



The Implication and System Construction of Intelligent Sports Service System in Colleges and Universities

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Abstract. Intelligent sports is a hot topic in current academic research. This article analyzes the connotation of intelligent sports services through research methods such as literature review, mathematical statistics, and logical induction, including the public service system, the integrated transformation of intelligent sports industry, and the expansion of service objectives. The study found that the construction of intelligent sports service system should be designed in three parts: building a three-dimensional teaching environment, building a multidisciplinary collaboration platform, and designing technology application modules.

Keywords: Smart sports, public service system, college sports.

1 Introduction

In April 2018, the Ministry of Education issued the Action Plan for Artificial Intelligence Innovation in Colleges and Universities and the Action Plan for Education Informatization 2.0, which clearly pointed out that "smart education innovation and development" is an important measure in the new mode of future education services. In February 2019, the Central Committee of the Communist Party of China and the State Council issued the "China Education Modernization 2035", pointing out that it is necessary to accelerate the reform of education in the information age, build intelligent campuses, and innovate education service formats, and other strategic deployments have pointed out the direction for the development of smart education services in the new era.

China's research on smart sports began in the 21st century, and the research is divided into three stages under the influence of the international development situation. The first phase is 2000-2008, at this stage, China's smart sports are mainly affected by two aspects: Sydney 2000 Olympic Games and Beijing 2008 Olympic Games. (Mao Peng, 2000) proposed "wisdom", the purpose is to change the basic point that the Chinese sports administration adheres to the Soviet training theory of the 50s in terms of training ideas, it aims to promote the process of China's sports status as a world sports power^[1]; On the eve of the 2008 Olympic Games, the development of smart sports has gradually shifted from politics to teaching concepts. (Yang Qingci, 2004)

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Orienteering as an emerging intelligent sport, The purpose is to comprehensively improve the quality of college students and cultivate compound talents^[2]. (Wan Huai-yu, 2006) proposed "the application of Sun Tzu's strategic thinking in sports competition", emphasizing the strategic wisdom in sports competition^[3]. Thus, While China experienced the 2000 Sydney Olympic Games, it was also rethinking and improving the path of sports development, and the concept of smart sports was also transformed. At this stage, the development of smart sports in China is leapfrogging, its connotation has gradually risen from theory to practice. (Ye Qiang, 2011) believes that smart sports is an inevitable trend in the development of sports informatization, and has a new definition of smart sports: digitalization, networking, and intelligence are the three major elements of smart sports^[4]. (Dong Liangshan, 2016) analyzed the college sports mobile application "BGI Sports"^[5]. At this stage, informatization has given more and more achievements to smart sports, and the rise of smart APP has provided a lot of inspiration for the development of smart sports. The third phase is 2018-2023. This stage is a mature stage of the development of smart sports in China, especially in the application of universities, The emergence of smart devices such as "MOOCs", "smart venues", "extracurricular sports mini programs" and "wearable devices" has greatly highlighted the cutting-edge dynamics of smart sports in China's development. (Fu Gangqiang, 2021) proposes the transformation and upgrading of smart venues empowered by artificial intelligence, and puts forward new requirements for intelligent services^[6]. (Liang Meiying, 2022) Through the "Trail Fun Running" campus smart sports platform, it is concluded that the campus sports smart platform can not only integrate modern information technology to promote the transformation of smart sports in colleges and universities, but also train college students to actively participate in physical exercise and comprehensive quality training to a certain extent^[7]. The third stage is actually the deepening, innovation and reform of the second stage, which clearly points out that smart sports is an indispensable part of national sports, and its wide coverage, strong operability and high degree of intelligence are enough to show that China is rapidly moving towards a sports power. In order to address the theoretical and practical shortcomings of intelligent sports elements in universities, this article will conduct in-depth research on intelligent sports service systems in universities. Under this new service model, it is committed to achieving broader sports participation, more people-oriented sports experience, more accurate health management, and more three-dimensional sports communication, representing the direction of innovative development of university sports in the intelligent era.

