



## Changing body structure components and motor skills in Military High School students within one year

Promena komponenti strukture tela i motoričkih sposobnosti kod učenika Vojne gimnazije tokom jedne godine

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### Abstract

**Background/Aim.** Proper growth and development of adolescents in the morphological, functional and psychosocial aspects is the imperative of the educational process. The aim of this study was to determine the status and changes in the indicators of morphological characteristics, motor skills and lifestyle habits among the students of the Military High School in Belgrade. **Methods.** The study included 217 students aged 15 to 18 years (from the first to the fourth grade). The two measurements performed at the intervals of one year were used to determine: the body structure by means of 10 variables and motor skills by 4 variables, while life habits were determined by 25 variables. **Results.** The differences in the indicators of morphological characteristics were recorded in all the groups, being the highest in the first year of schooling. During the period of growing up, a reduction of fatty component in percentage values was found, as well as an increase of muscle mass. The progressive growth of motor skills in the first, second and the third grade was recorded in the manifestation of power, and endurance improved only in the first year. In terms of dietary habits, there was no difference among the groups. **Conclusion.** The obtained results indicate proper morphological and motor development and the formation of lifestyle habits. The data obtained will serve as a basis for health and functional prevention and upgrading in terms of improvement of the process of military education.

### Key words:

students; military personnel; adolescents; serbia; physical education and training; body composition; attitude to health; questionnaires.

### Apstrakt

**Uvod/Cilj.** Pravilan rast i razvoj adolescenata u morfološkom, funkcionalnom i psihosocijalnom pogledu jeste imperativ vaspitno-obrazovnog procesa. Cilj ovog rada bio je da se ustanovi stanje i promene u pokazateljima morfoloških karakteristika, motoričkih sposobnosti i životnih navika kod učenika Vojne gimnazije u Beogradu. **Metode.** Istraživanjem je bilo obuhvaćeno 217 učenika, uzrasta od 15 do 18 godina (od prvog do četvrtog razreda). U dva merenja u razmaku od godinu dana određivani su telesna struktura pomoću 10 varijabli, motoričke sposobnosti pomoću četiri, a životne navike pomoću 25 varijabli. **Rezultati.** Razlike u pokazateljima morfoloških karakteristika evidentirane su kod svih grupa i bile su najveće u toku prve godine školovanja. Tokom odrastanja, ustanovljeno je sniženje procentualnog iznosa masnog tkiva, a povećanje mišićnog tkiva. Progresivan rast motoričkih sposobnosti do treće godine evidentiran je u ispoljavanju snage, dok je nivo izdržljivosti poboljšan samo u toku prve godine. U pogledu navika u ishrani nije bilo razlika između grupa. **Zaključak.** Rezultati istraživanja ukazuju na pravilan morfološki i motorički razvoj i formiranje životnih navika kod ispitivanih učenika. Dobijeni podaci će poslužiti kao polazna osnova za zdravstvenu i funkcionalnu prevenciju i dalje usavršavanje procesa obrazovanja u vojnom školstvu.

### Ključne reči:

studenti; vojni kolektiv; adolescenti; srbija; fizičko vaspitanje i trening; telo, sastojci; stav prema zdravlju; upitnici.

## Introduction

Modern way of life in all generations has actualized particular lifestyle habits that contribute to increased risk of inappropriate adolescence development and potential health problems in adulthood.

Studies have shown that some of the causes of such a situation can be found in early youth and adolescence, in terms of the formation of inadequate lifestyle habits and the decrease in physical activity, and their transfer into adulthood<sup>1,2</sup>.

Nilsson et al.<sup>3</sup> stated that for proper growth and development, adolescents need at least 60 minutes of physical activity of moderate and high intensity every day. For example, in Hungary in 1987 schoolchildren watched television 35 to 45 minutes, and in 2005, 69 to 84 minutes, while their physical activity outside of school, which was 3 to 3.8 hours *per* week in 1987, reduced to 1 to 1.5 hours in 2005<sup>4</sup>. Furthermore, Sabo<sup>5</sup> states that the body composition even in preschool children is violated and deviates from the standard of posture status.

