

# Close Combat and Physical Training in Kickboxing

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**Abstract** The aim of the study was to develop a technique for preparing blows in close combat and improving physical fitness in kickboxing over a period of 10 years (2011-2021). To achieve the goal, methods were used, including: 1) analysis of scientific and information sources on the research problem; 2) pedagogical observation; 3) testing; 4) methods of static and mathematical processing of recorded data for the purpose of their subsequent interpretation. Three educational organizations of the city of Belgorod acted as a base at the same time. The study involved kickboxers whose training sessions were conducted from 2011 to 2021. The results recorded during the athletes' performance clearly demonstrated the effectiveness of the author's training program in hand-to-hand combat and physical training, which was reflected in winning medals at regional, regional, all-Russian and international competitions.

**Keywords** kickboxing, hand-to-hand combat, blows, physical training, competitions, taekwondo, tactical

## 1. Introduction

Currently, a distinctive feature of popular kickboxing is the use by an athlete in a duel of the technique of striking (hitting) with his hands, borrowed from boxing, and with his feet from taekwondo. There are several sections in the kickboxing technique that need to be mastered in order to achieve a high level of sportsmanship [1]. Such variability provides not only a variety of types of techniques used in a duel, but also determines the complexity of mastering the whole variety of motor actions of a kickboxer.

V. N. Malykhin and V. I. Panin analyzing the dependence of the high results of the athletes during the competition, the technique of punches noted the influence of technique on tactical thinking athletes and its level [16].

S. L. Padalko, V. N. Seluanov, R. V. Fomin and A. A. Novikov noted in their scientific works, the importance of bio organisms and biomechanical phases of motor actions in identifying the activity of the main muscles involved in the selection of methods of training athletes [17]

Therefore, the aim of the study was to develop a methodology for preparing for hand-to-hand combat and physical training in kickboxing[18].

To achieve this goal, methods were used, including: 1) analysis of scientific and information sources on the research problem; 2) pedagogical observation; 3) testing; 4) methods of static and mathematical processing of recorded data for the purpose of their subsequent interpretation [13].

Three educational organizations simultaneously acted as a base corresponding to the purpose of the study: MBUDO BDDT, MBOU LYCEUM No. 9, MBOU secondary SCHOOL No. 21 Belgorod. The study involved kickboxers whose training sessions were conducted from 2011 to 2021.

The theoretical basis of the research was the publications of such authors as V.N. Kleshchev, S.L. Podpalko, A.A. Poteryakhin, V.I. Filimonov, etc.

The practical significance of the result is justified by factors integrating the knowledge that allowed us to build a methodology for training athletes within the framework of this study, the use of hand-to-hand combat and physical training in practice is highly effective.

## 2. Materials and methods of research

There are opponents who fight aggressively, constantly working forward, as well as rivals who constantly retreat and use a clinch, with such kickboxers it is necessary to be able to work in close combat [10], therefore, for effective kickboxing training, it is important to master hand-to-hand combat with the mindset of using the most effective strikes[2].

It should be noted that V.A. Olkhov, characterizing a series of blows and their biomechanics, emphasized the use of an integrated approach[19] and the study of hand-to-hand combat as one of the universal types (Table 1).

