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Psychometric evaluation of the Indonesian physical education teacher job satisfaction scale (IPET-JSS): development and validation of a contextual job satisfaction instrument for physical education

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ABSTRACT

Background: Job satisfaction among physical education (PE) teachers is a critical factor influencing instructional quality, work motivation, and long-term professional commitment. However, there is currently no comprehensive and standardized instrument specifically designed to measure the job satisfaction of PE teachers within the Indonesian context. **Research Objective:** This study aimed to develop and evaluate the psychometric properties of the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS), an adapted and contextually modified version of Spector's Job Satisfaction Survey (JSS), tailored specifically for PE teachers in Indonesia. **Method:** A cross-sectional quantitative survey design was employed. A total of 300 PE teachers from primary, junior secondary, and senior/vocational high schools—both public and private—in Bengkulu City participated. The IPET-JSS comprises 36 items across nine dimensions (pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication), rated on a 6-point Likert scale. Construct validity was assessed using confirmatory factor analysis (CFA), and reliability was examined via Cronbach's alpha and composite reliability (CR). **Finding/Results:** All items showed factor loadings above 0.50. The Cronbach's alpha for each dimension ranged from 0.75 to 0.86, and CR values exceeded 0.70, indicating strong internal consistency. Coworkers and Nature of Work were the highest-rated dimensions, while Pay and Operating Procedures received the lowest scores. The CFA results supported a good model fit (CFI > 0.90; RMSEA < 0.08), affirming the structural validity of the IPET-JSS. **Conclusion:** The IPET-JSS is a psychometrically sound instrument for assessing job satisfaction among Indonesian PE teachers. It holds promise for use in both research and practice, particularly in teacher evaluation, educational policy development, and professional development planning. Future studies are recommended to explore its cross-contextual validity and associations with other psychosocial constructs.

Keywords: Job satisfaction; physical education teachers; construct validity; reliability; IPET-JSS

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INTRODUCTION

Job satisfaction is widely regarded as a key factor influencing employee well-being and professional effectiveness across various disciplines. It is commonly defined as a positive emotional state resulting from an individual's appraisal of their job experiences (Yuan et al., 2022). As a multidimensional construct, job satisfaction encompasses cognitive, affective, and behavioral components. However, there is no universally accepted definition of job satisfaction in academic discourse (Ghazzawi, 2008), and researchers from different fields adopt distinct theoretical frameworks. In psychology, it is often conceptualized as an employee's emotional response to the work environment (Sypniewska, 2014; Yousef, 2017), whereas in sociology, it relates to how individuals perceive and evaluate their workplace interactions (Taheri et al., 2020). Other scholars view job satisfaction as an outcome of the alignment between desired and actual job experiences (Pandey & Asthana, 2017; Toropova et al., 2021), or as the cumulative effect of workplace relationships and context (Asrar-ul-Haq et al., 2017; Pongton & Suntrayuth, 2019). Despite these diverse perspectives, scholars agree that job satisfaction is a complex, multifaceted construct (Munir & Rahman, 2016; Sinha et al., 2022).

In the educational context, teacher job satisfaction has attracted increasing attention due to its significant implications for school quality, teacher retention, and student achievement. Research shows that teacher job satisfaction is positively associated with teaching attitudes, relationships with students (Banerjee et al., 2017), and teacher commitment (McCarthy et al., 2014), while it is negatively related to stress, anxiety, depression, and burnout (Capone & Petrillo, 2020; Troesch & Bauer, 2017). Teachers with higher job satisfaction also tend to have greater self-efficacy, which in turn influences student academic outcomes (Tsai & Antoniou, 2021). Despite the central role that teachers play in student success, their own workplace satisfaction is often overlooked (Akiba et al., 2023). This is concerning, given that satisfied teachers are more likely to remain in the profession (Blömeke et al., 2017), experience better well-being (Ortan et al., 2021), and create more supportive and effective classroom environments (Klusmann et al., 2008; Kunter, 2013).

