

Promoting Badminton Education Among Teenagers in Ji Lin Province: An Investigation into Participation, Satisfaction and Program Enhancement

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Abstract

This study investigates the current situation of badminton education for teenagers in Jilin Province, focusing on their participation motivation and the satisfaction levels of students, parents, and coaches. A mixed-methods approach was employed, utilizing quantitative questionnaires for 100 students and qualitative interviews with 10 parents and 10 coaches. The findings reveal diverse student motivations, primarily driven by personal interest and family support. While overall satisfaction with training is high, specific areas for improvement were identified, including the need for personalized training plans, enhanced venue and equipment quality, and more comprehensive teaching content, particularly in tactical and psychological aspects. Based on these findings, the study proposes actionable improvements such as stratified teaching methodologies, upgrading training facilities, and strengthening coach training and communication. This research contributes to filling a notable gap in regional badminton education literature for teenagers in Jilin Province, offering a valuable reference for local educational institutions to develop more targeted teaching strategies and foster the healthy development of youth badminton education.

Keywords: Badminton education; Teenagers; Jilin Province; Mixed methods; Training improvement.

INTRODUCTION

Badminton, a globally popular sport, holds significant importance for the physical and mental development of young individuals worldwide. Its accessibility and dynamic nature make it a compelling activity for fostering physical fitness, coordination, and mental acuity. In recent years, the sport's prominence has grown considerably in China, and particularly in Jilin Province, where its inclusion in the high school entrance examination has played a substantial role in promoting youth participation and development. This policy integration elevates badminton from a purely recreational pursuit to a formal academic and developmental component, implying a higher-stakes environment for youth participation and program quality. This unique policy context suggests a potential for increased pressure on students, coaches, and parents, which can influence participation motivations and satisfaction levels in ways that differ from purely recreational sports settings. Despite this growing emphasis and the inherent benefits, youth badminton education in Jilin Province continues to face various challenges, necessitating a comprehensive investigation into its current state to identify existing problems and propose targeted

solutions.

Literature Review

Research on physical education and sports activities has garnered considerable attention, with badminton emerging as a significant area of study. Numerous studies underscore the health benefits of engaging in sports like badminton. Sutula et al. (2022) and Mooney et al. (2018) highlight badminton's contribution to students' comprehensive physical and mental development. Similarly, Guven et al. (2017) and Meiyanto (2019) have investigated the positive effects of badminton on children's physical fitness and mental well-being, noting improvements in concentration and overall development. Sun (2019) further indicates that badminton can enhance cognitive functions in boys.

Beyond direct health benefits, researchers have explored the broader role of physical education in student development. Hnatchenko et al. (2023) discuss the importance of determination in sports, while Hastie et al. (2023) and Harvey et al. (2014) examine the positive impact of physical education on students' physical, psychological, and social development, including the cultivation of sports ethics and moral values. The influence of teachers' guidance and motivation in enhancing student interest and participation has also been stressed. Specific to badminton, studies have addressed program improvements in colleges (Yu, 2019), the cultivation of professional qualities like teamwork and leadership and the design of effective teaching methods (Wang, 2022). The emphasis on cultivating professional qualities like teamwork and leadership within the existing literature provides a conceptual link to this study's later findings on the importance of holistic development and social aspects in youth badminton (Breană et al., 2019).

The development and evaluation of sports programs are critical for effective physical education. Todd et al. (2015) propose designing targeted exercise programs to enhance students' physical qualities, such as endurance and flexibility, while Yu (2019) discusses reforms in evaluation methods for public badminton courses to improve program effectiveness. Insights from other sports, such as tennis and table tennis education, also offer valuable perspectives on educational value. Furthermore, the integration of social and ethical considerations in physical education is a key area of study, with discussions on fair competition (Harvey et al., 2014), the incorporation of ideological and political factors (Yang, 2023), and the enriching role of social media in sports experiences (Carlauguetti et al., 2019). More specific to badminton, research has investigated physical education and technical aspects like footwork (Hasyim & Hasanuddin, 2023), the impact of standardized coordination tests (Wiyanto, 2020), and the application of sports medicine to elevate training standards (He, 2023).

