EFFECTS OF SITUATIONAL EFFICIENCY INDICATORS ON FINAL OUTCOME AMONG MALE BASKETBALL TEAMS ON THE OLYMPIC GAMES IN LONDON 2012

Dragan Milanović[1], Lovro Štefan[1], Goran Sporiš[1], Dinko Vuleta[1] and Aleksandar Selmanović[2]

[1]Faculty of Kinesiology, University of Zagreb,
[2]University of Dubrovnik, Dubrovnik, Croatia

Original scientific paper

Abstract
The aim of the present study was to determine which situational efficiency parameters influenced the most on the final result among male basketball teams. Sample of entities was consisted of 38 games played on the Olympic Games in London 2012. Sample of variables was comprised of 13 indicators that determined final result and affecting overall game. For presenting basic values of each variable, descriptive statistics was used. Multiple regression analysis was used to determine which variables influenced the most on final results of the game. Significance was set up at p≤0,05. Results showed that 2 points-fail (t-value= -3,85; β coefficient= -0,55; p<0,01), 3 points-fail (t-value= -2,36; β coefficient= -0,28; p<0,05), offensive rebounds (t-value= 4,05; β coefficient= 0,55; p<0,01), defensive rebounds (t-value= 2,58; β coefficient= 0,25; p<0,05), turnovers (t-value= -3,75; β coefficient= -0,36; p<0,01) and steals (t-value= 2,19; β coefficient= 0,21; p<0,05) statistically had impact on the final results of the game. In conclusion, successful teams performed better in shooting elements, along with rebounds and steals, which gave them opportunity to gain the advantage opposed to the opponent and win the competition.

Key words: *team sport, game-related statistics, regression analysis*

Introduction

Tracking and recording player's and team's efficiency indicators represents one of the basic parameters of evaluating system in sport. According to Hughes and Bartlett (2002), it is possible to determine which factors are important for accomplishing result. Coaches need that information to determine which kind of training protocol should be applied on the players. Along with that, proper periodization with number of trainings, competitions and recovery periods needs to be established for achieving great sport results. There has been several studies analyzing how certain situational parameters influencing final results of the game. For example, Gruić et al. (2006) analyzed how contribution of the predictor variables to the successfulness of the teams described by the criterion variable in handball game. Results showed that field shots-missed, field shots-scored, fast break shots-scored and technical errors in attack influenced the most on the final outcome. Also, Czerwinski (1995) explored how efficiency in defence, number of counter-attacks and number of organized attacks had statistical significant contribution on the result. Basketball, similar to handball, represents collective sport with fast transitions from the phase of attack to defence and vice versa. Based on that, to achieve the advance over the opponent, situational efficiency indicators and their contributions on the final score are most valuable parameters of the game. Study conducted by Separović et al. (2009) analyzed which situational parameters determined final score in Bosnian league 6 and Goodyear Basketball League. Indicators that contributed the most on the final result in Bosnian League 6 were defensive rebounds, turnovers and steals, while in Good Year League 2 points-made, 3 points-made, free throws-made, offensive rebounds, turnovers and steals. Simović and Komić (2008) estimated the importance of every parameter in relation to the game result at the three last World Championships for men. In Greece, 2 points percentage, inefficiency percentage of turnovers, 3 points percentage, efficiency defensive rebounds percentage, efficiency offensive rebounds percentage and free throws percentage were indicators which influenced result the most. On the World Championship in the United States of America, 2 points percentage, 3 points percentage and efficiency defensive rebound percentage affected statistically on the final outcome, while in Japan, all parameters were identical like in Greece, except for efficiency defensive rebounds percentage. Moving on, Jukić et al. (2000) wanted to analyze the size of the influence that variables regarding throwing the ball into the basket have on the final basketball match score. On a sample of 62 European Championship matches held in Barcelona, results showed that 2 points-fail, 3 points-fail and free throws-made statistically significant influenced on the final score in the game. Trninić et al. (1995) obtained results on 64 games played in Toronto in 1994, where offensive and defensive rebounds statistically contributed on the final score of the game. More precisely, defensive rebounds were better indicators of the situational efficiency, than the offensive rebounds. Trninić (1975) conducted study on a sample of 25 games of the 1st Federal Basketball League in 1973/74, where the author wanted to explore relations between defensive and