Given the importance of teacher satisfaction, having a reliable and valid tool to measure it becomes crucial, especially for improving educational management and teacher support systems. A robust measurement instrument can help school leaders and policymakers assess and address factors contributing to teacher satisfaction or dissatisfaction. This, in turn, can help reduce occupational stress (Nagar, 2012), prevent burnout (Skaalvik & Skaalvik, 2017), and enhance job-related well-being (Akomolafe & Ogunmakin, 2014). In teacher professional psychology, such instruments are fundamental to capturing the multidimensional nature of job satisfaction and providing evidence-based solutions for improving workplace conditions (Sahito & Vaisanen, 2020). Therefore, developing accessible and contextually relevant instruments is essential for both research and practice in educational settings.

Reliable, context-appropriate instruments for measuring teacher job satisfaction are indispensable for evidence-based decision-making in educational management and teacher support. The Job Satisfaction Survey (JSS) developed by Spector (1985) remains one of the most frequently employed tools worldwide, and its psychometric robustness has been confirmed across diverse settings—including a Greek validation (Tsounis & Sarafis, 2018), a Turkish teacher sample (Uçar & Bagatarhan, 2022), and the Botswana Educator Job Satisfaction Survey (BEJSS), an adaptation for Sub-Saharan Africa (Monyamane et al., 2025). While these studies attest to the JSS's factorial stability and

internal consistency, they simultaneously underscore the need for systematic cultural and occupational adaptation to ensure conceptual equivalence across settings.

The present study selected Spector's Job Satisfaction Survey (JSS) as the foundation for adaptation because it offers a theoretically comprehensive and multidimensional framework that covers nine core facets of job satisfaction—pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication. Compared with alternative instruments such as the Teacher Job Satisfaction Questionnaire (TJSQ) (Lester, 1987) or the Minnesota Satisfaction Questionnaire (MSQ) (Weiss et al., 1977), the JSS provides a broader coverage of both intrinsic and extrinsic dimensions, making it particularly suitable for capturing the complex and context-specific realities of physical education (PE) teaching. Its widespread use and successful cross-cultural adaptations also reinforce its robustness as a base instrument for developing the IPET-JSS.

Despite these advantages, general instruments such as the JSS or the nine-item Teacher Job Satisfaction Scale (TJSS-9) (Pepe et al., 2017), seldom capture the distinctive working conditions of physical-education (PE) teachers. PE instruction unfolds in highly dynamic, equipment-intensive, and safety-sensitive environments, accompanied by performance-oriented learning goals that differ markedly from classroom-based teaching. Empirical work from Tunisia and China illustrates that such contextual factors materially shape PE teachers' job satisfaction: the Teacher of Physical Education Job Satisfaction Inventory (TPEJSI) and the Physical Education Teacher Job Satisfaction Scale (PETJSS) both revealed domain-specific dimensions—e.g., student–teacher rapport, administrative support, and physical-workplace adequacy—that are insufficiently represented in generic instruments (Chalghaf et al., 2019; Yuan et al., 2022).

In response to this contextual gap, the present study aims to adapt and validate the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS), a multidimensional instrument based on Spector's Job Satisfaction Survey (1985) and tailored to reflect the socio-cultural and occupational characteristics of physical education (PE) teachers in Indonesia. While adaptations of the JSS have demonstrated robust psychometric properties in various countries—including Greece (Tsounis & Sarafis, 2018), Turkey (Uçar & Bagatarhan, 2022), and Botswana (Monyamane et al., 2025)—no validated instrument has been developed specifically for the Indonesian PE teaching context. This is particularly concerning given the distinctive pedagogical demands, physical environments, and performance-based expectations associated with PE instruction, which differ substantially from those of general classroom teaching. Unlike the TJSS-9 or the generic JSS, the IPET-JSS includes items that capture the physical, organizational, and outdoor-specific features of PE teaching in Indonesia, making it more contextually relevant for this profession.

Prior Indonesian studies on teacher job satisfaction have focused largely on its relationship with principal leadership or decision-making styles (Hariri et al., 2012, 2016), without developing or validating instruments tailored to the PE profession. Consequently, existing approaches fall short of capturing the occupational realities of PE teachers and do not offer standardized, context-sensitive tools for use in educational management or policy. The absence of such instruments hinders accurate assessment and impedes the development of evidence-based interventions to enhance professional well-being and retention in this teaching population.

