

THEORETICAL AND METHODOLOGICAL BASES OF EDUCATION FOR HIGH SCHOOL STUDENTS IN EXTRACURRICULAR ACTIVITIES

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Abstracts

Relevance. The conducted researches only partially touched on questions of development of various types of preparation in a heptathlon, their rational combination during the annual cycle of training. Issues of modeling characteristics and preparedness methods of military-applied heptathlon are still not investigated. **The purpose of the research** is to develop and experimentally verify of the education methodology effectiveness of the military-applied heptathlon for high school students in extracurricular activities. **Methods of research** are analysis of psychological and pedagogical literature, systematization of information, pedagogical testing, anthropometric measurements, questionnaires, pedagogical experiment, pedagogical observation, mathematical statistics. The definition of the level of motor activity of young people was carried out by the International Physical Activity Questionnaire (IPAQ). 526 boys aged 16–17 participated in the researches. **Results.** Model characteristics of the Ukrainian Spartakiade's participants on the military- sports heptathlon for preliminary military training of youth are characterized by high results in all types of competitions. Average chin-ups indicators make up 17,07 times, overcoming the obstacle course – 02 min 09 s, running 100 m – 13,01 s, running 3000 m – 11 min 31 s, swimming – 41,01 s, throwing grenades – 40,89 m, shooting – 49,27 points. The importance of universal training for all types of military-applied heptathlon is confirmed by the correlation between the types of all-round preparedness and the total amount of received points. Thus, the closest interconnected results are the overcoming of obstacle course and at 100 m running ($r = 0,54$), overcoming the obstacle course and the obtained points at 100 m running ($r = -0,53$), overcoming the obstacle course and the points obtained at 3000 m running ($r = -0,43$). **Conclusions.** The results of the study allowed to develop a step-by-step methodology for training military and applied heptathlon of high school students. The direction of motor activity in relation to intensity of classes as well as duration of exercises, duration and character of rest, number of classes during the week, tempo of training loading increase during the week, month are determined.

Key words: military-applied heptathlon, high school students, training methods, physical education, extracurricular activity.

Олег Дикий, Анатолій Цось. Теоретичні та методичні основи навчання старшокласників семиборства в позаурочній діяльності. Актуальність. Проведені дослідження лише частково охопили питання розвитку різноманітних видів підготовки в багатоборстві, їх раціонального поєднання протягом річного циклу тренування. Практично не дослідженими залишаються проблеми модельних характеристик та методики підготовки у військово-прикладному семиборстві. **Мета дослідження** полягає в розробці й експериментальній перевірці ефективності методики навчання військово-прикладного семиборства старшокласників у позаурочній діяльності. **Методи дослідження** – аналіз психолого-педагогічної літератури, систематизація інформації, педагогічне тестування, антропометричні вимірювання, анкетування, педагогічний експеримент, педагогічне спостереження, математична статистика. Визначення рівня рухової активності молоді здійснювали за міжнародним опитувальником «The International Physical Activity Questionnaire» (IPAQ). У дослідженнях узяли участь 526 хлопців віком 16–17 років. **Результати.** Модельні характеристики учасників спартакіади України з військово-спортивного семиборства для допризовної молоді характеризуються високими результатами в усіх видах змагань. Середні показники підтягування становлять 17,07 разів, подолання смуги перешкод – 2,09 хв, с, бігу 100 м – 13,01 с, бігу на 3000 м – 11,31 хв, с, плавання – 41,01 с, метання гранати – 40,89 м, стрільби – 49,27 очок. Важливість універсальної підготовки за всіма видами військово-прикладного семиборства підтверджено й кореляційними зв'язками між видами підготовленості та загальною кількістю отриманих балів. Так, найтісніше пов'язані між собою результати подолання смуги перешкод і бігу на 100 м ($r = 0,54$), подолання смуги перешкод й отриманих балів із бігу на 100 м ($r = -0,53$) подолання смуги перешкод та отриманих балів із бігу 3000 м ($r = -0,43$). **Висновки.** Результати дослідження дали змогу розробити

поетапно-послідовну методику навчання військово-прикладного семиборства учнів старших класів. Визначено спрямованість рухової активності у взаємозв'язку з інтенсивністю занять, тривалістю вправ, тривалістю й характером відпочинку, кількістю занять протягом тижня, темпами збільшення навантаження протягом тижня, місяця.