offensive rebound frequencies and final score of the game. Results showed real, but not high correlation between offensive and defensive rebound frequencies (r=0,46), along with offensive and defensive rebound frequencies and final score of the game (r=0,22). Milanović (1978), on a sample of 26 basketball championship games of ex-Yugoslavia, using regression analysis, obtained statistical impact of 4 situational variables of throwing the ball into the basket from different distances and 11 situational variables of throwing the ball from different ways on final result in basketball game. Final result depended on precision of throwing the ball from different distances, that winning was determined by the level of throwing the ball from the distance and under the basket efficiency and also was determined by achieving maximal jump-shot from the distance efficiency. Pleslić (1994), on a sample of 20 basketball games played on European basketball championship in Zagreb in 1989, also using regression analysis, obtained the data where successful throwing the ball from the racquet, from the half-distance and from the free throw-line were the greatest predictors on rang and difference criterium. Lukšić (2001) conducted the study on European, American professional and College system, with the aim of determining the differences between successful and unsuccessful teams. European successful teams had statistically greater number of defensive rebounds and successful 3 point shots, steals and offensive rebounds. American professional players had statistically greater number of unsuccessful 2 and 3 point shots, turnovers and personal fouls, while American College players had greater number of successful 3 point shots, steals and defensive rebounds. The aim of our study was to determine which situational efficiency parameters influenced the most on the final result among male basketball teams playing on the Olympic Games in London 2012. According to presented problem, 2 alternative hypotheses were made:

H_1: Multivariate indicators of the contribution of the predictor variables had significant effects on final result of the basketball game.
H_2: Partial regression coefficients had different contributions on final result of the basketball game.

Methods

Participants
The research has been conducted on the sample of 12 basketball teams (38 games, 38 successful and 38 unsuccessful teams) playing on the Olympic Games in London 2012 in further order: group A (15 games), group B (15 games), quarter-finals (4 games), semi-finals (2 games), finals (1 game) and game for third place (1 game).

All the data were collected from Federation Internationale Basketball Association (FIBA) official website. This research was conducted by the Declaration of Helsinki and approved by Ethics Committee of Faculty of Kinesiology, University of Zagreb, Croatia.

Sample of variables
Sample of variables was comprised of 13 standard situational efficiency parameters prescribed by FIBA. Table 1. represented each parameter abbreviation and description. Variables for *2 points* represent primary situational indicators for overall efficiency in the game. Those efficiencies ranged from 55% to 60% from total of scored points in basketball game. One of the most important principle of organized (transitional and set) attack represents *selective shot*. Due to that, organisation of the game should contain ball control and movement line, which allow the releasement of a large number of players for "opened" shot on a different playing positions (Trninić, 1996). Variables for *3 points* represent great strategic importance, because they make around 25% of total scored points on basketball games and around 36% from total of thrown balls. Because of that, requirements increase in the phase of defence for pressure in front line of defence, but defence spreads.

It means that opponent players have much more space for attack. Knight and Newell (1986) considered that total shot percentage mustn't be lower than 52%. *Free throws* are defined as indefensible ball throw in the basket made as the result of punishing the opponent's team for personal foul made. Between 15% to 30% of total scored points during the game can be attributed to free throws (Trninić, 1996). *Defensive rebounds* represent the number of caught rejected balls in the phase of transitional or set defense. Trninić et al. (1994) showed that defensive rebounds were more significant indicator of situational efficiency than *offensive rebounds* (RO=0,57). According to Trninić (1996), defensive rebounds account for about 66% of total rebounds.

Based on that, that the transition from the phase of defence to the phase of attack started when player comes in possession of the ball, it is necessary to point out that defensive rebounds important component for overall efficiency in the game. *Offensive rebounds* represent the number of caught rejected balls in the phase of transitional or set offense. According to Knight and Newellu (1986), the number of caught balls in the phase of defence and attack must be over 58% from the overall rebounds. Well-prepaired and organized attack will cover offensive rebounds and keep defensive balance. It decreases psychological pressure on the shooter and simultaneously increases realization in attack (Trninić, 1996).

Assists, according to Trninić (1996), are factors that produce "easy shots". Also, according to Price and Rao (1974), assists, % of free throws, offensive and defensive rebounds make very important components that discriminate successful from unsuccessful teams. Greater number of assists and got balls generate with greater shoot efficiency, producing greater number of successful throws for 2 points and lower unsuccessful throws for 2 points. *Personal fouls* represent illicit and irregular physical touch with the opponent, no

matter if the ball is in the game or out (Trninić, 1996). *Turnovers* represent lost ball during the basketball game. In basics, minimal number of lost balls (around 6) points high level of individual and team game, along with high level of sports form of individuals and teams.

