



Instructional Coaching Strategies in Collegiate Volleyball: An Adaptive Framework for Enhancing Technical Proficiency, Psychological Readiness, and Team Cohesion

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Abstract

Effective coaching in collegiate sports requires an instructional framework that transcends traditional physical training to address the holistic needs of student-athletes. This study investigates the impact of diverse coaching methods—directive, collaborative, and observational—on the performance of undergraduate volleyball players within the Indonesian university context. Employing a sequential mixed-methods design, quantitative data were gathered from 56 undergraduate students at STKIP PGRI Sumenep via closed-ended questionnaires, complemented by structured interviews with six selected participants to gain in-depth qualitative insights. The findings reveal that while directive coaching is fundamental for foundational technical skill acquisition, collaborative methods are superior in fostering team cohesion and intrinsic motivation. Furthermore, observational coaching serves as an effective tool for reflective learning, though it requires integration with active instructional feedback to optimize immediate performance. The study concludes that an integrative, adaptive coaching framework—which dynamically balances directive clarity, collaborative participation, and reflective observation—is essential for enhancing holistic athlete development and team performance in higher education settings. These insights contribute to the Scholarship of Teaching and Learning (SoTL) by providing a replicable instructional model for coaches and sports educators aiming to harmonize technical excellence with psychological and social growth in competitive collegiate sports.

Keywords: Adaptive coaching, Collegiate volleyball, Instructional design, Team cohesion, University sports pedagogy.

ABSTRAK

Pembinaan yang efektif dalam olahraga perguruan tinggi membutuhkan kerangka kerja instruksional yang melampaui pelatihan fisik tradisional untuk mengatasi kebutuhan holistik atlet mahasiswa. Studi ini menyelidiki dampak beragam metode pembinaan—direktif, kolaboratif, dan observasional—terhadap kinerja pemain voli mahasiswa di konteks universitas Indonesia. Dengan menggunakan desain metode campuran sekuensial, data kuantitatif dikumpulkan dari 56 mahasiswa di STKIP PGRI Sumenep melalui kuesioner tertutup, dilengkapi dengan wawancara terstruktur dengan enam partisipan terpilih untuk mendapatkan wawasan kualitatif yang mendalam. Temuan menunjukkan bahwa meskipun pembinaan direktif sangat penting untuk perolehan keterampilan teknis dasar, metode kolaboratif lebih unggul dalam menumbuhkan kekompakan tim dan motivasi intrinsik. Lebih lanjut, pembinaan observasional berfungsi sebagai alat yang efektif untuk pembelajaran reflektif, meskipun membutuhkan integrasi dengan umpan balik instruksional aktif untuk mengoptimalkan kinerja langsung. Studi ini menyimpulkan bahwa kerangka kerja pembinaan yang integratif dan adaptif—yang secara dinamis menyeimbangkan kejelasan direktif, partisipasi kolaboratif, dan observasi reflektif—sangat penting untuk meningkatkan pengembangan atlet secara holistik dan kinerja tim di lingkungan pendidikan tinggi. Wawasan ini berkontribusi pada Kajian Pengajaran dan Pembelajaran (SoTL) dengan menyediakan model instruksional yang dapat direplikasi bagi pelatih dan pendidik olahraga yang bertujuan untuk menyelaraskan keunggulan teknis dengan pertumbuhan psikologis dan sosial dalam olahraga perguruan tinggi yang kompetitif.

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Kata kunci: Pelatihan adaptif, Bola voli perguruan tinggi, Desain instruksional, Kohesi tim, Pedagogi olahraga universitas.

INTRODUCTION

The global landscape of sports education in higher education has undergone a paradigm shift, transitioning from purely performance-oriented training to a sophisticated focus on instructional science. Volleyball, characterized by its fast-paced, interdependent nature, serves as a primary site for this transition, where technical proficiency must be harmonized with psychological resilience and group synergy. However, the global challenge remains the effective transmission of high-level disciplinary expertise within complex, modern learning ecosystems, particularly when the intersection of physical development and pedagogical theory is neglected.

