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Relationship Between Morphological Characteristics and Motorical Abilities

by the Performance of Situational Motoric Elements of Basketball, Volleyball, and Handball in the Lessons of Sport and Physical Education

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Abstract
The aim of this research is to determine the relationship of morphological characteristics and motoric abilities by the performance of situational elements of basketball, volleyball and handball in the lessons of sport and physical education. Sample variables from the predictor area are composed of 12 morphological and 24 motoric variables, and the sample variables from the criterion area of 9 variables (3 for basketball, volleyball and handball.) Determining the relationship was carried out by canonical correlation analysis. The obtained results show that a relationship between morphological and situational-motoricalareas did not appear, while the registered connection between motoric and situational-motoric areas was isolated in four significant and positive canonical functions.

Key words: **morphological characteristics, motoric abilities, situational-motoric abilities**

Sažetak
Cilj ovog istraživanja je da se u nastavi sporta i tjelesnog odgoja učenika u srednjoj školi utvrdi povezanost morfoloških karakteristika i motoričkih sposobnosti sa izvođenjem situaciono motoričkih elemenata košarkaške, odbojkaške i rukometne igre. Uzorak varijabli prediktorskog prostora sastoji se od 12 morfoloških i 24 motoričke varijable, a uzorak varijabli kriterijskog prostora od 9 varijabli (po 3 iz košarkaške, odbojkaške i rukometne igre). Utvrđivanje povezanosti izvršeno je kanoničkom korelacionom analizom. Dobijeni rezultati pokazuju da se nije pojavila povezanost između morfološkog i situaciono-motoričkog prostora, dok su veze registrovane između motoričkog i situaciono-motoričkog prostora izolovane koz četiri značajne i pozitivne kanoničke funkcije.

Ključne riječi: **morfološke karakteristike, motoričke sposobnosti, situaciono-motoričke sposobnosti**

Introduction

Research within the field of teaching sport and physical education, in recent years aregrowingly oriented towards the introduction of personal approach in teaching which by Hardmann (2008) may have far-reaching results in the development in the science of sport. The entire system runs in the direction of eliminating mechanical action and the gradual transition to real creative process, which is completely accustomed to the individual. The development of an individual/student begins on diversity (Healthy Life Education Broschur) and this fact in the teaching of sport cannot be ignored, considering thatuniforming would represent limitations in opportunities to develop. The significance of the teachings of sport and physical education, according to Findak (2001) lies in discovering and developing all potential opportunities, with the establishment and continuous application of humanistic and individualistic concepts of work. As it is already shown in previously performed research and practice, the morphological-motoric structures of students affect their performancein lessons of sport and physical and health education. In this study, canonical correlation analysis was performed to verify the relation of which morphological characteristics and motoric abilities achieve realization by situational-motorical elements in lessons of sport and physical education, in a way that the confirmed relations could potentially be applied positively in practice and thus facilitate the introduction of individualization. It is interesting to note that the lessons in this case represented situational-motoric elements of basketball, volleyball and handball (criterion area), while the predictor areawas represented by a total of 36 variables (12 representing morphological and 24 representing motoric area. Determining the relationship of morphological characteristics and motoric abilities (predictor area) with situational motorical abilities (criterion area) can be observed even with analysis of larger number of works by authors from the field that also came to approximate indications according to the following: Bukvić (2003) who noted that impact of basic motoric abilities exist in the control of the ball and throw to the basket. Mahmutović (2003) noted that morphological characteristics have no influence on the efficiency in the game of volleyball, while motoric characteristics do. The results of the conducted research are similar to the results of Brettschneider and Naul (2004) who found that socio-economic status of families, parents' education level and aspirations of an individual have a strong influence on the motoric status of adolescents (higher social status - higher motoric status). Babic, Harasin and Dizdar (2007) through their research contributed to a improved knowledge of the factors that determine success in sprint running, apropos that greater the dimensionality of the skeleton is negatively correlated with the length and frequency of movement. Kovač, Leskošek and Strel (2007) initiated that there are differences in the morphological-motoric structures between students of different high school programs, moreover, that students from vocational high schools received inferior results than the students from reference high schools. Vlašić, Oreb and Furjan-Mandić (2007) found that there is a statistically significant correlation of predictor morphological-motoric area with a specific criterion of situational motoric elements. Therefore, the results of the previous research suggest the goal of the study could be achieved, namely that the relationship between morphological characteristics and

