THE INFLUENCE OF SOME MOTOR ABILITIES ON THE SPECIFIC KARATE PRECISION WITH HAND AND LEG

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Abstract

The survey was conducted on the most quality karate athletes' cadets, members of representative selections of Macedonia. For this study were included a total of 31 karate experts (cadets) of the whole territory of the Republic of Macedonia. The main objective of the study was to determine the relations between the motor abilities, and the specific karate precision with hand and leg. The realization of this study was enabled with the measuring instruments that have satisfactory measurement characteristics, for assessment of: the basic motor skills (9 variables) divided by three measures in the specific motor spaces characteristics in karate sport (rhythmic structure, frequency of the segmented movements and explosive power of the lower limbs), represented as predictive system of the variables, and two (2 variables) to assess the specific karate precision with hand and leg, as criteria system of the variables. Using linear regression analysis, were determined the relations between the motor dimensions and the specific karate precision with hand.

Keywords: internationals, karate, cadets, predictors, criteria.

INTRODUCTION

The greater development of karate as a sport requires modern approaches, concepts, forms, activities and procedures in the training of young karate technologies, especially concerning the structure of anthropological features their correlations and specifications on the athletic performance. In addition, it is necessary to establish the diagnosis and the validity of the instruments used for modeling, diagnosis, planning, programming and monitoring of the effects of implementing the training process. Doder et. all (2011).

Because of the specificity of this sport that features with very complex movements and movements of explosive character that depending on the accuracy are crucial in a given situation of sport combat, there is a need to continuously implement new researches that will concern themselves on the explanation of the phenomena.

The specific motor abilities in the modern sport are maybe crucial factor for solving sport tasks and achieving sport success. The strokes with arm and leg in karate sport are dominant techniques with which the sportsmen scores points or win the fight Kostovski, et. all. (2012a). Karate sport, from the aspect of competitors' motor activities, as well as competition specifics, belongs to the first group of sports that have a significant impact on transformation of the athletes' anthropological status Kostovski, et. all. (2013).

So, for the process can be successful, existing patterns need to be upgraded and to be based on real examples, practical and scientific achievements which will enable objective valorization of the elements that are important for the transformation of the mentioned dimensions Kostovski, et. all. (2012b).With the aim to provide better kinesiology researches, in nova days there are used measure instruments for registering and measuring of the manifestation of specific motor abilities Sertić et. all. (2009) and greatly for planning, programming, monitoring and control of the athletes training process.

Karate sport belongs to the group of sports which have a significant impact on the transformation of the human person as a whole. With its regular practice throughout a long period of time affects on the optimal athlete development, on the improvement of the structure of psychosomatic status, influence on the anthropometric and motor dimensions of athletes. According to what has been previously stated, the object of this study in this paper represents some motor and specific motor abilities in young karate athletes.

The problems of this study are the predictive values of the variables from the motor space, in the system of criteria variables (specific karate precision with young karate athletes). The purpose of this research can be defined as, determining the impact of certain motor skills on

the successful realization of the specific karate precision.

From the object and the purpose of the research resulta aalso the specific tasks that are carried out in this study as follows: With the analysis of the results, it was established that the applied predictive variables of the motor space has the largest statistically significant impact on the performance of the specific karate precision.

METHODS

Participants

The research was conducted on a random sample of participants, or the most quality karate cadets, members of the aforementioned representative selection. In total includes 31 karate cadets from all over Macedonia.

Instruments

In this study the measurement instruments that were used were divided into two groups:

- The predictor system of variables include: specific tests for assessment the basic motor skills (9 variables), divided by three measures in the specific motor spaces characteristic for the karate sport (rhythmic structure, frequency of the segmented movements and explosive power of the lower limbs),

- The criteria system of variables consists of: two (2) variables to evaluate the specific karate precision.

The motor variables were estimated according to the methodology of Metikoš, D., et all, (1989), as for the variables to assess the specific karate precision were measured according to the methodology of Kostovski, Ž. (2004).

