

## Technical and tactical training of kickboxers and the results of performances at international tournaments in tatami

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### Abstract:

*Relevance:* The popularization of various kickboxing disciplines in Russia has made it possible to obtain high results in this sport. However, high rates are absent in the least traumatic types tactical training of athletes - point fights and kick-lights, the fights of which take place on the tatami. For tatami disciplines are characterized by individual actions or their combinations, performed in the framework of attacks and counterattacks. The quality of an athlete's technical and tactical readiness is reflected in the overall performance of the athlete. In this regard, it is necessary to pay attention to the technical and tactical training of athletes-kickboxers for international competitions. *The subject of the research:* is the technical and tactical training of kickboxers. *The purpose of this study:* is to consider the effectiveness of technical and tactical training of kickboxers based on the author's methodology. The main research method was a pedagogical experiment. *Methodology:* The research was carried out on the basis of MBOU Secondary School No. 21 in Belgorod in a kickboxing sports school. The subjects were kickboxers 10-12 years old. *Results:* The positive dynamics of the results confirms the success of the author's training methodology, which allows kickboxers to gain victories in international competitions of the World and Europe cups. The process of technical and tactical training of kickboxers consisted in the priority use of individual and group technical and tactical actions in the training process. At the control stage, the effectiveness of the author's technique was shown in comparison with the primary diagnosis, which indicates a positive trend. *Conclusions:* The effectiveness of the author's methodology allows to optimize the training process of kickboxers and to increase the effectiveness of performances.

**KeyWords:** -Kickboxing disciplines, least traumatic sport types, training of athletes, framework of attacks, point fighting, international competitions

### Introduction

Modern kickboxing is a sport that uses boxing arm technique and taekwondo kick technique. Currently, the following sections are distinguished in it: point fighting, light contact, kick light, full contact, full contact with low kick, K-1, solo compositions. Kickboxing can combine activities in sportsmanship and health groups (Ivanov, 1995).

#### Point fighting

In recent years, due to the popularization of kickboxing ring disciplines in Russia, the national team has shown the best results in the world arena, taking the first command place. Unfortunately, such indicators are absent in the most popular, most non-traumatic sections of kickboxing —point fighting and kick-light, which fights are held on the tatami. In the fight of kickboxers of these sections, separate actions or their combinations are usually distinguished, which are reflected in the technical and tactical preparedness of the athlete. These actions primarily include attacks made in attack and counterattack. In this regard, it is necessary to pay attention to the technical and tactical training of athletes-kickboxers for international competitions (Sazonov, 2017). The author's methods of technical and tactical training of kickboxers allow to provide variability of actions of a technical and tactical nature, an individual and comprehensive approach to training an athlete. In this regard, it is advisable to consider the effectiveness of technical and tactical training of kickboxers based on the author's methodology (Poteryakhin, 2020).

#### Previous studies:

Experts note that modern kickboxing is characterized by a significant variability in the actions of technical and tactical skill and the complex development of basic physical qualities, which have a pronounced speed-

power character. Thus, the study of technical and tactical training of kickboxers of various qualifications is an urgent problem (Ouergu,i et al., 2016).

