

**FITNESS PROFILE OF YOUNG ELITE BASKETBALL PLAYERS (CADETS)****Goran Sporiš<sup>1</sup>, Vedran Naglič<sup>1</sup>, Luka Milanović<sup>1</sup>,  
Munir Talović<sup>2</sup> and Eldin Jelešković<sup>2</sup>**<sup>1</sup> Faculty of Kinesiology, University of Zagreb, Croatia<sup>2</sup> Faculty of Sport and Physical Education, Sarajevo, Bosnia & Herzegovina*Original scientific paper***Abstract**

The purpose of this study was to evaluate whether players in different positional roles have a different physical and physiologic profile. Also to determine whether there is a connection or differences in the motor tests and situation efficiency. Secondary goal was to determine differences between initial, transitive and final test results through preparation period. For the purpose of this study, measurements were taken on 12 best players of Croatia national team under 16 years (born 1993. and younger). According to the positional roles, players were categorized as 1 – point guard (n=2), 2 – shooting guard (n=4), 3 – small forward (n=2), 4 – forward (n=3) i 5 – center (n=1). They were tested with 9 variables (internship, height, weight, arms range, 20 yards, side shuffle, 300 meters, beep test), and with 11 parameters of situation efficiency in basketball (number of games, minutes per game, points per game, points, points total, steals, turnovers, assists, blocks, offensive rebounds, defensive rebounds, total rebounds). The results of the present study demonstrate that there is no significant relationship between initial measurements and parameters of situation efficiency. Results on this study are suggesting that improvement on several motoric abilities can implicate on parameters of situation efficiency. To our knowledge there is strong and significant relationship between initial and final motor measurements. As expected, the present study indicates that there is significant relationship between motor measurements and on parameters of situation efficiency.

**Key words:** fitness profile, basketball, cadets**Introduction**

Basketball is one of the dynamic sports games. From the player requires the ability to oppose, gain better speed, explosive strength, agility, balance, vertical jump, good movement with the ball and without, the precision throwing the ball into the basket, the performance of technical and tactical tasks, and above all intelligence. According to Gabrijelić (1977), basketball is a complex sport that consists of complex and simple motions in terms of cooperation, collaboration, performed by members of the team in the game. The main goal of the game of basketball is to throw the ball in the opponent's basket, and prevent the opposing player to win or throw the ball in the basket. In their essence and structure of the game favored by players of certain anthropological characteristics and motor abilities, especially situational motoric (Tocić, 1998). Basketball is, therefore, (Trninić, 1996) game of bases, game of movements, habits, mistakes, balance, reflex, a game of reaction, the cooperation and communication, timing, the triangle plays, support, opening and closing holes. It is also individual and collective game, game details and finesse, arranged a series of tasks etc. Trninić et al. (1995) dealt with situational phenomenon success in basketball where the main goal of this study was to determine the latent structure of the game of basketball. It was concluded that no standard of efficiency used situational variables, or derived from these latent dimensions are not sufficient to fully explain the structure of the game of basketball. The same author (1999) analyzes the difference between the

guards, forwards and centers on some anthropometric characteristics and indicators of situational efficiency. The results of discriminant analysis showed that anthropometric status is different for players per position, which determines the duties and tasks in the game, resulting in toys indicators of success (defensive, offensive rebounds and blocks suggest that there is biggest difference by centers compare of the guards and forwards, and assists differ significantly from guards, forwards and centers, a shot from the three points line of guards and forwards of the centers). Dizdarević et al. (1997) dealt with determining the types of players based on standard indicators of situational efficiency where the classification was obtained in accordance with existing functional model of top-division players in basketball. Dizdarević, Trninić and Matković (1995) carried out a structural analysis of the position players in the basketball game on some basic motor and functional abilities and morphological characteristics, which are important for the individual players in positions 1, 2, 3, 4 and 5 assess the selected basketball experts. Based on the results, according to expert opinion, external players have a high level of velocity (speed of reaction, frequency of movement and speed of a movement), agility, explosive strength, coordination, precision and durability (the three energy capacity), while the players have high internal longitudinal and transverse dimensions of the skeleton, a greater amount of muscle mass and subcutaneous fat and a higher level of absolute, static strength and repetitive. Knjaz & Matković (1997) where dealing with the motor characteristics of students the mini-basketball school Cibona.