Variables for assessment of the frequency of movement

1. taping with hand for 10 seconds in sagital plane - MTAP10

2. taping with leg for 10 seconds in sagital plane - MTAN10

3. taping with leg on wall - MTANZ

- *Variables for assessment of the rhythmic*

4. Non rhythmic strokes with hands - MNUR

5. Non rhythmic strokes with legs - MNUN

6. Strokes and defenses - MUIO

Variables for assessment of explosive strength of the lower limbs

7. Long jump - MSMD

8. Jump height - MSMV

9. Kicks towards the front (mae geri) from kneeling - MUMGK

Variables for assessment of the specific karate precision

10. Stroke with hand (dzaku zuki) in moving target that moves in sagital plane - URMSR

11. Stroke with leg (mae geri) in moving target that moves in sagital plane - UNMSR

Statistical Analysis

The applied variables in this study were treated with standard descriptive procedures, which were calculated the basic central and dispersion parameters in order to determine the function of their distribution and the function of the basic parameters for all researched areas: minimum values of the results (Min), maximum values of the results (Max), arithmetic mean (Mean), standard deviation (Std.Dev). To test the normality and the distribution of the results were used: the coefficient of curvature (Skew), coefficient of extension (Kurt) and Kolmogorov and Smirnoff method (max D). Besides the basic statistical parameters there were calculated and the correlation coefficient (r) and partial correlation (PART-R), for the whole system of variables. The assessment of the impact of predictive systems of the variables on the criteria variables, were calculated by the method of multiple regression analysis. Regression analysis is applied for determining the impact of basic motor skills, presented as predictive system on the specific motor karate precision as criterion. According to this were calculated: coefficient of multiple correlation (RO), coefficient of determination, partial regression coefficients (BETA), standard error of prediction (SIGMA), the level of significance of the partial regression coefficients Q (BEBETATA) and for the verification of the hypothesis that the true value of the multiple correlation is actually zero, was calculated the F-test.

RESULTS AND DISCUSSION

The Table 1 shows the results of the basic descriptive statistical parameters of the karate cadets. According to the obtained results we conclude that there are not any major deviations from the results of the anticipated logical values.

Table 1. Descriptive Statistics

	Valid N	Mean	Min	Max	Std.Dev.	Skew	Kurt	max D	p
MTR10	31	23,871	19	32	3,030	0,662	0,244	0,161	p > .20
MTN10	31	13,742	10	18	2,190	0,536	-0,227	0,181	p < ,20
MTNZ	31	28,129	21	38	4,559	-0,096	-0,797	0,143	p > .20
MNUR	31	15,645	10	24	3,963	0,323	-0,974	0,135	p > .20
MNUN	31	7,935	2	15	2,607	0,281	1,019	0,116	p > .20
MUIO	31	5,419	3	9	1,455	0,517	0,032	0,162	p > .20
MSMD	31	188,032	155	245	23,787	0,667	-0,388	0,131	p > .20
MSMV	31	33,839	25	48	6,768	0,585	-0,799	0,199	p < ,15
MUMGK	31	4,226	3	5	0,669	-0,292	-0,674	0,277	p < ,01
UNMSR	31	8,548	5	11	1,338	-0,066	0,911	0,239	p < ,05
URMSR	31	9,065	8	10	0,574	0,015	0,336	0,351	p < ,01

From Table 1 in terms of the asymmetry of the distribution of the results, it can't be observed, which it could be said that were defined symmetrical distributions. It suggests on expressed homogeneity in the results among the respondents. According to the results of Kolmogorov-Smirnoff method, we conclude that with the applied variables were determined significant deviations of the results in three cases. Statistically significant deviation of the results was found in the variables MUMGK (p <.01), UNMSR (p <.05) and URMSR (p <.01). In the results of the other applied variables with karate cadets normal distribution was determined.

Table 2 Pearson coefficient of correlation

	MTR10	MTN10	MTNZ	MNUR	MNUN	MUIO	MSMD	MSMV	MUMGK	UNMSR	URMSR
MTR10	1,00										
MTN10	0,10	1,00									
MTNZ	-0,06	0,19	1,00								
MNUR	-0,10	-0,15	-0,37	1,00							
MNUN	0,20	0,20	-0,03	0,40	1,00						
MUIO	0,25	0,13	0,27	0,04	0,22	1,00					
MSMD	-0,08	0,12	0,47	-0,21	-0,14	-0,07	1,00				
MSMV	0,07	0,37	0,28	-0,03	0,00	0,03	0,70	1,00			
MUMGK	0,06	0,15	0,25	0,08	0,22	0,31	0,38	0,31	1,00		
UNMSR	-0,06	0,24	-0,02	-0,05	0,00	-0,19	0,13	-0,06	-0,07	1,00	
URMSR	0,27	0,36	0,19	0,10	0,05	0,37	0,41	0,42	0,05	-0,13	1,00

The Pearson correlation coefficients between the variables applied with the karate cadets are shown on Table 3. The obtained results are considered as statistically significant if the values of the correlation coefficients are equal to or greater than 0.36 to p <0,05; and correlation coefficients whose values are equal to or greater than 0.46 to p <0,01.

From the above stated it results that, a statistically significant relation at the level of p <0,05 was established with the relations between the variables: - MTAN10 with: MSMV (0.37), URMSR (0.36); - MTANZ with: MNUR (0.37); - MNUR with: MNUN (0.40); - MSMD with: MUMGK (0:38); - MSMV with: MTN10 (0.37);

While statistically significant relations at the level of p <0,01 was established with the relations between the variables: - MSMV with: URMSR (0.42); - MTANZ with: MSMD (0.47)With the other relations between the applied variables, the determined correlation coefficients are with smaller values and are not statistically significant.

Table 3 shows the regression analysis of the variable Stroke with hand (dzaku zuki) in moving target that is moving in the sagital plane

(URMSR) among cadets. From the obtained results it can be seen that the coefficient of multiple correlation is 0.799 and the explained variability of the common variance is 37%. This connection between the criteria variable and the system of applied predictive motor variables is statistically significant at level p = 0.003. Significant partial regression coefficients of the level of p = 0.05 were determined with the variables: MTN10 (0.022), MNUR (0.038), MUIO (0.007), MSMD (0.004) and MUMGK (0.019).

