

Infrastructure policy and training environment in shaping pencak silat athlete achievement: A qualitative case study in Central Java

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Abstract

This study examines how infrastructure policy, facility access, and training system implementation shape pencak silat athlete achievement in Central Java, Indonesia. In many provincial contexts, formal sport policies are not always accompanied by sport-specific infrastructure and stable access, creating gaps between policy design and training practice. A qualitative case study was conducted using criterion-based purposive sampling involving six stakeholders representing policy, administration, coaching, and athlete perspectives within the provincial sport system. Data were collected through semi-structured interviews, non-participant observations, and document analysis, and analyzed using reflexive thematic analysis emphasizing iterative coding and interpretive engagement across data sources. Interviews were guided by a protocol developed from the research questions, observations focused on training practices and facility use, and documents provided contextual policy evidence. The findings suggest that although pencak silat is formally recognized within provincial sport governance, infrastructure support remains general and not yet translated into sport-specific provision, facility access is uneven across training contexts, and training continuity is maintained through adaptive coaching practices and institutional coordination, resulting in athlete achievement that appears stable but reflects an effective yet fragile support system that depends more on human and organizational capacity than on stable structural support. This study contributes to the sport development literature by demonstrating that athlete achievement is an environmentally conditioned outcome shaped by the interaction between policy conditions, access arrangements, and adaptive training practices within a provincial sport environment. The findings indicate the need for more sport-specific infrastructure planning, stable facility access, and stronger coordination among sport institutions.

Keywords: Pencak silat, infrastructure policy, facility accessibility, sport development, athlete achievement.

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INTRODUCTION

Pencak silat, as a competitive sport that continues to expand at both national and international levels, cannot be understood solely through the lens of athletes' technical skills or coaching quality. Foundational perspectives on sport development have long emphasized that athlete performance is shaped by the interaction between individual, organizational, and environmental factors within a structured system. In contemporary sport systems, this understanding has been further developed through the concept of the high-performance environment, where athlete achievement is increasingly influenced by the quality of policy structures, access to material resources, and the implementation of training systems in everyday practice (Henriksen et al., 2024; Svensson et al., 2023). Consequently, athletic performance must be conceptualized not as an isolated outcome, but as a product of the interaction between structural, material, and operational conditions within the broader sport development system.

Recent developments in sport development research have shifted the analytical focus from individual-centered explanations toward system-based perspectives that emphasize the integration of governance, organizational practices, resource availability, and training processes (Hauser et al., 2022; Stavitz & Koc, 2024). Within this framework, the availability and accessibility of facilities play a central role, as they directly influence training continuity, intensity, and the overall quality of athlete preparation. However, in many regional contexts, particularly in developing countries, the quality of such environments remains uneven due to infrastructural limitations, fragmented governance, and the incomplete translation of policy into practice (Brunet, 2019; Laplaza et al., 2017).

In Indonesia, sport development has been systematically guided through national policy frameworks such as the Desain Besar Olahraga Nasional (DBON), which emphasizes structured athlete development, institutional coordination, and the integration of sport science (Republik Indonesia, 2021). Despite this strategic framework, existing evidence

suggests that policy formulation does not automatically result in effective implementation at the regional level. The main challenge lies in operationalizing policy, particularly in ensuring the provision of sport-specific facilities, stable access to training spaces, and coordinated support among key stakeholders involved in athlete development (Fitri et al., 2022; Solanellas et al., 2023). Thus, the critical issue is not the absence of policy, but how policy is translated into concrete conditions that support athlete training.

In the context of pencak silat, this issue is particularly significant given the sport's reliance on consistent, suitable training environments. Facility accessibility extends beyond mere availability, encompassing the certainty of access, the appropriateness of training spaces according to technical standards, and the continuity of usage that allows systematic training to occur. This includes factors such as the stability of training schedules, the adequacy of training surfaces and equipment, the safety and suitability of practice environments, and the availability of supporting facilities required for athlete preparation. Previous studies indicate that limited infrastructure, shared training spaces, and inadequate facility conditions can constrain training effectiveness and hinder long-term athlete development (Allen et al., 2021; Till et al., 2022; Yang et al., 2024). These findings highlight that facilities are not simply supporting elements, but integral components of the training system that directly influence performance outcomes.