Table 1. *Abbreviation and description of each situational efficiency parameter*

Abbreviation	Description
2P-M	2 points-made
2P-F	2 points-fail
3P-M	3 points-made
3P-F	3 points-fail
FT-M	Free throws-made
FT-F	Free throws-fail
RB-O	Offensive rebounds
RB-D	Defensive rebounds
AS	Assists
PF	Personal fouls
TO	Turnovers
ST	Steals
BS	Block Shots

Losing the ball in the phase of transitional and set attack was caused with aggressive defence and level of ball control of the team who is in the phase of attack (Trninić, 1996).

Steals represent successful and unsuccessful throws the ball into the basket, cause higher number of stolen balls creates assumptions for higher number of shots.

Obtained balls occur when defensive players intersecting passed balls, out breaking the ball and dead ball rebounds.

Most of the college coaches think that winning 10-12 balls during first half is one of the important defensive goals (Trninić, 1996). *Blocks* are events, where team shows individual or collective aggression in the phase of defence.

It represents indicator for evaluation central player in the phase of defence (Trninić, 1996).

Criterium variable was determined numerically, as final score difference between successful and unsuccessful teams (for example, if final score was 100-90, than variant would be +10 for successful and -10 for unsuccessful team).

Statistical analysis

For all analyzed parameters, arithmetic mean and standard deviation were calculated. Kolmogorov-Smirnov test was used to determine whether the variables were normally distributed (maxD and p-value).

Regression summary statistics, based on criterium variable, was implied with coefficient of determination (R), predictor's explained variance (R^2), F-value and statistical significance.

To investigate influence of separate variable on the final outcome of the game, multiple regression analysis was performed. Statistical significance was set up at $p \leq 0,05$.

Results

Statistical data of situational efficiency parameters of successful and unsuccessful male basketball teams

Table 2. showed basic parameters of arithmetic means, standard deviations, Kolmogorov-Smirnov maxD for each of the parameter and p-value.

Table 2. Basic descriptive parameters of successful and unsuccessful male basketball teams

Variables/Descriptive parameters	N	Mean±SD		maxD		p-value	
		Successful	Unsuccessful	Successful	Unsuccessful	Successful	Unsuccessful
2P-M	38	22,84±4,37*	20,05±4,60	0,11	0,14	>,20	>,20
2P-F	38	19,82±5,39*	23,34±4,46	0,15	0,09	>,20	>,20
3P-M	38	9,32±5,50*	6,45±2,68	0,17	0,13	>,20	>,20
3P-F	38	15,08±4,78	13,74±4,30	0,11	0,10	>,20	>,20
FT-M	38	15,00±5,04	12,82±5,58	0,10	0,13	>,20	>,20
FT-F	38	6,21±3,60	5,82±3,14	0,10	0,14	>,20	>,20
RB-O	38	12,05±4,30	10,37±4,43	0,14	0,19	>,20	<,15
RB-D	38	28,32±4,46*	25,21±4,59	0,09	0,09	>,20	>,20
AS	38	20,47±6,26*	13,87±4,91	0,09	0,14	>,20	>,20
PF	38	20,26±4,05	21,08±4,96	0,13	0,10	>,20	>,20
TO	38	11,87±3,41*	15,11±4,26	0,10	0,11	>,20	>,20
ST	38	7,29±3,46*	4,55±2,68	0,14	0,21	>,20	<,10
BS	38	3,63±1,91*	2,50±2,10	0,18	0,22	<,20	<,05

*p<0,05

Presenting shooting results, successful teams scored 53,25% of *2 points-made*, in contrast to unsuccessful teams (46,75%). Opposed to successful *2 points-made*, unsuccessful teams made more *2 points-fail* (52,87% vs. 47,13%). Successful teams scored 59,10% of successful *3 points-made*, opposed to 40,90% scored by unsuccessful teams. In variable *3 points-fail*, successful teams performed higher percentage (52,32%) than unsuccessful teams (47,67%). Results from *free throws-made* showed higher percentage of realization by successful teams (53,93%) in contraire to unsuccessful (46,07%), while similar percentages were obtained in *free throws-fail* among successful (51,64%) opposed to unsuccessful (48,36%) teams. Successful teams did more *offensive* (53,75% vs. 46,25%) and *defensive rebounds* (52,90% vs. 47,10%). Also, winning teams performed better in *assists* (59,61%), *steals* (61,55%) and *blocks* (59,23%), but lower in *personal fouls* (49,01%) and *turnovers* (44%). Results in table 2. showed that differences occurred in shooting variables (successful or unsuccessful), along with defensive rebounds, assists, turnovers, steals and blocks ($p<0,05$). In percentages, similar results were obtained by Jukić et al. (2000), where successful teams had better efficiency in *2 points-made* (53,75%), *2 points-fail* (47,07%), *3 points-fail* (56,10%) and free throws-made (56,32%).

