



Review Study Of Integrating Ai Technology Into Sports Training System

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ABSTRACT

This article mainly reviews the application of artificial intelligence technology in the field of physical education and its future development trend. The article analyses how AI technology can enhance the quality and efficiency of physical education, providing students with better teaching experience and training effects through intelligent teaching aids, virtual reality technology and big data analysis. The article also highlights the important role of AI technology in promoting the personalized and interdisciplinary development of physical education, demonstrating the potential and prospects for its widespread application in the field of physical education. At the same time, the article also discusses the technical, ethical and privacy challenges facing the application of AI technologies in physical education, and puts forward suggestions for strengthening regulation and norms to ensure the healthy development of the technologies and maximize the benefits to society. In looking at the future development trend, the article points out that AI technology will continue to drive innovation and change in the field of physical education, injecting new vigor into the development of physical education globally.

Keyword: Artificial Intelligence; Integration; Physical Education; Training System

1.Introduction

1.1 Background And Significance of The Study

The integration of artificial intelligence and physical education is an inevitable trend in the development of education information technology. With the continuous innovation of information technology, the field of education is also constantly exploring how to apply these advanced technologies to teaching practice in order to improve the quality and efficiency of teaching (Zhang et al., 2022).

In the field of physical education, the integration of artificial intelligence technology will bring many changes to teaching. Intelligent technology can help personalize physical education teaching (Almusawi et al., 2021). Innovation in physical education: Teachers' perspectives on readiness for wearable technology integration.

Computers & Education, The introduction of artificial intelligence technology will greatly enrich the content and form of physical education teaching. Again, the integration of artificial intelligence and physical education will help cultivate students' innovative potential (Tan, 2023). The integration of artificial intelligence and physical education is an inevitable trend in the development of education informatization and a key step in the development of physical education towards intelligence and modernization.

1.2 Research Objectives and Problems

In the process of exploring the integration of artificial intelligence technology and physical education, the first problem we have to face is: how to choose the artificial intelligence technology suitable for physical education?

By selecting these technologies that are highly compatible with physical education, we can lay a solid foundation for building an innovative teaching model. How to organically integrate these technologies into the teaching process and build an innovative teaching model based on AI technology is the next key problem to be solved.

In the process of constructing an innovative teaching model, we also need to pay attention to another important issue: how to scientifically assess the effectiveness of the practical application of artificial intelligence technology in physical education? This requires us to establish a set of perfect assessment system to comprehensively and objectively measure the teaching effect from multiple dimensions. Through these scientific and rigorous assessment methods, we can provide a strong basis for the promotion and application of AI technology in physical education.

1.3 The Current Status of The Application of Artificial Intelligence Technology in Physical Education

1.3.1 Application Cases of Artificial Intelligence Technology in Physical Education Intelligent teaching systems, as one of the important applications of artificial intelligence technology in physical education, have brought a new learning experience to many students. These systems are able to accurately grasp the learning situation and needs of students by analysing and mining all kinds of data in the process of student learning, so as to provide tailor-made teaching solutions for each student (Wang & Tang, 2021). Intelligent teaching systems are also capable of tracking and evaluating students' learning progress in real time, identifying students' learning difficulties and problems in a timely manner, and providing appropriate solutions.

Sports analysis and evaluation is another important application area of artificial intelligence technology in physical education. By using advanced technologies such as computer vision and deep learning, the sports analysis and evaluation system is able to automatically capture, analyse and evaluate students' sports movements, providing students with accurate sports feedback and guidance. Virtual training and simulation games are the most cutting-edge and innovative application areas of AI technology in physical education (Nie, 2022). Through the use of virtual reality, augmented reality and other technologies, the virtual training and simulation game system can create a highly realistic training environment and game scenes for students.

1.3.2 The Application Effect of Artificial Intelligence Technology in Physical Education

The application of artificial intelligence technology in physical education is not limited to the development of personalized teaching plans. In the training process, artificial intelligence technology is also able to monitor students' sports performance in real time, and accurately assess students' technical movements through data analysis and sports biomechanics (Wang et al., 2022). Artificial intelligence technology can also provide a rich virtual training environment and simulated game scenes for sports teaching. Through virtual reality technology, students can train for various sports in a simulated environment. This virtual training method not only enables students to train anytime and anywhere without the limitation of space and time, but also provides them with diversified training scenarios and challenging tasks, which increases the interest and motivation of learning. It is worth mentioning that the application of artificial intelligence technology in physical education can also effectively promote the physical and mental health of students. The wide application of artificial intelligence technology in the field of physical education also puts forward higher requirements for the professionalism of teachers. Teachers need to continuously learn and master relevant knowledge and skills, such as data analysis, virtual reality technology, etc. They also need to have a sense of innovation and practical ability, actively explore the deep integration of artificial intelligence technology and physical education teaching, and continuously improve their teaching level and effect.

