Research on Basketball Technical Training and Tactics Training of College Students Based on Big Data

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Abstract. Basketball is a kind of competitive sports with strong antagonism, which requires the overall cooperation of the whole team. Therefore, in the basketball training of college students, we must help them to have a good technical training and tactical awareness training. Tactical awareness is a good tactical quality formed by college students participating in basketball training, which will make the whole team coordinate and cooperate. In the context of big data, we can get professional data through sport Vu, which will help athletes analyze each other's technology and tactics better. Therefore, through big data analysis, we can better cultivate college students' basketball technology and tactical awareness. First of all, this paper analyzes the important value of big data analysis of training to the team. Then, this paper analyzes the application of big data in basketball. Finally, some examples are given.

Keywords: Big Data, College Basketball, Technical Training, Tactical Training

1. Introduction
Basketball consciousness is the soul of basketball game. Only when college students have a good sense of basketball, can they actively find and master the fighters according to the offensive and defensive situation in the game field[1]. According to the basketball consciousness, college students will take appropriate countermeasures and actions, which will maximize the advantages of themselves and the team to win. It is urgent for basketball players to have a strong tactical awareness, which requires the cultivation of College Students' basketball tactical awareness. In the long-term training, college students will gradually form a strong tactical awareness, which can respond quickly according to the tactical content[2]. Therefore, the cultivation of basketball consciousness is inseparable from technical training and tactical training, which is also the basis of Cultivating Basketball Consciousness. In the context of big data, we can get the overall video of the basketball game. Through sport Vu software, we can analyze a player's overall tactics, which will provide detailed tactical confrontation for opponents[3].

Psychological state training can improve the psychological quality of college students, which is the premise of tactical training. An excellent college player must have a good psychological state. There are many uncontrollable influencing factors in the competition field, which requires athletes to have strong psychological quality. The training of psychological state can relieve the tension and anxiety of
athletes, which will face all kinds of sudden situations on the field\cite{4}. At the same time, the mental state training can strengthen the psychological pressure resistance ability of college athletes. Basketball has strong antagonism, which requires college students to have a strong ability to resist pressure. Psychological tactics is also a kind of tactics, which needs the support of psychological state. Therefore, the tactical training of college students basketball game is very important, which can’t do without the “psychological” game. In this regard, according to the big data analysis, coaches can exercise psychological training for college students\cite{5}.

2. The important value of big data analysis to the team

2.1. Athletes digging
The strategic significance of data analysis of basketball is not only to master the huge data information. Through professional data processing, the team can dig out a good player. In the era of big data, the traditional basketball team operation and management mode is no longer suitable, which requires us to combine big data analysis technology to carry out the game. Since MIT Sloan sports summit, data analysis has become an important guide for team draft and signing players, which will help the team to find the best team members. Therefore, big data analysis can help teams mine athletes\cite{6}.

2.2. Tactical play
It is obvious that the role of this professional analysis tool in sports has become more and more important. Through data analysis, the team can develop targeted tactics, which will lead the team's offensive and defensive strategies. According to the analysis of big data, the researchers conclude that long-distance middle shot is the most inefficient offensive means in basketball, and 3-point shot is the most rewarding shooting method. Since then, the Rockets began to take the 3-point ball as the most important offensive means. Therefore, increasing the 3-point ball and reducing the proportion of shots in the middle shot have become the team's offensive strategy. According to the 2014-2015 season team regular season trackingshots data, the Rockets have thrown 2080 3-point shots in 82 games of the regular season, and the Rockets are the team with the least middle shots.

2.3. Training monitoring
Through big data analysis, coaches can observe the athletes' competition state, which will better develop training plans. According to sportvu data, data analysts give constructive advice to athletes and coaches. For example, if an athlete's running distance and speed are reduced, but the heart rate is still high, it indicates that the athlete is in a state of fatigue. In terms of health analysis, the Spurs have always been the leader of professional basketball teams, which will determine the rotation of players based on tracking data. Through the reasonable analysis of the data, the coach will enhance and reduce the training intensity. Therefore, data analysis has become a decisive factor in the team's decision-making process, which is also a key link to play the value of data in the era of big data\cite{7}.

