

Analysis on the Integration and Development of Smart Sports and Traditional Martial Arts in the New Era



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Abstract: In the context of the new era, the integration of smart sports and traditional martial arts has broad prospects for development. This article first explores the application scope of smart sports technology in martial arts training and demonstrates its significant effect in improving training efficiency and accuracy through case analysis. Then, the practical significance of the integration of smart sports and traditional martial arts was analyzed, including promoting the modern inheritance of traditional culture, improving training effects and popularity, reducing the risk of injury, and its application value in the fields of health management and rehabilitation therapy. On this basis, specific strategies for the integrated development of smart sports and traditional martial arts in the new era are proposed, including promoting the popularization and application of smart sports technology; building a scientific and efficient education and training system to cultivate compound talents; strengthening technology companies and martial arts experts cooperation to jointly develop intelligent equipment and systems suitable for martial arts training. These practices aim to provide new paths and impetus for the integrated development of smart sports and traditional martial arts and promote the modern inheritance and innovative development of Chinese traditional culture.

Keywords: intelligent sports; traditional martial arts; artificial intelligence; sports training

Introduction

The introduction of intelligent technology has pushed sports on the road to change in the new era. The 2023 Hangzhou Asian Games will use advanced intelligent technology to paint a smart picture for sports. In the stadium, 4K high-definition cameras and VR cameras can freeze the movements of badminton players from different angles and generate 360-degree playback special effects; AI technology can assist and optimize umpire scoring, greatly improving the fairness of penalties; the shock-absorbing effect of the stadium paved suspended professional sports flooring, which can effectively reduce the harm to athletes in intense handball matches. These technologies not only improve the viewing experience and fairness of the event but also provide a safer competitive

environment for athletes. In the context of the rise of smart sports, as a treasure of Chinese culture, how traditional martial arts can be integrated and developed with smart sports is not only an important topic worthy of discussion but also an important way to promote the modern inheritance of traditional culture. The rise and development of smart sports technology not only brings new opportunities to traditional martial arts but also gives it new vitality.

1. The Cultural Value and Martial Arts Characteristics of Traditional Martial Arts

Chinese martial arts is a rich cultural carrier. It contains Chinese wisdom in every move, displays the Chinese spirit in every punch, and records Chinese civilization in every skill. The history of martial arts can be traced back to the Shang and Zhou dynasties and is a valuable cultural heritage accumulated by the

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working people in their long-term social practice. In addition to self-protection, practicing martial arts can also effectively improve one's adaptability and physical and mental quality. The development of martial arts has gone through several stages, embodying the wisdom of Chinese philosophy, aesthetic conception, and literary charm, forming a stable, independent martial arts cultural system with Chinese national characteristics. Martial arts emphasizes the cultivation of physical skills, as well as the cultivation of inner spirit and philosophy, forming unique martial arts characteristics and practical value. Its movements require strict specifications and graceful postures. For example, the movements of Changquan reflect overall conciseness and enrichment, while Nanquan shows "masculine beauty". In modern society, martial arts not only serve as a form of physical exercise to improve personal health and physical fitness but also play an important role in cultural exchange and dissemination, becoming a cultural bridge connecting China and the world. In the new era, inheriting and developing traditional Chinese martial arts culture should become a social responsibility. This is not only a respect for and promotion of traditional culture, but also a response to the spiritual and cultural needs of modern society.