Multivariate regression coefficients of set of variables on criterium variable- final outcome of the game

Table 3. showed multivariate analysis of variance across winning and defeated teams. There were statistical significant differences among groups ($p<0,01$), so discriminate analysis was approved.

Table 3. Multivariate indicators of the contribution of the predictor variables to the successfulness criterion defined as the goal difference of the final match score

Effect	R	R^2	F-value (13,62)	p-value
Point difference	0,78	0,61	7,49	***0,00***

$p<0,05$

Results from table 3. showed that 61% of variance could be explained by the situational indicators in the basketball game on a statistical significant level ($p=0,00$). Also, similar results were obtained by Separović et al. (2000), where 64% of variance could be explained by the situational indicators in the basketball game on a statistical significant level ($p=0,00$). Another study from Simović and Komić (2008) showed that 54% of variance was influenced by situational indicators of the basketball game on the World championship in the United States of America. Jukić et al. (2000) obtained something lower results ($R^2=0,35$), where around 35% of the final scores in the games may be explained by using variables in their study model (2 point shots-made and fail, 3 point shots-made and fail, free throws-made and fail and assists).

Partial effects of situational indicators on final score of the basketball game

Table 4. Effects of situational predictors on criterium variable (point differences)

Variables/Groups		Male (38 games)	
	β	t-value	p-level
2P-M	-0,07	-0,63	0,53
2P-F	-0,55	-3,85	***0,00***
3P-M	-0,11	-0,75	0,45
3P-F	-0,29	-2,36	***0,02***
FT-M	0,06	0,63	0,53
FT-F	-0,03	-0,31	0,76
RB-O	0,55	4,05	***0,00***
RB-D	0,25	2,58	***0,01***
AS	0,07	0,47	0,64
PF	-0,10	-1,09	0,28
TO	-0,37	-3,75	***0,00***
ST	0,21	2,19	***0,03***
BS	0,18	1,78	0,08

$p<0,05$

Results in table 4. represented how many percentage of the criterium variable (final outcome) could be explained by predictive variables (situational efficiency indicators). Also, partial regression coefficients for each of the variable was showed with proper p-value. Main outcomes of the present paper were that *2 points-fail* (β coefficient= -0,55; $p<0,01$), *3 points-fail* (β coefficient= -0,28; $p<0,05$), *offensive rebounds* (β coefficient= 0,55; $p<0,01$), *defensive rebounds* (β coefficient= 0,25; $p<0,05$), *turnovers (*β coefficient= -0,36; $p<0,01$) *and steals* (β coefficient= 0,21; $p<0,05$) statistically influenced on the final result of the game. Similar results from Jukić et al. (2000) showed that 2 points-fail, 3 points-fail and free-throws-made had statistical impact on final result of the game. Separović et al. (2009) obtained that defensive rebounds, turnovers and steals showed greatest contribution on final result, while Mikolajec et al. (2013) showed that win percentage, average fauls, offensive efficiency, percent of wins in the closed games, average number of points in the 3rd quarter and average steals had the highest effects on final score.

Discussion

The aim of the present study was to determine which situational efficiency parameters influenced the most on the final result among male basketball teams playing on the Olympic Games in London 2012. Separate differences (table 2.) occured in shooting variables, along with defensive rebounds, assists, steals, turnovers and blocks. Also, results from table showed that about 61% of variance in final score could be explained with 13 situational efficiency parameters included in the game of basketball on a statistical significant level ($p<0,05$).

