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Analysis of the Path for Introducing Orienteering into Junior High School Physical Education under the New Curriculum Standard

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Abstract: *Orienteering, with its educational value that combines intellectual and physical challenges, has been included in the emerging sports section of the "Compulsory Education Physical Education and Health Curriculum Standards 2022 Edition". It can address the issues of monotonous content and rigid forms in traditional physical education teaching models and become a key carrier for driving the reform of physical education teaching. This article first introduces orienteering, then analyzes its current development status and existing problems, and proposes four practical approaches: designing a reasonable curriculum system, implementing professional teacher training, developing and utilizing curriculum resources, and establishing a teaching evaluation mechanism. The aim is to promote the popularization and promotion of orienteering in junior high school physical education teaching under the new curriculum standards and provide an effective means for the comprehensive development of students' core literacy.*

Keywords: *Orienteering, Compulsory Education Physical Education and Health Curriculum Standards, Junior High School Physical Education Teaching, Core Literacy, Practical Path*

1. Introduction

After the official promulgation of the Compulsory Education Physical Education and Health Curriculum Standards, new concepts and directions were introduced to physical education. Against this backdrop, orienteering—an emerging sport combining fun and competitiveness—has been incorporated into the physical education curriculum due to its unique educational value. It has become a key force in driving the reform of physical education, fully demonstrating its role in promoting students' holistic development.

The new curriculum standards emphasize the guiding principle of "health first" and set higher requirements for the comprehensiveness, practicality, and innovation of physical education and health courses. However, in middle school physical education practice, the drawbacks of traditional teaching models, such as monotonous content and outdated methods, have gradually emerged, failing to meet students' needs for comprehensive development.

Orienteering can address the shortcomings of traditional teaching. It integrates intelligence and physicality, requiring students not only to have good physical fitness but also to use their wits to analyze maps and plan routes. This characteristic aligns well with the philosophy advocated by the new curriculum standards. Introducing orienteering into middle school physical education can effectively enhance students' physical and mental well-being, stimulate their interest in sports, and bring new vitality to the classroom.

2. Overview of Orienteering

2.1 Definition of Orienteering

Orienteering traces its origins to late 19th-century Sweden, where it began as a military training program aimed at enhancing soldiers' navigation and survival skills in wilderness environments. Over time, the sport evolved into a public recreational activity, transforming into an outdoor competitive

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discipline that integrates both intellectual and physical challenges. It has since gained global popularity, becoming a key component of modern leisure sports[1].

Participants navigate complex terrains using tools such as maps and compasses to locate designated control points in sequence. Victory is determined by the shortest completion time. This demands not only exceptional physical endurance but also cognitive abilities including spatial interpretation, route planning, and situational assessment. Athletes must rapidly decode map information, strategize optimal paths, and adapt to terrain variations—showcasing the sport's unique "mind-body synergy" and its holistic educational value.

2.2 Classification of Orienteering

Orienteering can be classified into various types based on competition formats and venue characteristics. The 100-meter orienteering is usually held in small areas such as campuses and playgrounds, with a distance of approximately 100 to 150 meters. It requires participants to find multiple checkpoints within a very short time. It is a very suitable project for beginners' training and promotion in schools. The competition range of short-distance orienteering is 1 to 3 kilometers, mostly held in natural environments such as suburban forests and parks. Participants need to comprehensively consider terrain and path factors to formulate corresponding strategies and find a balance between physical strength and route planning. Medium and long-distance orienteering expands the competition range to complex terrain areas such as forests and mountains, with a race distance of 5 to 12 kilometers. This places higher demands on participants' physical strength, navigation experience, and psychological resilience, making it a core event to test the comprehensive skills of participants. In team events, relay orienteering requires team members to complete the race sections in sequence and hand over the map. It emphasizes both individual competition and team coordination. In team races, all members need to jointly study the map, plan the route, and the overall team performance is used as the evaluation criterion. This is conducive to promoting communication and collaboration among team members and cultivating a sense of collectivism.

2.3 Characteristics of Orienteering

2.3.1 Universal Appeal

Orienteering exhibits exceptional universal appeal. Regardless of age, gender, or fitness level, participants choose routes matching their own pace and capability. Shi Jiandong's research confirms the sport imposes no restrictions on age, gender, or physical conditioning—children, adolescents, adults, novices, and professional athletes alike tailor challenges to their individual capacities[2]. Mass participation has established orienteering as a pivotal platform for advancing nationwide fitness initiatives.

