



Coaches' Feedback Quality and Skill Development of Badminton Athletes in an Institute of Technology in Jiangxi Province, China

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Abstract: This study investigates the relationship between coaches' feedback quality and the skill development of badminton athletes at the Nanchang Institute of Technology in Jiangxi Province, China. Utilizing a descriptive-comparative-correlational design, 304 badminton athletes were surveyed on their demographic profiles, their assessment of their coaches' feedback quality (across dimensions of relevance, clarity, timing, and tactical insight), and their self-assessment of their own skill development following feedback sessions. Results indicated that athletes perceived their coaches' feedback as constructive overall. Furthermore, athletes reported significant improvements in their skills, particularly in self-monitoring and tactical application, after receiving feedback. While no significant differences were found in these perceptions based on demographic factors (age, sex, years of experience), the study concludes that high-quality, well-communicated feedback is a critical component of athlete development. The findings support the implementation of programs to further enhance coaches' feedback delivery techniques.

Keywords: Athlete-Coach Interaction , Competitive Mindset , Consistency in Rallying , Fatigue Management , Goal-Oriented Training, Mental Resilience

Introduction

The pursuit of athletic excellence in badminton, a sport demanding exceptional precision, agility, and strategic thinking, is heavily dependent upon the coaching process. Central to this process is the quality of feedback provided by the coach, which serves as a critical mechanism for refining technique, shaping tactics, and fostering the psychological resilience required for competition. High-quality feedback enables athletes to bridge the gap between their current performance and their potential, transforming training efforts into tangible skill development and competitive success (Anderson & Bishop, 2021). The effectiveness of this feedback is not monolithic; rather, it is determined by a complex interplay of factors including its specificity, its timing, and the method of its delivery, all of which can significantly influence an athlete's learning trajectory and motivation (Roberts & Spencer, 2021; Baker & Reynolds, 2022).

Research indicates that the content and delivery of feedback are paramount to its efficacy. Specific, actionable feedback that focuses on technical execution—such as footwork and shot placement—and tactical awareness has been shown to lead to higher rates of skill mastery compared to general or vague instructions (Davies & Foster, 2023; Clarke & Miller, 2022). The immediacy of feedback is equally crucial, as it allows athletes to correct errors promptly and internalize proper techniques before incorrect movements become habituated (Harrison & O'Connell, 2020; Bianchi & Fortini, 2023). Furthermore, the integration of technology, such as video analysis, provides a powerful visual aid that helps athletes understand their movements and more effectively internalize corrective actions, thereby enhancing skill retention (Müller & Kiefer, 2021; Campbell & Richardson, 2021).

Beyond the technical aspects, the interpersonal and psychological dimensions of feedback are vital. The athlete's perception of the feedback—whether it is seen as supportive, respectful, and tailored to their individual needs—greatly affects their willingness to accept and act upon it (Jensen & Madsen, 2022; Johnson & Barrett, 2022). A coach's ability to communicate with clarity and to foster an open dialogue ensures that the intended message is understood, creating a positive learning environment (Carter & Holmes, 2023; Wright & Lawson, 2023). This relationship is also key to developing mental skills like resilience and focus, with consistent feedback on mental strategies proving beneficial for performance under pressure (Taylor & Grant, 2020). Coaches must also be cognizant of cultural and individual preferences, as these nuances can determine whether an athlete responds best to direct instruction or a more collaborative approach (Vasileva & Petrov, 2023).

Existing literature extensively documents the general principles of effective feedback, but a significant gap remains in understanding its applied effectiveness within specific regional and sporting contexts. Most studies are conducted in controlled environments or Western settings, leaving a lack of empirical evidence on how feedback quality is perceived by athletes and subsequently influences skill development in a real-world Chinese collegiate sports system, particularly for a sport like badminton. Furthermore, there is insufficient research that simultaneously measures athletes' assessment of feedback quality across multiple dimensions (relevance, clarity, timing, tactical insight) and correlates these assessments with their self-reported skill development. This study aims to address this gap by investigating the nuanced relationship



between coaches' feedback quality and athlete skill development at a technical institute in Jiangxi Province, China, providing contextualized insights for coaching enhancement programs.