Current sports education programs, especially in private university settings, face significant challenges such as limited access to specialized coaching resources, non-standardized frameworks, and high variability in coach pedagogical training. These constraints impede the development of consistent, high-quality coaching interventions that meet the evolving needs of undergraduate athletes. Consequently, many collegiate programs struggle to bridge the gap between technical drill-based training and the broader instructional objectives required for comprehensive student-athlete development.

Prior research has extensively explored coaching dynamics, yet significant inconsistencies persist in the efficacy of various instructional methods. Studies focused on the impact of diverse coaching strategies—ranging from directive to collaborative approaches—have been conducted by authors such as Oliveira et al. (2020), Pelzer et al. (2020), Davis et al. (2019), Ramos et al. (2023), Karakullukçu (2020), and Fortes et al. (2021). While these scholars have established foundational understandings of motivation and skill acquisition, their work is often limited by a primary focus on elite professional environments or Western cultural contexts, which may not adequately address the sociocultural nuances of Southeast Asian collegiate sports.

The novelty of this research lies in its application of an adaptive instructional framework specifically designed for the Indonesian university context, a domain that has remained largely under-researched. By shifting the focus from

purely disciplinary sports science to Instructional Science, this study introduces a replicable pedagogical model that synthesizes directive, collaborative, and observational methods. This approach provides a unique evidence-based pathway to transform technical disciplinary research into actionable instructional media, filling the gap identified in previous studies that often compartmentalized these coaching dimensions.

A significant research gap exists regarding the lack of localized evidence and integrative coaching frameworks in the Indonesian sports education system. While previous studies have examined technical proficiency, psychological readiness, and team cohesion as isolated variables, there is a scarcity of comprehensive research investigating these factors collectively at the collegiate level. Furthermore, existing literature fails to account for how institutional and cultural factors specifically influence the effectiveness of coaching in emerging sports contexts like Indonesia, limiting the applicability of Western-centric models.

This study is anchored by a multidimensional pedagogical framework that aligns with the Scholarship of Teaching and Learning (SoTL). The core theory utilizes principles of Instructional Design and Disciplinary Pedagogy, emphasizing the necessity of adapting instruction to match the specific characteristics and learning trajectories of student-athletes. This framework supports the view that coaching is not merely technical instruction but a complex instructional design process that must be responsive to the diverse cognitive and affective needs of the learner.

The concepts central to this research revolve around the integration of "Directive Coaching" for foundational skill acquisition, "Collaborative Coaching" for social and cognitive engagement, and "Observational Coaching" for reflective depth. These concepts are framed within the wider context of team sports performance, where the interdependence of players necessitates a balance between coach-led instruction and athlete-led decision-making. This conceptual triad allows for a more holistic evaluation of athlete growth than has been achieved in studies focusing on single-style coaching interventions.

This research is particularly significant due to its focus on bridging the gap between high-level sports disciplinary expertise and innovative instructional design within Indonesian private universities. The potential for this model to enhance athlete satisfaction, workforce readiness, and overall educational quality in physical education makes it a critical area of inquiry for current instructional science. By exploring these dynamics, this study addresses the urgent requirement for contextualized instructional models that empower both coaches and educators to make data-driven, evidence-based decisions.

The primary objective of this study is to investigate the effectiveness of different coaching methods—directive, collaborative, and observational—on the technical proficiency, psychological readiness, and team cohesion of undergraduate volleyball players. By employing a sequential mixed-methods design, the research aims to provide a comprehensive analysis that informs a replicable instructional framework. Ultimately, this inquiry seeks to propose strategies that harmonize technical excellence with the holistic development of student-athletes, ensuring better alignment between institutional sports programs and modern educational standards.

RESEARCH METHODS

2.1 Research Design

This study utilized a sequential mixed-methods design, which is essential for capturing both the breadth of patterns through quantitative analysis and the depth of individual experiences through qualitative exploration. This design facilitates a comprehensive understanding of coaching effectiveness by first quantifying performance trends across a broader participant pool and subsequently enriching these findings with nuanced insights. The systematic process follows an iterative flow: (1) quantitative data collection, (2) initial analysis to identify significant patterns, and (3) qualitative follow-up to explain the "how" and "why" behind the observed results.

