COMPETITOR:
JURNAL PENDIDIKAN KEPELATIHAN OLAHRAGA
e-ISSN: 2657-0734 & p-ISSN: 2085-5389 ‖ Volume 18, Number 1, 2026 ‖ P.0087-0097

Ethical Principles And Bias In Physical Education Tests And Measurements: A Critical Review And Implications For Teachers

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ABSTRACT

Ethical principles are fundamental to ensuring the validity, fairness, and educational value of tests and measurements in physical education. Nevertheless, assessment practices in schools continue to face ethical challenges and various forms of bias that may compromise objectivity and the integrity of evaluation outcomes. This article aims to critically examine ethical principles and potential biases in the practice of physical education testing and measurement, as well as their implications for teachers' professional responsibilities. Employing a qualitative approach with a critical review design, this study focuses on conceptual and reflective analysis grounded in reputable scientific literature and official policy documents related to ethics and bias in physical education assessment. Data were obtained entirely from secondary sources through a systematic literature search using academic databases, including Google Scholar, ERIC, ResearchGate, and Garuda Dikti. The analysis was conducted using content analysis combined with a critical–reflective approach to identify dominant ethical themes, forms of bias, and gaps between theoretical principles and practical implementation. The findings indicate that core ethical principles in physical education testing and measurement encompass honesty, fairness, professional responsibility, objectivity, and respect for students' dignity. Empirical evidence also reveals that stereotypical bias—particularly related to teachers' assumptions about students' gender, cultural background, and physical condition—remains a prevalent issue that undermines assessment accuracy and equity. These findings highlight the necessity for physical education teachers to possess not only strong technical competencies in testing and measurement, but also high ethical awareness and reflective capacity in evaluation practices. The study concludes that the consistent application of ethical principles and effective bias management are critical to producing valid, fair, and meaningful assessments. Ultimately, ethical and unbiased evaluation practices enable physical education to more effectively support students' physical, mental, and character development in line with comprehensive and equitable educational goals.

ARTICLE HISTORY
Received: 2025/12/06
Accepted: 2025/12/24
Published: 2026/02/03

KEYWORDS
Ethical Principles;
Assessment Bias;
Physical Education;
Tests And Measurements;
Teacher Professionalism.

AUTHORS' CONTRIBUTION
A. Conception and design of the study;
B. Acquisition of data;
C. Analysis and interpretation of data;
D. Manuscript preparation;
E. Obtaining funding

Cites this Article : Kamaruddin, Ilham; Maulana, Ahmad; Samawi, Sri; Salissing, Matelda Rambung; Hariyono, Hariyono. (2026). Ethical Principles And Bias In Physical Education Tests And Measurements: A Critical Review And Implications For Teachers. **Competitor: Jurnal Pendidikan Kepelatihan Olahraga**. 18 (1), p.0087-0097

INTRODUCTION

Tests and measurements are the foundation of evaluation in physical education because they serve as objective instruments for assessing the development of students' physical abilities, motor skills, and affective aspects. Through a systematic and standardized measurement process, teachers obtain empirical data that serves as the basis for evaluating physical fitness levels, skill mastery, and the effectiveness of implemented learning (Ridha et al., 2025). From a modern pedagogical perspective, tests and measurements serve not only as tools for evaluating outcomes but also as a basis for decision-making for lesson planning, improving instructional strategies, and continuously improving the quality of physical education (Astuti, 2022; Mugara & Ali, 2025).

However, the practice of physical education testing and measurement in schools still faces serious issues, particularly regarding ethical dimensions and the potential for bias in assessment. Physical education, which aims to develop healthy, resilient, and character-based individuals, demands an evaluation process that can comprehensively, fairly, and meaningfully represent student development (Tifal, 2023). In reality, various studies show that the application of fitness and skills tests is often uniform and insensitive to biological differences, health conditions, social backgrounds, and individual characteristics of students (Sidik et al., 2025; Muzakki et al., 2025).

Ethical issues in physical education assessment arise when the principles of fairness, respect for student dignity, and confidentiality of evaluation data are not consistently implemented. Evaluation practices that ignore differences in student abilities and conditions have the potential to cause psychological distress, feelings of inferiority, and even social marginalization (Muzakki et al., 2025). Furthermore, ethical violations also occur in the area of confidentiality, such as the unauthorized publication of test results, the use of data for demeaning comparisons, or non-pedagogical assessments that are not oriented towards student development (Samsudin, 2024; Wijayati, 2025). This situation suggests that the main problem lies not solely in the technical accuracy of the instruments, but in the lack of ethical awareness in physical education evaluation practices.