1.3.3 Challenges and Problems in The Application of Artificial Intelligence Technology in Physical Education

Although the rapid development of technology has led to a reduction in the cost of artificial intelligence hardware and software, it is still difficult for many schools and educational institutions to bear the cost of introducing artificial intelligence technology on a large scale (Luan et al., 2020). As the application of AI technology in physical education deepens, the privacy and security of students' sports data is also becoming more and more prominent, and how to ensure the security and privacy of students' data while using AI technology is an issue that must be taken seriously in the field of physical education. In addition to the challenges of technology and safety, the integration of artificial intelligence technology with educational concepts and methods should not be ignored, and it is necessary to think about how to achieve the organic integration of technology and education.

The application of AI technology in physical education is full of opportunities and challenges. We must face up to these challenges and problems and find effective solutions and paths through in-depth research and exploration in order to truly realize the great potential of AI technology in physical education.

1.4 Research Methodology And Framework

In order to ensure the scientificity and reliability of the study, we comprehensively use a variety of research methods, including literature review, case analysis, and empirical research. Guided by the research objectives and questions, we designed a systematic and complete research framework. We conducted a comprehensive analysis of the current status of the application of artificial intelligence technology in physical education. By combing through relevant literature and cases, we found that AI technology has achieved remarkable results in physical education teaching, training, and assessment. In order to solve problems such as the low popularity of the technology application and the inconsistent evaluation standard of the teaching effect, we designed a set of physical education teaching model based on AI technology. The model takes students' individual needs as the starting point, and provides them with tailor-made teaching plans by intelligently analysing their learning characteristics and ability levels. For the evaluation of the application effect, we adopted a combination of quantitative and qualitative methods. By collecting and analysing a large amount of data, we found that the physical education teaching mode based on artificial intelligence technology has significant advantages in improving students' motor skills, enhancing physical health and cultivating teamwork.

2. The Necessity And Feasibility of Artificial Intelligence Technology into Physical Education Training System

2.1 The Necessity of Artificial Intelligence Technology into Physical Education Training System

The core of artificial intelligence technology lies in its powerful data processing and learning ability (Wyant & Baek, 2019). Based on these data analyses, artificial intelligence can tailor the most suitable training plan for students, so that each student can continue to progress on the path that best suits him or her. In addition to this, the application of artificial intelligence technology in physical education can greatly enrich the teaching means and methods. What's more, artificial intelligence technology is equally promising in cultivating students' comprehensive quality. With the assistance of artificial intelligence, physical education is not only the training of physical ability and skills, but also the cultivation of students' thinking ability, innovative spirit, teamwork and other aspects of ability.

In fact, the feasibility of incorporating AI technology into the physical education training system has been verified in many ways. Globally, more and more educational institutions and research teams have begun to explore and practice this new model, and have achieved impressive results (Guo & Li, 2021). These successful cases provide us with valuable experience and point out the direction of future development (Wang, 2021).

2.2 Feasibility of Artificial Intelligence Technology Incorporated into The Physical Education Training System

We are well aware that the traditional way of physical education is often limited by factors such as teaching resources, teacher level and venue facilities, making it difficult to achieve personalized and precise teaching (Ma et al., 2020). With the continuous maturity of artificial intelligence technology, this problem is expected to be fundamentally solved. The application of AI technology in physical education can go deeper to the level of resource allocation and management. In the traditional mode of physical education, there is a certain degree of imbalance in the distribution of educational resources, and some regions or schools are difficult to obtain sufficient educational resource support for various reasons. The introduction of artificial intelligence technology can achieve the optimal allocation and sharing of educational resources through intelligent data analysis and resource deployment (Chu et al., 2022). Artificial intelligence technology can also play a greater role in physical education.

It is worth mentioning that the application of AI technology in physical education has also received a great deal of attention and support from the government and all sectors of society. All sectors of society have also actively responded to the call and invested a large amount of funds and human resources in technology research and development and promotion. This policy environment and social atmosphere provide a strong guarantee and support for the implementation of artificial intelligence technology in physical education.

