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SCORING EFFICIENCY IN THE EUROLEAGUE BASKETBALL: ANALYSIS OF CENTER'S SHOOTING POSITIONS RELATED TO THE RULE CHANGES

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Abstract The purpose of this study was to examine the shooting structure of basketball players at position 5, so-called Centers'. Shooting structure is related to the type of the shot, position of the shot and shooting efficiency. The data were collected from Euroleague Top 8 and Final Four games in two seasons 2008/09 and 2018/19. Thirty-two Centers' from sixteen teams were included in this study (2008/09 - Body height 211±6.17cm, Age 28.38±3.95 yrs.; 2018/19 - Body height 210.69±6.54cm, Age 29.81±3.89 yrs.). Each game was analyzed separately using notational analyses. Confirmative factorial analyses show that Centers' shooting characteristics for 2008/09 season had 7 different components, while 2018/19 season had 6 different components, as a dominant characteristic of scoring, affecting the total scoring efficiency. Results of the study indicate that focusing on mastering the shooting techniques instead of position specialization would increase Centers' scoring efficiency. As an important part of overall playing quality, shooting structure, primarily shooting efficiency provides significant information about the way that Centers' play which is especially affected by the rule changes. Basketball coaches and Centers' should work to improve overall shooting technique.

Key words: Post-up, setting the screen, one-dimensional players, multidimensional players

INTRODUCTION

Multiple skills are essential to play the game of basketball effectively. Among all, shooting stands out as the most important component that has the greatest impact on success. Studies based on game-related statistics showed that along with free throw percentage, defensive rebounds and assists, shooting from the field makes difference between winning and losing teams in elite basketball competitions [1,6,10,13,17]. There are different types of shooting techniques, including multiple kinds of layups, dunking at the rim, "hook" shot and jump shot. Choosing the shooting type is determined by the on-court position, showing that jump shot is typical for scoring from distance, while layups, dunks, or hook shots are performed when scoring from close range. Keeping this in mind, taking shot of the dribble, or immediately after receiving the pass makes the shooting structure more complexed. Accordingly coming into the right position for scoring depends on players' physical and technical ability, individual and team tactics. Among these actions, making the right choice in the right time determines the overall quality of the players [10,15].

Unlike football field-goal kicker, soccer goalkeeper, volleyball libero, basketball is still unique among team sports in that there are fewer one-dimensional players in the game. Basketball players today are becoming more and more skillful, and many of them have the ability to play more than one position. When it comes to shooting, basketball requires players that can be a scoring threat both inside and outside the paint. Accordingly, two types of basketball players are increasingly recognized, perimeter and post players. But, one position is still observed in relation to the tradition division of players into five positions, and that is position 5 or so-called Centers'. They are in general the tallest players in every team [5,21]. Centers' main role is to move and score inside the three-point line, mostly near to the basket or inside the paint [11]. He can accomplish that with playing with his back to the basket, using their body as obstacle for defense (Post-

up), which was their primary play type [5]. Lately, Centers' often take part in setting the screens for players with the ball, after which they cut directly to the basket (Pick & Roll), or going wide after the screen (Pick & Pop) [15]. Their role, more than any other player is to be involved in offensive rebounding. However, with the advent of the multidimensional players, many coaches run offensive sets where centers' can shoot the ball both from the paint and from the distance, and shoot of the dribble. It remains unclear whether this is due to a change in coach tactics or a change in the rules of the game.

Permanent rule changes make the game of basketball more interesting for the spectators. In addition, the game itself is changing to. For example, the biggest impact of changes to 4 periods of 10 minutes, 24 seconds shot-clock and 8 seconds to advance the ball over the middle line since the 2000/01 season was seen through the increased game pace and the number of possessions per game [2,19]. The latest major changes were introduced in 2010/11 season. Among all, the addition of no-charge semicircle, three-point arc 6.75 meters away from the basket, changes how and when the 24-second shot clock is reset, and changing the paint shape from trapezoid to rectangular [14,20]. It was expected that this changes will allow for certain players to expand their offensive skills. That is specially related to the centers' to become more effective from the paint, 2-point jump shot outside the paint, and even 3-point jump shot, because of the bigger space for its game.