Literature Review

Feedback is a cornerstone of sports coaching, influencing skill development, motivation, and overall performance. Badminton requires precision, agility, and strategy, and the quality of feedback provided by coaches is crucial to an athlete's development. High-quality feedback has been recognized as a mechanism for enhancing an athlete's strengths, addressing weaknesses, and promoting continuous improvement (Anderson & Bishop, 2021).

Effective feedback sessions not only improve an athlete's technical skills but also enhance their confidence and adaptability. According to research by Clarke and Miller (2022), structured and personalized feedback can improve an athlete's ability to execute complex strategies in badminton. They found that athletes who received specific, actionable feedback performed better in skill training than those who received general or vague instructions.

The timing and delivery of feedback are equally important to ensuring its effectiveness. A study by Harrison and O'Connell (2020) emphasized that immediate feedback after practice enabled badminton players to quickly correct errors and internalize effective techniques. Similarly, Wright and Lawson (2023) emphasized the importance of maintaining a supportive tone during feedback sessions, which helps foster a positive learning environment for athletes.

Feedback quality is also closely linked to athlete motivation and engagement. Roberts and Spencer (2021) explored the role of constructive feedback in maintaining intrinsic motivation and found that athletes who perceived feedback as encouraging and developmental reported higher engagement during training. This aligns with the findings of Baker and Reynolds (2022), who noted that feedback emphasizing effort and progress helps athletes set realistic goals and maintain focus.

The content of feedback significantly impacts skill development. Davies and Foster (2023) found that badminton coaches who focused on technical and tactical aspects (such as footwork and shot placement) reported higher skill mastery among their athletes. Furthermore, feedback combined with video analysis allows athletes to visually visualize their errors and understand corrective actions, as confirmed in a study by Campbell and Richardson (2021). Feedback must be tailored to the individual athlete to maximize its effectiveness. According to a study by Johnson and Barrett (2022), personalized feedback that takes into account an athlete's skill level, learning style, and emotional state leads to better skill retention. Participating athletes reported feeling more valued and motivated when feedback was tailored to their unique needs.

Regular feedback sessions also help develop psychological skills, such as resilience and focus. Taylor and Grant (2020) observed that badminton players who received consistent feedback on mental strategies, such as staying calm under pressure, performed better in competition. These findings highlight the multifaceted role of feedback in physical and mental preparation.

A coach's communication skills are crucial for providing effective feedback. Carter and Holmes (2023) found that coaches who used clear and concise language during feedback sessions helped athletes more easily grasp technical concepts. Furthermore, the study showed that athletes responded positively to coaches who encouraged open dialogue and welcomed questions during the feedback process.

Statement of problems

This study will determine the relationship between coaches' feedback quality and the skill development of badminton athletes after feedbacking sessions at the Physical Education Department of Nanchang Institute of Technology.

The results of the study will be used as a basis for a feedback quality and communication enhancement program.

Specifically, the study will answer the following questions:

1. What is the demographic profile of the athlete respondents in terms of:
 - 1.1. sex;
 - 1.2. age; and
 - 1.3. number of years as a badminton athlete?
2. What is the assessment of the athlete respondents of their coaches' feedback quality in terms of:
 - 2.1. relevance and specificity;
 - 2.2. clarity and communication;
 - 2.3. timing and delivery;
 - 2.4. tactical and technical insight;
3. Is there a significant difference in the assessment of the athlete respondents of their coaches' feedback quality when they are grouped according to their profile?
4. What is the self-assessment of the athlete respondents of their skill development of badminton athletes after feedbacking sessions in terms of:
 - 4.1. implementation of feedback;
 - 4.2. tactical application;
 - 4.3. performance improvement;
 - 4.4. retention of learned skills;
5. Is there a significant difference in the self-assessment of the athlete respondents of their skill development of badminton athletes after feedbacking sessions when they are grouped according to their profile?

6. Is there is a significant relationship between coaches' feedback quality and the skill development of badminton athletes after feedbacking sessions?

