

# Basketball Training and Game Load Monitoring Based on Multimedia Technology

Sijie Zhao

Nanchang University, Nanchang, 330031 Jiangxi, China

**Keywords:** Multimedia technology, Basketball training, Game load monitoring

**Abstract:** Because the unique charm of basketball has become one of the students' favorite sports, basketball teaching is also an important part of middle school physical education. Middle school basketball teaching can exercise students' physique, improve students' psychological quality and good social adaptability, and at the same time train reserve talents for the development of basketball. School physical education is not only an important part of the all-around development of students' quality education but also an indispensable scientific subject of school education. In recent years, the state has been promoting educational reform. The rapid development of computer and network technology has greatly changed the mode of information dissemination, and human society is moving towards the information age. In the 21st century, the knowledge economy has become the main melody of the times and an important symbol of social progress, especially the application of multimedia technology with the computer as the core in the field of education. It has led to profound changes in teaching mode, teaching means, and teaching methods. Therefore, the application of multimedia technology in basketball teaching has broken the traditional teaching mode, and the design and application of multimedia courseware have become an important task given to our teachers by the times. Many teachers also hope to improve their teaching by using modern educational technology.

## 1. Introduction

The basic feature of basketball technology is the combination of body movements and control of the ball. The most significant feature that distinguishes it from other sports techniques is that the athlete directly controls and dominates the ball with his hands, and coordinates with the whole body to form various special movements. Through the movement control of the hand, the running of the ball, and the possession of the ball, the body movements and the ball control is integrated, showing the charm of basketball skills. Because of its unique charm, basketball has become one of the favorite sports of students, and basketball teaching is also an important part of middle school physical education. Middle school basketball teaching can exercise students' physical fitness, improve their psychological quality and good social adaptability, and also cultivate reserve talents for the development of basketball. Basketball teaching is an important part of physical education. Teachers teach students basketball theory and basic techniques and tactics. The biggest feature of multimedia technology is that it can be switched at any time. For the traditional mode of teaching, when teachers explain the movements, some actions that cannot be seen clearly can be played back in multimedia teaching. For important tactics and skills, media technology can be played slowly. Or perform action decomposition. This kind of teaching method can not only familiarize the students with the essentials of movements but also greatly help the improvement of basketball skills. Multimedia technology not only has the functions of recording and presentation but also has the function of material editing. The process of integrating text information, picture information, audio information, and video information can create a more ideal education and teaching situation and then enter a more Efficient learning pattern.

## 2. Characteristics of Multimedia Technology in Basketball Teaching

### 2.1 Multimedia Teaching is Scientific and Operable, So It Can Be Used with Teachers

This is a systematic method and procedure for designing, planning, implementing, and evaluating the whole teaching process. According to the requirements of the syllabus, multimedia can combine simulation training, knowledge structure, review guidance, exercise training, degree test, and other links in basketball teaching, and integrate education, science, fun, and practicality. In addition, as teachers grow older, their ability to complete actions declines, and there is a contradiction between their current level and the objective needs of teaching. Using multimedia technology can help teachers solve this contradiction. Teachers can also vividly show the basketball theoretical knowledge that is difficult to explain clearly, difficult for students to master, and difficult to understand in front of students, and can also decompose the difficult technical movements into several simple technical movements so that students can intuitively understand the technical principles of difficult movements. Multimedia is excellent in resolving the important and difficult points of teaching content, thus improving the teaching quality.

## **2.2 Basketball Multimedia Teaching Has the Ability to Improve Teaching Quality and Teaching Content**

In the process of basketball teaching, multimedia teaching can call a certain part at any time according to the needs of teaching progress, and combine traditional teaching to decompose, correct, and strengthen basketball skills and tactics. In order to improve the quality of teaching on the basis of reducing the teaching intensity of teachers, the combination of multimedia teaching and traditional teaching can be easily achieved. For multimedia teaching, its features are novel in content, accurate in basketball movements, and rich in knowledge, which is of great help to improve students' enthusiasm. At the same time, multimedia teaching has the characteristics of content flexibility and large information, so that it can teach more basketball skills and tactics in the same teaching time.