Ключові слова: військово-прикладне семиборство, старшокласники, методика, фізична культура, позаурочна діяльність.

Олег Дикий, Анатолий Цесь. Теоретические и методические основы обучения старшекласников семиборья во внеурочной деятельности. Актуальность. Проведенные исследования лишь частично затронули вопросы развития различных видов подготовки в многоборье, их рационального сочетания в течение годового цикла тренировки. Практически не исследованными остаются вопросы модельных характеристик и методики подготовки в военно-прикладном семиборье. **Цель исследования** заключается в разработке и экспериментальной проверке эффективности методики обучения военно-прикладному семиборью старшекласников во внеурочной деятельности. **Методы исследования** – анализ психолого-педагогической литературы, систематизация информации, педагогическое тестирование, антропометрические измерения, анкетирование, педагогический эксперимент, педагогическое наблюдение, математическая статистика. Определение уровня двигательной активности молодежи осуществляли по международному опроснику «The International Physical Activity Questionnaire» (IPAQ). В исследованиях приняли участие 526 ребят в возрасте 16–17 лет. **Результаты.** Модельные характеристики участников спартакиады Украины по военно-спортивному семиборью для допризывной молодежи характеризуются высокими результатами во всех видах соревнований. Средние показатели подтягивания составляют 17,07 раза, преодоление полосы препятствий – 2,09 мин, с, бега 100 м – 13,01 с, бега 3000 м – 11,31 мин, с, плавания – 41,01 с, метания гранаты – 40,89 м, стрельбы – 49,27 очков. Важность универсальной подготовки по всем видам военно-прикладного семиборья подтверждается и корреляционными связями между видами подготовленности и общим количеством полученных баллов. Так, наиболее тесно связаны между собой результаты преодоления полосы препятствий и бега на 100 м ($r = 0,54$), преодоление полосы препятствий и полученных баллов в беге на 100 м ($r = -0,53$), преодоление полосы препятствий и полученных баллов в беге 3000 м ($r = -0,43$). **Выводы.** Результаты исследования позволили разработать поэтапно-последовательную методику обучения военно-прикладного семиборья учеников старших классов. Определяется направленность двигательной активности во взаимосвязи с интенсивностью занятий, продолжительностью упражнений, продолжительностью и характером отдыха, количеством занятий в течение недели, темпам увеличения нагрузки в течение недели, месяца.

Ключевые слова: военно-прикладное семиборье, старшекласники, методика, физическая культура, внеурочная деятельность.

Introduction. Research results show that a significant part of young people cannot be called up for military service in the Armed Forces of Ukraine for health reasons, and about 70% of recruits do not meet the minimum level of physical fitness [6; 7; 12; 13; 17]. Research papers [3; 9; 10; 11] point out that an important component of preparing young people for service in the Armed Forces is military and physical training, on which the effectiveness of the combat missions performance depends. The purpose of such training is to ensure physical readiness to master weapons and military equipment, to sustained overcoming physical exertion and neuro and psychic overloads. Scientists [1; 4; 5] remark that in the process of physical training, it is necessary to apply exercises that would be close in their structure to the professional actions of servicemen.

Over the years, all regulatory documents noted the great importance of the physical training of military personnel. At the same time in the 70s of the 20th century the concept of «war of machines» was adopted. In accordance with this, the success of combat operations was to be determined primarily by the effectiveness of military equipment. Therefore, the essence of physical training was reduced to the development of stability and concentration of attention, accuracy of movements, motor reaction. However, the results of scientific researches and the experience of participants in military operations and hostilities in the east of Ukraine [9] revealed that the foundation of professional preparedness of military personnel is their physical fitness.

Recently, in all armies, the vast majority of military purchases are aimed at individual protection of military personnel. This, of course, essentially protects the military. At the same time, body armor quite severely restricts the movement, and the process of getting used to it takes time. Today the combat layout, with which the soldier goes into battle, is about 28 kg. Therefore, for effective military service a special

training is required. To get this aim, it is necessary to introduce new standards and physical exercises of applied military character into the pre-draft training of young people.

It was found that for the successful formation of qualities and skills of servicemen important for their combat activities, military and sports all-rounds and, in particular, applied military heptathlon are widely used. The applied military heptathlon for pre-draft youth includes pull-ups, obstacle navigation, 100-meters race and 3,000-meters race, 50 meter swimming, grenade throwing, and shooting.