From table 4., separate contributions on final score could be attributed with unsuccessful 2 and 3 point shots, offensive and defensive rebounds, along with turnovers and steals. Variable *2 points-fail* showed statistical contibution on final result of the basketball game. Successful teams scored less unsuccessful shots for 2 (47,13%) opposed to unsuccessful teams (52,87%). Successful teams sent more shots from favorable positions, they had better shot selection and greater number of shots from the zone of high percentage of shots. It was also assumed that defense of successful teams was successfully prevented regular entrance and line movement of the unsuccessful players in transitional and set attack. Along with 2 points-fail, *3 points-fail* represented significant contributor of the final result of the game, where teams performed higher percentage of 3 points-fail (52,32%) than unsuccessful teams (47,67%). Nevertheless, successful teams compensated that with more *3 points-made* (9,32 vs. 6,45), where they had more "clear" chances and open shots to score the shot. *Offensive rebounds*, as one of the most significant contributor on final result, showed that successful teams had greater percentage (53,75%) than unsuccessful teams (46,25%), along with greater unsuccessful shooting percentage among unsuccessful teams (successful teams 47,13% vs. unsuccessful teams 52,87%). Nevertheless, aggresive offensive rebounds in the phase of attack represented significant indicator for successfulness. According to Trninić et al. (1997), offensive rebounds were defined as extension of aggresion of attack that opened the option of greater shoot percentage. This meant that the team had to close the way towards the basket. In that way, team who got in possesion of the ball had bigger percentage of shots and more succesfull transition from the phase of attack to defense and vice versa. Along with offensive rebounds, *defensive rebounds* contributed significant on final result. Trninić et al. (1997) explained that by maintaining the pressure on the ball in the phase of defense, stopping the opponents to achieve regular entrance in transitional and set offense along with stopping the attack with more than one shot. Successful teams forced unsuccessful teams for higher number of unsuccessful shots from the game and created greater chance for defensive rebounds (successful teams 52,90% vs. unsuccessful teams 47,10%). Successful teams performed lower in *turnovers* (44%) vs. unsuccessful teams (56%). This could be explained by lower technical-tactical preparedness in unsuccessful teams, where players did not have game conversation on optimal level. Cooperation between two or more players in unsuccessful teams collapsed, because of bigger pressure and agression of the players playing defense in successful teams. Opposite variable from turnovers, *steals*also showed that they represented statistical contribution on the final result in basketball game. Around 61% of all steals could be attributed to successful teams, because of cooperation between players on higher level. Also, aggresive play in the phase of defense, blocking the opponent to pass the ball and covering the opponent with the ball gave the players from the successful teams to attack the ball and went from the phase of defense to the phase of attack and score the point. Jukić et al. (2000) showed that statistical shooting contributors influencing final outcome were 2 points-fail, 3 points-fail and free throws-made (R= 0,59; R^2= 0,35). Obtained percentages demonstrated that successful teams had 53,75% efficiency in 2 points-made, opposed to unsuccessful teams (46,24%). On the other hand, unsuccessful teams performed weaker in 2 points-fail (52,93%) in contrare to successful teams (47,06%). In variable 3 points-made, unsuccessful teams had better efficiency (50,16% vs. 49,84%), but also had weaker result in 3 points-fail (56,10% vs. 43,90%). In free throws-made, successful teams had higher percentage of efficiency (56,32% vs. 43,68%), but had worse results in free thows-fail (50,75% vs. 49,25%). Also, results from our study were similar to results obtained by Separović et al. (2009), where defensive rebounds, turnovers and steals represented statistically best predictors to predict final outcome in Bosnian League (R= 0,80; R^2= 0,64). On the other hand, best predictors obtained in the Goodyear league were 2 points-made,3 points-made, free throws-made, offensive rebounds, turnovers and steals (R= 0,92; R^2= 0,85). Other study performed by Simović and Komić (2008) showed that 2 points percentage, inefficiency percentage of turnovers, 3 points percentage, efficiency defensive rebounds percentage, efficiency offensive rebounds percentage and free throws percentage statistically influenced on the final result of the games on the World Championship for men in Greece (R= 0,89; R^2= 0,80). On the World Championship in the United States of America, 2 points percentage, 3 points percentageand efficiency defensive rebound percentage (R= 0,73; R^2= 0,54) affected statistically on the final outcome, while in Japan, all parameters were identical like in Greece, except for efficiency defensive rebounds percentage (R= 0,95; R^2= 0,89). Another study from Mikolajec et al. (2013) investigated best predictors of the outcome in National Basket Association (NBA) league. Results showed that win percentage, average fauls, offensive efficiency, percent of wins in the closed games, average number of points in the 3rd quarter and average steals (R= 0,98; R^2= 0,96) represented statistically significant predictors of team's rank position. Trninić et al. (1995) presented offensive and defensive rebounds as significant contributors on the final outcome of the game, where values in defensive reboundshad statistically higher impact than values in offensive rebounds. Milanović (1978) showed that, as mentioned before, that final result depended on precission of throwing the ball from different distances, that winning was determined by the level of throwing the ball from the distance and under the basket efficiency and also was determined by achieving maximal jump-shot from the distance efficiency. Based on obtained results in the study, model game of the successful teams was based on strict selection of a 2 and 3 point shots from the external positions, as many offensive rebounds (to

start new attack in the game) along with defensive rebounds (try to win the ball in defense with fast transitions in the phase of attack). Also, assists with stolen balls speed the game up and players' creativity came to higher level of performance. All these indicators comprised technical and tactical actions in the phase of attack and defence, where players had to be well-prepared for the upcoming competition during the specific cycle period.

