

# STRUCTURE OF MORPHOLOGICAL CHARACTERISTICS OF STUDENTS OF FACULTY OF SECURITY SCIENCES

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## **Abstract:**

*Set of 17 morphological measures was applied in order to determine the latent structure of morphological characteristics on a sample of 84 students of the first year of the Faculty of Security Sciences at the University of Banja Luka. Using factor analysis, we identified three factors that were interpreted as: volume and body mass factor, the factor of the longitudinal and transverse dimensionality of the body, and the factor of physical body composition which estimate was based on the thickness of the subcutaneous fat tissue. This research represents an attempt to show that segregated latent hierarchical structure of morphological factors has both theoretical and practical values, and these factors should represent certain mean for the prediction of anthropometric characteristics and programming of training operators in the process of teaching Special Physical Education.*

**Keywords:** *morphological characteristics, Faculty of Security Sciences, Special Physical Education Program.*

## **INTRODUCTION**

In all sports activities and skills, as well as in martial arts – in this case, the Special Physical Education (later in the text referred as SFO), the success of learning and the

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(practical) usage of such martial arts and their connections, depends largely on anthropological characteristics and their compatibility with the appropriate sport – skill.

Longitudinal dimensionality, volume and body mass, subcutaneous fat tissue, and transverse dimensionality (factors that determine the morphological space) have long been the subject of research by many authors. The ones that had the population of students as a subject are: Kurelić (1957), Viskić (1972), Stojanović, and associates (1975), Stojanović, and associates (1975), Szirovica, and associates (1980), Hošek and Jeričević (1982), Momirović, and associates (1987), Božić (1994) and Mudrić and Jovanović (2000), and they all point to the existence of four latent morphological dimensions that are considered responsible for explaining individual changes registered in the domain of manifest morphological indicators identified as the factor of longitudinal dimensionality, the factor of the transferal dimensionality, the body's volume factor and the physical body composition factor.

The well-known fact that the performance of an individual in sports depends on the compatibility of his antiprotonic characteristics with certain sports activity, and the research conducted in karate sports (Giampietro and associates (2003), Pieter et al. (2009), Abdel-Baser (2010), Sterkowicz and Przybycien (2010), in boxing: Blažević (2007) and in judo Marchocka (1988), Sertić (1993) and Sertić, Segedi and Žvan (2007) confirm that fact. Hence, based on experience and research related to motor learning, refinement and the efficiency of application of motor patterns, it is rightly believed that each of these factors can be of great help in the planning of curricula in the SFO. Practical experience and research indicate the advantages and disadvantages of certain morphological characteristics that can influence learning, improvement, and realization of specific motor programs. Milošević and associates (1985), Milošević and associates (1987), Božić (1989) and Blagojević (1996) point out the positive relations of longitudinal dimensionality and mechanisms for structuring and reprogramming the motor algorithm, the transferal dimensionality, and the volume of the body with the same mechanisms, but also on the negative relation between the subcutaneous fat tissue and the mechanism for reprogramming the motor algorithm and the mechanism for selective control and regulation of the facilitation and inhibition of peripheral motorways. Considering that the knowledge about the direction and intensity of the activity on the transformation of the psychosomatic status of students enables adequate and optimal programming of the teaching contents of the SFO, and based on the published research, it has been established that the morphological characteristics greatly influence the effectiveness of adoption and application of program Blagojević, (1996), as well as the fact that SFO teaching significantly influences the transformation of morphological characteristics of students Blagojević, (2002) and Jankovic (2009), this research aimed at determining the morphological hierarchical structure in the students of the Faculty security sciences in Banja Luka, to classify students based on morphological characteristics in as homogeneous groups as possible due to better efficiency of teaching in SFO subjects. Considering that the knowledge about direction and intensity of the activity on the transformation of the psychosomatic status of students enables adequate and optimal programming of the teaching contents of the SFO, and based on the research published so far, it has been established that the morphological characteristics greatly influence the efficiency of adoption and application of program contents of SFO, Blagojević, (1996), as well as the fact that teaching SFO significantly influences the transformation of morphological characteristics of students Blagojević, (2002) and Janković (2009), this research aimed at determining the morphological hierar-

chical structure among students of the Faculty of Security Sciences in Banja Luka, in order to classify students based on morphological characteristics in as homogeneous groups as possible for the best possible efficiency of teaching SFO. Based on this defined goal of the research, it is assumed that students of the Faculty of Security Studies have an appropriate structure of morphological characteristics and that the factor analysis algorithm will transform the set of manifest morphological variables into the predicted number of relevant morphological factors.

