).

**Keywords:** kickboxing, individualization, technique, tactics, training, fighting style.

**Introduction.**

Kickboxing is a kind of sport where technical and tactical actions in competitive activities had a great value. Based on objective knowledge about the structure of competitive activities and training of athletes, with considering the general regularities of formation of sports skills and individual capabilities of athletes are determined the sports progress. (Platonov, 1997; Maryan, 2013; Romanchyshyn, 2015; Briskin, 2016). Positive and negative aspects of kickboxers skills and features of modern kickboxing are showed in competitive activities. However, reveal them is too difficult because of the complexity of duels during the competition, which consists of a large number of variety aspects of the process and ways of their study. Clear concept of studying the regularities of development a competitive activities in theory and methodology of kickboxing, had not been found by us. Separated experimental and theoretical research results in this area are difficult to systematize due to various purpose, objectives and methods of these research, which reduces the value of scientific data. Modern single combat sports combine the best technical elements and tactical combat methods from similar by technical and tactical arsenal sports, allowing to use a single methodological approach to their study. Analysis of competitive activity of kickboxing shows a steady trend to increase sports competition. Since the way to increase training loads has natural limitations, searching the new ways of improving the training process are relevant. Analysis of the literature makes it possible to conclude that one of the most promising areas of improvement of sports training is optimization of algorithm the technical and tactical training (Matveev, 2005; Platonov, 2004).

The lot of authors calculated coefficients of attacking, defensive and counterattacking actions which allow evaluate the competitive battle, based on indicators describing competitive activity. We can identify strengths and weaknesses of training process of athletes and make some appropriate adjustments in the training process through knowing the value of mentioned coefficients and comparing them with the same indicators of other athletes or kickboxers team averages value of the same class and weight. Counting the number of beats, different types of defenses and counterattacking actions and determining their effectiveness, can let us find some features of individual manner of fight. It is possible to record a variety of fighting actions (attacking, defense, counterattacking, etc.). According to the research of competitive activity of kickboxers were identified over 20 different coefficients which characterize the effectiveness of competitive activity (protective, attacking, counterattacking actions, etc.). Competitive activity was studied using an approach developed by (Frolov, 1976; Horskov, 1983) and improved in the works (Kravchenko, 1998; Nikiforov, 1987; Kalmykov, 1983; Ostyanov, 2001, 2011), including kickboxing (Hutsul 2015, 2016). In our previous work we have carried out some research in this direction (Petukhov, 1969; Stepanov, 2009).

Analysis of scientific and methodological literature indicates that the problem of using individual approach in the training process of athletes of high qualification was devoted to a number of publications

(Taimazov, 1981; Rusanov, 1985; Tumanyan, 2006). Video of kickboxers fights was analyzed by method of pedagogical observation. The manner of the fight evaluated by a group of qualified experts with registration numbers of accomplished actions and time of some of them, namely the number of hits per round and per whole fight, number of attacking and counterattacking hits, protections were used arms, legs and torso. In addition, the number of situational and preparatory actions, the fighting time on the far, intermediate and near distances was registered too. Reproducing the competitive conditions in the training process is not possible. Only in terms of competition possible to fully develop the ability of maximally mobilize own forces and purposefully use them. Competitive activity in kickboxing has its own specificity, which related to uncompromising brutal duel of opponents. This leads to creation of higher requirements to technical and tactical actions, which performing in limited time and space in terms of conflict-variant situations. It should be noted that direction spectrum of individualization of sports training of high qualified single fighters is not enough learned yet.

**Purpose** - Improve the technical and tactical approach of qualified athletes of different individual styles of fight in competitive activity qualified kickboxer.

### Materials and Methods

Research methods: analysis and generalization data of scientific and technical literature; video recording and analysis of video materials; pedagogical observation; methods of mathematical statistics.

There were analyzed nearly 65 fights in area of this research. The registration of quantitative and qualitative characteristics of attacking, defensive and counterattacking actions of qualified kickboxers was made.