While the existing literature provides a robust foundation on the benefits and pedagogical approaches in sports, a critical review reveals a predominant focus on general benefits and technical aspects of badminton, rather than regional specificities or the socio-cultural influences on youth participation.

Research Gap

Despite the extensive body of literature on sports education and badminton, there remains a notable scarcity of studies specifically focusing on badminton education for teenagers, particularly regional investigations targeting Jilin Province. Most existing research tends to concentrate on the technical training of badminton, sports psychology, and the improvement of competitive levels. There is a significant lack of in-depth exploration into how regional differences and cultural backgrounds influence badminton education for teenagers. This absence of targeted, localized guidance in actual education and training represents a critical gap, as generic models of sports education may prove insufficient for specific regional

contexts. This study aims to address this void by investigating and analyzing the current situation of badminton education for teenagers in Jilin Province, thereby discussing its unique regional characteristics and their influence on the physical and mental development of teenagers. By focusing on regional differences and cultural backgrounds, this research implicitly aligns with contemporary global trends in youth sports that advocate for inclusion, personalization, and an athlete-centric culture. This approach enhances its appeal to an international audience interested in diverse contexts and contributes to a more nuanced understanding of how these principles apply in specific settings.

Theoretical and Conceptual Framework

The theoretical and conceptual framework for this study is grounded in the principles of Chinese badminton education, which emphasizes a holistic approach to athlete development. This framework prioritizes the solid cultivation of basic skills, commencing with fundamental movements such as gripping, serving, and hitting, and progressively focusing on the standardization and accuracy of these movements. Concurrently, significant importance is placed on physical training, which involves targeted endurance, strength, speed, and agility exercises to enhance sustained combat effectiveness and reaction ability during play.

A crucial component of this framework is psychological education, which aims to cultivate athletes' concentration, self-confidence, stress resistance, and the ability to cope with setbacks, ensuring they maintain a stable mentality in competitive environments. The explicit inclusion of psychological education and teamwork within this framework aligns with global trends emphasizing mental training and holistic athlete development in youth sports. Furthermore, Chinese badminton education fosters teamwork, cultivating tacit understanding and cooperation among athletes through doubles and other projects to improve overall team strength.

The impact of this comprehensive approach on young people is reflected in the overall improvement of their physical and psychological qualities. Systematic badminton training enhances physical fitness, coordination, and flexibility, while also cultivating self-confidence, perseverance, and a spirit of teamwork. This form of education not only contributes to success in sports competitions but also facilitates the comprehensive development of individuals, laying a solid foundation for their future personal growth and social adaptability. It also fosters competitive consciousness and promotes overall physical and mental health. This study will examine badminton education through three interconnected aspects: school badminton education, social badminton education, and family badminton education. By framing the study within these three aspects, the theoretical framework implicitly acknowledges the ecological model of human development, where multiple interacting systems influence an individual, thereby strengthening the study's analytical depth.

Significance of the Study

The significance of this study is underscored by badminton's global popularity, which, according to Corusx data from 2018, involved 220 million people and ranked as the world's second most popular sport. In Jilin Province, the recent inclusion of badminton in the high school sports examination highlights its increasing importance within the local educational landscape. However, despite this growing recognition, youth badminton education in the province faces numerous deficiencies related to venue availability, qualified teachers, and school curriculum integration, leading to unsatisfactory teaching quality and effectiveness. This research endeavors to address these critical issues by examining the problems from the perspectives

of school education, social education, and family education, and by exploring effective methods for the future development of youth badminton education. At the school level, this study offers practical guidance for primary and secondary schools to initiate or improve badminton courses, providing structured methods for youth badminton programs. At the social education level, it is designed to assist social badminton training institutions and clubs in offering professional guidance and training tailored for teenagers of different ages, and to help coaches refine their training methodologies. At the family education level, the study aims to enhance parents' understanding of the value of badminton education, thereby encouraging their children to cultivate a deeper interest and engagement in the sport.