Generally, it is necessary to follow the development of the entire body structure, as well as lifestyle habits, especially at younger ages, and according to the results determine the course of action. In his study Gajević<sup>6</sup> says that the process of programming and implementation of a system for monitoring morphological and motor skills of children and adolescents requires determination of the level, dynamics and structure of current phenomena, related to gender, age, social, ethnographic, geographic and other characteristics.

In military organization, the morphological and functional status is of great importance, serving, along with the educational work, as the basis for building a person with a high level of emotional stability and cognitive abilities<sup>7</sup>, which are necessary for safe and successful doing tasks in specific jobs (pilots, sailors, special units, etc.).

In order to improve preventive healthcare and functional abilities, it is necessary to diagnose the existing condition and find ways to further educate adolescents, focusing on the problem, in order to reduce the consequences and avoid risks of transferring bad habits in adulthood.

It is indicative that studies on adolescents mostly deal with topics of excessive body weight (obesity) and related conditions as the risk for occurring and developing certain diseases. There are few studies, dealing with adolescent population showing the results of the morphological status and motor skills consistent however, with health standards, except in the case of the study with athletes.

The examinees in this study were the students of the Military High School, which prepares them for further education at the Military Academy, and they should, therefore, be properly guided in terms of nutrition, physical activity and lifestyle habits.

Thanks to specific boarding conditions of life and work, including a strict daily schedule that determines the time for eating, classes, rest, learning, sports activities and sleep, it might be expected that all those positive impacts in the support of proper growth of adolescents in terms of morphological and functional parameters and dietary habits will be

shown with the students of the Military High School. The aim of this study was to perform measurements of morphological characteristics in four generations of students of the Military High School for a period of one year, to test their motor skills and to determine their dietary habits, as initial research with a view of taking the necessary preventive measures that would be incorporated into the military educational process.

## Methods

This longitudinal study included 217 male students of the Military High School in Belgrade, divided into four groups: students of the first year (I,  $n = 68$ ); the second year (II,  $n = 58$ ); the third year (III,  $n = 54$ ) and the fourth year (IV,  $n = 37$ ).

The first measurement of the indicators of morphological status and testing of motor skills was carried out at the beginning of the school year, and the next one at the beginning of the next school year. The survey on the lifestyle habits was conducted in the period of the second measurement.

Measurement of the indicators of morphological characteristics was conducted in the laboratory of the Military Academy, using a BIA "InBody 720" and altimeter "SECA bodymeter 206" with a precision of 1 mm, while the abdominal circumference (AC) was measured with a flexible tape at the level of the navel with a precision of 1 mm.

Indicators of morphological characteristics were determined on the basis of directly measured variables: AC, expressed in cm; body height (BH) expressed in cm; body mass (BM) expressed in kg; body fat mass (BFM) expressed in kg; skeletal muscle mass (SMM) expressed in kg; visceral fat area (VFA) expressed in  $\text{cm}^2$ ; total water (TW) expressed in L.

To assess the morphological characteristics, derived variables were also used: percent of body mass (PBF), calculated as  $\text{BFM}/\text{BM}$ , expressed in %; body mass index (BMI), calculated as  $\text{BM}/\text{BH}^2$ , expressed in  $\text{kg}/\text{m}^2$ ; percent of skeletal muscle mass index (PSMM), calculated as  $\text{SMM}/\text{BM}$ , expressed in %.

A survey on dietary and lifestyle habits was conducted through a questionnaire, which consists of two parts<sup>8</sup>. The first part includes 14 questions about eating habits (type of food consumed, the frequency of daily meals and preferences related to food and beverages), where the answers are validated from 0 to 3. The second part of the survey is related to lifestyle habits (alcohol and cigarettes, physical activity and leisure time), and responses are validated from 0 to 4.