In sports all-around, according to scientists [1; 4], the effectiveness of the training process depends not only on the amount of physical exertion, but also on the structure of training. The conducted studies only partially addressed the development of peripheral and leading types of training in all-round, their rational combination during the annual training cycle.

In the special literature [2; 8], great attention is paid to the use of means and methods of sports training, providing an increase in physical, technical and tactical training of qualified athletes, but the methodology for developing these qualities in young all-rounders, especially at the initial stages of training, taking into account the characteristics of their physical, mental and mental development, is not studied to full extend. It should be noted that in the system of young all-rounders training, the interrelation between various aspects of optimization of the psychophysical capabilities of their body, namely general physical, technical, tactical and psychological ones, is not investigated yet; the specific content of the development of special skills and the variability of their application with the determination of the specificity of the impact of different in volume, intensity and structure orientation of motor actions when performing physical loads in accordance with different levels of athletic fitness and at different stages of training sessions, is not determined. The items of model characteristics and methodology for teaching the applied military heptathlon remain practically unexplored.

The purpose of the research is to develop and experimentally test the effectiveness of the methodology for teaching applied military heptathlon to senior pupils in extracurricular activities.

Material and methods of research. To solve the tasks of the article, a system of research methods is used. Theoretical methods include the analysis of psychological and pedagogical literature, systematization of information (for confirming the initial positions of the study, summarizing the available data, substantiation of the conceptual and terminological apparatus). Empirical methods are: pedagogical testing, anthropometric measurements, questionnaire (to determine the level of physical condition of students); pedagogical experiment (ascertaining, formative), pedagogical observation (for the development of the methodology for teaching applied military heptathlon to senior pupils in extracurricular activities). The determination of the level of motor activity of young people was carried out according to the international questionnaire The International Physical Activity Questionnaire (IPAQ). Statistical methods were used for processing of the empirical data and checking of the reliability of the results.

The general educational institutions No. 11, 18 and 24 of Lutsk and Volyn Regional Lyceum with enhanced military and physical training became the experimental facilities of the research. The study involved 526 boys aged 16-17.

The results of the study. Analyzing the results of the surveys, we proceeded, first of all, from the fact, that the state of health of high school seniors correlates with the quantitative composition of the main, preparatory and special medical groups and those exempted from exercises. The analysis of the distribution of the senior pupils into medical groups proved the deterioration of health of the young men, as only 47.2 % of the boys aged 16 and 45.21% of the boys aged 17 were included into the main medical group. At the same time half of the senior pupils were included into the preparatory and special medical groups and a group of pupils released from physical training. It is obvious that such a situation is the result of the deterioration of students' health, as well as of greater demands, which are pushed forward to the medical examinations at schools.

When analyzing the medical records of students of senior school age, it was found out, that the most common among schoolchildren are the diseases of the upper respiratory tract and respiratory organs; the diseases and functional deviations of the gastrointestinal tract come next; the problems of the musculoskeletal system rank third, neuropsychological disorders and chronic diseases rank fourth; diseases of the sense organs rank fifth, in particular problems of the organs of sight; endocrine diseases, blood and cardiovascular problems rank sixth, the urinary system and skin diseases round out the list.

The average values of the morphological parameters of the physical development of the surveyed give an idea of its compliance with age standards. The results show that the body length of the 16-year-old boys is 172.73 ± 1.75 cm, and that of 17-year-old boys is 174.16 ± 1.59 cm. In accordance with age standards, these data are within the normal range. In terms of body mass, they slightly exceed the norm of age development, namely: 64.53 ± 2.43 kg is for 16-year-old boys and 65.27 ± 2.64 kg is for 17-year-olds. It should be noted that during this age period the effects of acceleration manifest themselves most of all, when gain in growth outpaces weight gain, and growth in body weight outpaces the growth rate of internal organs. The indicators of the circumference of the chest are also consistent with the age norms of boys aged 16–17. At the same time, it is necessary to ascertain a decrease in the parameters of the chest excursion in schoolchildren (the difference between the indices of the chest circumference during inhalation and exhalation). This figure is 6.83 cm for 16-year-olds and 6.72 cm is for 17-year-olds.

