

Building a Better Basketball “Box” Score

How Division I Coaches Define and Value Field Goal Shooting and Taking-Charges

By

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Introduction

The NCAA basketball “box” score is the official record for each game played and is the foundation to determine team and individual leaders. As well, the data collected from the “box” is used to calculate and analyze the statistical trends in the game. If the primary objective of the “box” is to provide a complete record of the game, it should record all the relevant primary statistics that can be established, and provide a clear and unambiguous measure of each performance category. Clearly, the current “box” is deficient as it leaves out *Taking-Charges* and does not clearly delineate *Field Goal* shooting. Primary statistics are the performance factors that can be objectively measured, and can be clearly delineate for each statistical category. From the current “box”, the following statistical categories have been established or derived: Games Played (GP), Minutes Played (MP), Field Goals Made (FGM), Field Goals Attempted (FGA), Field Goal % (FG%), Free Throws Made (FTM), Free Throws Attempted (FTA), Free Throw % (FT%), 3 Point Field Goal Made (3FGM), 3 Point Field Goal Attempted (3FGA), 3 Field Goal % (3FG%), Offensive Rebounds (OR), Defensive Rebounds (DR), Total Rebounds (TR), Assists (AST), Turnovers (TO), Steals (STL), Blocked Shots (BLK), Personal Fouls (PF), and Total Points (TP). From these categories, team and individual leaders are established for the nation along with national performance norms used to evaluate the statistical trends in the game.

Statistical Trends

Although not the focus of this article, one of the primary uses for the statistical trend analysis is to determine if a rule change might have a significant enough affect on the game to upset the balance between offense and defense. For this season (2008-09), one of the most important statistics under review is seasonal 3FG% after the arc was moved back from 19’ 9” to 20’ 9”. Although it is important to analyze the effect on 3FG% after the arc was moved, the primary rationale for moving the arc back was not necessarily to make the shot more difficult, but to create more space between the arc and the low post. This making it more difficult for perimeter defenders to help defend on balls passed into the low post while defending the

three point line with the objective of cutting down on rough play in the post. The question now become's, how to measure if moving the arc back has had the desired effect. A simple way to measure this would be to count the number of fouls committed against post players. This can be done by keeping statistics on players by position-of-play.

In regards to three point field goal shooting, at mid-season the stat for 3FG% dropped to 34.32%, down from last year's mark of 35.23%. The final 3FG% rebounded to 34.40%, still slightly below recent year ending stats for 2007 (35.40%), 2006 (34.95%), and 2005 (34.70%). This may indicate a slight downward trend, but generally it takes players a period of time to adjust to any changes, and as the mid-season stats did not hold for the season, it may take a number of seasons to determine if moving the arc will have any lasting effect on this primary statistic. At this point, moving the arc back appears to have had little effect on 3FG%.

Defining the Game

The game of basketball can be defined by its structure of play, the rules that govern play and the value of the performance factors established for the sport. As the structure, rules, and quality of play have evolved, so have the primary statistical performance factors that quantify the quality of play that defines the game. Unfortunately, one of these defining performance categories has been left-out of the official "box" score, and another needs to be more clearly delineated. The primary statistical category that has been left-out is *taking-a-charge* (TC), and the performance factor that needs to be more carefully delineated is total FG shooting. It is the purpose of this article to demonstrate the importance and value of *taking-a-charge* to the game, and the need to delineate FG shooting into 2FG shooting and 3FG shooting as both are part of total FG shooting. By establishing *taking-charges* as a primary statistic and to better delineate FG shooting, these performance factors can be accurately accounted for, defined clearly, and properly evaluated in the context of their value to the game.

Survey and Results

To determine the importance and value of *taking-a-charge* to the game of basketball and to determine if overall total FG shooting needed to be delineated into 2 Point Field Goal % (2FG%) and 3FG%, a survey of men's NCAA Division I coaches was conducted. Of the 330 coaches surveyed, 102 returned completed surveys representing 31% of all Division I coaches. One or more coaches returned surveys from each of the 33 conferences and independent colleges. The returns then represent coaches from the entire nation at all Division I conference levels.

(Despite not establishing 2FG shooting as a statistical category for the "box", the NCAA does calculate 2FG% in its yearly statistical trends.)