- Bouaziz, Makni, Passelergue, Tabka, Lac, Moalla, Chamari and Elloumi (Bouaziz et al., 2016) monitored the training load.
- Crewther, Carruthers, Kilduff, Sanctuary and Cook (Crewther et al., 2016) studied the relationship between individual changes, training motivation and physical performance of athletes.
- Hölbling, Preuschl, Hassmann, Baca (Hölbling et al., 2017) made a kinematic analysis of double side impact in pointfighting, kickboxing.
- Ouergui, Davis, Houcine and others (Ouergu,i et al., 2016) examined the performance of the organism of winners and losers during a battle.
- Pesce, Fratta, Ialenti, Patruno, Ferrone, Franceschelli, Rizzuto, Tatangelo, Campagna, Speranza, Felaco and Grilli (Pesce et al., 2015) the profile of the winning and losing athlete in combat sports.
- Podrigalo, Volodchenko, Rovnaya, Podavalenko and Grynova (Podrigalo, et al., 2017; Podrigalo, et al., 2018) predicted success in kickboxing based on the analysis of morphofunctional, physiological, biomechanical and psychophysiological parameters.
- Šiška and Brod'ani (Šiška et al., 2016; Šiška & Brod'ani, 2016; Šiška & Brod'ani, 2017; Šiška et al., 2020), Štefanovký and Todorov (Šiška et al., 2016) studied the reliability parameters of a boxing strike and analyzed fights. They managed to design an exercise program for diagnosing and measuring the specific endurance boxing skills, quantified the power-speed sequence allowing to track a real time load development.
- Slimani, Chaabene, Miarka and Chamari (Slimani, et al., 2017a; Slimani, et al., 2018; Slimani, Chaabene, Davis et al., 2017; Slimani, et al., 2017b) considered various physiological reactions of an athlete.
- Szafranski and Boguszewski (2015) carried out studies in the field of the reaction of individual muscles during training kickboxers.
- Korobeynikov, Stavinskiy, Korobeynikova, Volsky, Semenenko, Zhirnov, Chernozub and Nikonorov (2020) studied professional kickboxers' functional state and connection between its motor components and sensory components and concluded that "low-kick" strike has maximum values of maximum and average speed is 8.86 m/sec and 4.22 m/sec, correspondingly; and that indicators' assessment of sportsmen' psychophysiological state is suitable for measurement of kickboxers' physical adaptation.
- Tabben, Coquart, Chaabène, Franchini, Ghoul, Tourny and others (2015), Quanbeck, Russell, Handley and Quanbeck (2017) carried out time, tactical and technical analysis of athletes in single combats depending on gender, match outcome and weight categories.
- Matveev, Filimonov and Mokeev note that the system of training kickboxers is determined by the effectiveness of the training process. At the initial stage, the basis of the physical fitness of athletes, the development of their functional and technical characteristics is created (Kleschev, 2006).
- Ashmarin, Builin and Makeson argue that the purpose of the initial stage is to create a base of special preparedness, which will determine the athlete's achievements in subsequent years (Ashley, 2011).
- According to Karpov and Carter, the most important stage in percussion sports is the training of athletes in technical and tactical actions, which is implemented in the process of interaction between a coach and an athlete. Modern kickboxing techniques are diverse (Ashley, 2011).
- Zadorozhna, Okopnyy, Hutsul, Kotelnyk, Grashchenkova, Perederiy, Pityn, and Svistelnyk (2019) proposed their experimental program too. Main differences from previous programs were that they selected exercises for special physical training of training macro-cycle in preparatory period, considering individual features of athlete's competitive activity. Training time was divided such way: 40% — for special physical qualities improvement (athletes exercised together), 30% — for individual styles, 30% — for preventatives of individual styles.

## Materials & methods

### Participants

The research was carried out on the basis of MBOU Secondary School No. 21 in Belgorod in a kickboxing sports school. The subjects were kickboxers 10-12 years old. The study was approved by the ethics committee and consent was obtained to participate in the experiment.

### Procedure

As equipment were used: heavy balls, jump rope, boxing bags, boxing paws, weighting materials, rubber, tennis balls, dumbbells.

The first academic year is divided into 5 stages of technical and tactical training (Table 1), at the same time, physical training is an integral part of all sports training. Next, we will dwell on technical and tactical training in more detail. At the beginning of classes (stage 1 September-October), beginner kickboxers learn the kickboxing technique (Table 1) (Poteryakhin, 2020). At the diagnostic stage, the level of physical and technical-tactical fitness of kickboxers was diagnosed. The method proposed by O. P. Frolov was chosen as the basis for calculating the technical and tactical readiness of athletes, with the help of which it is possible to determine the number of strikes delivered and reached the target. On the basis of the data obtained, the effectiveness of combat

operations was assessed by calculating the efficiency coefficients of attacking (attack coefficient - SC) and counterattack (counterattack coefficient - CC) actions in one duel (Hastie, Ward & Brock, 2017).

Attack coefficient (KA) is the ratio of the number of hits that reached the target to the number of all hits delivered by the kickboxer.

CC is the ratio of the number of effective counterattacking actions to the total number of strikes delivered in the counterattack (Falsoni, 2011).

The sum of these two ratios is the generalized combat effectiveness coefficient (CE) (Hastie, Ward & Brock, 2017).

The main stage was carried out during one academic year.

*Data collection and analysis*

The aim of the study was to consider the effectiveness of technical and tactical training of kickboxers based on the author's methodology. The main research method was a pedagogical experiment. The research used the following methods: analysis of literary sources; observation; mathematical and statistical methods for collecting, processing and analyzing data.