2. The Rise and Development of Smart Sports

In recent years, with the rapid development of artificial intelligence technology, smart sports have gradually become an important part of the sports industry. The core of smart sports is to use advanced technologies such as artificial intelligence, big data, cloud computing, and the Internet of Things to improve the overall efficiency and user experience of the sports industry. In the field of sports competition, artificial intelligence technology is widely used in assisting event judging, athlete selection, competition preparation, and sports rehabilitation. For example, the "Eagle Eye" system in tennis and the VAR system in football have greatly improved the accuracy and fairness of game decisions. The application of intelligent scoring systems in

gymnastics, figure skating, and other events also makes scoring more objective and fair. In the sports products industry, the development of smart sports products includes wearable devices, smart fitness equipment, etc., which has greatly improved the ability to monitor sports and formulate personalized sports plans. These smart devices can not only monitor athletes' physical conditions in real time, but also provide scientific training suggestions to optimize training effects. In the construction of smart sports venues, digital and intelligent management methods not only improve the operational efficiency of the venues, but also provide audiences with a more convenient and personalized viewing experience. In addition, the rise of smart sports has not only changed the operation model of traditional sports, but also spawned new sports consumption methods and business models. For example, the popularity of online fitness platforms and smart fitness applications allows people to perform fitness activities anytime and anywhere, and enjoy personalized exercise guidance and social interaction. Therefore, the rise of smart sports not only promotes the upgrading and modernization transformation of the sports industry, but also provides the public with richer and more diverse ways to participate in sports.

3. The Value of Integrating Smart Sports and Traditional Martial Arts

3.1. Application scope of intelligent sports technology in martial arts training

Smart sports technology has a wide range of applications in martial arts training, covering multiple directions such as motion capture and analysis, virtual reality (VR) and augmented reality (AR) training, smart wearable device monitoring, and intelligent teaching systems (Liu, 2022). These technologies can not only improve the scientific nature and accuracy of training, but also provide students with a more intuitive and interactive learning experience. For example, through motion capture technology, martial arts movements can be

recorded and analyzed in detail, helping students correct wrong movements and optimize training effects. Virtual reality and augmented reality technology can simulate a real training environment, allowing students to conduct high-intensity confrontation training in a safe virtual space, thereby improving their actual combat capabilities. Smart wearable devices can monitor students' physical status in real time and provide personalized training suggestions to avoid overtraining and injuries. Nanjing Institute of Physical Education conducted a 12-week teaching experiment on 64 sophomore students to test the effect of smart stone locks in martial arts teaching. Experimental results show that the application of smart stone locks in stone lock teaching has a positive impact on students' exercise attitudes, including behavioral attitudes, behavioral cognitions, behavioral habits and emotional experiences. The smart stone lock has significantly improved students' mastery of the skills of stone lock vertical rotation 360°, stone lock flat rotation 360°, stone lock vertical flip 360° and stone lock flat flip 360°. The application of these technologies enables students to master complex martial arts skills in a shorter period of time, while cultivating good exercise habits and a positive attitude towards exercise, which greatly improves the effect and quality of martial arts training. Through the application of these smart sports technologies, the teaching and training models of traditional martial arts have been innovated and optimized, which not only improves training efficiency, but also provides new impetus for the inheritance and development of martial arts culture.

3.2. The significance of the integration of intelligent sports and traditional martial arts

The integration of smart sports and traditional martial arts is of great significance. It can not only promote the modern inheritance of traditional culture, but also improve the training effect and popularity of martial arts. First of all, the application of smart sports technology has injected new vitality into traditional martial arts. Through

data analysis, virtual reality, augmented reality and other technologies, the movements and skills of traditional martial arts have been more scientifically and accurately interpreted and presented, making learning and mastering easier. Martial arts become more intuitive and efficient. Through intelligent training equipment and teaching systems, students can get real-time action feedback and correction suggestions, thereby quickly improving their skill levels; combined with real-time monitoring and data analysis, it can effectively reduce the risk of injury in martial arts training and ensure that students are safe. environment for effective practice. Secondly, the introduction of smart sports technology will help promote and popularize traditional martial arts. Modern people, especially the younger generation, are more likely to accept and like sports forms that combine high-tech elements. Through smart sports equipment and interactive platforms, traditional martial arts can be presented in a more novel and attractive way, attracting more people to participate in learning and practice (Gu, 2024). Smart sports technology can also break the limitations of time and space through online platforms and virtual classes, giving more people the opportunity to contact and learn traditional martial arts, expanding its influence and spread. Finally, the integration of smart sports and traditional martial arts can also promote the application of martial arts in fields such as health management and rehabilitation treatment. For example, through intelligent monitoring equipment, practitioners' physical status and health indicators can be monitored in real time, providing personalized health management plans to further leverage the fitness and therapeutic functions of martial arts. This integration not only enriches the application scenarios of martial arts, but also enhances its practical value and status in modern society. Therefore, the integration of smart sports and traditional martial arts not only promotes the modern inheritance and popularization of traditional martial arts, but also improves its training effect and practical value, providing new paths and motivation