**Table 1** Methods of studying melee combat in kickboxing

No	Day 1	Day 2	Day 3	Day 4	Day 5
1	Side blow with the front hand to the body - side blow with the front hand to the head	Uppercut with front hand into body – uppercut with the back hand into the body – side impact with the front hand to the head	Dive – side kick with the front hand into the body – side kick with the back hand to the head	Two side kicks to the body – two side blows to the head	Dive – side kick with the front hand into the body – side kick with the back hand to the head
2	Side impact with the front hand in the body - a side blow with the back hand to the head	Three uppercuts in the body - a side blow with the back hand to the head [4]	Dive – side kick with the back hand into the body – side blow with the front hand to the head	Two uppercuts in the body - two uppercuts in the head	Dive – side kick with the back hand into the body – side blow with the front hand to the head
3	Side blow with the front hand to the head – side impact with the back hand into the body	Uppercut with front hand into body – uppercut with the back hand into the body – side impact with the front hand to the head	Dive – side kick with the front hand into the body – side kick with the back hand to the head	Two uppercuts in the body - two side blows to the head	Dive – side kick with the front hand into the body – side kick with the back hand to the head
4	Side blow with the front hand into the body - side blow with the front hand to the head - side blow with the back hand into the body	Three uppercuts in the body - a side blow with the back hand to the head	Dive – side kick with the back hand into the body – side blow with the front hand to the head	Two side kicks to the body – two side blows to the head	Dive – side kick with the back hand into the body – side blow with the front hand to the head
5	Uppercut with front hand into body – uppercut with the back hand into the body – side impact with the front hand to the head	Two side kicks to the body – two side blows to the head – two uppercuts to the body	Two side kicks to the body – two side blows to the head – two uppercuts to the body	Two uppercuts in the body - two uppercuts in the head	Two side kicks to the body – two side blows to the head – two uppercuts to the body
6	Uppercut with the front hand into the body - side blow with the front hand to the head - side impact with the back hand into the body	Two side kicks to the body – two side blows to the head – two uppercuts to the body	Two side kicks to the body – two side blows to the head – two uppercuts to the body	Two uppercuts in the body - two side blows to the head	Two side kicks to the body – two side blows to the head – two uppercuts to the body
No	Day 6	Day 7	Day 8	Day 9	Day 10
1	Side blow with the front hand to the body - side blow with the front hand to the head	Uppercut with front hand into body – uppercut with the back hand into the body – side impact with the front hand to the head	Stand – side impact with the front hand into the body	Stand – front hand side kick to the head – uppercut blow with the back hand to the head [8]	Dive – side kick with the front hand into the body – side kick with the back hand to the head
2	Side impact with the front hand in the body - a side blow with the back hand to the head	Three uppercuts in the body - a side blow with the back hand to the head	Stand – side impact with the back hand into the body	Stand – side kick with the back hand to the head – impact of the uppercut with the front hand to the head [6]	Dive – side kick with the back hand into the body – side blow with the front hand to the head
3	Side blow with the front hand to the head – side impact with the back hand into the body	Uppercut with front hand into body – uppercut with the back hand into the body – side impact with the front hand to the head	Stand – side impact with the front hand to the head	Stand – side kick with the front hand into the body – side impact with the back hand to the head	Slope – side impact with the back hand into the body
4	Side blow with the front hand	Three uppercuts in the	Stand – side impact	Stand – side kick with	Slope – side

	into the body - side blow with the front hand to the head - side blow with the back hand into the body	body - a side blow with the back hand to the head	with the back hand to the head	the back hand into the body – side blow with the front hand to the head	impact with the front hand into the body
5	Uppercut with front hand into body – uppercut with the back hand into the body – side impact with the front hand to the head	Two side kicks to the body – two side blows to the head – two uppercuts to the body	Stand – side impact with the front hand to the head	Stand – side kick with the back hand to the head – impact of the uppercut with the front hand to the head	Slope – a side blow with the back hand to the head
6	Uppercut with the front hand into the body - side blow with the front hand to the head - side impact with the back hand into the body	Two side kicks to the body – two side blows to the head – two uppercuts to the body	Stand – side impact with the back hand to the head	Stand – front hand side kick to the head – uppercut blow with the back hand to the head	Slope – a side blow with the front hand to the head

If the opponent constantly attacks, does not control the distance with the kickboxer and uses a clinch [5], then it is necessary to engage in close combat and work with your hands quickly and strongly, with a turn of the trunk and legs, while keeping your hands close to the head and trunk. Thus, thanks to constant training, you can significantly increase the flexibility of the body, improve dexterity, coordination of movements, and of course, increase your immunity. The safety of children in training and their health must be ensured by the coach. All equipment of the hall must fully comply with the highest levels of security. It is forbidden to strike with full force, it is mandatory to use full protective equipment. In addition, the constant monitoring of an experienced coach will reduce the risk of injury to zero.