## **METHODS**

### *Sample of respondents*

The sample of respondents consisted of 84 male students, the first year of the Faculty of Security Studies in Banja Luka, the age of  $19 \pm 0.6$  years. All the entities that constituted the sample were clinically healthy and without obvious morphological defects.

### *The sample of variables*

To evaluate the morphological structure of the body, 17 variables were selected in order to cover a four-dimensional space defined as the longitudinal dimension of the skeleton, the transferal dimension of the skeleton, the subcutaneous fat tissue, and the volume and body mass. The following system of anthropometric variables was used: Body height (AVISTJ), Leg length (ADUZNO), Arm length (ADUZRU), Shoulder width (ASIRAM), Plevis width (ASIKAR), Elbow diameter (ADIJLA), Knee diameter (ADIJKO), Wrist diameter (ADIJRZ), Hock diameter (ADIJSZ), Body weight (ATEZTJ), Volume of the upper arm (AOBNAD), Volume of the forearm (AOBPOD), Volume of the upper leg (AOBNAT), Volume of the lower leg (AOBPOT), Skin fold on the upper arm (AKNNAD), Skin fold on the stomach (AKNTRB) and Skin fold on the lower leg (AKNPOT). Since all variables were measured according to the International Biological Program (IBP) method, the results of this study can be compared with most of the results of similar research in the country and the environment. Respondents were measured by a team of trainees for such measurements, composed of three teachers of Special Physical Education, measurer and one scorer, all male. The following instruments were used for taking these measures: decimal scales, anthropometer, caliper type „John Bull”, centimeter pant, pelvimetar, cephalometer, and slider. The accuracy of the reading was 0.1 mm, 0.1 kg on the scale, and 0.1 cm on the other instruments. All measures were taken three times, taking into account the mean value of the measured results.

## **DATA PROCESSING METHODS**

Statistical data processing was done on the Pentium 4 PC, using the SPSS application program (version 20.00). The basic measures of the central tendency and the dispersion of results are defined by means of Mean and standard deviation (Std. Deviation). In order to test the correctness of data distribution, Kolmogorov-Smirnov test was used,

while in line with the aim of this empirical research, the testing of an alternative hypothesis was performed using a multivariate model of factor analysis. In order to determine the actual relations between the different dimensions, the Direkt Oblimin rotation was used, after which the matrix of the structure and the matrix of the assembly was obtained.

## RESULTS

**Table1** Basic descriptive parameters distribution of anthropometric variables

	N	Mean	Std. Deviation	KS p
AVISTJ	84	181.85	6.13	.932
ADUZNO	84	94.97	4.40	.516
ADUZRU	84	78.03	3.37	.160
ASIRAM	84	40.61	2.05	.033
ASIKAR	84	27.32	1.56	.105
ADIJLA	84	6.57	.47	.000
ADIJRZ	84	5.34	.41	.000
ADIJKO	84	8.93	.72	.000
ADIJSZ	84	7.04	.53	.000
ATEZTJ	84	78.25	9.19	.745
AOBNAD	84	29.53	3.00	.722
AOBPOD	84	26.41	1.81	.381
OABNAT	84	56.77	4.32	.528
OABPOT	84	37.13	2.39	.612
AKNNAD	84	7.64	2.71	.000
AKNTRB	84	11.10	4.72	.007
AKNPOT	84	9.68	2.91	.159
Valid N	84			

**Legend:** N – number of subjects; **Min** – lowest result; **Max** – highest result; **Mean** - arithmetic mean; **Std. Deviation** - standard deviation; **Skewness** - a measure of asymmetry; **Kurtosis** - a measure of elongation; **KS<sub>p</sub>** - probability of Kolmogorov-Smirnov test; **AVISTJ** –body height; **ADUZNO** -Leg length; **ADUZRU** - Arm length; **ASIRAM** - Shoulder width; **ASIKAR** - Plevis width; **ADIJLA** - Elbow diameter; **ADIJKO** - Knee diameter; **ADIJRZ** - Wrist diameter; **ADIJSZ** - Hock diameter; **ATEZTJ** - Body weight; **AOBNAD** - Upper arm volume; **AOBPOD** –Forearm volume; **AOBNAT** - Upper leg volume; **AOBPOT** - Lower leg volume; **AKNNAD** - Skin fold on the upper arm; **AKNTRB** –Abdominal skin fold and **AKNPOT** - Skin fold on the lower leg.