Table 3 Regressive analysis of the criteria URMSR

Regression Summary for Dependent Variable: URMSR						
R= ,799 RI= ,638 Adjusted RI= ,483						
F(9,21)=4,1210 p<,003 Std.Error of estimate: ,412						
		St. Err.		St. Err.		
	BETA	of BETA	B	of B	t(21)	p-level
Intercpt			3,520	1,261	2,791	0,011
MTR10	0,276	0,146	0,052	0,028	1,899	0,071
MTN10	0,381	0,155	0,100	0,041	2,464	0,022
MTNZ	-0,080	0,174	-0,010	0,022	-0,460	0,650
MNUR	0,376	0,170	0,054	0,025	2,216	0,038
MNUN	-0,140	0,160	-0,031	0,035	-0,877	0,390
MUIO	0,463	0,156	0,182	0,062	2,959	0,007
MSMD	0,750	0,231	0,018	0,006	3,250	0,004
MSMV	-0,115	0,211	-0,010	0,018	-0,546	0,591
MUMGK	-0,402	0,158	-0,345	0,136	-2,544	0,019

In table 4 is shown the regression analysis of the variable Stroke with leg (Mae geri) in moving target that moves in sagittal plane (UNMSR) among cadets. According to the obtained results it can be seen that the multiple correlation coefficient has a value of 0.498, and participate in explaining the variability of the common variance with 25%. This connection between the criteria variable and the system of applied predictive variables it is not statistically significant at the level p = 0.05 (p <0.645).

Table 4 Regressive analysis of the criteria URMSR

Regression Summary for Dependent Variable: UNMSR						
R= ,49807830 RI= ,24808199 Adjusted RI= -----						
F(9,21)=,76984 p<,64499 Std.Error of estimate: 1,3863						
		St. Err.		St. Err.		
	BETA	of BETA	B	of B	t(21)	p-level
Intercpt			4,460	4,241	1,052	0,305
MTR10	0,017	0,210	0,008	0,093	0,082	0,935
MTN10	0,444	0,223	0,271	0,136	1,988	0,060
VAR3	-0,129	0,251	-0,038	0,074	-0,515	0,612
MNUR	0,089	0,245	0,030	0,083	0,365	0,719
MNUN	0,009	0,231	0,005	0,118	0,041	0,968
MUIO	-0,130	0,226	-0,120	0,207	-0,579	0,569
MSMD	0,580	0,333	0,033	0,019	1,741	0,096
MSMV	-0,551	0,304	-0,109	0,060	-1,815	0,084
MUMGK	-0,124	0,228	-0,248	0,456	-0,544	0,592

CONCLUSION

Based on the results obtained in this research that was conducted among karate cadets, the following conclusions are possible: According the determined influence of the predictive system of variables on the criteria variables for estimating the specific karate precision with hand or in the variable Stroke with hand (dzaku zuki) in moving target that is moving in the sagittal plane (URMSR), was determined statistically significant prediction of the motor

predictive variables on the criterion variables among karate cadets.

The test, seen from the perspective of previous researches on the proportional representation of the scoring techniques in karate, is one of the most exploited techniques. The successful execution of the same requires good concentration, estimation of the distance between competitors, and timely response to the shortening of the distance, known as diae. If we analyze the partial influence of the motor abilities we can observe that for successful implementation of this technique the largest contribution have the variables which cover the following motor spaces and are very important for the karate sport: frequency of the motion with upper and lower extremities (MTR10 p =, 041 and (MTR10 p =, 022), rhythmic (MNUR p =, 038 and MUIO p = 0,007), explosive strength of the lower limbs (MSMD p =, 004) and (MUMGK p =, 019).

From the results of some previous studies, which was analyzed the competition effectiveness of karate athletes, it was established that the highest number of scored points are scored using hand techniques (IPON) Koropanovski et. all. (2008).

In the rest of the relations among cadets, there wasn't determined statistical significant prediction of the predictive motor variables on the criteria variable for estimating the specific karate precision in Stroke with leg (Mae geri) in moving target that is moving in the sagital plane (UNMSR). This kind of phenomenon is probably due to the complexity of performing the technique (diae maegeri) for this age.

PRACTICAL ASPECTS

The obtained results will inevitably be of great importance for both scientific thought also for practice. Our opinion is that the results and their interpretation and correct conclusions will contribute in explication, prediction and transformation of the anthropology of the future supreme karate athlete. Karate as a sport discipline that takes a larger scale in our country and the world is a complex phenomenon which abounds with research techniques and movements that require full balance of all segments. During the competition that lasts a relatively short time, come to the fore, precisely the balance of all segments because of it he fight will be won or lost.

The practical contribution will be seen in:
- Expert trainers at any time will be able to compare the current state of their competitors,
- With the testing of their competitors, indirectly they will influence on the control of the effects of the training process
- Positive comparative results will be the benchmark for well-organized and implemented training process.

Such approaches and knowledge's of current and future training experts will enable despite the previous intuitional, traditional, enthusiastic and personal knowledge's, to seek greater support in the latest scientific and proven knowledge's, and their implementation would be a basis for success in any training process.

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