



THE USE OF “SYNERGY SPORTS TECHNOLOGY” FOR THE COLLECTION OF BASKETBALL GAME STATISTICS

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Abstract:

Basketball games have been analyzed in great detail, providing valuable information for coaches and team scouts to tactically prepare the team for the upcoming games. “Synergy Sports Technology” company provides one of the greatest databases for basketball coaches. Regarding the basketball game, there are 10 standardized play-types in offense and 2 standardized play-types in defense. Using Synergy, every basketball game is logged separately, storing data in a general database from which scouts and coaches or researchers select specific information or video for further data analysis. In basketball, there is a large number of data collected and processed all the time, regarding the great number of games played. Applicability of these data presents a great tool for detailed analysis and creating scout reports. Using this program for further research could be very helpful and can contribute to a better, more accurate, and detailed analysis.

Keywords:

Sports technology, Scouting, Research in sport, Data application.

INTRODUCTION

Analytics in basketball has recently experienced rapid development. Recently, basketball games have been analyzed in great detail, providing valuable information for coaches and team scouts to tactically prepare the team for the upcoming games [1]. To be successful, it is important to acquire precise information about the opponent, therefore a way of collecting data is a very important factor [1].

Notational analysis has been one of the most commonly used methods for data collection, which is described as a process of collecting data and diagnostics of events during the game [2]. Filling out observation sheets can be a very difficult job for one person, regarding the great number of games that need to be analyzed during the season. That is why most coaches use video technology for data collection.

“Synergy Sports Technology” company provides one of the greatest databases for basketball coaches. Experienced video loggers analyze and log data regarding basketball games, which is further used by coaches and team scouts for creating scouting reports.

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What is even more important, collected data is often used for scientific papers related to basketball box-score or game statistical analysis [3]–[6]. Considering that there are several standard play-types in basketball, analysis and systematic organization contribute to easier data processing and, therefore better and quicker preparation for basketball games.

As technology takes up an increasing part, both in basketball as in everyday life, it would be significant to present the Synergy logging program as a tool for more efficient data collection, regarding basketball games.

The aim of this paper is to present the Synergy Sports Technology logging program and database in detail and describe its use in basketball scouting and basketball research.

2. DATA COLLECTION

Regarding the basketball game, there are 10 standardized play-types in offense and 2 standardized play-types in defense.

2. 1. OFFENSE PLAY-TYPES

As mentioned, 10 offense play-types are:

1. Cut – Player movement inside the three-point line, mostly going to the basket, before receiving the ball for immediate scoring;
2. off-screen – Setting the screen for the player without the ball;
3. Isolation – Playing 1 on 1 against the opponent in an isolated situation;
4. “Pick and Roll” and “Pick and Pop” – Setting the screen for the player with the ball, after which the screener opens up going to the basket or wide from the ball;
5. Spot-up – Mostly used play type, it presents every situation in which player receives the ball and takes the shot or penetrates to the basket;
6. Post-up – Playing 1 on 1 near to the basket with back turned to the basket (in most cases this is played by Centers);
7. Transition – Quick offense, resulting in scoring or taking the shot before the defense is set;
8. Hand-off – Ball is given to a teammate in close distance (literally handing over the ball) after which he penetrates or takes the shot from distance;

9. “No play type” – This is marked in a situation where none of the above can’t describe the play type (i.e. Last-second shots from the other half of the court); and
10. Offensive rebounding – player in offense takes the ball after his team took the shot and missed.

Each offensive play-type is created as a string of certain actions which can be ended with different types, such as shot made, shot missed, turnover, or no violation (a situation where the ball remains in the same possession – i.e. defense picks the ball out of bounds). In each offense, only the last action is being logged as a string, i.e. if there are multiple hand-off situations or “Pick and Roll” actions, only the last one in the current offense will be logged as previously mentioned. Of course, strings are constructed in much more detail, but a detailed explanation is beyond this paper.

