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Teaching Competence of Physical Education Teachers in Junior High Schools: A Cross-Sectional Study in Nias, Indonesia

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ABSTRACT

Purpose of the study: This study aimed to evaluate the pedagogical competence of Physical Education, Sports, and Health (PJOK) teachers in junior high schools in Hiliserangkai District, Nias Regency, Indonesia, and to examine competence levels across eight pedagogical dimensions prescribed by national teacher competency standards.

Materials and methods: A quantitative cross-sectional survey design was employed involving all PJOK teachers (N = 5) from four public junior high schools through total sampling. Data were collected using a validated 85-item pedagogical competence questionnaire covering eight dimensions: understanding student characteristics, mastery of learning theories and instructional principles, curriculum development, educational learning activities, student potential development, communication with students, assessment and evaluation, and utilization of assessment results. Content validity was established through expert judgment (S-CVI/Ave = 0.96), and internal consistency reliability was confirmed using Cronbach's alpha (α = 0.93). Data were analyzed using descriptive statistics, competence index calculations, percentage distributions, and 95% confidence intervals with IBM SPSS Statistics 26.

Results: The overall pedagogical competence index reached 89.7%, indicating a "Very Good" level of competence. The highest competence scores were observed in utilization of assessment results (94.8%), assessment and evaluation (94.0%), and communication with students (92.8%). The lowest scores were found in understanding student characteristics (82.8%) and curriculum development (83.2%), although both remained within the "Very Good" category. Six of the eight dimensions were consistently rated "Very Good" across all participants, while limited variation was observed in student characteristics and curriculum development.

Conclusions: PJOK teachers in Hiliserangkai District demonstrated strong pedagogical competence despite teaching in a geographically remote setting. Nevertheless, targeted professional development focusing on curriculum adaptation and understanding student diversity is recommended to further enhance instructional quality and sustain educational improvement in rural schools.

Keywords
pedagogical competence; physical education teachers; teacher competence; junior high school; rural education; Indonesia.

INTRODUCTION

Physical Education, Sports, and Health (PJOK) is a mandatory subject in the Indonesian national curriculum, mandated from primary to senior secondary education (Hastuti et al., 2021, p. 310; Ockta & Mardesia, 2023, p. 2). At the junior high school (SMP) level, it aims to develop students' physical fitness, motor skills, health awareness, and character through structured bodily movement. The effectiveness of PJOK is profoundly dependent upon the pedagogical competence of the teachers who deliver it.

Indonesian law (Law No. 14 of 2005 on Teachers and Lecturers) mandates that teachers possess four core competencies: pedagogical, professional, personal, and social (Yamin & Maisah, 2010). Among these, pedagogical competence is particularly critical, as it governs the planning, implementation, and evaluation of learning (Janawi, 2011; Rukajat et al., 2023, p. 4). Ministerial Regulation No. 20 of 2018 (Permendikbud, 2018) and Ministerial Regulation No. 16 of 2007 (Permendiknas, 2007) further operationalize teacher competence standards across Indonesia, including specific expectations for PJOK educators (Halimah, 2018, p. 43).

Nias Regency, situated in North Sumatra Province, represents one of Indonesia's geographically isolated regions, characterized by limited educational infrastructure, inadequate teacher training access, and constrained human resources. Hiliserangkai District within this regency encompasses four state junior high schools serving a predominantly rural student population. Prior to this study, no systematic empirical assessment of PJOK teacher competence in this sub-district had been conducted.

Critical Examination of Existing Literature

Research consistently demonstrates that teacher competence is the primary determinant of student learning outcomes, superseding the influence of instructional models or curriculum design (Arban et al., 2023, p. 32; Astiwi et al., 2024, p. 349; Mardiana et al., 2025). In the context of physical education, competent teachers are essential not only for skill transmission but also for promoting student health, positive affect toward physical activity, and character development (Bailey et al., 2008; Ennis, 2014;

McKenzie & Lounsbery, 2013).

