



# The Application of Computer Management System for Physical Education in Colleges and Universities

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**Abstract.** Physical culture is an indivisible part of civilization. After the 21<sup>st</sup> century, it has become high profile, as competitive sports events like the Olympics are welcomed by millions of people. The Olympic Motto, “Faster, Higher, Stronger-Together,” encourages generations of Chinese athletes to work miracles regardless of limits. Many athletes and their coaches are working hard to achieve their goal of winning gold medals and ranking first. As “turning to science and technology to improve training” has become a consensus, and “scientific selection, scientific training, and scientific management” has become three major strategies to improve athletic performance, sports personnel, especially the trainer and manager, should focus the daily management, and strengthen standardized training as well as scientific selection. The development of computer and information transmission technology has profoundly affected humanity and society in the information age. Nowadays, with the development of modern information technology and digitalization in China, the computer and distance network education systems are gradually recognized and promoted. It is also imperative to fully and rationally recognize the shortcomings in traditional Chinese school education and use modern information technology to reform the education system. Although some colleges and Universities (CAU) have successfully developed comprehensive computer application systems in physical education, studies on the operation, practice and management methods for such systems are still at a primary stage. On this basis, the paper will examine some of the applications of computer technology for physical education and research at CAU, describe the main characteristics of new management systems, and summarize future technologies in this field.

**Keywords:** Computer · Physical Education · Information Management System

## 1 Introduction

As part of college education, physical education plays a unique role. Its management process has the characteristics of other management and teaching departments and its uniqueness and complexity. More specifically, the management of teachers’ information is of a very high degree of closeness, while the management of students’ information is open. Besides information about teachers and students, other factors such as classrooms

and equipment also need management [1]. Due to the uniqueness and complexity of the above factors and a lack of information personnel, the level of informatization and automation in PE information management in CAU remains low, as it remains manual. However, the disadvantages are becoming apparent with the rapid increase of management information: (1) the storage of materials is disorganized and difficult to update, and the continuity of sports management is inadequate; (2) the absence of standardized management results in a lack of standardization and low efficiency; (3) it is incompatible with data query, summary and reports writing. As a result, the administrative departments in CAU require a better PE information management system based on their management network and office automation needs.

Information is an essential resource in this age, and its management has become necessary and witnessed a significant change in methods and content. Information management system (MIS) is vital in modern information management. It has gradually evolved into an interdisciplinary involving computer electronic communication theory and method, computer science, information science, mathematics, system science, and other advanced management information science. Around the mid-1970s, China saw its first direct implementation of MIS, the management application integration platform. MIS at that time employed standalone software as the operating system to analyze single business data, thereby assisting modern management [2]. It has gradually been widely used in many enterprises at home and abroad. By the 1980s, MIS was further used to manage many specific business contents, including personnel, wages, inventory, planning and financial information. By the 1980s, information and business management systems had moved fast towards computer networking, intelligent information management, and distributed computing systems as computer and integrated technology developed [3].

Studies on sports information in China began in the 1950s. In the earlier stage, the core of sports information system development was an information database and a series of databases storing different types of data on different scales facing all sports. For instance, the General Administration of Sport of China (GASC) established the International Public Sports Information Database and the subject database for sports events and athletes in 1996 [4].

By the end of the 1990s, provincial and municipal sports administrative departments attached importance to sports information network development [5]. As a result, informational websites of local sports administrations, sports departments, and remote working systems were gradually established while the administrations utilized multi-resources, effectively combing new network development with resource database establishment. The development of websites, working system, and database highly improved the efficiency of sports information management, bringing sports management informatization into a new stage. Since 2003, GASC, sports administrations, and sports management centres have set up the "China Competitive Sports Management Information System" in Beijing, Tianjin, and 13 other pilot provinces. So far, such a system has been promoted nationwide. The new and advanced information collection and transmission mode greatly improve work efficiency and China's competitive sports management's informatization level.