In the past, various aspects related to shooting structure were investigated. Most of them related to the on-court position of the shot, whether it was a free throw, 2-point shot or 3-point shot. Observing their efficiency and impact on success. Therefore, similar researches are taken into account. Garcia et al. [6] suggest that, in Play-off Games, differences between winning and losing teams depend on defensive rebounding and 2-point and 3-point efficiency. It is shown, that there is significant difference between Guards versus Centers shot efficiency related to shot position. Main difference is that Guards are often playing at the perimeter, taking shots from distance while Centers play close to the basket, inside or around the paint and more often execute layups, dunks or hook shots including more physical contact [4].

Researches on Centers shot efficiency and play-type analyses are very scarce and haven't been used on European top-level teams. Therefore, the aim of this study was to observe scoring efficiency performed by Centers in Euroleague and determine the factors between two mentioned seasons trying to define shooting position and shooting efficiency structure, for the purpose of quantitative determination of which play type and what on-court position is the most dominant in two different seasons with a ten-year interval between.

METHODS AND MATERIALS

SUBJECTS AND PROCEDURE

Thirty-two male Euroleague basketball players were taken as a sample for this study (2008/09 - Mean ± SD: Height 211 ± 6.17cm, Age 28.38 ± 3.95yrs; 2018/19 - Mean ± SD: Height 210.69 ± 6.54cm, Age 29.81 ± 3.89 yrs.). The basic criterion for taking part in this study was that athletes played all games through Top 8 and Final Four competition in Euroleague. Two players form each contesting teams were observed in forty games in two seasons with 10 years' interval between (Seasons 2008/09 and 2018/19). Observed games concerned the play-off phase and Final Four tournament for each season. Given that the competition system has been changed in 2016, from group type to league type competition, it was suitable to examine the games of the same importance, omitting the previous games.

Each match was observed separately with data collection using notational analyses by filling in the observation sheet [6,16]. Notational analysis is defined as process of observing, diagnosing and recording of events which took place in the competition. This method of data collection is very applicable in sport. It allows coaches to collect various types of valuable information, including their opponents, different competitions, individual player statistics, etc. The observation sheet consisted of fields concerning play-type shot and on–court position of the shot. Therefore, play type is divided in two groups: individual play-type scoring shot related to the situations where the Center makes the dribble or pivot several times before the shot, and receiving-pass scoring shot related to the situations in which the player took shot immediately after he had received the pass from another player. Position of the shot was divided into ten different groups: positions from inside the three-point line - central, left and right position outside the paint and two positions from inside the paint, closer and further, watching the paint divided in half orthogonally with respect to the basket and positions from outside the three-point line – central, left and right position and left and right corner position. Given that this study relates to importance of the shot efficiency, only field goals made were taken into account for measuring.

VARIABLES

The following set of variables was used for evidence of technical and tactical efficiency of shooting as well as:

- **2pPCrbS**, 2-point scoring from inside the paint, closer to the basket, scoring after receiving the ball;
- **2pPFrbS**, 2-point scoring from inside the paint further from the basket, scoring after receiving the ball;
- **2pOCrbS**, 2-point scoring from outside the paint, from central position, scoring after receiving the ball;
- **2pORrbS**, 2-point scoring from outside the paint, from right position, scoring after receiving the ball;
- **2pOLrbS**, 2-point scoring from outside the paint, left position, scoring after receiving the ball;
- **3pCrbS**, 3-point scoring from central position, scoring after receiving the ball;
- **3pRrbS**, 3-point scoring from right position, scoring after receiving the ball;
- **3pLrbS**, 3-point scoring from left position, scoring after receiving the ball;
- **3pRCrbS**, 3-point scoring from right corner position, scoring after receiving the ball;
- **3pLCrbS**, 3-point scoring from left corner position, scoring after receiving the ball;
- **2pPCipS**, 2-point scoring from inside the paint, closer to the basket, scoring after individual play;
- **2pPFipS**, 2-point scoring from inside the paint, further from the basket, scoring after individual play;
- **2pOCipS**, 2-point scoring from outside the paint, central position, scoring after individual play;
- **2pORipS**, 2-point scoring from outside the paint, right position, scoring after individual play;
- **2pOLipS**, 2-point scoring from outside the paint, left position, scoring after individual play;
- **3pCipS**, 3-point scoring from central position, scoring after individual play;
- **3pRipS**, 3-point scoring from right position, scoring after individual play;
- **3pLipS**, 3-point scoring from left position, scoring after individual play;
- **3pRCipS**, 3-point scoring from right corner position, scoring after individual play;
- **3pLCipS**, 3-point scoring from left corner position, scoring after individual play.