National data from the Indonesian Ministry of Education, Culture, Research and Technology indicate that the average Teacher Competence Index (IKG) for PJOK teachers in Indonesia stands at 68.5 out of 100 (Anwar et al., 2020, p. 1; Karawang et al., 2025; Nugraha et al., 2022, p. 321). However, regional disparities are substantial; in remote areas such as Nias Regency, scores tend to fall to approximately 62.3, attributed to restricted access to professional training, inadequate sports facilities, and limited pedagogical support. Ockta & Mardesia (2023, p. 4) reported that 45% of PJOK teachers in rural Indonesian areas fail to meet pedagogical competence standards, with downstream effects on student motivation and learning quality.

Studies from similar contexts corroborate these patterns. Putra and Suwiwa (2021) found low pedagogical competence scores (mean: 55/100) among PJOK teachers in remote areas of East Java, principally due to the absence of systematic in-service training (Hastuti et al., 2022, p. 378; Susanto et al., 2022, p. 342). Nugroho et al. (2021) demonstrated that PJOK teachers holding subject-specific degrees outperformed generalists on pedagogical measures (75 vs. 60), highlighting the importance of targeted tertiary education (Nugraha et al., 2022, p. 321). Budiana et al. (2025) showed that targeted training interventions improved PJOK teacher competence by 27% in Nusa Tenggara Timur, a similarly remote province.

On the theoretical plane, Spencer and Spencer (1993) define competence as an integrated capability encompassing knowledge, skills, and disposition that enables performance to an established standard. Falloon (2020, p. 2469) locates teaching competence within a broad pedagogical framework that spans student understanding, curriculum enactment, instructional execution, and formative assessment. Sanjaya (2016) extends this by emphasizing teaching as a transactional and character-forming process rather than mere information delivery.

Despite these advances, the extant literature remains largely focused on urban and peri-urban Indonesian settings or on aggregate provincial analyses. Highly localized, school-level assessments of PJOK teacher competence in remote sub-districts—as called for by scholars advocating evidence-based policy (McKenzie & Lounsbery, 2009; Rink, 2013)—remain underrepresented.

Identification of Research Gaps

A systematic review of the literature reveals three substantive gaps relevant to the present study. First, no published study has examined PJOK teacher competence specifically in Hiliserangkai District, Nias

Regency, leaving local educational administrators without empirically grounded data for policy formulation. Second, most existing studies employ either purely self-reported questionnaires without peer-assessment validation, or focus exclusively on one or two competence dimensions. Third, the multi-dimensional evaluation of pedagogical competence across eight indicators—as stipulated by Indonesian national standards (Permendiknas, 2007)—has rarely been operationalized simultaneously in a remote Indonesian context.

Rationale for the Research

A preliminary investigation conducted at SMP Negeri 1 Hiliserangkai on November 25, 2025, involving structured interviews with ten students, revealed several concerning indicators: PJOK lessons were perceived as monotonous (all 10 students), teachers rarely articulated learning objectives prior to instruction (eight of ten students), instructional methods were repetitive and rarely varied (all 10 students), and assessment procedures were irregular or absent (nine of ten students). Concurrently, Nias Regency's Education Office (2023) data indicated that only 10% of PJOK teachers in Hiliserangkai District had demonstrated clear professional competence profiles. These converging signals—student perceptions, administrative records, and the broader literature—justify a rigorous empirical survey of actual teacher competence.

Objectives

This study aimed to: (1) determine the overall level of teaching competence of PJOK teachers at junior high schools in Hiliserangkai District, Nias Regency; and (2) describe the distribution of competence across eight pedagogical sub-dimensions as defined by national teacher standards.

MATERIALS AND METHODS

Study Participants

The target population comprised all PJOK teachers at state junior high schools in Hiliserangkai District, Nias Regency, North Sumatra Province, Indonesia. At the time of the study, the total population consisted of five teachers distributed across four schools: SMP Negeri 1 Hiliserangkai (n=2), SMP Negeri 2 Hiliserangkai (n=1), SMP Negeri 3 Hiliserangkai (n=1), and SMP Negeri 4 Hiliserangkai (n=1). Following Arikunto's (2019) recommendation that when a population is fewer than 100 subjects, all should be included, a total sampling (census) approach was employed, resulting in a sample of five participants (N=5). All participants held a Bachelor of Education degree (S1) in Physical Education, Sports, and Health (PJOK) and were actively employed at the time of data collection. Participation was voluntary and informed consent was obtained from all participants.