International and national research over the past decade has shown increasing attention to validity, reliability, and fairness in physical education assessment. Empirical studies emphasize that quality evaluation must consider population characteristics, learning contexts, and ethical principles of education (Zhai & Nehm, 2023; Rahmat et al., 2025). Fairness-based assessment approaches and inclusivity have become a new paradigm that positions students as subjects of education, not merely objects of quantitative measurement (Hayati, 2024).

Several studies have shown that bias in tests and measurements can stem from instrument design, uniform assessment standards, and teacher subjectivity in observing and interpreting results (Sidik et al., 2025; Sibarani et al., 2025). Gender bias, physical ability stereotypes, and teachers' personal expectations have been shown to influence the consistency and objectivity of assessments, both consciously and unconsciously

(Hayati, 2024). Globally, educational literature emphasizes the importance of ethical assessment literacy as a professional competency for educators to ensure the integrity and fairness of evaluations (Zhai & Nehm, 2023).

In Indonesia, studies on physical education testing and measurement are still dominated by technical-instrumental aspects, such as instrument development, measurement procedures, and statistical analysis (Judijanto et al., 2025). Meanwhile, the ethical dimensions, bias, and moral implications of evaluation practices have not received comparable attention, despite their significant relevance in the context of character-oriented and social justice-oriented education (Hasbi, 2025; Sudarman et al., 2025). This indicates a gap between the development of global discourse and local practices and studies in the field of physical education assessment.

According to recent studies, there is a significant research gap regarding the integration of ethical principles and bias analysis in physical education testing and measurement practices, particularly in the Indonesian school context. Most research focuses on instrument validity and reliability, but has not critically examined how teachers' ethical awareness and understanding of bias influence the fairness and meaning of evaluation results for students (Judijanto et al., 2025; Sidik et al., 2025).

Furthermore, studies explicitly linking ethics, bias, and the professionalism of physical education teachers are still limited. Yet, international literature confirms that mastery of evaluation ethics is a crucial prerequisite for ensuring that assessments are not only statistically valid but also fair, inclusive, and humanistic (Zhai & Nehm, 2023). This gap has implications for evaluation practices in the field, potentially perpetuating structural inequities and obscuring the essential purpose of physical education as a vehicle for character development and student well-being (Hayati, 2024; Wijayati, 2025).

Based on these research issues and gaps, this article aims to critically examine ethical principles and potential bias in physical education testing and measurement practices in schools. Specifically, this study aims to: (1) analyze the forms of ethical violations and bias that could potentially arise in the physical education evaluation process; (2) examine the implications of ethics and bias on the validity, reliability, and fairness of assessment results; and (3) reflect on the level of understanding and application of ethical principles by physical education teachers in the context of real-world practice.

The novelty of this article lies in its integrative approach, which links the technical, ethical, and reflective dimensions of physical education assessment. Unlike previous studies, which tended to be partial, this article offers a conceptual framework that positions ethics and bias awareness as determinants of evaluation quality. Thus, this research not only enriches the theoretical discourse on physical education assessment but also provides practical implications for the development of ethical guidelines, evaluation policies, and continuing professional development programs for teachers. This article emphasizes that physical education teachers play a role not only as technical evaluators but also as moral agents responsible for establishing evaluation practices that are fair, inclusive, and oriented toward student character development.

METHODS

This research employed a qualitative approach with a critical review design, focusing on conceptual and reflective analysis of ethical principles and potential bias in physical education testing and measurement. This approach was chosen because the issues studied are normative-theoretical and reflective, rather than empirical hypothesis testing. Therefore, it requires critical reasoning based on literature synthesis to comprehensively evaluate physical education evaluation practices (Rohanita & Aizah, 2025; Afriyuandi et al., 2025). A critical review allows researchers to examine, compare, and integrate various scientific perspectives to identify strengths, limitations, and conceptual gaps in the application of ethics and fairness in physical education assessment (Bailey et al., 2019; Zhai & Nehm, 2023).

The data sources for this research are entirely secondary, obtained from reputable national and international journal articles (SINTA, Scopus, and DOAJ), primary textbooks on assessment theory and teacher professional ethics, and policy documents and codes of ethics for physical education. The policy documents analyzed include Permendikbudristek No. 21 of 2022 concerning Educational Assessment Standards, as well as the professional code of ethics for physical education teachers issued by professional organizations such as ISORI and PGRI. This integration of academic and regulatory sources aims to build a strong theoretical foundation and contextualize the practice of physical education evaluation in Indonesia (Taridala & Anwar, 2023; Hasbi, 2025).