This issue is particularly relevant in Central Java Province. Although the province has established a formal regulatory framework for sport governance, existing policies remain largely general and have not been fully operationalized to address the specific needs of particular sports such as pencak silat. As a result, facility provision and infrastructure management are not always aligned with the technical demands of athlete development at the provincial level. In practice, this condition requires coaches and athletes to adopt adaptive strategies in response to limited facilities, unstable access, and fragmented coordination among

institutions. Central Java is empirically significant because it combines formal provincial sport governance with practical challenges in facility provision and access for pencak silat development, making it a relevant case for examining how policy, infrastructure, and training systems are experienced and negotiated in practice. Institutional coordination among government agencies, sport organizations, coaches, and athletes further shapes how training support is organized and delivered. Therefore, Central Java is not merely a research location, but a critical provincial case for understanding how policy, facility accessibility, and training systems interact within athlete development practice.

METHOD

Research Design and Case Boundaries

This study employed a qualitative case study design to examine how infrastructure policy, facility accessibility, and the implementation of training systems interact within the provincial pencak silat athlete development system in Central Java, Indonesia. A qualitative case study approach was selected because the study aimed to generate an in-depth, contextually grounded explanation of how policy is translated into practice and experienced across multiple actors within a bounded system, rather than to test causal relationships statistically (Baxter & Jack, 2015; Crowe et al., 2011).

The case in this study is defined as the provincial pencak silat athlete development system in Central Java, bounded by (1) the institutional structure of provincial sport governance (The Department of Youth, Sports, and Tourism (Dinas Kepemudaan, Olahraga, dan Pariwisata/Disporapar), The Indonesian National Sports Committee (Komite Olahraga Nasional Indonesia/KONI), and The Indonesian Pencak Silat Association (Ikatan Pencak Silat Indonesia/IPSI)), (2) the operational training environment (Pelatda and related training settings), (3) the geographic scope of Central Java Province, and (4) the data collection period from 15 October to 30 November 2025. This bounded case represents an integrated system in

which policy, facility provision, and training practices converge. Central Java was selected as an information-rich and critical case due to the coexistence of formal sport governance structures and observable challenges in facility provision, access stability, and training implementation, making it a relevant context for examining the policy–practice gap in athlete development.

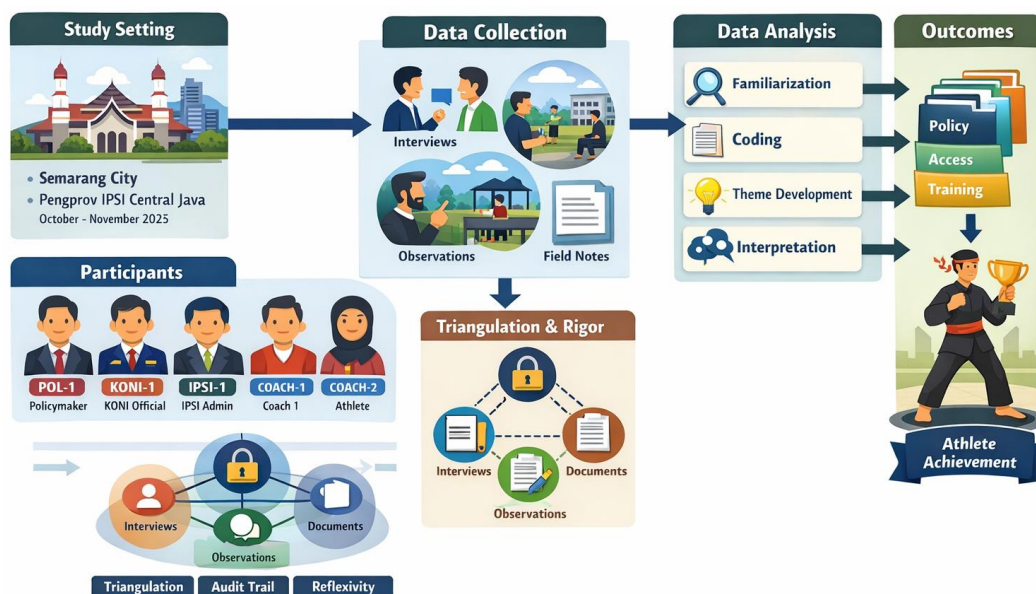


Figure 1. Research Design and Methodological Flow

Participants and Sampling Strategy

Participants were recruited using criterion-based purposive sampling, aimed at selecting information-rich individuals who occupy central roles within the provincial sport system. The inclusion criteria required participants to have direct involvement in one or more of the following domains: (1) sports policy formulation or infrastructure administration, (2) elite sport coordination, (3) technical governance of pencak silat, (4) coaching within the provincial training system, or (5) active participation as a provincial-level athlete.