2 The logical implication of the intelligent sports service system of colleges and universities

2.1 Public sports service system

As the first five years of China's march towards the second centennial goal, the "14th Five-Year Plan" period is also the first period to lay a solid foundation for a strong sports country, accelerate the construction of a strong sports country, and strive to

realize the modernization of sports^[8]. In 2022, the General Office of the CPC Central Committee and the General Office of the State Council issued the Opinions on Building a Higher Level of National Fitness Public Service System (hereinafter referred to as the "Opinions") , requiring all units to implement sports activity promotion plans and build a higher level of national fitness service system^[9]. At present, college sports are in full swing, smart sports is the foundation of campus sports, the cornerstone of national fitness, and the trend of future college and social sports development. By browsing the national sports administration department and searching keywords such as "social smart sports", "college smart sports" and "smart service system" in CNKI, it was found that most of the content was related to policies, while the content of the relevant intelligent sports service system that was truly implemented in society and individuals was less. Although the national fitness plan has been implemented, the popularity of social sports is not high, and all levels of society and all ages do not pay enough attention to sports. According to relevant statistics, the proportion of people in China who regularly participate in physical exercise in 2020 is 37. 2%^[10], the population is larger than the total population of many sports powerhouses, such as 331 million in the United States, 125 million in Japan, 83 million in Germany, and 67 million in the United Kingdom and France^[11]. At the same time, there is very little research in the field of public sports such as fitness venues, sports guidance, and sports infrastructure, and even if practice shows the construction situation, it has not been well "systematized", which not only wastes social sports resources, but also reduces the integration of sports information development.

2.2 Integrated transformation of smart sports industry

The smart sports solution is based on the smart sports cloud platform^[12], using 5G technology to realize the interconnection of resources. Affected by the epidemic in 2020, many domestic and foreign sports events were forced to cancel or postpone, resulting in people unable to watch the games live, and the "5G + VR" virtual live broadcast and 5G ultra-high-definition live broadcast not only solved the problem of the lack of people's viewing venues, but also brought viewers a new all-round viewing experience. In universities, 5G features are used to deploy networks multiple times at one time, flexibly respond to multiple scenarios, meet the requirements of fast computing, and reduce network operation costs and difficulties^[13]. Therefore, the effectiveness and accuracy of 5G technology provide people with many conveniences.

Smart sports have opened up a new path for traditional sports tourism. Smart sports can make traditional sports tourism come alive and active, which is of great significance for improving the accuracy of tourism services and optimizing tourism projects. During the "14th Five-Year Plan" period, the sports industry development plan clearly defines the task of "increasing the proportion of sports service industry", forms a sports tourism and leisure format through the integration of sports and tourism, develops sports characteristic towns under the perspective of global tourism, pays attention to the cross-penetration between sports and tourism industries, and then forms sports tourism at different levels, such as: sports business tourism, sports exhibition tourism, sports health tourism, sports vacation tourism, sports adventure tourism, etc. Sports

characteristic towns play an important role in the supply-side structural reform of the smart sports industry, integrating multi-functional industrial chains such as sports, leisure, culture, tourism, and pension, promoting the transformation of the spatial structure of tourism in the whole region and meeting the health needs of grassroots people^[14].

Smart sports give birth to intelligent products and modern sports service systems. Compared with the traditional fitness model, the emergence of "black technology" has made more and more people interested in physical exercise. The "Nintendo Switch fitness ring" launched in 2019 solves the problem of boring people's exercise. Sensors on this fitness ring record stretching and squeezing data during exercise, and develop targeted training to improve body shape. In addition, it can also communicate with the game, realizing the "exercise while playing" mode. There are also intelligent sports products such as smart fitness equipment, intelligent hardware (including watches and Bluetooth headsets), sports intelligent equipment (such as smart football, volleyball, etc.), AI sports test stations, etc., which provide a guiding role in strengthening the construction of sports informatization and improving sports hardware and software and other related configurations in the future, and further promote the development of science and technology sports in China.

