COMPARATIVE ANALYSIS OF SOME MOTOR TESTS AMONG THE GREATEST WRESTLERS AND BOXERS IN THE REPUBLIC OF MACEDONIA

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(Original scientific paper)

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Abstract

A research on 151 research participants, male athletes aged from 18 to 33 year old, has been carried out. The athletes have therefore been categorized into two different groups, one group of 64 wrestlers and another one of 87 boxers. To realize the aims of the research a predicting system of 10 motor tests that estimate some motor capabilities has been applied. The results are additionally processed with a multivariate and univariate analysis of variance. They show that the wrestlers have better flexibility, frequency of the lower extremities, explosive strength in the lower extremities, while the boxers have better explosive strength in the upper extremities and the shoulder girdle, repetitive strength and endurance of the upper extremities and shoulder girdle and static strength of the spinal extensors, as well as better agility (speed with a change of the body's position and direction).

KeyWords: *training, top athletes, variance analysis, motor capabilities, combat sports*

INTRODUCTION

Scientific knowledge is essential to the field of kinesiology, since without it - it would be difficult to verify the transformation processes of these activities. This is of great importance for the reason that these processes can be the basis for determining and changing the motor, anthropometric and other measurements of the athlete. Of a great importance is the study of the anthropometric, motor (basic and specific), cognitive and cognitive space. The study of these measures in terms of the psychosomatic status is extremely important in the planning and realizing the kinesiological activities of the athletes.

Although, according to one of the categories of types of sport, wrestling and boxing are in the group of polystructural sports with an acyclic character whose base is the cross (straight punch) and the knockout of the opponent, both being different from each other. The success in these sports depends on the different forms of progress of certain capabilities and on the characteristics of the anthropological state.

This complex activity requires the wrestlers and boxers to be aware and all-present during a fight. They must have a range of postures and techniques, diverse strategies for performing different techniques. The wrestlers and boxers also have to be prepared for the diversity of opponents, each having a unique and specific style (Ćirković, 1978; Kuznjecov, 1980; Savić, 1986 a i b; Savić, 1996; Chatzilelekas, 1999; Filimonov, 2000).

The training sessions have to last long enough in order to cause changes in specific organs or the whole body system required by that sport (Zahorjević, 1976; Zulići Milošević, 1987; Popović, 1988; Malacko i Rađo, 2004; Malacko i Popović. 2001). It is important to determine the capabilities and characteristics of the anthropological state of the athlete that can help us recognize the effects of the workout in order to plan a training session schedule. Once we have the differences in the training sessions between the two groups distinguished, we will be able to recognize the advantages and disadvantages of each training program.

The aim of this research is to determine the state and the differencies of some motor tests among Macedonian athletes engaged in professional boxing and wrestling.

WORKING METHODS

A research on 151 research participants, male athletes aged from 18 to 33 years old, has been car-

Table1. Difference in the motor skill tests between the best boxers and best wrestlers from the Republic of Macedonia

Wilks'Lambda	Rao's R	df 1	df 2	Q
40,81	571,35	10,00	140,00	**,00**

Variables	Sport	Mean	Std. Error	F	Q
Crane exercise on a balance bench with the eyes opened	Wrestling	51,20	3,74	0,20	,65
	Boxing	53,41	3,21		
Arm Tapping	Wrestling	36,23	0,54	1,03	,31
	Boxing	35,52	0,46		
Leg Tapping	Wrestling	42,80	0,32	150,61	**,00**
	Boxing	36,46	0,27		
Bench forward lean	Wrestling	52,92	0,69	277,34	**,00**
	Boxing	37,86	0,59		
Sitting hamstring stretch	Wrestling	63,91	1,48	4,82	**,03**
	Boxing	59,62	1,27		
Standing long jump	Wrestling	223,48	2,34	16,13	**,00**
	Boxing	211,11	2,01		
Supine chest throw with a medicine ball	Wrestling	1231,48	25,06	3,59	**,05**
	Boxing	1294,08	21,50		
Arch up exercises	Wrestling	11,42	0,66	7,33	**,01**
	Boxing	13,76	0,56		
Doing back extensions	Wrestling	64,84	2,69	112,12	**,00**
	Boxing	72,44	2,31		
Run –step crisscross	Wrestling	284,61	9,98	134,37	**,00**
	Boxing	202,00	8,56		

ried out. The athletes are therefore categorized into two different groups, one group of 64 wrestlers and another one of 87 boxers. The research participants are all specified as active athletes (boxers and wrestlers), from all categories, including contestants taking part in the Macedonian national league championship and in international tournaments. All research participants are healthy, without any physical disabilities and aberrant motor manifestations.

