

The effectiveness of physical upbringing foundation among students by means of kosiki-karate

Anton A. Khokhlov^{*}, Olga I. Razumova², Aleksey V. Voronin², Dmitriy M. Maryin²

¹Technological Institute – branch of the P.A. Stolypin State Agrarian University, Dimitrovgrad, Russia

ORCID: 0000-0002-1927-4533, khokhlov.73@mail.ru^{*}

²P.A. Stolypin State Agrarian University, Dimitrovgrad, Russia

ORCID: 0000-0002-5317-4173, razumovaoi@mail.ru

ORCID: 0000-0001-8956-394X, aleksej.voronin.1986@mail.ru

ORCID: 0000-0002-6392-1347, marjin25@mail.ru

Abstract: Kosiki-karate lessons in physical upbringing of schoolchildren have physical-sports orientation. They provide the basis of physical culture, physical upbringing mastering, physical fitness and health state improvement during physical exercises and the basis of kosiki-karate fulfillment. The aim of kosiki-karate lessons is assistance in a child's personality formation and development and also health strengthening, motor qualities development and the need upbringing for regular sports during physical exercises fulfillment, the basis of kosiki-karate technic and theory study and taking part in the competitions. **Materials.** The article considers the effectiveness foundation of physical upbringing in students by means of kosiki-karate. **Research methods.** 24 boys at the age of 16-17 took part in the research. The respondents were divided into 2 groups, control group and experimental group. Each group included 12 people. Control group trained according to physical culture program, schoolchildren in the experimental group were involved into kosiki-karate lessons in terms of variative part. During the stating experiment we studied the indices of physical fitness and children's functional state. During the forming experiment we selected exercises for kosiki-karate. **Results.** During the pedagogical experiment we revealed that kosiki-karate lessons with 16-17 year-old boys provide general and special physical readiness indices and the functional state of cardiovascular and respiratory system improvement, motivation increase to attend physical culture lessons and axiological attitude to health formation. **Conclusion.** Hypothesis, stated at the beginning of the research, was proved. Kosiki-karate means use in physical upbringing of 16-17 year-old boys provides physical qualities development, the level of special physical readiness increase, functional state of schoolchildren improvement and the level of their physical culture increase.

Keywords: kosiki-karate, martial arts, competitions, sports, physical education.

For citation: Anton A. Khokhlov^{*}, Olga I. Razumova, Aleksey V. Voronin, Dmitriy M. Maryin. The effectiveness of physical upbringing foundation among students by means of kosiki-karate. Russian Journal of Physical Education and Sport. 2021; 16(3): 42-47. DOI: 10.14526/2070-4798-2021-16-3-50-56.

INTRODUCTION

An important objective of this country is to form a healthy generation. Normative- juridical documents of the Russian Federation explain the succession of the modern education strategy, its essence and importance for the oncoming generation upbringing as successful, developing, actively interacting subjects. In particular, kosiki-karate in the system of physical education helps teen-agers to develop both physically and spiritually. Kosiki-karate is a kind of sport. It provides training and taking part in individual and team competitions. Kosiki-karate has a rich technical arsenal, no less

than other martial arts and even exceeds them.

Nevertheless, it was revealed that there are no sufficient works concerning kosiki-karate means use in physical education of schoolchildren. Thus, there appears the contradiction between the necessity of physical upbringing realization in schoolchildren with the help of kosiki-karate means and the absence of the methodology of kosiki-karate means use in physical upbringing of schoolchildren. It underlines the urgency of chosen by us topic of the research [1].

The aim of the research – the effectiveness of physical upbringing foundation in students by

means of kosiki-karate.

The object of the research – kosiki-karate in the system of physical upbringing in students.

The subject of the research – technology of physical upbringing in 16-17 year-old boys by means of kosiki-karate.