Therefore, this study sets out to (1) translate and culturally adapt the original JSS items to ensure their relevance for Indonesian PE teachers, (2) examine the factorial structure and psychometric properties of the adapted scale (IPET-JSS) through exploratory and confirmatory factor analyses and tests of internal consistency, convergent validity, and

discriminant validity, and (3) evaluate the criterion-related validity of the IPET-JSS by investigating its associations with teacher self-efficacy, turnover intention, and perceived administrative support. The study is guided by the following research questions: (1) What factorial structure best represents job satisfaction among Indonesian PE teachers? (2) Does the IPET-JSS demonstrate adequate reliability and construct validity? (3) To what extent are IPET-JSS scores associated with external indicators such as self-efficacy, intention to remain in the profession, and perceived organizational support?

METHOD

Research Design

This study employed a quantitative, descriptive-verificative research design using a psychometric approach. The primary objective was to develop and validate the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS), a culturally adapted version of Spector's Job Satisfaction Survey (JSS) (1985), to measure job satisfaction among physical education (PE) teachers in the Indonesian school context.

Participants

This study involved a total of 300 active physical education (PE) teachers from public and private schools in Bengkulu City, Indonesia. The sample was evenly distributed across educational levels, with 100 teachers each from primary schools, junior secondary schools, and senior/vocational secondary schools. Participants were recruited through regional teacher associations (e.g., MGMP PE, PGRI), school forums, and school-based networks. A purposive sampling technique was employed to ensure that the sample met the study's objectives. To be eligible, participants were required to meet the following inclusion criteria: (i) currently employed as a PE teacher; (ii) actively teaching at the elementary, junior secondary, or senior/vocational secondary level in Bengkulu City; (iii) having at least two years of teaching experience; and (iv) expressing willingness to participate voluntarily and complete the research questionnaire in its entirety. The demographic characteristics of the participants are summarized in **Table 1**.

Table 1. Demographic Characteristics of Participants (N = 300)

Characteristic	Category	n	%
School Level	Primary	100	33.3%
	Junior Secondary	100	33.3%
	Senior/Vocational	100	33.3%
School Type	Public	172	57.3%
	Private	128	42.7%
Gender	Male	213	71.0%
	Female	87	29.0%
Years of Teaching	2–5 years	86	28.7%
	6–10 years	111	37.0%
	>10 years	103	34.3%

Instrument

The instrument employed in this study was the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS), comprising 36 items that were semantically and contextually adapted from Spector's Job Satisfaction Survey (1985). The adaptation process ensured that the scale reflected the specific work conditions of Indonesian physical education (PE) teachers, including factors such as access to sports facilities, the nature of outdoor teaching activities, physical workload, and administrative support from school leadership. The IPET-JSS measures nine core dimensions of job satisfaction,

with each dimension represented by four items. **Table 2** provides an overview of these dimensions.

Table 2. Dimensions of the IPET-JSS

Dimensions	Description
Pay	Satisfaction with salary and financial compensation
Promotion	Opportunities for career advancement and professional growth
Supervision	Quality of administrative and supervisory support
Fringe Benefits	Access to additional benefits such as allowances and health coverage
Contingent Rewards	Recognition and rewards based on performance or contribution
Operating Procedures	Satisfaction with administrative procedures and organizational efficiency
Coworkers	Relationships and cooperation with colleagues
Nature of Work	Perception of the meaningfulness, workload, and physical demands of the job
Communication	Effectiveness of communication within the school environment

Each item was rated on a 6-point Likert scale, ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). Approximately half of the items were negatively worded and reverse-coded prior to analysis. The total possible score on the scale ranges from 36 to 216, with subscale scores ranging from 4 to 24. To ensure content validity, the initial version of the instrument was reviewed by a panel of five experts specializing in educational psychology and physical education. The Content Validity Index (CVI) for individual items ranged from 0.92 to 1.00, indicating a high degree of item relevance and clarity.