motoric abilities by performance of situational motoric elements of basketball, volleyball and handball could be determined. Well established studies of areas and variables, on an objectively professional and scientific level, contribute to individualized teaching materials and adaption to the examinees, which within everything else, provides for higher quality planning and programming in the lessons of sport and physical education in high schools, and also better monitoring of impacts and transformations made in the process of teaching.

Methods

Sample examinees

Sample examinees are defined by the male population of vocational high schools in Sarajevo, between the ages of 16-18. The survey included only those students, who during the process of testing and measuring were completely healthy. The total number of examinees in the sample consists of 151 students. All examinees had suitable conditions of regular attendance in the lessons of sport and physical education, which represented one of the fundamental requirements for conducting this research. The sample can not be selected by any criteria for entry into high school school.

Sample variables

The selection and definition of the investigated areas (morphological, motoric, situational motoric) in this order were made on the basis of standardized and empirically verified methods of measurement and testing, based on which came to specific information about the characteristics of the surveyed examinees.

The sample of predictor variables is defined as follows:

Variables for assessment of morphological characteristics:
Body height (VISTJ)
Leg length (DUZNG)
Arm length (DUZRK)
Hand width (SIRSA)
Wrist diameter (DIRZG)
Elbow diameter (DILAK)
Body mass (MASTJ)
Upper arm radius (OBNDL)
Middle thorax radius (OBGRU)
Upper arm skinfold (NBNDL)
Back skinfold (NBLED)
Abdominal skinfold (NBTRB)

Variables for assessment of motoric abilities:

Variables for assessment of coordination
1. Coordination with a bat (MKTKK3)
2. Slalom with three medicine balls (MKOS3M)
3. Figure eight with ducking (MAGOSS)

Variables for assessment of explosive strength
1. Throwing a medicine ball out of a back laying position (MESBML)
2. Standing long jump (MESSD)
3. Running 20M (MBR20M)

Variables for assessment of movement frequency
1. Foot tapping (MBFTAN)
2. Foot tapping against a wall (MBFTAZ)
3. Hand tapping (MBFTAR)

Variables for assessment of repetitive strength
1. Push-ups on a loom (MRASKR)
2. Raising body out of a lying position (MRSPTL)
3. Deep squats with weights (MRLDCT)

Variables for assessment of balance
1. Standing on one leg longitudinally on a bench with open eyes (MBAU1O)
2. Standing on one leg across from the bench with closed eyes (MBAU1Z)
3. Standing on one leg longitudinally on a bench for balance with closed eyes(MBAP1Z)

Variables for assessment of precision
1. Targeting with a long stick(MPCDŠ)
2. Targeting a vertical target by foot (MPGVCN)
3. Targeting a horizontal target by hand (MPGHCR)

Variables for assessment of flexibility
1. Flex with a bat (MFLISK)
2. Leg lift while laying facedown (MFLZLG)
3. Deep forward bend on a bench(MFLDPK)

Variables for assessment of speed
1. Running 20M out of a high start (MBR20M)
2. Running 20M out of a flying start (MBR20MLS)
3. Running 50M out of a high start (MBR50MVS)

Sample of criterion variables (situational-motorical) defined as follows:

Variables for assessment of basketball
1. Throwing the ball with both hands against a wall (OKBLRZ)
2. Dribbling slalom (OKVLS)
3. Throwing ball into basket (OKBLK)

Variables for assessment of volleyball
1. Hitting aim over a net from primary position(OOGCPMOS)
2. Block “hammer” circular shape (OOOČK)
3. Serve (OOSR)

Variables for assessment of handball
1. Performing a seven (ORIS)
2. Throwing ball against a wall (ORBLZ)
3. Dribbling slalom (ORVLS)

Methods of processing data

Processing of data obtained was done by the software package SPSS 12.0 for Windows. At a multivariate level for determining the relation, a canonical correlation analysis was used, which represents an extremely suitable mathematical-statistical procedure in cases where it is necessary to determine a relationship between two sets of different variables.