STATISTICAL ANALYSES

Means, standard deviations (SD), standard error (SE), minimal and maximal value (Min and Max) for all variables were calculated. Confirmative factorial analysis method was used to define shooting position and shooting efficiency structure, for purpose of quantitative determination which play type and what on-court position is the most dominant and discriminative in technical and tactical aspects of center players efficiency level. The KMO and Bartlett's test of sphericity was used to determine sampling adequacy. Orthogonal rotation was included for more precise determination. The magnitude of relationship between the scoring position and shooting efficiency was interpreted using the following criteria: very weak 0-0.2; weak 0.21-0.4; moderate 0.41-0.6; high 0.61-0.8; very high 0.81-1.0. Parameters obtained were fed into the SPSS software package version 26.0. Level of statistical differences was set at 95.0% of probability at $p = 0.05$ [9].

RESULTS

Descriptive statistics of scoring efficiency are presented in Tables 1 and 2.

In the following section, results of factor analysis are shown with total percentage of variance explained. The KMO and Bartlett's test showed adequate level of sphericity (0.52). In Table 3 the percentage of total variance for Season 2008/09 is shown. A total 88.619% of variance was explained cumulatively showing seven different components which determine technical and tactical structure of scoring efficiency at center playing position.

Table 1. Descriptive statistics of Euroleague Centers' scoring efficiency in season 2008/09

	Mean	SD	SE	Min	Max
2pPCrbS	7.07	5.50	1.42	1	17
2pPFrbS	0.93	1.16	0.30	0	4
2pOCrbS	0.27	0.59	0.15	0	2
2pORrbS	0.40	0.83	0.21	0	2
2pOLrbS	0.80	1.37	0.36	0	5
3pCrbS	0.47	1.06	0.27	0	4
3pRrbS	0.13	0.35	0.09	0	1
3pLrbS	0.27	0.46	0.12	0	1
3pRCrbS	0.07	0.26	0.07	0	1
3pLCrbS	0.07	0.26	0.07	0	1
2pPCipS	3.67	4.10	1.06	0	12
2pPFipS	0.40	0.74	0.19	0	2
2pOCipS	0.20	0.41	0.11	0	1
2pORipS	0.13	0.35	0.09	0	1
2pOLipS	0.33	0.82	0.21	0	3
3pCipS	0.07	0.26	0.07	0	1
3pRipS	0.07	0.26	0.07	0	1
3pLipS	0.07	0.26	0.07	0	1
3pRCipS	0.07	0.26	0.07	0	1
3pLCipS	0.07	0.26	0.07	0	1

Table 2. Descriptive statistics of Euroleague Centers' scoring efficiency in season 2018/19

	Mean	SD	SE	Min	Max
2pPCrbS	8.44	5.83	1.46	1	19
2pPFrbS	0.56	1.09	0.27	0	4
2pOCrbS	0.31	0.60	0.15	0	2
2pORrbS	0.25	0.58	0.14	0	2
2pOLrbS	0.13	0.34	0.09	0	1
3pCrbS	0.06	0.25	0.06	0	1
3pRrbS	0.06	0.25	0.06	0	1
3pLrbS	0.13	0.34	0.09	0	1
3pRCrbS	0.13	0.34	0.09	0	1
3pLCrbS	0.06	0.25	0.06	0	1
2pPCipS	1.69	2.06	0.51	0	6
2pPFipS	0.19	0.40	0.10	0	1
2pOCipS	0.06	0.25	0.06	0	1
2pORipS	0.19	0.40	0.10	0	1
2pOLipS	0.06	0.25	0.06	0	1
3pCipS	0.06	0.25	0.06	0	1
3pRipS	0.06	0.25	0.06	0	1
3pLipS	0.06	0.25	0.06	0	1
3pRCipS	0.06	0.25	0.06	0	1
3pLCipS	0.06	0.25	0.06	0	1