Study Organization

This study employed a quantitative descriptive cross-sectional survey design. The research was conducted in four phases: (1) preparatory phase (January 2026), including instrument validation and formal institutional permission; (2) field data collection phase (February–March 2026, comprising eight meeting sessions across the four schools); (3) data processing and analysis phase (March 2026); and (4) reporting phase (March–April 2026).

Data collection visits were coordinated with school principals, who also designated peer assessors (fellow teachers) to evaluate each PJOK teacher's competence. Each PJOK teacher was evaluated by four designated peer assessors, supplemented by the researcher's direct observational assessments. Additional documentary evidence (lesson plan documents, learning modules, attendance records) was collected to triangulate questionnaire responses.

Test and Measurements

The primary data collection instrument employed in this study was a structured, closed-ended questionnaire designed to assess the pedagogical competence of Physical Education, Sports, and Health (PJOK) teachers. The instrument was developed based on the pedagogical competency standards stipulated in the Indonesian National Education Standards and relevant literature on teacher competence. The questionnaire comprised 85 items distributed across eight dimensions of pedagogical competence, covering teachers' ability to understand student characteristics, apply learning theories, develop curricula, implement educational learning activities, facilitate student potential development, communicate effectively with students, conduct assessment and evaluation, and utilize assessment results for instructional improvement. Each item was measured using a five-point Likert scale ranging from 1 (*Not Capable*) to 5 (*Very Capable*). The structure of the questionnaire is presented in Table 1.

Table 1. Structure of the Pedagogical Competence Questionnaire

Dimension	Pedagogical Competence Indicator	Number of Items	Maximum Score
A	Understanding Student Characteristics	10	50
B	Mastery of Learning Theories and Instructional Principles	10	50
C	Curriculum Development	10	50
D	Educational Learning Activities	15	75
E	Development of Student Potential	10	50
F	Communication with Students	10	50
G	Assessment and Evaluation	10	50
H	Utilization of Assessment Results	10	50
Total	Pedagogical Competence	85	425

As shown in Table 1, the pedagogical competence instrument encompasses eight dimensions that collectively represent the core pedagogical responsibilities of PJOK teachers. The largest proportion of items was allocated to educational learning activities (15 items), reflecting the central role of instructional implementation in physical education. The remaining seven dimensions each consisted of 10 items, ensuring balanced measurement across key pedagogical domains. The total maximum score attainable was 425, indicating that higher scores reflected stronger pedagogical competence. This multidimensional structure enabled a comprehensive assessment of teachers' pedagogical capabilities in accordance with national professional standards.

Validity and Reliability of the Instrument

Prior to data collection, the questionnaire underwent a content validation process conducted by two experts in physical education and educational measurement. Instrument reliability and validity were evaluated to ensure that the questionnaire accurately measured pedagogical competence and produced consistent results. The validity and reliability statistics of the instrument are presented in Table 2.

Table 2. Instrument Validity and Reliability

Measurement Property	Method	Criterion	Result
Content Validity	Expert Judgment (2 Experts)	I-CVI ≥ 0.78	Accepted
Scale Content Validity	S-CVI/Ave	≥ 0.90	0.96
Internal Consistency	Cronbach's Alpha	≥ 0.70	0.93
Number of Items	Questionnaire	—	85
Scale Type	Likert Scale	1–5	Five-point

The results presented in Table 2 indicate that the questionnaire possessed satisfactory psychometric properties. The content validity assessment demonstrated that all items were considered relevant and representative of the pedagogical competence construct. Furthermore, the scale-level content validity index (S-CVI/Ave = 0.96) exceeded the recommended threshold, indicating excellent content validity. The instrument also exhibited excellent internal consistency reliability, with a Cronbach's alpha coefficient of 0.93, suggesting that the questionnaire items consistently measured the same underlying construct. These findings support the suitability of the instrument for assessing PJOK teachers' pedagogical competence in the present study.

