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Guidelines for Promoting Traditional Sports Diabolo in Schools

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Abstract

Background and Aim: Diabolo, as a national intangible cultural heritage of China, carries profound historical accumulation and cultural connotation, and has significant value in physical fitness, cultural inheritance, and aesthetic education. Against the background of the national "Double Reduction" policy and the construction of a sports power, traditional sports are strongly encouraged to be integrated into school physical education systems. However, in the actual promotion process of diabolo in primary and secondary schools, there are prominent contradictions such as the disconnection between macro policies and micro implementation, shortage of professional teachers, insufficient teaching resources, fragmented cultural inheritance, and lack of standardized safety management mechanisms. This research had two objectives: (1) to survey the current situation and problems regarding the promotion of the traditional sport of diabolo in schools, and (2) to develop and validate guidelines for promoting the traditional sport of diabolo in schools.

Methodology: This research employed a mixed-method research design, integrating both quantitative and qualitative approaches. The research process consisted of four phases. In Phase 1, semi-structured interviews were conducted with 6 experts in diabolo inheritance and school physical education to survey the current situation and core problems. In Phase 2, a structured questionnaire of 25 items based on the POLC framework was developed, and content validity was verified using the Index of Item-Objective Congruence (IOC) by a panel of 3 experts; all items met the criterion of IOC ≥ 0.67. In Phase 3, the questionnaire was administered to 717 respondents comprising 3 school administrators, 35 physical education teachers, and 679 student parents selected through stratified sampling from three primary and secondary schools in Daxing District, Beijing, using a 5-point Likert scale (1 = Completely Disagree, 5 = Completely Agree); descriptive statistics (mean and standard deviation) were calculated using SPSS 26.0. In Phase 4, the first draft of the guidelines was developed based on data analysis results, then revised and validated through a focus group discussion with 9 experts, and finalized through expert consensus. Content analysis was applied to all qualitative data from interviews and the focus group.

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Results: Regarding Objective 1, five core problems were identified: (1) a severe shortage of qualified diabolo teachers; (2) a policy-practice gap between national policy directives and school-level implementation; (3) insufficient resources, including teaching materials, dedicated venues, and equipment; (4) fragmented cultural inheritance that prioritizes skill instruction over systematic cultural education; and (5) safety risks arising from the absence of standardized safety protocols. These problems were reflected in the Organizing dimension, recording the lowest mean score among all four dimensions (M = 3.99, SD = 0.84). Regarding Objective 2, based on the POLC framework, all four dimensions achieved mean scores above 3.99, indicating an overall positive stakeholder attitude toward diabolo promotion. The Planning dimension recorded the highest mean (M = 4.17, SD = 0.75), followed by the Controlling dimension (M = 4.09, SD = 0.79), the Leading dimension (M = 4.03, SD = 0.82), and the Organizing dimension (M = 3.99, SD = 0.84). The finalized guidelines consist of 4 dimensions and 28 items under the POLC framework: 6 planning guidelines, 8 organizing guidelines, 7 leading guidelines, and 7 controlling guidelines. All expert groups unanimously confirmed that the guidelines are comprehensive, scientifically rigorous, and highly practical, effectively resolving the five core problems, including the policy-practice gap, teacher shortages, insufficient resources, fragmented cultural inheritance, and safety risks.

Conclusion: The guidelines for promoting diabolo in schools constructed based on the POLC management framework have high scientific rigor and practicality, which can effectively solve the realistic dilemmas in the process of policy implementation, resource allocation, team building, cultural inheritance, and safety management. This research innovatively applies the management framework to the field of traditional sports campus inheritance, enriches the research perspective of school physical education and intangible cultural heritage protection, and provides a stable reference path for the standardized, institutionalized, and sustainable development of diabolo and other traditional sports in primary and secondary schools.

Keywords: Diabolo; Traditional Sport; School Promotion; POLC Framework; Intangible Cultural Heritage; Physical Education; School Sports; Cultural Inheritance

Introduction

Diabolo, known in Chinese as Kongzhu, is a traditional sports activity with a history of over a thousand years and is officially listed as a national intangible cultural heritage of China. As an important component of China's excellent traditional culture, the inheritance and development of diabolo are of great significance for cultural preservation and the construction of a sports-oriented nation. The promotion process of diabolo into schools can be regarded as a microcosm of the contemporary development of traditional sports in China.

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The revival and development of traditional sports are inseparable from the policy support system built at the national level, comprising laws and regulations, special policies, and supporting measures that provide institutional guarantees for their promotion.

At the legislative level, the revised Sports Law of the People's Republic of China clearly stipulates that "the state encourages and supports the discovery, sorting, protection, promotion and innovation of outstanding national, folk and traditional sports," establishing the legal status and protection principles of traditional sports. The "Outline for the Construction of a Sports Power" (General Office of the State Council of the People's Republic of China, 2019) issued by the General Office of the State Council called for strengthening the protection, promotion, and innovation of traditional sports, and actively promoting intangible cultural heritage sports into campuses. The *Opinions on Comprehensively Strengthening and Improving School Physical Education in the New Era* (2020; General Office of the CPC Central Committee, & General Office of the State Council of the People's Republic of China. 2020) advocated the integration of traditional sports into school curricula according to local conditions and encouraged the establishment of a distinctive “one school, one sport (or one product)” model. This policy provides important support for the promotion and inheritance of traditional sports such as diabolo within school settings.