3. Application of big data in Basketball Competition

3.1. Application of big data
At present, big data of basketball includes complex network information such as game data, team training data and fans' data. Through some technical means, we can collect and process data. Through the scientific analysis method, we can analyze and study the data information, which will excavate the data needed by coaches and players. Through the corresponding analysis, coaches will apply these data to training, competition, management, event communication and other aspects, which will achieve the purpose of guiding training and formulating tactics. This paper analyzes the application of big data in basketball competition, as shown in Figure 1.
3.2. Develop game strategy and adjust game play
Big data analysis can help teams make the right tactical choices. On the court, college students can create a reasonable lineup, which will help college students adjust their play. Through big data analysis, college students' teams can improve their competitive level. For the coaches of college teams, big data can help them understand the characteristics of college students, which will find out the advantages and disadvantages of players. At the same time, through big data, college teams can analyze the opponent's technical characteristics and tactics, which will better carry out the game. For example, before the Spurs played the Heat in the NBA, Spurs coach Popovich studied James's scoring areas and scoring methods, and made targeted deployment. Through a large number of data mining, the team chooses targeted tactics for James' calculation, which will prevent James from breaking through. Through data mining, we can comprehensively analyze the opponent's sports habits and offensive strategies, which will help college students to formulate competition strategies and adjust the game playing methods. Through big data analysis to develop competition strategy, college students can use real-time data to adjust the tactics in the game in time, which will help students improve the details of cooperation.

Figure 1. The application of big data in basketball competition.

3.3. Coach training and prevent injuries
Data collection statistics can reflect a player's sports characteristics and physical condition. Through big data analysis, coaches can better guide college students' training. At the same time, coaches will avoid risks in training and competition according to big data, which will help college students prevent injuries. First, guidance and training. In the usual training, coaches should take different targeted training according to the characteristics and responsibilities of college students. For example, Curry and Owen are both defenders, but their styles are quite different. The coach will choose different technical training. Similarly, the coach will choose different technical training according to college students' basketball skills, which will help students improve their ability.

4. Visual information system based on big data analysis -- Taking NBA as an example

4.1. Shooting heat chart based on big data
Through the visualization of graphics, people can quickly understand the surface information and mine the information behind it, and transform it into information cognition. Data visualization is to show data in the form of map, graphics or animation. Through intuitive feelings, we can analyze the results. According to the data in the game, this paper records the shooting area and shooting results.
Through different shapes and colors, we can evaluate the efficiency and tendency of shooting. According to the big data, this paper obtains Curie shooting thermal diagram, as shown in Figure 2.

![Figure 2. Curie's shooting heat chart in 13-14 season.](image)

4.2. Defense position effect map based on big data

Defensive position effect map can effectively evaluate the defensive effect of a player. In this paper, the best defensive player Leonard's defensive position effect map based on big data is developed, as shown in Figure 3. According to figure 3, the big red circle near the three-point line indicates that the possibility of a successful breakthrough is very small. The small gray circles within the three-point line and near the basket indicate that a successful breakthrough is possible. Through figure 3, we can see that Leonard's defense ability is very good near the three-point line, and weak defense within the three-point line and near the basket.

![Figure 3. Leonard's defensive position effect.](image)

4.3. Value attack prediction based on big data

According to big data, we can analyze the opponent's tactics and the technical characteristics of key players. Therefore, we can develop the attack map of estimated value of basketball game by deep learning algorithm, as shown in Figure 4. According to figure 4, we can deeply understand the rationality of the attack strategy of the game, which will comprehensively analyze the offensive choice of players in the game. By judging the attack efficiency of players, we can judge the cooperation between players.
5. Conclusion
The training of college basketball players needs to focus on technical training and tactical awareness training. The cultivation of tactical awareness helps college basketball players feel the charm of basketball as a team sport. Through the technical training program, college students can have a clear goal and scientific methods, which will ensure the effectiveness of technical training. Basketball technical training and tactical training based on big data analysis can promote the healthy growth of college basketball players.

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