Competence Classification Criteria

To facilitate interpretation of the questionnaire scores, pedagogical competence levels were categorized according to percentage-based criteria adapted from Arikunto (2019). The classification system used in this study is presented in Table 3.

Table 3. Interpretation of Pedagogical Competence Scores

Percentage Score (%)	Category
81–100	Very Good
61–80	Good
41–60	Fair
21–40	Poor
0–20	Very Poor

Table 3 illustrates the classification framework used to interpret teachers' pedagogical competence scores. Scores ranging from 81% to 100% were categorized as *Very Good*, indicating a high level of pedagogical competence, while scores between 61% and 80% were classified as *Good*. Lower score ranges reflected progressively weaker levels of competence. This classification system provided a standardized basis for evaluating individual dimensions as well as overall pedagogical competence, thereby facilitating meaningful comparisons across teachers and competence domains.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics Version 26. Descriptive statistics including mean, standard deviation, median, minimum, maximum, percentage scores, and 95% confidence intervals were calculated for each pedagogical competence dimension. Internal consistency reliability of the questionnaire was assessed using Cronbach's alpha coefficient. Content validity was evaluated using the Content Validity Index (CVI). Spearman rank-order correlation analysis was employed to examine

associations among the eight pedagogical competence dimensions. Effect sizes were interpreted using Cohen's d. Statistical findings were reported in accordance with APA 7th edition and international reporting standards.

Ethical Considerations

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Prior to data collection, written approval was obtained from the principals of all four participating schools. Informed written consent was obtained from all teacher participants before study procedures commenced. Participation was voluntary, and teachers were assured that non-participation would have no professional consequences. Data were stored securely and reported in aggregate to protect individual anonymity. No biological samples or invasive procedures were employed. The study protocol was reviewed and approved by the Faculty of Sport Science, Universitas Negeri Medan, in accordance with institutional ethical guidelines.

DISCUSSION

Reliability and Content Validity of the Instrument

Prior to the main analysis, the psychometric properties of the pedagogical competence questionnaire were examined. Internal consistency reliability was assessed using Cronbach's alpha coefficient, while content validity was evaluated through expert judgment using the Content Validity Index (CVI).

Table 4. Reliability and Content Validity Statistics

Indicator	Value	Interpretation
Cronbach's Alpha	0.93	Excellent Reliability
I-CVI Range	0.83–1.00	Acceptable–Excellent
S-CVI/Ave	0.96	Excellent Content Validity

The overall questionnaire demonstrated excellent internal consistency (α = 0.93), exceeding the recommended threshold of 0.70. Furthermore, the scale-level content validity index (S-CVI/Ave = 0.96) confirmed that the instrument adequately represented the construct of pedagogical competence.

Descriptive Statistics and Competence Index

Descriptive statistics for the eight pedagogical competence dimensions are presented in Table 5.

Table 5. Descriptive Statistics, Competence Index, and 95% Confidence Intervals

Dimension	Mean	SD	Competence Index (%)	95% CI
Student Characteristics	41.4	5.67	82.8	34.4–48.4
Learning Theories & Principles	45.6	5.02	91.2	39.4–51.8
Curriculum Development	41.6	5.10	83.2	35.3–47.9
Educational Learning Activities	66.4	3.42	88.5	62.2–70.6
Student Potential Development	45.0	1.58	90.0	43.0–47.0
Communication with Students	46.4	1.79	92.8	44.2–48.6
Assessment and Evaluation	47.0	1.58	94.0	45.0–49.0
Utilization of Assessment Results	47.4	1.14	94.8	46.0–48.8

The highest competence index was observed in the utilization of assessment results (94.8%), while the lowest was found in understanding student characteristics (82.8%). Nevertheless, all dimensions remained within the “Very Good” category.

Distribution of Competence Categories

Table 6. Percentage Distribution of Teachers Across Competence Categories

Dimension	Very Good (%)	Good (%)
Student Characteristics	60	40
Learning Theories & Principles	100	0
Curriculum Development	40	60
Educational Learning Activities	60	40
Student Potential Development	100	0
Communication with Students	100	0
Assessment and Evaluation	100	0
Utilization of Assessment Results	100	0

Six of the eight dimensions were uniformly rated as “Very Good” by all participants, whereas curriculum development and understanding student characteristics exhibited relatively greater variation.

