

CONDITIONALITY OF INDIVIDUAL AND TEAM TECHNICALLY-TACTIC WOMAN BASKETBALL PLAYER FUNCTIONS ON THE LEVEL OF SITUATIONALLY-MOTOR READINESS

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Summary

The research was conducted on 43 female basketball players from 6 clubs of First division basketball women competition in Bosnia and Herzegovina. The main goal of this research is by using methodologically-analytical methods obtaining appropriate effective procedure to consider conditionality of individual and team technically-tactic functions on the level and character of situational motor readiness. For that reason our major issue was outlining methodology of differentiated approach to identify belonging of women basketball players to specific type groups according to structure affinity of their situational-motor skills, which was presented by hierarchical cluster analysis. To research indicators that could be the main criteria to measure effectiveness of rival activity of tested women basketball players, multiple analysis of variance of tactics quality was used to identify rational group of dominant components and it's reducing to optimal measure.

Key words: basketball, situational motor readiness, cluster analysis

Introduction

Cognition of conditionality of individual and team technically-tactic functions on the level and character of situational-motor readiness, process of improving quality of basketball game is actually implementing based on principles of complementarities of direct relation of logics and intuition, as a common index for autonomic rival women basketball players experience during fulfillment of their operational tasks, information based on deficient information. During that transformation, on stage of strengthening individualization of women basketball player rival training, initial and basic function of creative overhead of quality *4-basketball game relates to growth of basic and situational-motor quality on energetic-synergy level.

Objective

The main goal of this research is to find appropriate effective procedures to consider conditionality of individual and team technical-tactic woman basketball player functions on the level and character of situational-motor readiness.

Methods

The research was conducted through 15 basketball games in First division basketball women competition in Bosnia and Herzegovina in season

2004/05. We included 6 of the best basketball clubs in First division; KŽK "Željezničar" – Sarajevo, KŽK "Jedinstvo" – Tuzla, KŽK "Biss Tours Čelik" – Zenica, KŽK "Banovići" – Banovići, KŽK "Zrinjski" – Mostar, KŽK "Brčko" – Brčko Distrikt. Forty three women basketball players are tested. To estimate situational-motor abilities the following tests have been applied: 1. "Koverta" test with ball (SKFTUP), 2. Dribbling ball 4x5 m, turn and change direction with ball (SKF4x5), 3. Pass and catching ball against floor in front of wall with pivot (360°) – 30'' (SKFBLZ). 4. Three point rebound shot (6,25m) (SKF6,25), 5. Sprint with dribbling and shot to the other side of basketball court (SKFVP2), 6. Free throw (SKFBSB), 7. Entrance with shots after receiving the ball and dribbling, 8. Shot from 5 positions 5 m far from basket (SKFSS5). This experiment manifest variables were elaborated with standard statistic **descriptive** procedures, in order to specify central value measures and functions of their distribution as well as differences between actually gained and expected cumulative frequencies. Thereby we enabled assumption review that distribution of gained results is normal, which was tested with Kolmogorov-Smirnof's procedure. For results gained the following statistic parameters have been calculated: Arithmetic mean - **Mean**, Standard deviation - **SD**, Minimum valuation - **Min** and

Maximum valuation – **Max**. The assumption that some variable is normally distributed was tested according to measures: coefficient of skew – skewness and coefficient of elongate – **kurtosis**. **Correlation analysis** that determines even correlation and specification of variables was conducted through method of determination called Pearson product-moment correlation. (Guilford, J.P. (1950). *Fundamental statistics in psychology and education*. London McGraw-Hill Book Company. To determine significance of variations between separate groups of examinees, as well as to determine taxonomic importance of variable contribution to their classification **method of multiple variance analysis** was used (multivariate test and universal variant test: F- test, Norušić Marija SPSS Advanced statistic Guide 1984). For examinee classification into specific type groups (taxon) we applied hierarchy cluster analysis, method of furthest neighbors (complete) with measuring distance (cosine) actually according to similarity in structure of examinee variables analyzed. (Everit, Brian S. (1993). *Cluster analysis*, London, Edward Arnold. For transformation of scaled values Probit and Logit analysis was applied. Probit scaling was applied on variables with normal distribution, and logit for scaling series of variable values whose logarithm distribution can be transformed into linear with logarithm distribution. (Agresti, Alan.(1990). *Categorical Data analysis* N.Y. Wiley and sons.

