EFFICENCY ASSESMENT MODEL OF BASIC LEVERAGE TECHNIQUE PERFORMANCE WITHIN PROGRAM OF SPECIAL PHYSICAL EDUCATION

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Abstract
The main objective of this study was to determine the structure of morphological and motor features of students in the first year of studies and their impact on the efficiency of mastering curriculum of Special Physical Education in the part referring leverage. For the purposes of this study we used a battery of tests which included a set of twenty morphological, seven motor and seven criterion variables representing basic leverage techniques from SPE program. The study was conducted on a sample of eighty two respondents. Descriptive, correlation and factor analysis were conducted on all variables and accordingly can be determined that the analyzed data are reliable and can be validly interpreted. Qualitative analysis applying confirmative techniques, made it possible to define efficiency assessment model of basic leverage technique performance. On a practical level, the research results will contribute to a better selection and optimization in choosing means and methods in procedures in order to improve motor efficiency of each individual.
Key words: *Leverage techniques, morphological features, motor skills, Special Physical Education.*

INTRODUCTION

In Special Physical Education model, leverage techniques (*kansecu vaza*) are designed as one of basic methodological contents. This usage is certainly associated with practically applicable values of these techniques and possibilities of an effective linkage with the techniques from other martial systems. Leverage techniques are represented in all stages of learning: in the phase of basic, directed and situational training. In the first phase basic leverage techniques are being processed. These basic techniques in the second phase are improved through number of variants and mutual combinations, as well as through starting functional connection with other techniques (blocking, kicks, throwing, etc).

The structure of applied techniques itself imposes the need to perform movement with high speed, which, before that, have to be max technically adopted. This is especially important when punches and kicks are performed. Speed of blocks and punches performance, equally good with both arms and legs (left-right), is a very important prerequisite for achieving maximum effect and success in order, especially when there is a rival who is also well trained. The speed of technique performance greatly depends on the movement speed of upper and lower limb, which is mainly caused by morphological and motor performer speed (Kostovski et al., 2014).

In the third phase of training, these techniques are being applied in the structuring of the efficient motor programs within the framework of situational tasks, which have been projected based on the expected practical situation (Milošević et al.,1989; Mudrić, 2005; Milošević & Milošević, 2013). In SPE dominate poly structural acyclic activities with extremely fast actions and reactions, with explosive and multiple complex movements that require high level of performer skills. Teaching SPE regarding the character of present motor activity belongs to a first group of activities that have significant impact on the anthropological athlete status transformation. According to criteria of energetic process domination, i.e. according to physiological classification, it belongs to anaerobic activity (glycolytic energetic process) with extremely high duration intensity between 5 seconds to 3 minutes (Kostovski et al. 2013). In previous studies it was established that effectiveness of content adoption of subject Special Physical Education, to a large extent depends on the motor skills and morphological characteristics (Milošević, M., 1985; Milošević, M., Gavrilović, P., Ivančević, V., 1988; Blagojević, M., 1996; Amanović, Đ., Mudrić, R., Jovanović, S., 1999; Subotički, 2003; Baltić, 2006). On the other hand it was noted that educational treatment of SPE significantly influences the transformation of psychomotor status of students. Both impacts are significant for the design of

selection criteria for future police officers as well as for programming of methods and means of special physical education, which optimally affect the higher level of basic and specific motor skills in integral education process of police force (Milosevic, Mudric, Jovanovic, Amanovic, Dopsaj, 2005; Milosevic & Milosevic, 2014). Certainly, permanent monitoring and constant control of training condition of ministry workers (students, police officers and other employees who deal with security matters), is one of the most important segments of work and presents constantly actual research objective.

The main objective of this study is to define the structure of morphological and motor status of students, as well as the impact that these dimensions have on the efficiency of basic leverage techniques realization from SPE program. Determining the structure of morphological and motor status imposes itself as an additional problem of candidate selection for study enrollment, i.e. selection of candidates for future police officers. In the experiment we treated basic leverage techniques anticipated by curriculum for the first year of studies, included in subject Special physical education 1 program.