In kickboxing, in order to withstand the entire fight from start to finish at a good pace, using feints, attacking and counterattacking actions, while maintaining the strength, speed and accuracy of the blow, physical training is necessary. At the same time, in the works of A.I. Agapov and V.A. Oskolkov, considerable attention was paid to general physical training within the framework of circular training [20] (Table 2) and its impact on the fitness of athletes for a certain period of training sessions.

**Table 2** the method of circular training for general physical training in kickboxing.

№	Day 1	Day 2	Day 3	Day 4	Day 5
1	Jumping over the bench	Jumping: knees to chest	Rubber: side to center	Slope – dive – three direct blows from the front hand – side kick with the front foot	Push-ups – knees to chest, lying down – jumping out with blows
2	Rubber – punches	Pushups	Rubber: top to bottom	Slope – dive – three direct blows from the front hand – side kick with the front foot – side kick with the back foot from the turn	Leg in the supine position
3	Press: knees bent – torso tilts	Press: hands to feet – legs to hands	Rubber: straighten from chest	Slope – dive – three direct blows from the front hand – side kick with the front foot – side kick with the back foot from the turn – three direct blows from the front hand – round kick with the front foot	Press: to yourself in the corner
4	Tennis ball on the floor	Squats	Rubber: direct impacts	Slope – dive – three direct blows from the front hand – side kick with the front foot – hook kick with the back foot from the turn	Lying on your stomach, raising different arms and legs
5	Direct blows with dumbbells	Free work on a boxing shell	Rubber: side impacts	Slope – dive – three direct blows from the front hand – side kick with the front foot – hook kick with the back foot from the turn – two fencing blows round–kick with the back foot	Push-ups with a narrow grip
6	Long jump	Jump rope	Rubber: uppercuts	Slope – dive – three direct blows from the front hand – side kick with the front foot – hook kick with the back foot – two fencing blows round–kick with the back foot – three direct blows from the front hand – two fencing blows round–kick with the front foot.	Press: elbows to knees – knees to elbows
7	Pushing a heavy ball up	Tennis ball on the floor	Dumbbells: bottom up in front of you	Feint with the foot – avoiding the counter-attacking leg	Knee-high leg
8	Somersaults: forward – backward	Shadow Fight	Dumbbells: bottom up on the sides	Walking away from feint with a foot – a side kick with forward	Lying on the stomach, punches: four direct blows from the front hand to the body - two direct blows from

					the front hand to the head
9	Dumbbells: Upside Down Strikes	Throwing out hands with dumbbells	Dumbbells: from bottom to top to chest alternately	Feint with the foot – avoiding the counter-attacking leg – hitting the back hand forward	Lying on your back, climbing into the rack - front kicks with the front leg and back leg
10	Floor staircase: four on the sides	Running on the spot	Dumbbells: straighten from the chest	Walking away from feint with a foot – a side kick with forward	Press: Corner – Punches
11	Floor staircase: two forward – one back	Pull-ups on the horizontal bar	Dumbbells: from the chin up alternately	Feint with the foot – avoiding the counter-attacking leg – hitting the back hand forward	Push-ups with wide grip
12	Tennis ball	Push-ups on bars	Dumbbells: from the side to the center	Walking away from the feint with your foot – side kick with forward advance – counterattack with the front hand back	Leg-to-foot squats

The duration of the round in a circle is 1, 2 and 3 minutes. Only 3 laps.

To use physical training in combat, work on a boxing apparatus is used [12] using ligaments of arms and legs.

Table 3 shows effective combinations of punches and kicks in kickboxing on a boxing projectile.