In order to achieve the set aim it is necessary to solve the following objectives:

1. To study the peculiarities of kosiki-karate means use in the system of students physical upbringing.

2. To create the technology of physical upbringing in 16-17 year-old boys using kosiki-karate means.

3. To estimate the effectiveness of the created technology use.

Hypothesis of the research – it is supposed that kosiki-karate means use in physical upbringing of 16-17 year-old boys would provide not only physical qualities development and students' functional state improvement, but also would increase the level of motivation to physical culture lessons, would provide more realized attitude to health, readiness of boys to serve in the Army owing to moral, moral-volitional, professional skills formation and physical training development under the influence of the eastern culture.

MATERIALS AND METHODS

In order to solve the set objectives the following methods were used:

- scientific-methodical sources analysis;
- pedagogical testing;
- pedagogical experiment;
- methods of mathematical-statistical data

handling.

The sources of scientific-methodical and special literature analysis and summarizing was organized in order to study the problems of kosiki-karate means use in physical upbringing of schoolchildren.

The held analysis showed that very often the questions of martial arts use in physical upbringing of schoolchildren are not paid much attention to. At the same time we didn't find the works, which presented the recommendations concerning kosiki-karate means use in physical upbringing of

schoolchildren. It demands further studies in this sphere.

Testing organization was conditioned by the necessity to characterize physical fitness indices and functional state of the respondents.

In order to estimate physical readiness the following tests were used:

- 1 Chin-up
2. 100 meters running
3. 3000 meters cross.
4. Shot put (weight 450 gr).
5. Obstacle course.

The experiment was parallel comparative. It included the stating, preparatory and forming experiments. 24 boys at the age of 16-17 took part in the research. The participants of the experiment were divided into 2 groups, control group (CG) and experimental group (EG). Each group included 12 people.

Control group studied according to physical culture program, schoolchildren in the experimental group were involved into kosiki-karate in terms of the variative part.

During the stating experiment we studied the indices of physical readiness and children's functional state. During the forming experiment we selected exercises for kosiki-karate.

The control experiment helped us to estimate the effectiveness of kosiki-karate use in physical upbringing of students.

In order to handle the results of the pedagogical research we used the methods of mathematical statistics. There the following things were calculated: arithmetical mean, standard deviation, Student t-criterion (t). Statistical data handling was held with the help of Student t-criterion. All calculations were realized with the help of Microsoft EXCEL.

In order to substantiate the effectiveness of kosiki-karate use in physical upbringing of schoolchildren since November, 2017 till November, 2019 the research was held on the basis of Oktyabrski agricultural lyceum. It included 4 stages:

1 stage – stating (November, 2017 – March, 2018) – was dedicated to literature sources analysis concerning the peculiarities of schoolchildren's physical upbringing, and was also dedicated to the

respondents selection. We selected kosiki-karate means, realized the initial diagnostics of physical fitness, functional state and the level of physical culture of the respondents.

2 stage – preparatory (April, 2018 – August, 2018) – included the methodology of technology, pedagogical conditions substantiation, means and methods testing.

3 stage – forming (September, 2018 – May, 2019), additional diagnostics of physical fitness indices, functional state and the level of physical culture was organized. We also realized the received results analysis and summarizing.

4 stage (June, 2019 – November, 2019) – systematization, summarizing experimental results.

Thus, in order to solve the set problems we used adequate and valid means, the scheme of organization and methods of their effectiveness estimation.

In order to estimate the effectiveness of kosiki-karate use in physical upbringing of schoolchildren we organized the preliminary testing before and after the pedagogical experiment. The results of testing general physical fitness in the control and the experimental group presents table 1 [1,2,3,4,5,6,7,8,9].