The study involved six participants representing five stakeholder groups: one official from the Provincial Office of Youth, Sports, and Tourism (Disporapar), one official from the Provincial KONI, one administrator from IPSI Central Java, two certified pencak silat coaches (representing Pelatda and PPLOP training contexts), and one athlete

actively involved in the provincial training camp (Pelatda). These participants were selected because they hold functionally central roles in shaping, implementing, and experiencing the provincial athlete development system.

Given the qualitative case study design, the study prioritized depth of insight over breadth of representation. The selected participants were considered sufficient to capture key perspectives across policy, governance, coaching, and athlete experience within the bounded system. To ensure confidentiality, all participants are reported using role-based identifiers: POL-1, KONI-1, IPSI-1, COACH-1, COACH-2, and ATH-1. The selection of six participants reflects a purposive strategy aimed at capturing information-rich perspectives from key actors occupying structurally central roles within the provincial sport system. Rather than prioritizing numerical breadth, the study emphasizes analytical depth by ensuring representation across policy, governance, coaching, and athlete experience. This configuration allows the study to examine how policy is interpreted, implemented, and experienced across different levels of the system, thereby providing sufficient analytical coverage to address the research questions.

Table 1. Alignment of Research Questions, Data Sources, and Analytical Focus

Research Question	Primary Participants	Additional Data Sources	Analytical Focus
RQ1. How is provincial sports infrastructure policy translated into practice for the development of pencak silat in Central Java?	Disporapar, KONI, IPSI	Regional regulations, institutional records, program documents	Policy translation, institutional roles, implementation gaps
RQ2. How do athletes and coaches experience facility accessibility in the provincial training system?	Coaches, athlete	Field observations, scheduling-related records, and facility use context	Access stability, scheduling, suitability, and practical barriers
RQ3. How are training systems implemented and adapted under existing infrastructural conditions?	Coaches, IPSI, athlete	Training-related documents, field observations	Program design, implementation, and adaptation under constraints
RQ4. How do infrastructure policy, facility accessibility, and training systems interact in shaping athlete achievement?	All stakeholder groups	Competition/evaluation documents, integrated thematic interpretation	Mechanism linking policy, access, training, and athlete achievement

Table 2. Participant Matrix

Stakeholder Group	Inclusion Criteria	N	Role in Provincial Sport System	Years of Experience	Institutional Tenure	Certification Level (Coaches)	Level of Involvement	Identifier
Disporapar (Provincial policymaker)	Direct involvement in sports policy or infrastructure administration	1	Policy coordination and public sport administration	>10 years	>5 years	–	Strategic decision-making and policy formulation	POL-1
Provincial KONI	Direct involvement in elite sport coordination	1	Program coordination, budgeting, and evaluation	>8 years	>4 years	–	Strategic and operational coordination	KONI-1
Provincial IPSI	Direct involvement in pencak silat technical governance	1	Technical management of provincial pencak silat development	>10 years	>5 years	–	Technical oversight and program implementation	IPSI-1
Coaches (Pelatda & PPLOP)	Certified and actively involved in provincial athlete development	2	Training delivery, supervision, and program adaptation	5–12 years	3–8 years	National-level coaching certification	Direct training implementation and athlete mentoring	COAC H-1, COAC H-2
Provincial Athlete (Pelatda)	Active participation in the provincial training system	1	Training participant and performance actor	3–6 years	2–4 years	–	Direct participation in training and competition	ATH-1

Data Collection Procedures

Data were generated through semi-structured interviews, non-participant observations, and document analysis, allowing for methodological triangulation.