2.3 Paths And Strategies for The Inclusion of Artificial Intelligence Technology in The Physical Education Training System

When discussing the innovation and development of physical education in depth, it is impossible not to mention the rise of artificial intelligence technology and its potential impact on the field. The purpose of this paper is to explore the necessity and feasibility of incorporating AI technology into the physical education training system, and to propose a series of implementation strategies in this regard.

Strengthening the technological research and development of AI technology in the field of physical education is the key to promoting the innovative development of the field. Incorporating artificial intelligence technology into the physical education curriculum system is an inevitable choice to adapt to the needs of physical education in the new era. To achieve the organic integration of AI technology and physical education, we cannot rely only on technology research and development and curriculum system reform, and it is equally important to strengthen the AI technology training of physical education teachers. The establishment of a scientific and effective evaluation mechanism is an important guarantee to ensure the organic integration of AI technology and physical education. Through the implementation of a series of strategies such as strengthening technology

research and development, improving the curriculum system, strengthening teacher training and establishing an assessment mechanism, we can promote the in-depth integration of AI technology and physical education, and inject new vitality into the development of physical education.

3. The Implementation Program of Artificial Intelligence Technology into Physical Education Training System

3.1 Curriculum Design of Artificial Intelligence Technology into Physical Education Training System

In the current educational context, physical education is experiencing unprecedented changes. The rapid development of artificial intelligence technology is one of the driving forces of this change. Imagine a scenario where students are no longer confined to the traditional playground or gymnasium, but are immersed in a virtual sports world created by AI technology. Further, the use of virtual reality technology allows physical education to no longer be limited by time and space. In the field of sports analysis, intelligent systems are able to deeply mine and analyze students' sports data to provide coaches with scientific training advice. In sports injury prevention and rehabilitation, AI technology also demonstrates unique advantages.

To realize the above vision, the importance of interdisciplinary curriculum design has to be recognized. Knowledge and skills from the fields of artificial intelligence, computer science, and sports science need to be organically integrated to form a comprehensive curriculum (Yang et al., 2020). This set of curricula should not only focus on the transfer of theoretical knowledge, but also emphasize the cultivation of practical skills. Under such a curriculum design, students will no longer be passive recipients, but will become active participants and creators. They will have the opportunity to personally experience the charm of AI technology and explore its infinite possibilities in physical education, and they will also learn how to maintain a keen insight and the ability to learn continuously in this rapidly changing world.

3.2 Teacher Training of Artificial Intelligence Technology into Physical Education Training System

To address the current shortcomings of physical education teachers in the application of artificial intelligence technology, we will conduct a series of thematic training courses. We understand the importance of interdisciplinary cooperation in promoting educational innovation, so we will actively build a platform to promote exchanges and cooperation between physical education and related disciplines such as computer science and artificial intelligence (Lazem et al., 2024). Through the organization of seminars, workshops and other forms of activities, physical education teachers will be encouraged to have in-depth discussions with experts from other disciplines to jointly study the application strategies of AI technologies in physical education. In order to further optimize the structure of the teaching team and improve teaching standards, we will implement a talent acquisition program. We will also set up a set of scientific evaluation mechanisms to regularly assess and summarize the implementation effect of the program. Through collecting feedback and analyzing data, we will keep abreast of the problems and deficiencies of the program and take corresponding measures to improve and optimize it (Huang et al., 2021). In this process, we always insist on taking teachers as the main body and giving full play to their subjective initiative and creativity.

3.3 Evaluation And Feedback of Artificial Intelligence Technology Incorporated into Physical Education Cultivation System

In the process of exploring the integration of artificial intelligence technology and physical education training system, the evaluation and feedback link is particularly important. In this evaluation system, we will make full use of the advantages of artificial intelligence technology to monitor students' learning progress and effects in real time. This type of evaluation is more scientific and accurate, and it can also provide students with personalized learning advice and guidance, helping them to better master sports skills and improve their physical education (Peng et al., 2022). We encourage students to actively participate in the assessment process and will also give due consideration to the role and needs of teachers.

