

数字化创新驱动太极拳套路传承与发展研究

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摘要: 国家把数字创新列为战略重点, 数字化技术在成像、虚拟现实、数据传输等方面发展迅速, 让太极拳虚拟对象具象化、场景可视化有了实现可能。多项政策都指向数字化发展。《全民健身实施计划(2021-2025)》《奥林匹克 2020+5 议程》提出体育数字化方向;《体育强国建设纲要(2019)》要求保护推广民族体育, 支持研发智能运动装备;《武术产业发展规划(2019-2025 年)》提出推动“互联网+武术”, 利用新技术构建服务平台。当下, 体育信息化、数字化转型是时代所需, 也是体育事业高质量发展的必然。未来, 太极拳发展离不开数字化的推动与拓展。**研究目的:** 太极拳套路由历代习练者从实战经验中凝练而来, 是蕴含中国哲学思想和文化特色的动作集合。它抽离具体格斗场景与假想对抗对象, 保留动作顺序和路线, 既展现格斗技巧与中国技击思想, 也传播中国哲学和伦理道德。不过, 格斗对象虚化、场景抽离使学习者难以理解技击动作, 无法和创编者在格斗想象上达成一致, 导致学习过程枯燥, 降低学习兴趣和参与度, 进而影响太极拳传承发展。所以, 实现假想敌具象化、格斗场景可视化, 还原技击过程, 成了传承传播太极拳的关键。**研究方法:** 本文运用文献资料法、问卷调查法、实地调查法、案例分析法和逻辑分析法, 全面收集武术套路资料及数字化成果, 分析相关政策法规, 梳理研究重点, 为后续研究筑牢理论根基;通过设计问卷并统计分析, 了解不同人群对武术套路数字化的看法与行为特点, 明确数字化产品与服务定位;实地访谈武术机构、从业人员以及技术企业、科研机构, 掌握武术套路发展现状与技术瓶颈, 挖掘关键影响因素;广泛收集国内外案例, 总结经验与问题, 提出改进建议;从传承与发展角度剖析文献资料, 探究武术套路与数字化创新的融合过程, 最终提出数字化创新驱动武术套路传承与发展的策略。**研究结果:** 数字化技术对太极拳传承具有显著驱动作用。其一, 动作捕捉技术是保留太极拳精髓的关键手段。它能精准记录太极拳的动作顺序与路线, 完整留存其中蕴含的格斗技巧和中国特色技击思路, 将太极拳的技击过程真实还原, 避免传统传承中因人为因素导致的动作偏差或失传。其二, 大数据与云计算技术为太极拳的记录和传承开辟了新路径。这些技术不仅革新了太极拳的保存方式, 使其摆脱传统口传身授的局限;还能通过数据分析重新解读拳理内涵, 帮助习练者深入理解太极拳

的文化底蕴。同时，借助数字化手段，人们可以获得沉浸式文化体验，让太极拳的传承更具时代吸引力和参与感。数字化技术对太极拳的发展起到了重要的推动作用。首先，虚拟现实技术是展现太极拳格斗场景的有效方式。它能够全方位、立体化地呈现太极拳格斗过程，将原本抽象的假想敌具象化，使练习者更直观地感受攻防场景，加深对太极拳技击原理的理解。其次，太极拳体感装备显著提升了训练体验。这类装备可以实时捕捉练习者的动作，精准预判格斗意图，并迅速给予反馈，让格斗场景从静态变为动态，带来近乎真实的训练感受，有效激发练习者的积极性。最后，基于 AI 的智能系统为科学化训练提供了支撑。身体姿态采集系统、训练辅助系统和动态反馈系统相互配合，不仅能实时记录运动数据、监控训练状态，还能通过数据分析总结运动规律，为习练者定制个性化训练方案，大幅提高太极拳训练的效率和专业性。数字化技术为太极拳传播带来了创新突破。首先，数字化技术助力太极拳传播模式革新。基于互联网思维，突破传统传播局限，通过创设青少年喜爱的太极拳虚拟人物 IP，以生动的形象激发年轻群体的参与兴趣；同时，挖掘太极拳经典故事并融入现代创作，让传统武术文化以贴合青少年接受习惯的方式呈现，增强传播吸引力。其次，数字化技术构建了多维传播载体。搭建以太拳为核心的网络交流平台，实现武术精神的线上传播；通过创新格斗场景，打通虚拟与现实的界限，为习练者提供沉浸式体验，进一步拓宽传播渠道。这些创新举措不仅为太极拳现代传承注入了新动力，也推动着数字化传播模式的可持续发展。