2. 2. DEFENSE PLAY-TYPES

There are two standardized defense systems – “Man to man defense” where every defender has a specific player which he guards. The other system is “Zone defense” where every player is responsible for defending a specific area of the court. There are other defense play-types, but most of them are combinations of these two defensive systems.

Every basketball game is logged separately, storing data in a general database from which scouts and coaches select specific information or video for further data analysis. Besides team game analysis, data is also used for player analysis, which is a very important part of the scouting report. There are different types of scouting reports, depending on the competition. A basic scouting report should consist of offensive structure, defensive structure, individual analysis about the opponent’s strengths and weaknesses. When the scouting report is written independently, it is important to recognize every play-type on both offense and defense. Sometimes a bad camera angle makes it impossible to evaluate certain plays. This is one of the advantages of using the Synergy Sports Technology database. All plays are already arranged and ready for use.

Further, using box-score for analyzing data has become very popular recently. There is numerous research that has addressed this problem [4], [6]–[9]. Reaching for several box-score tables and data separately can be very exhausting when analyzing multiple games from different competitions. Synergy database allows access to multiple box-score information using the same program.



In Figure 1 is shown a logging program for collecting data. Data are collected by a great number of professional loggers, trained to recognize specific situations.

Every play that occurred during the game is first logged as single play-by-play, which is part of Synergy string during logging.