Table 1 shows the descriptive parameters of all measured anthropometric measures. Increased values of the standard deviation of the longitudinal dimensionality measures of the skeleton and body volume indicate a high variability of the results around the arithmetic mean, but taking into account the sample size, this phenomenon can be considered normal.

The results of the Kolmogorov-Smirnov test for the analysis of the normality of the disposition shows that the normal disposition is described by the variables for estimating the longitudinal dimension of the skeleton: body height (AVISTJ), leg length (ADULT) and arm length (ADUZRU), variables for estimating the circular dimensionality of the skeleton and body mass: upper arm volume (AOBNAD), forearm volume (AOBPOD), upper leg volume (AOBNAT), lower leg volume (AOBPOT) and body weight (ATEZTJ)

as well as Plevis width (ASIKAR) and Skin fold on the lower leg (AKNPOT) variables, while values of less than 0, 05 were found in thethe variables: skin fold on the upper arm(AKNNAD), abdominal skin fold(AKNTRB), shoulder width (ASIRAM) and almost all variables for assessing transverse diagonal skeleton: elbow diameter (ADIJLA), wrist diameter (ADIJRZ) and the hock diameter (ADIJSZ).

By comparing the results of this research with the results of the research conducted by Mudrić and Jovanović (1997) on the population of students of the College of Interior from Zemun, no significant differences were found in the variables for which the longitudinal dimensionality of the skeletons and the variables for which the volume and mass were measured, but there are noticeable differences in the variables that were used to measure the transverse dimensionality of the body and the subcutaneous fat tissue. It is visible that students of the College from Zemun have slightly higher values of body weight, elbow diameter, knee diameters, hock diameter, wrist diameter, upper arm volume, forearm volume, lower leg volume, skin fold of the upper arm and abdominal skin fold, while the students of the Faculty of Security Studies from Banja Luka have higher values of body height, volume and skin fold on the lower leg, from which we can conclude that the students of the Faculty of Security Studies from Banja Luka are somewhat higher and with a lower percentage of the body mass than the students of the College from Zemun.

**Table 2** Matrix of intercorrelation of morphological characteristics

	AVISTJ	ADUZNO	ADUZRU	ASIRAM	ASIKAR	ADIJLA	ADIJRZ	ADIJKO	ADIJSZ	ATEZTJ	AOBNAD	AOBPOD	AOBNAT	AOBPOT	AKNNAD	AKNTRB	AKNPOT
AVISTJ	1.00																
ADUZNO	.834	1.00															
ADUZRU	.807	.833	1.00														
ASIRAM	.493	.464	.417	1.00													
ASIKAR	.288	.283	.265	.097	1.00												
ADIJLA	.342	.305	.318	.367	.147	1.00											
ADIJRZ	.401	.408	.394	.445	.154	.432	1.00										
ADIJKO	.386	.383	.402	.360	.007	.308	.291	1.00									
ADIJSZ	.445	.434	.425	.485	.201	.318	.340	.580	1.00								
ATEZTJ	.586	.548	.510	.587	.267	.382	.393	.412	.474	1.00							
AOBNAD	.199	.199	.090	.391	.027	.251	.361	.201	.179	.680	1.00						
AOBPOD	.273	.253	.167	.392	.078	.378	.323	.289	.331	.645	.732	1.00					
AOBNAT	.236	.268	.147	.386	.100	.292	.268	.289	.338	.754	.604	.674	1.00				
AOBPOT	.344	.292	.215	.400	.185	.255	.155	.325	.504	.749	.527	.596	.733	1.00			
AKNNAD	.125	.115	.111	.219	.115	.139	.113	.045	.098	.573	.458	.370	.603	.484	1.00		
AKNTRB	.317	.241	.252	.369	.184	.221	.217	.144	.282	.674	.521	.399	.528	.518	.796	1.00	
AKNPOT	.375	.211	.320	.392	.159	.237	.238	.207	.305	.641	.399	.413	.521	.519	.676	.751	1.00

**Legend:** AVISTJ – body height; ADUZNO -Leg length;ADUZRU - Arm length; ASIRAM - Shoulder width; ASIKAR - Plevis width; ADIJLA - Elbow diameter; ADIJKO - Knee diameter; ADIJRZ - Wrist diameter; ADIJSZ - Hock diameter; ATEZTJ - Body weight; AOBNAD - Upper arm volume; AOBPOD – Forearm volume; AOBNAT - Upper leg volume; AOBPOT - Lower leg volume; AKNNAD - Skin fold on the upper arm; AKNTRB – Abdominal skin fold and AKNPOT - Skin fold on the lower leg.