研究结论：数字化发展为太极拳传承与创新提供了重要机遇。首先，数字化推动太极拳成果高效转化。通过探索创新技术应用，将太极拳以数字形态留存，契合当代发展需求，提升数字化科技含量。其次，数字化技术为太极拳注入发展活力。动作捕捉技术立体呈现太极拳的动作与场景，结合 AI 和大数据分析，实现训练的精准化、智能化。系统通过采集数据，为习练者定制个性化训练方案，有效提升训练质量，助力专业人才培养，增强太极拳在竞技领域的竞争力。再者，文化融合助力太极拳拓宽传播路径。将太极拳传统元素与现代数字文化结合，打造特色人物 IP，以数字产品吸引青少年群体。同时，依托物联网、5G 技术搭建网络社区，打破地域壁垒，促进全球范围内的交流互动，扩大太极拳文化的传播范围和影响力。最后，协同创新构建太极拳数字化生态。组建专业研究团队，深入分析市场需求与技术趋势，明确发展方向；搭建多方合作平台，整合高校、企业等资源，共同开发数字化产品，如教学软件、智能设备等，推动太极拳数字化的可持续发展。

关键词：数字化创新；创新驱动；太极拳套路；传承与发展

Research on the Inheritance and Evolution of Tai Chi Routines Propelled by Digital Innovation: Mechanisms, Practices, and Prospects

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Abstract: Digital innovation has been elevated to a national strategic priority, accompanied by the rapid advancement of digital technologies in areas such as imaging, virtual reality, and data transmission. This technological progress enables the visualization of virtual objects and scenarios within Tai Chi practice. The Chinese government has issued multiple policies emphasizing digital development in sports. For instance, the National Fitness Implementation Plan (2021–2025) and the Olympic 2020+5 Agenda outline the trajectory of sports digitalization; the Outline for Building a Powerful Sports Nation (2019) advocates for the preservation and promotion of traditional sports while supporting the R&D of intelligent sports equipment; and the Wushu Industry Development Plan (2019–2025) proposes the integration of the Internet with wushu and the construction of digital service platforms through emerging technologies. In the contemporary context, the informatization and digital transformation of sports represent both a response to societal demands and a prerequisite for the high - quality development of the sports industry. Consequently, the future development of Tai Chi is intricately linked to the continuous promotion and expansion of digitalization. **Purpose:** Tai Chi routines, distilled from the combat experiences of successive generations of practitioners, constitute a movement system imbued with Chinese philosophical concepts and cultural attributes. By abstracting from specific combat scenarios and hypothetical adversaries while preserving movement sequences and trajectories, Tai Chi not only showcases martial techniques and Chinese combat philosophies but also disseminates traditional Chinese philosophical and ethical values. Nevertheless, the abstraction of combat elements poses challenges for learners. The lack of tangible references makes it arduous to comprehend the martial implications of movements and align with the creators' envisioned combat scenarios, leading to a tedious learning experience. This, in turn, diminishes learners' enthusiasm and engagement, thereby impeding the inheritance and development of Tai Chi. Consequently, materializing hypothetical opponents, visualizing combat situations, and reconstructing martial processes have emerged as critical factors in the preservation and dissemination of Tai Chi. **Research Methods:** This study employs five methodologies—literature review, questionnaire survey, field investigation, case analysis, and logical analysis—to achieve its research objectives. Firstly, the literature review method is utilized to systematically gather materials related to martial arts routines and their digitalization achievements. Through an in-depth analysis of relevant policies and regulations, key research points are identified, thereby establishing a robust theoretical framework for subsequent research. Secondly, the questionnaire survey method involves designing questionnaires tailored to different populations. By

collecting and statistically analyzing responses, this method aims to elucidate various groups' perceptions and behavioral patterns regarding the digitalization of martial arts routines, which helps in accurately positioning digital products and services. Thirdly, the field investigation method comprises on-site interviews with martial arts institutions, practitioners, technology enterprises, and research institutions. These interactions enable the study to comprehensively understand the current development status of martial arts routines, identify technical bottlenecks, and uncover critical influencing factors. Fourthly, the case analysis method entails a wide-ranging collection of domestic and foreign cases. By summarizing the experiences and issues encountered in these cases, targeted improvement recommendations are proposed. Finally, through logical analysis, existing literature is examined from the perspective of martial arts routine inheritance and development. This process explores the dynamic integration between martial arts routines and digital innovation, ultimately leading to the formulation of strategies for digital innovation-driven inheritance and development of martial arts routines.