for the innovative development of traditional culture in the context of the new era.

4. Integration Development Strategy of Smart Sports and Traditional Martial Arts in the New Era

4.1. Construction of education and training system

In the integration and development of smart sports and traditional martial arts in the new era, it is crucial to build a scientific and efficient education and training system. Colleges and universities should offer courses related to the integration of smart sports and traditional martial arts to cultivate compound talents who are proficient in both martial arts skills and smart technologies. These courses can cover the use of smart devices, data analysis, virtual reality training, etc., providing students with comprehensive theoretical and practical knowledge (Su et al., 2023). Develop a systematic training plan for existing martial arts coaches and teachers so that they can master the application of intelligent sports technology and effectively integrate these technologies in teaching. Through regular training and assessment, we ensure that coaches and teachers always maintain the latest technical level. Thirdly, an intelligent martial arts training center can be established, equipped with advanced intelligent equipment and facilities, to provide students with a scientific and efficient training environment. The intelligent martial arts training center can not only serve as a training base for educational institutions, but can also be opened to the outside world to serve the majority of martial arts enthusiasts and promote the popularization and development of traditional martial arts. In the smart sports center, students can use smart wearable devices, virtual reality systems and motion capture technology to conduct personalized martial arts training and receive real-time action feedback and guidance. In terms of online education, intelligent martial arts teaching platforms and mobile applications can be developed to break the limitations of time and space through

online courses and virtual training modules, allowing more people to learn and practice martial arts conveniently. The platform should provide rich teaching resources, including video tutorials, action demonstrations and interactive exercises, to help students learn independently and improve their skills (Han, 2024). Through online communities and forums, students can also exchange experiences and share insights to create a good learning atmosphere. By establishing a complete education and training system and integrating smart sports technology into traditional martial arts teaching and training, it can not only improve teaching effects and training efficiency, but also promote the modern inheritance and widespread popularization of traditional martial arts.

4.2. Popularization and application promotion of smart sports technology

In the new era, popularizing and promoting the application of smart sports technology in traditional martial arts is key. First, the government and relevant institutions should formulate supporting policies to promote the widespread application of smart sports equipment in martial arts training. Martial arts gyms, schools and training institutions can be encouraged to purchase and use smart sports equipment by providing financial subsidies and tax incentives. By holding demonstration projects and activities that combine smart sports with traditional martial arts, we can demonstrate the advantages and practical effects of smart martial arts to the public and enhance social awareness and acceptance (Chen & Jia, 2024). Secondly, use multiple media platforms for publicity and promotion. Through TV programs, online videos, social media and other channels, we will produce and release popular science content and promotional videos about intelligent martial arts training to attract more people's attention and participation. Martial arts masters and scientific and technological experts are invited to participate in promotional activities to further promote the concept and practice of smart martial arts through their influence and professional knowledge. By establishing a dedicated smart martial

arts teaching website and mobile application, a wealth of online resources and interactive functions can be provided, allowing more people to easily obtain smart martial arts related information and learning resources. Thirdly, smart martial arts experience activities and competitions can be organized in communities and schools to allow more people to experience the application of smart sports technology in martial arts training. Through these activities, it can not only increase people's interest and participation, but also actually demonstrate the functions and effects of smart devices, and promote the popularization and application of smart martial arts. Finally, strengthen the research and development and innovation of smart sports equipment to ensure that it adapts to users of different levels and needs. Through cooperation with technology companies and research institutions, we will develop more smart devices suitable for martial arts training, such as smart wearable devices, virtual reality systems and motion capture technology. These devices should be easy to operate, feature-rich, and affordable to meet the different needs of beginners to professional martial arts practitioners (Liu et al., 2023). Through policy support, media publicity, community activities and technological innovation, we will promote the popularization and application of smart sports technology in traditional martial arts, improve the modernization level of martial arts training, and promote the inheritance and development of traditional martial arts.