Table 1 – the results of studying general physical fitness in 16-17 year-old boys

Tests	CG		EG		t CG-EG before	t CG-EG after
	before	after	before	after		
Chin-up (quantity)	10,25±0,52	12,08±0,49	10,58±0,52	14,58±0,35	0,47	4,34**
100 meters running (sec.)	14,38±0,06	14,05±0,06	14,39±0,05	13,58±0,09	0,21	4,49**
3000 meters running (min, sec.)	14,22±0,03	13,59±0,14	14,25±0,04	13,13±0,13	0,57	2,50*

Notes : * - P<0,05; ** – P<0,01

RESULTS AND DISCUSSION

The results of testing general physical fitness before the experiment showed that in the studied tests the indices are almost the same in the boys from the control and the experimental groups, as statistical data handling didn't reveal valid differences (P>0,05). The results of the additional test analysis showed that the received indices of the experimental group exceed the test results of the boys from the control group. Statistical data handling revealed valid results differences of the additional testing for the control and the experimental groups according to all tests. They characterize general physical fitness of children. Let's see the dynamics of the testing results.

The results of “Chin-up” test in the control group at the end of the experiment improved by 1,83 times (15,1%), in the experimental group – by 4 times (27,4%).

Statistical data handling revealed valid

results differences of “Chin-up” test in the control and the experimental groups after the experiment (temp.=4,34; P<0,01). In the control group at the end of the experiment the results of “100 meters running” test improved by 0,33 sec. (2,29%), in the experimental group – by 0,81 sec. (5,63%). Statistical data handling revealed valid results differences of “100 meters running” test in the control and the experimental group after the experiment (temp.=4,49; P<0,01). In the control group the results of “3000 meters running” test improved by 0,63 min, sec. (4,43%). In the experimental group time decreased to 1,12 min, sec. (7,86 %). Statistical data handling revealed valid results differences of “3000 meters running” test in the control and the experimental group after the experiment (temp.=2,50; P<0,05). The received during the pedagogical experiment results of special physical fitness testing in the control and the experimental group are presented in table 2.

Table 2 – Results of studying special physical fitness in 16-17 year-old boys

Tests	CG		EG		P CG-EG before	P CG-EG after
	before	after	before	after		
Shot put, 450 gr, m	31,58±0,89	35,67±1,02	32,33±0,71	38,92±0,60	0,69	2,88**
Obstacle course (sec.)	206,42±2,03	196,25±2,33	205,67±1,80	182,33±1,83	0,29	4,9**

Notes : * – P<0,05; ** – P<0,01

During the experiment the indices of “Shot put, weight 450 gr.” test changed. In the control group during the pedagogical experiment the results improved by 4,08 m (12,93%). In the experimental group the test results improved by 6,58 m (20,36%). According to the held analysis, “Obstacle course” test indices in the control group improved by 10,17 sec. (4,93%), in the experimental group the results of the test improved by 23,33 sec. (11,35%). Statistical data

handling proves the validity of differences between the control and the experimental groups after the experiment (temp.=4,9; P<0,01). Thus, in the experimental group the indices of special physical fitness validly changed more significantly that in the control group. Functional state indices change in 16-17 year-old boys, received during the pedagogical experiment, are presented in table 3.

Table 3 – Results of studying functional state of 16-17 year-old boys

Tests	CG		EG		P CG-EG before	P CG-EG after
	before	after	before	after		
HR, beats/min	69,33±1,00	70,42±1,19	67,92±0,72	68,08±0,89	1,20	1,64
systolic blood pressure (SBP), mm Hg	122,67±1,38	122,25±1,18	122,50±1,50	122,33±1,27	0,09	0,05
diastolic blood pressure (DBP), mm Hg	73,00±0,62	73,42±0,64	72,75±0,59	73,25±0,56	0,31	0,21
Maximal oxygen consumption, l/min	2,18±0,06	2,49±0,08	2,15±0,06	2,81±0,06	0,30	3,41**
Ruffier test, points	9,36±0,46	6,92±0,44	9,12±0,42	4,94±0,20	0,41	4,29**
Stange's test, sec.	38,00±1,40	48,08±1,51	37,58±1,23	55,50±0,79	0,23	4,56**
Genchi test, sec.	30,17±0,83	35,08±1,08	30,42±1,12	40,75±0,97	0,19	4,08**

Notes : * – P<0,05; ** – P<0,01

During the experiment we see some heart rate increase. The results of heart rate analysis revealed that both in the control and the experimental groups there is no valid indices dynamics. The indices are within the limits of normative age related values (P>0,05).