Research Results: Digital technology exerts a profound impact on the inheritance, development, and dissemination of Tai Chi. Inheritance Facilitation: Firstly, motion capture technology serves as a pivotal tool for preserving Tai Chi's core elements. It meticulously records the movement sequences and trajectories of Tai Chi routines, ensuring the complete preservation of combat techniques and traditional Chinese martial arts philosophies. By accurately replicating Tai Chi's combat dynamics, this technology mitigates the risk of movement distortion or loss that often occurs in traditional transmission methods, which rely heavily on human instruction. Secondly, big data and cloud computing technologies have revolutionized Tai Chi's recording and inheritance mechanisms. These technologies not only transcend the constraints of traditional oral and practical teaching methods but also enable in-depth data-driven analysis of Tai Chi's theoretical foundations. Through this analysis, practitioners gain a more profound understanding of Tai Chi's cultural heritage. Additionally, digital platforms offer immersive cultural experiences, enhancing the attractiveness and engagement of Tai Chi inheritance.

Development Promotion: Virtual reality (VR) technology provides an effective means of visualizing Tai Chi combat scenarios. VR systems present a comprehensive, three-dimensional portrayal of Tai Chi combat, transforming abstract hypothetical opponents into tangible entities. This visualization allows practitioners to intuitively grasp offensive and defensive strategies, thereby deepening their comprehension of Tai Chi's martial principles. Tai Chi somatosensory equipment significantly elevates the training experience. By instantly capturing practitioners' movements, accurately predicting combat intentions, and providing prompt feedback, this equipment animates static combat scenarios, offering a realistic training environment that stimulates practitioners' motivation. AI-driven intelligent systems underpin scientific Tai Chi training. Integrated body posture acquisition, training assistance, and dynamic feedback systems continuously monitor training data, analyze movement patterns, and generate personalized training programs. This approach substantially improves the efficiency and professionalism of Tai Chi training.

Dissemination Innovation: Digital technology has revitalized Tai Chi's dissemination models. Drawing on internet-based strategies, it introduces appealing Tai Chi virtual IP characters, captivating young audiences through vivid digital representations. Simultaneously, it

repackages traditional Tai Chi stories into modern formats, aligning with contemporary youth culture and enhancing the dissemination. **Research Conclusions:** Digitalization has presented significant opportunities for the inheritance and innovation of Tai Chi routines.

1. Efficient Transformation of Tai Chi Achievements: Digital technologies enable the systematic preservation of Tai Chi in digital formats through innovative technical applications, aligning with contemporary development needs and enhancing the technological sophistication of digitization. For instance, 3D modeling and motion capture ensure precise recording of traditional routines, facilitating academic research and modern adaptation.
2. Technological Vitalization of Training Systems: Motion capture technology, integrated with AI and big data analytics, enables three-dimensional visualization of Tai Chi movements and combat scenarios. This integration supports intelligent training by generating personalized programs based on real-time data collection, improving training efficiency, fostering professional talent development, and enhancing Tai Chi's competitiveness in athletic contexts.
3. Cultural Integration for Expanded Outreach: The fusion of traditional Tai Chi elements with modern digital culture—such as creating virtual IP characters and interactive digital products—effectively engages youth audiences. Meanwhile, IoT and 5G-powered online communities dismantle geographical barriers, enabling global cultural exchanges and amplifying Tai Chi's international influence.
4. Collaborative Ecosystem Construction: Cross-disciplinary research teams analyze market demands and technological trends to guide strategic development, while collaborative platforms integrating academic and industrial resources drive the creation of digital tools (e.g., intelligent training software, wearable devices), ensuring the sustainable advancement of Tai Chi digitization.

Keywords: Digital Innovation; Innovation-driven; Tai Chi Routines; Inheritance and Development