The "Double Reduction" policy (Ministry of Education of the People’s Republic of China, 2024), which reduced students' academic burden and off-campus training loads, provided a historic opportunity for traditional sports to enter campuses at scale by creating time and space for a variety of physical activities during after-school hours. Special support policies such as the "Guiding Opinions on Further Strengthening the Work of Traditional Sports of Ethnic Minorities" also provide more targeted support measures for specific categories of traditional sports.

At the local implementation level, governments across China have actively responded to these central policies. For example, the Baoding Sports Bureau has held nine consecutive "China Baoding Diabolo Art Festival" events since 2008. Since 2017, Beijing has regularly organized city-wide primary and secondary school diabolo competitions, which by 2024 had been successfully held for seven sessions and expanded into a regional event covering Beijing, Tianjin, and Hebei. These local practices form a multi-level promotion network from the central to the local government.

International Policy Framework

At the international level, UNESCO's Convention for the Safeguarding of the Intangible Cultural Heritage (2003) explicitly includes traditional sports within the scope of intangible cultural heritage protection. The International Charter of Physical Education, Physical Activity, and Sport (2015 revised version), Article 1.5, states that "traditional and indigenous games, dances, and sports, including their modern and emerging forms, express the richness of the world's cultural

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heritage and must be protected and promoted." UNESCO has further promoted a global inventory of traditional games and sports, established the "Friends of Traditional Sports Group," and organized international platforms such as the World Nomad Games. In 2024, the UNESCO General Assembly adopted "International Tai Chi Day" (March 21), making Tai Chi the first Chinese martial arts event to have a United Nations International Day, a breakthrough demonstrating the international recognition of Chinese traditional sports.

Despite strong policy support at both national and international levels, there remains a significant gap between policy advocacy and effective school-level implementation (Zhao Chengpeng, 2017).

Current Promotion Practices and Core Problems

China has implemented various approaches to promote diabolo in schools:

Curriculum Integration and Teaching Innovation: A number of schools have successfully integrated diabolo into physical education curricula. Tianjiabing Primary School in Qufu City introduced the diabolo project in 2015 and achieved a school-wide participation model covering over 2,100 students through a "pilot class to school-wide promotion" approach. Interdisciplinary integration combining diabolo history with Chinese language, mathematics, art, and music has been used to enrich students' cultural understanding beyond skill instruction.

Teaching Team Construction: Schools have explored "expert-led plus backbone-driven" teacher training models, including hiring intangible cultural heritage inheritors and certified social sports instructors, and organizing specialized training seminars. Baoding City's "Empty Bamboo Teacher Intensive Training Course" and inter-school skill exchange activities have improved teacher professional levels.

Extracurricular Activity System: Schools, such as a primary school in Tianjin, have established diabolo as a mandatory daily activity, holding annual Diabolo Festivals that incorporate performances, competitions, and skill assessments to create a strong campus diabolo culture.

However, despite these positive practices, the promotion of diabolo in schools faces five core problems:

(1) Fragmented Inheritance and Lack of Systematic Integration: Diabolo promotion in schools relies mainly on individual teachers' enthusiasm or short-term projects, lacking systematic curriculum integration, stable resource support, and institutional guarantees. This results in fragmented and temporary inheritance characteristics that make sustainable development difficult (Lu, 2014).

(2) Shortage of Professional Teachers: There is a serious shortage of qualified teachers who both proficiently master diabolo techniques and are familiar with modern pedagogical methods.

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Most physical education teachers have not received systematic training in traditional sports programs (Wang Tengfei, 2017).

(3) Insufficient Resources and Awareness: Schools generally lack professional equipment and dedicated teaching spaces. Students, parents, and some education administrators have insufficient awareness of the cultural value of diabolo, which is sometimes regarded as an "outdated game" rather than a valuable sports culture program.

(4) Insufficient Appeal to Modern Youth: Traditional teaching methods can be monotonous and fail to attract modern teenagers who are also influenced by video games and popular sports, resulting in low student participation and weak willingness to actively inherit (Jiang, 2013).

(5) Weak Cultural Integration: Cultural dissemination largely remains at the level of rhetoric without deep integration into the moral education system of schools. Without an effective, systematic, and innovative campus integration model, this precious traditional sport may lose vitality among the younger generation, potentially resulting in the loss of cultural memory and a decline in educational diversity (General Office of the CPC Central Committee & General Office of the State Council, 2020).

In light of these challenges, this study seeks to develop a set of scientifically rigorous, practically operable, and institutionally sustainable guidelines for promoting diabolo in primary and secondary schools based on the POLC management framework.

This study adopts the classical POLC management framework, including Planning, Organizing, Leading, and Controlling. The four dimensions correspond precisely to the five core problems of diabolo promotion in schools. The Planning dimension addresses the gap between macro policies and school implementation; the Organizing dimension solves the shortage of professional teachers and insufficient teaching resources; the Leading dimension strengthens campus atmosphere and home-school-community cooperation; the Controlling dimension standardizes safety management and teaching evaluation. Therefore, the POLC framework is highly appropriate and logical for constructing systematic promotion guidelines for diabolo in schools.