The basic criteria after which all participants are accepted to be a part of this research is to have been actively engaged in boxing or wrestling at least for a year, to take part in competitions and to practice at least three times a week. The research participants come from a number of wrestling and boxing clubs in the Republic of Macedonia.

The following motor tests have been used to determine the aims of this research: crane exercise on a balance bench with the eyes opened, leg tapping, arm tapping, sitting hamstring stretch, bench forward lean, supine chest throw with a medicine ball, run-step crisscross, standing long jump, arch up exercises and back extensions.

The gathered data is afterwards analyzed using basic statistical parameters such as the arithmetic mean (X), standard deviation (SD), minimal result (MIN), maximum result (MAX). The normal distribution of the applied variables is verified through the Kolmogorov-Smirnov test. The differences between four different groups formed based on the percentile values of the body masses are determined with a multivariate and univariate analysis of variance (MANOVA and ANOVA). The differences between each separate group have been determined with a LSD-test. The data has been processed with the SPSS (a software package used for statistical analysis) for Windows Version 15.0.

RESULTS

The results in most of the tests of both groups are normal, enabling further analysis of the primary data. The results of the multivariate and univariate variance analysis are given in Table 1.

Table 1 presents the results of the multivariate variance analysis. We can notice that there are statistically significant differences in the motor skills

of the boxers in comparison to the motor skills of the wrestlers.With Wilks' Lambda distribution of 40.81, Rao's R approximation of 571.35 and degrees of freedom DF of (1,2) 10/140, the differences make them statistically significant with a highest degree od statistical probability (Q=,00).

In a total of 10 analyzed motor tests, 8 have shown statistically significant differences among the analyzed group of research participants. Statistically significant differences have not been ascertained among the following tests: crane exercise on a balance bench with the eyes opened and arm tapping. Among the remaining motor skill tests the F Test is a statistically significant one with a certain level of statistic probability. The level of statistical significance of the arithmetic mean results shown on Table 1, shows us that the wrestlers performed better in the following tests: standing long jump, leg tapping and sitting hamstring stretch. Boxers performed better in the following tests: supine chest throw with a medicine ball, run-step crisscross, arch up exercises, doing back extensions. Given the results, we can prove that the wrestlers have a better flexibility, frequency of the lower extremities, explosive strength in the lower extremities, while the boxers have better explosive strength in the upper limbs and the shoulder girdle, repetitive strength and endurance of the upper limbs and shoulder girdle and static strength of the spinal extensors, as well as better agility (speed with a change of the body's position and direction). It is clear that there are such differences since both sports require certain disciplines. Boxing requires explosive and repetitive strength in the upper limbs and the shoulder girdle in order to perform different movements and techniques, agility in order to avoid the punches of the opponents, as well as strong muscles in the upper body. On the other hand, wrestlers are required to be flexible and to have segment and frequent speed of the legs in order to be able to perform most of the moves and to attack the opponent.

The results of this research should be taken into consideration when preparing the training sessions schedules, as well as in the selection of young athletes.

CONCLUSION

Given the results, we can conclude the following:

- wrestlers performed better in the following tests: standing long jump, leg tapping and sitting hamstring stretch.
- Boxers performed better in the following tests: supine chest throw with a medicine ball, run-step crisscross, arch up exercises, doing back extensions.

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КОМПАРАТИВНА АНАЛИЗА ВО НЕКОИ МОТОРИЧКИ ТЕСТОВИ МЕЃУ ВРВНИ БОРАЧИ И БОКСЕРИ ОД РЕПУБЛИКА МАКЕДОНИЈА

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(Оригинален научен труд)

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Апстракт

Истражувањето е реализирано на селективен примерок од 151 испитаника од машки пол, спортисти на возраст од 18 до 33 години. Примерокот е поделен во два супримерока и тоа 64 борачи и 87 боксери. За реализирање на целите на истражувањето беше применет систем од 10 тестови за проценување на некои моторните способности. Добиените резултати беа обработени мултиваријатна и униваријатна анлиза на варијансата . Резултатите од истражувањето покажаа дека дека борачите имаат подобра флексибилност, брзина на фреквенција на долните екстремитети и експлозивна силина на долните екстремитети, додека боксерите имаат подобра експлозвна силина на рацете и раменот појас, репитативна силина и издржливост на рацети и раменот појас и статичка силина на екстезоритe на дрбетниот столб како и подобра агилност (брзина со промена на правецот).

Клучни зборови: *тренажен процес, врвни спортисти, анализа на варијанса, моторни способности, боречки спортови*