Table 1. Technical and tactical training of kickboxers during the academic year (stage 1)

1st stage of training				
Month \ week	1st week	2nd week	3rd week	4th week
<b>September</b>	Warm up (10%) + front kick and straight punch (70%) + physical fitness (15%) + cool down (5%)	Warm up (10%) + round kick and side punch (70%) + physical fitness (15%) + cool down (5%)	Warm up (10%) + side kick and punch uppercut (70%) + physical fitness (15%) + cool down (5%)	Warm-up (10%) + hook-kick and backfist (70%) + physical fitness (15%) + cool down (5%)
<b>October</b>	Warm up (10%) + difficult roundhouse kicks (70%) + physical fitness (15%) + cool down (5%)	Warm-up (10%) + fencing leg and fake legs (70%) + physical fitness (15%) + cool down (5%)	Warm-up (10%) + free hand work (70%) + physical fitness (15%) + cool down (5%)	Warm up (10%) + free work with arms and legs (70%) + physical fitness (15%) + cool down (5%)

At the 2nd stage of training (November-December), work in pairs is studied and at the end of this stage the first competitions among beginners are held (Table 2).

Table 2. Technical and tactical training of kickboxers during the academic year (stage 2)

2nd stage of training				
<b>November</b>	Warm-up (7%) + light contact - attack (83%) + physical fitness (5%) + cool down (5%) + physical fitness (5%) + hitch (5%)	Warm-up (7%) + light contact - counter work (83%) + physical training (5%) + cool down (5%)	Warm up (7%) + light contact - work from the leg (83%) + physical training (5%) + cool down (5%)	Warm up (7%) + light contact - free work (83%) + physical fitness (5%) + hitch (5%)
<b>December</b>	Warm up (5%) + light contact - 18 rounds (90%) + physical fitness (3%) + cool down (2%)	Warm up (10%) + light contact - 12 rounds (60%) + physical training (20%) + cool down (10%)	Warm up (20%) + light contact - 9 rounds (45%) + physical fitness (25%) + cool down (10%)	Warm up (30%) + light contact - 6 rounds (30%) + physical fitness (30%) + cool down (10%)

In January-February, kickboxers focus on the technical and tactical training of athletes. At the 3rd stage, it is necessary to turn to preparation for the all-Russian competitions (Table 3).

Table 3. Technical and tactical training of kickboxers during the academic year (stage 3)

3rd stage of training				
<b>January</b>	Warm up (7%) + pointfighting - attack (83%) + physical fitness (5%) + cool down (5%)	Warm up (7%) + pointfighting - counter work (83%) + physical fitness (5%) + cool down (5%)	Warm-up (7%) + pointfighting - work from the leg (83%) + physical fitness (5%) + cool down (5%)	Warm-up (7%) + pointfighting - free work (83%) + physical training (5%) + hitch (5%)
<b>February</b>	Warm-up (7%) + stop and go - attack + counter work (83%) + physical fitness (5%) + cool down (5%)	Warm up (7%) + leg feint - attack + counter work (83%) + physical fitness (5%) + cool down (5%)	Warm-up (7%) + lunge - attack + counter work (83%) + physical fitness (5%) + cool down (5%)	Warm- up (7%) + free attack + counter work (83%) + physical fitness (5%) + hitch (5%)

In the spring, at the 4th and 5th stages of preparation, most of the time in training sessions is devoted to special physical training (Table 4).

Table 4. Technical and tactical training of kickboxers during the academic year (stage 2)

4th stage of training				
<b>March</b>	May Warm up (10%) + stretching (30%) + static 5 seconds * 24 rounds * 4 hits (20%) + sparring (20%) + skipping rope (10%) + cool down (10%)	Warm up (10%) + stretching (30%) + static 10 seconds * 12 rounds * 4 hits (20%) + sparring (20%) + rope (10%) + cool down (10%)	Warm up (10%) + stretching (30%) + static 15 seconds * 8 rounds * 4 hits (20%) + sparring (20%) + rope (10%) + cool down (10%)	Warm up (10%) + stretching (30%) + static 20 seconds * 6 rounds * 4 hitting (20%) + sparring (20%) + skipping rope (10%) + hitch (10%)
<b>April</b>	Running (15%) + warm-up (10%) + heavy balls (15%) + sparring (35%) + skipping rope (15%) + cool down (10%)	Running (15%) + warm-up (10%) + boxing bags (15%) + sparring (35%) + rope (15%) + hitch (10%)	Run (15%) + warm-up (10%) + ladder (15%) + boxing paws (15%) + sparring (35%) + cool down (10%)	Run (15%) + warm up (10%) + rubber (15%) + dumbbells (15%) + sparring (35%) + cool down (10%)
5th stage of training				
<b>May</b>	Warm up (10%) + stretching (30%) + static 5 seconds * 24 rounds * 4 hits (20%) + sparring (20%) + skipping rope (10%) + cool down (10%)	Warm up (10%) + stretching (30%) + static 10 seconds * 12 rounds * 4 hits (20%) + sparring (20%) + rope (10%) + cool down (10%)	Warm up (10%) + stretching (30%) + static 15 seconds * 8 rounds * 4 hits (20%) + sparring (20%) + rope (10%) + cool down (10%)	Warm up (10%) + stretching (30%) + static 20 seconds * 6 rounds * 4 hitting (20%) + sparring (20%) + skipping rope (10%) + hitch (10%)

Further in June, athletes go on vacation, which is 3 full weeks. At the end of the rest, the competition schedule for the next academic year is agreed with the athletes, the main tournament of the year is determined, as a rule, the international start, and preparation for it begins.