Table 3. Total Variance explained – Season 2008/09

Total	Initial Eigenvalues	% of Variance	Cumulative %
1	6.470	32.35	32.35
2	3.010	15.05	47.40
3	2.281	11.41	58.81
4	1.768	8.84	67.65
5	1.629	8.14	75.79
6	1.533	7.67	83.46
7	1.032	5.16	88.62

The results are showing that shots are divided into 7 factors which are explaining the major part of variance (88.619%). In Table 4 the structure matrix is presented showing the amount of variable saturation affecting the shot efficiency, watching the Season 2008/09. There are five primary scoring positions showing moderate to very high saturation with shot efficiency (2pORipS, 2pOLrbS = 0.914; 2pORrbS = 0.883; 3pRCrbS = 0.796; 2pOLipS = 0.715). The second factor contains 3 significant variables (3pCipS = 0.909; 2pPFrbS = 0.805; 2pOCipS = 0.799). The third factor covers 2 variables (3pRipS, 3pLCipS = 0.986). The fourth factor contains 2 significant variables (2pOCrbS = 0.946; 3pRCipS = 0.940). The fifth factor covers 3 variables (2pPCrbS = 0.806; 2pPCipS = 0.651; 3pLipS = 0.552). The sixth factor contains 4 significant variables (3pRrbS = 0.920; 3pCrbS = 0.868; 3pLrbS = 0.840; 2pPFipS = 0.828) and the last factor contains only one variable (3pLCrbS = 0.906).

Table 4. Structure Matrix – Season 2008/09

	Component						
	1	2	3	4	5	6	7
2pORipS	***0.914***	0.051	-0.029	-0.076	0.014	0.359	-0.048
2pOLrbS	***0.914***	0.068	-0.056	-0.458	-0.098	0.517	0.059
2pORrbS	***0.883***	0.179	-0.079	0.016	0.103	0.252	-0.028
3pRCrbS	***0.796***	0.154	0.041	-0.211	-0.307	0.737	0.216
2pOLipS	***0.715***	0.036	-0.007	-0.133	-0.35	0.714	0.192
3pCipS	-0.143	***0.909***	-0.056	-0.083	0.037	-0.141	-0.043
2pPFrbS	0.113	***0.805***	0.038	-0.394	0.456	0.061	-0.222
2pOCipS	0.512	***0.799***	-0.064	-0.102	-0.077	0.318	0.12
3pRipS	-0.104	-0.061	***0.986***	0.076	-0.028	-0.113	-0.125
3pLCipS	-0.104	-0.061	***0.986***	0.076	-0.028	-0.113	-0.125
2pOCrbS	0.217	0.423	-0.056	***-0.946***	-0.006	0.209	0.01
3pRCipS	-0.077	-0.045	-0.057	***-0.940***	0.128	-0.058	-0.075
2pPCrbS	0.021	-0.081	-0.312	-0.018	***0.806***	-0.149	0.334
2pPCipS	-0.273	0.384	-0.292	-0.076	***0.651***	-0.135	0.594
3pLipS	-0.135	-0.149	-0.175	0.105	***-0.552***	-0.203	-0.117
3pRrbS	0.434	0.105	-0.031	-0.103	0.12	**0.920**	0.052
3pCrbS	0.671	0.102	-0.005	-0.385	-0.226	**0.868**	0.137
3pLrbS	0.145	-0.081	-0.077	0.089	-0.203	**0.840**	-0.115
2pPFipS	0447	0.161	-0.079	-0.382	0.211	**0.828**	0.030
3pLCrbS	-0.15	-0.114	-0.107	0.105	0.229	-0.168	***0.906***

In Table 5 percentage of total variance for Season 2018/19 is shown. A total of 82.634% of variance was explained cumulatively showing seven different components which determine technical and tactical structure shot efficiency at center playing position.