To assess motor skills, the tests that are regularly conducted every year to check the physical ability<sup>9</sup> were used: pull-ups (number of repetitions *per* minute); sit-ups (number of repetitions *per* minute); standing long jump (expressed in cm); 1,600 meter run (expressed in sec).

Statistical analysis was performed in Statistical Package for the Social Sciences (SPSS) version 19.0. The significance of differences of numerical variables within the groups was determined using general linear model – repeated measures and between the groups using *t*-test. To test the categorical variables,  $\chi^2$ -test was used. Differentiation of students based

on numerical and categorical variables was determined by canonical discriminant analysis.

**Results**

Statistically significant differences between the first and second measurement of the variables that define the morphological characteristics were registered in all the variables, but not in all the groups (Table 1).

meter run, a significant increase was registered only in the group I (Table 2).

Canonical discriminant analysis included all 39 variables (Table 2). There are three functions: morphological area (0.738,  $p < 0.0001$ ), motor area (0.559,  $p = 0.001$ ) and the area of lifestyle habits (0.507,  $p < 0.05$ ). Under “original”, the first group of 45 (66.2%) students have the results that confirm they really belong to their group, while 42 students (72.4%) have the results that show they belong to the

**Table 1**  
The results of morphological variables for the students of the Military High School measured in 2012 and 2013

Variables	Study grades											
	I			II			III			IV		
	2012 $\bar{x} \pm SD$	2013 $\bar{x} \pm SD$	$\Delta$	2012 $\bar{x} \pm SD$	2013 $\bar{x} \pm SD$	$\Delta$	2012 $\bar{x} \pm SD$	2013 $\bar{x} \pm SD$	$\Delta$	2012 $\bar{x} \pm SD$	2013 $\bar{x} \pm SD$	$\Delta$
<b>Morphological</b>												
AC (cm)	76.66 ± 6.17	81.46 ± 7.12**	4.80	79.23 ± 6.49	82.71 ± 6.56**	3.48	79.94 ± 5.39	83.53 ± 6.08**	3.58	81.80 ± 5.71	81.46 ± 5.26	-0.34
BH (cm)	176.91 ± 6.48	179.10 ± 6.48**	2.18	178.14 ± 6.09	179.25 ± 6.34**	1.11	179.47 ± 6.36	180.07 ± 6.34	0.59	179.31 ± 6.45	180.03 ± 6.49	0.73
BM (kg)	65.24 ± 8.79	69.64 ± 9.07**	4.40	68.47 ± 9.10	70.09 ± 8.36**	2.45	71.53 ± 8.70	74.33 ± 9.05**	2.79	74.04 ± 9.94	74.15 ± 9.12	0.11
BFM (kg)	7.77 ± 4.00	8.19 ± 3.85	0.42	7.87 ± 4.44	7.27 ± 3.98	-0.60	8.75 ± 4.47	8.74 ± 4.22	-0.01	9.73 ± 5.28	7.79 ± 3.87**	-1.94
SMM (kg)	32.26 ± 4.07	34.76 ± 4.30**	2.50	34.22 ± 3.76	36.22 ± 3.76**	2.00	35.63 ± 3.72	37.4 ± 4.11**	1.61	36.70 ± 4.37	37.94 ± 4.37**	1.24
PBF (%)	11.64 ± 4.43	11.52 ± 4.37	-0.12	11.15 ± 4.91	9.94 ± 4.68**	-1.21	11.93 ± 4.59	11.55 ± 4.25	-0.38	12.80 ± 5.10	10.31 ± 4.21**	-2.49
BMI (kg/m <sup>2</sup> )	20.83 ± 2.53	21.69 ± 2.40**	0.86	21.57 ± 2.57	22.08 ± 2.38**	0.50	22.21 ± 2.46	22.89 ± 2.40**	0.69	23.01 ± 2.68	22.86 ± 2.37**	-0.15
PSMM (%)	49.55 ± 2.57	50.01 ± 2.58*	0.46	50.17 ± 2.92	51.22 ± 2.75**	1.04	49.96 ± 2.56	50.22 ± 2.50	0.27	49.74 ± 3.02	51.27 ± 2.54**	1.53
VFA (cm <sup>2</sup> )	29.54 ± 17.81	32.02 ± 19.31	2.48	30.16 ± 22.67	26.42 ± 20.00*	-3.74	33.61 ± 20.67	34.15 ± 20.39	0.54	37.74 ± 25.18	28.51 ± 19.99**	-9.23
TW (L)	42.18 ± 4.95	45.06 ± 5.20**	2.88	44.36 ± 4.55	46.68 ± 4.53**	2.32	45.74 ± 4.86	47.95 ± 5.05**	2.21	47.13 ± 5.37	48.70 ± 5.45**	1.57
<b>Motor</b>												
PU (n), $\bar{x} \pm SD$	5.40 ± 4.42	6.53 ± 4.16**	1.13	8.55 ± 5.17	10.05 ± 4.87**	1.50	9.98 ± 4.33	11.65 ± 4.03**	1.67	12.24 ± 4.28	12.27 ± 4.07	0.03
SU (n), $\bar{x} \pm SD$	43.09 ± 7.17	50.29 ± 5.25**	7.21	46.69 ± 4.77	48.38 ± 5.01*	1.69	51.93 ± 6.01	51.65 ± 6.61	-0.28	50.89 ± 6.02	50.51 ± 4.21	-0.38
SLJ (cm), $\bar{x} \pm SD$	205.96 ± 21.35	219.57 ± 17.36**	13.62	222.41 ± 15.77	231.41 ± 17.39**	9.00	230.04 ± 16.28	239.17 ± 17.18**	9.13	240.65 ± 15.90	243.22 ± 16.83	2.57
1,600 m run (sec)	427.88 ± 43.88	389.54 ± 27.68**	-38.34	374.88 ± 59.81	376.58 ± 31.22**	1.70	367.61 ± 25.21	364.04 ± 26.58	-3.57	372.03 ± 31.38	363.35 ± 26.50	-8.68