Group of qualified experts consisted of seven people (MSU, IMS and coaches with work experience of 7-10 years) which were analyzed videos of fights. Recording was performed at three different positions, by three cameras (Panasonic SDR-H280). Coefficients which describe attacking and defensive actions of kickboxers were calculated based on competitive activity such as: the number of hits per fight (KA) – hits to the head and torso reached to the enemy; coefficient of effectiveness of attacks (KEA); calculation was performed by the ratio of hits reached the target to the total number of hits; coefficient of effectiveness of defense (KEZ); calculation was performed by the ratio of the number of relevant protection to the total number of enemy attacks; the relative number of attacks (A) (% attack actions of all kinds of attack actions); the relative number of opposing counterattacks (ZK) (% opposing counterattacks of all kinds of attack actions); the relative number of appropriate counterattacks (VK) (% of appropriate counterattacks against all kinds of attack actions) (Hutsul, 2015, 2016).

### Results

Analysis of the competitive activities of athletes from the technical and tactical actions of experimental and control groups are presented in Table 1.

Table 1. Dynamic of indexes of technical and tactical actions of kickboxers (CG) and (EG) before and after forming experiment ( $M \pm m$ )

Indexes TTA	Groups of investigated	Subgroups of investigated	Indexes TTA		Difference %	P
			before experiment	after experiment		
KY	CG	Points Fighters	128±23	137±27	2,2	p>0,05
		Continuous Fighters	141±37	154±44	1,9	p >0,05
		Knock out Fighters	120±23	1304±0	3,7	p >0,05
	EG	Points Fighters	130±26	169±19	2,5	p <0,05
		Continuous Fighters	138±42	189±54	10,3	p <0,05
		Knock out Fighters	121±18	145±25	9,9	p <0,05
KEY (%)	CG	Points Fighters	0,32±0,09	0,39±0,09	7	p >0,05
		Continuous Fighters	0,22±0,06	0,28±0,07	8,9	p >0,05
		Knock out Fighters	0,3±0,08	0,4±0,06	1,1	p >0,05
	EG	Points Fighters	0,34±0,06	0,61±0,09	23,4	p <0,05
		Continuous Fighters	0,21±0,05	0,39±0,08	38,4	p <0,05
		Knock out Fighters	0,3±0,06	0,61±0,05	24,2	p <0,05
KEZ (%)	CG	Points Fighters	0,65±0,07	0,9±0,06	5	p >0,05
		Continuous Fighters	0,58±0,05	0,5±0,03	5	p >0,05
		Knock out Fighters	0,7±0,06	0,69±0,03	2,3	p >0,05
	EG	Points Fighters	0,62±0,08	0,9±0,05	22	p <0,05
		Continuous Fighters	0,6±0,08	0,88±0,08	24	p <0,05
		Knock out Fighters	0,72±0,06	0,96±0,05	17	p <0,05

Notes: KY – number of hits per fight; KEY - coefficient of hits; KEZ - coefficient of effectiveness of protection. CG - control group; EG - experimental group.

The results of indexes of technical and tactical actions of kickboxers before and after the experiment showed their improvement in the experimental and control groups. Slight indexes improvement of technical and tactical actions was observed in the control group ( $p > 0.05$ ). Index number of hits per fight, coefficient of efficiency of hits and protection after experiment were significantly higher than before the experiment in the experimental group of kickboxers of all fight styles.

The dynamics of indicators of the kickboxers performance in the competitive activity of the control and experimental groups are shown in Fig. 1.

After the end of the pedagogical experiment, kickboxers of the experimental group of all styles took twice as many prize places (17 points nominal were awarded) in the championship of Ukraine held in March 2016, than in March 2015 (9 nominal points).

The effectiveness of the competitive activity in the control group in 2015 and 2016 stayed at the same level (9 nominal points), when in the experimental (17 nominal points).

All mentioned above means that the our developed method is effective for the individualization of the training of kickboxers with different individual styles of fight.

The method of individualization of the training of qualified kickboxers was implement into the training process of the Ukrainian kickboxing team, which was preparing for the Championship of Ukraine 2016 in Kyiv.

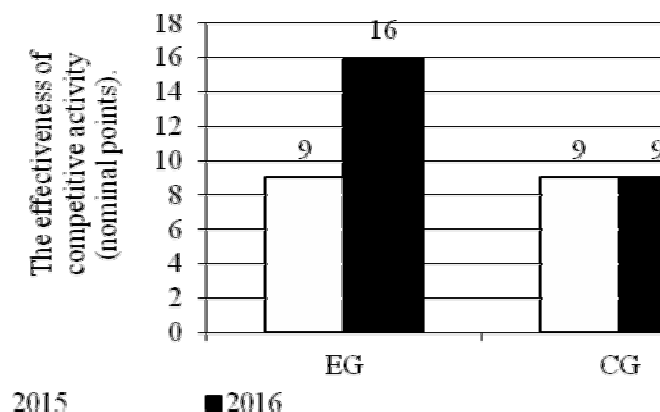


Fig. 1. Changes in the effectiveness of the competitive activity of athletes of the control and experimental groups at the Championship of Ukraine before (February 2015) and after (February 2016) carried out a pedagogical experiment

Experimental implementation was carried out by the trainer's team under guidance of Faibesha Leva coach. The organization was conducted in a four-week microcycle.

