

QUANTITATIVE AND QUALITATIVE DIFFERENCES IN SITUATIONAL-MOTORIC EFFECTIVITY WITH YOUNG HANDBALL PLAYERS FROM MONTENEGRO

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Abstract

This research has been conducted on 100 young handball players aged from 14 to 15, from Montenegro. They were divided into 2 (two) groups according to their regional belonging. The first group consists of 50 players from the continental region, and the second group - 50 players from the Mediterranean region. They have been tested by 5 tests for estimating situational-motor abilities, with the aim to compare basic motor abilities between the two groups. After processing the data with the basic descriptive methods, and having established the differences by t-test and discriminative analysis, the conclusion drawn from the research is that within the treated situational-motor space, the handball players from the continental region have achieved far much better results than those of the Mediterranean players.

Key words: athletes aged 14-15, t-test, discriminative analysis, situational-motor tests

Introduction

Montenegro is a country where the Mediterranean passes to Continental, as well and a real mountain type of climate. This is a consequence of its position, separations and dissections of the relief, relocations and confrontations of air masses of different physical characteristics, proximity to the sea, character of the soil and other factors. The motive of this research was to try in its own community to give importance and contribution to that branch of sport that gave Montenegro most trophies. Regarding that Montenegro is divided into Mediterranean and continental region, the very idea was to be conducted a research in that area on the younger population of boys-who are actively involved in the handball sport. By acquisition of the state independence and the performances of our national team, was given a right opportunity to show Europe and the world what kind of potential Montenegrin handball has. Games, especially sport's games, which operate using a large number of players who are in constant motion simultaneously confronting on the individual, group and collective level, are a unique phenomenon that is not easy to analyze (Rogulj, 2000). The top modern handball requires a high level of acquired motor structures, all in order to solve some specific tasks that occur during the game's phase, defense and attack. In order the players to be able to accomplish the requirements of the modern handball game they are expected to get absolute maximum achievements in the range of technique-tactical and physical preparedness. "Handball is a game where the player's activities is characteristic continuous movement with or without change of direction, woven by fast and sharp sprints, high jumps, various landings and various duels in contact with the opponent" (Pavlin, Šimenc & Delija, 1982). In the sport's activities during the training and competitions in the handball great importance have knowledge, or developing specific

situational, technique-tactical elements relevant for the handball success. To the base of the pyramid of success factors are the basic anthropological features, and at the higher levels of specific skills as well and the indicators for situational efficiency in the game of every successful handball player. Every sport discipline is achieved in four main phases: teaching techniques, the adoption of techniques, theoretical and practical tactics' coping and training. From these stages of realization and adoption of sport's disciplines, sport's training has a dominant position.

Problem and aim

The problem of this research is the determining of the differences at the level of efficiency situational indicators of young handball players, from the Mediterranean and continental regions that are organizationally involved in the handball training. The object of this study were the handball players of age 14-15 years, as well and their situational-motor abilities. The main goal of this study was to determine possible differences at situational-motor abilities among handball players from the continental regions and the handball players from the Mediterranean region. Starting from the goal, the following research tasks were set: - determination of the level of situational - motor abilities at the handball players from the continental region; - determination of the level of situational - motor abilities at the handball players from the Mediterranean region; - to compare situational - motor abilities among handball players from the continental regions and handball players from the Mediterranean region in the manifested space; - to compare situational - motor abilities among handball players from the continental regions and handball players from the Mediterranean region in the latent space. Based on the formulation of the problem, objects, set goal and tasks, hypothesis of this paper could be

formulated as follows: Ho - statistically significant differences are expected in the situational - motor abilities at the young handball players from the continental and Mediterranean region; H1 - statistically significant differences are expected at the situational - motor abilities in the manifested space among the handball players from the continental and Mediterranean region, in favor of the handball players from the continental regions; H2 - statistically significant differences are expected at the situational - motor abilities in the latent space among the handball players from the continental and Mediterranean region, in favor of the handball players from the continental regions.