METHODS

Participants

The population we used as the sample of respondents can be defined as a population of male students in the first year of Criminal Police Academy in Zemun, 19 to 25 years of age, good health condition and no damage of locomotor system. The sample included only respondents who were not involved in leverage before engaging into actual program. Thus obtained sample of 82 respondents equals 70 % of population. The entire sample in this experiment had the same treatment, i.e. standard education program for the first year students according to actual curriculum of Special physical education.

Instruments

The sample of measuring and tests in this study was divided into measuring and tests of predictor and tests of criterion system. In the experiment was treated the set of 20 morphological (height, body mass, arm length, leg length, shoulder width, pelvis width, elbow diameter, wrist diameter, knee diameter, ankle joint diameter, the upper arm circumference, forearm circumference, thigh circumference, lower leg circumference, skinfold thickness of upper arm, skinfold thickness of forearm, skinfold thickness of upper leg, skinfold thickness of lower leg, skinfold thickness of the chest and abdomen skinfold thickness) seven motor (maximum force of back extensors, number of forward bends performed in 30 sec, the number of push-ups performed in 10 sec, Abalac test with arm swing, standing long jump, Cooper test and the test of contracting and stretching) and seven criterion variables (leverage on the elbow stretching, leverage on the hand flexing, leverage on the hand distortion, leverage on the hand twisting, broaching from the inside, broaching from the outside and the key on the elbow).

Testing methods

Anthropometric measuring was performed according to the method that is recommended by the International Biological Program (Winer, Louire, 1969). The endurance test (Cooper test) was performed out in the open and all other test in the gym. All predictors in respondents were measured by the same group of measurers who were previously trained. Tests have been arranged in such way there was no influence of fatigue, which occurs after each test, on the results of other tests. Measuring of criterion tests was conducted on the first year students at the end of the summer semester. Criterion tests are presented by basic leverage techniques included in the curriculum of SPE. Criterion tests were measured in the martial hall during morning hours. Respondents came in groups of ten subjects dressed in kimono and barefoot. Criterion variables were obtained by expert assessment deriving average ratings by five SPE teachers. The ratings were in the range of five to ten with a precision of one decimal. The elements to evaluate during technique performance were: taking the right posture, maintaining proper body balance, correctness and accuracy of technique performance, power and speed of technique performance and full control over the opponent.
After completing all the data obtained with previous measuring we approached to their statistical analysis using the descriptive and comparative statistical procedures and based on the results finished their interpretation and derived relevant conclusions.

RESULTS AND DISCUSSION

By statistical data processing, efficiency performance evaluation of basic leverage techniques and data on morphological and motor

features of students – respondents, significant correlation was established. Analysis of morphological domain indicated that in mentioned student population there are certain characteristics which indicate to the evident shift in variables observed. It was noted that such shift is noticeable in body mass decrease and body height and shoulder width increase; besides, there is a shift towards decrease of subcutaneous adipose tissue indicators. Characteristics noted indicate changed constitutional features that go in a direction, dolicomorph features of torso length, brachymorph shoulder width and mesomorph extremity characteristics (arms and legs). Analysis within motor (table 1) and morphological domain (table 2), the matrix of correlation and partial correlation indicates to a very high level of correlation coefficient with statistically significant level of significance.

The results related to the connection of morphological and motor features with efficiency of basic leverage technique performance indicate that for optimal organization of educational – training process in teaching students it is important to take into account the selective morphological and motor characteristics that occur as significant predictors of effective basic leverage technique performance abilities. In morphological domain it is important to pay attention to the factor of body composition in terms of student selection with lower percentage of subcutaneous body fat. In motor domain, special attention is suggested to selective capabilities such as; maximum force, explosive force of lower limbs and dynamic force in terms of repetition.

Correlation analysis within observation of morphological and motor domain, the matrix of correlation, also indicates a very high coefficient of correlation with statistically significant level of significance within six blocks (maximum force of back extensors, Abalac test with arm swing, standing long jump, number of push-ups in 10 sec., test of contracting and stretching and Cooper test).