Interviews

Interviews served as the primary data source. A semi-structured interview protocol was developed based on the research questions and the study's conceptual focus on infrastructure policy, facility accessibility, and training systems. The protocol was adapted slightly across participant groups to reflect their roles (e.g., policymakers, administrators, coaches, and athletes), while maintaining consistency in core themes. The interview guide was reviewed internally to ensure alignment with the research questions and clarity of wording. Minor adjustments were made to tailor

the questions to different participant roles. Formal pilot testing was not conducted, as the study relied on focused, role-specific questioning guided by the conceptual framework.

A total of six interviews were conducted between 15 October and 30 November 2025 in Bahasa Indonesia, with each interview lasting approximately 35–50 minutes. All interviews were conducted face-to-face in locations agreed upon with participants. Topics explored included: (1) policy formulation and infrastructure planning, (2) facility access and scheduling practices, (3) training system implementation, (4) adaptation to infrastructural constraints, and (5) perceived implications for athlete achievement. With participants' consent, all interviews were audio-recorded and transcribed verbatim.

Observations

Non-participant observations were conducted in multiple training sessions within the provincial pencak silat system in Semarang. A total of 4 observation sessions were conducted, each lasting approximately 90–120 minutes. Observations focused on facility conditions, access arrangements, scheduling practices, training delivery, and coach–athlete interactions. Field notes were recorded systematically during and immediately after each session to capture contextual details and behavioral patterns relevant to the research questions.

Document Analysis

Document analysis was conducted to complement interview and observational data. The analyzed documents included: (1) regional sports regulations, (2) institutional program plans, (3) training schedules and records, and (4) competition and evaluation reports from the past five years. Documents were selected based on their relevance to infrastructure provision, facility use, and athlete development processes. These documents were used to provide contextual background, corroborate interview data, and support the interpretation of policy implementation in practice.

Data Analysis

Data were analyzed using reflexive thematic analysis, emphasizing the researcher's active interpretive engagement in constructing meaning from the data. Analysis involved iterative steps: familiarization, coding, category development, and theme construction. Coding combined deductive (based on research focus) and inductive approaches (emerging patterns). Themes were developed through continuous comparison and interpretive reflection across data sources. Microsoft Excel was used as a data management tool to organize transcripts, field notes, and documents into coding matrices, facilitating systematic comparison across sources.

Table 3. Example of Coding Process

Raw Excerpt	Code	Category	Theme
"We often adjust training schedules because the venue is shared."	Scheduling adjustment	Access constraint	Constrained facility accessibility
"Training continues, but sometimes we reduce intensity due to space."	Reduced intensity	Training adaptation	Adaptive training system

Trustworthiness

To enhance trustworthiness, the study applied multiple strategies. Credibility was strengthened through triangulation of interviews, observations, and documents, as well as prolonged engagement within the field setting. Dependability was ensured by maintaining a detailed audit trail documenting coding decisions and analytical steps. Confirmability was supported through reflexive memo writing, which allowed the researcher to reflect critically on assumptions and interpretations throughout the analysis. Transferability was addressed by providing a rich description of the research context, enabling readers to assess the applicability of findings to other settings.

Operationalization of Athlete Achievement

In this study, athlete achievement is understood as a contextual, multi-dimensional construct encompassing both objective indicators (e.g., participation in provincial training programs and competition outcomes) and perceived performance development as reported by athletes and coaches. Rather than treating achievement as a purely quantitative

outcome, the study interprets it as a result of the interaction between policy conditions, facility accessibility, and training system implementation within the provincial development context.

RESULT

1. Provincial Policy Provides General Support but Lacks Sport-Specific Infrastructure Planning

The findings indicate that pencak silat is formally included within the provincial sport policy framework; however, infrastructure policy remains general and not sport-specific. The Disporapar informant explained that existing regulations provide a broad legal basis for sport development, but do not specifically regulate pencak silat infrastructure:

“This policy is of a macro nature and covers sports in general, including pencak silat” (POL-1)

Similarly, it was stated that no specific regulation exists for pencak silat infrastructure development:

“There are no local regulations that specifically govern the development of sports infrastructure for pencak silat” (POL-1).