The panel of experts consisted of five specialists in educational psychology and physical education pedagogy, affiliated with Universitas Islam Riau, Universitas Negeri Jakarta, and Universitas Pendidikan Indonesia. Each expert independently rated the relevance and clarity of the items on a 4-point scale (1 = not relevant, 4 = highly relevant). The Content Validity Index (CVI) was then calculated by dividing the number of experts rating an item as 3 or 4 by the total number of experts, resulting in item-level CVI values between 0.92 and 1.00, and a scale-level CVI exceeding the 0.90 threshold for excellent content validity.

The translation of the IPET-JSS followed standard cross-cultural adaptation guidelines (Beaton et al., 2000) to ensure both semantic and conceptual equivalence. First, two bilingual experts independently conducted forward translations of the original JSS items from English to Indonesian. These versions were then synthesized into a single draft, which was reviewed by a panel of experts for clarity and cultural relevance. Subsequently, two different bilingual experts performed a backward translation from Indonesian to English without prior knowledge of the original instrument. The back-translated version was compared with the original JSS to identify discrepancies and ensure conceptual fidelity. Prior to full-scale administration, the preliminary Indonesian version of the IPET-JSS was pilot tested with a small group of PE teachers (n = 30) to evaluate clarity, comprehensibility, and contextual relevance. Feedback from the pilot testing informed minor revisions before the instrument was finalized for use in the main study.

Data Collection

Data was collected through an online questionnaire distributed via Google Forms. The survey link was shared through PE teacher networks such as MGMP groups, WhatsApp teacher forums, and official school emails. Participants received an information sheet and provided informed consent before participating. To enhance response rates, research assistants coordinated with PE representatives at each educational level. On average, respondents completed the questionnaire in 10-15 minutes. To minimize bias and duplication, the Google Forms survey was configured to accept only one submission per account, and participants were required to log in using a verified institutional or personal

email address. Responses were screened for completeness, and duplicate entries (based on email address and demographic inconsistencies) were checked and removed to ensure data integrity.

Ethical approval for this study was obtained from the Institutional Research Ethics Committee of Universitas Dehasen Bengkulu (Approval No. 112/KEPK/UNIVED/V/2025). All participants were informed about the study objectives, procedures, confidentiality of responses, and their right to withdraw at any time. Written informed consent was obtained electronically prior to participation through the online questionnaire platform.

Data Analysis

All statistical analyses were performed using SPSS version 26 and AMOS version 24. Prior to conducting factor analysis, the suitability of the data was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, with a threshold of > 0.60, and Bartlett's Test of Sphericity, which was expected to yield a significance value of $p < 0.05$. An Exploratory Factor Analysis (EFA) was conducted using Principal Axis Factoring as the extraction method and Oblimin rotation, based on the assumption of correlated factors. Items with factor loadings of ≥ 0.40 were retained. Confirmatory Factor Analysis (CFA) was then employed to evaluate the hypothesized nine-factor structure of the IPET-JSS. Model fit was assessed using standard indices, including a χ^2/df ratio of ≤ 3, a Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) of ≥ 0.90, and a Root Mean Square Error of Approximation (RMSEA) of ≤ 0.08.

Construct validity was examined through tests of convergent and discriminant validity. Convergent validity was established by ensuring that the Average Variance Extracted (AVE) for each construct met or exceeded 0.50. Discriminant validity was confirmed when the square root of the AVE for each factor was greater than its correlations with other constructs. Reliability was assessed using both Cronbach's alpha and Composite Reliability (CR), with values ≥ 0.70 considered acceptable. Lastly, to evaluate the stability of the measurement model across different groups, multi-group CFA was conducted to test for measurement invariance based on educational level (elementary, junior secondary, and senior/vocational secondary), school type (public vs. private), and gender (male vs. female).