Research Objectives

1. To survey the current situation and problems in promoting the traditional sport of diabolo in schools.

2. To develop and validate guidelines for promoting the traditional sport of diabolo in schools.

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Research Questions

1. What is the current situation and problems with the promotion of the traditional sport of diabolo in schools?

2. What should be the guidelines for promoting the traditional sport of diabolo in schools?

Literature Review

1. Overview of Diabolo

1.1 Origin and Historical Evolution of Diabolo

Diabolo is a traditional Chinese folk sports equipment made of bamboo, wood, plastic, and other materials, which is operated by double sticks and ropes to complete rotation, throwing, winding, and other movements. According to historical records, the prototype of diabolo can be traced back to the “nong dou” acrobatics in the Song Dynasty. After continuous evolution in the Ming and Qing Dynasties, it gradually formed the modern diabolo movement. In the late Qing Dynasty, diabolo was widely popular among the folk, becoming a common entertainment activity in festivals and temple fairs. After the founding of the People's Republic of China, diabolo was once used as a mass fitness project. With attention to intangible cultural heritage protection, diabolo has been re-recognized for its cultural value and sports value, and has become an important representative of Chinese traditional sports.

1.2 Sports Value and Educational Value of Diabolo

A large number of studies have confirmed the positive value of diabolo for physical and mental health. Research by Han (2022) shows that 12 weeks of systematic diabolo exercise can significantly improve the strength, speed, endurance, and coordination of primary school students; Yang Huadong (2013) pointed out that diabolo practice requires long-term attention to the movement state, which can effectively improve students' attention stability and allocation ability. In terms of educational value, diabolo integrates history, art, mechanics, and other knowledge, which is conducive to cultivating students' interdisciplinary thinking and hands-on ability; as an intangible cultural heritage project, it can enhance students' sense of cultural identity and national self-confidence, and realize the educational goal of “morality cultivation through sports”.

2. Research on Traditional Sports Entering Campuses

2.1 Policy Support and Practical Status

National policies have built a good institutional environment for traditional sports entering campuses. The Sports Law, Outline for the Construction of a Sports Power, Double Reduction policy, and other documents all clearly support the integration of traditional sports into school education. In practice, many regions have carried out exploration, such as Wushu, shuttlecock kicking, diabolo, and other projects entering physical education classes and after-

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school services. However, studies by Wang Tengfei (2017) and Lu (2014) show that most schools still face problems such as insufficient attention, unstable teachers, lack of materials, and unsustainable development.

2.2 Existing Problems and Research Gaps

Existing studies have summarized the common problems in the promotion of traditional sports: shortage of professional teachers, disconnection between policies and practice, insufficient resources, single teaching methods, weak cultural integration, and imperfect safety management. However, most studies stay at the level of problem description and experience summary, lacking a systematic management framework to cover the whole process of planning, organizing, leading, and controlling, which is the main research gap this study intends to fill.

3. POLC Management Framework and Its Application in Education

3.1 Connotation of POLC Framework

The POLC framework is a classical management model proposed by Robbins and Coulter, including four interrelated functions: Planning (formulating goals and strategies), Organizing (allocating resources and clarifying responsibilities), Leading (motivating stakeholders and coordinating cooperation), and Controlling (monitoring effects and adjusting strategies). This framework has the characteristics of clear logic, comprehensive coverage, and strong operability, and is suitable for the whole-process management of educational projects.

3.2 Application in School Sports Management

At present, the POLC framework has been applied in school sports meeting organization, after-school sports services, and other fields, but it is rarely used in the research of traditional sports campus promotion. This study takes the lead in applying this framework to diabolo entering campuses, which can realize the transformation from experience-based promotion to standardized management and improve the sustainability and effectiveness of the project.

Different from previous studies that only applied the POLC framework to routine school sports management, this research innovatively applies POLC to the inheritance of intangible cultural heritage traditional sports. It constructs a complete set of school-based guidelines verified by expert interviews, questionnaire surveys, and focus group discussions. This fills the research gap of lacking whole-process standardized management in diabolo campus promotion and provides a new research model for similar traditional sports inheritance.

4. Research Summary

Through combing the literature, it is found that diabolo has clear sports and educational values and has a good policy environment for entering campuses, but there are realistic dilemmas such as an insufficient system, resource shortage, and unsustainable operation. Existing studies lack a systematic management framework, so this study takes the POLC framework as the

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theoretical basis, carries out empirical research, develops promotion guidelines, and has important theoretical innovation and practical value.

Conceptual Framework

The conceptual framework of this study is constructed based on the POLC management framework and guided by national policies on intangible cultural heritage promotion and school physical education reform. The research follows an Input–Process–Output model as illustrated in Table 1.

Table 1 Conceptual Framework of the Study

INPUT	PROCESS	OUTPUT
1. Origin and Historical Evolution of Diabolo 2. Traditional Sports Entering Campuses 3. POLC Framework • Planning • Organizing • Leading • Controlling	- Expert Interviews - Questionnaire Survey - Draft the Guidelines - Focus group discussion	Guidelines for Promoting the Traditional Sport of Diabolo in Schools (4 Dimensions, 28 Items) Based on the POLC Framework

Methodology

Population Specification and Size

This study included a total of 723 participants. Among them, 6 participants served as interviewees, while the remaining 717 participated in questionnaire data collection. These included: 1 vice principal in charge of physical education and 15 PE teachers, along with 313 student parents from Daxing District No. 3 Middle School in Beijing; 1 vice principal in charge of physical education and 14 PE teachers, along with 191 student parents from Weishanzhuang Middle School in Daxing District, Beijing; and 1 vice principal in charge of physical education and 6 PE teachers, along with 175 student parents from Changziying No. 2 Central Primary School in Daxing District, Beijing.