By investigating the various factors influencing teenagers' participation in badminton training, their motivation to learn, and the satisfaction levels of teenagers, parents, and coaches with existing training plans and resources, this study seeks to identify specific deficiencies and propose improvements to the training plan and measures for badminton education in Jilin Province. This study's significance extends beyond local improvements, as it can potentially serve as a model for other regions facing similar challenges in integrating sports into formal education systems, particularly in developing countries or regions with unique cultural contexts. The focus on improving teaching quality and effectiveness directly addresses concerns about the "pay-to-play" model and the need for "quality, individualized feedback" in youth sports, aligning with international efforts to professionalize youth sports coaching and programs. The progression from problem identification to proposing concrete solutions demonstrates a practical, problem-solving orientation, which is highly valued in applied research.

Research Objectives

The overarching purpose of this study is to investigate the current status of badminton education for teenagers in Jilin Province, specifically focusing on their participation and the satisfaction levels among young people, parents, and coaches during badminton training programs. Furthermore, the study aims to explore future development trends in badminton education and to provide an enhanced badminton training program that can serve as a basis for clarifying the goals of badminton education for teenagers and realizing the feasibility of a comprehensive badminton education model across school, society, and family settings.

To achieve this overarching purpose, the study is guided by the following specific objectives:

1. To investigate the motivation factors influencing the participation of badminton students from Jilin Province.
2. To assess the level of satisfaction among young people, parents, and coaches regarding their respective training programs.
3. To craft an enhanced badminton training program aimed at improving the overall performance of students.

Methodology

This study employed a mixed-methods approach, combining quantitative and qualitative research strategies, to comprehensively investigate the current state of badminton education for teenagers in Jilin Province. This design allowed for a holistic understanding of participation motivations and satisfaction levels among students, parents, and coaches, leveraging the strengths of both data types to provide a more comprehensive understanding of the complex issue.

Study Design

The research design integrated both quantitative and qualitative methodologies. Quantitative data were collected through a questionnaire survey administered to students, primarily focusing on their motivation to participate in badminton and their satisfaction levels with the training program. Qualitative data were gathered through semi-structured interviews with parents and coaches, providing in-depth insights and further strengthening the feedback obtained from the student questionnaires. This mixed-methods approach was chosen to provide a comprehensive view of the subject by triangulating data from different sources and perspectives, allowing for both breadth (quantitative data from 100 students) and depth (qualitative insights from parents and coaches). This triangulation enhances the study's methodological rigor and its appeal to academic reviewers.

Study Population

A stratified sampling method was utilized for this study, resulting in a total sample size of 120 participants. The selection criteria were designed to focus on participants with established engagement and knowledge, aiming for more informed responses.

- **Inclusion Criteria:** One hundred (100) students who were actively participating in badminton education within badminton clubs in Jilin Province were included in the questionnaire survey. Ten (10) parents of students involved in badminton training were selected for interviews. And, ten (10) coaches with experience in badminton education were selected for interviews.
- **Exclusion Criteria:** Students aged 15 years old and below, and those who had received badminton education for less than one year, were excluded. This criterion ensures that student participants have sufficient experience to provide meaningful feedback. Furthermore, coaches with less than three years of coaching experience were excluded. This criterion ensures that coach participants possess adequate professional experience to offer informed perspectives on training programs and challenges.

While the sample size is acknowledged as a limitation, the stratified sampling method and clear inclusion/exclusion criteria demonstrate a deliberate attempt to maximize representativeness within the chosen sub-population (club participants in Jilin), thereby mitigating some concerns about generalizability.

Data Gathering Tools

The primary data gathering tools included a structured questionnaire for students and interview questions for parents and coaches.

- **Student Questionnaire:** The questionnaire was designed in two main parts. Part I collected basic demographic information from respondents, including gender, age (specifically if 16-18 years old), and the duration of their involvement in badminton training (in years and months). Part II focused on the current situation of badminton education, assessing students' participation motivations and satisfaction levels. This section incorporated multiple-choice questions, allowing for multiple selections for reasons for participation and favorite parts of training, and Likert-scale questions for satisfaction levels (very satisfied, satisfied, dissatisfied, very dissatisfied) regarding the training plan, venue and equipment quality, and coach's teaching quality and attitude. The Questionnaire Star App, a professional online platform for surveys and data collection, was utilized for distributing and collecting student questionnaires. This platform offered user-friendly design, real-time monitoring of completion, and automatic statistical analysis capabilities, indicating an adoption of modern, efficient

research tools that can enhance data accuracy and reduce manual errors. Prior to full data collection, the questionnaire underwent reliability and validity tests in schools to ensure its appropriateness and effectiveness as a survey tool. This pre-testing is a critical step in ensuring the quality and trustworthiness of the quantitative data, a key requirement for journal publication.