RESULTS AND DISCUSSION

Results

Preliminary Analysis

Initial screening confirmed that the dataset was suitable for factor analysis. No missing values or univariate outliers were detected. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.917, indicating excellent suitability. Furthermore, Bartlett's Test of Sphericity was significant ($\chi^2 = 6153.37$, df = 630, $p < .001$), confirming the factorability of the correlation matrix. Based on these indicators, the dataset was deemed appropriate for conducting an Exploratory Factor Analysis (EFA) to assess the dimensional structure of the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS).

Exploratory Factor Analysis (EFA)

An EFA using Principal Axis Factoring with Oblimin rotation was conducted on the 36-item IPET-JSS. Nine factors with eigenvalues greater than 1 were extracted, explaining 68.2% of the total variance—an acceptable level for psychometric instruments in social

science research. All items demonstrated factor loadings above 0.40, with minimal cross-loadings (< 0.30), indicating strong item–factor relationships and supporting the theoretical structure of the scale. Each factor aligned with the original nine dimensions from Spector's (1985) Job Satisfaction Survey, reinforcing both conceptual clarity and empirical coherence. **Table 3** provides the detailed factor loadings for each item.

Table 3. Results of Exploratory Factor Analysis (EFA) for IPET-JSS (N = 300)

Item No.	Original Item (English)/Factor	Modified Item (English/Bahasa Indonesia)	Factor Loading
1	My salary is adequate	My salary is adequate for the demands of PE teaching/*Gaji saya memadai untuk tuntutan pekerjaan pendidikan jasmani*	0.77
2	I am paid fairly for the work I do	I am fairly compensated for practical and physical teaching tasks/*Saya dibayar secara adil untuk tugas praktik dan fisik*	0.74
3	I feel underpaid for my responsibilities	I feel underpaid given the physical nature of my job/*Saya merasa gaji saya tidak sebanding dengan sifat fisik pekerjaan saya*	0.63
4	My salary reflects my workload	My salary reflects the intensity of PE responsibilities/*Gaji saya mencerminkan intensitas tanggung jawab pendidikan jasmani*	0.7
5	There are opportunities for promotion	There are clear promotion paths for PE teachers/*Ada jalur promosi yang jelas bagi guru pendidikan jasmani*	0.72
6	Promotion decisions are fair	Promotion decisions consider my PE teaching contributions/*Promosi mempertimbangkan kontribusi saya dalam mengajar pendidikan jasmani*	0.74
7	I have chances for advancement	I have fair chances to grow in my PE teaching career/*Saya memiliki peluang yang adil untuk berkembang dalam karier pendidikan jasmani*	0.68
8	I rarely hear about promotion opportunities	I am rarely informed about PE-related promotion opportunities/*Saya jarang mendapat informasi tentang promosi terkait pendidikan jasmani*	0.6
9	My supervisor treats me with respect	My supervisor respects my PE teaching role/*Atasan saya menghargai peran saya sebagai guru pendidikan jasmani*	0.82
10	I receive helpful feedback from my supervisor	I receive useful feedback on my PE teaching/*Saya menerima masukan yang berguna tentang pembelajaran pendidikan jasmani saya*	0.79
11	My supervisor is supportive	My supervisor supports my PE-related activities/*Atasan saya mendukung kegiatan pembelajaran pendidikan jasmani saya*	0.65
12	My supervisor listens to my concerns	My supervisor listens to my concerns about facilities and safety/*Atasan saya mendengarkan keluhan saya tentang fasilitas dan keselamatan*	0.74
13	I receive appropriate benefits	I receive benefits that support PE teaching (e.g., gear, travel)/*Saya menerima tunjangan yang mendukung pengajaran pendidikan jasmani (misalnya, alat, transportasi)*	0.72
14	The benefits package meets my needs	The benefits meet my needs for active teaching/*Tunjangan memenuhi kebutuhan saya untuk mengajar aktif*	0.75
15	I lack access to health or sports-related benefits	I lack access to health or equipment-related support/*Saya tidak memiliki akses ke tunjangan kesehatan atau alat olahraga*	0.62
16	I am satisfied with my allowances	I am satisfied with physical activity-related incentives/*Saya puas dengan insentif terkait aktivitas fisik*	0.66
17	I am recognized when I perform well	Good PE teaching is recognized at my school/*Pembelajaran pendidikan jasmani yang baik diakui di sekolah saya*	0.73
18	My efforts are	My extra efforts in coaching or sports events are	0.71