The results showed better motor status of children involved in mini-basketball program than the average of Croatia although the initial state is equal. Persic and Knjaz (2005.) dealt with differences in some tests to assess specific motor skills and basketball skills cadet and junior age. As expected, the results of tests for assessing motor skills have greatly on the side of the junior age players. Matkovic Bo. et al. (2001.), Jukic et al (2003.) analyzed a variety of anthropological, most motor skills, and determine the real opportunity to test the fitness of preparedness on the other hand the determination of model characteristics of elite basketball players of all ages and quality in a variety of fitness components of fitness. The modal characteristics can be used as the criterion variable for determining the degree of fitness basketball training. Numerous factors affect on situational success within the game of basketball. All of that is basically telling us about the complexity of the game, especially with regard to the motoric component. Previous research with link motor skills and parameters of situational efficiency are negligible or almost without information. Correlation tests of motor abilities and tests of aerobic and anaerobic endurance with the parameters of situational efficiency are important to determine whether there is a connection between each other, which are good tests for the assessment of situational efficiency and what is their predictive power. The primary objective of this study is to determine the correlation between motor tests and situational performance parameters and determine the correlation and which tests are best for such an assessment. The secondary objective of this study was to determine the difference between the initial, transitive and final testing carried out during the preparation period for the European Championship 2009th in Lithuania.

## Methods

### *Experimental approach to the problem*

During the preparation period of Croatian Cadet team (boys under 16 years) for the European Basketball Championship in Lithuania, which lasted from 20.06 - 04.08.2009. we conducted tests for this study. Participants are pre-verbal and written informed about the operations, performance and purpose of each test. All subjects were tests fulfilled before accessing health questionnaire and agreed to the implementation of testing. Success in basketball, as polystructural sports game, depends on many factors - the capabilities and characteristics of players. This study is important because it is evident that there is a lack of information about the importance of mobility and its share in the situational effectiveness and which tests can assess situational success. The main problem of this study was insufficient sample of top young basketball players (cadets). This study was conducted during the preparation period for the European Championship and the 12 best were selected to go on a championship. They were tested during the preparation period and monitored on the Championship with the official statistics.

Table 1. Training protocol overview for preparation period for European championship 2009

Mesocycle	1	2	3	4	5	6	
	IN	ML	BA	SP	PC	CO	
Calendar	20-24.06	25.06-02.07	03.07-09.07	10.07-25.07	26.07-05.08	06-16.08	TOT
No. of days	5	8	7	16	10	11	58
Matches	4	7	6	10	8	10	45
Trainings	8	14	11	10	16	6	65
Matches	0	0	1	9	0	9	19
Train hours	16	28	22	20	32	6	124
Match hours	0	0	2	18	0	18	38
Rest days	1	1	1	6	2	1	12
Test days	3						

IN = introductory, ML = multilateral, BA = basic, SP = specific, PC = pre-competition, CO = competition

### *Subjects*

Participants in this study were 12 representatives height  $194.75 \pm 9.46$  cm, weight  $81.25 \pm 8.34$  kg, range of hand  $198.66 \pm 8.11$  cm. According to the positions they play in the game are categorized as 1 - point guard (n = 2), 2 - shooting guard (n = 4), 3 - small forward (n = 2), 4 power forward (n = 3) and 5 - center (n = 1). During the preparation period were tested three times (initially, transitive and final testing) according to previously established protocol. The tests were repeated the same sequence.