Research Design

This study employed descriptive, comparative, and correlational methods, characterized by precise parameters, systematic documentation, comprehensive analysis, and meticulous examination of contextual interactions. According to Ellsworth and Campbell (2023), descriptive research systematically explores and identifies key characteristics, behaviors, and attributes of a phenomenon within its natural context. Its primary purpose is to construct a detailed overview or clearer understanding of the current situation, laying a solid foundation for future research.

Descriptive research extends the insights of Ellsworth and Campbell (2023), making it an integral part of social science and psychology because it enables a deeper understanding of natural patterns and behaviors. This approach enables the collection of accurate and unbiased data on the beliefs, behaviors, and characteristics of a specific population, thereby revealing broader societal trends.

Furthermore, Harrington and Sullivan (2024) emphasize the importance of comparative methods in isolating key variables that influence outcomes across different groups or contexts. They assert that correlational analysis is a key tool for identifying potential causal relationships between variables, thereby enhancing the explanatory depth of research designs. In this study, correlational analysis will explore the relationship between specific demographic factors and relevant attitudes or behaviors, contributing to the construction of theoretical models and the development of practical interventions.

The descriptive-comparative-correlational approach employed in this study provides a holistic framework for evaluating complex relationships between variables and their context. By integrating the fundamental principles outlined by Ellsworth and Campbell (2023) with the methodological contributions of Harrington and Sullivan (2024), this approach enhances the depth, credibility, and applicability of the findings, paving the way for subsequent research and practical applications in related fields.

This study aimed to investigate the evaluation of coach feedback quality by badminton players in the Department of Physical Education at Nanchang Institute of Technology and their self-assessment of their skill development following feedback sessions.

This research approach allows researchers to numerically analyze, compare, and correlate the relationships between the dependent variables included in the study.

Using this method, the researchers will be able to identify any significant differences or relationships between the badminton player respondents' assessments of the quality of their coach's feedback and their demographic data (e.g., gender, age, and years of badminton experience). Furthermore, the researchers will be able to identify any significant differences or relationships between the badminton players' self-assessments of their badminton player skill development after the feedback session and their demographic data (e.g., gender, age, and years of badminton experience). The badminton players' assessments of the quality of their coach's feedback will then be correlated with their self-assessments of their badminton player skill development after the feedback session.

Research Location

The research location of this paper is the Department of Physical Education of Nanchang Institute of Technology. The predecessor of Nanchang Institute of Technology was Jiangxi Institute of Water Resources and Electric Power, which was established in 1958. It was successively affiliated with the Ministry of Water Resources and Electric Power, the Ministry of Water Resources, and later became a university jointly established by the Jiangxi Provincial People's Government and the Ministry of Water Resources. The university has 18 colleges (departments) offering 57 undergraduate majors. Three programs—Water Conservancy and Hydropower Engineering, Mechanical Design, Manufacturing and Automation, and Environmental Design—have been designated as national first-class undergraduate programs. Water Conservancy and Hydropower Engineering is a national specialty program. Four programs—Water Conservancy and Hydropower Engineering, and Hydrology and Water Resources Engineering—have received national engineering education certification.

Participants

The subjects of this study are badminton players from the Department of Physical Education of Nanchang Institute of Technology. In selecting the badminton player respondents, we will use the population enumeration technique among the athlete respondents.

Research Instruments

After collecting the required data, researchers will develop a custom questionnaire to investigate badminton players' perceptions of the quality of their coach's feedback and their self-assessment of their skill development following the feedback session.

The questionnaire will be administered face-to-face or in-person.

The questionnaire will consist of the following parts:

part 1 - This part identifies the demographic characteristics of the badminton players.

part 2 - This part identifies the badminton players' perceptions of the quality of their coach's feedback.

part 3 - This part identifies the badminton players' self-assessment of their skill development following the feedback session.

The revised questionnaire and the researcher-developed questionnaire will undergo content validation by experts in the research field. The experts' suggestions will be incorporated into the questionnaire instrument.

The same questionnaire will be submitted to at least five experts for face-to-face validation. The questionnaire will undergo preliminary testing to verify its reliability. This preliminary testing will be performed using Cronbach's alpha in the Statistical Package for the Social Sciences (SPSS). The researchers welcome suggestions from the experts and will make necessary revisions to ensure the validity of the above instrument. The overall reliability of the questionnaire was Cronbach's Alpha = 0.977, indicating that the results of all items were very consistent. The reliability test results showed that the research instrument was statistically reliable.