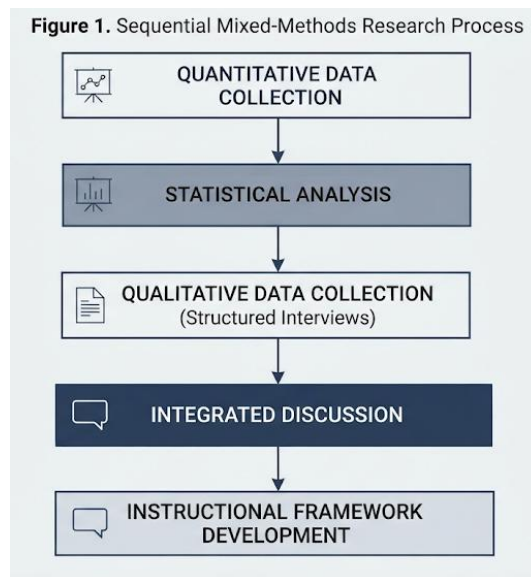


Figure 1. Sequential Mixed-Methods Research Process

(Visual Description: The process begins with 'Quantitative Data Collection' leading to 'Statistical Analysis', which informs 'Qualitative Data Collection' via structured interviews, culminating in 'Integrated Discussion' and 'Instructional Framework Development'). This structured approach ensures that the resulting coaching framework is not only statistically robust but also contextually relevant to the specific needs of undergraduate volleyball athletes in Indonesia

2.2 Subject and Location of Research

The research was conducted at the Universitas PGRI Sumenep in East Java, Indonesia, specifically chosen for its established volleyball training programs and accessible population of active student-athletes. A total of 56 undergraduate students participated, selected through purposive sampling based on stringent inclusion criteria: at least one year of consistent training, participation in minimum two intercollegiate competitions, and active enrollment in sports-related academic courses. Exclusion criteria involved inactivity for more than one semester or medical conditions precluding physical performance. This selection strategy ensures that participants possess the necessary experience to provide meaningful perceptions of various coaching methods.

2.3 Research Instruments

Data collection utilized a closed-ended, 30-item questionnaire (10 items per dimension: technical, psychological, team) and a semi-structured interview protocol. The questionnaire employed a 5-point Likert scale (1: Strongly Disagree to 5: Strongly Agree), while the interview protocol allowed for in-depth probing of participants' experiences with directive, collaborative, and observational coaching. All instruments were rigorously developed to align with the specific instructional dimensions identified in the literature, such as task/social cohesion.

Table 1. Instrument Alignment and Subject Mapping

Dimension	Item Count	Primary Subject Focus	Data Source
Technical Skills	10	Skill-based drills/Tactical awareness	Questionnaire
Psychological	10	Confidence/Stress/Mental focus	Questionnaire

Readiness			
Team Cohesion	10	Communication/Trust/Cooperation	Questionnaire
Coaching Experiences	N/A	Lived experiences of coaching styles	Interviews

2.4 Validity and Reliability

Validity was established through expert review by three sport education scholars with doctoral qualifications, who assessed item clarity, relevance, and cultural appropriateness. Reliability was confirmed using Cronbach's alpha; the study achieved high internal consistency coefficients across all dimensions: technical skills ($\alpha = .872$), psychological readiness ($\alpha = .861$), and team cohesion ($\alpha = .893$). These values exceed the conventional .80 threshold, indicating that the instruments are stable and reliable for use in this educational context.

2.5 Data Collection Procedures

The data collection followed a two-phase sequential procedure. In Phase 1, the questionnaire was administered to the full sample ($n=56$) during scheduled training sessions in a controlled, non-distracting environment. In Phase 2, six participants were purposively selected for structured, face-to-face interviews lasting 30–40 minutes to probe specific coaching interactions. Furthermore, systematic observation was utilized to triangulate findings, ensuring that the documented coaching practices—including video reviews and team huddles—were accurately captured.