The values of SBP and DBP are also within

the limits of the norm for 16-17 year-old boys.

Statistical data handling didn't reveal valid differences of blood pressure indices (P>0,05).

We saw positive dynamics of MOC indices in both groups. In the control group the indices improved by 0,32 l/min, which was 14,56%, in the experimental group the indices improved by 0,66 l/

min, which was 30,62%. Statistical results handling, held after the experiment, proves the validity of MOC indices differences in the control and the experimental groups at the validity level 99% (temp = 3,41; $P < 0,01$).

Ruffier test dynamics analysis revealed that in the experimental group the results improved in the average for 4,18 points (45,80%), in the control group the increase was for 2,44 points (26,09%). Statistical data handling after the experiment proves the validity of differences of Ruffier test in the control and the experimental groups at the validity level 99% (temp = 4,29; $P < 0,01$).

The indices increase of Stange's test was in the control and in the experimental group. However, in the experimental group the increase was 17,92 sec. (47,67%), in the control group – 10,08 sec. (26,54%). Statistical data handling proves the validity of differences between the control and the experimental groups after the experiment (temp.=4,56; $P < 0,01$).

Testing results analysis showed that Genchi test in the experimental group improved for 10,33 sec., which is 33,97%, in the control group – for 4,92 sec., which is 16,3%. Statistical analysis of the received results proves the differences validity between the control and the experimental groups after the experiment (temp.=4,08; $P < 0,01$). Thus, there is a positive change of all indices, which characterize physical qualities development among schoolchildren, who took part in the experiment [4-6].

CONCLUSION

Thus, the hypothesis, set at the beginning of the research, is proved. Kosiki-karate means use in physical upbringing of 16-17 year-old boys provides physical qualities development, the level of special physical fitness increase, schoolchildren's functional state improvement and the level of physical culture increase. It means that physical fitness level of schoolchildren. They are involved into kosiki-karate, are higher in comparison with the control group. In this connection we come to the conclusion that kosiki-karate use in physical upbringing of schoolchildren is effective.

REFERENCES

1. Khokhlov A.A., Kostyunina L.I. Kosiki-

karate as a promising kind of martial arts. *Sovremennye problemy fizicheskogo vospitaniya I bezopasnosti zhiznedeyatel'nosti v sisteme obrazovaniya: materialy Vserossijskoj nauchno-prakticheskoy konferencii* [Modern problems of physical upbringing and life safety in the system of education: materials of All-Russian scientific-practical conference]. Ulyanovsk : Ulyanovsk State Pedagogical University named after I.N. Ulyanov. 2017: 308-312 [In Russ.].

2. Khokhlov A.A., Kostyunina L.I., Chekulaeva L.V. The effectiveness of the training process increase among young karatekas in a yearly cycle of training. *Social'no-pedagogicheskie aspekty fizicheskogo vospitaniya molodezhi: materialy XVI mezhdunarodnoj nauchno-prakticheskoy konferencii* [Social-pedagogical aspects of physical upbringing among young people: materials of the XVI International scientific-practical conference]. Ulyanovsk : Ulyanovsk State Technical University. 2018: 479-483 [In Russ.].

3. Khokhlov A.A., Nazarenko L.D. Coordinating qualities development among junior schoolchildren at kosiki-karate training lessons. *Sovremennye problemy fizicheskogo vospitaniya I bezopasnosti zhiznedeyatel'nosti v sisteme obrazovaniya: materialy II Vserossijskoj nauchno-prakticheskoy konferencii s mezhdunarodnym uchastiem* [Modern problems of physical upbringing and life safety in the system of education: materials of the II All-Russian scientific-practical conference with the International participation]. Ulyanovsk: Ulyanovsk State Pedagogical University named after I.N. Ulyanov. 2019: 126-130 [In Russ.].