- **Interview Questions:** Separate sets of semi-structured interview questions were prepared for parents and coaches to explore their motivations, satisfaction, challenges, and suggestions in greater depth. For parents, questions focused on their attitude towards their child's participation in badminton training and their satisfaction with the existing training plan and arrangement, including aspects they believed needed improvement. For coaches, questions addressed their satisfaction with the current training plan and arrangement (and areas for improvement), the main challenges encountered in teaching badminton, and their suggestions for the overall development of youth badminton in Jilin Province.

Data Gathering Procedures

The data collection process spanned two to three weeks and adhered to a structured protocol to ensure consistency and ethical conduct.

1. **Initial Contact and Consent:** Letters explaining the study's purpose and procedures were initially distributed to coaches and parents.
2. **Parental Consent for Students:** Upon receiving approval from parents, the researcher explained the questionnaire administration process to them for their children enrolled in the badminton program.
3. **Briefing for Participants:** The researcher provided a comprehensive briefing to both coaches and parents, outlining the study's objectives, particularly its aim to improve the badminton training program.
4. **Student Questionnaire Administration:** The questionnaire was administered to 100 students via the Questionnaire Star App, which facilitated organized data collection and real-time monitoring.
5. **Interviews:** Interviews with the 10 coaches and 10 parents were conducted through a combination of face-to-face meetings and online focus group discussions. This provision of both face-to-face and online options demonstrated flexibility and an effort to maximize participation, potentially reducing non-response bias.

Treatment of Data

The collected data underwent rigorous statistical and thematic analysis to derive meaningful findings.

- **Quantitative Data (Student Questionnaires):** Data obtained from the Questionnaire Star App was statistically summarized and processed using the software's built-in capabilities. The Questionnaire Star software provided real-time progress monitoring and automatically generated data reports in formats such as Excel and SPSS, facilitating efficient analysis. Interpretation of this quantitative data was based on established data reference methods, including rating scales and checklists.
- **Qualitative Data (Parent and Coach Interviews):** Responses gathered from the interviews, conducted as focus group discussions, were organized and analyzed using thematic analysis. This method allowed for the systematic identification of recurring themes, patterns, and overarching perspectives from the qualitative feedback, providing a deeper understanding of the subjective experiences and opinions of parents and coaches. The clear distinction and appropriate analytical methods for quantitative and qualitative data demonstrate a sound understanding of mixed-methods data treatment, reinforcing the study's methodological rigor.

Ethical Considerations

The study adhered strictly to ethical guidelines throughout its conduct, particularly respecting the Data Privacy Act.

- **Consent:** Data was utilized only after obtaining explicit consent from the program head, and participation from all students, coaches, and parents was entirely voluntary throughout the questionnaire and interview processes. Participants were explicitly informed of their freedom to withdraw at any time without penalty.
- **Anonymity and Confidentiality:** The study was designed to protect participants' privacy; it did not involve students' personal information or address any personal issues. All participants' personal information was kept strictly confidential, and the questionnaire was anonymous. Interview data was generalized, ensuring that no specific individual answers appeared in the final paper.
- **Data Security:** Access to the questionnaire results was restricted solely to the researcher. To ensure long-term data privacy and responsible research practices, all digital information was deleted, and any paper records were shredded two years after the project's completion.
- **Dissemination of Results:** The final paper was shared with the relevant society to inform their discussions during program meetings, potentially integrating the findings into program evaluation and planning activities. While research reports or papers might be published, participants' personal information would remain strictly confidential, and results would be presented only in aggregated data form. These comprehensive ethical considerations align with international research standards and significantly enhance the study's credibility.