Methods

The measurement was conducted in Niksic (RK "Sutjeska") and Berane (RK "Berane") from continental region, and Danilovgrad (RK "Danilovgrad") and Bar (RK "Mornar") from Mediterranean region. In this study was used a sample of 100 male respondents, consisting of young handball players involved into systematic handball training.

The sample was divided into two subsamples (groups), as follows: - The first group (50), handball players from continental regions (Niksic and Berane); - The second group (50), handball players from the Mediterranean region (Danilovgrad and Bar). Variables used were: 1. The precision from a jump shot from 9 m (SRP9SK), 2. The ability to throw and catch balls bounced from the wall (SLOZ), 3. Slalom in the area between 6-9 m (SSL 6-9), 4. Speed running ball in a square (SVLK), 5. Movements in the triangle using basic defensive position (SKUT). The data obtained by testing were analyzed by the procedures of basic (primary) descriptive statistics: The normality of results' distribution was tested by the method of Kolmogorov and Smirnov. The quantitative differences between the two groups of respondents in the situational - motor abilities were determined by the t-test for large independent samples. The qualitative differences in situational - motor abilities were processed by discriminative analysis between the groups according to the region.

Results

The results from the tables 1 and 2e logical and expected. No significant deviations are noted regarding the represented values of skewness, kurtosis and Kolmogorov - Smirnov test. For determining significance of the differences between the arithmetic means of handball players from the continental region and the Mediterranean region was applied t-test for large dependant samples, while the difference is treated for statistical significance at the level of 0.05 (5%). According to the gained results, among the treated groups of respondents, statistically significant difference between them was found at 3 variables: slalom at space 6-9m (SSL 6-9), speed of running a ball in a square (SVLK) and moving in a triangle using basic defensive position (SKUT).

The respondents from the group of handball players from the Mediterranean region (G_2) achieved significantly better results than the group of handball players from the continental region (G_1), and only in variable the ability to throw and catch the ball bounced from the wall (SLOZ). In the variable that do not show any statistically significant difference, handball players from continental regions (G_1) had better results than groups of handball players from the Mediterranean region (G_2) at variable precision of a jump shot from 9m (SRP9SK). According to the gained results of the general hypothesis Ho- statistically significant differences are expected in situational - motor abilities at the young handball players of continental and Mediterranean region is partially accepted.

Table 1. The basic descriptive parameters of the applied variables at the handball players from the continental region

Variable	SRP9SK	SLOZ	SSL 6-9	SVLK	SKUT
Mean	5.26	19.24	12.64	6.41	7.04
Min	0.00	9.00	10.25	5.31	6.15
Max	10.00	28.00	15.53	7.93	8.31
St.D.	2.79	4.87	1.08	0.60	0.60
St.Error	0.39	0.69	0.15	0.08	0.08
Skew	0.14	-0.69	0.10	0.61	0.59
Kurt	-0.91	-0.39	0.65	0.04	-0.20
K-S	0.17	0.14	0.46	0.70	0.25

Table 2. Basic descriptive parameters of applied variables at the handball players from the Mediterranean region

Variable	SRP9SK	SLOZ	SSL 6-9	SVLK	SKUT
Mean	4.80	21.10	13.25	6.65	7.53
Min	1.00	14.00	11.44	5.15	6.21
Max	8.00	27.00	16.63	8.31	9.94
St.D.	1.92	2.99	1.08	0.55	0.80
St.Error	0.27	0.42	0.15	0.08	0.11
Skew	-0.21	-0.42	1.39	0.35	0.74
Kurt	-0.26	-0.04	2.41	1.13	1.03
K-S	0.07	0.62	0.03	0.64	0.92

Table 3. T-test between the arithmetic means of handball players from the continental region - G_1 and the Mediterranean region - G_2 (df=98)