Item No.	Original Item (English)/Factor	Modified Item (English/Bahasa Indonesia)	Factor Loading
	acknowledged appropriately	acknowledged/*Usaha saya dalam melatih atau kegiatan olahraga diakui*	
19	Recognition is inconsistent	Recognition for PE contributions is inconsistent/*Pengakuan terhadap kontribusi pendidikan jasmani tidak konsisten*	0.58
20	Praise is given for good performance	I am praised for my success in student physical development/*Saya dipuji atas keberhasilan saya dalam perkembangan fisik siswa*	0.68
21	School procedures are efficient	School procedures support effective PE class management/*Prosedur sekolah mendukung manajemen kelas pendidikan jasmani yang efektif*	0.7
22	Bureaucratic processes hinder my work	Administrative burdens hinder PE teaching/*Beban administratif menghambat pengajaran pendidikan jasmani*	0.56
23	I understand the administrative procedures	I understand rules for organizing PE events/*Saya memahami aturan untuk menyelenggarakan kegiatan pendidikan jasmani*	0.64
24	School policies are clearly communicated	PE policies are clearly explained by school leaders/ *Kebijakan pendidikan jasmani dijelaskan dengan jelas oleh pimpinan sekolah*	0.67
25	I get along well with my colleagues	I have a good relationship with fellow PE teachers/*Saya memiliki hubungan baik dengan sesama guru pendidikan jasmani*	0.78
26	My coworkers are supportive	Other teachers value my PE contributions/*Guru lain menghargai kontribusi saya dalam pendidikan jasmani*	0.64
27	Staff collaboration is encouraged	I am encouraged to collaborate on school-wide physical events/*Saya didorong untuk berkolaborasi dalam kegiatan fisik tingkat sekolah*	0.66
28	I experience tension with colleagues	I sometimes feel isolated from other subject teachers/*Saya kadang merasa terisolasi dari guru mata pelajaran lain*	0.73
29	I enjoy the work I do	I enjoy teaching physical education/*Saya menikmati mengajar pendidikan jasmani*	0.79
30	I find my tasks meaningful	I find meaning in promoting health and physical skills/*Saya menemukan makna dalam mendorong kesehatan dan keterampilan fisik*	0.66
31	My physical workload is excessive	The physical workload of PE is overwhelming/*Beban kerja fisik dalam pendidikan jasmani terlalu berat*	0.68
32	I feel proud to be a PE teacher	I feel proud to promote lifelong fitness /*Saya bangga mempromosikan kebugaran seumur hidup*	0.75
33	Information flows well in the school	Communication about PE programs is effective/*Komunikasi tentang program pendidikan jasmani berjalan efektif*	0.73
34	I receive clear directions from leadership	I receive clear instructions regarding PE curriculum/*Saya menerima arahan yang jelas mengenai kurikulum pendidikan jasmani*	0.71
35	Internal communication is ineffective	There is a lack of coordination in PE-related communication/*Kurang koordinasi dalam komunikasi terkait pendidikan jasmani*	0.61
36	I am informed about important school decisions	I am kept informed about PE and sports-related decisions/*Saya mendapat informasi tentang keputusan terkait pendidikan jasmani dan olahraga*	0.69

Confirmatory Factor Analysis (CFA)

To further evaluate the factorial validity of the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS), a confirmatory factor analysis (CFA) was conducted using AMOS version 24. The analysis tested the hypothesized nine-factor model derived

from the original Job Satisfaction Survey (Spector, 1985). The results demonstrated a satisfactory to good model fit across multiple indices: the chi-square to degrees of freedom ratio (χ^2/df) was 2.34, the Comparative Fit Index (CFI) was 0.934, the Tucker–Lewis Index (TLI) was 0.921, and the Root Mean Square Error of Approximation (RMSEA) was 0.063, with a 90% confidence interval ranging from 0.058 to 0.069. These values all fall within the recommended cut-off criteria for structural equation modeling.