Results and Discussion

Canonical correlation analysis **between morphological characteristics and situational-motorical areas** (Table 1.) is not isolated neither of significant nor positive canonical functions (Canonicl R) that could explain a general correlation between morphological characteristics (morphological area) and success in the performance of elements in teaching (situational-motorical area.) On the level of significance from p=.074 (not significant) only a canonical function with a canonical root was isolated (Canonicl R) .514, which eventually could explain
26% of the variability (Canonicl R-sqr.) research areas. In this case, it can be concluded, that treating the variables to assess the

morphological status (considering that out of possible 37 by IBP only 9 are used), were not sublimated and showed the influence of morphological area on the performance of elements of sport games in the teachings of sport and physical education in high school populations. The assumption that it was possible, in the case that all the morphological variables were treated cannot be excluded, that is to say the conducting of measurements in accordance to IBP, occurrence of statistically significant canonical functions. It is assumed that the structure of the sampleexaminees (consistent with findings from research in present vocational high schools) and specific age of the studied population (puberty, acceleration of growth and development) had relevant influence on the relations obtained this way. Absence of association or the absence of canonical factors with the significance level to .050 may provide relevant guidance and on the criterion area, it may imply the simplicity/low complexity of elements in volleyball, basketball and handball but are used for analysis of situational motorical areas and for whose performance is not necessary to have significantly marked morphological characteristics.

Table 1. *Canonical correlation analysis of morphology /situational motorics*

	Canonicl R	Canonicl R-sqr.	Chi-sqr.	df	p	Lambda
0	.514	.265	129.897	108	.074	.392
1	.456	.208	87.071	88	.507	.534
2	.327	.107	54.518	70	.913	.675
3	.309	.095	38.728	54	.941	.756
4	.249	.062	24.735	40	.972	.836
5	.235	.055	15.779	28	.968	.892
6	.161	.026	7.854	18	.980	.945
7	.142	.020	4.167	10	.939	.970
8	.096	.009	1.296	4	.861	.990

Canonical correlation analysis **between motorical and situational-motorical areas** (Table 2.), four significant and positive canonical functions are isolated (Canonicl R) which describes a general relationship between motoric abilities and quality performance of elements in sport games. Level of significance for the first three canonical functions is p=.000, andfor the fourth isolated function the level of significance is p=.019. All four isolated canonical functions for these two pairs of variables are quite high, the largest being Canonicl R = .748 which can explain 56% of the common variability (Canonicl R-sgr.), and the lowest being Canonicl R that is .596 which can explain (Canonicl R-sgr.) with 35% common motoric variables and variables for success in performance of elements in sport games. Significant connection of the studied areas (Chi-sgr.) ranges from 422.7 for the first and goes up to the highest of 161.0 for the fourth and lowest canonical factor/function.

Table 2. *Canonical correlation analysis of motoric/situational motoric*

	Canonicl R	Canonicl R-sqr.	Chi-sqr.	df	p	Lambda
0	.748	.560	422.769	216	.000	.041
1	.688	.474	313.532	184	.000	.094
2	.628	.395	228.006	154	.000	.180
3	.596	.355	161.052	126	.019	.297
4	.491	.241	102.637	100	.408	.462
5	.457	.209	65.891	76	.789	.609
6	.374	.140	34.607	54	.981	.770
7	.266	.070	14.452	34	.998	.897
8	.186	.034	4.684	16	.997	.965

Analyzing the first canonical factor in the projected motorical area (Table 3.) we can conclude that from 24 variables, only 4 have significant correlation relations with an isolated canonical dimension. For all significant correlation coefficients, it can be concluded that they are the middle and lowest level of significance, and from the four listed correlation variables, two treat the area with the coefficient (.368) for the variable from the area of explosives MBR20MVS and coefficient (.353) for the variable MBR20MVS, and one variable treats an area: pure explosive strength of (.256) for MESBML and the precision area of (.339) for MPGVCN. All listed variables except MESBML also have significant correlationswith other isolated canonical factors, but this fact does not change the significance of the impact on the currently analyzed first canonical root. Relations set like this lead us to the fact that the first canonical factor in motorical areas behave as a factor of speed- precision performance.