**Table 3** Effective bundles of punches and kicks in kickboxing on a boxing apparatus.

№	Day 1	Day 2	Day 3	Day 4	Day 5
1	Two direct blows with the front hand – a direct blow with the back hand	Front-kick front leg – front-kick with hind leg – three direct blows from the front hand	Front-kick front leg – round kick front leg – three direct blows from the front hand	Side blow with the front hand to the body - side blow with the front hand to the head	Two direct blows from the front hand – side-step
2	Front kick front leg – three direct blows from the front hand	Front-kick front leg – round kick with back leg – three direct blows from the front hand	Round-kick front leg – front kick front leg – three direct blows from the front hand	Side impact with the front hand in the body - a side blow with the back hand to the head	Three direct blows from the front hand – side-step
3	Direct back hand kick – front hand side kick	Round-kick front leg – front kick with back foot – three direct blows from the front hand	Three direct blows from the front hand – front-kick with the front foot – round-kick with the front foot	Side blow with the front hand to the head – side impact with the back hand into the body	Two direct blows from the front hand – side-step – round-kick with the back leg
4	Three direct blows from the front hand – front kick with the back foot	Round-kick front leg – round kick with back foot – three direct blows from the front hand	Three direct blows from the front hand – round-kick with the front leg – front kick with the front leg	Side blow with the front hand into the body - side blow with the front hand to the head - side blow with the back hand into the body	Three direct blows from the front hand – side-step – round-kick with the front foot
5	Side blow with the front hand to the body - side blow with the front hand to the head - direct blow with the back hand	Three direct blows from the front hand - front-kick with the front leg - front-kick with the back leg	Two rounds-kicks with the front foot into the body - three direct blows from the front hand - two round-kicks with the front foot to the head	Uppercut with front hand into body – uppercut with the back hand into the body – side impact with the front hand to the head	Two direct blows from the front hand – side kick with the back foot from the turn
6	Round kick with the front foot – three direct blows from the front hand	Three direct blows from the front hand – front-kick with the front leg – round-kick with the back leg	Round-kick front foot to the body – round-kick with front foot to the head – three direct blows from the front hand – round-kick with the front foot to the head – round-kick with the front foot into the body [11]	Uppercut with the front hand into the body - side blow with the front hand to the head - side impact with the back hand into the body	Two direct blows from the front hand – hook kick with the back foot from the turn
7	Two direct blows from the front hand to the body – side kick with the front hand	Three straight punches from the front hand – round kick with the front foot – front kick with the back foot	Round-kick front leg – side kick front leg – three direct blows from the front hand – front kick with the back foot	Three uppercuts in the body - a side blow with the back hand to the head	Direct front hand kick - rebound - two direct blows from the front hand
8	Three direct blows from the front hand – round kick with the back foot	Three direct blows from the front hand – round-kick with the front foot – round-kick with the back foot	Front-kick front leg – side kick front leg – three direct kicks from the front hand – round kick with the back foot	Two side kicks to the body – two side blows to the head – two uppercuts to the body	Direct front hand kick – rebound – two direct blows from the front hand – rebound – direct blow with the back hand

9	Direct blow with the back hand – uppercut with the front hand	Front-kick front leg – three direct blows from the front hand – front-kick with the back leg	Ex-kick with front foot – three direct blows from the front hand – side kick from the turn	Two side kicks to the body – two side blows to the head	Two direct blows from the front hand - rebound - two direct blows from the front hand
10	Side kick with the front foot – three direct blows from the front hand	Front-kick front foot – three direct blows from the front hand – round-kick with the back leg	Front-kick front leg – front-kick with hind leg	Two uppercuts in the body - two uppercuts in the head	Free hand work
11	Two side strokes from the front hand to the body – two side blows from the front hand to the head	Round-kick front leg – three direct blows from the front hand – front-kick with the back foot	Round-foot foot –round-foot foot	Two uppercuts in the body - two side blows to the head	Free footwork
12	Three direct blows from the front hand – side kick with the back foot from the turn	Round-kick with the front foot – three direct blows from the front hand – round-kick with the back foot	Ex-kick front leg – ex-kick with back leg	Infighting	Free work

The duration of the round is 2 minutes with a 30-second break.