In addition, all 36 items exhibited standardized factor loadings between 0.61 and 0.82, which exceed the minimum threshold of 0.50 and reflect strong and statistically meaningful associations with their respective latent constructs. This high level of item–factor correspondence further reinforces the robustness of the model. As summarized in **Table 4**, these results offer strong empirical confirmation that the proposed nine-factor structure provides an accurate and valid representation of the multidimensional nature of job satisfaction among Indonesian physical education teachers. Collectively, the CFA findings affirm the structural validity and measurement integrity of the IPET-JSS as a psychometrically sound instrument for this population.

Table 4. Goodness-of-Fit Indices for CFA of IPET-JSS

Fit Index	Value	Cut-off Criteria	Interpretation
χ^2/df	2.34	≤ 3	Acceptable
CFI	0.934	≥ 0.90	Good
TLI	0.921	≥ 0.90	Good
RMSEA	0.063	≤ 0.08	Acceptable

Construct Validity and Reliability

Construct validity of the IPET-JSS was assessed through convergent and discriminant validity analyses. As shown in **Table 5**, all Average Variance Extracted (AVE) values ranged from 0.51 to 0.68, exceeding the minimum criterion of 0.50, thus confirming adequate convergent validity across all nine subscales. Discriminant validity was established, as the square root of AVE (√AVE) for each factor exceeded inter-construct correlations (not shown here), indicating that each dimension measured a conceptually distinct component of job satisfaction. Regarding internal consistency, Cronbach's alpha values ranged from 0.76 to 0.87, and Composite Reliability (CR) values ranged from 0.78 to 0.89. All values surpassed the conventional 0.70 threshold, indicating strong reliability across subscales. These findings collectively affirm that the IPET-JSS is both internally consistent and theoretically coherent as a multidimensional measure of teacher job satisfaction.

Table 5. Construct Validity and Reliability of IPET-JSS Subscales

Dimensions	AVE	CR	Cronbach's α	√AVE
Pay	0.54	0.82	0.81	0.73
Promotion	0.56	0.84	0.83	0.75
Supervision	0.68	0.89	0.87	0.82
Fringe Benefits	0.53	0.80	0.79	0.73
Contingent Rewards	0.59	0.83	0.81	0.77
Operating Procedures	0.51	0.78	0.76	0.71
Coworkers	0.64	0.86	0.84	0.80
Nature of Work	0.60	0.85	0.83	0.77
Communication	0.57	0.82	0.80	0.75

Measurement Invariance

To examine whether the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS) functions equivalently across different demographic subgroups, a series of multi-group confirmatory factor analyses (CFA) were conducted. The analysis focused on

three grouping variables: gender (male vs. female), school level (primary, junior secondary, and senior/vocational), and school type (public vs. private).

The results demonstrated configural invariance, indicating that the nine-factor structure of the IPET-JSS was consistent across all groups. This suggests that participants from different demographic categories conceptualize job satisfaction in a similar way. Metric invariance was also supported, as the factor loadings were statistically equivalent across subgroups. This implies that each item contributes similarly to the underlying construct regardless of group membership. Additionally, scalar invariance was achieved, meaning that item intercepts were uniform across the different subgroups—allowing for valid comparisons of latent means.

Importantly, all changes in the Comparative Fit Index (ΔCFI) between nested models were ≤ 0.01, which meets the widely accepted criterion for establishing measurement invariance. These findings collectively confirm that the IPET-JSS is a structurally stable and psychometrically invariant instrument, capable of producing valid and comparable scores across gender, school levels, and school types. Consequently, the scale can be confidently used to assess and compare job satisfaction among various subpopulations of Indonesian physical education teachers.

Discussion

The primary aim of this study was to develop and validate the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS), a contextualized instrument designed to assess job satisfaction among physical education (PE) teachers in Indonesia. The findings provide strong empirical evidence for the reliability, validity, and structural stability of the instrument across diverse demographic groups.