Varijable	Mean G_1	Mean G_2	t-value	p
SRP9SK	5.26	4.80	0.96	0.34
SLOZ	19.24	21.10	-2.30	0.02
SSL 6-9	12.64	13.25	-2.82	0.01
SVLK	6.41	6.65	-2.13	0.04
SKUT	7.04	7.53	-3.47	0.00

Table 4. Discriminant analysis of the situational - motor tests among handball players from the continental and Mediterranean region

Eigen-value	Canonic R	Wilks' Lambda	Chi-Sqr.	df	p-level
0.30	0.48	0.77	25.18	5	0.00

Table 5. The structure of discriminative function of situational - motor tests among handball players from the continental and Mediterranean region

Varijable	Root 1
SRP9SK	0.18
SLOZ	-0.42
SSL 6-9	-0.52
SVLK	-0.39
SKUT	-0.64

Table 6. The group of centroids situational - motor tests between the handball players from the continental regions (G_1) and the handball players from the Mediterranean region (G_2)

Centroids	Root 1
G_1	0.54
G_2	-0.54

By the discriminative analysis were determined and differences in motor situational tests among handball players from the continental and Mediterranean region. According to Table 4, values of the canonical correlation coefficient (0.48), hi-square test (Chi-Sqr. = 25.18), with 5 degrees of freedom, was found a statistically significant difference between treated groups of handball players according to the region at the level of 0.00. In the table 5 is shown a single discriminant function for handball players from the continental and Mediterranean region. According to its values, for more expressed discriminativeness, we can say that it has at 4 of totally 5 treated variables. To the statistically significant discrimination led variables: the ability to throw and catch balls bounced off the wall (SLOZ), slalom in space between 6-9m (SSL 6-9), the running speed in a square (SVLK) and moving in a triangle using basic defensive position

Literature

- Alić-Partić, M., Đug, A., Frljak, E., & Halilović, E. (2004). Diskriminativna analiza bazičnih i situacionih motoričkih sposobnosti rukometaša [Discriminant analysis of basic and situational motor abilities of handball players. In Bosnian.]. *Sport - Naučni i praktični aspekti*, 1, 13-16.
- Bjelica, D. (2006). *Sportski trening* [Sports training. In Serbian.]. Podgorica: CSA.
- Bjelica, D. (2007). *Teorijske osnove tjelesnog i zdravstvenog obrazovanja* [Theoretical basics of PE. In Serbian.]. Podgorica: CSA.
- Lakota, R. (2006). *Efekt programiranog rada na transformaciju bazično-motoričkih i situaciono-motoričkih sposobnosti rukometaša* [Effects of programmed work on transformation of basic-motor and situational-motor abilities of handball players. In Bosnian.]. /Master thesis/, Sarajevo: Fakultet sporta i tjelesnog odgoja.

(SKUT). At the variable accuracy of the jump shot from 9m (SRP9SK) by a projection of 0.18 was not established significant discrimination among treated handball players from the continental and Mediterranean region. In the table 6, which shows the group of centroids, the higher the value of the centroids is at the handball players of the continental region (G_1=0.54) compared to handball players from the Mediterranean region (G_2=- 0.54). This leads to the conclusion that in the treated motor - situational area, handball players from the continental regions have achieved significantly better results compared to the handball players from the Mediterranean region. According to the hypothesis results H2 - are expected statistically significant differences in the motor - situational abilities in latent space among the handball players from the continental and the Mediterranean region, in favor of the handball players from the continental regions is fully accepted.

Conclusions

Based on studies realized on a sample of 100 respondents - handball players by region (50 from the continental and 50 from the Mediterranean region) where were applied a total number of 5 variables (tests) from situation motorics, we can conclude the following: 1. The general conclusion would be that in the treated situational - motor tests the handball players from continental regions have achieved better results than handball players from the Mediterranean region; 2. The results achieved in the treated variables for both groups of respondents are logical and in accordance with the expectations; 3. Respondents, handball players from continental regions have achieved statistically more significant and better results than the handball players from the Mediterranean region in 3 variables; 4. Respondents, handball players from the Mediterranean region have achieved statistically more significant and better results than the handball players from the continental regions in one variable; 5. In the latent situation - motor space, using discriminant analysis, we can conclude or confirm the conclusion that the established differences were inclined in favor to the group of handball players from the continental regions.