2.3.2 Cognitive-Physical Integration

As a comprehensive athletic discipline, orienteering demands dual competencies in both physical and cognitive domains. According to Yang Bingyan's research findings, participants must possess:

Robust physical endurance to withstand high-intensity exertion,

Advanced cognitive skills including map interpretation, directional judgment, and route planning to dynamically respond to contingencies during navigation. It is precisely this synergistic challenge of intellect and physique that manifests orienteering's unique appeal[3].

2.3.3 Multi-Terrain Adaptability

Orienteering distinguishes itself through extraordinary venue flexibility, utilizing both natural landscapes (forests/mountains) and urban environments (parks/streets) as competitive arenas. This terrain diversity not only creates stimulating and challenging experiences that enhance participants' sensory engagement but also significantly develops acute environmental adaptability and rapid response capabilities.

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3. Educational Significance of Orienteering in Junior High School Physical Education

3.1 Interdisciplinary Knowledge Integration

Orienteering is a comprehensive sport that integrates knowledge from multiple disciplines, providing middle school students with a cross-disciplinary learning platform.

During participation, students utilize maps and compasses to locate positions and plan routes. By analyzing terrain features on maps, they enhance map-reading skills and spatial awareness. This practical process helps students concretely understand geographical concepts like contour lines and scale bars, transforming textbook knowledge into applied competencies.

Mathematical applications permeate the entire activity:

Calculating real-world distances using map scales

Determining azimuths via trigonometric functions

Optimizing routes by comparing distance and terrain difficulty data

These tasks strengthen students' ability to apply mathematical knowledge to real-world problem-solving and decision-making[1].

As a competitive sport, orienteering demands both physical and technical proficiency:

Sustained running/climbing improves cardiopulmonary function and muscular endurance

Navigating complex terrains enhances coordination and reaction speed

Precise checkpoint location fosters sportsmanship and strategic thinking

This multidimensional engagement systematically advances students' core physical literacy while bridging academic and practical learning[4].

3.2 Cultivating Core Competencies

Orienteering implementation in middle school physical education significantly enhances students' athletic abilities, health behaviors, and sports ethics.

3.2.1 Athletic Ability Development

Students master map analysis, direction discernment, and route planning skills, synergized with sustained physical training, fostering coordinated growth of spatial cognition and physical fitness[4].

3.2.2 Health Behavior Formation

Complex terrains cultivate self-protection awareness and proactive injury prevention knowledge.

The activity’s inherent fun and challenges stimulate intrinsic motivation, promoting habitual exercise and structured fitness routines.

3.2.3 Sports Ethics Enhancement

Team-based competitions nurture collaboration spirit and collective honor through role division.

Navigating unexpected obstacles builds resilience and decision-making capabilities.

Fair competition and rule adherence gradually solidify sportsmanship.

4. Current Status of Orienteering Implementation in China's Primary and Secondary School Physical Education and Health Curriculum

In economically developed regions of China, secondary school orienteering has achieved significant development with mature teaching and competition systems. The Pearl River Delta (PRD) in eastern China serves as a prime example. Building on prior research, this paper highlights representative cases:

Scholar Sun Di found that over 30 middle schools in Shenzhen offer orienteering programs, of which 14 schools have won repeated awards in municipal, provincial, and national competitions, demonstrating leading competitiveness and popularity nationwide[5].

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Li Yuting's study on Dadun Junior High School in Foshan's Shunde District noted that the school established an orienteering team in 2009. From 2011 to 2019, its competition participation increased steadily, with results consistently ranking among the top in provincial and municipal events[6].

Huang Junyu reported that Haizhu District, Guangzhou, has hosted three district-level orienteering championships, cultivating 3 municipally-recognized specialty schools. These schools leverage professional teachers and adequate equipment to offer orienteering as a featured elective, developing targeted teaching models[7].

Supported by policies and resource advantages, these regions have established an integrated development framework: "Curriculum Instruction—Training Competitions—Specialty Advancement" [8][9].

The development of orienteering in Chinese secondary schools exhibits significant regional disparities. While some areas lead in progress, nationwide promotion faces multiple challenges:

Chen Bing's study notes that despite Fujian's coastal location and proximity to Guangdong, limited course offerings exist due to late initiation and insufficient promotion of orienteering in the province[10].

In Haining (eastern coastal region), robust theoretical instruction contrasts with insufficient practical sessions. Despite abundant venue resources, low utilization rates and reliance on equipment rentals hinder effective implementation[11].

Bao Xiangcun identifies low awareness as a barrier in Lanzhou: students lack pre-course understanding of orienteering, and specialized teacher training remains absent[12].