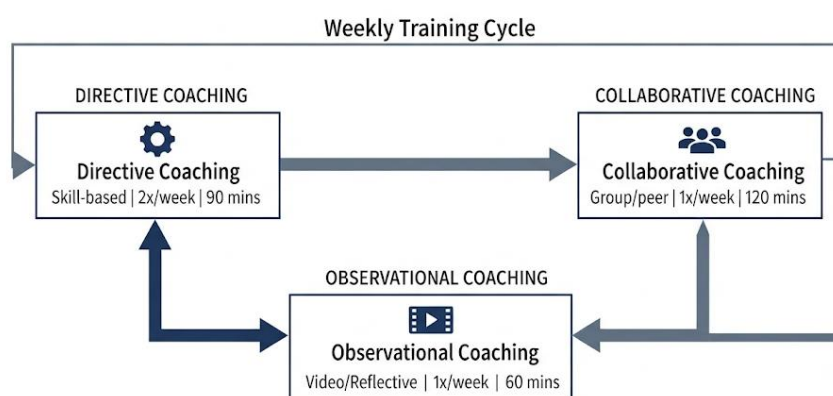


Figure 2. Coaching Methods Implementation Framework

(Visual Description: A flow diagram showing: 1. Directive Coaching (Skill-based, 2x/week, 90 mins); 2. Collaborative Coaching (Group/peer, 1x/week, 120 mins); 3. Observational Coaching (Video/Reflective, 1x/week, 60 mins), all integrated into the weekly training cycle.).

2.6 Data Analysis

Quantitative data were analyzed using IBM SPSS version 27, utilizing descriptive statistics and one-way ANOVA to evaluate significance, followed by post-hoc testing. Interview data were processed through verbatim transcription and thematic analysis using open and axial coding to extract recurring patterns. This integrated approach enables the research to link quantitative trends with qualitative depth, addressing the study's research questions comprehensively.

Table 2. Research Questions and Type of Analysis.

Research Question	Type of Analysis
How do coaching methods affect technical skills?	Descriptive & One-way

	ANOVA
How do coaching methods affect psychological readiness?	Descriptive & One-way ANOVA
How do coaching methods affect team cohesion?	Descriptive & One-way ANOVA
How are these methods experienced by athletes?	Thematic Coding (Open & Axial)

2.7 Ethical Considerations

Ethical clearance was obtained from the Institutional Research Ethics Committee at Universitas PGRI Sumenep. All participation was voluntary, with informed consent obtained prior to data collection. Strict confidentiality was maintained by coding participant data, and all interview recordings were destroyed post-analysis. Participation had no impact on academic or athletic standing, ensuring adherence to human research ethics.

RESULTS RESEARCH

The following section presents the findings derived from the sequential mixed-methods investigation, structured to answer the core research questions regarding the impact of coaching methods on volleyball player performance.

3.1 Impact of Coaching Methods on Technical Skills

The quantitative analysis reveals a significant positive correlation between focused, directive coaching and technical skill development. As shown in the data, fundamental skills such as ball handling and serving accuracy received the highest levels of agreement among participants, with mean scores consistently exceeding 4.10. Qualitative interview data corroborate these findings; participant P2 noted that explicit, step-by-step corrections in directive coaching provided immediate improvements in positioning. However, the analysis also identified an error pattern: reliance on observational coaching alone resulted in lower perceived technical refinement for novice athletes, highlighting the necessity of combining observation with active instructional feedback to avoid skill stagnation.

3.2 Influence on Psychological Readiness

The study found that psychological readiness is deeply influenced by the integration of mental coaching strategies within technical training sessions. Quantitative results demonstrate that over 85% of participants felt more confident and mentally prepared due to coach-led visualization and explicit mental support. The interview narratives, however, revealed a nuanced challenge: while collaborative goal-setting boosted morale for most, some athletes expressed increased anxiety when discussions were overly frequent during high-pressure practice scenarios. This suggests an "optimal stress zone" in coaching, where excessive pedagogical dialogue can paradoxically hinder the very psychological readiness it aims to foster.