In regards to *taking-charges*, coaches were asked the following questions; 1) if they recorded *taking-charges*, 2) if they planned practice-time to teach the skill/tactic, 3) how much they emphasized *taking-charges* as part of their team defense, 4) how important was the skill/tactic to the position-of-play, and 5) how strongly they felt to include *taking-charges* as a primary statistical category for the game. To delineate FG shooting more accurately, coaches were also asked if 2FG shooting represented by 2FG% should have its own category like 3FG%.

Despite the NCAA not requiring *taking-charges* to be recorded in the official “box” score, 75.7% of the coaches indicated that they did keep the statistic. In terms of planning practice-time to teach the skill/tactic, 77.2% indicated they did, showing that for some, even if they did not record the stat, they felt that it was an important tactic to teach. In terms of how much emphasis coaches put on the tactic as part of their team defense, a Likert scale ranging from *least emphasis* (1) to *highly emphasized* (5) was used. Here 83.9 % of the coaches’ *emphasized* or *highly emphasized* the tactic as part of their team defense. When asked to rate the importance of the tactic to the *position-of-play* (PG, OG, SF, PF, C, and “swing” positions) on a scale of 1 to 5, the lowest mean score by position was for OG’s at 4.03, and the highest mean score was for PF at 4.18. The lack of variance among means scores for each position indicates that coaches felt *taking-charges* were of equal importance to all *positions-of-play*. When asked if *taking-charges* should be established as a required primary statistic for the game, 65.4% *agreed* or *strongly agreed*, and 16.8% were *undecided*. Here, some coaches interjected that it was the inconsistency of how officials made the call that caused them to be undecided, not the need to keep the statistic.

From the survey data, it appears that coaches believe that *taking-charges* are an important performance category for the game. *Taking-a-charge* is an objective measurable performance factor that has an established value; it creates a change-in-possession that can lead to a scoring opportunity, and as well, takes a scoring opportunity away from the opponent. *Taking-a-charge* also adds to the opponent’s team-foul total leading to the Bonus-Free Throw situation sooner, and it results in a personal foul that may lead to a player’s disqualification and/or reduced playing time to protect against disqualification. There is no doubt that *taking-a-charge* is a valuable statistic for the game and should be included in the Official NCAA “box” score. Some may argue that because there are so few *charges* called that it is not worth the effort to kept tract of them. However, we can say the same for *blocked shots* where the seasonal statistical trends show that teams only average 3.3 *blocked shots* per games. Although blocked shots may have a psychological impact on the opponent, there is no guarantee that a change-in-possession takes place and therefore the value of a *blocked shot* is diminished when comparing the two.

When coaches were asked if FG% shooting needed to be delineated more clearly, on a scale of *disagree* (1) to *strongly agree* (5), 72.3% *agreed* or *strongly agreed* it should be separated into both 2FG shooting and 3FG shooting, 15.8% were *undecided*. Even though 2FG% can be easily derived, its status to the game is diminished if it is not a part of the official record.

In the modern game of basketball, 3FG% has been separated from total FG% because of its importance to team play and individual performance. 3FG% however, is a sub-set of total FG% and it makes little sense to view them separately as one is part of the other. To better delineate total FG%, it would be better to separate FG% into 2FG% and 3FG%. 2FG% is easily calculated and stands on its own as an important performance factor for the game. Just as *Free Throw* shooting generates points like *Field Goal* shooting, we view it as a separate performance factor. This should similarly apply to 2FG's and 3FG's as both types of shots have a distinct value for the game, either two or three points respectively. Here we may also note that the Federation International Basketball Association (FIBA) calculates 2FG% separately and does not list total FG% as a separate category. FIBA is the governing international body for basketball in the world.

Conclusion

From this study, it is apparent that Division I basketball coaches viewed *taking-charges* as an important performance factor for the game. They also strongly supported the separation of 2FG shooting from 3FG shooting as a means to accurately delineate field goal shooting. As the structure, rules, and quality of play in our great game have evolved over time, it is important that the tools or mechanisms we use to define and record the game keep-up with the game's evolution. One way we can accomplish this is to build a better "box" score that gives a complete and accurate record of our game by including *taking-charges* and establishing 2FG shooting as a separate performance category.

Author's notes: Dr. Ken Swalgin is an Associate Prof. of Kinesiology at Penn State University and a member of the National Association of Basketball Coaches (NABC) Research Committee. He has coached basketball for 23 years (retired) and has published extensively in the area of performance analysis where his research led to the creation of The Basketball Evaluation System (BES), a computerized model to grade player performance in relationship to position-of-play and minutes-played from game statistics based on national performance norms. For questions or comments, please contact the author at kxs1@psu.edu