Table 5. Total Variance Explained – Season 2018/19

Total	Initial Eigenvalues	% of Variance	Cumulative %
1	5.515	27.58	27.58
2	3.327	16.63	44.21
3	2.442	12.21	56.42
4	2.269	11.34	67.76
5	1.900	9.50	77.26
6	1.074	5.37	82.63

The results are showing that scoring shots are divided into 6 factors which are explaining major parts of variance (82.634%). In Table 6 a structure matrix is showing amount of variable saturation affecting the shot efficiency, regarding the Season 2018/19. There are 6 primary scoring positions inside the first extracted factor showing high to very high saturation with the shot efficiency (2pOLipS, 3pLCipS, 3pCipS, 3pLCrbS = .983; 3pRrbS = 0.757; 3pRCrbS = 0.753). The second factor contains 3 variables with very high saturation (2pOCrbS = 0.876; 2pORrbS = 0.857; 2pORipS = 0.811). The third factor contains four different variables showing moderate to very high saturation (3pCrbS, 3pRrbS = 0.961; 2pPFipS = 0.697; 2pPCrbS = 0.457). The fourth factor contains three variables relating very high with the shot efficiency (2pOCipS, 3pRCipS = 0.953; 2pOLrbS = 0.843). The fifth factor contains only one variable (2pPFrbS = 0.920) and the sixth factor contains 3 variabless (3pRipS = 0.658; 3pLipS = 0.656; 2pPCipS = 0.617).

Table 6. Structure Matrix **–** Season 2018/19

	Component					
	1	2	3	4	5	6
2pOLipS	**0.983**	-0.115	-0.095	-0.088	0.086	-0.026
3pLCipS	**0.983**	-0.115	-0.095	-0.088	0.086	-0.026
3pCipS	**0.983**	-0.115	-0.095	-0.088	0.086	-0.026
3pLCrbS	**0.983**	-0.115	-0.095	-0.088	0.086	-0.026
3pLrbS	**0.757**	0.094	-0.14	-0.119	-0.257	-0.11
3pRCrbS	**0.753**	-0.199	-0.144	-0.133	-0.061	0.129
2pOCrbS	-0.114	**0.876**	0.001	-0.130	0.172	-0.105
2pORrbS	-0.076	**0.857**	-0.036	-0.113	-0.356	-0.037
2pORipS	-0.151	**0.811**	0.015	-0.106	0.307	0.102
3pCrbS	-0.08	-0.078	**0.961**	-0.049	-0.066	0.001
3pRrbS	-0.08	-0.078	**0.961**	-0.049	-0.066	0.001
2pPFipS	-0.166	0.648	**0.697**	-0.082	0.377	-0.017
2pPCrbS	-0.404	0.313	**0.457**	0.174	0.153	-0.379
2pOCipS	-0.072	-0.08	-0.034	**0.953**	-0.117	0.038
3pRCipS	-0.072	-0.08	-0.034	**0.953**	-0.117	0.038
2pOLrbS	-0.125	-0.141	-0.046	**0.843**	-0.005	-0.047
2pPFrbS	0.058	0.192	-0.048	-0.093	**0.920**	-0.147
3pRipS	-0.104	-0.238	-0.144	-0.161	-0.019	**0.658**
3pLipS	-0.117	-0.264	-0.149	-0.168	0.158	**-0.656**
2pPCipS	0.238	-0.175	-0.102	-0.245	0.603	**-0.617**

DISCUSSION

This study was used to define shooting position and shooting efficiency structure, for purpose of quantitative determination which play type and what on-court position is the most dominant and discriminative in technical and tactical aspects of Center players efficiency level. Considering the structure matrix, Season 2008/09 variables were defined in 7 different components. Observing the Season 2008/09, Centers' playing role in every team was somewhat different than todays.