4.3. Cooperation between technology companies and martial arts experts

To promote the integrated development of smart sports and traditional martial arts in the new era, cooperation between technology companies and martial arts experts is crucial. First of all, this kind of cooperation requires the establishment of a long-term cooperation mechanism and a platform for exchanges and cooperation between technology companies and martial arts experts. For example, a special research fund can be set up to support technology companies and martial arts experts to jointly carry out research and development projects on intelligent martial arts

technology to promote the in-depth integration of technological innovation and traditional martial arts. Through regular seminars, technical exchange meetings and other activities, the two parties will promote experience sharing and technical exchanges in the development of smart devices, technology applications and teaching methods. Second, software and hardware suitable for martial arts training need to be developed. Technology companies can use the professional knowledge and practical experience of martial arts experts to develop smart wearable devices, virtual reality training systems and motion capture technology that are more in line with martial arts training needs (Zheng et al., 2023). These devices and systems should focus on user experience and practical application effects, and be able to provide accurate movement analysis and feedback to help students better master martial arts skills. On this basis, the development of intelligent martial arts teaching software, combined with artificial intelligence technology, can provide students with personalized training plans and suggestions, improving training effects and learning efficiency. Third, carry out pilot projects for smart martial arts applications. Conduct pilot applications of smart devices and systems in martial arts schools, training halls, community centers and other places to test their effectiveness and feasibility through actual operations (Tian & Yang, 2023). Based on the feedback issues and suggestions from the pilot project, continuous improvement and optimization will be carried out to ensure that smart equipment and technology can truly meet the needs of martial arts training. Through successful pilot projects, the application of smart martial arts technology will be gradually promoted to a wider range. Finally, technology companies and martial arts experts can jointly write and publish smart martial arts textbooks and instruction manuals, combining the latest smart technology and martial arts teaching methods to form systematic training and teaching materials. These teaching materials and manuals can be used by martial arts teaching institutions and

individual learners to help them better understand and apply intelligent martial arts techniques and improve the scientificity and effectiveness of teaching and training. It can be seen that through strategies such as establishing long-term cooperation mechanisms, developing smart equipment, conducting pilot projects, and compiling teaching materials, the cooperation between technology companies and martial arts experts will provide a solid foundation and strong driving force for the integrated development of smart sports and traditional martial arts, and promote Modernization and scientificization of martial arts training.

Summary

The integration of smart sports and traditional martial arts in the new era has broad development prospects, which not only injects new vitality into traditional martial arts, but also enhances the cultural connotation of smart sports. Through the application of intelligent technology, the teaching and training of traditional martial arts have become more scientific and efficient, greatly promoting its modern inheritance and popularization. This integration not only improves the actual combat effectiveness and safety of martial arts, but also expands the application of martial arts in fields such as health management and rehabilitation treatment, fully reflecting its practical significance. Future research directions should focus on the in-depth application of intelligent technology in martial arts, such as the further integration of motion capture, virtual reality and artificial intelligence technologies. At the same time, cross-border cooperation should be strengthened to promote close collaboration between technology companies, educational institutions and martial arts experts to jointly develop intelligent equipment and systems suitable for martial arts training. Through the efforts of policy support, technological innovation and education and training, the integrated development of smart sports and traditional martial arts in the new era will surely usher in a better future and provide new paths and motivation for the inheritance and innovation of

Chinese traditional culture.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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