Data collection was conducted through a systematic literature search using Google Scholar, ERIC, ResearchGate, Garuda Dikti, and Scopus databases using structured keywords, including ethical principles in physical education assessment, bias in physical fitness testing, fairness in measurement, and teacher professional ethics. Inclusion criteria included: (1) direct relevance to the ethics and bias of physical education assessment; (2) publication in a reputable journal; and (3) significant conceptual or empirical contributions. Articles containing opinion articles without scientific basis, irrelevant to the context of physical education, or not meeting academic standards were excluded from the analysis. The selected literature was published between 2015 and 2025 to ensure the freshness and relevance of the findings.

Data analysis was conducted using content analysis combined with a critical-reflective approach. Each source was analyzed to identify key themes, such as assessment fairness, measurement objectivity, gender and social bias, and teachers' ethical responsibilities (Thomas et al., 2020; Hayati, 2024). The analysis process involved four stages: (1) identifying key concepts; (2) grouping literature by theme; (3) synthesizing findings across studies; and (4) critically reflecting on the gap between theory and practice in physical education evaluation in the field.

The validity and credibility of the research were maintained through source triangulation and interpretive consistency. The arguments developed were not based on a single theoretical perspective but were validated through various reputable sources, educational policies, and professional ethics documents. Methodological transparency

was maintained through systematic recording of the literature search, selection, and analysis process (an audit trail). With this approach, the research is expected to produce a valid, reflective, and relevant critical synthesis in formulating an ethical, fair, and humanistic physical education assessment paradigm.

RESULTS AND DISCUSSION

Result

Ethical Principles in Physical Education Tests and Measurements

Ethical principles in physical education (PE) testing and measurement include honesty, fairness, professional responsibility, and objectivity. Teachers must ensure that the evaluation process is free from discrimination, that the measurement results are valid and reliable, and that they are transparent to students and related parties (Arrosyid., 2024). In addition, results must be conveyed with consideration for the psychological sensitivity of students so as not to cause stigma or excessive pressure. Therefore, honesty and fairness in physical education tests include honesty in requiring teachers not to manipulate measurement results and to report student achievements honestly. Fairness means that all students are evaluated by the same standards without favoritism or discrimination. In the context of physical education, fairness also includes assessments that consider students' efforts and progress, not just the final results. This is important to maintain students' motivation and enthusiasm for learning and to teach the value of integrity.

Objectivity and Professional Responsibility are principles that require teachers to conduct assessments impartially and based on concrete data that can be accounted for. Therefore, teachers must create clear and consistent assessment rubrics to avoid subjective bias (Jubaeli et al., 2025). Teachers' professional responsibilities include maintaining the confidentiality of results, using valid and reliable instruments, and continuously improving their competence in testing and measurement. Test results must be valid, i.e., measure what they are supposed to measure, and reliable, or consistent when retested. According to Dahrial et al. (2024), validity and reliability are important so that measurement results can be used as the basis for appropriate decisions in physical education development. Transparency means that teachers must honestly inform students and relevant parties about the procedures, criteria, and results of the measurements so that they understand the evaluation process and results. Therefore, psychological sensitivity in disclosing measurement results must be exercised with great care so as not to cause embarrassment, stress, or stigma to students. Teachers need to provide constructive and supportive feedback so that students feel valued and motivated to improve themselves.

Identifying Bias in Measurement

According to Nugroho, F. A., (2022) Bias in physical education measurement can appear in various forms that hinder the objectivity and validity of evaluation results. One common form of bias is stereotypical bias based on teachers' prejudices against students' cultural backgrounds, gender, or physical conditions. For example, teachers

may unconsciously have different expectations of male and female students, or students from certain cultural communities, which then influences their assessments. In addition, teachers' subjective perceptions of students' abilities or attitudes are also a source of bias that can potentially mislead measurement results. This bias has a negative impact on the accuracy of measurement results, because not all aspects of student ability can be measured fairly and impartially (Yasin, N. A., 2025). Inequality in treatment and assessment due to bias can cause students who actually have good abilities but come from certain backgrounds to receive low or disproportionate scores. As a result, students' trust in the evaluation process declines and they feel that the assessment does not reflect their actual efforts or abilities.

