

INTEGRATED METHOD DEVELOPMENT OF GENERAL AND SPECIAL STUDENTS STAMINA INVOLVED IN THE FIGHT

Alekseev N.A., Kutergin N.B., Kulinichev A.N., Gorbatenko A.V.
Belgorod law Institute of MIA of Russia

Annotation. *Purpose:* testing the effectiveness of methods of development of general and special endurance cadets wrestlers. *Material:* the experiment was attended by 20 students aged 18-20 years (10-12 years experience of employment, qualifications - candidates for the master of sports and master of sports). Classes are held 10 times a week, lasting for 120 minutes. *Results:* the developed methodology based on the application of a special set of exercises. Technique promotes rapid increase endurance level students. The directions of increasing endurance and performance of students. As an exercise for the development of general endurance recommended: motocross race, gymnastics, sports (rugby, soccer). As an exercise for the development of special endurance recommended: Attempted partner with high intensity (8-9 shots in 10 seconds) Perform five series, consisting of 5 spurts (the maximum number of shots in 10 seconds) And run shots at a moderate pace (4 -5 throws) for 10 seconds ; training and educational training bout, fight quadruples (fight lasts until the transition to the fight lying down or throw up). *Conclusions:* the increase in special endurance cadets should be in parallel with the improvement of overall fitness.

Keywords: endurance, sports, student, fighting, development, skills, experiment.

Introduction

The high level of development of physical qualities allows the athlete to cope successfully with the training load and voltage events, provides quick and effective recovery between training sessions and competitions. High level of physical development is one of the main preconditions determining sportsmanship cadets ' occupying the struggle.

One of the features of modern techniques of training of these students is the trend toward specialization of physical training. It finds expression in the fact that the athlete exercises are becoming more and more specialized, i.e. acting mainly on specific muscle groups and developing the most necessary skills and qualities. This applies to both General and special endurance. Endurance is the quality, which affects the effectiveness of both the training and the competitive process.

The increase of General and special endurance connected with rebuilding in the activity of all body systems. In coaching, change the functional properties of organs, and biochemical processes in them, their biochemical composition, and even structure. Restructuring processes in different systems of the organism are closely connected among themselves. Improvement of this activity takes place through a complex interaction of the Central nervous system and peripheral organs, and some other complicated factors in our body [5, 7]. In addition, an important role in developing stamina plays a restructuring of hormonal regulation of muscle activities sympathoadrenal and pituitary-adrenal cortical systems [4]. It is also necessary to take into account this condition as increasing the capacity of mitochondria and the growth of activity of mitochondrial enzymes per unit mass muscles [10].

As means of development of General endurance necessary to offer swimming, cross-country running lasting from 20 to 120 minutes, skiing, boating and other[1, 3, 8, 9]. For the development of special endurance, as one of the most necessary tools, plays a significant role increasing pace in the course of the fight and the increased density of the training activities in General, however, there are other means and methods [2, 12].

Thus, the issue of integrated improvement and development of all levels of endurance of the cadets involved in the fight, relevant and requires experimental solutions.

Purpose, tasks of the work, material and methods

The aim was to develop a methodology, based on application of a special complex of exercises which help to increase the level of cadets ' endurance involved in the fight.

Tasks:

1. To study the existing theoretical development and practical guidelines for the development and improvement of endurance data cadets at the present stage;
2. To form the complex of traditionally applied in practice of preparation of students involved in combating General and special exercises aimed at improving endurance;
3. To test the effectiveness of the proposed exercise program during the pedagogical experiment.

The significance of the different research results were determined on the criterion of the validity of differences (Student) observed between the arithmetic mean indices of two independent distributions at $p < 0.05$; and in some cases and at $p < 0.01$.

Results of the research

In the course of ascertaining the pedagogical experiment (February 2013 - February 2014) were compared with the experimental and control groups (10 students involved in the fight at the age of 18-20 years old, with the experience of occupations by fighting 10-12 years, the sports qualification - CCM and master of sports). Classes were held 10 times

a week, lasting 120 minutes. Cadets of the experimental group were training offered to our method the development of endurance.

As exercises for the development of the overall endurance was used:

1. cross-country running;
2. gymnastic exercises;
3. sports (Rugby, football).