KONI and IPSI confirmed this pattern. Funding and support are primarily distributed through a proposal-based mechanism across all sports, rather than through permanent, sport-specific infrastructure provision. IPSI also reported the absence of a dedicated facility:

“We do not have our own building yet... so our current policy is to borrow or rent practice facilities” (IPSI-1).

These findings show that policy support exists in the form of regulation and funding mechanisms, but infrastructure provision remains dependent on coordination, proposals, and available budget.

Table 4. Institutional Roles and Empirical Findings in Provincial Pencak Silat Development

Institution / Actor	Formal Role	Empirical Finding
Disporapar	Macro regulation, budget allocation, and public sports administration	Provides a general policy framework for sports development, including pencak silat, without specific regulation for sport-specific infrastructure
Provincial KONI	Elite sport coordination, funding distribution, and program supervision	Distributes financial support through proposal-based mechanisms across sports and coordinates training programs and competitions
Provincial IPSI	Technical governance of pencak silat development	Organizes training activities, coordinates equipment use, and manages athlete preparation, but does not control infrastructure provision
Coaches and athletes	Program implementation and participation	Conduct training activities using available facilities, including shared, borrowed, or rented venues, and adjust training schedules and routines accordingly.

2. Facility Accessibility is Uneven Across Training Contexts

The findings show that facility accessibility varies across different training environments rather than being uniformly limited. At the provincial and Pelatda levels, the absence of a permanent training facility was consistently reported. The KONI informant stated that pencak silat does not yet have a dedicated training building, and the Pelatda coach confirmed that training is conducted in rented or borrowed venues. Training conditions often require the use of multiple locations, particularly when different training components cannot be accommodated in a single venue.

However, variation was observed across training contexts. In the PPLOP setting, access was reported to be more stable, although space limitations were still identified. The coach noted that available facilities support routine training but are insufficient for full competition simulation. From the athlete's perspective, access within the current training program was considered manageable due to structured scheduling, transportation support, and available equipment. At the regional level, Disporapar data indicate disparities in facility availability between urban and peripheral

areas. Facilities in major cities such as Semarang tend to be more accessible, while districts rely more on community-based or shared facilities.

Observational data support these findings, showing that equipment is generally available, but training spaces are often shared, temporary, or limited in size.

Table 5. Cross-context Comparison of Facility Accessibility

Training Context	Facility Condition	Access Pattern	Main Constraints	Practical Implication
Provincial-level training	No permanent pencak silat facility; training uses shared or borrowed venues	Access depends on institutional coordination and temporary arrangements	No dedicated building, shared use, unstable scheduling	Training continuity is maintained through scheduling adjustments under shared facility conditions.
Pelatda training	Facilities are available, but not fully specific to pencak silat needs	Access is arranged through program scheduling and coordination with KONI and IPSI	No fixed training center, separation of some training components across venues	Coaches must adjust training sessions based on available space and time
PPLOP training	Equipment is relatively complete, and daily access is more stable	Access is more regular because training is organized in a structured environment	Space is still limited for full sparring and competition simulation	Technical development can run more consistently, but simulation remains limited
Athlete's experience in the Semarang-based program	Training facilities are usable, and transport support is available	Access is perceived as manageable under current training arrangements	Access quality depends on the current program support and location	Athletes can train regularly, but this reflects conditions within the current training context and may vary across regions.
District or peripheral areas	Facility quality and accessibility are more uneven	Access varies by region and local support	Distance, time allocation, and shared facility use	Unequal access may affect consistency and preparation quality

3. Training Systems are Structured but Implemented Under Constraints

The findings show that training systems in Central Java are structured and follow planned programs, but their implementation is adjusted to existing infrastructural conditions. Coaches reported that training programs include physical, technical, tactical, and mental components, and are developed through structured planning processes, including testing, goal setting, and evaluation cycles. However, implementation is influenced by facility availability and budget conditions. The Pelatda coach explained:

"If the budget does not allow for it... then a decentralized system is implemented" (COACH-1).

This indicates that training arrangements may shift between centralized and decentralized models depending on available resources. Facility limitations also affect training execution. For example, some training components must be conducted in different locations, and training schedules may be adjusted due to shared facility use. Despite these constraints, training continuity is maintained through flexible scheduling, modification of training intensity, and adaptation of training methods to available space and time. These patterns were consistently observed across interview data and field observations.

