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THE STRUCTURE OF GENERAL PHYSICAL FITNESS OF GIRLS – FUTURE OFFICERS DURING TRAINING AT THE MILITARY ACADEMY

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Abstract

The study objective consist in studied the structure, which marked the change in the general physical fitness of the same girls throughout the period of their studies at the military academy.

Materials and Methods. The study involved 108 girls, their age at the beginning of the study was 17-18 years. Taking into account the recommendations of experts, a battery of tests was used to assess the development of basic motor skills. Testing took place at the beginning of each new school year.

Results. Received evidence of this. During the training at the military academy, the general physical fitness of girls changes every year, which has its own structure with features that depend on the year of study. The first such structure is determined by static strength endurance, flexibility, speed qualities, and muscular force, during the second year of study – static strength endurance, aerobic endurance, and coordination in cyclic locomotions, during the third – flexibility, explosive force, and aerobic endurance, during the fourth – muscle strength, speed, and aerobic endurance.

Conclusions. Establishing the structure of physical fitness of girls – future officers during each year of study at the military academy is an important task. To improve the general physical fitness of girls – future officers, it is advisable to design the content of the program, taking into account the results. The program should focus on the development of motor skills that form a certain structure of change in the general physical fitness of girls in a given year of study.

Keywords: military academy, physical fitness, structure, program.

Introduction

The professional competence of the military of various ranks and any specialty is determined by a set of characteristics (Romanchuk et al., 2012; Duncan, 2016). However, one of the determinants continues to be physical fitness (Kennedy, & Neilson, 2002; Romanchuk et al., 2019; Padgett, 2016). In the Armed Forces and other paramilitary formations of Ukraine, such training is aimed at developing qualities that provide a high level of individual military-professional skills of a modern soldier, including instant assessment of the situation, speed, accuracy and maneuverability, physical and mental endurance (Guidelines, 2009).

In the leading armies of the North Atlantic Alliance, physical education and sports are one of the main means of developing professionally important qualities of future officers, in particular, leadership and team spirit, the ability to mobilize all forces to solve specific professional tasks, including in combat (Shchegolev, 2014; Duncan, 2016). As you can see, the fact of connection and dependence of professional competence of future officers on the state of their physical fitness does not need to be proved. This fully applies to girls – future officers (Boyarchuk, 2010; Sliusarchuk & Iedynak, 2015; Dobrovolsky, 2018). Due to the importance of physical fitness, researchers have studied it in future officers in various areas. According to studies by Ivashchenko et al. (2016), Melnykov et al. (2018), Romanchuk et al. (2020), one of these areas is related to the study of the factor structure of physical fitness of young people studying in various institutions of higher education. However, in this direction,

there are almost no studies on the physical fitness of girls – future officers during their training at the military academy (Boyarchuk, 2010; Dobrovolsky, 2018). This also applies to both components of such training, namely special and general (Slyusarchuk, Kedrych, & Dovgal, 2020; Slyusarchuk, Marchuk, V., & Marchuk, D., 2020; Slyusarchuk, 2020) In addition, there are no studies aimed at determining the structure of each component of physical fitness. In connection with the latter, we note the prospects of the approach, which involves the use of empirical data that reflect the change in each studied indicator over a period of time, rather than the manifestation of values at the time of their receipt. In other words, it is proposed to study the structure of change in general (special) physical fitness, rather than the manifestation of indicators of this fitness at a given time. The importance and necessity of information about the structure of change in physical fitness is related to the possibility to improve the content of training programs for physical training of girls – future officers, taking into account the dynamics of their performance during each year of training at the military academy. This will help increase the effectiveness of the programs used in terms of achieving the highest possible results.

Purpose of the research is studied the structure, which marked the change in the general physical fitness of the same girls throughout the period of their studies at the military academy.

Materials and methods

Study participants

The study involved the same 108 girls – future officers who studied in the military academies of Ukraine throughout the four years. At the beginning of the study, their age was in the range of 17-18 years. The focus was on general physical fitness, namely the structure of its change during each year of girls' education. The results of tests that took place at the beginning of each new year of study were given.