Correlation Analysis Among Pedagogical Competence Dimensions

Spearman rank-order correlation analysis was conducted to investigate the relationships among the eight dimensions of pedagogical competence.

Table 7. Spearman Correlation Matrix (Selected Results)

Variables	Spearman's ρ	Strength
Assessment ↔ Assessment Utilization	0.91	Very Strong
Communication ↔ Student Potential Development	0.82	Strong
Curriculum Development ↔ Educational Activities	0.77	Strong
Learning Theory ↔ Assessment	0.74	Strong

The analysis revealed positive associations among all competence dimensions. The strongest relationship was observed between assessment competence and the utilization of assessment results, indicating that teachers with stronger assessment practices were also more likely to use assessment information effectively for instructional decision-making.

Effect Size Analysis

To evaluate the magnitude of differences between pedagogical competence dimensions, Cohen's d effect sizes were calculated.

Table 8. Effect Size Comparisons Between Key Dimensions

Comparison	Cohen's d	Interpretation
Curriculum Development vs Assessment	1.12	Large
Student Characteristics vs Communication	0.94	Large
Learning Theory vs Curriculum Development	0.79	Medium–Large
Assessment vs Assessment Utilization	0.28	Small

The largest effect size was observed between curriculum development and assessment competence (d = 1.12), suggesting a substantial disparity between these two pedagogical domains.

Radar Profile of Pedagogical Competence

To provide a visual representation of competence distribution across dimensions, a radar chart was generated based on the competence index scores.