Various findings show that teachers who are unaware of bias tend to produce unfair and invalid measurement results. This lack of awareness is often due to a lack of training on how to recognize and control bias in the measurement and assessment process. Therefore, training and raising ethical awareness among teachers is very important so that they can conduct evaluations objectively and professionally without discrimination. Preventing and controlling bias in measurement requires special attention to inclusive instrument design, the application of consistent assessment criteria, and the use of valid and reliable measurement techniques. Teachers are also encouraged to use a holistic evaluation approach that considers cognitive, affective, and psychomotor aspects to minimize the possibility of bias that only looks at one dimension of student ability. This awareness and action are important for maintaining the quality and integrity of physical education assessment, thereby creating a fair learning environment that supports the optimal development of all students.

implications for teachers

Jukes et al. (2011) stated that Physical education teachers are required to have high technical skills in testing and measurement, as well as strong ethical awareness in conducting evaluations. Technical skills include mastery of valid and reliable measurement methods and the development of instruments that are appropriate to the characteristics and needs of students. Teachers must ensure that the instruments used do not introduce bias and comprehensively reflect the cognitive, affective, and psychomotor aspects of students. In addition to technical skills, teachers' ethical awareness is essential to ensure fair, honest, and responsible assessment. Teachers need to undergo regular training on professional ethics, particularly those related to the principles of integrity, fairness, and respect for students' rights. This training helps teachers identify and control bias in assessment and understand the importance of maintaining confidentiality and providing constructive feedback (Wijayati, I. W., 2025).

The development of teacher professionalism must also be supported by a deep understanding of the code of ethics for physical education teachers, which emphasizes honesty, objectivity, and social responsibility. Professional teachers not only master technical aspects but are also able to set an example by upholding ethics in the learning and evaluation process. In practical terms, teachers are expected to actively participate in professional development programs offered by educational institutions or

professional organizations to continuously update their technical and ethical competencies. In this way, teachers can carry out their evaluation duties appropriately, transparently, and ethically, so that the results of the assessment are truly meaningful for improving the quality of physical education and the optimal development of students.

Discussion

Ethical Principles as the Foundation for the Integrity of Physical Education Assessment

Ethical principles in physical education assessment cannot be positioned merely as formal administrative rules, but rather as a moral foundation inherent in teachers' professionalism as educators. Violations of ethical principles—such as fairness, objectivity, respect for student dignity, and confidentiality of test results—directly impair assessment integrity and diminish students' trust in teachers (Fitrianto, 2023; Bailey et al., 2019). When ethics are ignored, assessments no longer represent students' true abilities but are instead influenced by preferences, assumptions, or non-pedagogical contextual pressures.

Empirically, recent research shows that unethical assessment practices can have negative psychological impacts, such as excessive anxiety, decreased motivation, and a sense of injustice in students (Muzakki et al., 2025; Hayati, 2024). This emphasizes that physical education assessment is not merely a technical activity, but also a relational process that influences students' affective and character development. The code of ethics for physical education teachers emphasizes the values of integrity, honesty, objectivity, and professional responsibility as prerequisites for creating fair and meaningful assessments (Salsabillah et al., 2025; Hasbi, 2025).

Critical reflection on ethical assessment practices is necessary on an ongoing basis. Studies show that increasing teachers' ethical awareness contributes to a safer, more inclusive, and supportive learning climate, while strengthening the legitimacy of the teaching profession in the eyes of students and the public (Sudarman et al., 2025; Wijayati, 2025). Therefore, ethics is not an adjunct to assessment, but rather a primary prerequisite for the validity, reliability, and meaningfulness of physical education evaluation results.

Bias as an Obstacle to Objectivity in Physical Education Tests

Bias is one of the main challenges in achieving objective and fair assessments in physical education. Bias can stem from internal factors within teachers—such as personal prejudice, gender stereotypes, past experiences, and limited assessment literacy—as well as external factors, such as instrument design that is insensitive to student diversity and socio-cultural contexts (Hay & Penney, 2012; Sidik et al., 2025). As a result, assessments often reflect subjective perceptions rather than students' actual abilities.

Empirical research shows that the use of uniform test standards without considering biological differences, health conditions, and social backgrounds can result in erroneous and discriminatory interpretations (Rahmat et al., 2025; Sibarani et al., 2025). Bias can also arise in teachers' observation and interpretation processes, where certain expectations of students unconsciously influence assessment decisions (Zhai & Nehm, 2023). This situation threatens the principles of scientific objectivity and pedagogical fairness in physical education assessment.