Table 1. Matrix of correlation and partial correlations (predictor variables – motor)

	MAXFBE	ABALAK	LNGJUMP	PUSHUP10S	TORSO30S	CONSTRCH	COOPER
MAXFBE		0.286	0.006	0.091	0.066	0.04	0.047
ABALAK	0.045		0.127	0.171	0.138	0.302	0.134
LONGJUMP	-0.025	0.285		0.416	0.289	0.13	0.033
PUSHUP10S	0.204	0.015	0.12		0.237	0.12	0.046
TORSO30S	-0.077	0.087	0.171	0.391		0.137	-0.039
CONSTRCH	-0.161	0.058	0.14	0.246	0.245		0.131
COOPER	0.024	0.041	0.301	0.132	0.117	0.132	

The lower triangle refers to the ordinary correlation coefficients and the top refers to coefficients of partial correlation. Critical values at significance level of at least 95% are shaded in the table

Tabela 2. Matrix of correlation and partial correlations (predictor variables – morphology)

	BM	BH	LL	AL	SR	SK	DL	DRZ	DK	DSZ
1		0.63	0.54	0.40	0.55	0.58	0.39	0.33	0.53	0.45
2	0.56		0.90	0.83	0.61	0.57	0.34	0.51	0.49	0.58
3	0.51	0.90		0.88	0.57	0.54	0.46	0.46	0.47	0.50
4	0.37	0.82	0.88		0.51	0.47	0.50	0.44	0.41	0.46
5	0.59	0.55	0.54	0.48		0.49	0.48	0.23	0.30	0.33
6	0.58	0.55	0.54	0.47	0.50		0.38	0.41	0.44	0.41
7	0.53	0.45	0.37	0.38	0.37	0.47		0.63	0.70	0.54
8	0.35	0.50	0.45	0.43	0.26	0.42	0.64		0.61	0.68
9	0.55	0.47	0.47	0.41	0.33	0.45	0.71	0.61		0.74
10	0.42	0.58	0.50	0.46	0.31	0.41	0.53	0.67	0.73	
11	0.76	0.20	0.18	0.01	0.48	0.22	0.33	0.06	0.22	0.06
12	0.77	0.34	0.32	0.16	0.57	0.39	0.58	0.34	0.40	0.29
13	0.87	0.25	0.22	0.07	0.40	0.42	0.37	0.20	0.39	0.20
14	0.75	0.22	0.12	0.01	0.28	0.35	0.38	0.26	0.35	0.27
15	0.49	-0.09	-0.07	-0.10	0.21	0.26	0.17	0.02	0.15	-0.05
16	0.44	-0.09	-0.08	-0.13	0.11	0.30	0.11	0.01	0.13	-0.10
17	0.51	-0.04	-0.02	-0.09	0.12	0.13	0.03	-0.20	0.04	-0.19
18	0.60	0.16	0.22	0.09	0.21	0.27	0.15	0.06	0.28	0.15
19	0.50	-0.11	-0.09	-0.18	0.13	0.28	0.05	-0.21	0.08	-0.15
20	0.54	-0.10	-0.05	-0.17	0.08	0.35	0.07	-0.11	0.22	-0.03

Table 2. (extension) Matrix of correlation and partial correlations (predictor variables – morphology)