AC – abdomen circumference; BH – body height; BM – body mass; BFM – body fat mass; SMM – skeletal muscle mass; VFA – visceral fat area; TW – total water; PBF – percent of body mass; BMI – body mass index; PSMM – percent of smooth muscle mass index; PU – pull-ups; SU – sit-ups; SLJ – standing long jump; n – number;  $\Delta$  – mean difference;  $\bar{x} \pm SD$  – mean ± standard deviation; \* $p < 0.05$ ; \*\* $p < 0.01$ .

BH was significantly higher in the second measurement in all the groups, and the values of BM were significantly different between the first and second measurement in the first three groups.

Significantly lower BFM values in the second measurement were registered only in the group IV, PBF was significantly lower in the groups II and IV, as well as VFA values.

The SMM values in the second measurement were significantly higher in all the groups, while the PSMM values were higher in the groups I, II and IV. The differences in the results of motor skills were significantly higher in the groups I, II and III (pull-ups), in the groups I and II (sit-ups) and in the groups I, II and III (standing long jump), while for the 1600

students of the other group, and so on. Under “cross validated”, 34 (50%) first-year students, based on functions, really belong to the first group, 29 (50%) students to the second, 22 (40.7%) students to the third, 72.2% of the students belong to the group III and 78.4% to the group IV.