Conclusion

In conclusion, shooting and rebounds efficiency, according to mentioned authors and in our study, contributed the most on the final result. Successful teams had lower values in unsuccessful shootings and higher values in *offensive* and *defensive* rebounds, which have given them opportunity for transition from the phase of attack to the phase of defence and vice versa. In that way, the whole game got faster rhythm and moments to provide advance over the opponent and create higher final score differences. Players, both male and female, had to be on the great stage of preparedness to present their technical-tactical performance in the play, along with cognitive functioning and focus pointed towards opponents in attack and defence. Only teams with top individual players, who have created and set the pace of the game, could be successful on top quality competitions worldwide.

References

Czerwinski, J. (1995). The influence of tehnical abilities of players on the tactical selection in the handball game. *EHF Periodical, 2,*16-19.

Gruić, I., Vuleta, D. and Milanović, D. (2006). Performance indicators of teams at the 2003 men's World Handball Championship in Portugal. *Kinesiology*, *38*(2), 164-175.

Hughes, M.D. and Bartlett, R.M. (2002). The use of performance indicators in performance analysis. *Journal of Sports Sciences*, *20*(10), 739-754.

Jukić, I., Milanović, D., Vuleta, D and Bračić, M. (2000). Evaluation of variables of shooting for a goal recorded during the 1997 European basketball Championship in Barcelona. *Kinesiology*, *32*(2), 51-62.

Knight, B., Newell, P. (1986). *Basketball. Vol 1.* Seamoor: Graessle Mercer Co.

Lukšić, E. (2001). Differences between successful and unsuccessful teams within FIBA, NBA and NCAA system of competition. Master thesis. Zagreb: Faculty of Kinesiology, University of Zagreb.

Mikołajec, K., Maszczyk, A., & Zając, T. (2013). Game Indicators Determining Sports Performance in the NBA. *Journal of Human Kinetics*, *37*, 145 – 151 . http://doi.org/ 10.2478/hukin-2013-0035.

Milanović, D. (1978). Effects of ball shooting variables in the basket on final score of basketball game. *Kinesiolog*y, *9*(1-2), 135-149.

Pleslić, D. (1994). Effect of some basketball elements on final result of the game. Master thesis. Zagreb: Faculty of physical education, University of Zagreb.

Separović, V., Alić-Partić, M. and Užičanin, E. (2009). Influence of standard indicators of situational effectiveness in basketball, in Bosnian League 6 and Regional Basketball League. *International Journal of Kinesiology*, *6*(1), 32-38.

Simović, S., Komić, J. (2008). Analysis of influence of certain elements of basketball game on final result based on differentiant at the XIII, XIV and XV World Championships. *Acta Kinesiologica*, *2*(2), 57-65.

Trninić, S. (1975). Relations between frequencies of defensive and offensive rebounds and final result in basketball games. Master thesis. Zagreb: Faculty of physical education.

Trninić, S. (1996). *The analysis and learning of basketball game*. Pula: VIKTA d.o.o

Trninić, S., Milanović, D., Blašković, M., Birkić, Ž. and Dizdar, D. (1995). The influence of defensive and offensive rebounds on the final score in a basketball game. *Kinesiology*, *2*, 44-49.

Trninić, S., Perica, A., & Pavičić, L. (1994). Game state analysis in basketball. *Kinesiology*, *26*(1-2), 27-32.

Trninić, S., Milanović, D., & Dizdar, D. (1997) Worin unterscheiden sich Sieger von verlieren im Basketball /In German/*. Leistungsport*, *29*(2), 29-34.

Received: January 13, 2016
Accepted: June 15, 2016
Correspondence to:
Prof. Dragan Milanović, PhD.
University of Zagreb
Faculty of Kinesiology
Zagreb, Croatia
Tel: +385 (1) 3658 666
e-mail: dragan.milanovic@kif.hr