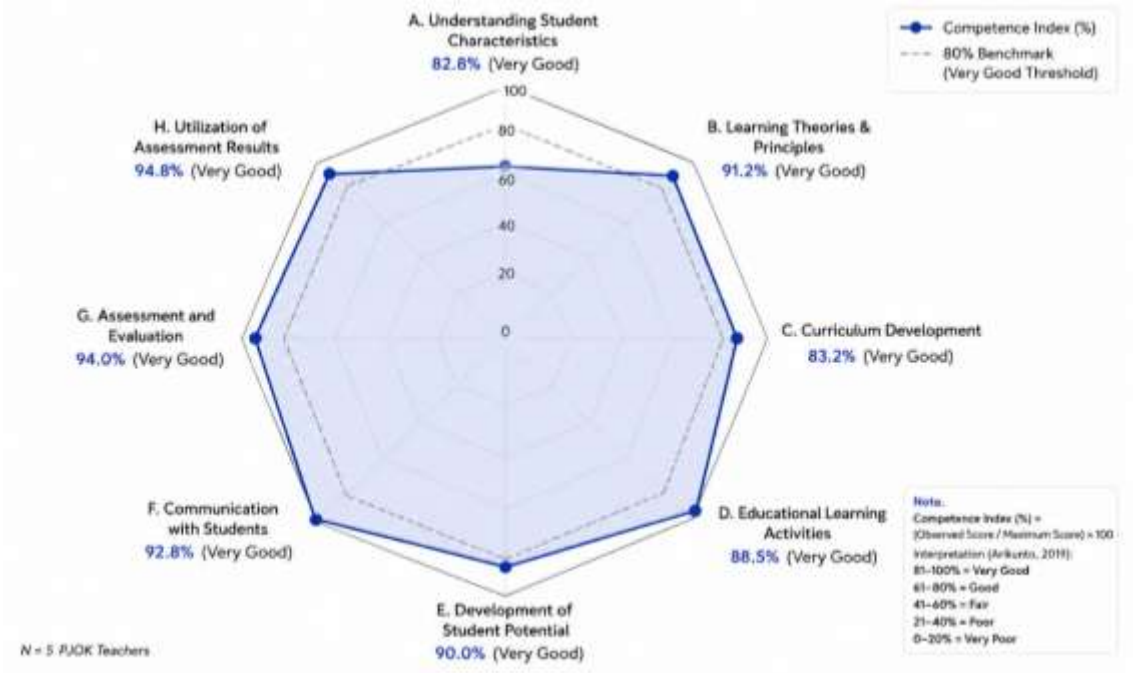

Figure 1. Radar Chart of Pedagogical Competence Dimensions

The radar chart illustrates a generally balanced competence profile across all eight dimensions. Peaks were observed in assessment and utilization of assessment results, while relatively lower scores appeared in curriculum development and understanding student characteristics. Despite these variations, all dimensions remained above the 80% threshold, indicating a consistently high level of pedagogical competence among PJOK teachers.

Overall Teaching Competence

The overall pedagogical competence index reached 89.7%, placing all participating teachers within the "Very Good" category. This finding indicates that PJOK teachers in Hiliserangkai District possess a strong pedagogical foundation across multiple dimensions of teaching competence, despite operating within a geographically remote educational context. The results further suggest that future professional development initiatives should focus primarily on curriculum adaptation and student diversity management, which demonstrated comparatively lower performance levels.

DISCUSSION

Interpreting the Outcomes

The central finding of this study—that PJOK teachers in Hiliserangkai District, Nias Regency demonstrate overall "Very Good" teaching competence—is both encouraging and nuanced. On the surface, it may appear to contradict national aggregate data Rosadi et al. (2025) and Haris et al. (2025) indicating lower competence scores in remote Indonesian regions. However, several contextual factors warrant careful interpretation.

First, the total sampling design (N=5) means that individual teacher characteristics are disproportionately influential on group scores. All five participants hold formal S1 (Bachelor's) degrees in PJOK and are currently employed in certified teaching positions, which may reflect a minimum threshold of formal preparation not captured by broader provincial surveys. Second, the peer-assessment methodology used in this study—in which senior colleagues evaluated each teacher's practice—may produce somewhat more favorable ratings than student perception surveys or independent external evaluations, a limitation discussed below.

The consistent "Very Good" classification across six of the eight dimensions suggests that pedagogical competence in foundational areas remains relatively robust, even within resource-constrained environments, as these core skills are heavily

reinforced during initial teacher education (Aeni et al., 2023, p. 314; Mohamadi & Malekshahi, 2018, p. 1; Rempillo & Quinito, 2025, p. 3). The dimensions of learning theory mastery (100% Very Good) and communication with students (100% Very Good) are particularly notable given that prior student interview data indicated concerns about instructional variability and goal-setting practices. This discrepancy may reflect a gap between competence as assessed by peer evaluators and competence as experienced by students, underscoring the value of multi-perspective assessments.

Evaluation Against Prior Studies

The present findings present a more optimistic profile of pedagogical competence than those reported by Putra and Suwiwa, who observed a mean score of 55/100 in remote East Java schools, and the Kemendikbudristek regional average(Bastian et al., 2016, p. 10; Purbasari et al., 2026). This discrepancy is likely attributable to methodological variance; whereas this study utilized an expert-validated, 85-item structured peer-evaluation instrument, national indices frequently depend on more generalized administrative metrics. Consistent with this, Nugroho et al. observed elevated scores when employing validated, multi-item assessment tools rather than administrative proxies, thereby underscoring how measurement methodology significantly moderates observed competence levels.

The observation that curriculum development demonstrated the greatest variability—with 60% of teachers categorized as "Good" rather than "Very Good"—is consistent with evidence that curriculum adaptation remains a significant challenge for rural physical education teachers, who must reconcile national mandates with localized constraints regarding facilities and student profiles (Yan et al., 2024, p. 10; Yan & Dai, 2025, p. 6). Correspondingly, Faisal & Martin (2019, p. 18) identified curriculum enactment as the dimension most strongly correlated with access to professional development, suggesting that targeted capacity-building programs could substantially enhance instructional performance in this area..