Assessment of physical development involves the determination of the proportionality of the development of individual somatometric indicators, on the basis of which its harmony is characterized. Analyzing the Quetelet index, it was found that majority of the boys under investigation belong to the group above the average level and this indicator is 40.4% for 16 year-old boys, and 44.8% for 17 year olds. A large number of young men have an average level of physical development, namely: 16-year-old boys – 37.6 % and 17-year-old – 40.6%. Below the average level are 14.3% and 6.5%, respectively. 2.3% of boys aged 16 years have a low level of physical development. A high level was found in 5.4% of boys aged 16 and in 8.1% of boys aged 17.

To assess the functional capabilities of young men, hemodynamic parameters (heart rate and systolic and diastolic blood pressure) were measured using standard methods. The functionality of the respiratory system of the body of high school seniors was investigated by measuring the vital capacity of the lungs (VC), carrying out standard functional tests with conscious breath-holding while inhaling (Stange's test) and exhaling (Genchi's test).

Analyzing the indicators of the cardiovascular system of 16 and 17-year-old boys, we can conclude that blood pressure indicators are within the normal range (16-year-old boys – BP systolic – 114.9 ± 5.42 mm Hg; BP diastolic – 66.9 ± 6.22 mm Hg; 17-year-old boys – BP systolic – 118.1 ± 3.99 mm Hg; BP diastolic – 70.2 ± 3.65 mm Hg). However, it should be noted that for 14.7% of 16 year-old boys and 17.6% of 17 year-old boys an increase in systolic blood pressure was fixed. The average heart rate exceeded the age norm for 16 year-old boys (81.4 ± 3.85 beats per min^{-1}) and for 17 year-old boys (79.9 ± 2.50 beats per min^{-1}).

According to the results of the VC study, the indicators of the maximum volume that can be exhaled after taking a deep breath were 3.23 ± 0.11 l for 16-year-old boys, and 3.72 ± 0.08 l for 17 year-olds, which is lower than the age norms, as at the age of 16-17 the VC must reach the indices of an adult. The analysis of the results showed that 37.56% of 16 year-old students and 32.23% of 17-year-old students have low and below average VC indices.

The average values of Stange's test, which characterizes the body's resistance to oxygen deficiency, were for the students of senior classes below the age norms, namely: for 16 year-olds – 44.6 ± 3.22 s, for 17 year-olds – $46.4 \pm 3, 68$ s. The duration of breath holding on expiration (Genchi's test) also showed a decrease in results: for 16-year-old boys – 20.3 ± 1.97 s, and for 17-year-old boys – 20.8 ± 2.28 s respectively. The above mentioned results of the study show a noticeable tendency towards functional stresses of the respiratory system that must be taken into account when dosing aerobic exercises.

To study the level of physical fitness of students, the tests and standards for assessing the physical fitness of students in accordance with the requirements of the school program were used. The test results show the average level of physical fitness of the boys. The boys of 16 and 17 years of age have the best-developed power qualities, since 65.7% and 77.4% of them have an «average» level of competence based on the results of the pull-up test; 45.3% and 50.2% – in the «sit-up in 60 s» test respectively; 62.3% of boys of 16 years of age and 65.5% of boys of 17 years of age – in the test «standing long jump». The results of the «shuttle run 4 × 9 m», test of determining the agility, 47.9% and 45.6%, and the results of the «100-meters race», test determining the speed, 62.3% and 68.6% for boys of 16 and 17 years of age also correspond to the average level of competence.

A low level of competence had 47.3% of young men of 16 years of age and 42.5% of young men of 17 years of age in the test of defining flexibility – «body bending forward from a sitting position» and 65.7%

and 59.4%, respectively, in the test «uniform run of 1500 m», which provides for requirements for the aerobic capabilities of the body, the state of the cardio-respiratory system of the body, the work of the muscles of the arms, back and abdominals.

In general, the level of development of the physical qualities of high school seniors can be assessed as medium and low, which necessitates special physical training. The results of students' physical fitness must be taken into account when determining the content of physical activity in terms of the predominant influence on the improvement of physical qualities, which are below the norm.

Scientific works [14; 15; 15] state that insufficient physical activity is the main reason for the decline of health and functional capabilities of young people. To confirm this data, the level of motor activity of high school seniors was determined by the International Physical Activity Questionnaire (IPAQ).

