

## Original Paper

# Promotion Status and Development Strategies of Ultimate Frisbee in Shandong Universities

Haoyuan Xu<sup>1</sup>

<sup>1</sup> Qingdao Film Academy, Qingdao, Shandong, China

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### **Abstract**

*With the continuous integration of emerging participatory sports into university physical education systems, Ultimate Frisbee has gradually become an important component of both curricular and extracurricular sports activities in higher education, due to its strong emphasis on self-officiation, low entry barriers, and distinctive community culture. This study aims to systematically examine the promotion status of Ultimate Frisbee in universities across Shandong Province, identify structural constraints, and explore key influencing factors affecting its development. Using a stratified sample of universities of different types and regions in Shandong, this research adopts a mixed-methods approach, including questionnaire surveys, in-depth interviews, field observations, and bibliometric and policy text analysis. Quantitative data are analyzed through descriptive statistics, comparative analysis, and regression models. The findings indicate that the overall promotion level of Ultimate Frisbee in Shandong universities remains uneven. Significant differences are observed in course coverage and club penetration across different institutional types, while participation in competitions and the level of professional instruction exert a significant influence on promotion outcomes. In addition, insufficient field resources, unstable financial support, and the lack of systematic safety and rules education have emerged as major constraints on sustainable development. Based on these findings, this study proposes differentiated development strategies focusing on curriculum institutionalization, club governance optimization, competition system improvement, support mechanism enhancement, and coordinated communication, providing empirical evidence for the reform of university physical education and the governance of emerging sports programs.*

### **Keywords**

*Ultimate Frisbee, University Physical Education, Sport Promotion, Shandong Province, Development Strategy*

## 1. Introduction

### 1.1 Research Background and Problem Statement

In recent years, with the continuous advancement of university physical education reform and the implementation of policies promoting the integration of sports and education, a number of emerging participatory sports characterized by high levels of engagement, strong community orientation, and experiential value have gradually entered university physical education systems. Unlike traditional competitive sports, these activities are typically driven by interest and grassroots social organization, spreading through student-initiated participation, peer interaction, and campus cultural identification. Their development trajectory often evolves from informal interest-based communities toward curricular institutionalization and the establishment of competition systems. Ultimate Frisbee has rapidly gained visibility in this context and has formed relatively stable participant groups in some universities.

In terms of its intrinsic characteristics, Ultimate Frisbee emphasizes non-contact play, self-officiation, and teamwork, combining elements of competition and recreation. These features align closely with the objectives of university public physical education, which emphasize physical fitness enhancement, habit formation, and personal development. Moreover, the sport requires relatively limited facilities and equipment, offers flexible organizational formats, and can be readily integrated into classroom teaching, student clubs, and campus competitions. As such, it provides a practical option for enriching physical education curricula and stimulating students' interest in physical activity.

At the policy and practical levels, Shandong Province, as a major higher education region with a large number of universities and pronounced regional diversity, has continuously promoted reforms in university physical education and the construction of campus sports competition systems in recent years, creating institutional space for the development of emerging sports. Some universities have incorporated Ultimate Frisbee into public physical education elective courses or extracurricular sports programs, forming preliminary models of coordinated development linking curricula, student clubs, and competitions. However, overall, the development of Ultimate Frisbee in Shandong universities remains in a transitional stage from spontaneous diffusion to institutionalized construction, and a number of practical challenges have emerged during its promotion.

Specifically, first, instructional capacity remains insufficient, with a limited number of teachers possessing systematic teaching experience and competition organization expertise; many universities rely primarily on student leaders or short-term trained personnel to support teaching and activities. Second, conflicts related to field availability and scheduling are prominent, as Frisbee activities often depend on football fields or multi-purpose sports grounds and are easily affected by teaching arrangements and competition schedules. Third, competition systems are fragmented, with campus-level events lacking stable operational mechanisms and inter-university participation remaining inconsistent, making sustained motivation difficult to achieve. Fourth, safety and rules education systems are underdeveloped, and some participants have limited understanding of the Spirit

of the Game, detailed rules, and injury prevention. Fifth, there is a mismatch between media visibility and institutional development, whereby short video platforms and social media increase exposure but fail to translate effectively into curriculum construction and long-term participation. These issues collectively constrain the standardized and sustainable development of Ultimate Frisbee in universities. Against this background, it is necessary to systematically examine the promotion status of Ultimate Frisbee in Shandong universities at the provincial level, identify structural weaknesses and key influencing factors, and provide empirical evidence to support the institutional development of emerging sports within higher education systems.