The uniformly high scores on assessment and utilization of assessment results (both 100% Very Good) contrast with the preliminary student interview data, which indicated that evaluation practices were perceived as irregular or opaque. This discrepancy parallels findings by Rink (2013), who noted that formal assessment competence—the ability to design valid instruments—does not always translate into consistent formative feedback practices observable by students. This similarly highlights the disparity between teachers' self-reported assessment proficiency and their observable assessment behaviors in physical education settings (Haerens et al., 2018, p. 997; Hernán et al., 2022, p. 129).

Implications of the Findings

These findings yield substantive implications for both educational policy and pedagogical practice. Regarding local and district-level educational administration, the data suggest that current teacher preparation pathways have effectively cultivated a robust foundation of pedagogical competence among PJOK educators in Hiliserangkai. Nevertheless, the observed variability in curriculum development proficiency highlights an exigency for targeted professional development initiatives; such programs should support educators in effectively adapting national curricula to constrained local environments, an approach aligned with existing scholarly recommendations (Haryani et al., 2021, p. 97; Pleasants et al., 2021, p. 14; Webb et al., 2016, p. 465)..

For school administrators, the finding that communication and student relationship competencies are strong provides a positive foundation upon which more sophisticated instructional strategies—such as tactical games models Dyson et al. (2004) and sport education Metzler (2011)—could be introduced through structured coaching and mentoring. The low standard deviations across most dimensions (particularly Dimensions E, F, G, H) suggest a collegial professional culture that could facilitate peer-learning and collaborative professional development (Casey & Jones, 2011).

For teacher educators at Universitas Negeri Medan, the competence profile suggests that pre-service programs have been effective in foundational areas but should strengthen modules on differentiated curriculum design and evidence-based student assessment practices, particularly for graduates likely to serve in remote and resource-limited educational environments.

Limitations of the Research

Several limitations of the present study should be acknowledged. First, the sample size (N=5) severely constrains statistical power and generalizability; findings cannot be extrapolated to other districts or provinces without caution. The small N also precludes meaningful subgroup analyses (e.g., by gender, experience, or school). Second, the primary instrument relied on peer-assessment by designated colleagues rather than on independent external observation, structured student surveys, or performance-based tasks (video-coded teaching episodes), which are generally considered methodologically superior measures of teaching competence. Third, social desirability bias may have inflated scores if peer assessors were reluctant to rate colleagues unfavorably in a tight-knit professional community. Fourth, no data were collected on contextual moderating variables—such as school facilities, student socioeconomic status, class size, or teacher workload—that are known to influence instructional quality. Fifth, the cross-sectional design precludes any causal inference; this study describes competence at a single point in time without capturing developmental trajectories. Future research should employ longitudinal designs, larger and more representative samples, multi-rater methodologies, and objective behavioral measures (e.g., systematic observation instruments such as SOFIT or QPET) to overcome these limitations.

CONCLUSION

This cross-sectional survey provides the first systematic empirical portrait of PJOK teacher teaching competence in Hiliserangkai District, Nias Regency, Indonesia. Contrary to the pessimistic picture painted by aggregate national data for remote Indonesian regions, all five PJOK teachers assessed demonstrated overall teaching competence at the "Very Good" level across eight pedagogical dimensions stipulated by national teacher standards. Six of eight dimensions were uniformly rated "Very Good" by all participants; the dimensions of understanding student characteristics and curriculum development, while still rated "Good" or higher by all teachers, exhibited the most variation and thus represent priority areas for professional development investment.

These findings confirm that formal tertiary teacher education in PJOK has successfully established a pedagogical

foundation among teachers serving this remote sub-district. Nevertheless, the gap between assessed competence and student perceptions—revealed by preliminary interviews—underlines the importance of triangulating survey-based competence measures with direct observational and student experience data in future studies.

From a policy perspective, these results suggest that the Nias Regency Education Office and local school administrators should prioritize: (1) structured in-service training in curriculum adaptation and contextualization; (2) mentoring programs that bridge the gap between assessed competence and enacted pedagogical practice; and (3) investment in sport facilities and instructional resources that enable more varied and creative PJOK delivery. Future research should employ multi-method, multi-rater designs with larger regional samples to more comprehensively map the landscape of PJOK teacher competence across Nias Regency and comparable remote Indonesian districts.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest. The funding institutions had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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