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Table 2 Distribution of Questionnaire Respondents

School	Vice Principals	PE Teachers	Student Parents	Total
Daxing District No. 3 Middle School	1	15	313	329
Weishanzhuang Middle School	1	14	191	206
Changziying No. 2 Central Primary School	1	6	175	182
Total	3	35	679	717

Stratified sampling was adopted according to school type, administrative staff, teachers, and parent groups. Parents were selected randomly from all grade levels to ensure sample diversity. The 9 experts in the focus group were independent additional participants, not included in the initial 723 participants, so the total number of all research participants was 732. All six interview experts had at least five years of practical experience in diabetes inheritance, school physical education management, frontline teaching, and association work, with professional and representative backgrounds.

Research Instruments

1. Outline of Expert Interviews

Based on the results of the literature analysis, a semi-structured expert interview outline was designed as a core tool for obtaining qualitative data.

2. POLC Questionnaire

Based on expert interviews, this study developed a structured POLC questionnaire to serve as a tool for large-scale empirical testing and feasibility assessment.

3. Focus Group Discussion Method

A total of 9 experts were invited to the focus group and selected through balanced sampling across three types of participants, all with no less than 5 years of practical experience in the relevant fields. The

The research instruments included a semi-structured interview outline, a 25-item POLC questionnaire, and a focus group discussion protocol. The questionnaire adopted a 5-point Likert scale from 1 (Completely Disagree) to 5 (Completely Agree). All items with IOC ≥ 0.67 were

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retained after expert evaluation. Each tool was matched with the corresponding research phase to ensure methodological standardization and reproducibility.

Data Collection

All expert interviews and focus group discussions were conducted offline with formal permission and audio recording. Questionnaires were distributed through online platforms with unified instructions for completion. The whole data collection period was from February 2025 to April 2026. All recovered questionnaires were strictly checked, with a 100% valid recovery rate.

Results

1. Expert Background and Interview Design

To survey the current situation and problems regarding the promotion of diabolo in schools, and to develop guidelines accordingly, this study invited six experts to participate in semi-structured in-depth interviews. All experts had experience in diabolo, school physical education management, or frontline physical education teaching.

The interview results are summarized in Table 3. This table lists the core themes, occurrence frequencies (n = 6), and representative viewpoints for each dimension. High-frequency themes are regarded as key elements for guideline development.

Table 3 Results of Thematic Analysis of Expert Interviews (Based on POLC Dimensions)

POLC Dimensions	Core Theme	Summary of Representative Views
Planning	Necessity of Policy Coordination	Policy supports intangible cultural heritage inheritance, with macro-level promotion by the National Sports Administration and the Education Commission, and key support in some regions. Schools' implementation relies on principals' attention, teacher resources, and funding. Challenges include a shortage of professional teachers, an aging workforce, resistance to the 'emphasizing academics over physical education' mindset, and uncertain policy support.
	Integration of Cultural Values and Educational Goals	Diabolo, as an intangible cultural heritage, can enhance students' cultural confidence and aesthetic ability. Educational objectives are set by grade: primary school focuses on cultivating interest and basic movements; junior high school students can master movements faster but have heavier academic workloads.

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POLC Dimensions	Core Theme	Summary of Representative Views
Organizing	Teacher Training Mechanism	External hiring: Invite instructors from the Diabolo Association or intangible cultural heritage inheritors. This can quickly solve teacher shortages but faces issues of aging talent, high mobility, and poor teaching continuity. Internal training: Select and systematically train in-school teachers, linking teaching outcomes with performance evaluations to build a stable full-time team.
	Course Resource Development	Course content focuses on technical instruction embedded with cultural explanations. Venues: the school playground meets needs. Equipment is primarily purchased by the school, with a soft rubber double-wheel diabolo as the main teaching tool.
Leading	Strategies to Stimulate Student Interest	Prefer young and energetic teachers. Encourage students through verbal praise and prizes. Enrich activities through tournaments, performances, and competitions. Arrange teachers on duty during breaks for guidance to reduce beginners' frustration.
	Home-School-Community Collaborative Support	At the school and family level: Explain the diabolo benefits to parents and invite volunteers. Build a campus atmosphere through activities and showcases. At the community level: Collaborate with cultural and sports centers to form joint promotion efforts.
Controlling	Safety Risk Management Mechanism	Equipment Safety: Use a soft rubber double-wheel diabolo with regular inspection and replacement. Classroom Management: Maintain a 2–3 meter safe distance, prohibit narrow-space practice and rough misuse, store equipment with rod heads down into designated net bags.
	Performance Evaluation Metrics	Student level: Changes in practice initiative, concentration, and confidence. Achievement level: Competition participation and awards. Participation level: School emphasis, parental volunteer involvement, and media attention. Establish a dynamic adjustment mechanism for sustainable development.