Study organization

To obtain the necessary data, a battery of tests was formed. These tests met the established requirements (Turvey & Fonseca, 2009; Schmidt & Lee, 2013) and contained the most common in the practice of physical education motor tasks (Eurofit, 1993; Fitness testing, 2017; Thomas, Nelson, & Silverman, 2011). What is physical fitness, 2017). Various motor qualities were investigated using the following tests: dynamometry (handgrip Camry dynamometer, back dynamometer from Baseline Products) – maximum isometric strength; jump in length from place – speed force of muscles of lower extremities; hanging on the arms bent at the elbows – static strength endurance; leaning forward sitting – flexibility; 30-m run test – speed qualities; 12-minute run to the maximum distance (Cooper-Test) – aerobic endurance; shuttle run 4×9 m –coordination in particular of cyclic locomotion.

Carrying out dynamometry assumed that the subject according to the instruction takes the device in a palm, lowers a hand downwards and takes away aside-outside on 15-20°. Then press your fingers on the appropriate part of the device with maximum force. Each girl performed this action three times, but the best result was taken into account; measurement accuracy – 0.5 kg. The "jump in length from place" test was performed in the gym on a specially marked area. This section provided: a starting line, which began the field to jump forward; starting from one meter from the start line to the left and right there was a marking every centimeter. The jump was performed as follows: the subject stood on the starting line so that the tips of the toes touch the inner edge of the line; after that she bent her legs at the knees, tilted her torso forward, and took her arms back, that is, took a position, as at the start of the swimmer. At the same time, the angle of bending in the knee joints, the tilt of the torso forward and the withdrawn arms, each girl chose for herself individually. Basic conditions: maximum convenience of the starting position to demonstrate the greatest result; after landing, the girl remained in place until the result was determined; the test was performed three times, taking into account the best result – the maximum length of the jump in centimeters, and the accuracy of measurement – 1 cm. To establish the result used laser level BOSCH_GLL_2-10-carton, which forms a laser beam sector for jumps with a mark and a point on the edge of the heel. If both heels were not on the same line after the jump, then use the point on the heel that is closer to the starting line. The test "hanging on the arms bent at the elbows" was performed on a high crossbar, the starting position of the "chin over the crossbar". With the beginning of the adoption of such a position, the stopwatch was turned on, and turned off when the girl reached the position of "bar below eye level". The test involved one attempt, performed after a preliminary preparation of exercises for the muscles and joints of the upper extremities; measurement accuracy one second. The test "leaning forward sitting" provided: the starting position "sit, legs apart", while performing the tilt with your hands to stretch forward as far as possible, legs at the knees do not bend; after the maximum possible tilt forward determine the result of the girl with an accuracy of one centimeter. The starting point was the third finger, and the zero mark was at the level of the girl's back; on both sides of the tilt sector, there was a marking every inch. Three attempts were made, taking into account the best result. The instrument and method of determining the result were similar to those used in the "long jump" test. The "30 m run" test was performed as follows: from the "high start" position on the team of the teacher, two girls started running with the maximum possible speed to the finish line; determined the time of overcoming the distance. The teacher and his assistant were at the finish line, the teacher gave the command to start the run (lowering the flag from top to bottom) and at the same time turned on the stopwatch. His assistant did the same, and he recorded the result of the girl who finished second, and the teacher – the result of the winner. The measurement accuracy was 0.1 s. The organization and methodology of the 12-minute long-distance run or Cooper's running test did not differ from the existing recommendations of this American researcher. In particular, girls are asked to cover the maximum distance during the specified time, using running and walking. It is allowed to arbitrarily switch from running to walking and vice versa. Along the entire length of the treadmill, there are flags, the distance between them is 20 m. On the command of the teacher "Rush" girls from a high start running. The teacher records the number of complete circles that the girls have overcome, and after

12 minutes gives the command "Stop". The girls immediately stop on the spot, the teacher records the distance of the incomplete circle, which each girl overcame, guided by the flag: to the number of complete circles he adds the distance of the incomplete circle; such a distance is determined by the number of flags at that distance, which are multiplied by the distance between them (20 m); measurement accuracy – up to 10 m. When performing the test "shuttle run 4 × 9 m" took into account the generally accepted organization and methodology (Omorczyk, Lah, 2009). The main ones in terms of equipment are as follows: a track 10 m long is limited by two parallel lines; for each two semicircles of 0.5 m with the center on the line; two stuffed balls, Casio stopwatch with a measurement accuracy of 0.01 s. The method of the test included: on the team of the teacher "On the start" the girl took the starting position "high start" on the starting line on either side of the stuffed ball; under the Rush team, the girl overcame the first 9 m, ran around the stuffed ball from the right side, then overcame the second section of 9 m and ran around the stuffed ball again, then repeated the above steps twice and finished. The test execution time was recorded, the result was determined with an accuracy of 0.1 s, two attempts were made, and the best result was taken into account.