As exercises for the development of special endurance was used:

1. throws partner with high intensity (8-9 shots for 10 sec.);
2. the implementation of the five series, consisting of 5 spurts (the maximum number of shots for 10 sec.) and throwing average (4-5 shots) for 10 seconds;
3. training and a training of the fight;
4. the struggle in fours (fight lasts until the transition to fight or to throw).

For evaluation of the experiment, we used the following indicators:

to assess the overall endurance was considered the number perform gymnastic exercises to failure;

for the evaluation of special endurance was considered the number of shots in the amount when executing spurts.

Also used the data from the measurement of the heart rate at rest, immediately after loading, and after one minute of rest.

Evaluation of General and special endurance was conducted prior to and after the experiment, data displayed in tables.

The data from table. 1, you can see that the results of cadets of the control group during experiment increased slightly in each of the proposed exercises that evidence of the positive influence the standard of training for endurance.

Table 1

Evaluation of General and special endurance in the control group

№	Stamina						Special endurance	
	Pulling up on a crossbeam (number of times)		The stretching and bending arms in a lying position (number of times)		Squats (number of times)		The implementation of 5 spurts (the number of shots in total)	
	do	after	do	after	do	after	do	after
1.	24	25	65	68	156	158	47	48
2.	21	24	69	70	158	159	46	47
3.	23	25	63	65	155	157	48	50
4.	26	28	70	72	153	156	45	47
5.	21	23	69	69	161	162	44	46
6.	27	28	62	64	154	155	46	49
7.	22	25	66	67	156	160	49	51
8.	21	24	65	68	158	158	43	46
9.	28	29	64	67	155	157	47	49
10.	27	29	67	70	154	158	45	47
X	24	26	66	68	156	158	46	48
±x	2,7	2,6	2,7	2,4	2,4	2,0	1,8	1,6

However, this increase, although it is statistically significant but minor significance level.

To check the plausibility of the differences in results, we used t-student test and found that differences in the results before and after the experiment statistically little significant at $p < 0.05$. You can make the assumption that to obtain statistically significant results required a longer training period.

According to table 2 indicators of General and special endurance in the experimental group increased.

Table 2

Evaluation of General and special endurance in the experimental group

№	Stamina						Special endurance	
	Pulling up on a crossbeam (number of times)		The stretching and bending arms in a lying position (number of times)		Squats (number of times)		The implementation of 5 spurts (the number of shots in total)	
	do	after	do	after	do	after	do	after
1.	27	30	70	76	166	175	45	53
2.	29	33	68	72	165	173	47	55
3.	25	29	65	70	163	170	46	54
4.	23	28	69	74	164	172	48	56

5.	26	32	67	73	162	171	44	52
6.	24	30	68	75	165	173	45	50
7.	25	31	71	77	161	170	46	53
8.	27	32	69	76	164	174	47	54
9.	26	31	67	73	168	178	48	57
10.	28	34	66	74	162	174	44	56
X	26	31	68	74	164	173	46	54
±x	1.8	1,8	1,8	2,1	2,1	2,4	1,4	2,1

All control exercises (pull-UPS, bend and straighten the arms in a lying position, squat) has been a marked increase in results.

When testing hypotheses using t-test, t-test, $p < 0.05$ was confirmed statistically significant difference between the results ($p < 0.01$).

One of the operational indicators of the levels and the General and special endurance, is in the heart rate, as a reaction to the actual load.

Assessment of the intensity of loads data cadets determined by heart rate (HR) in different segments of the training sessions. However, for the HR values in conventional unit is used more often, is clearly outdated scale, involving a linear dependence of these parameters, which is not true if the variation is more than 150 beats/min

However, considering the coordination of the complexity of the load of the fighters carries significant information, however, is only visually.

In this regard, B. I. Tarakanov (1997) proposed system more objective assessment coordinating complexity load cadets involving the separation of all exercises in 4 groups (rank)with his assessment. This system is presented in table 3.

In this regard, developed an upgraded rating scale load intensity, based on three zones where training: the area of small training effect (HR 130 beats./min), the optimal training area of effect (HR from 130 to 170 beats./min) and area of limit loads (HR 170 beats./min), and in the transition from one zone to another, the cost burden substantially.