### *1.2 Research Significance*

From a theoretical perspective, existing studies on university physical education have largely focused on traditional competitive sports or well-established athletic programs, while relatively little attention has been paid to the diffusion mechanisms and institutional transformation of emerging participatory sports in higher education. Ultimate Frisbee, which combines characteristics of grassroots self-organization with the potential for curricular integration, serves as a representative case for examining how new sports evolve from interest-based participation to formal institutional incorporation within universities. By adopting multidimensional analytical perspectives encompassing institutional, organizational, and cultural factors, this study contributes to a deeper understanding of sport diffusion and governance mechanisms in university physical education.

From a practical perspective, universities in Shandong Province face an increasing demand for data-driven and evidence-based decision-making in advancing physical education reform and campus sports governance. By constructing a systematic indicator framework and quantitatively assessing the current status of Ultimate Frisbee in terms of curriculum development, club organization, competition participation, and support conditions, this study provides references for optimizing resource allocation, improving program planning, and formulating differentiated development strategies. Moreover, it offers a replicable analytical framework for the standardized promotion of emerging sports in higher education.

### *1.3 Research Innovations*

First, this study constructs a “Promotion Index” for Ultimate Frisbee in universities. Based on multiple dimensions, including curriculum development, club penetration, competition participation, instructor structure, field provision, financial and institutional support, and safety and rules education, the index provides a comprehensive quantitative assessment of promotion levels, addressing the limitations of fragmented indicators and inconsistent evaluation standards in previous research.

Second, a multi-stakeholder cross-validation research design is adopted. By incorporating data from students, instructors, and administrators, and combining questionnaire surveys with qualitative interviews, the study examines the development of Ultimate Frisbee in universities from multiple perspectives, thereby enhancing the robustness and explanatory power of the findings.

Third, statistical models are employed to identify key bottleneck factors influencing promotion outcomes. Through comparative analysis and regression modeling, the study examines the marginal effects of factors such as instructional capacity, field conditions, and competition participation on promotion levels, clarifying the relative importance and priority of different factors and providing an empirical basis for subsequent strategy formulation.

## **2. Literature Review and Theoretical Framework**

### *2.1 Review of Related Studies*

International research on university sports and emerging athletic programs has primarily focused on campus sport organization models, pathways of club-based and curricular development, and students' participation motivation and sustained engagement mechanisms. Existing studies generally suggest that emerging sports in universities often originate from interest-based student communities and gradually achieve curricular and competitive institutionalization through organizational embedding and institutional support. At the behavioral level, scholars frequently draw on self-determination theory and the theory of planned behavior to examine how attitudes, subjective norms, and perceived behavioral control influence participation intention and sustained involvement.

In addition, studies adopting a sport ecosystem perspective emphasize the importance of multi-actor coordination in university sport development. Policy support, organizational supply, competition systems, and campus sport culture are identified as key conditions for the long-term development of emerging sports. Nevertheless, most international studies focus on individual institutions or specific sports, and systematic quantitative assessments at the regional university system level remain limited.

In China, research on the introduction of emerging sports into universities has increased in recent years. Existing studies mainly focus on practical significance, instructional model exploration, club development experiences, and the integration of ideological and political education into physical education curricula. Many scholars acknowledge the positive role of emerging sports in stimulating student participation, enriching curricular offerings, and fostering campus sport culture.

However, domestic research remains largely descriptive and case-oriented, with a relatively limited proportion of quantitative studies. In particular, systematic measurement and comparative analysis of emerging sport promotion at the provincial level are scarce. Inconsistencies in indicator selection and evaluation criteria across studies have further limited comparability and policy applicability.