Ethical Considerations

Researchers will constructively consider and diligently adhere to ethical considerations necessary to protect the rights of all respondents. These ethical considerations are as follows:

1. Conflict of Interest

Researchers for this study will ensure that there are no conflicts of interest. Researchers will explain the purpose of this study in detail and clearly to selected respondents. Researchers must also adhere to the purpose of collecting personal information and data. All collected data must not be used for any form of exploitation of respondents. Researchers must adhere to the goals and objectives of the study.

2. Privacy and Confidentiality

Before conducting this study, we will assure respondents that all collected information will remain confidential and that the results will not be disclosed to anyone other than the researchers and those who completed the questionnaires. Researchers will not mention respondents' names when providing collected data to protect their privacy. Respondents' identities will remain anonymous, and no clues or hints that could lead others to associate or relate to them will be included.

3. Informed Consent Process

Before administering the questionnaire, researchers will obtain a consent form confirming that respondents understand the purpose and objectives of the study and agree that the data collected will enhance the researcher's research. Researchers will ensure that everything is explained clearly and comprehensively to respondents, without any deception. The researchers will also discuss the process and potential risks of participating in this study.

4. Recruitment

The participants in this study will be swimmers. Participants are free to agree or disagree with participation in this study. Participants will not be forced to participate and have the right to refuse at any time.

5. Risks

The researchers will ensure that participation in this study is risk-free. Participants will ensure that any data and information collected will not harm their life or reputation. Participants have the right to stop asking questions at any time if they feel harassed, overly personal, or intrusive.

Results and Discussion

Frequency Distribution of the Teacher Respondents' Profile

Profile	Frequency	Percentage
Age		
Less than 15 years old	37	12.2%
16 years old	76	25.0%
17 years old	100	32.9%
18 years old	63	20.7%
More than 18 years old	28	9.2%
Total	304	100%
Sex		
Male	145	47.7%
Female	159	52.3%
Total	304	100%

Number of Years as Badminton Athlete		
Less than 3 years	206	67.8%
3-5 years	79	26%
More than 5 years	19	6.3%
Total	304	100%

In terms of age, thirty-seven (37) or about 12.2% of the athlete respondents are less than 15 years old, seventy-six (76) or about 25.0% are 16 years old, one hundred (100) or about 32.9% are 17 years old, sixty-three (63) or about 20.7% are 18 years old, and twenty-eight (28) or about 9.2% are more than 18 years old. This means that the majority of the athlete respondents are 17 years old. This illustrates that most of the athletes are in their mid-adolescent stage, which is considered a crucial age for skill development, competitive exposure, and peak performance training.

In terms of sex, one hundred forty-five (145) or about 47.7% of the athlete respondents are male, while one hundred fifty-nine (159) or about 52.3% are female. This means that the majority of the athlete respondents are female. This illustrates that badminton is a sport with greater female participation, which may reflect accessibility, inclusivity, and interest among female athletes.

In terms of number of years as a badminton athlete, two hundred six (206) or about 67.8% of the respondents have been athletes for less than 3 years, seventy-nine (79) or about 26.0% have been athletes for 3 to 5 years, and nineteen (19) or about 6.3% have been athletes for more than 5 years. This means that the majority of the athlete respondents have been engaged in badminton for less than 3 years. This illustrates that most of the athletes are relatively new to the sport, suggesting that badminton has been attracting fresh participants and developing emerging players who may still be in the early stages of competitive training.