	ONL	OPL	ONK	OPK	DKNNL	DKNP	DKNN	DKNP	DKNG	DKNT
1	0.73	0.74	0.86	0.74	0.45	0.44	0.49	0.58	0.48	0.53
2	0.27	0.44	0.29	0.25	-0.07	-0.08	-0.02	0.18	-0.09	-0.09
3	0.20	0.36	0.23	0.12	-0.07	-0.08	-0.02	0.22	-0.09	-0.05
4	0.02	0.19	0.08	0.01	-0.10	-0.13	-0.09	0.09	-0.18	-0.17
5	0.40	0.51	0.34	0.23	0.15	0.08	0.08	0.16	0.09	0.04
6	0.19	0.38	0.41	0.33	0.25	0.29	0.11	0.26	0.26	0.33
7	0.28	0.57	0.33	0.35	0.14	0.09	0.00	0.13	0.03	0.04
8	-0.01	0.32	0.17	0.24	-0.01	-0.01	-0.23	0.04	-0.23	-0.13
9	0.17	0.38	0.37	0.33	0.12	0.11	0.01	0.26	0.05	0.20
10	0.06	0.32	0.20	0.28	-0.05	-0.10	-0.19	0.15	-0.15	-0.03
11		0.79	0.69	0.56	0.45	0.42	0.56	0.55	0.51	0.41
12	0.84		0.62	0.58	0.30	0.24	0.28	0.43	0.25	0.25
13	0.72	0.66		0.76	0.51	0.53	0.59	0.59	0.29	0.64
14	0.59	0.61	0.77		0.38	0.41	0.45	0.40	0.38	0.42
15	0.49	0.36	0.54	0.41		0.84	0.69	0.50	0.79	0.75
16	0.41	0.25	0.53	0.42	0.84		0.66	0.56	0.76	0.74
17	0.57	0.32	0.61	0.47	0.70	0.67		0.69	0.72	0.66
18	0.55	0.45	0.60	0.42	0.52	0.57	0.70		0.54	0.61
19	0.52	0.29	0.60	0.40	0.80	0.76	0.73	0.56		0.81
20	0.43	0.28	0.64	0.44	0.75	0.74	0.67	0.62	0.85	

Analyzing summary statistics of factor leverage ratings of criterion variables was noted that rating values have a large variability. The average values for all variables vary around 6.90. Correlation analysis in the frame of criterion variable observation – evaluation, the matrix of correlation and partial correlation (table 3.), indicates a very high positive correlation coefficient with statistically significant level of significance for all variables of the observed domain, therefore can be concluded that the evaluations are associated with improvement of technique performance. Therefore, any accidental occurrence of good evaluation in one technique is excluded.

Table 3. The matrix of criterion variable correlation

	oprlak	savsake	izvrsake	uvrsake	prospo	prounu	kljuc
oprlak							
savsake	0.959						
izvrsake	0.969	0.967					
uvrsake	0.962	0.951	0.961				
prospo	0.962	0.958	0.977	0.96			
prounu	0.965	0.968	0.975	0.965	0.962		
kljuc	0.959	0.964	0.958	0.958	0.946	0.972	

Results obtained applying two methods of factor analysis (Varimax and Oblimin) can be explained as follows: during segregation i.e. extraction of factors, seven factors were separated (Table 4.). This model carries approx 79.23% of the total variability explanation. The first factor explained 24.66% of valid variance and it was defined with nine variables from morphological domain, i.e. dimensions of skinfold thickness, lower limb circumference and body mass. Based on the structure and character of the variables saturated in this factor, can be defined as a factor of body volume. The second factor explained 22,26% of valid variance and is defined by the following variables: leverage on the elbow stretching, leverage on the hand flexing, leverage on the