2.3 Expand service target

The smart sports service system mainly includes sports fitness, physical education, sports event management, and sports information services. The smart sports service system basically covers all the needs of people of all ages for sports. In colleges and universities, smart sports and digital sports give campus sports a new driving force. Smart sports renew the traditional mode of "teaching" and "learning" to give students more space for independent play. Through information equipment, smart sports timely feedback students' physical health, sports performance and posture analysis reports, so as to realize students' learning feedback and learning results. At the same time, it also lays a good foundation for students to achieve "lifelong sports", and promotes students to achieve two-way development of physical and mental health in physical exercise.

3 Construction of smart sports service system in colleges and universities

With the continuous improvement of the core literacy of college students, the value of physical exercise has attracted more and more students' attention. College sports implement smart sports and health services for all students, transform from traditional single services to diversified services, and expand services to all aspects of students' learning and life, promote the development concept of college sports around "people-oriented", and promote the integrated development of college sports and science and technology.

3.1 Build a three-dimensional teaching environment

The development of intelligent teaching of physical education in colleges and universities is an inevitable product of the development of physical education in the new era. The three-dimensional teaching of smart sports is the use of intelligent space, network, storage and computing to provide basic support. Three-dimensional teaching can get rid of the three-stage traditional teaching and give students more space for independent exploration, which is mainly manifested in: with network technology, to achieve online and offline synchronous teaching mode, students can not only gain sports knowledge and skills in offline classrooms, but also choose diversified and personalized content online to meet their own needs. Schools can also collect, sort out and analyze students' physical health and sports performance through the network system, form big data of information resources, timely feedback to individuals, guide students to carry out physical exercise, and achieve scientific teaching. In summary, smart physical education in colleges and universities is a multi-dimensional system, and under the interaction of human resources and material resources, efficient and accurate teaching intelligence is achieved, which is of great help to the cultivation and improvement of students' comprehensive ability.

3.2 Construction of a multi-subject collaborative platform

Build a diversified and interactive software and hardware platform to achieve high-quality sports resource sharing. The information platform can manage the teacher teaching information platform, and at the same time build student sports big data, so as to realize the integrated management of students' physical education classes, daily exercise, and physical fitness tests. The platform data center improves the authenticity and accuracy of students' physical health monitoring through data integration, data visualization display, and intelligent data statistical submission. In addition, through the application of various APP, mobile platform, fixed platform, embedded platform, virtual platform, smart platform and many other smart sports teaching platforms, the collection, transmission, storage, processing and application of smart sports teaching information are obtained^[15]. It brings great convenience to the implementation of smart sports teaching.

3.3 Technical application module design

Make good use of smart venues, sports apps, smart wearable devices and other scientific and technological products in smart sports teaching course modules, smart sports physical health modules, smart stadium service modules, smart sports equipment modules, and smart sports research and management modules^[16], realizing the deep integration of sports with artificial intelligence, the Internet and the Internet of Things. In 2022, iFLYTEK proposed a smart sports solution, pointing out that with improving the level of sports education as the core, it will be applied in six scenarios of daily teaching, sports competitions, after-school training, national body side, physical education examination, and health big data through the three industrial forms of

AI teaching assistant, AI assessment system, and smart wearable device, which shows that AI-enabled sports have far-reaching significance for the digital reform of school sports.

4 Conclusions

The construction of the intelligent sports service system in colleges and universities has extended the connotation and scope of sports services in colleges and universities in the intelligent information era, helping to transform the form of sports services in colleges and universities, and improving the level of sports services in colleges and universities. However, the intelligent sports service in China's universities is in the process of exploration and development, and needs further improvement and development. More content in the concept of intelligent sports services, such as the public service system, the integrated transformation of the intelligent sports industry, and the expansion of service objects, requires further research and refinement. Therefore, the construction of intelligent sports service system is jointly designed in three parts: building a three-dimensional teaching environment, building a multidisciplinary collaboration platform, and designing technology application modules.

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