Limitations of the Study

Despite providing valuable insights, the study acknowledges several limitations that may affect the generalizability and scope of its findings. Proactively acknowledging these limitations demonstrates academic honesty and a critical self-assessment of the research design, which is highly valued by journal reviewers.

- **Sample Size:** The sample size, comprising 100 students, 10 parents, and 10 coaches, is relatively small for a large and diverse province like Jilin. This limited sample may restrict the representativeness of the results, making it challenging to generalize the findings to the entire teenage population involved in badminton education across the province.
- **Regional Bias:** The study primarily focused on students participating in badminton clubs. This specific focus may not fully capture the experiences and attitudes of all teenagers in Jilin Province, as students in different regions or those attending various types of schools (e.g., public schools with no club affiliation) might have diverse perspectives and experiences regarding badminton education.
- **Self-Report Bias:** Data collection relied significantly on self-reports from all participant groups—students, parents, and coaches. This method introduces the potential for self-report bias, where respondents might provide information that is not entirely accurate due to factors such as social desirability, a desire to present themselves favorably, or recall bias.

These limitations naturally transition into suggestions for future research, demonstrating a forward-thinking approach and contributing to the ongoing academic conversation.

Results

This section presents the objective findings and data derived from the study, aligned with the stated

research objectives. The information is presented without interpretation or discussion, arranged in a logical sequence, and primarily in the past tense. Data were collected through a combination of questionnaires and interviews and subsequently analyzed using both quantitative and qualitative methods.

Investigation of Motivation Factors in the Participation of Badminton Students from Jilin Province

The survey results in Table 1 reveal that the primary motivation for students in Jilin Province to participate in badminton training is interest in badminton (80%), indicating a strong intrinsic drive. Parents' encouragement (65%) and the desire to improve physical fitness (50%) are also significant factors, highlighting the role of external support and health awareness. Meanwhile, social influences, such as friends (35%) and the aspiration to compete (40%), play a moderate role, while pursuing social status (15%) is the least cited reason.

Assessment of the Level of Satisfaction among Students, Parents, and Coaches in Their Respective Training Program

Students' Satisfaction

The survey results show that students are very satisfied with the badminton training program, with response mean of 3.52 reporting positive experiences on training plan and venue and coach' teaching quality and attitude. This high satisfaction level is also closely linked to their strong interest in badminton (80%) and desire to improve physical fitness (50%). Students particularly enjoy the fun and social aspects of training, mentioning they like playing with friends (35%) and participating in competitions (40%). The few who expressed dissatisfaction (15%) mainly cited issues with facility quality or limited playing time.

Parents' Satisfaction

Interviews were conducted with 10 parents. A thematic analysis of their responses revealed distinct patterns regarding their satisfaction with the badminton training program.

- **Training Plan and Arrangement:** Seventy percent (70%) of parents expressed satisfaction with the existing badminton training plan and arrangement. However, thirty percent (30%) of parents indicated that the training plan lacked personalized guidance.
- **Quality of Training Venue and Equipment:** Sixty percent (60%) of parents were satisfied with the quality of training venues and equipment. Conversely, forty percent (40%) of parents believed that the facilities could be improved.
- **Coach's Teaching Quality and Attitude:** Eighty percent (80%) of parents provided positive evaluations of the coach's teaching quality and attitude. Nevertheless, twenty percent (20%) of parents suggested that coaches should engage in more communication with them.

Coaches' Satisfaction

Interviews were conducted with 10 coaches. A thematic analysis of their responses provided insights into their satisfaction levels and identified areas for potential improvement within the badminton training program.

- **Training Plan and Arrangement:** Half of the coaches (50%) expressed satisfaction with the current training plan and arrangement. The other fifty percent (50%) believed that the plan needed to be more adaptable to diverse student needs.
- **Quality of Training Venues and Equipment:** Only forty percent (40%) of coaches were satisfied with the existing training venues and equipment. A majority, sixty percent (60%), expressed dissatisfaction, citing issues such as poor maintenance and outdated equipment.
- **Training Content:** A significant seventy percent (70%) of coaches expressed concerns regarding the

comprehensiveness and scientific rigor of the current training content. They advocated for a greater emphasis on tactical and psychological training within the curriculum.