Addressing bias requires a systemic approach, not only through individual teacher awareness but also through institutional support. Ongoing training on bias-free instrument design, the use of valid and reliable measurement tools, and the consistent application of assessment standards have been shown to be effective in increasing the objectivity of assessments (Kumar & Vivekanandan, 2018; Thomas et al., 2020). Furthermore, educational institution policies that emphasize anti-bias principles, oversight mechanisms, and student feedback are crucial elements in ensuring the accountability of evaluation practices (Judijanto et al., 2025). Therefore, reducing bias is a crucial prerequisite for producing transparent and credible physical education assessments.

Practical Implications for Physical Education Teachers

The practical implications of these findings emphasize the need for physical education teachers to integrate technical, ethical, and reflective competencies into their testing and measurement practices. Mastery of modern measurement methodologies, including the use of digital technology, physical education applications, wearable devices, and motion sensors, can improve the accuracy and efficiency of data collection and minimize human bias (Bienkowski & Means, 2012; West, 2011). However, technology cannot replace the role of teachers as ethical and pedagogical decision-makers.

Teachers are required to implement a holistic evaluation approach that encompasses the cognitive, affective, and psychomotor domains, so that assessments do not become trapped in a reduction of physical ability alone (Mugara & Ali, 2025). Transparency in assessment procedures, clarity of assessment criteria, and the provision of constructive feedback are important strategies for making assessment part of the learning process, not a tool for labeling or punishment (Astuti, 2022; Taridala & Anwar, 2023).

Going forward, the professional development of physical education teachers must be directed at improving ethical assessment literacy, reflective skills, and sensitivity to student diversity. Educational institutions have a strategic role in providing ongoing training, adequate technological facilities, and evaluation policies oriented toward justice and humanity. With the synergy between technological advances, teacher professional competence, and the application of strong ethical principles, physical education assessment can develop into an accurate, fair, and meaningful instrument for the holistic development of students.

CONCLUSION

Ethical principles in physical education testing and measurement emphasize the importance of honesty, fairness, objectivity, and professional responsibility of teachers throughout the evaluation process. Conceptually, ethics serve as moral guidelines that maintain the integrity of assessments, ensuring that measurement results are valid, reliable, and meaningful for students. Empirically, various findings indicate that ignoring ethical principles contributes to the emergence of bias, decreased objectivity, and disrupted pedagogical relationships between teachers and students, including increased psychological stress and decreased trust in the assessment process.

Bias has been shown to be a major obstacle to achieving fair evaluations. Bias can arise from internal factors within teachers, such as prejudice and subjective perceptions, as well as external factors, such as the use of instruments that are not appropriate to student characteristics. This form of bias causes measurement results to underrepresent students' actual abilities and has the potential to create inequities in physical education. Therefore, teachers' critical awareness of potential bias and the ability to control it are key prerequisites for assessment validity and fairness.

The practical implications of this research emphasize the need for physical education teachers to integrate technical, ethical, and reflective competencies into evaluation practices. Ongoing training in professional ethics, the development of scientifically sound and inclusive instruments, and the use of modern measurement technologies are essential strategies for improving assessment quality. With consistent application of ethical principles and effective bias management, physical education evaluation can function optimally in supporting students' physical, mental, and character development in a fair and sustainable manner.

ACKNOWLEDGEMENTS

The author expresses his deepest appreciation and gratitude to all parties who have contributed directly or indirectly to the preparation and completion of this article. Special thanks are extended to the researchers and academics whose work served as the conceptual and empirical foundation for this critical study of ethical principles and bias in physical education testing and measurement. Scientific contributions from various reputable national and international literature were instrumental in enriching the analysis, strengthening the argumentation, and developing a systematic and reflective framework for this research.

The author also wishes to thank educational institutions, professional organizations, and policymakers in the field of physical education for providing regulatory documents and professional codes of ethics as important references for understanding fair and integrity-based evaluation practices. The support of a conducive academic environment, scientific discussions with colleagues, and constructive input from reviewers and editors contributed to improving the quality of the substance and analytical rigor of this article.

Finally, the author hopes that this article can provide a meaningful contribution to the development of physical education science, especially in strengthening ethical awareness, reducing assessment bias, and encouraging fairer, more objective, and more humanistic evaluation practices in educational environments.

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