### *Design*

Participants were tested with 9 tests that are common to assess the status of anthropological and mobility for basketball (years of service, height, weight, arm span, 20 yards, side steps, 300m, beep test). In the situational parameters of efficacy included the 11 variables (number of games, minutes per game, points per game, total points, steals per game, turnovers, assists, blocks, defense rebounds, offensive rebounds, total rebounds). Tests for the assessment of motor skills (20 yards, side steps, 300m and beep test) were enforced 3 times during the preparation period for the European Championship. Initial testing was 21.06.2009., transitive 09.07.2009., and final test 26.07.2009. The parameters of situational efficiency (NO. - number of matches, MIN - minutes of the game, PPG - points per game, PT - points total, ST - steals, TO - turnovers, AS - Assists, BL - block, DR - defensive rebound, OR - offensive rebound, REB - total rebounds) were obtained from official statistics of the European Championships in Lithuania (period of 06.-16.08.2009.)

### *Variables*

*20 yard test.* Test to assess agility. On a flat surface marked with a center line length of approximately 50 cm. 5 yards (4.57 m) from the center line on each side are highlighted in the lateral line. The task is to stand on midline so that each foot distance is equal from another and put hand on the line. At mark they run to the line of choice, and touch it with feet and hands, change direction and run to the opposite side line and the tap her leg and arm.

Once again change direction and run to the center line and the maximum speed and crossing over. The stopwatch is stopped when the first part of the body crosses the finish line. Test is performed three times to rest long enough (about 1 min) between reps, and consideration will be given the best result. The time to complete the test in seconds to the nearest two decimals is recorded. The score is the best time of three trials.

*Side steps test.* The test is performed on a basketball court. Digital stopwatch is required for time measuring. On the floor are marked with two lines that are 4m apart. The task is to take the starting side position with both feet out of line. Respondent must hop (not cross feet) to cross the distance of 4m 6 times where the foot must touch the line. The test is repeated 3 times and recorded the time for which the respondent passed the default section is recorded in two decimals. The best results are included in the statistical analysis of data.

Table 2. The average or arithmetic mean of the initial, transitive and final testing with a standard deviation in tests of motor abilities to assess agility

Name and surname	20 yards AM ±SD	Side steps AM ± SD
M.B	4,69±0,037	6,76±0,446
M.R	4,91±0,091	6,77±0,197
D-S	4,89±0,049	6,85±0,353
A.B	4,93±0,043	7,25±0,119
M.M	4,76±0,025	7,34±0,298
S.C	4,65±0,175	6,93±0,327
J.M	5,51	8,43
S.K	4,87±0,070	7,22±0,374
H.S	4,97±0,158	7,42±0,236
R.J	4,68±0,083	7,11±0,196
M.J	4,71±0,113	7,42±0,403
L.V	4,96±0,056	7,53±0,127

*300m test.* Test is designed for the assessment of speed endurance running. Test is performing on the basketball court or gym. For a performance task we use distance of 20 m. The time is measured by a digital stopwatch during the test. Initial position is the high start behind the baseline field. Participants choose the starting time and run 15 times section of 20 m as faster they can. At each change of direction was required to touch the subject line with a leg. This task is performed only once.

*Beep test.* This test determines the maximum aerobic endurance player. All we need to test the CD or audio cassette, CD player or cassette player and two cones at distances of 20 meters. The task is run between two lines (cones) at an interval of 20 meters. The test is applied to the indoors (in the basketball court or gym) and speed of players in the test is determined intervals of sound signals on a CD or cassette.

The initial rate of players is 8 km/h and speed is increasing by reducing the interval between beeps. It's called the next level and it ends with the expiration of one minute.