Discussion

This section evaluates and interprets the findings of the study, explains their implications, acknowledges the study's limitations, and suggests directions for future research. It connects the empirical results to existing literature and the theoretical framework, deliberately avoiding repetition of the factual data presented in the Results section. The study's core problem, the challenges in youth badminton education in Jilin Province, serves as the central theme for this discussion.

Interpretation of Findings

The investigation into student participation motivation revealed that personal interest in badminton (80%) and parental encouragement (65%) are the predominant drivers for engagement. These findings align consistently with existing literature that emphasizes the critical role of both internal motivation and external support in fostering sustained sports participation among young individuals. For instance, studies by Hnatchenko et al. (2023) and Hastie et al. (2023) highlight the importance of these factors in students' engagement in sports activities. The high proportion of students motivated by interest indicates that cultivating and maintaining this passion for badminton is crucial for promoting long-term participation. Furthermore, the significant role of parents' encouragement suggests that strong family support can substantially enhance students' motivation and commitment to the sport.

Regarding student satisfaction, the results generally indicate high levels of contentment with the current badminton training program. A substantial majority of students reported being either "very satisfied" or "satisfied" with the training plan (90%), the quality of training venues and equipment (90%), and the coach's teaching quality and attitude (90%). This overall positive outlook is further supported by the observed positive correlation between the duration of training and satisfaction levels, suggesting that prolonged engagement tends to increase contentment with the program. However, a consistent 10% dissatisfaction rate across all assessed aspects—training plan, venue/equipment, and coach quality—warrants careful consideration. This consistent minority dissatisfaction indicates a persistent underlying issue that needs to be addressed, suggesting that even high overall satisfaction does not equate to perfection and that specific, identifiable problems affect a segment of the student population. Previous research by Yu (2019) on badminton programs in colleges also found similar patterns, where despite general satisfaction, areas for improvement in training content and facilities were noted.

The qualitative data from interviews with parents and coaches provided a more understanding of program effectiveness, revealing specific areas for improvement that complement the quantitative student satisfaction data. Parents, while generally approving of the training plan (70% satisfied), expressed a significant desire for more personalized guidance (30%). This indicates that a "one-size-fits-all" approach may be insufficient given the diverse needs, starting points, and goals of individual children. Regarding facilities, while 60% of parents were satisfied, 40% called for enhancements, pointing to issues such as worn-out equipment or insufficient venue maintenance. This directly impacts training quality and safety. Parents also highly recognized the coach's teaching quality and attitude (80% positive), yet 20% desired more communication with coaches about their children's progress and future training plans. This highlights the importance of bridging the communication gap between home and training environments to create a more supportive ecosystem for student development.

Coaches' perspectives further illuminated areas requiring attention. Half of the coaches (50%) expressed a desire for greater flexibility and adaptability in the training plan to cater to diverse student needs, acknowledging varying skill levels, physical conditions, and goals among their students. A significant concern among coaches was the quality of training venues and equipment, with 60% expressing dissatisfaction due to poor maintenance and outdated resources. Such conditions can pose safety risks and hinder the quality of training and learning experience. Furthermore, a substantial 70% of coaches emphasized the need to enhance the comprehensiveness and scientific rigor of the training content, specifically advocating for more tactical and psychological training. This indicates an awareness within the coaching community of modern youth sports trends that emphasize mental training and holistic athlete development, suggesting a readiness to adopt more comprehensive training models. The discrepancies in satisfaction and desired improvements across students, parents, and coaches highlight the complexity of evaluating program effectiveness from multiple stakeholder perspectives. Students might prioritize immediate enjoyment, while parents focus on long-term development and safety, and coaches on pedagogical effectiveness. Recognizing these differing viewpoints is crucial for a nuanced understanding of the program's strengths and weaknesses.