The first canonical factor projected in situational-motorical areas (Table 4.) has two isolated variables with strong non significant connections in basketball OKBLRZ of (.533) and handball ORVLS with a negative sign and coefficient from (-.579). Since both tests, i.e. the element represented by these variables require speed-accurate properties, thus this isolated factor, saturated with two variables that belong to different sport games, can bedefines as a factor of saturated speed-accurate characteristics that are demonstrated during the performance of given elements in sport games.

The listed variables (OKBLRZ and ORVLS) have suitable high projections on the rest of the canonical factors, while other variables with isolated canonical factors have a connection below (.-248), i.e. that connection is not statistically significant. According to the above listed, this factor could be defined as the factor of speed-accuratecharacteristics that are represented in the sport of basketball and handball, because there is a connection between these areas with an isolated canonical function (ex. Throwing the ball with the hands against the wall in basketball and dribbling slalom with the ball in handball, requires speed to catch the ball, precision blocking the ball, speed of movement and manipulation of the body in order to dominate the ball and direct movement, etc.) Considering the relationship between situational-motorical area and motorical area at the first isolated canonical function, considering that the speed accurate characteristics are defined in the motorical area, it is necessary for the realization of the situational-motorical elements in correlation, in reference to theassignment: throwing a ball against the wall in basketball – for a limited time of 30 sec. with the requirement that the ball bounces off the wall at a distance of 3 m, in order to achieve the best results that require speed and precision and handball dribbling slalom – for the shortest time necessary to implement the appropriate motorical task which also requires speed and precision, and for which are seen from the above outlined that speed and precision is necessary, we can conclude that the attained connections are expected and logical.

On behalf of the second canonical factor projected in motorical area (Table 3.) we can statethat it registers a significant correlation with two variables whose relationship with the canonical factor can be defined by the following: one variable with the most but negative signs MBAU10 with a correlation coefficient of (-.537), which is the largest level of connectivity with other canonical factors and defines an area where balance is the major difference compared to the first canonical factor of motorical area, because at this- from the first root the connection is not registered nor a variable from the area of balance and the second variable MBFTAN at a somewhat lower level of connectivity from the area of speed frequency (-.428) also for which a significant connection in other canonical factors was not found. According to the variables with which the correlation was made, but do not consist of significant canonical projections with other factors, we can state that name of the factor is - factor of balance with some influences of movement frequency, which is not surprising, considering the requirement of possessing certain abilities in the area of balance and frequency speed, it is necessary for the realization of certain situational-motorical tasks (ex. For the shortest time a larger amount of repetition while maintain equilibrium in order to better master the ball, etc.).

On behalf of the second canonical factor projected in the situational-motorical area (Table 4.) which is typically isolated, with a strongly indicated connection, two variables representative of the game of basketball (.717.)OKBLRZ and (.628) OKVLS and something lower, but still significant individual correlation with the variables of volleyball (.598) OOSR and handball (.410) ORBLZ. Even though these variables belong to different sports, analyzing activities of movement is necessary for the execution of situational-motorical tasks, it can be stated that the second canonical factor of situational-motoric area is marked and is called the motoric abilities of balance and movement frequency, and is exactly isolated in the second factor of motorical areas. Therefore elements of sports (especially in the game of basketball) that are found to be in a significant correlation with the second canonical factor, for quality performance, requires motorical abilities isolated by the second canonical factor in the motorical area, and this confirms the previously named motorical factor.