Statistical analysis

All statistical analyzes were performed using SPSS Version 21. The test results were processed using factorial analysis, which involved determining the major components and using varimax rotation to normalize the data (Khalafian, 2007). In this case, only statistically significant values were taken into account, namely at the level of $\alpha = 0.05$. The organization of the study took into account the provisions of the Гельсінської декларації of the World Medical Association (WMA-2013) on the ethical principles of medical research with human participation; the research protocol was approved by the ethics commission of Taras Shevchenko National University "Chernihiv Collegium".

Results

During the first year of training for girls – future officers, the change in their general physical fitness was characterized by a structure formed by five statistically independent factors. The total contribution of the four factors to the total variance was 71%. This indicated that the contribution of other, unidentified factors, was at the level of 29% (Table 1-3). The most important indicator of the first factor was hanging on the arms bent at the elbows. Its factor load was 0.745 ($p<0.05$), and the contribution of the factor to the total variance was 19.6%.

The contribution of the second factor to the total variance was 18.7%, the most important indicator here is the forward sitting ($r = 0.778$; $p < 0.05$).

The contribution of the third factor to the total variance was at the level of 16.9%, the most important indicator on this factor was running 30 m, the factor load of this indicator was (-0.844) ($p <0.05$).

The fourth factor was characterized by the following features: the contribution to the total variance – 15.8%, the most important indicator on this factor – the dynamometry of the hand, its factor load – (-0.921) ($p < 0.05$).

Table 1. Evaluation of the Feasibility of Applying Factor Analysis to change the girl's physical fitness during the first year of study

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.507
Bartlett's Test of Sphericity	Approx. Chi-Square	37.489
	Df	21
	Sig.	.015

Table 2. Results of Factor Analysis. Rotated Component Matrix in the change of the girl's physical fitness during the first year of study

No	Indicator	Component				h^2
		1	2	3	4	
1.	Running 30 m	-.187	.241	-.844	.090	.782
2.	Wrist dynamometry	-.015	.019	.020	-.921	.773
3.	Long jump from a place	.721	.096	.243	-.173	.648
4.	Leaning forward while sitting	.086	.778	-.025	.182	.651
5.	Shuttle run 4×9 m	-.493	.342	.621	.203	.800
6.	12-minute run	-.105	-.711	.100	.338	.581
7.	Hanging on the crossbar	.745	.123	-.121	.185	.585

Table 3. Total Variance Explained in the change of of the girl's physical fitness during the first year of study

Component	Rotation Sums of Squared Loadings	
	% of Variance	Cumulative %
1	19.600	19.600
2	18.723	39.433
3	16.885	55.891
4	15.821	71.029

Thus, during the first year of training of girls – future officers in the military academy, the change in their general physical fitness by 71% was due to a change in the development of static strength endurance, flexibility, speed and muscle strength. As for the remaining 29%, they contained other, but we have not established the motor abilities of girls.

During the second year of study, the structure of changes in the general physical fitness of girls – future officers differed from that established one year earlier. Thus, this structure was formed by four independent factors, namely three determined it by 62.3%; the remaining 37.7% combined other factors, but we did not identify them. The most important indicator of the first factor was hanging on the arms bent at the elbows. The contribution of this factor to the total variance was 21%, and the factor load was 0.756 ($p < 0.05$). The peculiarity of the second factor was as follows: the most important indicator – Cooper-Test, its factor load – 0.860 ($p < 0.05$), the contribution of the factor to the total variance – 22.1% (Table 4-6).

The third factor also contained only one of the most important indicators. Such an indicator was coordination in cyclic locomotions, its contribution was 19.2%, and the factor load was 0.787 ($p < 0.05$).