In terms of categorical variables from the survey on dietary and lifestyle habits, the following was shown: significantly fewer number of the group IV students than the students of other groups consumed sweets [ $\chi^2$ -test 20178, degrees of freedom (df) 9,  $p < 0.017$ ]; significantly fewer consumers of cigarettes (smoker,  $n = 27$ ) than other students ( $n = 190$ ) consumed fruit ( $\chi^2$ -test 15,717, df 3,  $p < 0.001$ ), and more of them consumed alcohol ( $\chi^2$ -test 5,362; df 1,  $p < 0.021$ ); consumers of tobacco and alcohol (the “smoking and alcohol group  $n =$

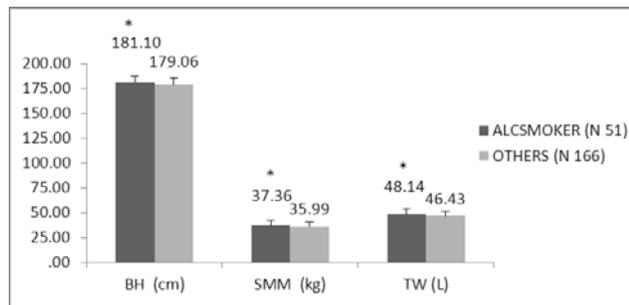
**Table 2**  
Canonical prediction for the students of Military High School

Classification results		Predicted group membership				Total	
		Group	I	II	III		IV
Original	Count (%)	I	45 (66.2)	13 (19.1)	7 (10.3)	3 (4.4)	68 (100)
		II	7 (12.1)	42 (72.4)	5 (8.6)	4 (6.9)	58 (100)
		III	5 (9.3)	4 (7.4)	39 (72.2)	6 (11.1)	54 (100)
		IV	2 (5.4)	2 (10.8)	4 (10.8)	29 (78.4)	37 (100)
Cross-validated	Count (%)	I	34 (50.0)	18 (26.5)	12 (17.6)	4 (5.9)	68 (100)
		II	16 (27.6)	29 (50.0)	6 (10.3)	7 (12.1)	58 (100)
		III	8 (14.8)	9 (16.7)	22 (40.7)	15 (27.8)	54 (100)
		IV	3 (8.1)	6 (16.2)	9 (24.3)	19 (51.4)	37 (100)

51) practise training on an annual basis significantly less ( $\chi^2$ -test 11,935, df 4,  $p < 0.018$ ) than other students ( $n = 166$ ).

It was found that the students of all the four examined group belong to the “smoking and alcohol” group – 18 from the group I, 10 from the group II, 14 from the group III and 9 from the group IV.

In addition, it was found that the group of students the consumers of tobacco and alcohol (alcsmoker,  $n = 51$ ), compared to other students ( $n = 166$ ), had significantly higher values of BH, SMM and TW (Figure 1).



**Fig. 1 – Mean differences in morphological variables: body height (BH), skeletal muscle mass (SMM) and total water (TW) between the alcsmokers (consumers of alcohol and cigarettes) and other students measured.**

## Discussion

When enrolling in the Military High School, students are selected according to the physical status and they are in excellent health, which is regularly monitored during training. During training they live under boarding conditions, have four regular meals and their daily activities and meals are carefully planned. They have two classes of physical education a week and are encouraged to get involved in sports activities in their leisure time, according to personal preferences. Their psychophysical development takes place within institutional educational system and the impact of newly acquired friends in the microenvironment. Maturation during this period involves constant change, both physical and psychosocial, so it is a big responsibility of teachers and professors to enable that the process of four years of schooling sets the right path.

Based on the results of one-year follow-up, there are significant differences in most indicators of morphological and motor characteristics. These results were expected, since this is the age group of 15 to 18 years, a period when adolescents grow up both mentally and physically. The greatest differences in body height were registered during the first year of schooling, or in the period between 15 and 16 years of age (average increase 2.18 cm). Studying the dynamics of the increase in body height, Rogol et al.<sup>10</sup> found that, after a relatively steady increase of 5 to 6 cm/year during childhood, there is a rapid growth (peak height velocity) in boys around the age of 14, then a slowdown due to connecting epiphysis of long bones, followed by the stabilization of height at about 17 years of age. Our study also confirmed a slowdown, expressed in absolute values of the differences between the mean values in the first and second measurement in the first

three groups (group I – 2.18 cm; group II – 1.11 cm, group III – 0.59 cm), while in the group IV a larger value of this indicator (0.73 cm) was registered compared to the group III. Similar results regarding the body height in schoolchildren were also obtained by Gharib and Shah<sup>11</sup>.