For the final preparation for the competition, in order to get in good shape, work on acceleration in pairs and on boxing equipment is used, as well as improves the athletes' readiness for competitions and strengthens physical fitness.

### 3. Results

The results obtained at regional, regional, All-Russian and international competitions in various sections of kickboxing are the result of the research carried out for the period 2011-2021 (Table 5). The work carried out within the framework of the study according to the chosen methodology contributed to a significant improvement in the physical indicators of athletes involved and the level of readiness for the competitive period [15], as well as the intermediate results of some athletes and their physical indicators are shown in Figures 1,2,3.

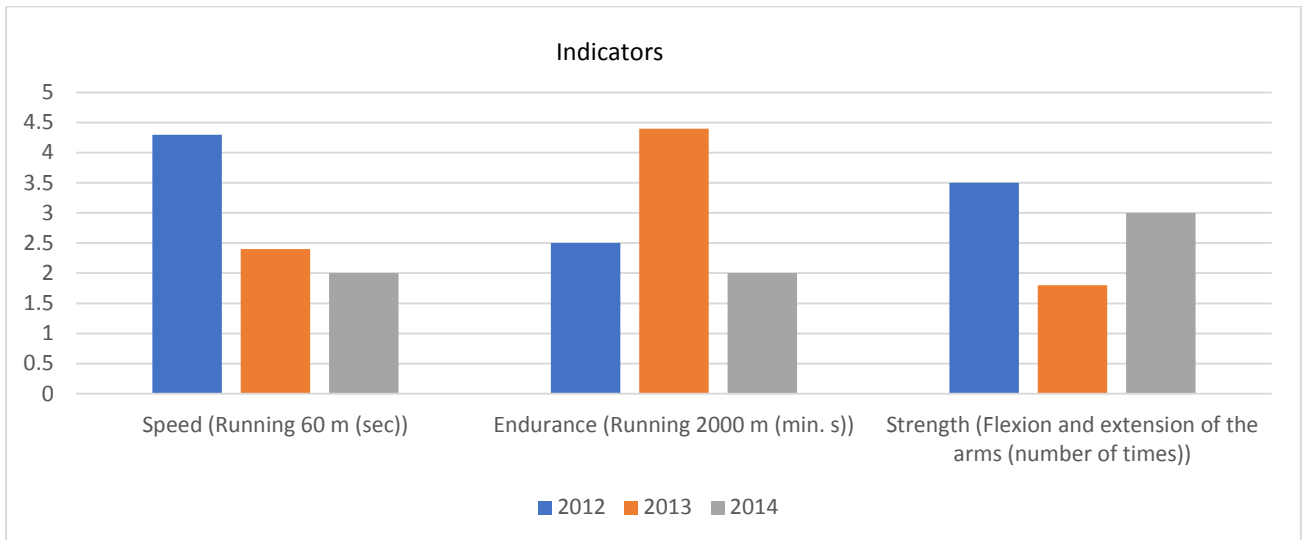
**Table 5** Results of All-Russian and international competitions from 2011 - 2021 academic years.