Chen Juan observes that while Chengdu (central region) established orienteering interest classes, inadequate facilities and faculty expertise have rendered the initiative superficial[13].

In summary, numerous schools and physical education (PE) teachers inadequately recognize the educational value of orienteering, persisting with traditional teaching models that lack innovative course design. From a faculty perspective:

Most instructors lack professional background in orienteering, relying only on short-term training or self-study, resulting in deficits in systematic knowledge and practical experience.

Schools show insufficient investment in recruiting or cultivating specialized orienteering teachers[4].

Regarding equipment and activities:

Critical tools like compasses and electronic punch devices face funding constraints, forcing simplification of practical content and compromising student learning experiences.

The competition system remains underdeveloped, with few national/provincial events and low-quality school-level activities, limiting students' competitive exposure[7].

Safety management poses significant challenges:

Incomplete emergency protocols and inadequate risk assessments for venues are widespread.

Absence of safety education heightens concerns over outdoor risks, leading schools to adopt overly cautious approaches[14].

These interconnected issues collectively hinder the growth of school orienteering. To advance this sport, integrated efforts are required—including policy support, increased resource allocation, and strengthened teacher training.

5. Practical Approaches to Introducing Orienteering in Junior High School Physical Education Teaching

Research on the implementation of orienteering in Chinese secondary school physical and health education reveals significant developmental challenges: shortage of qualified teachers, limited resources, unscientific curriculum design, and insufficient competitive opportunities, all hindering its broader adoption in physical education. Considering orienteering's educational value and its alignment with the core competency cultivation goals in junior high education, four strategic pathways are proposed:

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5.1 Curriculum Design and Planning

When designing orienteering courses for junior high schools, align them with students' cognitive characteristics and motor skill development patterns. Integrate teaching objectives with the unique features of orienteering to emphasize the enhancement of core physical education literacy. Course content must include:

Fundamental orienteering knowledge, such as map reading and compass usage.

Physical fitness training and sport-specific skill drills to build practical competencies[14].

Additionally, connect orienteering with cross-disciplinary knowledge, including:

Mathematics: Directional judgment, coordinate calculation, and distance measurement.

Geography: Topographical features and cartographic principles.

This fosters integrated learning practices. Employ diverse teaching methodologies to motivate students, such as game-based approaches that combine play with skill acquisition—achieving edutainment goals while mastering orienteering techniques.

5.2 Professional Teacher Training and Team Development

To address instructors' knowledge gaps, schools should organize periodic professional training in orienteering, inviting experts and certified instructors to deliver systematic instruction covering both theoretical knowledge and practical skills[15][16]. Through sustained training and team-building initiatives, teachers will enhance curriculum design capabilities and master scientific teaching methodologies, ensuring orienteering courses are implemented systematically and efficiently. This approach establishes a solid foundation for teaching quality.

5.3 Rational Development and Utilization of Curriculum Resources

From the perspective of venue resource utilization, leverage existing campus spatial assets:

On-campus: Design orienteering routes around playgrounds, green areas, and teaching building complexes to fulfill daily instructional needs.

Off-campus: Collaborate with nearby parks, scenic spots, and research bases to establish outdoor practice sites, thereby expanding students' practical space.

For professional equipment essential to orienteering—such as compasses, punch devices, and bib numbers—teachers can guide students in creating simple alternatives. This approach not only reduces costs but also enhances students' understanding of orienteering principles and boosts their engagement in practical activities[15][16].

5.4 Establishing a Scientific Evaluation System

A scientific evaluation system comprehensively captures students' learning outcomes, requiring the integration of formative and summative assessments. It must assess both students' mastery of orienteering skills (such as the accuracy of map reading and the appropriateness of route planning) and their course participation levels, including teamwork competencies. Through multiple channels—self-assessment, peer assessment, and teacher assessment—this system provides a holistic and objective reflection of learning achievements. The diverse evaluation results offer valuable references for teachers to refine teaching strategies and aid students in self-improvement. Incorporating these results into students' physical education scores further motivates engagement in orienteering courses[16].

6. Conclusion

Orienteering, as an emerging sport combining recreational appeal and competitive elements, demonstrates multifaceted educational value when integrated into junior high school physical education. Under the guiding principle of fostering virtue through education, implementing practical pathways—including curriculum design, teacher training, resource development, and diversified assessment—can address developmental challenges in orienteering instruction. This integration serves as a key approach to fulfilling the pedagogical mandate of "acquire, practice, and compete". It provides an effective

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pathway for cultivating students' core competencies and promotes balanced development in: Motor competence enhancement, Health-enhancing behaviors and Sportsmanship cultivation.

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