Results

Specialty analysis of situational motor abilities of women basketball players examined begun with presentation and analysis of descriptive statistic parameters of basic and derived situational motor variables (table1.). Descriptive statistic parameters of basic and derived situational motor variables include

measures of central tendencies and variability of examined women basketball players of First BIH division. They were treated as model characteristics of actual level of individual and team characteristics of women basketball players examined and as standard for comparative analysis with model situational-motor characteristics of top women basketball players and highly placed teams in international competition. Using model characteristics of absolute and relative indicators we estimated variance between actual and needed measures and projected individual dynamic norms for their achievement. Connection of variables situational-motor quality of women basketball players was analyzed according to statistic significance and Pearson product-moment of variable situational-motor ability correlation (table2). Significant correlation coefficient on $p < .001$ ** have variables of situational-motor qualities of women basketball players: running in rectangle with dribbling (SKFTUP) with variables, run 4x5m with turn and change direction (MFE4x5), agility – dribbling with throw (SKFPV2E), reliability – free shot (SKFBSBP), reliability – jump and shot 5 position (SKFSS5P), sprint with dribbling and throw ball at basket (SKDCP2) with variables, free throw (SKFBSB), throw ball at basket after receiving ball (SKFIDP). To research indicators that could become the main criteria for efficiency evaluation of rival functions of women basketball players examined we applied multiple analysis of variance situational-motor quality of women basketball players in order to identify rational set of dominant components and their reduction to optimal measure. For that purpose multiple analyses of variance of situational-motor quality women basketball players in BIH First Division was applied according to their club affiliation. (table3.).

Table 1. Descriptive parameters

Variable	Mean	Std Dev	Minimum	Maximum	N
SKFTUP	22.90	1.78	19.13	26.39	43
SKF4X5	6.34	.47	5.53	7.70	43
SKFBLZ	18.47	3.03	13	26	43
SKF625N	2.44	1.12	1	6	43
SKF625P	40.70	18.65	16.7	100.0	43
SKFPV2T	11.56	.86	10.35	13.67	43
SKFPV2N	8.58	1.59	5	10	43
SKFPV2E	74.51	14.64	43.9	95.8	43
SKFPV2P	85.81	15.92	50	100	43
SKFBSBN	6.35	1.86	3	9	43
SKFBSBP	63.49	18.63	30	90	43
SKFUDPT	43.03	5.34	26.38	53.50	43
SKFUDPN	8.91	1.17	6	10	43
SKFUDPE	20.98	4.14	11	34	43
SKFUDPP	89.07	11.71	60	100	43
SKFSS5N	5.16	2.11	1	8	43
SKFSS5P	51.63	21.15	10	80	43

Table 2. Correlation analysis

	SKFTUP	SKF4X5	SKFBLZ	SKF625P	SKFPV2P	SKFPV2E	SKFUDPE	SKFBSBP	SKFUDPP	SKFSS5P
SKFTUP	1.00	.51**	-.24	-.39*	-.42*	-.60**	-.22	-.48**	-.38*	-.54**
SKF4X5		1.00	.25	-.32	-.15	-.37*	-.29	-.19	-.38*	-.29
SKFBLZ			1.00	.17	.41*	.37*	.12	.24	.27	.11
SKF625P				1.00	.11	.26	.02	.16	.21	.32
SKFPV2P					1.00	.93**	.22	.59**	.41*	.05
SKFPV2E						1.00	.30	.54**	.48**	.13
SKFUDPE							1.00	.05	.65**	-.01
SKFBSBP								1.00	.41*	.35
SKFUDPP									1.00	.17

Table 3. Multiple analyses of variance

EFFECT .. KLUB						
Multivariate Tests of Significance (S = 5, M = 2, N = 13)						
Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F	
Pillais	2.26435	2.64870	50.00	160.00	.000	
Hotellings	6.49840	3.43115	50.00	132.00	.000	
Wilks	.02857	3.09442	50.00	131.06	.000	
Roys	.77633					
Univariate F-tests with (5,37) D. F.						
Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
SKFTUP	56.55042	77.05340	11.31008	2.08252	5.43095	.001
SKF4X5	1.97955	7.36102	.39591	.19895	1.99003	.103
SKFB LZ	153.62625	231.07143	30.72525	6.24517	4.91984	.001
SKF625P	2470.39129	12140.5677	494.07826	328.12345	1.50577	.212
SKFPV2P	6902.86083	3743.65079	1380.57217	101.17975	13.64475	.000
SKFPV2E	4522.38899	4473.54741	904.47780	120.90669	7.48079	.000
SKFUDPE	17.65928	701.31746	3.53186	18.95453	.18633	.966
SKFBSBP	5245.59339	9331.15079	1049.11868	252.19326	4.15998	.004
SKFUDBP	994.33832	4768.45238	198.86766	128.87709	1.54308	.200
SKFSS5P	7092.39572	11693.6508	1418.47914	316.04462	4.48822	.003