Competitions	Year	City	Medals			
			Gold	Silver	Bronze	Total
Tatishchev Cup	2011	Togliatti	1 medal	-	2 medals	3 medals
Russian Cup	2011	Eagle	1 medal	1 medal	3 medals	5 medals
Martial Arts World Cup	2012	Feodosia	5 medals	3 medals	1 medal	9 medals
World Cup	2012	Anapa	1 medal	1 medal	1 medal	3 medals
Russian Championship	2012	Ufa	1 medal	-	1 medal	2 medals
Martial Arts Olympiad	2013	Saint-Petersburg	1 medal	-	-	1 medal
	2013	Samara	-	-	2 medals	2 medals
World Cup	2013	Anapa	1 medal	2 medals	2 medals	5 medals
Russian Championship	2013	Pskov	1 medal	-	-	1 medal
Tournament, in memory of the cultural heritage of the Botkins	2014	Shebekino	1 medal	3 medals	-	4 medals
Russian Championship	2014	Omsk	1 medal	-	1 medal	2 medals
Russian Cup	2014	Samara	4 medals	-	1 medal	5 medals
Martial Arts Olympiad	2014	Saint-Petersburg	2 medals	-	6 medals	8 medals
World Cup	2014	Szeged, Hungary	2 medals	3 medals	-	5 medals
World Championship	2014	Rimini, Italy	-	-	1 medal	1 medal
Tambov wolf-your friend	2014	Tambov	4 medals	6 medals	2 medals	12 medals
Tournament, for the prizes of the city of the first salute	2014	Belgorod	3 medals	3 medals	2 medals	8 medals
Tournament dedicated to the 73rd anniversary of the liberation of Yelets	2014	Yelets	2 medals	2 medals	6 medals	8 medals
Russian Championship	2014	Serpukhov	-	5 medals	1 medal	6 medals
Epiphany Tournament	2015	Shebekino	5 medals	5 medals	8 medals	18 medals

European Cup	2015	Karlovac, Croatia	3 medals	1 medal	1 medal	5 medals
Russian Championship	2015	Novosibirsk	-	2 medals	1 medal	3 medals
Russian Cup	2015	Samara	-	4 medals	4 medals	8 medals
European Championship	2015	San Sebastian, Spain	-	-	2 medals	2 medals
World Cup	2015	Anapa	1 medal	2 medals	6 medals	9 medals
Baltic Countries Cup	2015	Kaliningrad	3 medals	-	1 medal	4 medals
Russian Cup	2015	Voronezh	1 medal	-	-	1 medal
Russian Championship	2016	Ulyanovsk	-	-	1 medal	1 medal
Russian Championship	2016	Ekaterinburg	1 medal	1 medal	2 medals	4 medals
World Championship	2016	Dublin, Ireland	-	1 medal	-	1 medal
Tournament	2016	Alushta	3 medals	5 medals	5 medals	13 medals
Russian Championship	2016	Alushta	3 medals	5 medals	6 medals	14 medals
European Cup	2017	Karlovac, Croatia	7 medals	4 medals	3 medals	14 medals
Russian Championship	2017	Omsk	2 medals	3 medals	2 medals	7 medals
World Cup	2017	Budapest, Hungary	7 medals	2 medals	3 medals	12 medals
European Championship	2017	Skopje, Macedonia	-	1 medal	-	1 medal
Russian Cup	2017	Samara	3 medals	7 medals	6 medals	16 medals
World Tournament	2018	Athens, Greece	6 medals	10 medals	2 medals	18 medals
Moscow Open	2018	Ognikovo	9 medals	5 medals	8 medals	22 medals
Russian Championship	2018	Pokrovskoe	4 medals	6 medals	4 medals	14 medals
World Cup	2018	Innsbruck, Austria	1 medal	1 medal	2 medals	4 medals
Eurasian Martial Arts Games	2018	Ufa	3 medals	4 medals	3 medals	10 medals
World Cup	2018	Anapa	1 medal	3 medals	4 medals	8 medals
All-Russian Youth Martial Arts Games	2018	Anapa	3 medals	2 medals	3 medals	8 medals
Russian Cup	2018	Omsk	8 medals	2 medals	4 medals	14 medals
Moscow Open	2019	Yershovo	2 medals	1 medal	5 medals	8 medals
Russian Championship	2019	Irkutsk	1 medal	-	-	1 medal
Russian Championship	2019	Samara	8 medals	8 medals	2 medals	3 medals
World Cup	2019	Rimini, Italy	3 medals	2 medals	2 medals	5 medals
World Martial Arts Championship	2019	Orlando, USA	2 medals	-	-	9 medals
Russian Cup	2019	Krasnoyarsk	-	1 medal	-	3 medals
Baltic Challenge	2019	Riga, Latvia	5 medals	-	3 medals	2 medals
European Cup	2020	Conegliano, Italy	3 medals	5 medals	8 medals	1 medal
World Cup	2020	Dublin, Ireland	3 medals	3 medals	2 medals	2 medals
Moscow Open	2021	Luchinskoe	6 medals	4 medals	3 medals	5 medals
Russian Championship	2021	Yakutsk	-	1 medal	-	1 medal
Russian Championship	2021	Chelyabinsk	2 medals	-	-	4 medals
European Cup	2021	Belgrade, Serbia	5 medals	1 medal	1 medal	2 medals
<b>Total:</b>		<b>58 competitions</b>	<b>145</b>	<b>131</b>	<b>139</b>	<b>415</b>