## **2.3 Basketball Multimedia Teaching Has the Ability to Improve Students' Learning Enthusiasm and Increase Basketball Knowledge**

In multimedia teaching, due to the simultaneous appearance of information such as sound, image, picture, text, etc., gives students a sense of image, liveliness, accurate movement, and beautiful posture, and stimulates students' interest and motivation. To improve the current situation of sports management in colleges and universities, it is necessary to build a scientific and reasonable cognitive system. In the process of system formulation, it must be comprehensively implemented in the system construction process, because this feature lays the foundation for ensuring management creativity. First of all, it is necessary to have an overall cognition of the main groups of management. In the overall cognition, it is necessary to build a cognitive system in the brain of the entire college sports-related personnel and to clarify the key points of the sports management personnel, which requires a macroscopic view. In addition, it is necessary to implement this comprehensiveness into the cognitive work of the object, so contemporary philosophical thought shows the cognitive system theory. Once the cognitive system is formed, it can be used in different aspects of sports. The management theory and practice are effectively combined to form a unified cognitive system, which is convenient for guiding the correct way of thinking in the process of college sports management in the future. Basketball multimedia teaching is interactive so that students have more time to understand and master the content they are interested in, thus making up for the limitation of teachers' own knowledge, which is conducive to the comprehensive development of students' basketball skills and tactics.

## **3. The Effect of Multimedia Technology on Basketball Training**

### **3.1 Strengthen the Interaction between Various Sensory Center Functions and Proprioception of Muscles, and Effectively Improve Motor Skills.**

In multimedia technology teaching, the temporary nerve connection between the sensory centers and the motor centers in the cerebral cortex is established, and the proprioception of muscles is

deepened. At the same time, media teaching acts on students' various sensory organs, which enables students to accurately experience and establish corresponding muscle feelings, and promotes and accelerates the differentiation process of exercise conditioned reflex. Multimedia technology demonstrates the whole teaching process of basketball technical movements, which makes students feel immersive and improves their interest in learning. The influence of multimedia technology on basketball teaching is reflected in the teaching content. Traditional basketball teaching focuses on imparting knowledge with linear structure. In the teaching process, students' individual differences and teachers' own qualities are not taken into account, and the mode from simple to complex, from single action to combined action, is often followed. This mode will have great fluctuation for the basketball teaching effect. The use of multimedia technology in teaching can avoid these problems. The non-linear network learning structure can not only strengthen the basketball knowledge already learned, but also improve students' ability to learn new basketball knowledge.

### 3.2 Research Methods

Interview Method From September to October, 2014, during this period, a survey was conducted on the feasibility of the research on basketball jump shot technology by multimedia teaching, and the purpose and significance of the research. The survey objects were mainly basketball physical education teachers in colleges and universities, including Zhengzhou University, Henan Institute of Education, Zhongyuan Institute of Technology, Henan University of Technology, Henan university of economics and law, etc., and 10 teachers related to basketball physical education were interviewed directly. As can be seen from the table below, there are 5 professors, 3 associate professors and 2 lecturers among the interviewees. The interview results are shown in Table 1. Most PE teachers think that the multimedia teaching method has an important influence on basketball jump shot technique, accounting for 90%, and 10% PE teachers think that multimedia teaching method has an important influence on basketball jump shot technique.