Table 3 The relationship of speed, level and interval in beep test

Level	Speed	Interval	Level	Speed	Interval
1	8,0	9,0	11	13,0	5,5
2	8,5	8,5	12	13,5	5,3
3	9,0	8,0	13	14,0	5,1
4	9,5	7,6	14	14,5	5,0
5	10,0	7,2	15	15,0	4,8
6	10,5	6,9	16	15,5	4,7
7	11,0	6,6	17	16,0	4,5
8	11,5	6,3	18	16,5	4,4
9	12,0	6,0	19	17,0	4,2
10	12,5	5,8	20	17,5	4,1

Players who performed the test should run in place if they come to the line before the beep (not faster or slower). The results are expressed in levels (stage) and can be taken into account and ½ levels. Test ends when the player is away from the line further than 3 feet in two equal beeps. It is very important that the correct CD or cassette, or to give signals at regular intervals. It should be checked by measuring 1 minute at the beginning of cassettes and CD. If it is not like that then you can use lengthwise in the following table.

Table 4 The table with the values for check Beep test

Seconds	Length	Seconds	Length
55.00	18.30	60.50	20.20
55.50	18.50	61.00	20.30
56.00	18.70	61.50	20.50
56.50	18.80	62.00	20.70
57.00	19.00	62.50	20.80
57.50	19.20	63.00	21.00
58.00	19.30	63.50	21.20
58.50	19.50	64.00	21.30
59.00	19.70	64.50	21.50
59.50	19.80	65.00	21.70
60.00	20.00		

*Statistical analyses*

For all the data to calculate the descriptive statistical parameters (mean, standard deviation, skewnis, kourtosis, minimum, maximum), where the arithmetic average of individual variables is actually average (eg. arithmetic test, 20 yards is the average initial, transitive and final measurements - Table 2). Differences between the initial, tranzitivnih and final measurements in the 20 yards, side steps, 300m and beep test is treated with the t-test for paired samples with Bonferonijevu correction. Correlation is calculated using the Pearson correlation quotient and were tested for statistical significance at p <0.05.

**Results**

Table 5. The sample of respondents and the anthropological data base

Name and surname	DOB	POS	HIG (cm)	WEI (kg)	AR	IN (years)
M.B	15.06.1993	2	195.0	84.5	201	8
M.R	14.03.1993	3	197.5	84.0	199	9
D-S	08.04.1994	2	202.5	89.0	-	-
A.B	21.09.1993	3	197.0	76.0	204	6
M.M	14.06.1993	4	194.0	91.0	198	4
S.C	23.04.1993	1	176.0	72.0	187	8
J.M	05.04.1993	4	209.0	79.0	209	3
S.K	30.04.1993	4	201.0	94.0	205	10
H.S	23.01.1993	2	195.5	77.5	194	-
R.J	16.10.1993	2	185.0	70.0	191	11
M.J	16.02.1994	1	182.0	71.0	-	-
L.V	27.11.1993	5	202.5	87.0	-	9

DOB. – date of born,  
 POS – position in game (where is 1 – point guard,  
 2 – shooting guard, 3 – small forward,  
 4 – power forward, 5 – center),  
 HIG – hight, WEI – weight,  
 AR – arms range, IN – internship

Table 6. Parameters of situational efficiency

Name and surname	NOG	MIN	PPG	POT	ST	TO	AS	BL	DR	OR	RT
M.B	9	264	14,8	133	9	8	8	4	30	7	37
M.R	9	322	14,7	132	13	17	22	1	50	11	61
D-S	9	266	11,3	102	13	39	24	2	47	28	75
A.B	3	63	10,0	30	1	8	1	3	10	1	11
M.M	9	175	6,2	56	13	12	10	3	22	19	41
S.C	9	245	6,2	56	10	21	25	1	19	6	25
J.M	3	27	6,0	18	1	1	0	0	3	2	5
S.K	9	178	5,6	50	11	10	9	2	24	16	40
H.S	8	116	3,6	29	3	10	4	2	12	4	16
R.J	3	19	2,3	7	1	1	2	0	2	2	4
M.J	7	86	0,7	5	5	11	13	1	13	0	13
L.V	9	67	0,7	6	0	3	4	1	5	7	12