Figure 1. Profiles of taxonomic significant situational-motor quality

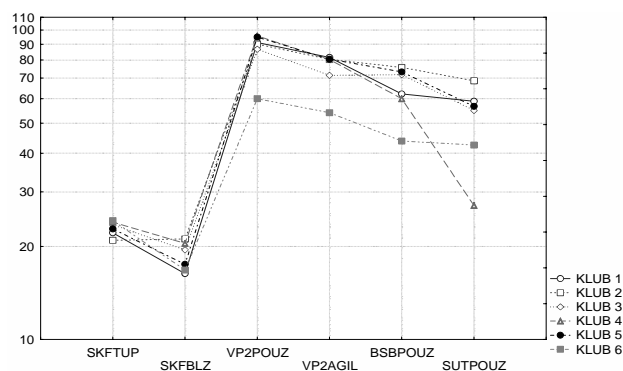


Table 4. Multiple analyses of variance EFFECT .. MJTIM

Multivariate Tests of Significance (S = 4, M = 2 1/2, N = 13 1/2)						
Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F	
Pillais	1.03499	1.11702	40.00	128.00	.316	
Hotellings	1.56621	1.07677	40.00	110.00	.373	
Wilks	.28341	1.10276	40.00	111.82	.338	
Roys	.41663					
Univariate F-tests with (4,38) D. F.						
Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
SKFTUP	12.42752	121.17630	3.10688	3.18885	.97430	.433
SKF4X5	.80509	8.53549	.20127	.22462	.89606	.476
SKFB LZ	62.64212	322.05556	15.66053	8.47515	1.84782	.140
SKF625P	3086.96451	11523.9945	771.74113	303.26301	2.54479	.052
SKFPV2P	293.01956	10353.4921	73.25489	272.46032	.26886	.896
SKFPV2E	540.84821	8455.08818	135.21205	222.50232	.60769	.660
SKFUDPE	145.14460	573.83214	36.28615	15.10085	2.40292	.067
SKFBSBP	287.85530	14288.8889	71.96382	376.02339	.19138	.941
SKFUDBP	1221.79863	4540.99206	305.44966	119.49979	2.55607	.054
SKFSS5P	3512.55445	15273.4921	878.13861	401.93400	2.18478	.089

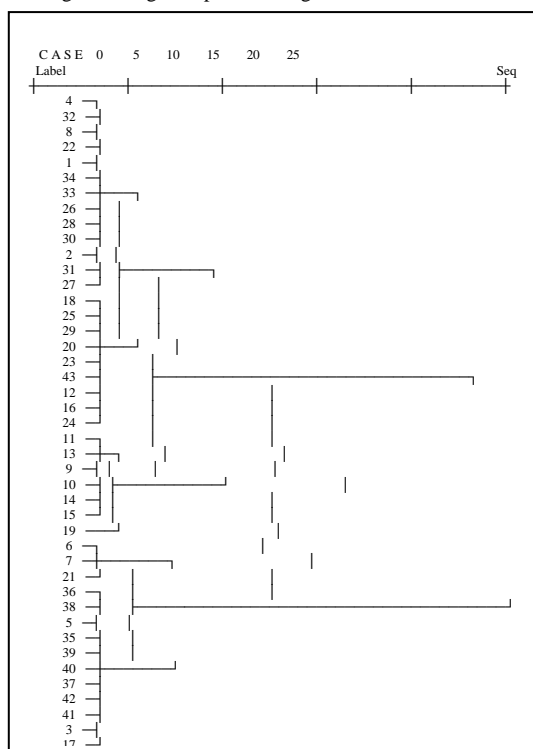
Table 5. Multivariate analysis of situational-motor qualities