Assessment of the Athlete Respondents of their Coaches, Feedback Quality in terms of Relevance and Specificity

	Mean	SD	Qualitative Description	Interpretation	Rank
1. My coach's feedback is tailored to my individual performance needs.	2.81	.94	True of My Coach's Feedback	Constructive	1
2. The feedback I receive addresses specific aspects of my performance that need improvement.	2.77	.98	True of My Coach's Feedback	Constructive	2
3. My coach's feedback focuses on actions or skills that directly affect my performance outcomes.	2.73	.94	True of My Coach's Feedback	Constructive	6
4. I feel that my coach's feedback is relevant to my role or position in the team.	2.75	.94	True of My Coach's Feedback	Constructive	3
5. The feedback from my coach highlights specific examples from practice or competition.	2.75	.96	True of My Coach's Feedback	Constructive	3
6. My coach provides solutions that are directly applicable to the areas needing improvement.	2.72	.97	True of My Coach's Feedback	Constructive	7
7. My coach avoids general comments and instead focuses on targeted feedback.	2.74	.92	True of My Coach's Feedback	Constructive	5
Composite Mean	2.75	.79	True of My Coach's Feedback	Constructive	

In terms of relevance and specificity, the highest assessment was given to the statement, "My coach's feedback is tailored to my individual performance needs," with a mean of 2.81 and described as True of My Coach's Feedback. This means that the athlete respondents perceived their coaches as providing feedback that is personalized

and aligned with their specific performance requirements. This illustrates that coaches are attentive to individual differences among athletes and make the effort to ensure that their feedback is directly relevant to each player's growth.

The lowest assessment was given to the statement, "My coach provides solutions that are directly applicable to the areas needing improvement," with a mean of 2.72 and described as True of My Coach's Feedback. This means that although athletes still consider the feedback constructive, they felt that solutions given by their coaches were sometimes less specific or not always directly actionable. This illustrates that while coaches are effective in pointing out areas for improvement, there is room to strengthen the practicality and direct applicability of the solutions offered.

The composite mean of 2.75, described as True of My Coach's Feedback, indicates that overall, the athletes perceived their coaches' feedback in terms of relevance and specificity as constructive and beneficial to their development. This illustrates that coaches generally provide meaningful and targeted feedback, though a stronger emphasis on actionable solutions could further enhance its effectiveness.

Assessment of the Athlete Respondents of their Coaches, Feedback Quality in terms of Clarity and Communication

	Mean	SD	Qualitative Description	Interpretation	Rank
1. My coach's feedback is easy to understand and clearly communicated.	2.73	1.01	True of My Coach's Feedback	Constructive	6
2. I feel that my coach explains concepts or corrections in a way I can easily follow.	2.77	.97	True of My Coach's Feedback	Constructive	1
3. My coach uses examples or demonstrations to make their feedback clearer.	2.77	.96	True of My Coach's Feedback	Constructive	1
4. The language and tone my coach uses ensure that I understand the intended message.	2.75	.97	True of My Coach's Feedback	Constructive	3
5. My coach takes the time to confirm that I understand their feedback.	2.74	.98	True of My Coach's Feedback	Constructive	5
6. I rarely feel confused or uncertain about what my coach's feedback means.	2.75	.98	True of My Coach's Feedback	Constructive	3
Composite Mean	2.75	.80	True of My Coach's Feedback	Constructive	

In terms of clarity and communication, the highest-rated items were "I feel my coach explains concepts or corrective actions in a way that I can easily understand" and "My coach uses examples or demonstrations to make their feedback clear." These two items had an average score of 2.77, and were described as "consistent with my coach's feedback." This means that athletes valued the way their coach explained and demonstrated corrective actions, making the feedback easy to understand and practical. This suggests that coaches are able to effectively simplify concepts and use clear methods to guide athletes to improve their performance.

The lowest-rated item was "My coach's feedback is easy to understand and clearly communicated," with an average score of 2.73, and was described as "consistent with my coach's feedback." This means that while athletes generally perceive their coach's communication as clear, in some cases, feedback may not be as effectively delivered as it could be. This suggests that clarity is generally consistent but could benefit from greater attention to ensuring directness in all situations. The overall average, representing "My coach's feedback is consistent with expectations," was 2.75, indicating that athletes generally perceive their coach's clarity and communication as constructive. This suggests that coaches are generally successful in ensuring athletes understand their feedback, but continued efforts to maintain clear and consistent communication will further enhance athletes' comprehension and responsiveness.