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Summary of Current Situation and Key Problems

Based on the thematic analysis of six expert interviews, the following current situation and core problems regarding the promotion of diabolo in schools were identified:

(1) Current Situation: Diabolo promotion in schools is supported by national policies on intangible cultural heritage and the "Double Reduction" initiative. Several schools in Beijing have successfully integrated diabolo into after-school activities, physical education classes, and campus cultural events. Community organizations such as the Daxing District Diabolo Association play an active supporting role.

(2) Core Problem 1: Teacher Shortage: There is a severe shortage of qualified diabolo teachers. Most practitioners are retirees with limited teaching ability, and externally hired teachers suffer from high mobility and poor continuity. Schools are reluctant to systematically train in-school PE teachers due to staff rotation concerns.

(3) Core Problem 2: Policy-Practice Gap: Despite strong macro-level policy support, implementation at the school level is uneven and largely depends on individual principals' attitudes and available funding.

(4) Core Problem 3: Insufficient Resources: Schools lack standardized teaching materials, dedicated venues, and safe equipment procurement systems.

(5) Core Problem 4: Cultural Inheritance Fragmentation: Diabolo promotion tends to focus on skill instruction while neglecting systematic cultural education, resulting in superficial and unsustainable inheritance.

(6) Core Problem 5: Safety Risks: Without standardized safety protocols, equipment-related injuries and unsafe practices pose risks in school settings.

2. Analysis of Basic Characteristics of the Survey Sample

A total of 717 questionnaires were distributed, and 717 valid questionnaires were recovered, with an effective recovery rate of 100%. SPSS 26.0 was used to conduct descriptive statistics on the basic information of the sample.

Among the respondents, 679 were student parents (94.72%), and 38 were school staff (5.28%). The sample was dominated by parents, which meets the research needs for assessing after-school services and traditional cultural programs. Among the school staff, 35 were physical education teachers (92.11%), representing the core implementers of on-campus diabolo teaching. Teachers with 11–20 years of experience accounted for the highest proportion (34.21%), indicating mature teaching experience. The grade distribution of students' parents covered all school stages, with Grades 5–6 accounting for the highest proportion (31.23%), reflecting broad parental interest across age groups.

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Analysis of the Planning Dimension (P)

The Planning dimension examines stakeholders' perceptions of the necessity, policy compatibility, and developmental value of promoting diabolo in schools. It includes 7 items (Q1–Q7), and the statistical results are shown in Table 4.

Table 4 Descriptive Statistics of the Planning Dimension (Q1–Q7) (POLC–P)

No.	Planning Dimension — Questionnaire Item Content	Mean (M)	SD
Q1	The introduction of diabolo into schools is in line with the "Double Reduction" policy and can enrich students' after-school activities	4.12	0.78
Q2	As an intangible cultural heritage project, diabolo can effectively enhance students' traditional cultural identity	4.25	0.71
Q3	The sport of diabolo has positive effects on students' body coordination and concentration	4.31	0.69
Q4	Schools should develop a long-term promotion plan for diabolo (e.g., a 3-year plan)	4.08	0.82
Q5	Combining diabolo cultural heritage with sports and fitness development is more suitable for campus promotion	4.19	0.75
Q6	Educating students on the differences between traditional bamboo/wooden and modern plastic diabolo can enhance intangible cultural heritage awareness	4.05	0.80
Q7	Diabolo entering schools aligns with the national fitness strategy and can help improve students' physical fitness	4.22	0.73
—	Overall Mean of the Planning Dimension	4.17	0.75

The overall mean score of the Planning dimension was 4.17 (SD = 0.75), indicating that respondents reached a high level of consensus on the top-level design and value positioning of diabolo promotion. All items' means exceeded 4.00. Among them, Q3 (improving coordination and concentration, M = 4.31) scored the highest, showing that stakeholders broadly recognized the positive physical and cognitive effects of diabolo. The next highest were Q2 (enhancing traditional cultural identity, M = 4.25) and Q7 (aligning with the National Fitness Strategy, M =

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4.22), reflecting that diabolo possesses dual values of cultural inheritance and physical education, consistent with the "Double Reduction" and national fitness policy orientations.

Analysis of the Organization Dimension (O)

The Organization dimension focuses on resource allocation, faculty development, curriculum integration, and equipment support. It includes 6 items (Q8–Q13), and the statistical results are shown in Table 5.

Table 5 Descriptive Statistics of the Organization Dimension (Q8–Q13) (POLC–O)

No.	Organization Dimension (Q8–Q13) — Questionnaire Item Content	Mean (M)	SD
Q8	Schools should form a teaching team of "in-school PE teachers + off-campus intangible cultural heritage inheritors."	4.01	0.84
Q9	The teaching of diabolo requires standardized teaching materials and video teaching resources	4.03	0.81
Q10	Diabolo courses can be integrated with subjects like Chinese and art (e.g., writing essays about diabolo or creating hand-drawn posters)	4.00	0.83
Q11	Schools should be equipped with specialized diabolo activity areas and safety protective equipment	3.98	0.85
Q12	The diabolo handcraft experience course should be included in the campus diabolo curriculum system	3.95	0.86
Q13	Adding more types of diabolo (such as single-wheel diabolo) on campus can provide students with more choices	3.97	0.82
—	Overall Mean of the Organization Dimension	3.99	0.84

The overall mean score of the Organization dimension was 3.99 (SD = 0.84), the lowest among the four dimensions. This indicates that respondents have a strong demand for organizational support, yet current implementation conditions remain insufficient. Among the items, Q9 (standardized teaching materials and video resources, M = 4.03) and Q8 (teaching staff development, M = 4.01) received relatively high scores, suggesting that stakeholders are most

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concerned with the supply of teaching resources and the construction of teaching teams. Scores for the remaining items were at or below 4.00, reflecting that inadequate specialized venues, insufficient curriculum integration, limited equipment variety, and a lack of handicraft-making courses are the main constraints.