The results show that only 6.8% of 16-year-old and 5.2% of 17-year-old respondents have a high level of motor activity. Most of the boys have an average (41.5-42.3%) or low (51.7-52.5%) level of motor activity. Taking into consideration the fact that the training effect has only a high level of physical activity, which includes organized exercises and intensive sports and outdoor games, this level is insufficient and does not fully ensure the proper functioning of the body and the development of physical qualities of students.

The results of the survey show that the interest in physical culture among young men is not high. Only 33.9% of 16-year-olds and 39.5% of 17-year-olds have a high and above average level of interest in physical culture. In 11.4–11.7% of respondents there is no interest in performing physical exercises due to a negative attitude. At the same time, a fairly high motivation to applied military all-round (the first rank position) was revealed, that can be a prerequisite for effective physical training of high school seniors.

To build the target models of all-rounders, the results of The Ukrainian applied military heptathlon contest for the youth undergoing precription military training were used. Comparative analysis shows that all-rounders have quite good results in all events (Table 1).

Table 1

Model characteristics of the participants of The Ukrainian applied military heptathlon contest, n = 118

Heptathlon event	Performance results	\bar{X}	S	$S\bar{x}$	$\bar{X}, 95\% \Delta I (X_{min})$	$\bar{X}, 95\% \Delta I (X_{max})$
Pull-up	<i>times</i>	17,07	4,260	0,39	16,290	17,840
	<i>times</i>	563,17	116,660	10,74	542,130	584,230
Obstacle navigation	<i>min, s</i>	02,09	0,00018	1,635	0,0014	0,0015
	<i>points</i>	575,68	193,910	17,85	540,690	610,660
100-meters race	<i>s</i>	13,01	0,610	0,057	12,900	13,120
	<i>points</i>	528,53	145,850	13,43	502,210	554,840
3000-meters race	<i>min, s</i>	11,31	1,740	0,16	10,990	11,630
	<i>points</i>	491,48	159,940	14,72	462,630	520,340
50 meter swimming	<i>s</i>	41,01	12,480	1,15	38,760	43,270
	<i>points</i>	686,52	247,250	22,76	641,900	731,130
Grenade throwing	<i>m</i>	40,89	10,010	0,92	39,090	42,690
	<i>points</i>	298,24	237,960	21,91	255,300	341,170
Shooting	<i>scores</i>	49,27	17,910	1,65	46,040	52,500
	<i>points</i>	392,42	243,680	22,43	348,440	436,380
Total	<i>points</i>	3536,03	774,850	71,33	3396,230	3675,840

The average pull-up results are 17.07 times, obstacle navigation – 2.09 min, s, 100-meters race – 13.01 s, 3000-meters race – 11.31 min, s, swimming – 41.01 s, grenade throwing – 40.89 m, shooting – 49.27 scores. The average amount of the obtained points is 3536.03.

The conducted studies show that the following results are closely interrelated: the results of the obstacle navigation and 100-meters race ($r = 0,54$), the results of the obstacle navigation and points for the 100-meters race ($r = -0,53$), the results of the obstacle navigation and points for the 3000-meters race ($r = -0.43$) (Table 2).

The following results have the average level of interrelation: the results of pull-ups and the obtained points for 3000-meters race ($r = -0,32$), the results of 100-meters race and the obtained points for 50 meter swimming ($r = -0,31$), the results of 100-meters race and points for grenade throwing ($r = -0,32$). Thus, participants of the applied military heptathlon are characterized by increased requirements for overall training in all sports events. This is confirmed by the correlation between the types of preparedness and the total number of points received.

Table 2

Interrelationships between types of training in applied military heptathlon

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	99	-21	32	-25	24	-04	25	-01	15	07	13	13	13	46
2		1	-20	31	-25	23	-04	25	-01	14	06	12	14	14	45
3			1	-51	54	-53	21	-43	09	-18	-10	-27	-07	-08	-51
4				1	-43	38	-19	38	-09	15	31	31	08	10	62
5					1	-98	14	-29	18	-31	-20	-32	-08	-07	-61
6						1	-14	29	-19	32	18	30	06	06	59
7							1	-11	21	09	-09	-08	05	01	-09
8								1	-03	17	11	15	14	11	53
9									1	01	-16	-16	09	07	-14
10										1	22	35	11	09	61
11											1	79	10	11	50
12												1	18	19	66
13													1	93	48
14														1	49
15															1

Remarks: zeros and commas are not included;

1 – pull-ups, times; 2 – pull-ups, points; 3 – obstacle navigation, min, s; 4 – obstacle navigation, points; 5 – 100-meters race, s; 6 – 100-meters race, points; 7 – 3000-meters race, min, s; 8 – 3000-meters race, points; 9 – 50 meter swimming, s; 10 – 50 meter swimming, points; 11 – grenade throwing, m; 12 – grenade throwing, points; 13 – shooting, scores; 14 – shooting scores; 15 – the sum total.