Summary Self-Assessment of the Athlete Respondents of their skill Development of Badminton Athletes after Feedbacking Sessions

	Mean	SD	Qualitative Description	Interpretation	Rank
Implementation of Feedback	2.81	.81	True of My Skill Development After Feedbacking Sessions	Improved	4
Tactical Application	2.82	.80	True of My Skill Development After Feedbacking Sessions	Improved	2
Performance Improvement	2.82	.82	True of My Skill Development After Feedbacking Sessions	Improved	2
Retention of Learned Skills	2.80	.79	True of My Skill Development After Feedbacking Sessions	Improved	7
Confidence and Motivation	2.80	.80	True of My Skill Development After Feedbacking Sessions	Improved	7
Self-Monitoring	2.83	.84	True of My Skill Development After Feedbacking Sessions	Improved	1
Communication and Feedback Integration	2.81	.83	True of My Skill Development After Feedbacking Sessions	Improved	4
Overall	2.81	.78	True of My Skill Development After Feedbacking Sessions	Improved	

Athletes rated self-monitoring highest ($M = 2.83$, $SD = 0.84$), indicating that the feedback sessions effectively improved their ability to observe and adjust their performance. This suggests that athletes gained a better understanding of their strengths and areas for improvement, enabling them to adjust their training habits and playing techniques accordingly. The emphasis on self-monitoring highlights how feedback fosters autonomy and accountability, both key factors for long-term improvement in badminton.

The lowest ratings were for retention of learned skills, as well as confidence and motivation ($M = 2.80$, $SD = 0.79$ and $M = 2.80$, $SD = 0.80$, respectively). This suggests that while feedback sessions help athletes understand and apply insights in the short term, maintaining learned skills and maintaining ongoing motivation remain challenges. These relatively low ratings suggest that more structured reinforcement strategies, such as repetitive practice or motivational techniques, may be needed to consolidate skills and maintain confidence after the feedback sessions.

The overall mean of 2.81 was interpreted as "My skills developed well after the feedback session" and described as "improved." This suggests that athletes generally felt feedback sessions were beneficial for their skill development. While significant improvements were seen across all areas, the results revealed a variable impact of feedback, with self-monitoring emerging as the strongest area for skill development, while skill retention and motivation required additional support. This suggests that feedback sessions are effective but should be supplemented with strategies that enhance consistency, long-term retention, and sustained athlete motivation.

Conclusions

This study demonstrates that the quality of coaching feedback is fundamentally linked to the skill development of badminton athletes. Athletes at the Nanchang Institute of Technology consistently rated their coaches' feedback as constructive across all measured dimensions, including relevance, clarity, and tactical insight. Crucially, this perceived high quality of feedback correlated with significant self-reported improvements in key athletic skills, most notably in the athletes' ability to self-monitor and apply tactics effectively. The findings reinforce the established theory that targeted,

clear, and well-communicated coaching input is a powerful driver of athletic improvement, providing empirical support for its prioritized use in training regimens.

Furthermore, the study reveals that the positive impact of feedback was consistently experienced across diverse demographic groups, as no significant differences were found based on age, gender, or years of playing experience. This universality suggests that the core principles of effective feedback are applicable to both new and experienced athletes alike. However, the identification of specific areas for enhancement—such as providing more directly actionable solutions and improving real-time tactical adjustments—provides a clear roadmap for coach development. Therefore, the conclusion underscores that while the current feedback practices are effective, structured programs focused on refining these specific delivery techniques could further amplify their positive impact on athlete skill acquisition and long-term development.

Recommendations

1. Coaches should continue to use consistent and structured feedback strategies, as research results showed no significant differences across athletes of different ages, genders, and years of experience, ensuring that all athletes benefit equally.
2. While no significant differences were found, subtle differences in mean values (e.g., higher self-monitoring records among younger athletes or higher overall reports among intermediate athletes) suggest the need to tailor subsequent training sessions to the specific developmental needs of different groups.
3. Coaches could be encouraged to refine communication strategies to further improve the clarity and integration of feedback, ensuring that male and female athletes continue to experience balanced benefits.
4. Athletes should be instructed to regularly self-monitor and reflect on how they use feedback in training and competition to enhance skill retention and long-term development, regardless of age or experience.
5. Organize seminars or workshops for coaches on evidence-based feedback techniques, emphasizing the motivational, technical, and tactical elements that maintain the consistent effectiveness observed across groups.

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