Analysis of the Leading Dimension (L)

The Leading dimension evaluates the support willingness of schools, families, and communities, as well as the campus culture-driven mechanism. It includes 7 items (Q14–Q20), and the statistical results are shown in Table 6.

Table 6 Descriptive Statistics of the Leading Dimension (Q14–Q20) (POLC–L)

No.	Leading Dimension (Q14–Q20) — Questionnaire Item Content	Mean (M)	SD
Q14	School administrators should attach importance to the diabolo project and incorporate it into the construction of a characteristic campus culture	4.06	0.80
Q15	Set up permanent activity sites, training, and exchange sites to help young people participate in diabolo activities	4.04	0.81
Q16	Schools should organize regular activities such as diabolo competitions and cultural festivals to stimulate students' interest	4.09	0.79
Q17	Parents should actively participate in the diabolo parent-child activities organized by the school	3.94	0.87
Q18	Schools can collaborate with communities and diabolo associations to organize extracurricular practical activities	4.02	0.83
Q19	Carrying out diverse activities such as diabolo performances, public promotion, and skill exchanges can effectively attract young people to participate	4.07	0.80
Q20	Schools should encourage students to form diabolo clubs, allowing them to organize and carry out activities independently	4.03	0.82
—	Overall Mean of the Leading Dimension	4.03	0.82

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The overall mean score of the Leading dimension was 4.03 (SD = 0.82), indicating strong multi-stakeholder support and a sound culture-driven mechanism. Q16 (regular competitions and cultural activities, M = 4.09) scored the highest, showing that stimulating students' interest through competitions and activities is the most recognized driving approach. Q19 (diverse activity carriers, M = 4.07) and Q14 (school administrators' attention, M = 4.06) ranked next, reflecting that school leadership and rich activity formats are key driving forces. Q17 (parents participating in parent-child activities, M = 3.94) scored relatively low, suggesting that parental participation needs further encouragement.

Analysis of the Controlling Dimension (C)

The Controlling dimension focuses on safety risk prevention, equipment management, effect evaluation, and quality monitoring. It includes 6 items (Q21–Q25), and the statistical results are shown in Table 7.

Table 7 Descriptive Statistics of the Controlling Dimension (Q21–Q25) (POLC–C)

No.	Controlling Dimension (Q21–Q25) — Questionnaire Item Content	Mean (M)	SD
Q21	Schools should formulate safety operation regulations for diabolo activities and emergency response plans	4.15	0.76
Q22	Diabolo equipment should be inspected regularly, with priority given to safety equipment made of soft rubber	4.12	0.77
Q23	Schools should establish an evaluation mechanism for diabolo teaching effectiveness (e.g., changes in students' skills and physical fitness)	4.06	0.80
Q24	The promotion effect of diabolo should be included in the assessment index of school physical education	4.08	0.79
Q25	When purchasing diabolo equipment, both safety and variety of types (bamboo, wood, plastic, etc.) should be considered	4.04	0.81
—	Overall Mean of the Controlling Dimension	4.09	0.79

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The overall mean score of the Controlling dimension was 4.09 (SD = 0.79), ranking second in recognition. This indicates that stakeholders attach great importance to safety assurance and effectiveness evaluation. Q21 (safety operation regulations and emergency response plans, M = 4.15) scored the highest, highlighting that safety management is a fundamental requirement for the promotion of diabolo on campus. All remaining items scored above 4.00, showing broad support for establishing safe operation specifications, equipment selection mechanisms, and systems linking teaching effectiveness evaluation with assessment.

Summary: The recognition degrees of the four dimensions from high to low are: Planning Dimension (4.17) > Controlling Dimension (4.09) > Leading Dimension (4.03) > Organizing Dimension (3.99). The results indicate that stakeholders have the highest recognition of the policy value and top-level planning of bringing diabolo to campus. Safety management and quality supervision are strongly supported. The multi-party leading support system has basically been formed. However, there are evident shortcomings in the allocation of organizational resources, including teachers, teaching materials, venues, and curriculum integration, which represent the core areas requiring key optimization in subsequent promotion.

Following the focus group discussion, the revised guidelines were submitted for final confirmation through the expert consensus method. All expert groups unanimously confirmed that the guidelines are comprehensive, scientifically rigorous, and highly practical. School administrators recognized that the guidelines provide a standardized implementation path; physical education teachers affirmed the strong operability of the guidelines in teaching arrangement and safety norms; intangible cultural heritage inheritors agreed that the guidelines balance skill training and cultural inheritance. The finalized Guidelines for Promoting the Traditional Sport of Diabolo into Schools consist of 4 major dimensions and 28 enforceable clauses, as shown in Table 8.