Technical and tactical preparation of kickboxers for an international tournament in the sections pointfighting, light-kick, kick-light is presented in tables 5, 6, 7.

Table 5. Technical and tactical training of kickboxers for an international tournament in the pointfighting section

Week 1				
MON - Stop'n'go (Attack)	TUE - Stop'n'go (Counterattack)	WED - Foot feint (Attack)	THU - Stop'n'go (Counterattack)	FR - Work against the leg
Week 2				
MON - Work against the leg	TUE- Entering the zone (Attack)	WED- Entering the zone (Counterattack)	THU - Stop'n'go, Foot feint, Entering the zone	FR - Stop'n'go, Foot feint, Entering the zone
Week 3				
MON - Attack	TUE- Attack	WED- Counterattack	THU - Counterattack	FR - Work against the leg
Week 4				
MON - rubber	TUE- Dumbbells	WED- Weights	THU - stuffed balls	FR - Working in pairs
Week 5				
MON - FR Pair work (displacement / movement / distance control, feints, side kick, blitz, attack versus counterattack, free work)				

The technical and tactical preparation of kickboxers for the international tournament in the light contact section is presented in Table 6.

Table 6. Technical and tactical preparation of kickboxers for an international tournament in the light contact section

Week 1				
MON - Stop'n'go (Attack)	TUE- Stop'n'go (Counterattack)	WED- Foot feint (Attack)	THU - Stop'n'go (Counterattack)	FR - Work against the leg
Week 2				
MON - Work against the leg	TUE- Entering the zone (attack)	WED- Entering the zone (Counterattack)	THU - Stop'n'go, Foot feint, Entering the zone	FR - Stop'n'go, Foot feint, Entering the zone
Week 3				
MON - Attack	TUE- Attack	WED- Counterattack	THU - Counterattack	FR - Work against the leg
Week 4				
MON - rubber	TUE- Dumbbells	WED- Weights	THU - stuffed balls	FR - Working in pairs
Week 5				
MON - FR Pair work (displacement / movement / distance control, feints, side kick, blitz, attack versus counterattack, free work)				

Technical and tactical preparation of kickboxers for an international tournament in the kick-light section is presented in Table 7.

Table 7. Technical and tactical training of kickboxers for an international tournament in the kick-light section

<b>Week 1</b>				
MON - Stop'n'go (Attack)	TUE- Stop'n'go (Counterattack)	WED- Foot feint (Attack)	THU - Stop'n'go (Counterattack)	FR - Work against the leg
<b>Week 2</b>				
MON - Work against the leg	TUE- Entering the zone (Attack)	WED- Entering the zone (Counterattack)	THU - Stop'n'go, Foot feint, Entering the zone	FR - Stop'n'go, Foot feint, Entering the zone
<b>Week 3</b>				
MON - Attack	TUE- Attack	WED- Counterattack	THU - Counterattack	FR - Разный уровень
<b>Week 4</b>				
MON - rubber	TUE- Dumbbells	WED- Weights	THU - stuffed balls	FR - Working in pairs
<b>Week 5</b>				
MON - FR Pair work (displacement / movement / distance control, feints, side kick, blitz, attack versus counterattack, free work)				

At the control stage, control diagnostics of technical and tactical training of kickboxers was carried out. The purpose of the control diagnostics was to determine the level of technical and tactical training of kickboxers according to the same indicators, to analyze the dynamics of the growth of results for a year of training.

### Results

The results of the study of technical and tactical training of kickboxers at the initial and control stages are presented below.

Table 8. Results of initial diagnostics of technical and tactical training of kickboxers

Athlete	KA	KK	КЭ	Level
1	0.14	0	0.14	Low
2	0.27	0.40	0.67	Middle
3	0.39	0.20	0.59	Middle
4	0.29	0	0.29	Low
5	0.12	0.14	0.26	Low
6	0.24	0.24	0.48	Middle
7	0.51	0.47	0.98	High
8	0.30	0.34	0.64	Middle
9	0	0.21	0.21	Low
10	0.35	0.27	0.62	Middle

According to the data obtained, 10% of athletes have a high level of combat effectiveness, 50% have a medium level, and 40% have a low level.