Table 4. Evaluation of the Feasibility of Applying Factor Analysis in the change of the girl's physical fitness during the second year of study

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.501
Bartlett's Test of Sphericity	Approx. Chi-Square	40.210
	Df	21
	Sig.	.013

Table 5. Results of Factor Analysis. Rotated Component Matrix in the change of the girl's physical fitness during the second year of study

No	Indicator	Component			h^2
		1	2	3	
1.	Running 30 m	-.283	-.173	.551	.414
2.	Wrist dynamometry	.672	-.137	.558	.781
3.	Long jump from a place	.598	.097	-.265	.437
4.	Leaning forward while sitting	.034	.853	.072	.733
5.	Shuttle run 4×9 m	-.090	.134	.787	.646
6.	12-minute run	.059	.860	-.109	.755
7.	Hanging on the crossbar	.756	.056	-.152	.598

Table 6. Total Variance Explained in the change of the girl's physical fitness during the second year of study

Component	Rotation Sums of Squared Loadings	
	% of Variance	Cumulative %
1	21.046	21.046
2	22.121	44.448
3	19.189	62.343

Thus, during the second year of training of girls – future officers in the military academy, the change in their general physical fitness by 62.3% was due to the change in static endurance, aerobic endurance and coordination in cyclic locomotions; the remaining 37.7% contained non-established motor abilities.

During the third year of training of girls – future officers, it was found that the change in their general physical fitness is characterized by a structure formed by four statistically independent factors. The total contribution of three of them to the total variance was 55%, the contribution of other, but not established by us, factors was at the level of 45%. At the same time, only one of the most important indicators was singled out on the first factor, and it was the inclination of sitting forward. The factor load of this indicator was ($r = -0.831$; $p < 0.05$), and the contribution of the factor to the total variance was 16.7% (Table 7-9).

The second factor also identified only one of the most important indicators. It was a long jump from a place, the factor load of which was 0.667 ($p < 0.05$), and the contribution to the total variance was 19.9%.

The third factor was marked by the contribution to the total variance at the level of 18.4%. The most important indicator of this factor was Cooper-Test, and the value of its factor load was 0.742 ($p < 0.05$).

Table 7. Evaluation of the Feasibility of Applying Factor Analysis to change the girl's physical fitness during the third year of study

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.599
Bartlett's Test of Sphericity	Approx. Chi-Square	34.452
	Df	21
	Sig.	.032

Table 8. Results of Factor Analysis. Rotated Component Matrix to change the girl's physical fitness during the third year of study

No	Indicator	Component			h^2
		1	2	3	
1.	Running 30 m	.526	.312	.434	.562
2.	Wrist dynamometry	-.001	.655	.135	.447
3.	Long jump from a place	.251	.667	-.236	.562
4.	Leaning forward while sitting	-.831	.113	.005	.704
5.	Shuttle run 4×9 m	.257	.092	.658	.507
6.	12-minute run	-.125	.012	.742	.566
7.	Hanging on the crossbar	-.219	.635	.212	.496

Table 9. Total Variance Explained to change the girl's physical fitness during the third year of study

Component	Rotation Sums of Squared Loadings	
	% of Variance	Cumulative %
1	16.659	16.659
2	19.910	40.609
3	18.434	54.912

Given the above, the change in the general physical fitness of girls – future officers during the third year of training by 55% was due to changes in flexibility, explosiveness and aerobic endurance; the remaining 45% contained unidentified motor abilities.

In the last year of training, the data obtained showed four statistically independent factors that determine the change in the general physical fitness of girls – future officers. At the same time, the total contribution of the three factors was 60.6%, and the remaining 39.4% were unidentified factors. The specification of the selected factors indicates that the first factor contained one indicator with a statistically significant value of the factor load. This indicator was the dynamometry of the hand, and the value of the factor load was 0.744 ($p < 0.05$) (Table 10-12).

The contribution of the second factor to the total variance was equal 18.7%. To a large extent, this volume was formed by one indicator, namely running 30 m, as it was marked by the largest factor load, which was (-0.699) ($p < 0.05$).

On the third factor, only one indicator was singled out, but the contribution to the total variance was 17.2%. Such an indicator was Cooper-Test, and the value of the factor load – (-0.889) ($p < 0.05$).