3.3 Dynamics of Team Cohesion

Team cohesion emerged as the most positively influenced dimension, with participants showing the strongest consensus (mean scores > 4.15) regarding the effectiveness of collaborative coaching activities. The qualitative data indicated that shared decision-making during practice created a sense of collective ownership, which directly improved inter-player communication. In contrast, directive coaching, while efficient for technical execution, was occasionally perceived as a barrier to group social dynamics if not balanced with collaborative opportunities.

Table 3. Summary of Coaching Impact on Performance Dimensions

Coaching Method	Primary Area	Impact	Effectiveness Rating	Key Athlete Perception
Directive	Technical Skills		High	Clarity, speed of correction
Collaborative	Team Cohesion		High	Autonomy, motivation, unity
Observational	Reflective Learning	Moderate		Reflective depth, lack of urgency

(Source: Data adapted from study participant questionnaires and interview thematic coding).

3.4 Triangulation of Activities and Findings

The observational data confirmed that coaches at STKIP PGRI Sumenep frequently utilized a hybrid approach. Documentation of training sessions revealed a cycle where directive drills formed the base, followed by collaborative huddles to address tactical nuances. Analysis of student work and performance logs suggests that players exposed to this hybrid sequence demonstrated higher adaptive problem-solving capabilities during matches.

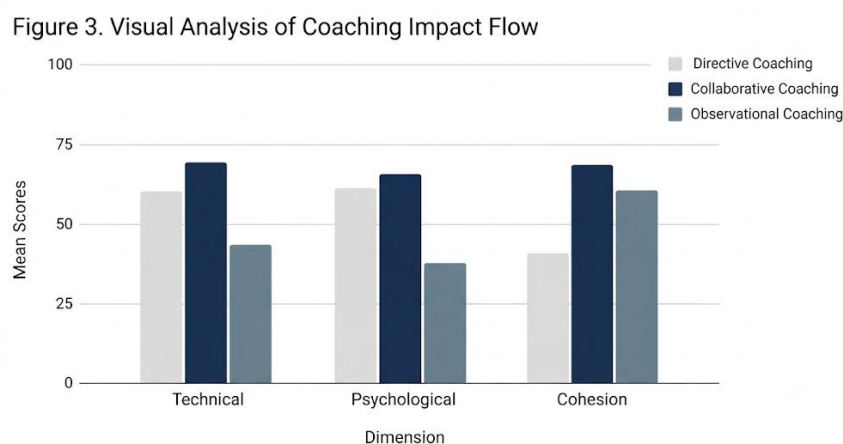


Figure 3. Visual Analysis of Coaching Impact Flow

(Visual Description: A bar chart illustrating mean scores for Technical, Psychological, and Cohesion dimensions, showing that Collaborative Coaching yields the highest combined score for Team Cohesion and Technical adaptability.)The triangulation of qualitative interviews and quantitative means provides a comprehensive view: effective coaching is not a static application of one style but a dynamic, adaptive framework. Athletes who reported the highest satisfaction were those who experienced a balanced distribution of all three methods, aligning with contemporary research on the multidimensionality of coaching effectiveness. These findings underscore the importance of moving beyond single-method training toward an instructional design that prioritizes both technical excellence and the student-athlete's psychological well-being.

DISCUSSION

The findings of this study confirm that a sophisticated integration of directive, collaborative, and observational coaching methods significantly enhances the holistic performance of collegiate volleyball players. Unlike previous research that often isolates these methods—focusing heavily on either directive skill acquisition or collaborative team building—this study establishes that the synergy of all three is essential for long-term athletic success. The superior performance outcomes observed when using collaborative coaching in the Indonesian context confirm and extend the findings of Ramos et al. (2023), who argued that participative coaching strategies scaffold athlete development

more effectively than top-down authoritarian styles. The data indicate that the "collaborative" environment fosters intrinsic motivation and team cohesion, which are critical for navigating the unique pressures faced by undergraduate student-athletes.