hand distortion, leverage on the hand twisting, broaching from the inside, broaching from the outside and the key on the elbow. Thus, the second factor can be defined as an evaluation factor of leverage technique performance. The third factor explained 14.05% of valid variance and included variables that represent bistiloide dimensions of joints. For their variability we find responsible the generator of transverse joint dimensions. The set of variables which build analyzed factor and present joint dimensions can be defined as a factor of transversal joint dimensionality. The fourth factor explained 6.49% of valid variance and is defined by following variables: Variables that determine this factor represent circumferences of upper extremities and maximum back force. For their variability we find responsible generator of body volume and ability to generate maximum back force, so it can be defined as a factor of upper limb circumference. The fifth factor explained 5, 10% of valid variance and is defined by following variables: leg length variable, height, arm length, are good indicator of linear skeleton dimensions for whose variability we find responsible generator of linear bone dimensions; variable shoulder width, within morphological domain research, is acting like measure of skeleton transversality, while variable Abalak test presents explosive force of lower limbs. Accordingly, based on the skeleton structure and variable characteristics, which are saturated with fifth varimax factor, can be concluded we are talking about factor of longitudinal skeleton dimensionality. The sixth factor explained 3.72% of valid variance. The variables that determine the sixth factor according to their structure and character can be divided into cyclic activities who, for their realization, mostly engage upper limbs and torso. Variable push-ups in 10 sec and forward bands in 30 sec have cyclic character, but each cycle lasts relatively long and they should define the ability to realize force impulse of a small number of muscle groups at short intervals. Based on analysis, this factor can be defined as a factor of upper limbs and torso dynamic force. The seventh factor explained 2.95% of valid variance and is defined with following variables. Variable standing long jump is characterized by simplicity of the moves where the muscle impulse is being implemented in relatively short time. It can be concluded that the variability generators in manifested results may be the ability for force implementation at high speeds of muscle contraction, ability for rapid muscle stiffening and synchronous activation and deactivation of antagonistic muscle groups. Variable Cooper test is a measure of aerobic capacities. Based on the structure this factor can be defined as a factor of lower limb dynamic force.

In Oblimin rotation, factors II and IV that were separated in Varimax rotation, only changed places and their percentage share remained unchanged (Table 5.) The factors I and III in their structure also remained unchanged. Based on the results of the factor analysis conducted over the domain of basic leverage techniques, the model for assessment of efficacy of basic leverage technique performance can be defined with the following form:

$$M = 0,25F_1 + 0,22F_2 + 0,14F_3 + 0,06F_4 + 0,05F_5 + 0,04F_6 + 0,03F_7$$

where is:

M – assessment model of basic leverage technique performance efficiency, F1 – factor of body volume, F2 – factor of leverage technique performance evaluation, F3 – factor of transversal skeleton dimensionality, F4 – factor of upper limb circumference, F5 – factor of longitudinal skeleton dimensionality, F6 – factor of upper limb and torso dynamic force and F – factor of lower limb dynamic force.

Accordingly, in the basis of obtained factors and models, i.e. determination of treated population capabilities, mechanisms responsible for body mass and volume variability, then linear bone dimensions variability, mechanism for rapid activation of arm, leg and torso muscles, mechanism that controls force realization at high speed contraction of the same muscle groups and mechanism that controls synchronous activation and deactivation of antagonistic muscle groups of upper and lower limbs and in the end, mechanism responsible for maximum amount of force in certain time periods of structuring motor programs.