EFFECT .. TIP5						
Multivariate Tests of Significance (S = 4, M = 2 1/2, N = 13 1/2)						
Test Name	Value	Approx. F	Hypoth. DF	Error DF	Sig. of F	
Pillais	2.23393	4.04775	40.00	128.00	.000	
Hotellings	22.08660	15.18454	40.00	110.00	.000	
Wilks	.00783	7.24899	40.00	111.82	.000	
Roys	.95043					
Univariate F-tests with (4,38) D. F.						
Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
SKFTUP	52.42621	81.17761	13.10655	2.13625	6.13530	.001
SKF4X5	2.25943	7.08115	.56486	.18635	3.03123	.029
SKFB LZ	321.03933	63.65834	80.25983	1.67522	47.91004	.000
S625POUZ	.25498	1.52409	.06375	.04011	1.58937	.197
VP2POUZD	.58867	.47598	.14717	.01253	11.74930	.000
VP2AGIL	.50169	.39771	.12542	.01047	11.98384	.000
BSBPOUZD	.57828	.87940	.14457	.02314	6.24702	.001
UDPPOUZD	.21575	.36053	.05394	.00949	5.68489	.001
UDPAGIL	.01503	.05418	.00376	.00143	2.63434	.049
SUTPOUZD	.41835	1.55328	.10459	.04088	2.55865	.054

Variations in value level of situational-motor quality of women basketball players of First Division BIH according to their club affiliation were significantly statistically noted in following variables: running in rectangle – “koverta test” with dribbling (SKFTUP), pass and catching ball against floor in front of the wall in 30s with both hands parallel with pivot 360° on one and on the other side. (SKFBLZ), reliability free shot (SKFBSBP), reliability and agility sprinting with dribbling and throwing ball to the other side of the court, throwing ball in the basket (VP2POUZ) and (VP2AGIL), and reliability shot from 5 position (SUTPOZD). According to significance of univariate F-tests these indicators can show that variables of situational-motor quality of women basketball players have main role in predicting club score. To analyze taxonomic variable structure important for situational-motor quality of women basketball players according to their club affiliation we used graphic chart (Figure 1.). Profiles of taxonomic significant situational-motor quality of women basketball players in BIH First Division according to their club affiliation are graphically presented in logarithm –linear coordination system so we can analyze their interrelations proportionally to their congruent logarithm projections. According to projected methodological course, to this analysis of basic-motor qualities, was conducted multiple

analysis of variance of situational-motor quality of basketball players according to their position in the game (table 4.). Results of multiple analysis of variance of situational-motor quality of basketball players according to their position in the game indicate fact that on the bottom line of taxonomic significance we can select variable of reliability for three point shot (SKF625P) significant for differentiation of women basketball players according to their primary position in the game. Having in mind primary purpose of this dissertation which is to invent suitable effective methodology-analytical procedures considering conditionality of individual and team technical-tactic functions of women basketball players on the level and character of basic and situational-motor readiness in the foreground we placed conceptualization of methodology differentiated approach to determine affiliation of women basketball players to specific typo groups according to similarity in structure of their situational-motor qualities. The results of hierarchic cluster analysis are presented in dendrogram 1. Five specific type groups of situational-motor quality of women basketball players was selected on the level of third scale distance of agglomeration according to rate of similarity in structure of their situational-motor qualities.

Dendrogram using Complete Linkage Rescaled Distance Cluster Combine



Dendrogram 1. Hierarchy cluster analysis of women basketball player qualification according to structure type specific situational-motor qualities on the level of five separated groups.

The purpose of identification of typo specific taxons of basketball players similar in structure of situational-motor qualities is appreciation of individual peculiarity and possibilities of concrete women basketball players, providing objectified information for planning available duty according to individual abilities expedient in relation to main goals of training. Affirmation of taxonomic significant variables related to structure of situational-motor qualities was conducted through multivariate analysis. Results of this analysis are presented in table 5. We used multivariate analysis to identify 5 specific typo groups of women basketball players according to similarity of their taxonomic significant situational-motor qualities: dribbling speed with change of direction (SKFTUP), dribbling 4x5 m with turn and change of direction (SKF4x5), reliability and agility sprint with dribbling and throw ball at the basket (VP2pouz) and (VP2AGIL), reliability of free shot (BAPOUZD) and reliability of entrance and throwing ball in the basket. Potential of players is based on these main situational-motor qualities.