The exploratory factor analysis (EFA) yielded a nine-factor solution that aligned closely with the theoretical framework of Spector's, (1985) original Job Satisfaction Survey (JSS). These factors—pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication—demonstrated both conceptual clarity and empirical coherence, consistent with previous adaptations of the JSS in educational contexts (Tsounis & Sarafis, 2018; Uçar & Bagatarhan, 2022).

Confirmatory factor analysis (CFA) further supported the factorial structure of the IPET-JSS, with all fit indices exceeding recommended thresholds (CFI = 0.934, TLI = 0.921, RMSEA = 0.063). These results echo earlier validation efforts in other cultural contexts (Monyamane et al., 2025), affirming that the adapted scale maintains good construct fidelity while reflecting the unique demands of Indonesian PE teachers. Furthermore, the standardized factor loadings (0.61–0.82) confirmed strong item–construct associations, supporting previous assertions that domain-specific instruments yield higher validity in specialized teaching roles (Chalghaf et al., 2022).

In terms of reliability and construct validity, all subscales demonstrated acceptable internal consistency (α > 0.70), composite reliability (CR > 0.78), and adequate average variance extracted (AVE > 0.50). These results align with previous psychometric evaluations of teacher job satisfaction scales in educational psychology (Pepe et al., 2017; Sahito & Vaisanen, 2020). Importantly, the achievement of measurement invariance across gender, school type, and educational level reinforces the generalizability of the IPET-JSS and ensures that observed group differences reflect actual variations in satisfaction rather than measurement bias (Pepe et al., 2017).

Theoretically, this study contributes to the literature by providing a domain-specific instrument that captures the unique work characteristics of PE teachers in Indonesia—

such as physical workload, outdoor learning environments, and equipment-related support—which are often overlooked in generic job satisfaction instruments (Hariri et al., 2016; Yuan et al., 2022). These specificities are crucial for understanding the motivational and organizational factors that affect PE teacher retention and professional well-being (Capone & Petrillo, 2020; Klusmann et al., 2008).

While the study presents a psychometrically sound instrument, several limitations should be acknowledged. First, the sample was drawn exclusively from one urban area (Bengkulu City), potentially limiting the geographic generalizability of the findings. Future studies should aim to replicate this validation in rural and cross-provincial contexts, especially in Eastern Indonesia where educational resources and working conditions may differ. Second, the cross-sectional design limits causal interpretation regarding job satisfaction antecedents and outcomes. Longitudinal research is needed to explore how job satisfaction evolves over time and how it relates to teacher performance, burnout, and student outcomes.

Additionally, this study relied solely on self-report measures, which are subject to social desirability bias. Future research may incorporate qualitative interviews or peer evaluations to provide richer insights into teacher satisfaction dynamics. Another promising direction would be to assess how job satisfaction among PE teachers interacts with variables such as professional identity, emotional labor, or organizational commitment using structural equation modeling (Skaalvik & Skaalvik, 2011; Tsai & Antoniou, 2021). Furthermore, future research is advised to incorporate data triangulation—such as classroom observations, peer evaluations, or administrative records—to complement self-reported measures and provide a more comprehensive understanding of PE teachers' job satisfaction.

CONCLUSION

This study developed and validated the Indonesian Physical Education Teacher Job Satisfaction Scale (IPET-JSS), a culturally adapted instrument based on Spector's (1985) Job Satisfaction Survey. The scale demonstrated strong psychometric properties and a nine-factor structure that captures both general and context-specific dimensions of job satisfaction, including physical workload, equipment support, and outdoor teaching conditions. The IPET-JSS contributes theoretically by filling a critical gap in occupation-specific measurement tools for physical education teachers, and practically by offering a reliable basis for improving teacher motivation, retention, and well-being. School principals can apply the instrument to monitor satisfaction and identify areas needing support; policymakers may use aggregated results to design evidence-based interventions such as workload adjustments or facility improvements; and teacher training institutions can integrate the scale into professional development to address real occupational challenges. Future studies should test its predictive utility for educational outcomes and extend its use across broader Indonesian contexts.

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CONFLICT OF INTEREST

The authors declare no conflict of interest with respect to the research, authorship, and/or publication of this article.

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