## **2 Computer Application Management System for Physical Education in CAU**

A computer application management system includes four major parts: hardware, system software, support hardware, and applications [6]. The application management system is widely used and can be customized to meet specific requirements, such as PE teaching management system, public sports management system, after-class sports training system, physical research management system, teacher management system, PE documentary management system, PE equipment management system, and other sports event management system. The following characteristics are found in current PE teaching application management systems:

1. **Comprehensive:** computer information management systems include daily teaching, mass sports, competitive after-school training, research, and logistics management, whose subsystems contain many other function modules. For instance, the undergraduate PE management system has functions like exam result query, statistics, and information analysis, representing the professional and systematic operation of the system.
2. **Convenient:** data processing and analysis of daily sports management and teaching are common in CAU. In some ways, compared to manual service, the computer provides a more rapid, comprehensive, correct, and efficient means of solving problems and teaching. It eliminates the time-consuming and complex manual work, such as exam result query, tabulation, and printing results, and makes online inquiry, modification, information collection, and data storage more convenient. For example, the teacher only needs to input the student number, name, or class information to check the exam score of each term online in real-time.
3. **Regular:** CAU usually holds sports events regularly. As many sports games (sports meetings, basketball games, volleyball games, football games, ping-pong and badminton game) are held only once a year, the traditional manual arrangements are time and labor consuming. However, with the help of computer management, people only need to create a template, fill in some information (date, referees, and athletes), and put it into use directly.
4. **Interdisciplinary:** computer science is widely used in physical education at CAU. The PE computer management system is interdisciplinary, combining computer science and physical knowledge. As a result, more research on computer applications in PE is required to integrate the two disciplines better.

## **3 Notices in the Use of the PE Computer Application Management System in CAU**

First, the leadership should make an exemplary arrangement of computer and multimedia technology in physical education and research at CAU. The administrators should be skilled junior and senior teachers whose roles are to carry forward and implement computer application development plans, reasonably arrange funds, set up training plans, and solve problems in real-time.

Second, CAU should cultivate talents in multi-levels. PE computer application system requires knowledgeable talents in multi-levels. Senior programmers are in charge of the system's design, operation, and optimization, and executives are responsible for its administration. In order to better apply the PE management system, CAU should ensure that the knowledge, intelligence and personnel structure are reasonable. Therefore, senior and middle-level administrators responsible for the system development, daily maintenance, and optimization need more training, especially for the operators. As for the middle and senior personnel, assistants are necessary for them to meet the needs of daily operations and information input. As computer science is interdisciplinary, training talents should integrate hardware and software knowledge and PE knowledge to cultivate high-level talents in various disciplines.

Third, CAU needs to strengthen the secondary development of the computer management system. Computer applications and projects in PE management at CAU are well developed and managed nowadays. The scope of the system is also expanding, the functions are developing better, and the links between different subsystems are getting closer. As a result, more requests are for using computers in physical education. It is essential to strengthening secondary development to promote software portability and maintainability.

Last, more data interfaces are needed as important channels for information transmission and high-speed exchange. There is a very intricate and intimate interaction between the PE computer application management system and other systems to enable real-time information interchange. With the promotion of PE computer application management systems, the information network is gradually formed and open to other departments of CAU. As an open system, it also needs to collect and analyze data from other databases or systems to achieve the goal of data sharing.

#### **4 Application and Implementation of PE Computer Application Management Systems in CAU**

The development of an information management system is essential in PE application management system, and it is mainly divided into three categories:

1. PE management and information system: junior administrators widely use his systems. PE management and information system is a large-scale information management system (MIS) integrating all PE subsystems for daily affairs and information management at CAU.
2. PE business management system (BMS): BMS in PE is a set of processes and procedures used in developing strategies for executors and all associated management personnel. Usually, BMS is used by senior administrators. The comprehensive management system and assisting information system utilize large-scale data processing, advanced mathematics, model calculation and simulation, AI and other technologies with artificial intelligence logic reasoning functions.
3. Decision support system (DSS): DSS for physical education is a kind of upper-level software system for decision and management, which enables users to obtain various decision models and analyze data conveniently and efficiently. Its functions include

centralized database management, prediction support, and assisted decision analysis, which can help administrators to make decisions.

The computer management systems at CAU must be comprehensive and advanced in technology to meet the higher demands of computer applications and software for the current PE management practice.

## 5 Conclusions

A PE computer application management system is ready after demand analysis, system design, system implementation, system testing, and test run. The system could: facilitate the trainers to check attendance and achieve automatic management, which is beneficial to the development of physical education; coordinate the leaders of departments, trainers, and students for better communication, and track students' data; promote the connections among CAU, increase mutual exchange and learning.

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