In the second isolated canonical function, the isolated factor in the motorical area is defined as the factor of balance with some influence of the frequency speed of movement. By analyzing the description of situational-motorical tests where, for ex. for a limited time of 30 sec. where it is necessary that the ball bounces off the wall at a distance of 3 m, in order to achieve the best results, which apart from speed requires maintenance of the body in a proper position of balance in order to establish “under the ball” or where for the shortest period of time necessary to implement the appropriate motorical task (speed) or where it is necessary to show specifically precise shooting or precise handling of the ball (precision) , we can constitute that the obtained correlation for the following variables from the situational-motorical area (OKBLRZ, OKVLS, OOSR and ORBLZ) confirms that it is about balance and speed frequency whichare necessary for the performance of motorical tasks, so the accomplished connections are natural and expected.

On behalf of the third projected canonical factor in the motoric area (Table 3.) we can state that it has positive relationships with a larger amount of motorical variables, reverently , if we take the lowest coefficient as (-.434) MRLDCT even five variables correlate in the area (total consisting of 24). Those variables, according to the significance of the relation with isolated factors, can be divided into several groups, however, because of wide interpretation of a very complex system of relations, and one that is already weighed down by a large number of coefficients in boundary values in this case variables are easier to group by the area they represent. In this sense we can state that two of three variables that represent the area of speed have a very high correlation with isolated canonical factors (-.832) MBR20MVS and (.787) MBR20MLS while the third variable of speed with a correlation coefficient under (-.434), but with a specificity that this canonical factor has the largest correlation (in comparison to the three stopped isolated roots in the motorical area). It is interesting that that the areas of coordination (.604 MKTKK3), explosive strength (.537 MESSD) and repetitive strength (-.434 MRLDCT) each have one variable of correlation, which in other isolated motorical canonical factors there is no correlation, and can be interpreted that it is only significant for this canonical factor. For two groups of variables we can state that they do not have one variable in a statistically significant relation with an isolated canonical factor, i.e. representative variable in the area of flexibility and area of speed frequency. Taking into consideration the largest number of correlation variables (two speed variables and two strength variables- explosive and repetitive) isolated canonical factor can be called the factor of powerful speed characteristics, with some variables that represent the area of coordination.

In the third projected canonical factor of situational-motorics area (Table 4.) it can be stated that it has statistically significant

connections with all three variables of sports: basketball (-726) OKVLS, volleyball with two variables (.582) OOGCPMOS and (.431) OOOCK and handball with (-.614) ORVLS. Interpreting the relationship of coefficient height in variables of different sports with isolated canonical factors, it can be constituted that they are logical, because they arefor ex. the variable in basketball of dribbling slalom and the variable in handball dribbling slalom, both are individually associated with the canonical factor in a high correlation relationship (.726) OKVLS and (-.614) ORVLS, and for both tests the presence of speed, strong and coordinated properties are required in examinees (it is also important for both variables in the game of volleyball). With this a name could be given to this factor, in addition it could confirm the previously given name to the third isolated canonical factor in the motorical area. In accordance to the given, as a representative of factors with a slight advantage, and considering that this is the third canonical factor, we can define the game of volleyball, whose two variables correlate in the area and for whose performance of elements , as in the performance of basketball and handball slalom, is required quick, strong and coordinated characteristics.

For the third isolated canonical function, it can be concluded that it is in the motorical area the isolated factor is defined by speed-strong characteristics in examinees, and that the variables (OKVLS, OOGCPMOS, OOOCK and ORVLD) that are in correlation with the canonical factor in the area of situational motorics, bythis statement confirming it. For the performance of these motorical tasks, particularly out of volleyball (two to three representatives in correlation), it is necessary to possess speed strong characteristics in examinees. In confirmation of the following, a specific description of the test could be used; for ex. measurement of precision of the lower block or the specific precision of aiming the ball, but where a concrete realization of the same, an examinee must continue to maintain the body in a proper position (for what strength is needed), or for maintaining precision at a high level, where at the continuous performance of the task also requires speed and strong abilities in examinees. Based on the above, it can be confirmed that the acquired connections for the third canonical function are logical and expected.