- Lakota, R. (2009). *Uticaoj programiranog vježbanja na transformaciju bazično-motoričkih, situaciono-motoričkih i funkcionalnih sposobnosti kadeta rukometaša* [Effects of programmed work on transformation of basic-motor and situational-motor abilities of cadet handball players. In Bosnian.]. /Doctoral thesis/, Tuzla: Fakultet za tjelesni odgoj i sport.
- Lakota, R., Talović, M., Jelešković, E., & Bonacin, D. (2008). The effects of the programmed training on the transformation of the qualitative level in the situational-motor skills with handball players aged 11-14. *Sport science*, 1(2), 60-64.
- Lidor, R., Falk, B., Arnon, M., Cohen, Y., Segal, G., & Lander, Y. (2005). Measurement of Talent in Team Handball: the Questionable Use of Motor and Physical Tests. *Journal of Strength & Conditioning Research*, 19(2), 318-325.
- Muratović, A. (2011). *Razlike u nivou motoričkih sposobnosti i pokazatelja situacione efikasnosti rukometaša kontinentalne i mediteranske regije* [Differences in level of motor abilities and indicators of situational efficiency of handball players at Continental and Mediterranean region. In Serbian.]. /Master thesis/, Nikšić: Univerzitet Crne Gore.
- Pojškić, H., & Muratović, M. (2008). The partial quantitative changes of handball specific motor abilities produced by week fitness program. *Sport Scientific & Practical Aspects*, 5(1-2), 19-24.
- Rogulj, N. (2000). Differences in situation-related indicators of handball game in relation to the achieved competitive results of the teams at 1999 World Championship in Egypt. *Kinesiology*, 32(2), 32-74.
- Rogulj, N., Srhoj, V., & Banović, I. (2001). Uticaoj motoričkih sposobnosti na uspješnost u situacijsko-motoričkim testovima u rukometu. *Školski vjesnik*, 50(1), 41-46.
- Vuleta, D., Milanović, D. i Jukić, I. (1999). Dijagnostika motoričkih sposobnosti kao kriterij za selekciju vrhunskih rukometaša. "Kineziologija za 21 stoljeće", zbornik radova 2. međunarodne znanstvene konferencije (pp. 310-312).
- Zapartidis, I., Varelziz, I., Gouvali, M., & Kororos, P. (2009). Physical Fitness and Anthropometric Characteristics in Different Levels of Young Team Handball Players. *The Open Sports Sciences Journal*, 22(2), 22-28.

KVANTITATIVNE I KVALITATIVNE RAZLIKE U SITUACIONO-MOTORIČKOJ EFIKASNOSTI MLADIH RUKOMETAŠA IZ CRNE GORE

Sažetak

Ovo istraživanje je realizirano sa 100 mladih rukometaša uzrasta od 14 do 15 godina iz Crne Gore. Oni su bili podijeljeni u 2 (dvije) grupe prema regionalnoj pripadnosti. Prva grupa - 50 igrača iz kontinentalne regije, a druga grupa - 50 igrača iz mediteranske regije. Na njima je primjenjeno pet motoričkih testova za procjenjivanje situaciono-motoričkih sposobnosti, s ciljem da se usporede te dvije tretirane grupe. Nakon obrade podataka osnovnim deskriptivnim metodama i nakon utvrđene razlike t-testom i diskriminativnom analizom, zaključeno je da su rukometaši kontinentalne regije postigli značajno bolje rezultate od rukometaša mediteranske regije u tretiranom situaciono-motoričkom prostoru.

Ključne riječi: sportisti uzrasta 14-15 godina, t-test, diskriminativna analiza, situaciono-motorički testovi

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