**Table 3** Matrix of typical roots and explained parts of common variance

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadingsa
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.129	41.933	41.933	6.721	39.535	39.535	5.292
2	2.589	15.228	57.161	2.288	13.457	52.992	4.677
3	1.373	8.077	65.238	.979	5.760	58.752	3.716
4	.999	5.878	71.116				
5	.907	5.334	76.450				
6	.812	4.776	81.225				
7	.617	3.628	84.854				
8	.540	3.177	88.031				
9	.408	2.398	90.428				
10	.378	2.221	92.649				
11	.320	1.883	94.532				
12	.270	1.591	96.122				
13	.185	1.087	97.210				
14	.161	.949	98.158				
15	.114	.669	98.828				
16	.112	.658	99.486				
17	.087	.514	100.000				

Extraction Method: Maximum Likelihood.

Rotation Method: Oblimin with Kaiser Normalization.

**Table 4** Factor analysis of morphological characteristics - direct oblimin rotation

Matrica strukture				Matrica sklopa			
Pattern Matrix <sup>a</sup>				Structure Matrix			
	Factor				Factor		
	1	2	3		1	2	3
AOBNAT	<b>.809</b>	-.106	-.221	AOBNAT	<b>.857</b>	.276	-.539
AOBPOD	<b>.796</b>			ATEZTJ	<b>.847</b>	.637	-.619
AOBPOT	<b>.713</b>		-.191	AOBPOT	<b>.800</b>	.354	-.491
AOBNAD	<b>.707</b>	-.121	-.220	AOBPOD	<b>.788</b>	.293	-.350
ATEZTJ	<b>.572</b>	.337	-.318	AOBNAD	<b>.748</b>	.218	-.492
ADIJLA	.292	.266		ADIJLA	.393	.384	-.146
ADUZRU	-.179	<b>.970</b>		ADUZRU	.254	<b>.906</b>	-.163

ADUZNO		<b>.911</b>	ADUZNO	.370	<b>.905</b>	-.123	
AVISTJ		<b>.908</b>	AVISTJ	.375	<b>.905</b>	-.205	
ADIJSZ	.331	.391	ASIRAM	.531	.541	-.274	
ASIRAM	.345	.385	ADIJSZ	.474	.521	-.158	
ADIJRZ	.235	.371	ADIJKO	.419	.466		
ADIJKO	.334	.354	.154	ADIJRZ	.377	.464	-.132
ASIKAR		.309	-.124	ASIKAR	.130	.311	-.160
AKNTRB		.116	<b>-.848</b>	AKNTRB	.489	.311	<b>-.906</b>
AKNNAD	.141		<b>-.828</b>	AKNNAD	.452	.133	<b>-.871</b>
AKNPOT	.128	.169	<b>-.694</b>	AKNPOT	.489	.352	<b>-.779</b>

**Legend:** AVISTJ – body height; ADUZNO -Leg length;ADUZRU - Arm length; ASIRAM - Shoulder width; ASIKAR - Plevis width; ADIJLA - Elbow diameter; ADIJKO - Knee diameter; ADIJRZ - Wrist diameter; ADIJSZ - Hock diameter; ATEZTJ - Body weight; AOBNAD - Upper arm volume; AOBPOD – Forearm volume; AOBNAT - Upper leg volume; AOBPOT - Lower leg volume; AKNNAD - Skin fold on the upper arm; AKNTRB – Abdominal skin fold and AKNPOT - Skin fold on the lower leg.

**Table 5** Matrix of intercorelation of isolated latent dimensions

	F1	F2 F3
F1	1.000	.421 -.417
F2	.421	1.000 -.186
F3	-.417	-.186 1.000

## DISCUSSION

When analyzing the matrix of intercorrelation of the variables for the evaluation of morphological characteristics (Table 2), it is noticeable that the connections among the applied variables are generally positive and that a smaller number of coefficients of the applied variables have high and significant connection, while most of them show a medium and insignificant connection.

As in most of the earlier studies, the greatest connection was obtained within the block of variables for estimating the longitudinal dimension of the skeleton, the block of variables for estimating the measures of the subcutaneous fat tissue and the block of variables for estimating the circular dimensionality of the skeleton.