For the fourth - also the last isolated canonical factor (Table 2. and 3.) can be stated that it has a level of significance from p = .019, that Canonicl R amounts to .596 and can explain (Canonicl R sgr.) 35% of motorical variables and variables for success in performance of elements in sport games, and that the significant connections of the research area (CHI-sgr.) ranges 161.0. With these characteristics the fourth isolated factor in the motorical area practically represents a mathematical artifact. All latent dimensions, excluding the coordination variables, have a connection with at least one of the variables with the above canonical factors where it can particularly state the variables that define area of frequency, regarding that it is the only one in this area that has correlation with all three variables with the canonical factor (.370) MBFTAN, (-.526) MBFTAZ and (-.393) MBFTAR. Essentially, because of the saturation of canonical factors with a large number of different variables with different levels of coefficients in comparison to, this factor can be interpreted only as a factor of general motorical abilities of examinees.

By means of the fourth projected canonical factor in situational - motorical areas (Table 4.) all three variables of basketball have a positive correlation with relations (.498) OKBLRZ, (431) OKVLS and (-.465) OKBLK., with the exception of these three variables, only one more variable out of a different area- area of volleyball associates with canonical factors of (.782) OOSR. Hence, considering that it concerns the last isolated canonical factor that is saturated with more then one variable of sport games and the canonical function only 35% groups of motoric variables and variables for the assessment of accomplishment are explained, it can be stated that it is defined from the assessment out of the field of basketball sport games, for which performance is required general motoric abilities of examinees, and that that factor can be named the general factor of motoric abilities.

The fourth isolated canonical function that has a low level of significance and that explains only 35% variability can be defined as the general motoric ability of examinees. The following confirms canonical roots achieved in the motoric area that correlates with great amount of different variables and as relations in situational-motorical areas within the three variables of basketball and one variable from the area of volleyball make a significant canonical connection with an isolated canonical root. As it is for the realization of motorical tasks (in a situational motorical area consisting of 9, four variables have a positive relations) that represent the performed tests, the necessary synergized complex of different motorical abilities of an individual, is natural to define this function as a general motorical ability of anexaminee.

Table 3. *Canonical factors in a motoric area*

	KF 1	KF 2	KF 3	KF 4
MKTKK3	.045	.129	.604	.126
MKOS3M	-.168	.141	.051	-.175
MAGOSS	-.203	.212	-.258	.166
MESBML	.256	.172	.098	.091
MESSD	.167	.469	.537	.447
MBR20MVS	.368	.444	.277	-.766
MBFTAN	.174	-.428	.124	.370
MBFTAZ	.235	-.360	-.108	-.526
MBFTAR	.144	.009	.029	-.393
MRASKR	-.074	-.145	-.282	.180
MRSPTL	.215	.308	.292	-.408
MRLDCT	-.097	.025	-.434	.029
MBAU1Z	-.172	.049	-.332	.021
MBAP1Z	-.062	.042	-.210	-.307
MBAU10	.015	-.537	.026	-.069
MPCDS	.089	.056	.326	-.016
MPGVCN	.339	.134	-.269	-.397
MPGHCR	.004	-.244	-.134	.443
MFLISK	-.232	-.251	.173	-.281
MFLZLG	-.129	.055	.134	-.224
MFLDPK	.101	.271	.124	-.194
MBR20MVS	.353	-.203	-.832	.395
MBR20MLS	-.000	-.380	.787	-.341
MBR50MVS	-.220	.148	-.396	-.162

Table 4. *Canonical factors in a situational-motorical area*

	KF 1	KF 2	KF 3	KF 4
OKBLRZ	.533	.717	-.306	.498
OKVLS	-.105	.628	.726	.431
OKBLK	.138	-.118	.331	-.465
OOGCPMOS	.036	.029	.582	-.050
OOOCK	.134	-.199	.431	-.084
OOSR	-.248	-.598	.004	.782
ORIS	.117	.229	.038	.048
ORBLZ	-.147	-.410	-.298	-.186
ORVLS	-.579	-.204	-.614	-.149