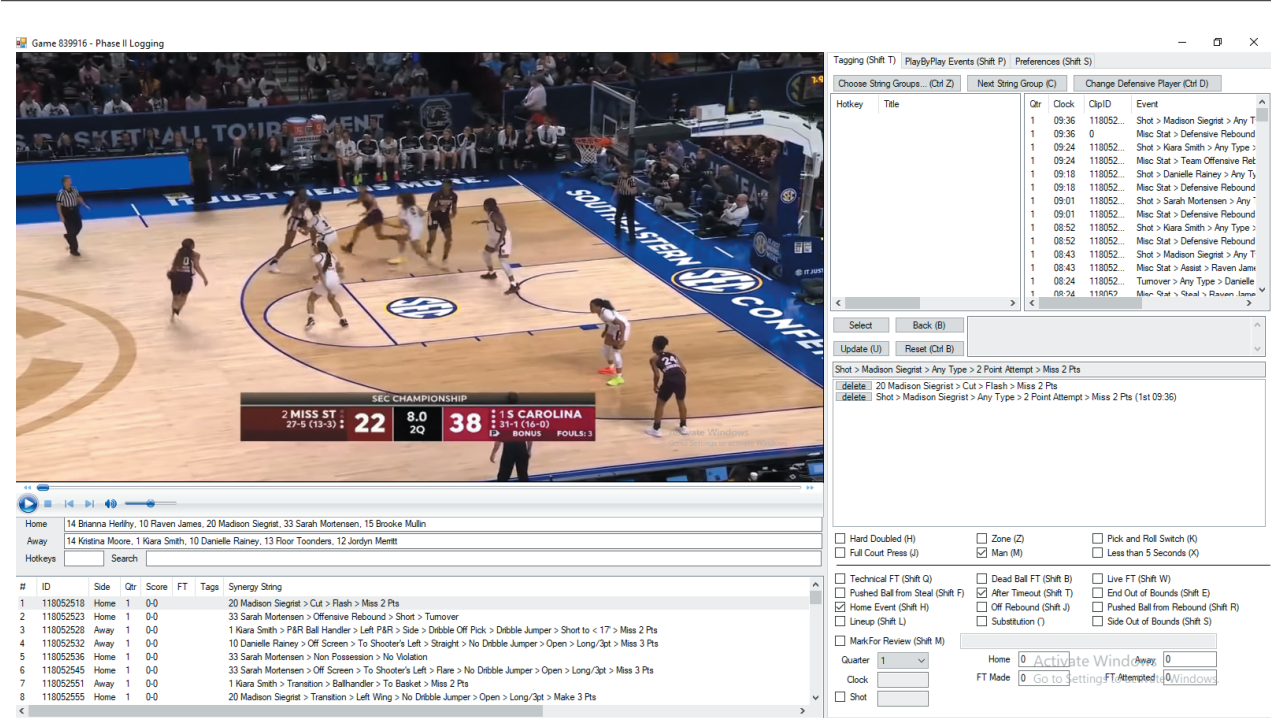


Figure 1 - Synergy logging program, used for data collection

3. DATAAPPLICATION

Scouting presents one of the crucial parts of team strategy. According to scouting reports, specific team tactic is organized, regarding the opponent. In Table 1 an example of defensive play-types which are applied by the opponent is presented. Each play type presents one part of the overall team strategy. Based on this information, it is decided which offensive strategy the team will apply.

For a long time, the collection of video data and assessment was a very hard job for coaches [10]. Using the Synergy database, game data processing is greatly facilitated. Good data organization is very important in a tight match schedule, such as in the NBA league, where teams sometimes play 3 or 4 games per week. It is necessary to obtain these data quickly and prepare scouting reports to prepare team strategy in time.

3. 1. USING DATA FOR SCOUTING

After data is retrieved from Synergy’s main database, the final task is to organize selected data and write a scouting report. When writing scouting reports, it is

important to be as concise as possible so that players are not burdened with too much unnecessary information. Sometimes this is the key to writing a good scouting report. A part of the scouting report related to the opponent's defensive structure according to the offense is shown in Table 1.

Defensive Structure	Play Types	Comment
P&R Top	Shadow + show & back	Main shadow + show & back-soft
P&R Side - 45	Shadow + Force on baseline + show.	Main Shadow + Force baseline + show #4.
P&R double elbow	Shadow + show & back	Main shadow #5 + show and back-soft #4.
Double Team	NO	
Screen Play	Follow + Over	Guard most of time follow + Over
Low Post	BACK	Back, strong body. Personal coverage, help from baseline.



High Post	Normal	
Pressure defense	YES	They like to play full-court press a few times per game.
Deny (face to face)	NO	
Zone defense	YES	Zone 2-3 on out of bounds.
Match up	NO	
Def. vs. shooter	Normal	.

Table 1 – Defensive Structure – part of scouting report showing defensive play-types according to the offense strategy.

3. 2. USING DATA FOR RESEARCH

Besides the practical application, obtained data is often used for research, mostly for analyzing shooting structure [5], [11] or specific game factors that affect success in basketball [2], [3], [6]. When writing a scientific paper, it is necessary to collect a large number of data to perform a detailed analysis. That is why using the Synergy database can be very helpful, because analyzing a great number of games from two, or more seasons can be done easily.

Marmarinos [3], analyzed the “Pick and Roll” (PnR) offense in top-level European basketball teams using the Synergy Sports Technology database. Analyzing a total of 12,376 PnR, significant findings have been made. It is shown which player takes the shot most often and which players are the most efficient after playing this play-type. It should be noted that PnR is just one segment of an offensive structure since it is difficult and impractical to analyze the whole playing structure in detail. In this research, an example is given of how using a huge database can affect on the simpler application of data in the preparation of scientific papers, saving more time.

4. CONCLUSION

In basketball, there is a large number of data collected and processed all the time, regarding the great number of games played. A thorough analysis could be very long and exhausting. That is why using specific sports technologies can be of great help for basketball coaches and team scouts, as it would for researchers.

Synergy Sports Technology presents a program for direct data collection regarding basketball games, which is systematized in detail. All collected data is stored in a general database, available for use. Applicability of these data presents a great tool for detailed analysis and creating scout reports. There is a lot of research done on basketball box-score analysis lately [7], [9], [12], [13]. Using this program for further research could be very helpful and can contribute to a better, more accurate, and detailed analysis.