In addition to body height, in the first year, the biggest differences were recorded in BM, SMM and AC values. As an accompanying indicator of the general body growth, an increase in TW of 2.88 L was also recorded. These data show a greater increase in body size at the age of 15 to 16 compared to older age groups, when there is also an increase in body volume. Korovljević et al.<sup>12</sup> point out that in the phase of puberty it is the body volume that increases, influenced by an increase in transversal sizes of the skeleton, which at the age of 15 correlates with diameters of bones, and in later adolescence the correlation decreases. Sinobad<sup>13</sup> gives the amount of muscle mass in male high school students of 1st, 2nd, 3rd and 4th year, of 33.8 kg and 34.5 kg, but also the percentage reduction in SMM from 50% to 48%. In contrast, in the Military High School students, significant differences in the fat component of body mass was not observed in either of the groups. Moreover, in the groups II and III, lower values were registered in the second, as compared to the first measurement. In the group IV, BFM values were significantly reduced (1.94 kg), PSMM values were significantly increased in the groups I, II and IV, while PBF values were significantly decreased in the groups II and IV. The reduction in the fat component in absolute and percentage values and the increase in absolute and percentage values of muscle mass in the period of adolescence, from 15 to 18 years of age, were rare, unless in the athletes. In Portugal, for example, overweight and obesity are present in boys from 13 to 17 years of age with 23.6%<sup>14</sup>. In this regard, Zanovec et al.<sup>15</sup> found out that the respondents with a high level of physical activity had a significantly lower percentage of fat component and more lean-tissue mass compared with a group of low-level activities.

A significant improvement in motor skills of the Military High School students was mostly registered in the groups I, II and III, with a plateau in the group IV, except in the case of 1,600 m run, where the only significant difference was noted in the group I, where at the end of the school year, the students, under the influence of a systematic work improved the result by 38 seconds. In contrast, pull-ups and sit-ups values were significantly higher in the groups I, II and III, but not in the group IV. These results can be explained by the fact that the Military High School students have compulsory physical education twice a week. Besides that, 22.6% of the students practice sports once or twice a week, 71.9% three times or more, while only 5.5% of the students are not systematically, but occasionally involved in sports activities in their free time. About 80% of the students practice sports seven or more months during the year. Data on the incidence of sports show no significant differences between the groups, indicating a consistent educational, organizational and motivational impact on the students' affinity towards sports activities. Even 47.1% of the students of the “smoking and alcohol” group ( $n = 51$ ) were registered to be involved in sports activities for 9 months a year or more.

The survey on dietary habits in most of the items does not show significant differences among the groups, which can be explained by the authority of the system and organized concern about the students' diet. In their study on the Belgrade adolescents of both sexes, Đorđević-Nikić et al.<sup>8</sup> show that about 36% of them skip breakfast and that 27.4% are classified in the sedentary group. Our data show that the Military High School students do not skip breakfast. According to Mota et al.<sup>14</sup>, skipping breakfast is associated with the development of overweight/obesity, and the incidence of meals is in inverse proportion to overweight/obesity. Talking about the educational work with adolescents, Pearson et al.<sup>16</sup> emphasize that adolescents, who describe their parents as authoritative, consume more fruit and have better and healthier diets than those who describe their parents as indulgent and negligent. These data are important in connection with the claims by Sweeting et al.<sup>17</sup> that the dietary habits are formed by the age of 15 and are very little changed until 18.

According to Pastor et al.<sup>18</sup>, the national education program on the diet quality gave a positive result in reducing incidence of obesity, the component of metabolic syndrome in adolescents of both sexes from the age of 12 to 16. As the proposal at a strategic level in order to improve the health of population, Enes and Slater.<sup>19</sup> suggest reducing diet that contains fat, such as pizza, chips and popcorn, and encourage the use of sugar free natural juices.