Conclusion

Connection between morphological characteristics and metrical abilities with the performance of motoric elements of basketball, volleyball and handball, was analyzed using canonical correlation analysis on 151 vocational high school examinees-students. The sample being analyzed by application consisted of 36 variables of the predicator area (12 morphological and 24 motorical variables) and 9 variables of the criterion area (3 from basketball, volleyball and handball). The given aim in the research assumed that a canonical connection between morphological characteristics and motorical abilities existed by the performance of situational morphological elements in basketball, volleyball and handball. Use of the canonical correlation analysis showed the absence of correlation in the relations of morphological situational-motorical area, i.e. absence of canonical factor on a significant level of .005, that could provide adequate guidance about elements in the criterion area, it may imply the simplicity/low complexity of elements in volleyball, basketball and handball, and are used for analysis of situational motorical areas and for whose performance is not necessary to have significantly marked morphological characteristics. It is assumed that the structure of sample examinees (vocational high school) and specific population of a certain age (puberty, acceleration in growth and development) had a corresponding impact on the obtained connections. In summarizing the connection obtained by application of the canonical correlation analysis fro morphological situational-motorical areas, it can be concluded that through four isolated canonical factors the significance and homogeneous structure of correlation in the groups of motorical abilities and situational-motorical test used for assessment of completion in performance of sports in lessons. These achieved connections are real and substantial, true with the middle projections of correlation coefficients on isolated canonical factors, like in motorical area, same in the area of situational-motorical variables (accomplishment in performance of elements in sports). Such statements can be supported mainly by reviewing the results of the canonical correlation analysis for the sets of variables used, followed by understanding the complexity of structure in movement and complexity of motorical ability in the performance of elements in lessons. General conclusion for all four canonical functions is that their common characteristics, required for quality realization of situational-motorical tasks reduced to the factor of all treated sports, it can be defined through speed characteristics in examinees, taking in consideration that the variables of speed characteristics take in correlation in all four canonical-motorical factors. Therefore, for successful performance of situational-motorical tasks (interpreting relations in correlations and where through all four isolated functions exists a global occurrence in all three sport elements tested) from the examinees it is most important to have fast abilities. Obviously that the quality of performing situational-motorical tasks is greater than the level of having other isolated motorical abilities (precision, balance, speed frequency of movement, strength) which is also established in the application of canonical correlation analysis and confirming the correlation that cannot be ignored in the whole system of relations. Therefore, the listed (determined) relations confirm the complexity, how connections between motorical abilities of the examinees and complexity of the structure treated by sports, and in the same way the complexity of relations that can result between these two areas. Previously obtained results along with this research, partially confirm the aim of study, i.e. canonical correlation only exists between motorical abilities of situational motorical elements in basketball, volleyball and handball.

Reference

Babić, V., Harasin, D. & Dizdar, D. (2007). *Relations between the variables of explosive strength and morphological features of the kinematic indicators of maximal speed running.* Kinesiology 1/2007, (pp 28-39). Zagreb.

Brettschneider, S., & Naul, S. (2004). *Influence of social status to the level of motor readiness secondary student population.* Kineziology 1/2004, (pp 23-34). Zagreb.

Bukvić, O. (2003). *Relations between basic and specific motor-motor-skills of basketball players and their impact on the success in basketball.* Homo sporticus No 1, (pp 17-28) Sarajevo.

Findak, V. (2001). *Methodology of physical education.* School books. Zagreb.

Hardman, K. (2008). *Physical education in schools: A global view of the state.* Kineziology 1/2008, (pp 5-28). Zagreb

Healthy Life Education Broschur (2007). Illinois: Tanita corporation of America Inc.

Kovač M., Leskošek, B., & Strel, J. (2007). *Comparison of morphological characteristics and motor abilities of boys of secondary school students of different programs.* Kineziology 1/2007, (pp 62-73). Zagreb.

Mahmutović, I. (2003). *Defining models and correlation of selected morphologically-dimensional mobility and efficiency in the European Championship game participants in volleyball 2001- th year.* The master thesis at the Faculty of Physical Education, University of Sarajevo. Sarajevo.

Vlašić, J., Oreb, G. &VFurjan-Mandić, G. (2007). *Relationship of motor and morphological characteristics of the student s performance in folk dances.* Kineziology 1/2007, (pp 49-61). Zagreb.

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