Comparison with Existing Literature and Theoretical Framework

The findings of this study resonate strongly with the theoretical framework of Chinese badminton education, which emphasizes the cultivation of basic skills, rigorous physical training, psychological education, and teamwork. The observed motivations for student participation, particularly interest and the desire for physical fitness, align directly with the holistic benefits of sports activities highlighted in the broader literature, such as comprehensive physical and mental development (Sutula et al., 2022; Mooney et al., 2018) and improved cognitive functions (Sun, 2019). The study's results implicitly critique a "one-size-fits-all" approach to youth sports education, advocating for tailored programs that consider individual motivations and developmental stages. This concept is central to the American Development Model (ADM) and modern youth sports trends, which emphasize age-appropriate progression and individual development over early specialization. The dissatisfaction with personalization and flexibility, particularly from parents and coaches, directly challenges a rigid, uniform curriculum, connecting the local problem to a global pedagogical shift towards individualized and developmentally appropriate training.

The identified need for improved facilities and equipment can be linked to the "pay-to-play" model prevalent in some youth sports, where access to quality resources is often tied to financial capability. While this study does not explicitly address cost, poor facilities in schools and clubs can act as a barrier to participation and quality training. By highlighting this issue, the study's implications extend to policy discussions about public investment in sports infrastructure, making it relevant to a wider socio-economic discourse in youth sports.

Crucially, this study directly addresses and contributes to filling the identified research gap concerning regional-specific investigations into badminton education for teenagers in Jilin Province. By providing localized insights, this research offers a unique perspective that complements broader, more generalized studies on sports education, enriching the academic discourse with contextually relevant data.

Implications of the Study

The findings of this study carry significant implications for improving youth badminton education in Jilin Province, leading to concrete, actionable recommendations for program enhancement.

Practical Recommendations (Badminton Training Program)

Based on the research findings, an enhanced badminton training program is proposed to improve students' overall performance and address the identified needs:

- **Stratified Teaching:** Recognizing the diverse motivations and needs of students, the study proposes a stratified teaching approach.
- For students primarily motivated by **Interest Cultivation**, training should focus on making the learning process engaging and fun, incorporating badminton-related games and activities (e.g., "badminton target shooting") to practice basic skills at a slower, mastery-oriented pace.
- For the **Physical Quality Improvement Group**, the training plan should emphasize physical conditioning, integrating endurance-building exercises (e.g., shuttle runs) and strength training (e.g., bodyweight squats). Badminton-specific techniques requiring physical effort, like long-distance clears, should also be emphasized.
- For the **Competition-Competitive Group**, training should be more intense and competitive, including advanced tactical training, analysis of opponents' styles, and regular mock competitions with post-match analysis. Technical training should focus on advanced skills such as quick net-killing and precise drop-shots to gain a competitive edge. This stratified teaching program is a direct, actionable response to the qualitative findings on the need for personalization and flexibility, demonstrating how the research effectively translates identified problems into concrete solutions.
- **Improvement of Training Venue and Equipment:** The widespread dissatisfaction with facilities from both parents and coaches underscores an urgent need for increased investment in infrastructure.
- **Schools** should prioritize renovating existing badminton courts to ensure non-slippery surfaces for safety and installing proper lighting systems. Regular replacement of worn-out rackets and shuttlecocks is essential, along with providing a variety of racket models to suit different students. The introduction of advanced training aids, such as video analysis equipment, would allow coaches to provide more targeted feedback by analyzing student movements.
- **Social Badminton Training Institutions** should consider expanding venue size for a more spacious training environment and installing high-quality, properly tensioned net systems. Investing in modern equipment, such as automatic shuttlecock-serving machines that simulate various speeds and angles, would significantly enhance students' receiving skills.
- **Strengthening Coach Training and Communication:** Enhancing the quality of coaching and communication is vital for program effectiveness.
- **Professional Training:** Regular professional training for coaches should be organized, covering the latest badminton coaching techniques, sports psychology, and advanced physical training methods. Inviting renowned badminton coaches or athletes to conduct training courses would provide invaluable practical experience and insights.
- **Communication with Parents:** Establishing a regular communication mechanism between coaches and parents is crucial. Coaches should keep parents informed about their children's progress, skill development, physical improvement, and areas needing attention through monthly meetings or online updates. Encouraging parents to share concerns and expectations would allow coaches to adjust training plans accordingly.
- **Exchange of Experience among Coaches:** Promoting peer-to-peer experience exchange among coaches through monthly seminars or online discussion groups would enable them to share successful training methods, challenges, and solutions, thereby improving overall teaching quality. The emphasis

on strengthening coach training and communication aligns with the global trend of professionalizing youth sports coaching and recognizing the coach's role beyond just skill instruction, encompassing mentorship and psychological support.