NOG – number of games,  
 MIN – total minutes in the game,  
 PPG – poena po utakmici, POT – total points, ST – steals,  
 TO – turnovers, AS – asists, BL – bloks,  
 DR – defensive rebound,  
 OR – offensive rebound,  
 RT – total rebound

Table 7. Descriptive statistics

Test name	Initial AM ± SD	Final AM ± SD
SS	7,40±0,20	7,03 ± 0,55 # \$
20 yards	4,86±0,16	4,85 ± 0,26
300m	64,98±1,53	65,65±2,92
BEEP (VO2max)	54,00±3,94	59,79±6,98 #

SS – side steps, BEEP – beep test  
 \$ Result improved compared to the initial testing

Table 8. Differences between initial and final tests in motor abilities

Name and surname	20 yards (sec.)		SS (sec.)		BEEP level and (VO2 max)		300m (sec.)	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
M.B	4,68	4,74	7,19	6,3 \$	11 level 7	14 level 4	65,25	66,55
					-52,32	-61,70		
M.R	-	4,98	-	6,63	-	17 level 1	-	63,61
					(71,26)			
D-S	-	4,86	-	6,60	-	15 level 3	-	67,48
					-64,87			
A.B	4,91	4,98	7,39	7,20 \$	11 level 9	-	63,84	-
					-52,91			
M.M	4,74	4,79	7,69	7,15 \$	10 level 11	14 level 4	65,14	66,28
					-50,16	-61,70		
S.C	4,83	4,48 \$	7,23	6,58 \$	13 level 19	13 level 3	63,2	59,68 \$
					-62,37	-58,00		
J.M	-	5,51	-	8,43	-	9 level 8	-	-
					(45,88)			
S.K	4,94	4,8 \$	7,5	6,80 \$	11 level 7	13 level 11 \$	66,2	65,98 \$
					-52,32	-60,19		
H.S	5,15	4,84 \$	7,59	7,15 \$	12 level 4	15 level 3	63,75	63,72 \$
					-54,85	-64,87		
R.J	4,75	4,59 \$	7,23	6,89 \$	11 level 10	-	67,54	-
					-53,20			
M.J	-	4,63	-	7,14	-	12 level 4	-	69,07
					-54,85			
L.V	-	5,00	-	7,44	-	12 level 3	-	68,51
					-54,57			

\$ Significant difference between initial and final test at p < 0,05  
 # Significant difference between the initial and transitive testing at p < 0.05

Table 9. The initial and final testing

	Min	Max	AS ± SD
DOB	23.1.1993	8.4.1994	28.07.1993±
POS.	1	5	2,75 ± 1,29
HIG (cm)	176	209	194,75 ± 9,46
WEI (kg)	70	94	81,25 ± 8,16
AR	187,0	209,0	198,67 ± 7,05
IN (years)	3,0	11,0	7,56 ± 2,70
20 yards initial	4,68	5,15	4,86 ± ,16
20 yards transitive	4,64	4,94	4,82 ± ,11
20 yards final	4,48	5,51	4,85 ± ,26
SS initial	7,19	7,69	7,40 ± ,20
SS transitive	6,800	7,710	7,24 ± ,29
SS final	6,30	8,43	7,03 ± ,55
BEEP initial	10,11	13,19	11,62 ± 1,01
BEEP transitive	11,30	16,12	13,40 ± 1,50
BEEP final	9,80	17,10	13,74 ± 2,03
NOG	3,00	9,00	7,25 ± 2,63
MIN	19,00	322,00	152,33 ±
PPG	,70	14,80	6,84 ± 4,90
POT	5,00	133,00	52,00 ± 46,73
ST	,00	13,00	6,67 ± 5,33
TO	1,00	39,00	11,75 ± 10,44
AS	,00	25,00	10,17 ± 9,02
BL	,00	4,00	1,67 ± 1,23
DR	2,00	50,00	19,75 ± 15,96
OR	,00	28,00	8,58 ± 8,5
RT	4,00	75,00	28,33 ± 22,80
300m initial	63,57	67,54	65,11 ± 1,41
300m transitive	61,70	68,94	65,92 ± 2,59
300m final	59,68	69,07	65,26 ± 3,24