Discussion and conclusion

The results of this research are used to upgrade field of acknowledgment about Conditionality of individual and team technically-tactic woman basketball player functions on the level of situational-

motor readiness. With these results we objectify process of improvement quality of the basketball game, based on principles of complementarities in correlation of logics and intuition as the main indicator of autonomous rival experience of women

basketball players accomplishing their tasks, especially on deficient information. In this transformation, on the stage of detailed individualization of women basketball players' rival training, the growth of energetic-synergetic level of basic and situational-motor qualities of women basketball players refers to starting, basic function of creative upgrade of basketball game quality. We used multivariate analysis to identify 5 specific typological groups of women basketball players according to

similarity of their taxonomic significant situational-motor qualities: dribbling speed with change of direction (SKFTUP), dribbling 4x5 m with turn and change of direction (SKF4x5), reliability and agility sprint with dribbling and throw ball at the basket (VP2pouz) and (VP2AGIL), reliability of free shot (BAPOUZD) and reliability of entrance and throwing ball in the basket. Potential of players is based on these main situational-motor qualities.

Literature

- Biberović, A., Mikić, B., & Mačković, S. (2002). Biomehanička analiza funkcija mišića u regulaciji skok šuta. *Zbornik radova*, 2, 317 – 330. Tuzla.
- Blašković, M. (1980) *Specifične antropološke karakteristike košarkaša i košarkašica. U: Gabrijelić i sur. Postupci izbora, usmjeravanja i praćenja u području vrhunskog sporta*. Zagreb: Institut za kineziologiju.
- Bregović, L.J., Matković, B., & Blašković, M. (1988). Procjena efikasnosti u košarkaškoj igri na osnovi nekih testova motoričkih sposobnosti. *Fizička kultura*, 1:95-106
- Bompa, T. (2000). *Total Training for Young Champions*. Champaign, IL.: Human Kinetics.
- Dizdar, D. (2002). *Vrednovanje skupa metoda za procjenu stvarne kvaliteta košarkaša. [Dissertation]*. (In Croatian). Zagreb: Kineziološki fakultet.
- Jukić, I., Milanović, D., Vuleta, D., & Bračić, M. (2000) Evaluation of variables of shooting for a goal Recorded during the 1997. European basketball Championship in Barselona, *Kinesiology*, 32(2), 42-52.
- Malacko, J., & Rađo, I. (2004). *Tehnologija sporta i sportskog treninga*. Sarajevo: Univerzitet u Sarajevu.
- Mikić, B. (2005). *Bazični i specifični trening kondicije košarkaša*. Tuzla: Fakultet za tjelesni odgoj i sport.
- Milanović, D., Jukić, I., Pavičić, I., & Trninić, S. (1997). Prilog metodologiji ocjene efikasnosti igrača u košarci. *Međunarodno savjetovanje "Dijagnostika treniranosti sportaša"*, pp.174. Zagreb: Fakultet za fizičku kulturu.

UVJETOVANOST INDIVIDUALNIH I TIMSKIH TEHNIČKO-TAKTIČKIH DJELOVANJA KOŠARKAŠICA RAZINOM SITUACIJSKO-MOTORIČKE PRIPREMLJENOSTI

Sažetak

Istraživanje je provedeno na uzorku 43 košarkašice iz 6 klubova Premijer košarkaške lige za žene Bosne i Hercegovine. Osnovni cilj ovog istraživanja je metodološko-analitičko iznalaženje prikladnih efikasnih postupaka razmatranja uvjetovanosti individualnih i timskih tehničko-taktičkih djelovanja košarkašica razinom i karakterom situacijske motoričke pripremljenosti. Iz tog razloga u prvi plan je stavljeno koncipiranje metodologije diferenciranog pristupa utvrđivanju pripadnosti košarkašica tipospecifičnim grupama prema srodnosti struktuiranosti njihovih situacijsko-motoričkih kvaliteta, što je predloženo hijerarhijskom klaster analizom. U svrhu istraživanja pokazatelja koji bi mogli poslužiti kao vodeći kriteriji ocjene efikasnosti natjecateljske djelatnosti ispitivanih košarkašica primijenjena je višestruka analiza varijance situacijsko-motoričkih kvaliteta u cilju identifikacije racionalnog skupa dominantnih komponenti i njegovo svođenje na optimalnu mjeru.

Ključne riječi: košarka, situacijska motorička priprema, klaster analiza.

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