Variables for estimating the transverse dimensionality of the skeletons have achieved somewhat lower coefficients of interconnection, but are still homogenized within their block. It is visible from the matrix of intercorrelation that the measures of the subcutaneous fat tissue have a high correlation with measurements of volume and body weight, while the measures of longitudinal dimensionality made a significant connection

with body weight, shoulder width, wrist diameter and a hinge diameter, while somewhat weaker connection was made with other variables. It is also visible that body weight is significantly correlated with almost all applied variables, and that it represents a linear combination of almost all morphological characteristics.

Based on the value of Kajzer-Mejer-Oklin's index and statistical significance of Bartlett's sphericity test, the component model of factor analysis has determined the latent structure of morphological characteristics of students of the Faculty of Security Sciences in Banja Luka.

By analyzing the main components (Table 3) using the Guttman - Kaiser criterion, it is evident that we have three main components that explain a total of 65.2% of the complete variance of manifest variables, with their individual contribution being: the first major component of 41.9%, the second 15.2% and the third: 8.1% of the total variance.

Based on the matrix of the structure and matrix of anthropometric dimensions (Table 4), it is visible that the first isolated factor is saturated with measurements of volume and body mass, and the following variables have the greatest influence on it: upper leg volume (AOBNAT), body weight (ATEZTJ), lower leg volume (AOBPOT), forearm volume (AOBPOD), upper arm volume (AOBNAD) and the elbow diameter (ADIJLA), so this factor can be defined as the volume and body weight factor. However, the structure of this factor is partially different from the structure of the factor that was equally interpreted and obtained in previous studies, with the dominant role in its definition being body mass determined by the body weight. Here, however, it is dominantly defined by the upper leg volume and body weight, lower leg volume, forearm volume and the elbow diameter.

It is interesting how the diameter of the elbow interferes to this factor, which, in spite of the high projection, has a small correlation to this factor, while other measures of the transfusional dimensionality of the body, although having a more significant correlation than the elbow diameter, did not achieve a significant projection to this factor.

Since the width of the joints on extremities is considered a precondition for the development of muscle joints, and that all anthropometric measures are important for determining the mass and volume of the body, it is assumed that the diameter of the elbow of the students of the Faculty of Security Sciences is differentiated by a special morphological type in which the mass and the circular body dimensions are defined predominantly by the muscular mass and which differs from the morphological type that does not have a body mass defined by the structure of anthropometric dimensions that suggest that it is predominantly an athletic physical constitution.

Second isolated factor is determined by the variables which are the indicators of the longitudinal and transferal measures of the skeleton, as the following variables influence it the most: length of the arm (ADDRESS), length of the leg (ADULT), body height (AVISTJ), shoulder width (ASIRAM), hinge diameter (ADIJSZ), knee diameter (ADIJKO), wrist diameter (ADIJRZ) and pelvis width (ASIKAR), which means that this factor can be defined as a mixed factor of the longitudinal and transverse dimensionality of the skeleton.

„The explanation for” interfering „some of the transferal measures in the definition of the longitudinal dimension of the skeleton can revive the already represented hypothesis that the width of the pelvis and shoulder width, not only anatomically, but also constitutionally, do not represent a strict measure of bone growth in width, but better ap-

proximate the length of the bone and the length of the clavicle „(Popović, 2007). Having this in mind, we can consider the fact that there is justification in the joint involvement of these measures in forming the structure of this factor.

The third isolated factor consists of variables: abdomen skin fold (AKNTRB), upper arm skin fold (AKNNAD) and lower leg skin fold (AKNPOT), so this factor could be defined as a subcutaneous fat tissue factor.

Having in mind that the variables that determine this factor represent the measures of adiposity of the body for which variability the main factor is generator of the physical composition of the body based on the thickness of the subcutaneous fat tissue, this factor can also be considered as a factor of the physical body composition based on the thickness of the subcutaneous fatty tissue.

Analyzing the matrix of intercorrelation of the isolated main components (Table 5), it is visible that there is a statistically significant correlation between a factor that is interpreted as a volume and body mass factor and factor that is interpreted as a factor of the longitudinal and transverse dimensionality of the body.

It should be noted that there is a significant but negative correlation between the factor that defines the volume and weight of the body and factor of the subcutaneous fat tissue and that there is a weak but negative correlation between the factor of the longitudinal and transverse dimensionality of the body and factor of the subcutaneous fatty tissue.