4. Khokhlov A.A., Voronion A.V., Khrabrykh V.Ya., Razumova O.I. Martial arts in the system of physical upbringing of schoolchildren. *Agrarnaya nauka I obrazovanie na sovremennom etape razvitiya: opyt, problem I puti ih resheniya: materialy Nacional'noj nauchno-prakticheskoy konferencii* [Agrarian science and education at a modern stage of development: experience, problems and the ways of their solution: materials of National scientific-practical conference]. Ulyanovsk: Ulyanovsk State Agrarian University named after P. A. Stolypin. 2019;1: 356-361 [In Russ.].

5. Khokhlov A.A., Kostyunina L.I. Effectiveness of kosiki-karate use in physical upbringing of 16-17 year-old schoolchildren. *Innovacionnye formy I prakticheskij opyt fizicheskogo vospitaniya detej I uchachejsya molodezhi: materialy VII Mezhdunarodnoj nauchno-prakticheskoy konferencii* [Innovative forms and practical experience of physical upbringing among children and students: materials of the VII International scientific-practical conference]. Vitebsk: Vitebsk State University named after P. M. Masherov. 2019: 98-101 [In Russ.].

6. Khokhlov A. A., Voronin A.V., Razumova O.I. Aesthetics of kosiki-karate as a kind of martial arts. *Agrarnaya nauka I obrazovanie na sovremennom etape razvitiya: materialy X Mezhdunarodnoj nauchno-prakticheskoy konferencii* [Agrarian science and education at a modern stage of development: experience, problems and the ways of their solution: materials of X International scientific-practical conference]. Ulyanovsk : Ulyanovsk State Agrarian University named after P. A. Stolypin. 2020: 38-43 [In Russ.].

7. Aleksandr S. Kuznetsov, Zinaida M. Kuznetsova. II Congress of the public

organization "Russian Professorial Assembly" members. *Pedagogiko-psihologicheskie I medicobiologicheskie problemy fizicheskoy kul'tury I sporta = Russian Journal of Physical Education and Sport*. 2019; 14(4): 5-7. DOI: 10.14526/2070-4798-2019-14-4-5-7 [In Russ., In Engl.].

8. Currell K., Pieter W. Validity, reliability and sensitivity of measures of sporting performance. *Sports Medicine*. 2008; 38: 297-316.

9. Pieter W., Heijmans J. *Scientific coaching for Olympic Taekwondo*. Oxford: Meyers and Meyers Sport. 2000.

Submitted: 15.07.2021

Author's information:

Anton A. Khokhlov – Candidate of Technical Sciences, Associate Professor, Technological Institute – branch of the P.A. Stolypin State Agrarian University, Dimitrovgrad, 433511, Russia, Dimitrovgrad, Kuibyshev str., House 310, e-mail: khokhlov.73@mail.ru

Olga I. Razumova – Senior Lecturer, P.A. Stolypin State Agrarian University, Ulyanovsk, 432017, Russia, Ulyanovsk, Novy Venets blvd., House 1, e-mail: razumovaoi@mail.ru

Aleksey V. Voronin – Candidate of Sociological Sciences, Associate Professor, P.A. Stolypin State Agrarian University, Ulyanovsk, 432017, Russia, Ulyanovsk, Novy Venets blvd., House 1, e-mail: aleksej.voronin.1986@mail.ru

Dmitriy M. Maryin – Candidate of Technical Sciences, Associate Professor, P.A. Stolypin State Agrarian University, Ulyanovsk, 432017, Russia, Ulyanovsk, Novy Venets blvd., House 1, e-mail: marjin25@mail.ru