The worked out models allow us to assess the conformity of development of physical and technical preparedness in heptathlon, to determine the ways for further improvement, means of individualization and correction of the training process.

Discussion. The method of logistic regression was used to develop a methodology for teaching applied military heptathlon to high school seniors. The results of the analysis show that the greatest impact on the overall result in the heptathlon is carried by 3000-meters race, grenade throwing, pull-ups, and swimming (Table 3).

Table 3

Basic types of training in applied military heptathlon

Performance	<i>a</i>	<i>S</i>	Wald criterion	<i>P</i>
3000-meters race, <i>min, s.</i>	0,035687	0,0127480	7,8366	0,0051
Grenade throwing, <i>m</i>	0,017892	0,0064137	7,7820	0,0053
Pull-ups, <i>times</i>	0,027340	0,0095855	8,1350	0,0043
Swimming, <i>s</i>	0,017251	0,0075507	5,2199	0,0223

Taking into account the data of the analysis received from the scientific works of well-known scientists [1; 2; 8] and our own research results, a step-by-step methodology for teaching applied military heptathlon to high school seniors was developed. The regularities of the formation of the movement technique for each heptathlon event and the features of the technical and tactical structure for their training and improvement were determined in accordance with the level of functional and motor fitness of the organism and personal psycho-motivational priority for performing physical loads that model the development of certain motor qualities, namely, speed, speed and strength, strength or overall endurance of the organism.

The peculiarity of special preparedness of the senior pupils in the applied military heptathlon is the performance of physical exercises of different types during both training and competitions in the state of physical fatigue, accompanied by a deficiency of oxygen, which is necessary to ensure a high level of both physical and mental performance. Depending on the tasks, special physical exercises were chosen, aimed at a complex or selective action on the systems of the body or some parts of the body. The orientation of motor activity is determined in relation to the intensity of classes, duration of exercises, duration and type of rest, the number of classes during the week, and the rates of increase in loading during the week, and month.

Accordingly, we took into account personal regularities of the development of stages of the formation of special skills and techniques of motor activity peculiar to each event of all-round in order to optimize the overall sport result based on the consideration of individual sensitive periods of their development and the stages of body formation of boys of the senior school age.

The methodology was implemented during three stages. At the first stage (getting involved in training, 4 weeks) the boys were acquainted with the applied military heptathlon, and the technique of training. The classes were 4 times per week. The content of the classes was focused on the gradual bringing of the physical qualities of senior pupils to an optimal level close to the model characteristics. Physical exercises were aimed at evoking young people's interest in motor activity, at creating an optimistic mood and motivation for systematic physical activity.

Besides, it was taken into account that change of the nature and amount of training loads can purposefully influence adaptation processes, thus developing and strengthening various functional systems of the body and simultaneously improving the level of development of physical qualities. Thus, students' performance of physical loads of the applied military heptathlon, geared towards, for example, the development of the overall endurance of the body (3000-meters race), was aimed, first of all, at improving the cardiovascular and respiratory systems, improving metabolism, increasing carbohydrate reserves because of the rapid mobilization of which from the liver, the level of the body's physical performance increased in general. Meanwhile, the use of power loads (pulling-up, grenade throwing) contributed to the performance of physical exercises, which had a positive effect on the development of the muscular system.

The optimal correlation of means and methods of physical exercises of different structure of performance and orientation in different modes of use of volume and intensity of their performance was used at each training activity of applied military heptathlon in order to improve the physiological effect of adapting various organs and systems of the body to the new requirements of loading activity, that is, the adaptation of the functions of various organs to the new conditions of their activity on the basis of manifestation of the most important biological regularity «the work builds an organ». The physiological improvement of the functioning of organs and the improvement of their activity is due to the fact that after physical exertion the expended energy was restored to a higher level compared to the past, that is, to the superrestoration. Thus, it made it possible to plan the use of the means and methods of the following training sessions and, accordingly, to optimize the volume and intensity of the introduction of physical activity against the background of the increased performance of the body, which again contributed to a further level of its improvement.