In addition to establishing a scientific evaluation system, we will continue to pay attention to the application and transformation of evaluation results. Evaluation results are not only a reflection of students' learning status, but also an important basis for us to improve teaching and optimize course design. We will continuously adjust and optimize the curriculum design, teacher training and teaching evaluation system based on the evaluation results and student feedback to ensure the effective application of AI technology in physical education (Yan Ru, 2021).

In the process of integrating AI technology with physical education, we will also pay attention to the ethical and social impact of the technology. Although the application of AI technology brings us many conveniences and innovations, it may also raise some ethical and social issues. We will follow ethical principles, safeguard data security, and ensure the fairness of the technology to provide a strong guarantee for the healthy development of physical education.

4. Case Study on The Combination of Artificial Intelligence And Physical Education

Case 1: Design and Application of Intelligent Sports Training System

In delving into the intersection of artificial intelligence and physical education, we have to mention a rather innovative intelligent sports training system. This system, with its unique fusion of sensor technology, big data analysis, and machine learning algorithms, has injected new vigor into the field of physical education (Xu et al., 2022). Its realtime monitoring function captures athletes' physiological data, accurately depicts their movement trajectories, and comprehensively evaluates their performance on the field. This intelligent sports training system has been proven to demonstrate impressive accuracy in assessing athletes' skills and fitness status. It provides the coaching team with scientific and objective data support, making the development of training programs more precise and targeted. With the aid of the system, coaches are able to guide their athletes more efficiently and help them achieve twice the results with half the effort in training. Athletes can also have a clearer understanding of their own strengths and weaknesses, so as to achieve a targeted approach in training, and constantly improve their own competitive level.

With the rapid development of technology, this intelligent sports training system is also facing new challenges. In order to meet the growing personalised needs of different sports and athletes, the system needs to continuously update and optimize its algorithms to ensure its accuracy and effectiveness.

Case 2: Artificial Intelligence-based Analysis And Evaluation of Sports Competitions

While traditional assessment methods often rely on the personal experience and intuition of coaches or experts, the introduction of AI adds science and objectivity to the process. By analyzing and comparing a large amount of data, the AI system is able to give more comprehensive and accurate assessment results, so that an athlete's performance is no longer a vague concept, but a specific indicator that can be quantified and compared (Mazurova et al., 2022). In addition, the intervention of AI has also greatly improved the efficiency of assessment. In the past, coaching teams may need to spend a lot of time watching game videos, analysing data and writing reports. Nowadays, all these tasks can be completed by AI systems in a short period of time, and the accuracy and quality have been significantly improved.

Case 3: Innovative Application of Artificial Intelligence in Physical Education In the physical education classroom, the traditional teaching mode is gradually being revolutionized. Physical education teachers are no longer simply demonstrating movements and correcting postures, and they have begun to use artificial intelligence to assist teaching, making teaching more accurate and efficient. In addition to its application at the teaching level, artificial intelligence also plays an important role in the assessment and management of physical education. Intelligent management systems can also assist schools in daily management work such as course scheduling and venue booking, further improving the efficiency of teaching and management (Zhou, 2018).

Artificial intelligence has revolutionized physical education in more ways than one. It is gradually changing our knowledge and understanding of physical education. In sports training, through the precise guidance of AI, athletes are able to arrange their training programs more scientifically, reduce the risk of injury and improve their competitive level. In the future, we look forward to seeing more innovative applications of AI in physical education.

5. Future Development Trends of Artificial Intelligence Technology in Physical Education

5.1 Technological Development Trends of Artificial Intelligence Technology in Physical Education

The emergence of intelligent coaching systems is changing the traditional teaching methods. These systems are able to monitor students' sports performance in real time through advanced sensors and algorithms and provide them with personalised training suggestions. What's more, this intelligent teaching mode allows for a fairer distribution of educational resources, and every student can enjoy a high-quality teaching experience. Of course, we cannot ignore the important role of big data analytics in physical education. In the past, coaches usually could only rely on experience to judge students' physical condition and training effect; nowadays, with the support of big data analysis tools, they can more accurately grasp each student's physical condition, skill progress and potential room for improvement.

The core advantage of artificial intelligence technology lies in its powerful data processing and analysis capabilities, which makes it possible to create tailored teaching plans and training programs for each student. Artificial intelligence technology provides students with unprecedented opportunities for self-directed learning. AI technology also plays a key role in promoting the deep integration of physical education with other disciplines. This interdisciplinary integration not only enriches the connotation of physical education, but also opens up a whole new development path for it.