In a certain way, the Military High School as an institution replaces adolescents their family, assuming the role of an authoritative parent and organizing meals without differences in relation to the age of the students. This approach provides a balanced attitude towards food and gives results, which are confirmed in the morphological characteristics, especially in progressive SMM increase and PBF reduction.

The only item in the survey on dietary habits that provides a significant difference among the groups is eating dessert. Much more, the group IV students "occasionally" eat dessert compared to students of other groups, where most of them consume dessert "frequently". Students assigned to smoker group ( $n = 27$ ) eat significantly less fruit. These data can be taken as indicative. According to Pearson et al.<sup>20</sup>, children and adolescents eat significantly less fruit than recommended, and eating fruit in childhood can have the function of protection against cancer in adulthood. The parent – adolescent relationship has a major influence in the development of healthy lifestyle habits,<sup>20</sup> which is of special significance for the Military High School students, as in the course of their education, the system assumes the role of parents.

The students who belong to alscsmoker group (23.5%), compared to the other students, showed significantly better morphological characteristics, evaluated through BH, SMM and TW values. Interestingly, the students of all four groups belong to alscsmoker group. Those are students who are taller and have more muscle mass, and are therefore likely to have felt the need to take a symbolic step into the adult world, accepting a distinctive social model. In addition, they are very young and are not chronic smokers or alcoholics. Cigarette smoking and alcohol drinking (mostly beer) is still at the level of tasting and pleasure testing. In terms of motor skills, evaluated through tests of strength, explosiveness and endur-

ance, they are not significantly different from those of the other Military High School students. Wider community shapes the environment in a way that adolescents recognize a symbol of adulthood in alcohol and cigarettes – "being a man means to light a cigarette and drink beer". A number of authors who have studied this phenomenon highlight that the habits acquired in adolescence are transferred in later periods of life<sup>2,8,14,16,20</sup>, and the educational imperative of the whole society is in understanding and addressing issues of social perception.

In the boarding lifestyle, besides the impact of the institution, the formation of lifestyle habits is also influenced by peers. In their study, Simpinks et al.<sup>21</sup> state two theories that explain the reasons for finding friends. The social theory supports the view of becoming close and making friends based on common activities in a given period, whereas the theory of selection is based on recognizing the similarities. The selection based on similarity can have positive and negative consequences, as mutual induction, i.e. interaction, enhances the impact of either healthy or unhealthy lifestyle habits, depending on the shared content of friendship. In this sense, it is necessary that teachers in boarding conditions are skilled people who know how to recognize the formation of negative tendencies and groups, in order to act accordingly following pedagogical principles.

Including indicators of morphological characteristics, motor abilities and responses to the survey, through canonical discriminant analysis, we estimated belonging to the current class, or find an answer to the question on whether students in different groups according to their characteristics belong to the age group they are in. The results show that 66% of the group I students belong to the right group, and for the other groups, the percentage is as follows: 72.4% (group II), 72.2% (group III) and 78.4% (group IV). Based on the results correlated, 50% of the students from the groups I and II, 40.7% of the students from the group III and 51.4% of the students from the group IV belong to the same group. These data indicate that there is a fine differentiation of morphological and motor skills in relation to age, and that those negative effects, which in the formation of the final image are integrated under the influence of media, peers and the general state of society, have a minimal impact. This is primarily attributable to a uniform educational and organizational influence in teaching and extracurricular activities, which is a system solution used in the Military High School, with the aim of forming a physically and mentally healthy person.

## Conclusion

The study observed a decrease in fat component in body structure and increase in muscle mass, along with an increase in motor skills in the Military High School students for a period of one year. Lifestyle habits related to diet do not differ among the students of different ages. The observed variables show that the institutional educational system applied in the Military High School gives good results aimed at forming a mentally and physically healthy person. The results of this study provide a basis for further research, which will be directed towards improving the process of military education.

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