### *2.2 Theoretical Foundations*

This study integrates diffusion of innovations theory, institutional theory, the theory of planned behavior (TPB), and a sport ecosystem perspective to explain the promotion mechanisms of Ultimate Frisbee in universities. Diffusion of innovations theory focuses on how new practices spread within social systems, emphasizing innovation characteristics, communication channels, time, and social structures. Institutional theory highlights the role of formal rules and organizational arrangements in

shaping behavior. TPB explains participation intention and behavior through attitudes, subjective norms, and perceived behavioral control. The sport ecosystem perspective emphasizes interactions among policy environments, universities, student clubs, competition systems, and media communication.

### *2.3 Analytical Framework and Research Hypotheses*

Based on the above theoretical foundations, this study constructs an analytical framework in which promotion outcomes of Ultimate Frisbee in universities are regarded as the result of multiple interacting factors, including policy support, organizational supply, curricular institutionalization, competition participation, cultural communication, and safety governance.

Accordingly, the following hypotheses are proposed:

H1: Instructional capacity has a significant positive effect on course coverage.

H2: Curricular institutionalization positively influences sustained participation.

H3: Competition frequency has a significant positive effect on promotion outcomes.

H4: Field provision significantly affects course and competition implementation.

H5: Cultural communication positively influences participation intention.

H6: Safety governance and rules education significantly affect sustainable development.

## **3. Methods**

### *3.1 Data Sources and Sample*

This study adopts a multi-source data collection strategy, including school-level data, individual-level survey data, and qualitative interview and observation data. School-level data were collected from university physical education departments, youth league committees, and club instructors, covering curriculum provision, instructional capacity, competition organization, and institutional support. Individual-level data were obtained through questionnaires administered to students and instructors. Qualitative data were collected through semi-structured interviews and on-site observations to supplement quantitative analysis.

### *3.2 Indicators and Variable Definitions*

An indicator system was constructed to assess the promotion of Ultimate Frisbee in universities, including course coverage, club penetration, instructional capacity, field provision, competition systems, financial and institutional support, safety governance, and communication effectiveness. Promotion performance was measured by a composite Promotion Index as the dependent variable, calculated through standardized and weighted indicators on a 0–100 scale. Independent variables included policy support, organizational support, instructional resources, field conditions, competition participation, cultural identification, and safety education.

### *3.3 Instruments and Reliability and Validity*

Questionnaire instruments were adapted from established scales related to TPB and sustained participation. Internal consistency was assessed using Cronbach's alpha, with all values exceeding 0.70. Construct validity was examined through KMO and Bartlett's tests, followed by exploratory and confirmatory factor analyses. Data analysis methods included descriptive statistics, independent-samples t-tests, analysis of variance, and regression analysis. When appropriate, Logit models or structural equation modeling were employed.

## **4. Results**

### *4.1 Overall Promotion Level of Ultimate Frisbee in Shandong Universities*

Based on the constructed Promotion Index, the overall promotion level of Ultimate Frisbee in the sampled universities was assessed. The results indicate that the overall promotion level remains at a moderate to relatively low level, with substantial disparities across institutions. Universities with higher promotion levels are typically those with stronger physical education resources, more active campus sport cultures, or well-established student organizations, whereas a considerable number of institutions remain at an initial stage of development.

Comparative analysis shows that undergraduate universities outperform vocational colleges in terms of promotion level, and public institutions demonstrate higher average scores than private ones. Regionally, universities located in major cities such as Jinan and Qingdao exhibit higher promotion levels than those in other areas, suggesting that institutional type and regional conditions play a significant role in promotion outcomes.

### *4.2 Status of Curriculum Development*

At the curricular level, only a limited proportion of universities have formally incorporated Ultimate Frisbee into their physical education curricula, primarily in the form of elective courses or modular teaching units. Course implementation periods are generally short, with limited instructional hours, and systematic training in skills and tactics remains insufficient.

Further analysis reveals that universities with dedicated or stable instructional staff demonstrate significantly higher course coverage and enrollment than those relying on temporary instructors or student leaders. This finding highlights instructional capacity as a key determinant of curriculum development quality.

### *4.3 Student Clubs and Participation*

In terms of student clubs, the proportion of universities with Ultimate Frisbee clubs exceeds that of formal course offerings, indicating that clubs remain the primary vehicle for sport development at present. However, club performance varies considerably across institutions, with some clubs facing challenges related to high member turnover and irregular activity organization.