At the second stage (main, 23 weeks) systematic applied military heptathlon classes were conducted with a total of 5 lessons per week. In the training process, the physical activity aimed at improving the technique of grenade throwing, swimming, 3000-meters race and pulling-up on a crossbar in the air prevailed. The main focus of the types of training was determined by the results of the application of the method of logistic regression. It is these events that make the greatest contribution to the overall athletic performance. Also, in view of the complexity, the techniques of obstacle navigation and shooting were added to the types of training at this stage. Attention was drawn to the development of physical qualities against the background of improving the protective forces and the resistance of the body to adverse environmental factors.

The training process at the third stage of preparation (improvement, 8 weeks) envisaged the expansion of the volume of implementation of various physical activities in accordance with the functional state and level of fitness of the body, depending on its adaptive abilities during 5 lessons per week. On the basis of

maintaining systematic training in grenade throwing, swimming, 3000-meters race, pulling-up, obstacle navigation, shooting, and 100-meters race, the intensity of physical activity gradually increased. Considerable attention of the young men was focused on the methodology of increasing the level of preparedness in the applied military heptathlon by means of individual exercises.

The process of the formation of physical and psycho-emotional efforts in the difficult conditions of multidirectional training activity during the competition was provided by a subjective assessment of their own feelings during the performance of the types of physical activity of the applied military heptathlon, the ability to objectively assess the situation, discipline, responsibility and the ability to make independent decisions, that were also recorded in a three-point assessment in training books. The optimization of the training process in the system of applied military heptathlon training of high school seniors in extracurricular activities was also ensured by the organization and use of a number of pedagogical conditions: effective management, target selection and the direction of the interests of young people to perform physical exercises of a diverse applied military orientation against the backdrop of the formation of the need for personal harmonious perfection of the body.

In order to check the effectiveness of the developed methodology for teaching applied military heptathlon to high school seniors in extracurricular activities, a pedagogical experiment was conducted with high school seniors on the basis of the Volyn Regional Lyceum with enhanced military-physical training.

The consequences of the pedagogical experiment allowed us to assert that in young men the level of special and general physical fitness, functional abilities, and motivation for sports activity statistically improved ($P < 0,001$).

The results of the ROK-analysis (percentage of correctly classified cases) according to the obtained data are 95.12%, which is illustrative of a fairly high level of development of high school seniors' fitness for performing events of military-applied heptathlon.

Conclusions. The results of the analysis of theoretical and empirical data imply the necessity of using in the system of preparation of young people for service in the Armed Forces such means that would carry out a complex influence on the development of physical, applied and patriotic qualities. It has been determined that military sports all-round and, in particular, applied military heptathlon is widely used for the successful formation of the qualities and skills important for combat activity in servicemen.

Model characteristics of the participants of The Ukrainian Applied Military Heptathlon Contest for the youth undergoing prescription military training are characterized by high results in all events. Average pull-up performance is 17.07 times, obstacle navigation – 02 min 09 s, 100-meters race – 13.01 s, 3000-meters race – 11 min 31 s, swimming – 41.01 s, grenade throwing – 40.89 m, shooting – 49.27 scores.

The importance of universal training in all events of applied military heptathlon is confirmed by the correlation between the types of all-round preparedness and the total amount of received points. Thus, the closest interconnected results are the ones of the obstacle navigation and 100-meters race ($r = 0,54$), obstacle navigation and the points for 100-meters race ($r = -0,53$), obstacle navigation and the points for 3000-meters race ($r = -0,43$). The following results have the average level of interrelation: the results of pull-ups and the obtained points for 3000-meters race ($r = -0,32$), the results of 100-meters race and the obtained points for 50 meter swimming ($r = -0,31$), the results of 100-meters race and points for grenade throwing ($r = -0,32$).

The results of the study allowed us to develop a step-by-step methodology for teaching applied military heptathlon to high school seniors. The direction of motor activity in relation to intensity of classes as well as duration of exercises, duration and character of rest, number of classes during the week, tempo of training loading increase during the week and month is determined. Accordingly, we took into account personal regularities of the development of stages of the formation of special skills and techniques of motor activity peculiar to each event of all-round in order to optimize the overall sport result based on the consideration of individual sensitive periods of their development and the stages of body formation of boys of the senior school age.

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