Table 6. Training Implementation Under Existing Conditions

Training Aspect	Planned Condition	Observed Condition	Adjustment Observed	Training Aspect
Training schedule	Based on program targets and the competition calendar	Affected by shared facility use	Scheduling adjustments	Training schedule
Training venue	Stable and consistent environment	Multiple or changing locations	Use of available venues	Training venue
Training components	Integrated physical, technical, tactical, and mental training	Not all components were conducted in the same location	Separation of training activities	Training components
Training intensity	Adjusted to the competition phase	Influenced by space and time availability	Modification of session focus	Training intensity
Program continuity	Expected to run consistently	Affected by budget and facility access	Use of decentralized arrangements	Program continuity
Coaching implementation	Structured training plans	Adjusted based on available conditions	Adaptation of drills and sessions	Coaching implementation

4. Athlete Achievement is Maintained Across the System

The data indicate that athlete performance outcomes are reported as stable within the provincial system. Institutional participants described improvements in competition results, including higher rankings in national events such as POPNAS. Participants also reported that training programs are implemented consistently and supported by equipment, transportation, and participation in competitions. From the athlete's perspective, achievement is associated with continued participation in structured training and exposure to competition.

Institutional data also indicate that training and competition programs are supported through budgeting and coordination among organizations. Across participants, athlete achievement is described as maintained within the current training system.

Table 7. Empirical Conditions Related to Athlete Achievement

Component	Empirical Condition
Infrastructure policy	General policy framework without sport-specific infrastructure planning
Facility accessibility	Access is available but varies across contexts
Training system	Structured programs implemented across training environments
Coaching practices	Training adjusted based on available facilities and schedules
Institutional coordination	Coordination occurs through funding, scheduling, and program support
Athlete achievement	Performance outcomes are reported as stable across competition levels

DISCUSSION

This study suggests that the achievement of pencak silat athletes in Central Java is shaped by the interaction between macro-level policy orientation, differentiated facility accessibility, and adaptive training implementation within a specific provincial context. Rather than attributing performance solely to individual factors, the findings indicate that achievement emerges from how structural, material, and operational elements are configured within the broader sport development environment. This aligns with and confirms prior work showing that high-performance environments depend on the integration of governance, resources, and daily training practices (Lundqvist et al., 2025; Schlawe et al., 2025; Scott et al., 2026), and extends it by demonstrating how such integration operates in a provincial, non-Western context.

First, the findings indicate that the central policy issue in Central Java is not the absence of regulation, but the general nature of existing regulations. Provincial frameworks provide formal legitimacy for sport development; however, they do not specify infrastructure requirements for pencak silat. This produces operational ambiguity, where institutional roles are recognized, but the translation of policy into concrete, sport-specific implementation remains limited. In practice, this is reflected in the absence of dedicated training facilities, reliance on proposal-based funding, and the need for cross-institutional negotiation to secure venues and training spaces. These results confirm and extend previous literature on sport governance by showing that the effectiveness of policy is not determined solely by its presence, but by its level of specificity and its capacity to guide operational decisions within particular sport contexts (Sirait & Noer, 2021; Sugden et al., 2023; Zardi et al., 2025). Thus, in relation to RQ1,

provincial infrastructure policy is translated into practice mainly through general regulatory recognition, proposal-based support, and inter-institutional coordination rather than through sport-specific infrastructure planning.

Second, this study refines existing understandings of facility limitations by demonstrating that accessibility is stratified rather than uniformly deficient. Institutional actors consistently reported the absence of permanent facilities and fragmented access arrangements, while the experiences of athletes and PPLOP coaches revealed relatively stable training conditions within certain program tiers. This indicates that accessibility is shaped by differences in institutional support, spatial location, and program structure, rather than by a simple lack of facilities. In this context, accessibility appears to function as the practical interface through which macro-level policy is experienced in everyday training environments. These findings confirm prior research on infrastructure constraints in sport development (Amali, 2021; Rahadian & Ma'mun, 2018) and extend it by highlighting that disparities in access, rather than absolute scarcity alone, play a critical role in shaping training continuity and athlete experience. In relation to RQ2, athletes and coaches experience facility accessibility as uneven, with access conditions varying according to program level, location, and institutional support.