The program was based on the initial individualized evaluation of the dynamic characteristics of kick actions with using the method of chronodynamometry ("Spooter-10").

Implementation of the method of individualization of training means the process of management based on the collection of information, its preliminary processing and next transfer for analysis to the decision maker, in our case, this is coach.

Therefore, this implementation in the training process served as sequential solution to the following related tasks: analysis of the potential opportunities of features of athletes of different competitive fight styles; goal settings; planning of training loads by capacity, intensity, and instruments (general and individualized on microcycles); realization of influences within the training process on microcycles and training in general; operational control of the effectiveness of these actions; correction of the individual training process.

The training load should increase in capacity and especially in intensity. The load capacity was evaluated by the "pure" time of exercises, and intensity – by the average relative intensity of the training load of qualified kickboxers in the training process

The load is characterized by the following features in the training process: capacity and intensity of loading; ratio of capacity and intensity of loads; allocation of load capacity by zones of intensity; capacity and intensity of training sessions in four-week microcycles.

The total load capacity for all investigated groups was the same - 1050 minutes. Clean time (without rest time). The training load capacity was also the same for all groups of qualified athletes of different individual styles in the training process.

The load intensity was calculated in percentage from the possible intensity. In the group of "Continuous Fighters" it was 68%, "Points Fighters" - 74%, and "Knock out Fighters" - 75%. High intensity was in the group of "Continuous Fighters" and "Knock out Fighters" and the most amount of exercises was performed in the zone

of maximum and large intensity. Indicators of the capacity and intensity of training sessions of kickboxers with individual styles of fight are illustrated on figure 3.

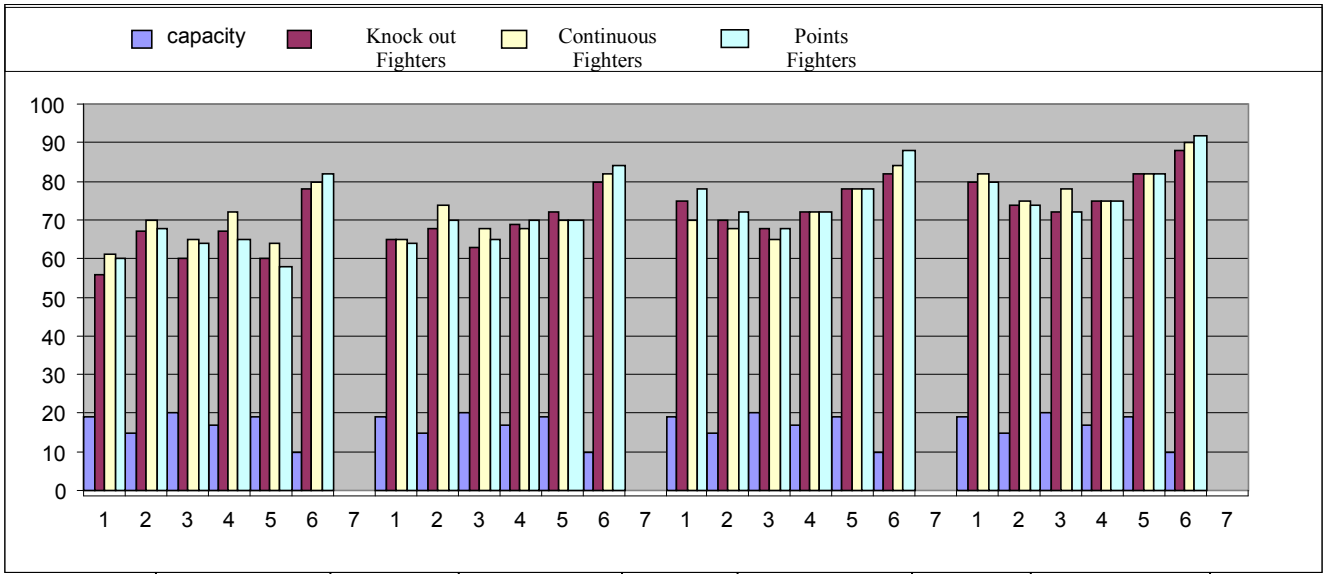


Fig. 3. Dynamics of indicators of capacity and intensity of physical activity in a four-week mesocycle of training of qualified kickboxers with different individual styles of fight