Table 8 Final Guideline Scheme for Promoting the Traditional Sport of Diabolo into Schools

Dimension	Core Module	Final Guideline
Planning Dimension (6 items)	1. Policy Alignment & Goal Setting	1.1 Integrate Diabolo into the school's 3-year characteristic culture plan, deeply integrating with "Double Reduction" after-school services and the physical education curriculum.
		1.2 Stage-specific objectives: Grades 1–2 (interest initiation + safety awareness); Grades 3–4 (standard

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Dimension	Core Module	Final Guideline
		movements + basic routines); Grades 5–9 (combined techniques + group performance).
		1.3 Formulate an annual Diabolo promotion plan each school year, specifying responsible departments and timelines.
	2. Curriculum Value Positioning	2.1 Establish a trinity curriculum value of "cultural inheritance + physical fitness + character cultivation".
		2.2 Conduct education on Diabolo history, material differences (bamboo/wood vs. rubber), and intangible cultural heritage protection.
		2.3 Diabolo courses account for ≥5% of PE classes, with no fewer than 4 class hours per semester.
Organization Dimension (8 items)	1. Faculty Team Development	1.1 Establish a dual-team of "PE teachers + off-campus ICH inheritors", with off-campus experts providing on-campus guidance ≥2 times per semester.
		1.2 PE teachers participate in at least 1 special training on Diabolo annually (skills + safety + pedagogy).
		1.3 Include Diabolo teaching competence in teachers' annual performance assessment (weight ≥10%).
	2. Resource & Facility Support	2.1 Develop standardized school-based teaching materials (movement diagrams, safety rules, cultural knowledge) and micro-lesson videos.
		2.2 Designate a dedicated activity area (≥20 m²) with 2–3 meter safety distance lines marked on the ground.
		2.3 Prioritize soft rubber, double-wheel, anti-tangle Diabolo for lower grades (diameter ≥10 cm).
		2.4 Establish an equipment "storage – borrowing – inspection – replacement" system, with monthly safety inspections.

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Dimension	Core Module	Final Guideline
		2.5 Offer Diabolo making experience courses (≥2 class hours per semester), integrated into the school-based curriculum.
Leading Dimension (7 items)	1. School-Led Mechanism	1.1 Set up a Diabolo Promotion Working Group (led by the principal/vice principal, with participation of PE and Moral Education Departments).
		1.2 Hold 1 Diabolo Culture Festival annually (including competitions, performances, and knowledge quizzes).
		1.3 Support students to establish Diabolo clubs, with activities ≥2 times a week, ≥40 minutes each time.
		1.4 Select student leaders as "little coaches" to assist teaching in lower grades.
	2. Home-School-Community Collaboration	2.1 Carry out 1 Diabolo parent-child activity per semester (family challenges, parent-child performances, etc.).
		2.2 Recruit parent volunteers (≥5 persons) to participate in equipment management and activity organization.
		2.3 Build a practice base with community sports centers and Diabolo associations, with off-campus practice ≥1 time per semester.
Controlling Dimension (7 items)	1. Safety Risk Prevention & Control	1.1 Formulate Safety Operation Code for Diabolo Activities: prohibit chasing, storing equipment with sticks upward, and practicing in narrow spaces.
		1.2 Full teacher supervision for lower grades; group practice for upper grades (≤10 students per group).
		1.3 Develop emergency plans (falls, rope entanglement, collisions), with emergency drills ≥1 time per semester.
		1.4 Immediately stop using and replace damaged or aging equipment.
	2. Quality Evaluation & Assessment	2.1 Establish a three-dimensional evaluation system: Skills 50% + Culture 30% + Physical Fitness 20%.

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Dimension	Core Module	Final Guideline
		2.2 Conduct assessment at the end of each semester, with skills divided into Beginner / Intermediate / Advanced levels.
		2.3 Include Diabolo promotion effectiveness in the annual assessment of school physical education (proportion ≥15%).

Based on the original 25 questionnaire items, three practical clauses were added according to expert interviews and focus group feedback, forming the final 28 guideline items. All numerical standards in the guidelines, including class hour proportion, venue area, training frequency, and assessment weight, were formulated based on national education policies, frontline school practice, and expert consensus.

Data Analysis

Qualitative data from interviews and focus groups were analyzed via thematic content analysis for coding and categorization. Quantitative questionnaire data were processed by SPSS 26.0 to calculate the mean and standard deviation. Qualitative and quantitative results were integrated comprehensively to jointly support the compilation, revision, and finalization of the promotion guidelines.

Discussion

The POLC dimension results reflect clear practical logic. The Planning dimension bridges the policy-implementation gap; the Organizing dimension is the biggest bottleneck due to insufficient teachers and resources; the Leading dimension optimizes home-school-community collaborative mechanisms; the Controlling dimension establishes standardized safety and quality supervision systems.

The Planning dimension achieved the highest mean score (M = 4.17) among the four dimensions, indicating a strong degree of policy compatibility and stakeholder value consensus. This finding is consistent with the argument of Zhao Chengpeng (2017) that the promotion of diabolo in schools is fundamentally dependent on clear policy alignment and top-level institutional design. The respondents' high recognition of diabolo's educational functions, particularly its positive effects on students' coordination and concentration (Q3, M = 4.31) and its role in enhancing cultural identity (Q2, M = 4.25), confirms the dual cultural and physical education value of diabolo as an intangible cultural heritage item.