The results of the control stage are presented in Table 9.

Table 9. Results of control diagnostics of technical and tactical training of kickboxers

Athlete	KA	KK	КЭ	Level
1	0.14	0	0.14	Low
2	0.47	0.60	1.07	High
3	0.35	0.90	1.15	High
4	0.22	0.47	0.69	Middle
5	0.12	0.14	0.26	Low
6	0.25	0.44	0.69	Middle
7	0.51	0.47	0.98	High
8	0.80	0.14	0.94	High
9	0.27	0.44	0.71	Middle
10	0.82	0.57	1.39	High

At the control stage, there is a positive trend. 50% of athletes have a high level of fighting, an average level - 30%, low — 20% of athletes.

The positive dynamics of the results confirms the successful author's training method, which continues after a 21-day rest in June, the successful coordination of the competition schedule, the choice of an international tournament and the analysis of the current winners of cups and championships in Europe and the World, which allows kickboxers to win victories over the current winners championships and cups of the World and Europe.

For example, at the 2018 World Cup in Rimini (Italy), where KseniaArtebyakina at the age of 15 with a weight of 46 kg entered the junior national team of Russia (16-18 years old, 50 kg), she won the World Cup in the age group 16- 18 years old in the 50 kg weight category and fulfilled the standard of the Master of Sports of Russia. At the 2020 World Cup in Dublin (Ireland), ArinaKirik at the age of 13 with a weight of 46 kg became the silver medalist of the World Cup in the age group 16-18 years old in the 50 kg weight category and fulfilled the standard of the Master of Sports of Russia.

### Discussion

Achievement of high sports results in the world and Russian arenas is associated with the constant improvement of the system of training activities of kickboxers. The growth of sports achievements in kickboxing is determined not only by an athlete's specialization, but also by the level of his technical and tactical training. At the same time, improving the quality of technical and tactical training of kickboxers largely depends on the development of a training methodology that reflects the main parameters of training, competitive activity and the level of preparedness.

The results obtained at the control stage of the study and their comparison with the results of the initial diagnostics suggest a positive trend. The success of the used author's technique of technical-tactical training of kickboxers includes the priority use of individual and group technical-tactical actions in the training process. The methodological features of the distribution of the content and volume of the exercises used in the combination of individual and group technical-tactical actions, including exercises in accordance with specialization, have been determined. The results obtained indicate the effectiveness of the author's methodology, which allows to optimize the training process of kickboxers and to increase the effectiveness of performances.

### Conclusions

And previous studies showed, for the highest achievements of athletes, it is necessary to comprehensively use physical, technical-tactical and psychological training (Crewther et al., 2016). To get increase in sports results influence of combination of physical and technical-tactical preparedness increases special physical training exercises' general intensity must be considered (Zadorozhna et al., 2019) together with application of right technology of students' mental and physical workability (Kopeikina et al., 2016) and automatization of coordination mechanisms in training of athletes is of great value (Viktorov et al., 2019), and effective technical training that includes coaches' knowledge in psychomotor features and experience of special exercises (Korobeynikov et al, 2020).

For effective kickboxing training in different sections, it is necessary to gradually master the entire arsenal of combat techniques with an intention to further use the most effective techniques for a specific stage of training.

To effectively master the basic fighting technique, one should study in a strict sequence: fighting stance, movements in a stance, punches, kicks, distance in pairs, feints, complex strikes.

Based on the results of our study, it is advisable to draw the following conclusions.

The developed methodology of athletes for international competitions includes five weeks of technical and tactical training in each section of kickboxing. The increase in the load allows you to successfully perform at international competitions.

Technical and tactical training in training athletes for international starts has a priority direction in the training process of kickboxers. One of the main, in this regard, is the identification of "problem" zones of training a kickboxer and targeted impact on them, allows not only to improve his technical training, but also the psychological state.

The implemented technique of technical and tactical training of kickboxers in tatami-disciplines kick-light, point fighting and low kick has shown its effectiveness. At the control stage, the effectiveness of the author's technique was shown in comparison with the primary diagnosis, which indicates a positive trend. 50% of athletes have a high level of fighting, an average level - 30%, low - 20% of athletes. The effectiveness of the author's methodology allows to optimize the training process of kickboxers and to increase the effectiveness of performances.

### Conflicts of interest

The authors declare to have no conflict of interest

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