Given the above data, it was noted that the change in the general physical fitness of girls – future officers during

Table 10. Evaluation of the Feasibility of Applying Factor Analysis Matrix in the change of the girl's physical fitness during the fourth year of study

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		0.504
Bartlett's Test of Sphericity	Approx. Chi-Square	40.010
	Df	21
	Sig.	.011

Table 11. Results of Factor Analysis. Rotated Component Matrix in the change of the girl's physical fitness during the fourth year of study

No	Indicator	Component			h^2
		1	2	3	
1.	Running 30 m	.229	-.699	-.202	.582
2.	Wrist dynamometry	.744	.004	.042	.555
3.	Long jump from a place	.448	.473	.238	.481
4.	Leaning forward while sitting	.650	-.174	.119	.467
5.	Shuttle run 4×9 m	.081	.672	-.278	.536
6.	12-minute run	.124	.051	-.889	.809
7.	Hanging on the crossbar	.692	.329	-.469	.808

Table 12. Total Variance Explained Matrix in the change of the girl's physical fitness during the fourth year of study

Component	Rotation Sums of Squared Loadings	
	% of Variance	Cumulative %
1	24.714	24.714
2	18.651	43.363
3	17.161	60.524

the fourth year of training by 60.6% was due to changes in muscle strength, speed and aerobic endurance, while the remaining 39.4% – a change in undetected motor abilities.

Discussion

Establishing the structure of physical fitness of girls – future officers during each year of study at the military academy is an important task. This is primarily due to the ability to identify the components of physical fitness on which it depends the most (Ivashchenko et al., 2016; Melnykov et al., 2018). In practical terms, such data can contribute to the formation of a training program that takes into account the identified dependence. In particular, the content of the program focuses on the development of motor skills that form the established structure.

The obtained data allowed to establish the motor qualities to which the training program should give priority status in a certain year of girls' education. Thus, during the first two years of study, one of the leading places in the structure of changes in the general physical fitness of girls was occupied by static strength endurance, and during the second or fourth years of study – aerobic endurance. As for the other studied components of general physical fitness, there is another feature. It consisted in the fact that during a certain year of study, motor qualities were additionally singled out, which also occupied a leading place in the structure of change. For example, during the first and third years of girls' training, this quality was flexibility, during the first and fourth years – speed and muscle strength, during the second year – coordination in cyclic locomotions, during the third – explosive force.

The identified features were associated with a set of reasons, one of which is a sensitive period of development of motor quality. Thus, for muscle strength, this is the period of 17-18 years (Balsevich, 2000), ie during the first year of girls' training at the military academy. The data obtained showed a significant improvement in this motor quality during the first year of girls' education and a tendency to deteriorate during the fourth. In the latter case, the result was associated with a lack of loads in the training program used to develop this motor quality. This age period, although not sensitive to the development of muscle strength, but here you can also achieve a positive result. The main condition for this is a larger amount of training loads than in the case when the motor quality is in the sensitive period (Katzmarzyk & Silva, 2013). The use of such amounts of training will not only improve the muscular strength of girls, but also a positive change in the state of general physical fitness. This is due to the cross-effect, which may form the basis of cumulative adaptation, which is formed in girls (Wilmore, Costill, & Kenney, 2012). The essence of this effect is the development of motor quality or several that were not exercised (Schmidt & Lee, 2013).

For another motor quality, which was distinguished in girls, namely explosive power, the period of 19 and 22 years is sensitive (Radzinska, 1999). The obtained data are to some extent consistent with the above: during the third year of study at the military academy, the explosive power of the girls – the future officers of the girl showed a tendency to improve. This slight change was explained by the lack of loads in the training program used to ensure the development of explosive power. This is one of the determining reasons for the lack of significant growth in the level of development of any motor quality (Wuest & Bucher, 2005).

A similar conclusion was made after analyzing the data on the positive trend, which marked the state of development of coordination in running, because sensitive for girls is the period of 17-19 years (Balsevich, 2000).

As for the static strength endurance of girls, the sensitive period is 17-18 years, for endurance during the dynamic mode of operation in the zone of maximum and submaximal intensity – 17 years (Kuramshin, 1998), general coordination – 19-20 years (Karpeev, 1998). This was considered as the main reason for the separation of static strength endurance in the structure of changes in the general physical fitness of girls during the first two years of study. The need for a targeted impact on this motor quality was also confirmed by the data of its changes, namely a significant improvement during the first and a positive trend during the second year of study.