In conclusion, the wide application and far-reaching impact of AI technology in physical education has been irreversible. It is changing the way we teach and learn, and each student will be able to develop on the path that best suits him or her, enjoying a more personalised, autonomous and interdisciplinary integration of physical education. This will not only be conducive to the all-round development of students, but will also

inject new vigor and momentum into the progress and development of society as a whole. With the continuous progress of technology and the depth of application, we have reason to believe that artificial intelligence technology will bring more innovation and breakthroughs for physical education.

5.2 Social Impact And Prospect of Artificial Intelligence Technology in Physical Education

In the field of physical education, the rise of artificial intelligence technology heralds an unprecedented change. It is not only a technological revolution, but also a social change that profoundly affects teaching methods, training methods and industrial patterns.

In terms of teaching quality, AI is able to accurately assess each student's learning ability, interest and potential through big data analysis and machine learning algorithms, so as to tailor the most suitable training program for them. And in terms of teaching efficiency, AI is equally promising. Traditional sports teaching methods often require teachers to spend a lot of time and energy to demonstrate, explain and correct movements. With the help of artificial intelligence technology, these tedious tasks can be greatly simplified. Artificial intelligence can also play a huge role in the training effect. Through smart wearable devices and sensor technology, students' physiological indicators and exercise data can be monitored in real time, so as to provide them with more scientific and effective training recommendations. Such training not only helps students better understand their physical condition and athletic ability, but also effectively prevents the occurrence of sports injuries, thus ensuring their physical and mental health.

It is foreseeable that with the continuous progress of technology and the expansion of application scenarios, artificial intelligence will play an increasingly important role in physical education. It can not only provide us with more efficient and quality teaching methods, but also cultivate more outstanding sports talents for us.

6. Conclusion And Research Outlook

6.1 Conclusion

The core advantage of artificial intelligence technology lies in its powerful intelligent analysis and virtual reality capabilities. Through these advanced means, AI technology can accurately analyze students' motor skills, physical condition and learning progress, thus providing teachers with more scientific and personalised teaching plans. The application of virtual reality technology also creates an immersive learning environment for students, allowing them to train in simulated real-life scenarios, which effectively enhances the learning effect.

The application of artificial intelligence technology in physical education faces many challenges. The cost of technology is a problem that cannot be ignored. Furthermore, many physical education teachers are unfamiliar with AI technology and need professional training to give full play to its role. Of course, data security and privacy protection are also issues we must pay attention to. As technology continues to advance and costs decrease, we believe that AI technology will become a standard feature in physical education in the future. With the help of this technology, physical education will become more scientific, efficient and personalised.

We should also see that the application of AI technology in physical education is not only a renewal of technical means, but also a renewal of educational philosophy. It requires us to re-examine the goals and methods of physical education and embrace this change with a more open and inclusive mindset. Only then can we truly utilize the potential of AI technology in physical education and make greater contributions to human health and development. The application of AI technology in physical education will also have a profound impact on the education industry. It not only changes the ways and means of physical education, but also triggers our thinking about the nature of education.

6.2 Research Outlook And Future Work

In delving into the future direction of physical education, we have to focus our eyes on the potential and impact of AI technology. With the rapid change of technology, AI has gradually penetrated into all aspects of life, and its prospect is even more attention in the field of physical education.

Intelligent coaches and virtual sports scenes have become two core elements. Imagine how efficient and personalised training will be when every sportsperson can have a tailor-made intelligent coach. The virtual sports scene provides unlimited training possibilities. Whether you want to experience the excitement of alpine skiing or the tense atmosphere of a football match, you can be there with just one key switch. A large number of examples have proved that the application of AI in physical education can not only improve the teaching effect, but also promote educational equity to a certain extent. In areas with limited resources, children can also have access to high-quality physical education resources through AI technology.

The application of AI technology in physical education is also accompanied by a series of ethical and moral issues. Only on the basis of following ethical principles and respecting the rights and interests of every sportsperson can AI technology develop in a truly healthy and sustainable way and eventually gain wide acceptance and recognition in society.

Wanting to promote the innovation and development of AI technology in the field of physical education, we actively advocate strengthening international exchanges and co-operation, and jointly exploring the best practices of AI in physical education. By sharing experiences and exchanging ideas,

every sportsman can enjoy the dividends brought by technology. In this era of infinite possibilities, we have reason to look forward to the future of AI technology in physical education.

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