The training method included four-week microcycles: developing, striking, supporting and summing up. Allocation of the capacity and intensity of physical activity load in four-week microcycles of kickboxers with different styles of fight are illustrated in table 2.

According to the dynamics changes the indicators of capacity physical activity load was tracked decrease from the first to the last week of the weekly microcycle in the group of "gamers", in the investigated group "tempos" the maximum load was observed on the second and third week of the weekly microcycle and in the group of "knock-outers" the maximum capacity physical activity load was on the second week of a weekly microcycle.

Table 2. Indicators of capacity and intensity of physical activity load in weekly microcycles of kickboxers with different styles of fight

Investigated	Week microcycle							
	1-week microcycle		2- week microcycle		3- week microcycle		4- week microcycle	
	Capacity (min)	Intensity (nominal points)	Capacity (min)	Intensity (nominal points)	Capacity (min)	Intensity (nominal points)	Capacity (min)	Intensity (nominal points)
Points Fighters	343	67,5	291	71,3	246	75,8	168	77,5
Continuous Fighters	289	75	321	69	258	74	186	79
Knock out Fighters	260	70,3	301	64,2	300	64,2	189	77,5

In all investigated groups within the four week microcycle, the maximum capacity load (28% of week capacity) was planned for Friday, the minimum (12%) - on Saturday, the average (20%) - on Tuesday, under the average (15%) - on Monday, Wednesday and Thursday.

Training methods which were used for the physical preparation of all investigated individual styles were united in the following groups: special training exercises (STE); exercises on instruments (EI); exercises for improvement of technical and tactical skills with a partner (TTS); nominal fights (NF); free fights (FF); sparring (Sp).

The main feature of our methodology was to increase the amount of time for the work out of technical and tactical actions of active counteraction with delegates with different individual styles of the fight in nominal fights that are approximate to the competitive ones.

Indicators of capacity and intensity of training loads of kickboxers with individual styles of fight are given in table 3.

The obtained results of our investigation indicate that the ratio of development levels kickboxers with different styles of competitive fight ("Continuous Fighters", "Points Fighters", "Knock out Fighters") significantly differ among themselves.

From the structure and direction that were determined in the training load and applied in the sports training of kickboxers with different styles of fight, were used only those exercises which aimed on improving those abilities that were most developed. For abilities that fall behind were used special exercises which aimed for their improvement and general expansion of an individual arsenal of technical and tactical actions of athletes.

In the structure of training facilities, the most important place was occupied by special exercises from karate, boxing, taekwondo, thailand boxing and kickboxing (table 3).

The use of these exercises in the training process is carried out with taking into account the specific requirements of each individual styles of competitive fight of special physical, technical and tactical training.

Table 3. Indicators of capacity and intensity of training loads of kickboxers with different styles of fight

Investigated groups of athletes	Training facilities	Zone of intensity					Parameters of load	
		1-a	2-a	3-a	4-a	5-a	Capacity %	Intensity %
		Load capacity %						
Continuous Fighter	STE	9	25	31	25	8	25	65
	EI	-	-	8	44	52	17	81
	ITTS	-	-	21	47	35	16	75
	NF	-	-	-	82	22	4	91
	FF	-	-	-	53	50	3	83
	Sp	5	14	17	41	30	62	74
	Sum	8	18	28	30	25	100	70
Points Fighters	STE	3	29	30	29	12	25	69
	EI	-	-	3	30	68	17	83
	ITTS	-	-	45	15	40	16	80
	NF	-	-	-	45	65	5	93
	FF	-	-	-	39	64	5	87
	Sp	2	12	15	34	42	62	78
	Sum	4	17	24	30	29	100	74
Knock out Fighters	STE	11	29	30	26	9	25	65
	EI	-	-	7	45	55	15	84
	ITTS	-	-	20	46	37	16	79
	NF	-	-	-	63	40	5	92
	FF	-	-	-	50	50	4	87
	Sp	5	9	20	40	30	64	79
	Sum	8	19	25	30	25	100	75

Note: SPE - special training exercises, EI - exercises on instruments, ITTS - improvement of technical and tactical skills, NF - nominal fights, FF - free fights, Sp - sparings.