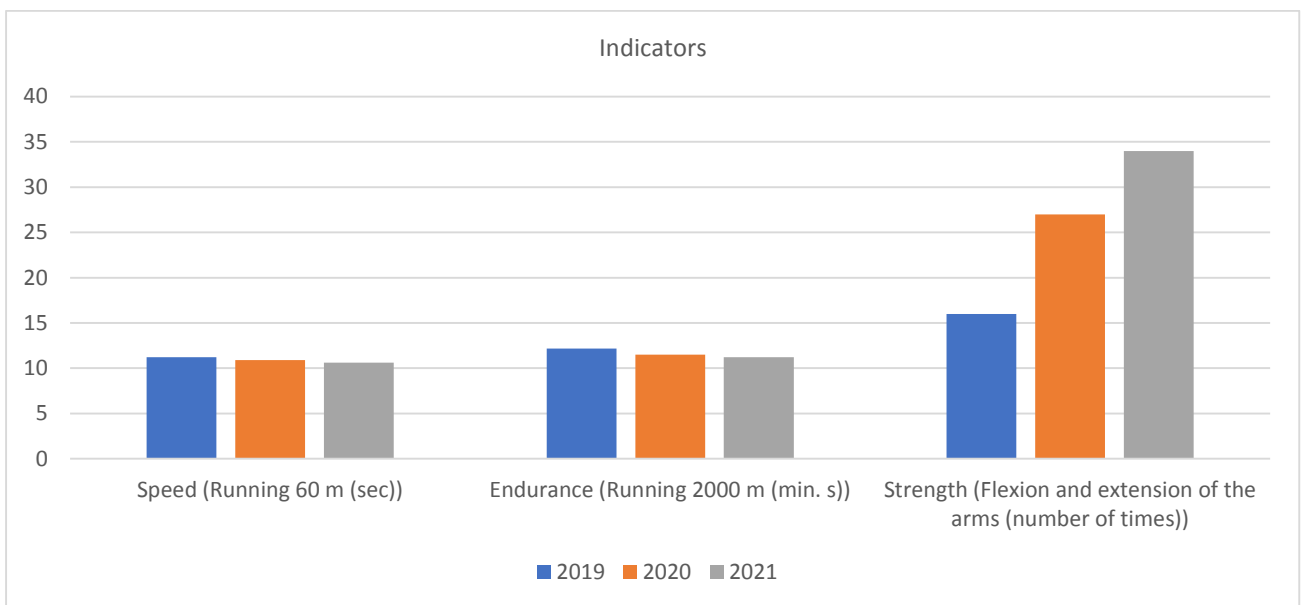
It can be concluded from the table that the chosen method of training athletes improved their dynamic performance, and was reflected in the results obtained at Russian and international competitions

Figure 1. Physical indicators of students - Ivan Polyakov



Analyzing Figure 1, we can conclude that the proposed training contributed to the improvement of speed indicators, which is of great importance.