In previously published studies researchers found high and significant connections between factors defining body volume and mass with factors that define longitudinal and transdermal dimensionality of the body, as well as weaker connections of these factors with subcutaneous fat tissue factor.

The results of this study match the results of research conducted by Stojanović, Momirović, Vukosavljević and Solarić (1975) on a sample of 737 male subjects aged between 19 and 27 with the aim of determining the structure of latent anthropometric dimensions from a population in which growth is completed and the process of deterioration of the morphological structure has not yet begun, and the existence of latent dimensions responsible for the volume and body mass, longitudinal dimensionality and subcutaneous fat tissue has been established, while the existence of the latent dimension responsible for the transferal dimensionality of the body remained questionable (which they connect with the procedure for determining the coordinate shaft in the space rescaled on an antiimage metric).

If we compare the results of this research with the results of research conducted by Mudrić and Jovanović (2000), on a sample of 102 students of the fifth semester of the College of Internal Affairs in Zemun, we see that identical factors with different effects in explaining the total variability (due to the application of different methods of factor analysis) were obtained.

Mudrić and Jovanović, by the method of the main components, distinguished four factors by combining varimaxsolution, three of which they managed to define as: the general factor of the body composition saturated with the thicknesses of the skin folds of the upper leg, the lower leg, the upper arm, the forearm, the breasts and the abdomen, as well as measures that determined composition of the body composition with a defined percentage of fat and muscle, a factor of longitudinal and transverse dimensionality of the body defined by the body height and diameter of the wrist, knee and hock, and the volume

and body mass factor that was defined by the body weight and volumes of the upper arm, forearm, upper leg lower leg.

Božić got similar results (1994), when, from a sample of 250 male students from the College of Internal Affairs in Zemun he formed a sample of 104 respondents aged 19 to 25 years, using the orthogonal Oblimin and Varimax solution also distinguished three factors that encompass the area of morphological characteristics, which he defined as: a factor of morphological development that was determined by the length of the leg, body height, arm length, pelvic width, elbow diameter and body weight; the physical body composition factor determined by the skin folds of: upper arm, lower leg, abdomen and back, and a body volume factor determined by the volume of the forearm, upperarm, chest, lower leg and wrist diameter. Analyzing the researches done to a similar population of the respondents, it is evident that almost identical results were obtained, which leads us to conclude that the results obtained by this research are valid and usable because they define the structure of morphological characteristics of the students of the Faculty of Security Sciences.

## CONCLUSION

The research was conducted with the aim of determining the morphological structure of the students of the Faculty of Security Sciences in Banja Luka. On a sample of 84 students of the first year of the Faculty of Security Sciences, a battery of 17 variables was used to estimate morphological characteristics, which hypothetically cover the longitudinal and transverse dimensionality of the skeleton, the volume and mass of the body, and the subcutaneous fat tissue factor. The obtained data were processed on the Pentium 4 PC, using factor analysis software and with the application of statistical program SPSS (version 20.00). After we applied statistical procedures, three factors were segregated, and they explain about 65.2% of the variability of this area and could be defined as volume and body mass factor, the factor of the longitudinal and transverse dimensionality of the body, and the factor of body composition based on the thickness of the subcutaneous fat tissue. When we compare the results of this study with the results of many studies conducted on a similar population of subjects, it is easy to conclude that there are no significant differences between them.

It is believed that the observed and isolated morphological characteristics could be a signpost in the process of programming and implementation of teaching and training operators, which would enable each individual, according to his individual characteristics and capabilities, to learn the materials from the subject of the SFO easier and faster. Considering the fact that morphological characteristics have a significant impact on the manifestation of force and power, and that an inadequate level of morphological characteristics can be a limiting factor in teaching when applying content from the SFO, it is desirable that future candidates for enrollment at the Faculty of Security Sciences have appropriate abilities and characteristics.

Given that future security personnel could perform very dangerous and complex tasks, it is very important that they have optimal capabilities and characteristics that could contribute to the successful performance of professional tasks. That is why, in the teach-

ing process, in addition to learning and mastering the basic elements of the technique and their connections envisioned with the contents of the SFO program, it is necessary to also influence the selection and formation of the model characteristics of each individual, so that the future security worker can be successful in his profession.

Naturally, in order to obtain more precise and complete information on the model characteristics of students of the Faculty of Security Sciences, further research is needed in this field. It is believed that the information obtained could contribute to a better choice of candidates, and hence to a better quality security personnel.

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