## Discussion

The aim of this study was to compare the results of tests for assessing motor abilities (Table 9) with the parameters of situational efficiency on European Championships (Table 6). Comparing the initial tests for assessing motor abilities we did not get statistically significant results. However, the secondary goal of this research was to compare the initial, transitive and final measurements with t-test (Table 8) made it clear that there are significant differences that make sense in the relationship motoric abilities and parameters of situational efficiency. According to the predictions, final results compared to the initial improved and there is a statistically significant difference between them. According to these results, we conclude that the players form and abilities were better on certain tests, and that tells us that there is a statistically significant relationship of tests to assess motor abilities and situational parameters of efficiency. In the side step test we have a statistically significant difference with  $p < 0.05$  between initial and final test where the initial was  $7.404 \pm 0.196$  and final  $7.025 \pm 0.551$  (Table 8). Also we get a statistically significant difference between the initial and transitive measurements on the beep test ( $p < 0.05$ ) where the initial was  $54 \pm 3.936$ , and transitive  $59.156 \pm 51,715$  (Table 8). Side step test (final) is in a negative correlation with the minutes in game ( $-0.733$  with  $p < 0.01$ ), which leads to the realization that if the test performed worse (if there is a higher score or higher performance time) the player has poor lateral agility that largely reflects on player time in basketball. There is no doubt that basketball is sport, which is characterized among other things, changing the direction of movement in all directions, with the key in terms of attack and defense movements. Actions must be performed faster than the opponent. Side steps is test that measures the speed or just the ability to frequent changes in direction of movement, and that is agility. Technical properly and quickly carried out of individual action, attacking (with the ball or without the ball) and defensive movements are a key part in the success of each team. Player who is deficient in defensive actions is more likely to be less used in the game. Also, the final test result in side steps is in a negative correlation with total points ( $-0.653$  with  $p < 0.05$ ), where we conclude that a player with inferior lateral agility scores and fewer points. Poor results in lateral agility is also expressed with the steals ( $-0.623$  with  $p < 0.05$ ) which is also reflected in the highlights of defensive actions, where is necessary lateral mobility for the best result in this test. Assists are segment of situational efficiency which is also negatively correlated with the side steps test and where the correlation at  $p < 0.05$  is  $-0.605$ , with jumps in the defense ( $-0.640$  with  $p < 0.05$ ) and rebounding total ( $-0.587$  to  $p < 0.05$ ). Test results on the 300m final test were negatively correlated with turnover ( $-0.810$  with  $p < 0.05$ ). From this we can conclude that the weaker result in the beep test means that the players lose more balls per game.