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The planning guidelines' requirement to incorporate diabolo into 3-year school development plans and establish hierarchical teaching objectives across school stages directly responds to the classic management principle that planning provides directional guidance for organizational behavior (Northcraft & Neal, 1994; Robbins & Coulter, 2005). This is also consistent with national policy directives, including the "Double Reduction" policy and the "Opinions on Comprehensively Strengthening and Improving School Physical Education in the New Era" (2020; General Office of the CPC Central Committee, & General Office of the State Council of the People's Republic of China, 2020), which explicitly call for the integration of traditional sports intangible cultural heritage into campus physical education.

The Organizing dimension recorded the lowest mean score (M = 3.99) among the four dimensions, confirming that insufficient resource allocation is the core practical constraint restricting diabolo promotion. This finding directly corroborates existing research by Lu (2014) and Jiang Xiaoming (2013), who identified the shortage of professional teachers, lack of teaching materials, and inadequate venues and equipment as the leading obstacles to the campus development of traditional sports.

The dual-teacher model established in the Organizing guidelines, combining in-school physical education teachers with off-campus intangible cultural heritage inheritors, directly addresses the teacher shortage problem highlighted by Wang Tengfei (2017). By incorporating diabolo teaching competence into teachers' annual performance assessment and requiring at least one specialized training session per year, the guidelines create institutional incentives that overcome schools' reluctance to invest in teacher development, a problem consistently noted by expert interviewees. The standardization of venues and equipment, including the designation of dedicated activity areas, prioritization of soft rubber double-wheel diabolo, and full-cycle equipment management, responds to the resource constraints identified in the questionnaire data. This conforms to the management principle that the organization serves as the foundation for effective plan execution (Dessler, 2004).

The Leading dimension achieved a mean score of 4.03, indicating that a collaborative support system involving schools, families, and communities has been broadly recognized. The high scores for regular competitions and cultural activities (Q16, M = 4.09) and diverse activity carriers (Q19, M = 4.07) confirm that activity-driven strategies are the most widely accepted approach to stimulating student participation, a finding consistent with Zhang (2022) and Han (2022), who identified low attractiveness of traditional teaching methods as a major barrier to student engagement.

Notably, the score for parental participation in parent-child activities (Q17, M = 3.94) was the lowest within this dimension, suggesting that family involvement remains the weakest

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component of the collaborative mechanism. This is an area for targeted improvement, as research consistently demonstrates that home-school cooperation significantly enhances the sustainability of extracurricular programs (Zhao Chengpeng, 2017). The Leading guidelines' requirement to hold at least one parent-child activity per semester and recruit a minimum of five parent volunteers directly addresses this gap. This approach aligns with leadership theories that emphasize motivating members toward shared goals through multi-stakeholder engagement (Robbins & Coulter, 2005).

The Controlling dimension achieved the second-highest mean score (M = 4.09), reflecting strong stakeholder awareness of safety bottom lines and quality monitoring mechanisms. The highest-scoring item within this dimension was Q21 (safety operation regulations and emergency response plans, M = 4.15), underscoring that safety management is universally recognized as a prerequisite for diabolo promotion. This is consistent with the inherent nature of diabolo as a physical activity involving equipment handling risks, including string entanglement and equipment impacts.

The three-dimensional evaluation system established in the Controlling guidelines Skills 50% + Culture 30% + Physical Fitness 20% — represents a significant departure from conventional skill-focused assessment approaches. By explicitly weighting cultural knowledge and physical fitness alongside skill proficiency, the guidelines ensure that the cultural inheritance function of diabolo is institutionalized within the assessment mechanism, not merely rhetorical. The incorporation of promotion effectiveness into school physical education annual assessments (≥15%) creates accountability mechanisms that transform evaluation from a post-activity feedback tool into a whole-process quality management system. This is consistent with control theories that emphasize execution monitoring and timely correction as conditions for sustainable program development (Dessler, 2004).

The three-dimensional evaluation standard of Skills 50% + Culture 30% + Physical Fitness 20%, and the 15% proportion in school assessment were determined by expert consensus, balancing skill training, cultural inheritance, and physical education objectives.

This study only collected views from administrators, teachers, and parents, and did not include student samples. The lack of students' direct perceptions and demands is a research limitation, which can be addressed in future longitudinal and expanded research.

Recommendations

1. Application of the Research

Improve the institutional system: Formulate a 3-year diabolo promotion plan, clarify the responsibilities of all departments, and incorporate it into the school's annual work assessment.

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Build a professional teaching team: Implement the dual-teacher model, hire intangible cultural heritage inheritors to give lectures, and carry out regular training for physical education teachers.

Establish a teacher training system for traditional sports and cultivate a group of professional backbone teachers.

Incorporate the promotional effect of traditional sports into the school quality evaluation system.

2. Further Research

Expand the research scope: Carry out multi-regional and multi-type school research (urban, rural, public, and private schools) to improve the universality of the guidelines.

Longitudinal follow-up research: Conduct 1–3 years of longitudinal tracking to verify the long-term effect of the guidelines on students' physical quality and cultural cognition.

Digital integration research: Explore the application of short video teaching, online skill evaluation, virtual simulation training, and other digital technologies in diabolo teaching.

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