## Discussion

Individualization of training should be implemented through the management process, which is based on the collection of information, its preliminary processing and next transfer for analysis to the decision maker, in our case, this is coach. That's why the main tasks in the training process were:

1. Improvement of individualization of technical and tactical skills in a difficult combat environment.
2. Physical training of an athlete for heavy multi-day fights, as well as the formation desire to act and win.
3. Upkeep the high mental readiness of athletes.
4. Provision of certain conditions for maximum use of all sides of the readiness of the athlete - physical, technical, tactical and mental - in order to get the most possible sports result in the competition.

As a goal-setting was formed task which aimed to expand of the individual arsenal of technical and tactical actions of the participants in the collection, based on the so-called "Wilder's law", the presence of the inverse correlation between this or that characteristic and the level of its change. Connection to this the directed correction of high-speed and power strike actions of delegates with different individual competitive style of fight was performed.

Individualization of capacity and intensity of training loads was carried out with taking into account the values of the initial characteristics of the physical training of a particular athlete. The main focus was on upkeep and increase speed-strength endurance and implementation capabilities.

In the interval of stabilizing and high-speed microcycle were solved tasks of improving the tactical and technical training of kickboxers, the main focus of which was to upkeep a high level of effectiveness of the

individual style of competitive activities and to expand the variability of the implementation of different technique styles, with emphasis on the strength of a single strike for delegates of the game style "tempo" and high tempo for "knock-outs".

Implementation of the proposed individual approach to provide the physical training of qualified kickboxers allowed to take into account the individual characteristics of the style of competitive activity of a particular athlete and the specific features of his reactions on training loads due to their intensity and direction.

The proposed scheme of corrective influences of the direction, structure and content, microcycles, implemented in the process of preparation of athletes. It showed effectiveness, which is confirmed by the competitive results of performance Ukraine's national team at the Championship of Ukraine 2016 - the first entire team place (7 gold, 1 silver and 3 bronze Medals).

Therefore, we can assume that the proposed method of individualization of preparation at the stage of specialized basic training of qualified kickboxers, based on providing the coach with objective information of the operational plan, allows to solve the issues of athlete training management. This is necessary, but not a sufficient element of keeping its effectiveness. Considering the level of complexity of the management object - the athlete, with his appropriate features of a complex system, practical experience of the trainer, his heuristic approach to the solution of management tasks of physical training is still the main component that determines its effectiveness. The coach is the decision maker and the person who is responsible for consequences of competitive results.

Individual indicators of athletes characterizing the physical training of kickboxers in the dynamics of the collection what provide the possibility of individualizing the capacity and intensity of training loads, achieving high competitive results.

The re-scientific data on the structure and content of competitive activities of qualified kickboxers with different fight styles was expanded and supplemented in this work. The individualization of technical and tactical actions in the competitive activity of qualified kickboxers was investigated.

Practical recommendations for optimizing the training process have been developed based on the results of the research results. The arsenal of technical and tactical actions of kickboxers with different fight styles was revealed. Investigation of individualization of technical and tactical actions in competitive activities was conducted on the contingent of leading kickboxers of the world, which gives us grounds to consider the results of researches are the model characteristics of elite kickboxers.

## Conclusions

The analysis of the competitive activity of qualified kickboxers allowed to identify the four most common fighting styles such as "Points Fighters", "Continuous Fighters", "Knock out Fighters" and "versatiles". Improvement of the results of the technical and tactical actions in the experimental group of kickboxers after the experiment was indicated. According to the indicators of technical and tactical actions in the control group, improvement was observed only at the level of insignificant tendency ( $p > 0,05$ ). Implementation of the method of individualization training of qualified kickboxers in the training process of the Ukrainian kickboxing team during its preparation for the Championship of Ukraine 2016 allowed to achieve high competitive performance (7 gold, 1 silver and 3 bronze medals).

Further direction of research lies into improving and orientation of loads (special physical, technical and tactical) of kickboxers individual fighting style. In turn, this will give opportunity to make the correction in training programs of KYSS and KYSSOR.

## Conflict of interests

Authors confirm that there is no conflict of interest.

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