Third, the findings suggest that the training system functions as a compensatory mechanism, is designed but adapted in implementation. Programs include planned components such as physical, technical, tactical, and mental training supported by evaluation cycles. However, their execution is continuously adjusted through decentralization, venue rotation, flexible scheduling, and prioritization of key training components. These practices reflect the system's adaptive capacity, with coaches and institutions actively responding to environmental constraints to maintain training continuity. This confirms and extends existing literature on high-performance environments by illustrating how organizational resilience and practical adaptation become central when material conditions are not fully

supportive (Hepfer & Lawrence, 2022; Ramadhan et al., 2020; Shojaee & Islam, 2025). At the same time, these adaptations operate within structural limits, as repeated adjustments to venues, schedules, and training focus may affect the consistency of long-term performance preparation. In relation to RQ3, training systems are implemented through structured programs but are continuously adapted in response to available facilities and resources.

Fourth, the findings suggest that stable athlete achievement should not be interpreted as evidence that the development system is fully sufficient. While Central Java continues to produce competitive results, the data indicate that these outcomes are sustained largely through strong human and organizational capacities operating within constrained infrastructural conditions. Athletes' experiences of structured training, equipment availability, and institutional support coexist with broader system-level limitations, including the absence of permanent facilities and reliance on budget-dependent arrangements. This pattern suggests that current achievement reflects both the strengths and the constraints of the existing system and confirms prior findings in sport performance research emphasizing the role of coaching quality and support systems (Dzahra et al., 2022; Gröschke et al., 2022), while extending them by showing how these factors operate within an environment characterized by uneven access and policy generality. In relation to RQ4, athlete achievement appears to be shaped by the combined operation of policy conditions, access arrangements, and adaptive training practices within the provincial system.

Taken together, the findings contribute to sport development literature by conceptualizing athlete achievement as an environmentally conditioned outcome produced through the interaction between policy structures, access to material resources, and adaptive training practices. Rather than viewing these elements in isolation, this study highlights their interdependence within a provincial high-performance environment and extends existing frameworks that emphasize integrated sport systems

(Conti et al., 2025; Wijaya et al., 2024) by situating them within a subnational and resource-constrained context.

From a practical perspective, the findings suggest that improving the sustainability of pencak silat development in Central Java requires moving beyond formal policy recognition toward more sport-specific and operationally grounded interventions. This includes the development of dedicated or semi-dedicated training facilities, clearer infrastructure planning at the provincial level, more stable and equitable access arrangements across districts, and reduced reliance on short-term, proposal-based funding mechanisms. Strengthening coordination between institutions and aligning policy with the technical needs of specific sports may also enhance the effectiveness of existing training systems (Gunawan et al., 2021; Lindsey et al., 2025).

This study has several limitations. First, it is based on a single provincial case, which limits the generalizability of the findings to other regions or sport systems. Second, the number of participants is relatively small and focused on key institutional actors, which may not capture the full diversity of perspectives within the system. Third, the study relies on qualitative data intended to provide in-depth contextual understanding rather than statistical generalization. Future research may expand this work by incorporating comparative provincial cases, larger participant groups, or mixed-methods approaches to examine further the relationship between policy, infrastructure, and athlete performance.

CONCLUSION

This study suggests that the achievement of pencak silat athletes in Central Java is shaped by the interaction between infrastructure policy, facility accessibility, and training system implementation. Although formally recognized in provincial policy, pencak silat development still relies on general frameworks and flexible facility arrangements and has not yet been supported by sport-specific infrastructure. Uneven facility access and adaptive training practices indicate that athlete achievement is maintained through a system that relies on human and organizational capacity rather

than stable structural support, where structured programs and adaptive practices enable continuity.

These findings highlight the need for more sport-specific infrastructure planning, stable facility access, and stronger institutional coordination. This study contributes to the literature on sport development by demonstrating that athlete achievement within a provincial pencak silat system is best understood as an environmentally conditioned outcome shaped by the interaction between policy conditions, access arrangements, and adaptive training practices within a provincial sport context. Future research should explore similar dynamics in other regional contexts.

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