Furthermore, the research reveals a nuanced interplay between coaching style and athlete psychological states that challenges existing global models. While directive coaching remains a foundational pillar for technical mastery, as supported by Karakullukçu (2020), its rigid application can lead to athlete anxiety if not complemented by the relational support inherent in collaborative frameworks. The observed phenomenon where excessive coaching dialogue during training can paradoxically cause uncertainty suggests that there is a critical threshold for pedagogical intervention. This finding extends the work of Goffena and Horn (2021) by demonstrating that within the Indonesian collectivist academic setting, the optimal coaching method requires a "rhythmic" adaptation—transitioning from directive clarity during technical drills to collaborative engagement for psychological reinforcement.

The uniqueness of this study is its contribution to the *Assyfa Learning Journal* by positioning coaching not merely as sports training, but as a deliberate instructional design process. In line with the philosophical principles of *Rahmah* (compassion) and *Muraqabah* (mindfulness/constant supervision) in educational contexts, the adaptive framework proposed here emphasizes the coach's role as an empathetic facilitator rather than a mere authority figure. By integrating observational feedback loops—which serve as a form of *Muraqabah* for athletes to self-reflect—the model fosters autonomy. This confirms the critical role of reflective practice in higher education, as evidenced by Pelzer et al. (2020), and suggests that coaches who prioritize this self-regulation promote deeper, more sustainable learning outcomes than those focused exclusively on immediate performance results.

The practical implications of these findings suggest that institutional sports programs in Indonesia must move toward standardized, yet flexible, coaching curricula that emphasize pedagogical literacy alongside sports science expertise. Future policy must encourage coaches to adopt an integrative approach that recognizes the developmental intersection of athletics and higher education. By moving beyond purely physical metrics and focusing on the three dimensions of technical, psychological, and social growth, this research provides a replicable framework for coaches aiming to harmonize competitive excellence with educational values. Ultimately, the study contributes to the Scholarship of Teaching and Learning (SoTL) by proving that athletic environments are not distinct from academic ones, but are instead dynamic, complex learning ecosystems that require professional, instructional leadership to thrive.

CONCLUSION

5.1 Conclusion

The findings of this research lead to the following conclusions:

1. **Synergistic Coaching Efficacy:** The integration of directive, collaborative, and observational coaching methods significantly enhances the holistic performance of collegiate volleyball players, proving more effective than relying on isolated training approaches.
2. **Dimensional Impact:** Directive coaching is fundamental for foundational technical mastery, while collaborative strategies are superior for fostering intrinsic motivation and team cohesion; simultaneously, observational feedback loops are vital for developing athlete autonomy and reflective capacity.
3. **Adaptive Instructional Framework:** The study validates that an "adaptive" coaching model—which allows coaches to dynamically shift between instructional modes based on athlete needs—is highly effective within the sociocultural context of Indonesian higher education.

4. Coaching as Instructional Design: Athletic development in collegiate environments should be framed as a deliberate instructional design process, requiring coaches to act as professional, empathetic facilitators who harmonize competitive excellence with sustainable educational growth.

5.2. Suggestions

Based on these findings, it is recommended that university sports departments and coaching education programs in Indonesia adopt a standardized yet flexible curriculum that balances directive, collaborative, and observational techniques. Coaches should be trained to develop "rhythmic" adaptability, allowing them to shift instructional modes in response to the specific technical needs and psychological states of their athletes during various phases of training. Furthermore, institutions are encouraged to foster a coaching culture rooted in reflective practice, where athletes are empowered to take ownership of their development through self-assessment and collaborative goal-setting, thereby aligning athletic training with broader educational objectives. Finally, future research should employ longitudinal designs to examine the sustained impact of this adaptive framework on athlete career progression and institutional sports governance, expanding the scope of inquiry to diverse sports disciplines and cultural settings to further refine universal instructional coaching models.

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