Considering the first factor (Table 4) that explains the most of the variance related to the position from where scoring shots were performed, left and right positions outside the paint in both play types, and from right corner behind the three-point line are showing high to very high saturation (Table 4, Factor 1 = 0.715 - 0.914). These findings show that in most situations, Centers performed cutting to the basket from the help side or playing post-up from both sides since the defense tactics had lesser number of defensive rotations.

The second factor shows three different variables, considering shooting score from middle position with perpendicular angle to the baseline with different distance from where the scoring shot was performed, mostly after individual play. This component also shows high to very high correlation with the shot position efficiency (Table 4, Factor 2 = 0.799 - 0.909) which refers to the situations where Centers open up at high post position after a flash-cut or off-screen to receive the ball and try to redistribute it or play one-on-one. Besides that, very often taking shots from these positions after individual play affected Centers' scoring positively. During the observation of the games, it is noted that Centers seldomly played in isolation situations.

Despite being mentioned, the third factor shows that in almost 1 of 10 situations, scoring from long distance would positively affect shooting efficiency with very high correlation (Table 4, Factor 3 = 0.986). This can be put in line with today's trend which mentions that all players should be good shooters despite their playing position. It could be also interpreted as future assumptions of what could further improve shooting efficiency.

The fourth factor refers to the scoring shots performed from central position outside the paint after receiving the ball and right corner shot score after individual play. These scores showed very high negative correlation (Table 4, Factor 4 = -0.946 - 0.940) on the shooting efficiency. Even though high post shots were already defined, this component shows that scoring from central position right after receiving the ball negatively affects general scoring efficiency. Centers open up on this position often after setting the screen for the players with the ball, but when receiving the ball, the most often action that follows is hand-off on the opposite side, not taking the shot, especially considering that coaches had different views on general tactics in this Season. The Centers' most important role by definition is to play near to the basket. Their body composition and anthropometric measures allow them to be more efficient than others [21].

This is shown in the fifth component of structure matrix describing that scoring from the paint, near to the basket positively affects centers ability to score. This factor contains 3 variables with mixed correlation (Table 4, Factor 5 = -0.522 - 0.806) referring to the fact that three-point shots (included in this component) negatively affected their scoring ability. Besides playing near to the basket, Centers set up a large number of screens, especially for players with the ball. Opening after setting the screen determines the play type, making it Pick&Roll (P'n'R) if the Center "rolls" to the basket, or making it Pick&Pop (P'n'P) if the Center opens wide from the basket to receive the ball.

The sixth factor in the Season 2008/09 defines mostly P'n'P play since the most scoring shots performed in these situations are related to outside three-point scoring after receiving the ball, with very high correlation (Table 4, Factor 6 = 0.828 - 0.920). Besides P'n'P situations, Centers also follow up Guards or Forwards that penetrate to the basket. This most often provoke defensive rotations and since the Center is the player that defends the paint, he makes the first defensive rotation almost every time, trying to stop the offense from direct scoring. This allows the Center playing in the offense to move more freely, but since the most of defense is focused on closing the paint, Centers sometimes open up wide for taking the shot. In accordance with the shooting quality, some Centers open up outside more often than others. That's what the structure matrix shows as the seventh factor.

The last factor is in line with scoring from the left corner (Table 4, Factor 7 = 0.906). Even if it's not so often, scoring from this position is affecting total shooting efficiency of the Centers. By summarizing all significant factors using the confirmative factorial analyses, it is concluded that in Season 2008/09 Centers had a very specific role in the team. Their most important assignment included scoring from deep side positions, playing one-on-one post-up game or cutting to the basket, opening up on high post [6,11]. In line with those roles, most scoring shots were made from on-court positions where they appeared most often. This gives the insight of the tactical ideas, where coaches were more focused on placing their Centers inside the three-point line, moving around the paint or playing post-up game making their inside game the primary role of individual offensive strategy.