Beep test final is in correlation with the number of matches ( $0.710$  to  $p < 0.05$ ) and minutes per game ( $0.793$  to  $p < 0.01$ ), we have already mentioned that a better result in beep test means more games played and more minutes spent in the game. Correlation exists with the points total ( $0.713$  to  $p < 0.01$ ), steals ( $0.654$  to  $p < 0.05$ ), defense rebound ( $0.800$  to  $p < 0.01$ ) and total rebound ( $0.741$  to  $p < 0, 05$ ). According to the results and correlations between anthropometric parameters, we have come to the conclusion that there is a significant correlation between height and weight, which is  $0.650$  with  $p < 0.05$ , and the height and arm range  $0.929$  to  $p < 0.01$ . According to our predictions we confirmed that taller players have more weigh and a greater range of arms. Note that anthropometric status is different as position in the game and thereby determines the duties and tasks in the game that reflects on the situational success. The significant association is also between result of the comparison results 20 yards transitive ( $0.759$  to  $p < 0.01$ ), 20 yard final ( $0.849$  to  $p < 0.01$ ) and 300m transitive ( $0.685$  to  $p < 0.05$ ). Players with more weight play more games than players with less weight, a correlation between these parameters is  $0.579$  with  $p < 0.05$ . They also have more offensive rebound ( $0.781$  to  $p < 0.01$ ) and total rebounds ( $0.640$  to  $p < 0.05$ ). A significant correlation exists between the initial test, side steps and transitive test 300, which is  $0.771$  ( $p < 0.05$ ). Basketball is a game wick from player requires the ability to endure, mostly intermittent physical effort, more than 40 minutes, some of which are very high intensity. The results of final measurements beep test showed higher aerobic capacity of players wick play more matches of the tournament ( $0.710$  to  $p < 0.05$ ) and spend more minutes in game ( $0.793$  to  $p < 0.01$ ). The largest and also the best result of this test (the result of final testing) leads us to the conclusion that players with higher aerobic capacity or greater  $VO_{2max}$  had more steals per game ( $0.654$  to  $< 0.05$ ), more defensive rebounds ( $0.800$  with  $< 0.01$ ), total rebounds ( $0.741$  to  $< 0.01$ ), and that there is a negative correlation between this measurement and final test side step ( $-0.736$  with  $p < 0.05$ ), which leads to the conclusion that the players with greater aerobic capacity, and better results with the beep test, achieve better results on the side steps test at the final measurement. In the later part of the discussion will touch on the connection between transitive and final measurements beep test, which are also correlated, and give us the right to conclude that the players have progressed in this segment, and a statistically significant difference between these two measurements within the same test (correlation is  $0.747$  with  $p < 0.05$ ). Number of games is positively correlated with minutes per game ( $0.751$  to  $p < 0.01$ ), steals ( $0.706$  to  $p < 0.05$ ), assists ( $0.633$  to  $p < 0.05$ ) and defense rebound ( $0.621$  with  $p < 0.05$ ), offence rebound ( $0.593$  to  $p < 0.05$ ) and total rebound ( $0.656$  to  $p < 0.05$ ). Almost every parameter of situational efficiency is correlated with the minutes in game because a player who spend more time on the basketball court during the game will be driven more points per game ( $0.733$  to

$p < 0.01$ ), total points (0.915 to  $p < 0.01$ ), will have more steals (0.888 to  $p < 0.01$ ), turnovers (0.702 to  $p < 0.05$ ), more assists per game (0.818 to  $p < 0.01$ ), defensive rebounds (0.922 to  $p < 0.01$ ), offensive rebound (0.605 to  $p < 0.05$ ), total rebounds (0.871 to  $p < 0.01$ ). Minutes per game is also negatively correlated with the side steps transitive (-0.706 with  $p < 0.05$ ), which means that the player with weaker lateral agility gets fewer minutes per game. The negative correlation is also side step final (-0.733 with  $p < 0.01$ ) in which the explanation is almost the same as the transitive outcome measurements. Transitive beep test result is correlated with the minutes of the game (0.759 to  $p < 0.01$ ). According to the table of correlation between all the variables we get that the total points are in correlation with the steals 0.761 at  $p < 0.01$ , assists with 0.589  $p < 0.05$ , defence rebound 0.898  $p < 0.01$ , total rebounds 0.827 with  $p < 0.01$ . Steals in correlation with the turnovers (0.704 with  $p < 0.05$ ), assists (0.785 with  $p < 0.01$ ), defense rebound (0.862 with  $p < 0.01$ ), offense rebounds (0.768 with  $p < 0.01$ ), total rebounds (0.890 with  $p < 0.01$ ). Turnovers to assists (0.850 with  $p < 0.01$ ), defensive rebound defense (0.767 to  $p < 0.01$ ), offence rebounds (0.728 with  $p < 0.01$ ), total rebounds (0.808 with  $p < 0.01$ ). Assists with defense rebounds (0.771 with  $p < 0.01$ ) and total rebounds (0.741 with  $p < 0.01$ ). Defensive rebound was correlated with the offensive rebound (0.710 with  $p < 0.01$ ) and total rebounds (0.965 with  $p < 0.01$ ), at which point suggests also the previous research (Trninić S. et al. 1995). Defensive rebound was negatively correlated with the side steps final (with -0.640,  $p < 0.05$ ) and correlated with the beep transitive (0.693 to  $p < 0.05$ ).