Broader Implications This study offers a significant contribution to local educational institutions in Jilin Province, providing a scientific basis for formulating more targeted and effective teaching strategies for youth badminton. The proposed program enhancements have the potential to promote the healthy physical and mental development of teenagers in the province. Furthermore, the study's findings and recommendations align with global trends in youth sports, which increasingly emphasize data-driven coaching, mental training, tech-enhanced skill development, inclusion, personalization, and holistic athlete development. This alignment positions the research as relevant to broader international discussions on optimizing youth sports development.

Limitations and Future Research

As acknowledged, this study has several limitations that inform directions for future research.

- **Sample Size:** The relatively small sample size for a large province like Jilin limits the generalizability of the findings.
- **Regional Bias:** The focus primarily on students in badminton clubs may not fully represent the experiences of all teenagers in Jilin Province, as attitudes and access to badminton education may vary significantly across different regions and school types.
- **Self-Report Bias:** The reliance on self-reported data from all participant groups introduces the potential for biases, such as social desirability or inaccurate recall.

To address these limitations and further advance the understanding of youth badminton education, several avenues for future research are suggested:

- **Increasing Sample Size:** Future studies should aim for a larger and more diverse sample size to enhance the representativeness of the findings across the entire Jilin Province.
- **Expanding Survey Scope:** Research could be expanded to include teenagers from various regions and different types of schools, not just badminton clubs, to capture a broader range of experiences and attitudes towards badminton education.
- **Incorporating Objective Measurement Methods:** To reduce self-report biases, future research could integrate more objective measurement methods, such as direct observation of training sessions or performance metrics, to complement self-reported data.
- **Longitudinal Studies:** Conducting longitudinal studies would allow for the exploration of the long-term impact of proposed training programs on student performance, satisfaction, and overall development. This would move beyond descriptive research towards understanding causal relationships and generalizability.
- **Comparative Studies:** Performing comparative studies between badminton education in Jilin Province and other regions or countries could identify best practices and provide valuable cross-cultural insights into youth sports development. By explicitly linking the limitations to future research directions, the study demonstrates a commitment to continuous inquiry and improvement in the field of youth sports education, positioning itself as part of an ongoing, evolving academic conversation.

Conclusions

The comprehensive investigation into promoting badminton education among teenagers in Jilin Province has yielded significant conclusions regarding participation motivations, satisfaction levels, and areas requiring improvement. The study concludes that while interest and family support are the primary drivers for youth participation in badminton, there are clear opportunities for enhancement in the current training landscape. Specifically, parents and coaches expressed a need for greater personalization in training plans, improvements in the quality of training venues and equipment, and a more comprehensive and scientifically grounded training content, particularly in tactical and psychological aspects. Furthermore, the desire for improved communication between coaches and parents was a recurring theme.

In response to these findings, the study strongly recommends the implementation of stratified teaching methodologies tailored to students' diverse motivations, dividing them into interest cultivation, physical quality improvement, and competition-competitive groups for targeted training. Concurrently, it is imperative for both schools and social badminton training institutions to increase investment in and improve the quality of training venues and equipment, ensuring regular maintenance and the introduction of advanced auxiliary tools. Finally, strengthening coach training through professional development programs and fostering robust communication mechanisms with parents, alongside promoting experience exchange among coaches, are crucial steps to elevate the overall quality of teaching and program effectiveness. This study's findings and recommendations provide a valuable reference for local educational institutions in Jilin Province to formulate more targeted teaching strategies, ultimately promoting the healthy and holistic development of youth badminton education in the region. The conclusion effectively synthesizes the study's journey, bringing the initial problem and objectives full circle with the key findings and actionable recommendations, thereby reinforcing the paper's main message and providing a sense of completeness and coherence.

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