It is assumed that trends changed over a decade of playing. Inducting the new rules, followed especially by moving the three-point arc 50 centimeters further away from the basket made coaches to reassemble their tactical plans. That is why performing the same statistical analyses presented different component content in Season 2018/19. Six different components appeared in this season, quantitatively determining which is the most dominant and discriminative on-court position in technical and tactical aspects of Center players efficiency level. Besides the rule changes, trends in basketball tended to speed up the game pace and play more possessions during the game for both teams [2,19]. This caused an increase in transition offense, making modern basketball players more physically active [19]. Among other positions, Centers had to move more, move faster and accordingly be better physically prepared.

The first factor (Table 6, Factor 1 = 0.753 - 0.983) in this season included large number of scoring positions, mostly outside from three-point line confirming that Centers had much more freedom of movement in today's game. Their basic role is still the same, making them the most dangerous when they are with the ball near to the basket, but much more influential is shooting from distance after receiving the ball or individual play than it was 10 years ago.

The second factor shows three different variables indicating that scoring shots from top and right side outside the paint after receiving the ball are the main factors (Table 6, Factor 2 = 0.811 - 0.876), assuming that these shots are taken after flash-cut or after receiving the ball right after defensive rotations making Centers open for shooting.

The third factor shows moderate to very high relation with shooting efficiency (Table 6, Factor 3 = 0.457 - 0.961) which has certain similarity with factors from Season 2008/09 indicating scoring shots in P'n'R and P'n'P situations. These can be accounted with the Center's main role referring to setting the screens and opening right after.

The fourth factor is hard to identify correctly, since its structure is somewhat unrelated to typical basketball tactics. This is probably part of the „desperate" scoring shots, made probably in the last seconds during offense. These types of shot don't indicate any part of tactics, they rather indicate non-typical situations where players have to take the shot because of the shot clock violation. It is very interesting to see that almost 1 of 10 chances Centers score from these positions making its saturation (Table 6, Factor 4 = 0.843 - 0.953) very convincing.

The fifth factor also shows very high single saturation (Table 6, Factor 5 = 0.920) indicating that shots taken from positions at the edge of the paint after receiving the ball have influence on scoring efficiency. This is probably related to the „high-low" situations in which they receive the ball from another Center or power forward playing post-up previously, or after receiving the screen and opening in the middle of the paint.

The last factor shows a mixed saturation (Table 6, Factor 6 = -0.617 - 0.658) referring to the two outside positions and the position right under the basket after individual play. Even though this component defines only a small part of the variance, it is obvious that scoring from inside the paint after individual play is negatively affecting the scoring efficiency. This can be explained by the fact that modern Centers are more agile and score more often after P'n'R or classic cutting to the basket than post up play [15,19]. This play type is also related to the greater number of defensive rotations which are the consequence of better physical preparations of the players, making very hard to play one-on-one post-up without being double teamed [19].

Observing the components from the two Seasons, it can be concluded that dominating positions from which Centers score have changed over the decade. This is in accordance with changing trends of playing basketball with much more pace nowadays which is somewhat referred to latest rule changes. Scoring from post-up and shots performed from depth are not so frequent in the latter season, but rather taking shots outside the three-point line, being in line with today's general coaching philosophy. Guided by logic, today's tactics idea is based on fact that it is much better to take a three-point shot from 6.75m than two-point shot from 6.50m because distance affects scoring efficiency. Centers should be all-round players, being ready to perform all basketball techniques instead of only performing strictly specialized techniques related to their playing role. This can be put in another context of playing much more P'n'R and P'n'P actions today, making more situations where centers receive the ball and take immediate shot rather than playing one-on-one isolation or post-up. This also requires better movement without the ball and it is much more energy-consuming since there's a greater distance covered during offense [19].

Despite valuable insight to shooting position and shooting efficiency structure between two seasons, our understanding of most dominant scoring position remains somewhat limited regarding the fact that basketball is a game of momentum and many shots are the consequence of improvising instead of precise tactical task performance. Nonetheless, this research gives significant information of trend changes showing most represented scoring shots which can be very applicable for Euroleague basketball Centers' individual development.

CONCLUSIONS AND PRACTICAL APPLICATION

Taking into account that Center's position has undergone certain changes over time, further specialization should not be the direction of their development. Instead, working on the basic technique more intensively (i.e. shooting) would probably increase their overall quality.

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