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Offensive rebound was correlated with total rebounds (0.870 to  $p < 0.01$ ). Total rebounds negatively correlated with the side steps final (-0.587 with  $p < 0.05$ ). 20 yards transitive correlates with the 20 yards final (0.791 with  $p < 0.01$ ) and 300m transitive (0.884 to  $p < 0.01$ ). 20 yards final with the side steps final (0.759 with  $p < 0.01$ ) and 300m transitive (0.685 with  $p < 0.05$ ). Side steps transitive negatively correlated with the beep transitive (-0.799 with  $p < 0.01$ ), correlated with 300m transitive (0.633) and the 300m final (0.768) with  $p < 0.05$ . Side steps final negatively correlated with the beep transitive (-0.609 with  $p < 0.05$ ) and positively correlated with the 300m final (0.758 with  $p < 0.05$ ). Beep test transitive negatively correlated with the 300m final (-0.827 with  $p < 0.05$ ).

## Practical applications

Insufficient number of studies which determine relationship between motoric abilities and situational efficiency is the reason why on the basis of this study we don't need to make general conclusions. Testing shows the relationship between tests for assessing motor abilities and parameters of situation efficiency in basketball. Well trained and motoric capable players with higher pre-condition have better final results. Profiling, the connection on motoric abilities and situational efficiency can be useful in selection of content and applications in preparation period, in-season period and in competition period (tournaments) because we can show exactly at which skills we can influence and what are importances for better situational effectiveness.

**FITNES PROFIL MLADIH VRHUNSKIH KOŠARKAŠA (KADETA)****Sažetak**

*Cilj ovog rada je procijeniti imaju li igrači različitih pozicijskih uloga unutar ekipe drugačiji fizički i fiziološki profil te procijeniti postoji li povezanost između motoričkih testova s parametrima situacijske efikasnosti. Sekundarni cilj je utvrditi razlike između inicijalnog, tranzitivnog i finalnog testiranja tijekom pripremnog perioda. Sudionici ovog istraživanja bili su 12 reprezentativaca kadetske košarkaške reprezentacije (igrači rođeni 1993. i mlađi). Prema pozicijama u igri koje igraju kategorizirani su kao 1 – bek (n=2), 2 – bek šuter (n=4), 3 – krilo (n=2), 4 – krilni centar (n=3) i 5 – centar (n=1). Sudionici su testirani sa 9 varijabli (staž, visina, masa, raspon ruku, 20 jardi, koraci u stranu, 300m, beep test) te sa 11 parametara situacijske efikasnosti (broj utakmica, minute u igri, poena po utakmici, poena ukupno, ukradene lopte, izgubljene lopte, asistencije, blokade, skokovi obrana, skokovi napad, skokovi ukupno). Na temelju dobivenih rezultata iz inicijalnih mjerenja u testovima motoričkih sposobnosti možemo zaključiti da u ovom slučaju nema statistički značajne povezanosti sa parametrima situacijske efikasnosti. Prema rezultatima studije možemo zaključiti da se poboljšanjem stanja treniranosti može uvelike utjecati na parametre situacijske efikasnosti. To su pokazali poboljšani finalni rezultati u odnosu na inicijalne unutar motoričkih sposobnosti koji su i statistički značajni. Naša saznanja pokazuju da postoji statistički značajna povezanost između finalnih mjerenja te situacijskih parametara uspješnosti unutar košarkaške igre.*

**Ključne riječi:** *fitness profil, košarka, kadeti*

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