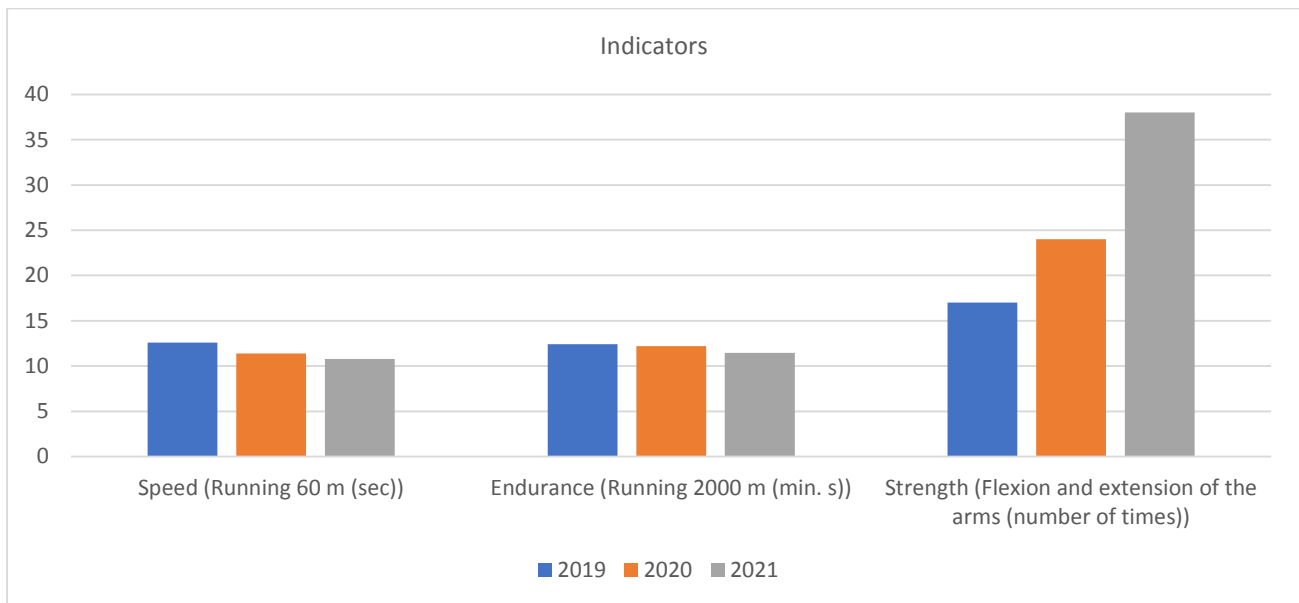
Figure 2. Physical indicators of students – Edamenko David



From Figures 2 and 3 it can be seen that in 3 years the strength indicator has improved among the athletes who train.

Figure 3. Physical indicators of students – Grigorev Aleksandr





#### 4. Discussion

The analysis of the data presented in Table 5 shows that over 10 years, kickboxers of the MBUDO Children's and youth sports school No. 4 of the "Boomerang" IC of Belgorod performed at 127 competitions and won 1,450 medals, including 584 gold, 428 silver and 438 bronze medals. Athletes have played 1,450 semifinal matches and won 1,012 victories (69.8%) [14]. In the final matches, they won 156 fights (57.7%) more than they lost. Consequently, kickboxers who regularly attend classes and practice according to the chosen method of hand-to-hand combat [7] successfully show results at all competitions of various levels and improve physical fitness indicators.

#### 5. Conclusions

1. The developed methodology of hand-to-hand combat and physical training in kickboxing includes five weeks of training.
2. Physical training and hand-to-hand combat in the preparation of athletes for regional, regional, All-Russian and international competitions is a priority in the training process of kickboxers.
3. The results recorded during the performance of the athletes participating in this study clearly demonstrated the effectiveness of the author's training program, reflected in the pupils who show results at international and Russian high-level competitions.

Thus, increasing physical fitness and improving work in close combat in kickboxing allows you to successfully perform at all competitions of different levels, subject to systematic training sessions.

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