REFERENCES

- [1] R. P. Schumaker, K. O. Solieman, and H. Chen, *Sports data mining*, 26th ed. Springer International Publishing, 2010.
- [2] J. García, S. J. Ibáñez, R. M. De Santos, N. Leite, and J. Sampaio, “Identifying basketball performance indicators in regular season and playoff games,” *J. Hum. Kinet.*, vol. 36, no. 1, pp. 161–168, 2013, doi: 10.2478/hukin-2013-0016.
- [3] C. Marmarinos, N. Apostolidis, N. Kostopoulos, and A. Apostolidis, “Efficacy of the ‘pick and roll’ offense in top level European basketball teams,” *J. Hum. Kinet.*, vol. 50, no. 2, pp. 121–129, 2016, doi: 10.1515/hukin-2015-0176.
- [4] C. Puente, J. Del Coso, J. J. Salinero, and J. Abián-Vicén, “Basketball performance indicators during the ACB regular season from 2003 to 2013,” *International Journal of Performance Analysis in Sport*, vol. 15, no. 3, pp. 935–948, 2017.
- [5] B. Božović and R. Mandić, “SCORING EFFICIENCY IN THE EUROLEAGUE BASKETBALL: ANALYSIS OF CENTER’S SHOOTING POSITIONS RELATED TO THE RULE CHANGES,” *Serbian J. Sport Sci.*, vol. 11, no. 4, pp. 101–109, 2020.
- [6] R. Mandić, S. Jakovljević S., F. Erèulj, and E. Štrumbelj, “Trends in NBA and Euroleague basketball: Analysis and comparison of statistical data from 2000 to 2017,” *PLoS One*, vol. 14, no. 10, pp. 1–17, 2019, doi: 10.1371/journal.pone.0223524.
- [7] S. J. Ibáñez, J. García, S. Feu, A. Lorenzo, and J. Sampaio, “Effects of consecutive basketball games on the game-related statistics that discriminate winner and losing teams,” *J. Sport. Sci. Med.*, vol. 8, no. 3, pp. 458–462, 2009.
- [8] M. A. Gómez, S. J. Ibáñez, I. Parejo, and P. Furley, “The use of classification and regression tree when classifying winning and losing basketball teams,” *Kinesiology*, vol. 49, no. 1, pp. 47–56, 2017, doi: 10.26582/k.49.1.9.



- [9] A. Lorenzo, M. Á. Gómez, E. Ortega, S. J. Ibáñez, and J. Sampaio, "Game related statistics which discriminate between winning and losing under-16 male basketball games," *J. Sport. Sci. Med.*, vol. 9, no. 4, pp. 664–668, 2010.
- [10] D. D. Saur, Y.-P. Tan, S. R. Kulkarni, and P. J. Ramadge, "Automated analysis and annotation of basketball video," *Storage Retr. Image Video Databases V*, vol. 3022, no. January 1997, pp. 176–187, 1997, doi: 10.1117/12.263406.
- [11] F. Erčulj and E. Štrumbelj, "Basketball shot types and shot success in different levels of competitive basketball," *PLoS One*, vol. 10, no. 6, pp. 1–14, 2015, doi: 10.1371/journal.pone.0128885.
- [12] E. Strumbelj, P. Vračar, M. Robnik-Sikonja, B. Dežman, and F. Erčulj, "A decade of euroleague basketball: An analysis of trends and recent rule change effects," *J. Hum. Kinet.*, vol. 38, no. 1, pp. 183–189, 2013, doi: 10.2478/hukin-2013-0058.
- [13] M. Á. Gómez, A. Lorenzo, J. Sampaio, S. J. Ibáñez, and E. Ortega, "Game-related statistics that discriminated winning and losing teams from the Spanish Men's Professional Basketball Teams," *Coll. Antropol.*, vol. 32, no. 2, pp. 451–456, 2008.