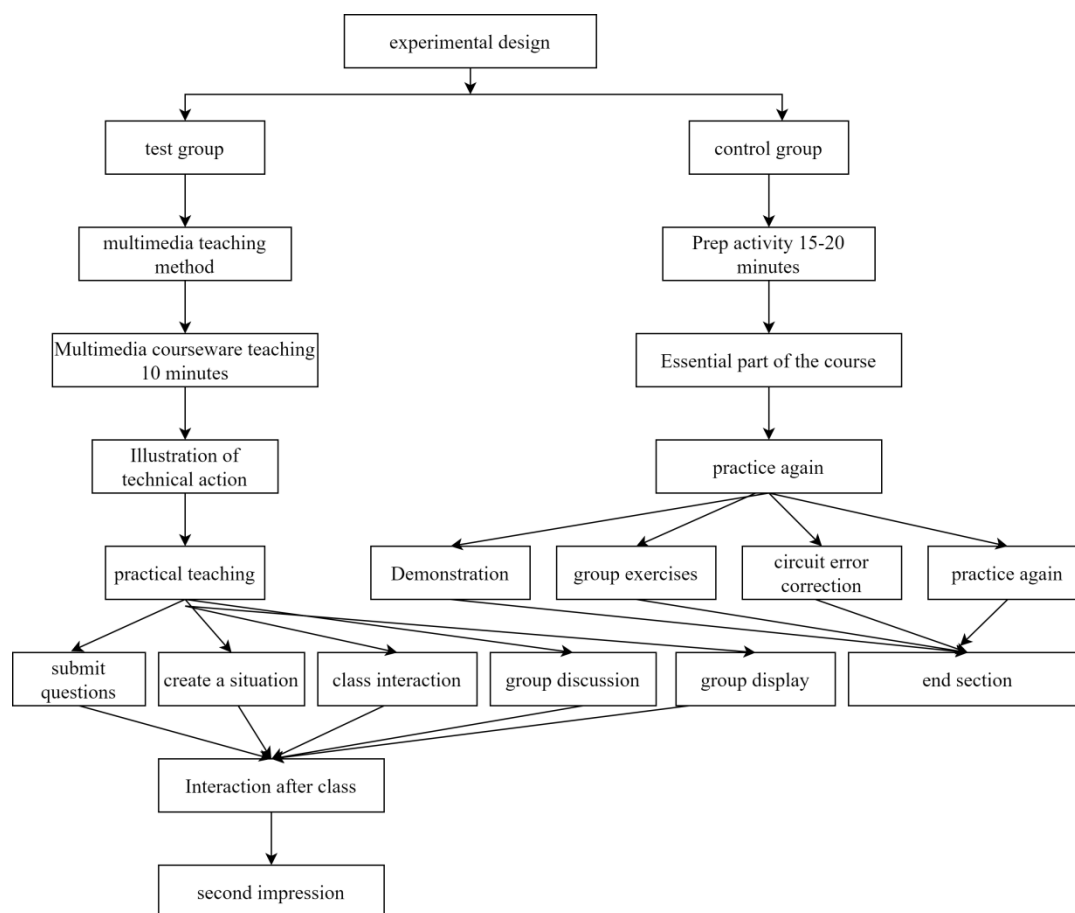
Table 1 Investigation of The Influence of Multimedia Teaching Methods on Basketball Teaching

Job title influential	Generally,NO	influence	professor
professor	5	0	0
Associate professor	2	1	0
Lecturer	2	0	0
Number of people	8	2	0
Proportion	90%	10%	0%

### 3.3 Control Group

This group of students adopts the traditional teaching method, which starts with the preparatory activities, and after 15-20 minutes, they enter the conventional teaching content, from the explanation and demonstration to the practice of students in groups, and then to the teacher's tour to guide the correction of wrong actions, and the traditional physical education teaching method in which students are practicing.

The design process is shown in Figure 1:



### 3.4 With the Help of Multimedia Resources, the Pattern of Basketball Training Demonstration Can Be Created.

With the help of multimedia resources, the pattern of college basketball training demonstration can be brought into a more ideal state. For the traditional basketball teaching method, the only way for students to get the essentials of action is through teachers. Only through teachers can students master basketball tactics and form their own basketball tactical style. Students want to assess their mastery only through teacher assessment. In these processes, there is too much dependence on teachers. Using multimedia technology to teach, students can learn selectively according to their own problems and characteristics, which not only reduces their dependence on teachers, but also makes students' learning change from passive to active, and plays an important role in improving students' polarity and mastery of tactics. Different multimedia resources have different effects on improving the teaching quality of basketball training. For example, introducing popular basketball animation resources into the early stage of the actual classroom can stimulate students' enthusiasm for learning basketball courses.

### 3.5 Using e-Sports Games to Assist Basketball Training and Teaching

Many college students are interested in e-sports games, including the “NBA 2K” series of games. This game is based on basketball sports, has strong operability, and is consistent with the demands of real basketball training and teaching. Taking this into account, e-sports games can be applied to basketball training and teaching, which is also a concentrated expression of the use of multimedia technology. Take the passing and cutting coordination in college basketball training as an example, that is, the action system that uses a combination of passing and cutting techniques between offensive players. It is used very frequently in many current basketball competitions, which fully demonstrates the importance of this technology.

### 3.6 Skilfully Use Flash Animation Technology to Enhance Students' Understanding of Basketball Technical Movements

College basketball training involves a lot of technical, strategic, tactical, theoretical, and other knowledge. These need to rely on in-depth understanding and then strengthen training to achieve the ideal state. Sometimes it is difficult to achieve the ideal effect only by relying on the teacher's action drills. Therefore, it is necessary to use Flash animation technology and take various measures to make students' understanding of basketball technical movements develop in a more profound direction. For example, when explaining the jump shot technique, the teacher's demonstration action is very fast. The moment the basketball is shot, it is difficult to capture the movement of the finger to move the ball, and it is difficult to find the bottom-up force of the jump. Therefore, this becomes the difficulty of actual technical training. It is necessary to use Flash animation production technology to present the actual action in this way, and with the help of the functions of pause, fast play, and slow play, students can more comprehensively and deeply understand the actual action essentials under the background of such technical support. In order to enhance students' understanding of correct actions, several wrong cases can be incorporated, and then students are guided to reflect on their actions so that the originally abstract actions can be presented in an intuitive way.