Table 4. Factor matrix of Varimax rotation of predictor and criterion variables

	VARIMAX							communa-
Varijable	F1	F2	F3	F4	F5	F6	F7	lities
PROVUNUT	**0.984**	0.032	-0.036	-0.064	0.064	0.017	-0.021	0.928
UVRTSAKE	**0.980**	0.019	0.001	-0.048	0.042	-0.018	-0.013	0.883
SAVSAKE	**0.978**	0.044	-0.014	-0.099	-0.018	-0.026	-0.008	0.891
KLJUCNAL	**0.978**	-0.013	-0.046	-0.056	0.054	0.011	-0.035	0.824
IZVRSAKE	**0.977**	0.101	-0.021	-0.110	0.040	-0.006	0.015	0.644
OPRLAKTA	**0.976**	0.055	-0.003	-0.078	0.039	-0.010	0.025	0.625
PROVLSPO	**0.974**	0.091	-0.018	-0.050	0.048	-0.016	0.039	0.751
DKNGRUDI	0.095	**0.910**	-0.098	-0.049	0.039	-0.023	0.005	0.771
DKNTRBUH	0.082	**0.888**	0.016	-0.056	0.011	-0.145	-0.024	0.737
DKNPODLA	0.077	**0.863**	0.075	-0.128	-0.050	0.005	-0.125	0.744
DKNNADLA	0.127	**0.848**	0.090	-0.113	0.066	-0.038	-0.078	0.883
DKNNADKO	0.015	**0.810**	-0.169	0.021	0.211	-0.043	-0.180	0.858
OBNADKOL	0.027	**0.718**	0.234	0.194	0.428	-0.052	0.144	0.815
DKNPODKO	0.033	**0.666**	0.089	0.190	0.229	-0.007	-0.422	0.652
TM	-0.010	**0.612**	0.411	0.426	0.449	-0.019	0.035	0.768
OBPODKOL	-0.062	**0.550**	0.345	0.012	0.427	-0.132	0.163	0.791
DIRUZGLO	-0.047	-0.117	**0.849**	0.141	0.090	-0.076	-0.023	0.719
DIKOLENA	0.045	0.150	**0.810**	0.210	0.108	-0.002	-0.011	0.851
DILAKTA	-0.061	0.117	**0.796**	0.109	0.251	0.078	0.136	0.821
DISKOZGL	0.006	-0.090	**0.786**	0.299	0.024	-0.065	-0.153	0.615
SIRKARLI	-0.078	0.373	**0.477**	0.464	-0.045	-0.166	0.081	0.61
DUZNOGE	-0.132	-0.003	0.372	**0.857**	-0.006	0.029	-0.012	0.737
DUZRUKE	-0.111	-0.098	0.372	**0.804**	-0.119	0.019	-0.050	0.736
TV	-0.229	-0.004	0.451	**0.791**	0.014	0.013	-0.028	0.702
ABALAK	-0.067	-0.177	-0.191	**0.670**	0.200	-0.053	0.216	0.561
SIRRRAME	-0.041	0.170	0.187	**0.631**	0.404	0.099	0.079	0.467
MSOPLEDJ	0.182	0.046	0.074	-0.044	**0.753**	-0.052	-0.058	0.964
OBPODLAK	0.036	0.350	0.349	0.226	**0.737**	0.098	0.088	0.97
OBNADLAK	0.035	0.548	0.060	0.172	**0.713**	0.199	0.023	0.979
SKLEK10S	-0.004	-0.110	0.006	-0.161	0.327	**0.767**	-0.053	0.964
TRUP30S	-0.017	0.018	0.049	0.051	-0.141	**0.754**	0.330	0.965
GRCPRUZ	-0.034	-0.310	-0.270	0.184	-0.080	**0.572**	-0.152	0.98
SKOKDALJ	-0.033	-0.326	-0.061	0.199	0.112	0.092	**0.752**	0.966
KUPER	0.259	-0.450	0.199	-0.030	-0.084	0.149	**0.357**	0.765
Explained variance	6.95	6.51	4.064	3.751	2.762	1.671	1.23	
Proportion %	20.4	19.2	12.0	11.0	8.1	4.9	3.6	79.2