Table 3

Assessment coordinating complexity of training loads fighters

Specialized exercises	General exercises	Rank number	Assessment
Training and control of the bout	Acrobatics. Exercise on the trampoline	4	5,5
Study and improvement of throws.	Sport: Rugby, basketball, football	3	4,2
Studying and improving throws сбивание, coups	Gymnastic exercises on shells. Exercise with a partner	2	2.6
Study and improvement of the techniques in the ground	Exercises with weights, cross-country	1	1,5

The proposed method for the estimation of intensity of exercise are presented in table 4.

Table 4

Assessing the training of fighters

Zone training load	HR (beats. min)	The intensity of the (points)
The small area of the training effect	100-110	1
	111-120	2
	121-130	3
The small area of the training effect	131-140	5
	141-150	7
	151-160	9
	161-170	11
Area of limit loads	171-180	15
	181-190	19

	191-200	23
	201 and more	27

The value of the fixed indicators of heart rate during studies indicate training loads, lying in the zone of optimal training effect.

Dynamics of indices of heart rate of cadets of the control and experimental groups during the study period of the experiment are given in table 5.

Table 5

Indices of heart rate before and after the experiment in the control and experimental groups

	Control group				Experimental group			
	Before the beginning of the experiment		At the end of the experiment		Before the beginning of the experiment		At the end of the experiment	
	peace	after load	peace	after load	peace	after load	peace	after load
1.	62	155	64	153	64	156	63	146
2.	66	160	66	158	66	158	65	154
3.	63	161	65	159	65	155	62	151
4.	61	154	67	153	63	153	66	150
5.	65	159	63	157	68	157	66	149
6.	64	158	64	156	67	154	65	151
7.	68	162	66	158	65	156	62	149
8.	60	153	65	152	64	155	65	150
9.	64	154	63	158	62	152	60	148
10.	67	164	67	156	66	154	66	152
X	64	158	65	156	65	155	64	150
±x	2,6	3,8	1,5	2,5	1,8	1,8	2,1	2,2

Indices of heart rate in the control group after the experiment has not practically changed, and in experimental has not changed significantly, as evidenced not statistically significant difference at the level of significance of $p < 0.05$. The latter confirms our assumption about the positive impact of selected training tasks such physical quality as endurance. Not large shifts, from our point of view, due to the fact that for the adaptation of the cardiovascular system requires a longer period of time.

Conclusions.

1. The results of the pedagogical experiment allow to assert, that in the control group, the indicators of General and special endurance has increased not statistically significant, and the performance of the experimental group increased statistically significant at $p < 0.01$, which allows to speak about the efficiency of the proposed approach.

2. For the development and improvement of General and special endurance cadets involved in the fight in the process of sports training, you should use the following exercise:

- exercises-speed nature (running from a low starting at 30 m, 60 m, 100 m, running with acceleration from 30 m to 50 m, jumping rope, throws dummy);
- exercises speed-power character (long jump, height, throwing printed ball, shot put);
- running in alternation with walking;
- Jogging with duration from 10-20 minutes with the intensity of 90-95% of maximum;
- football, basketball within 10-20 minutes;
- training contractions lasting 10-15 minutes and change partners.

3. The load on the lessons must be adjusted to the heart rate and outward signs of fatigue. The optimum mode of work (heart rate) when performing exercises for speed and power of nature 150-155 beats/min; exercises the power of nature 145-150 beats/min; endurance exercise 165-170 UD/minutes Further increase in heart rate leads to a significant fatigue.

4. Increase of the level of special endurance should be carried out in parallel with the improvement of General physical training. In the mesocycles preparatory period the funds of the special physical training is distributed on increasing from the beginning to the end of the period, and assets total training - decrementing.

References:

- 1 Akopian A.O., Pankov V.A., Astakhov S.A. *Skorostno-silovaia podgotovka v vidakh sportivnykh edinoborstv* [Speed-strength training in combative sports], Moscow, Soviet sport, 2003, 48 p.
- 2 Buriakin F.G., Karapetian E.A. Uroven' razvitiia special'noj vynoslivosti i vystupleniia borcov na sorevnovaniiax [The level of development of special endurance and performance fighters in competitions] *Sovershenstvovanie special'noj vynoslivosti sportsmenov* [Improving special endurance athletes], Moscow, VNIIFK, 1974, pp. 117-119.
- 3 Voronov A.I. *Metodika povysheniia nadezhnosti tekhnicheskikh dejstvij v sportivnoj bor'be* [Technique of improve reliability of technical actions in wrestling], Cand. Diss., Moscow, 1990, 22 p.
- 4 Dadaian A.V. *Effektivnost' primeneniia nagruzok aerobnoj napravlenosti dlia povysheniia rabotosposobnosti borcov raznoj kvalifikacii* [Efficacy of aerobic stress orientation to improve performance fighters with different skills], Cand. Diss., Moscow, 1996, 22 p.
- 5 Gabrys' T. *Anaerobnaia rabotosposobnost' sportsmenov: limitiruiushchie faktory, testy i kriterii, sredstva i metody trenirovki* [Anaerobic performance of athletes: limiting factors, tests and criteria, tools and training methods], Dokt. Diss., Moscow, 2000, 58 p.
- 6 Miakinchenko E.B. *Fizkul'tura, obrazovanie i nauka* [Physical education, education and science], Moscow, 1997, vol.1, pp. 9-14.
- 7 Pashincev V.G., Maksimov V.I. Glikoliticheskaia nagruzka v podgotovke dziudoistov [Glycolytic capacity in the preparation of judo] *Uchenye zapiski Kazanskoj Gosudarstvennoj akademii veterinarnoj mediciny im. N.E.Baumana* [Proceedings of the Kazan State Academy of Veterinary Medicine Bauman], Kazan, 2013, pp. 317-221.
- 8 Samvelian O.A. *Rabotosposobnost' borcov razlichnoj kvalifikacii* [Working capacity fighters with different qualifications], Moscow, Physical Culture and Sport, 1976, 96 p.
- 9 Sen'ko V.M. *Razvitie fizicheskikh kachestv borca* [Development of physical qualities fighter], Minsk, 1975, 132 p.
- 10 Stankov A.G. *Upravlenie podgotovkoj dziudoistov* [Management training judo], Moscow, Voenizdat, 1995, 161 p.
- 11 Stankov A.G. *Individualizaciia podgotovki borcov* [Individualization of training fighters], Moscow, Voenizdat, 1995, 240 p.
- 12 Filin V.P., Fomin N.A. *Osnovy iunosheskogo sporta* [Fundamentals of youth sports], Moscow, Physical Culture and Sport, 1980, 10 p.
- 13 Kholodov Zh.K., Kuznecov V.S. *Teoriia i metodika fizicheskogo vospitaniia i sporta* [Theory and methods of physical education and sport], Moscow, Academy, 2008, vol.6, 200 p.
- 14 Khokhlov I.N. *Metodicheskie determinanty sovershenstvovaniia trenirovochnogo processa v vidakh sporta s preimushchestvennym proiavlениem vynoslivosti* [Methodological determinants improve the training process in sports with a primary display of endurance], Cand. Diss., Sankt Petersburg, 1997, 22 p.
- 15 Alekseev N.A., Kutergin N.B., Kulnichev A.N. Perfection of physical training of students and listeners of educational establishments of Ministry of Internal Affairs of Russia. *Physical Education of Students*, 2013, vol.1, pp. 3-6. doi:10.6084/m9.figshare.156348

Information about the authors

Alekseev N.A.: ORCID: 0000-0001-5261-6497; Kutergin-nb@rambler.ru; Belgorod law Institute of MIA of Russia; Gorky str. 71, Belgorod, 308024, Russia

Kutergin N.B.: ORCID: 0000-0001-7072-5224; Kutergin-nb@rambler.ru; Belgorod law Institute of MIA of Russia; Gorky str. 71, Belgorod, 308024, Russia

Kulinichev A.N.: ORCID: 0000-0002-1415-8066; Kutergin-nb@rambler.ru; Belgorod law Institute of MIA of Russia; Gorky str. 71, Belgorod, 308024, Russia

Gorbatenko A.V.: ORCID: 0000-0001-9274-9534; Kutergin-nb@rambler.ru; Belgorod law Institute of MIA of Russia; Gorky str. 71, Belgorod, 308024, Russia

Cite this article as: Alekseev N.A., Kutergin N.B., Kulinichev A.N., Gorbatenko A.V. Integrated method development of general and special students stamina involved in the fight. *Physical education of students*, 2014, vol.3, pp. 3-8. doi:10.6084/m9.figshare.974476

The electronic version of this article is the complete one and can be found online at: <http://www.sportpedagogy.org.ua/html/anhive-e.html>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited (<http://creativecommons.org/licenses/by/3.0/deed.en>).

Received: 21.01.2014
Published: 27.02.2014