#### **4. Conclusions**

College basketball training is an important node in college basketball education and teaching. As a college basketball teacher, you need to view its value correctly, constantly improve your information literacy, master more advanced multimedia technology, and effectively infiltrate the actual classroom design. , which is very useful for continuously optimizing the actual college basketball training environment, improving the quality of college basketball education, and exercising the core literacy of college students' sports. There is no fixed model for the application of multimedia technology in basketball teaching. Teachers should choose and use it appropriately according to teaching requirements, the actual situation of schools and students, and accurately grasp the best role and timing of multimedia technology in basketball teaching so that multimedia technology can be used in basketball teaching. Technology and its teaching links are organically integrated. It is hoped that in this process, college students can master basketball skills more quickly and realize the all-around development of their comprehensive quality. Basketball teaching is a process of practice. Although multimedia teaching has advantages, it is not dominant in the process of basketball teaching. It is a supplement and improvement to the traditional basic teaching. The application of multimedia technology in basketball teaching should be vigorously promoted, schools should increase investment, gradually improve the construction of sports multimedia equipment, and formulate corresponding multimedia teaching systems according to the characteristics of basketball teaching in each school. In order to further ensure the smooth development of sports management in contemporary colleges and universities, it is necessary to build a flexible and efficient organizational mechanism, a very reasonable political system, a scientific and reasonable implementation of an efficient information processing mechanism, and an open and rich method system. When working in the gymnasium, I can achieve the overall cognitive level of the sports management process in colleges and universities.

#### **References**

- [1] Fu Wei. An Empirical Study on the Application of Multimedia Technology in Basketball Teaching [J]. Sports, NO.7, PP.2, 2017
- [2] Liang wang, Shen Zhanquan, Huang Junpeng, et al. Basketball training and game load monitoring based on Player LoadTM and IMA [J]. Journal of Guangzhou Institute of Physical Education, vol.038, No.001, PP73-7 6,128. 2018,
- [3] Tan Xianglie, Chen Lang, Su Wanbin. Analysis of the application value of multimedia technology in basketball training [J]. Contemporary Sports Science and Technology, VOL.11, NO.2, PP.3, 2021

- [4] Zheng Xin. Application status and analysis of multimedia technology in basketball teaching [J]. Contemporary Sports Science and Technology, VOL.8, NO.15, PP,22018
- [5] He Weizhao. Monitoring and Evaluation of Women's Basketball Physical Training Load [J]. Sports Fashion, NO.2,PP.2,2021
- [6] Hu Yunzhang. Design of intelligent monitoring system for basketball training posture based on LAN technology [J]. Journal of Xichang College: Natural Science Edition, VOL.35, NO.1, PP.52021
- [7] Li Jianxiong. Research on the application of multimedia technology in primary school basketball technology teaching [J]. Contemporary Sports Science and Technology, VOL.7, NO.15,PP.2, 2017
- [8] Zhao Liang. Research on the application of multimedia technology in college basketball teaching [J]. Contemporary Sports Science and Technology, VOL.7, NO.34,PP.2 . 2017
- [9] Zhang Xuanjing, Warring States Jie. Application of multimedia technology in primary school basketball teaching [J]. Sports World: Academic Edition,NO.12,PP.2, 2019
- [10] Liu Dehe, Ding Weixiang. Application of multimedia technology in basketball teaching of Physical Education Institute of Jiangxi Normal University [J]. -7),NO.47, PP, 48. 2013
- [11] Zheng Xin, Zhao Changbi. Research on the application of multimedia technology in basketball teaching [J]. Contemporary Sports Science and Technology, VOL.8, NO.18, PP.2, 2018
- [12] Gan Yunlong. Research on the application of multimedia technology in high school basketball technology teaching [J]. Reading, Writing and Counting, No.1132(21), PP.17-17, 2019
- [13] Ran Mengfu, Yu Luwei. Monitoring of biochemical indicators of training load and training fatigue of basketball players [J]. Science and Education Guide: Electronic Edition, NO.30, PP.1, 2017
- [14] Zhong Shubo. Analysis of the application of multimedia technology in basketball teaching [J]. Peasant Staff, NO.23,PP.1,2018
- [15] Zhao Liang. Research on the application of multimedia technology in college basketball teaching [J]. Contemporary Sports Science and Technology, 2017, 7(34):2.