Table 5. Factor matrix of Oblimin rotation of predictor and criterion variables

	OBLIMIN							communa-
Variables	F1	F 2	F 3	F 4	F 5	F 6	F 7	lities
DKNGRUDI	**0.903**	0.117	-0.047	0.225	-0.064	-0.124	-0.186	0.928
DKNTRBUH	**0.890**	0.102	0.064	0.198	-0.055	-0.251	-0.209	0.883
DKNPODLA	**0.858**	0.099	0.107	0.137	-0.120	-0.109	-0.302	0.891
DKNNADLA	**0.857**	0.149	0.130	0.250	-0.098	-0.144	-0.243	0.824
DKNNADKO	**0.811**	0.035	-0.105	0.368	0.009	-0.131	-0.336	0.644
OBNADKOL	**0.771**	0.029	0.323	0.593	0.266	-0.125	0.056	0.625
DKNPODKO	**0.687**	0.032	0.161	0.387	0.213	-0.101	-0.506	0.751
TM	**0.679**	-0.032	0.518	0.617	0.527	-0.091	0.005	0.771
OBPODKOL	**0.611**	-0.050	0.403	0.548	0.115	-0.190	0.098	0.737
PROVUNUT	0.058	**0.988**	-0.038	0.113	-0.157	0.013	-0.005	0.744
IZVRSAKE	0.127	**0.985**	-0.025	0.101	-0.200	-0.017	0.011	0.883
SAVSAKE	0.065	**0.983**	-0.024	0.034	-0.193	-0.034	-0.004	0.858
UVRTSAKE	0.047	**0.981**	-0.001	0.091	-0.137	-0.021	0.007	0.815
KLJUCNAL	0.012	**0.981**	-0.050	0.093	-0.152	0.012	-0.011	0.652
OPRLAKTA	0.082	**0.981**	-0.007	0.093	-0.166	-0.016	0.033	0.768
PROVLSPO	0.118	**0.978**	-0.015	0.110	-0.140	-0.025	0.040	0.791
DIRUZGLO	-0.046	-0.076	**0.856**	0.124	0.293	-0.099	0.078	0.765
DIKOLENA	0.219	0.016	**0.841**	0.206	0.349	-0.054	0.044	0.719
DILAKTA	0.192	-0.079	**0.822**	0.324	0.272	0.042	0.194	0.851
DISKOZGL	-0.028	-0.036	**0.809**	0.076	0.425	-0.096	-0.049	0.821
SIRKARLI	0.409	-0.118	**0.548**	0.086	0.542	-0.226	0.064	0.615
OBPODLAK	0.436	0.034	0.434	**0.830**	0.339	0.070	0.115	0.61
OBNADLAK	0.606	0.046	0.150	**0.828**	0.236	0.155	-0.012	0.737
MSOPLEDJ	0.120	0.200	0.116	**0.752**	0.010	-0.038	-0.006	0.736
DUZNOGE	0.026	-0.208	0.465	0.064	**0.913**	0.016	0.082	0.702
TV	0.030	-0.301	0.537	0.079	**0.873**	-0.004	0.065	0.561
DUZRUKE	-0.078	-0.187	0.447	-0.068	**0.850**	0.012	0.052	0.467
SIRRRAME	0.218	-0.083	0.290	0.478	**0.688**	0.090	0.137	0.964
ABALAK	-0.165	-0.113	-0.109	0.177	**0.645**	-0.001	0.296	0.97
SKLEK10S	-0.107	0.014	-0.013	0.300	-0.126	**0.779**	0.008	0.979
TRUP30S	-0.011	-0.024	0.035	-0.118	0.061	**0.753**	0.338	0.964
GRCPRUZ	-0.352	-0.050	-0.279	-0.140	0.131	**0.607**	-0.078	0.965
SKOKDALJ	-0.315	-0.048	-0.049	0.039	0.206	0.173	**0.817**	0.98
KUPER	-0.435	0.248	0.161	-0.154	-0.023	0.205	**0.454**	0.966
Explained variance	7.01	7.14	4.82	4.09	4.84	1.93	1.79	
Proportion %	24.7	22.3	14.1	6.5	5.1	3.7	2.9	79.2

CONCLUSION

In this study about the structure of morphological and motor features and efficiency of leverage technique implementation, which are included in the part of the SPE program, a set of twenty morphological, seven motor and seven criterion variables was applied. All data were collected on the sample of 82 respondents 19 to 23 years of age.

Qualitative analysis using confirmative techniques enabled defining the model for efficiency of basic leverage technique performance evaluation made of seven factors (F1 – factor of body volume, F2 – factor of leverage technique performance

evaluation, F3 – factor of transversal skeleton dimensionality, F4 – factor of upper limb circumference, F5 – factor of longitudinal skeleton dimensionality, F6 – factor of upper limb and torso dynamic force and F – factor of lower limb dynamic force).

The speed and effectiveness of learning technique is of great importance in martial in general and this study made an attempt to determine the degree of correlation between morphological and motor characteristics with success rate in learning basic leverage techniques included in the curriculum for the first year students of Criminalistic – Police Academy. Discovering correlation between motor and morphological dimensions we contribute to a better selection and more optimal training programming in Special Physical Education.

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