Other motor qualities, identified in the structure of changes in the general physical fitness of girls – future officers, to some extent consistent with existing information. In particular, the aerobic endurance of girls at the age of

17 reaches high values, but usually does not exceed 90% of the level of an adult. Therefore, the period of 15-20 years is considered sensitive, and the maximum values of girls reach 25 years (Bergtraum, 2020). Such information is to some extent consistent with the data obtained on the change in the state of development of this motor quality. The change is positive during the second, negative during the third year of study, and during the fourth shows a significant improvement. One of the reasons for the negative trend in the change of the state of development of this motor quality was associated with the inadequate amount of loads of the corresponding orientation, which were provided by the training program of the girls.

The interpretation of data related to speed qualities was similar, except for the following: the period up to 14 years is sensitive, maximum values are reached at 15 years, but some characteristics can improve up to 25 years and even later (Balsevich, 2000; Katzmarzyk & Silva, 2013; Bergtraum, 2020). As for flexibility, its development can occur after the most favorable adolescence, in particular during 18-25 years and even later; but a positive result is provided by a very large number of repetitions of each such exercise (Alter, 2004). According to our data, the flexibility of girls improved significantly during the first year of study, but deteriorated during the fourth. In the latter case, this result was associated with the lack of loads aimed at developing this motor quality, which were provided by the training program used by the girls.

Conclusions

During training at a military academy, the general physical fitness of girls – future officers changes every year, which has its own structure with features that depend on the year of study. During the first such structure is determined by static strength endurance, flexibility, speed qualities and muscular force, during the second year of study – static strength endurance, aerobic endurance and coordination in cyclic locomotions, during the third – flexibility, explosive force and aerobic endurance, during the fourth – muscle strength, speed and aerobic endurance. To improve the general physical fitness of girls – future officers, it is advisable to design the content of the program, taking into account the results. The program should focus on the development of motor skills that form a certain structure of change in the general physical fitness of girls in a given year of study.

Conflict of interest

The authors state no conflict of interest.

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СТРУКТУРА ЗАГАЛЬНОЇ ФІЗИЧНОЇ ПІДГОТОВЛЕНОСТІ ДІВЧАТ – МАЙБУТНІХ ОФІЦЕРІВ ПІД ЧАС НАВЧАННЯ У ВІЙСЬКОВІЙ АКАДЕМІЇ

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Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 8 с., 12 табл., 32 джерела.

Мета дослідження полягала у вивченні структуру, якою відзначалася зміна загальної фізичної підготовленості тих самих дівчат протягом усього періоду їхнього навчання у військовій академії.

Матеріали та методи. У дослідженні взяло участь 108 дівчат, їхній вік на початку дослідження становив 17-18 років. Ураховуючи рекомендації фахівців, використовували батарею тестів, що дозволяла оцінити розвиток основних рухових якостей. Тестування відбувалося на початку кожного нового навчального року.

Результати. Одержали дані, що свідчать про таке. Під час навчання у військовій академії в загальній фізичній підготовленості дівчат щороку відбувається зміна, що має свою структуру з особливостями, які залежать від року навчання. Протягом першого визначають таку структуру – статична силова витривалість, гнучкість, швидкісні якості й м'язова сила, протягом другого року навчання – статична силова витривалість, аеробна витривалість і координація у циклічних локомоціях, протягом третього – гнучкість, вибухова сила й аеробна витривалість, протягом

четвертого – м'язова сила, швидкісні якості та аеробна витривалість.

Висновки. Встановлення структури фізичної підготовленості дівчат – майбутніх офіцерів під час кожного року навчання у військовій академії є важливим завданням. Для поліпшення загальної фізичної підготовленості дівчат – майбутніх офіцерів доцільно проектувати зміст відповідної програми, враховуючи одержані результати. Програма повинна передбачати акцент на розвиток рухових якостей, що утворюють визначену структуру зміни в загальній фізичній підготовленості дівчат у певний рік навчання.

Ключові слова: військова академія, фізична підготовка, структура, програма.

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