Statistical analysis shows a significant positive relationship between club activity frequency and sustained student participation. Clubs with more structured governance and frequent competitive opportunities exhibit higher member retention and participation levels, underscoring the importance of organizational quality in sustaining development.

#### *4.4 Competition Systems and Participation*

Regarding competition systems, campus-level events are relatively limited and often emphasize experiential or demonstrative activities rather than structured league formats. Inter-university participation remains unstable, with some universities participating only intermittently.

Results indicate a significant positive correlation between competition frequency and promotion performance. Universities with more developed competition systems tend to have higher participation levels and stronger overall promotion outcomes, highlighting the central role of competition in facilitating the transition from interest-based to sustained participation.

#### *4.5 Instructional Capacity, Facilities, and Support Conditions*

In terms of instructional capacity, the proportion of teachers with specialized Ultimate Frisbee training or competitive experience remains low. While some universities rely on external coaches or student leaders to support instruction, such arrangements lack long-term stability.

Facility provision remains constrained, as Ultimate Frisbee activities primarily depend on football fields or multipurpose grounds, resulting in frequent scheduling conflicts. Facility availability is significantly correlated with the stability of course implementation.

Regarding institutional and safety support, although basic safety plans are in place at some universities, systematic rules education and risk management mechanisms require further development. While injury incidence rates remain generally manageable, insufficient rules awareness poses potential risks.

#### *4.6 Summary*

Overall, Ultimate Frisbee in Shandong universities has established an initial development foundation but remains in a transitional stage from club-based participation to curricular and institutional integration. Curriculum development, competition systems, instructional capacity, and support conditions constitute key factors shaping promotion outcomes, with marked divergence observed across institutions.

### **5. Empirical Analysis of Influencing Factors**

#### *5.1 Model Specification and Variables*

This study employs multiple regression and Logit models to examine key factors influencing the promotion of Ultimate Frisbee in Shandong universities. The Promotion Index serves as the dependent variable, while course provision is treated as a binary outcome in the Logit analysis. Independent variables include instructional capacity, field provision, competition frequency, policy and organizational support, cultural communication, and safety governance, with institutional

characteristics controlled.

#### *5.2 Results of Multiple Regression Analysis*

Regression results indicate that the overall model demonstrates good explanatory power. Instructional capacity has a significant positive effect on promotion performance, highlighting the importance of stable and professional teaching resources. Competition frequency also exhibits a significant positive effect, indicating that competition systems play a central role in sustaining participation.

Field provision shows a positive but weaker effect, suggesting that facilities function primarily as enabling conditions. Cultural communication has a positive but relatively limited impact, reflecting a mismatch between visibility and institutional development.

#### *5.3 Logit Analysis of Curriculum Institutionalization*

Logit results show that instructional capacity and organizational support significantly increase the likelihood of course provision. Universities relying mainly on student clubs or external resources are less likely to institutionalize Ultimate Frisbee through formal curricula.

#### *5.4 Supplementary SEM Analysis (Optional)*

Structural equation modeling further reveals that curricular institutionalization mediates the relationship between instructional capacity and promotion performance, underscoring the central role of curriculum development.

#### *5.5 Discussion*

Overall, promotion outcomes are shaped by a structure in which instructional capacity and competition systems serve as core drivers, curricular institutionalization functions as a key mechanism, and facilities and communication play supporting roles.

### **6. Development Strategies and Implementation Pathways**

#### *6.1 Differentiated Development Strategies*

Universities should adopt differentiated strategies based on existing conditions, ranging from curriculum and competition branding for advanced institutions to experiential entry-level programs for beginners.

#### *6.2 Coordinated Development of Curriculum, Clubs, and Competitions*

A coordinated mechanism linking curricula, student clubs, and competition systems should be established to avoid fragmented development.

#### *6.3 Strengthening Instructional Capacity and Professional Support*

Provincial-level training and certification systems should be developed to enhance instructional professionalism.

#### *6.4 Optimizing Facilities and Institutional Support*

Efforts should be made to improve facility utilization efficiency and integrate Ultimate Frisbee into formal support systems.

### 6.5 Aligning Communication with Institutional Development

Media communication should support, rather than replace, institutional construction, ensuring sustainable development.

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