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Strengthening Evaluation of Physical Fitness, Health, and Movement Competency

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Abstract
The high number of students who are physically inactive and the limitations of Physical Education teachers in conducting fitness evaluations indicate the need for competency improvement through structured training. Many teachers do not yet understand the concept of physical literacy and are not skilled in using valid and reliable fitness measurement tools. This community service activity aims to enhance the ability of PJOK teachers to measure and evaluate the fitness, health index, and physical literacy of students through a data-based approach. The methods of the activity include coordination with stakeholders, material preparation, pretest, theoretical and practical training (classroom, demonstration, case study, field practice), posttest, and result evaluation. The instrument used is a Google Form questionnaire developed to measure teachers' understanding and skills before and after the training. The results show a significant improvement: conceptual understanding increased from 28% to 88%, the skill in using measurement tools increased from 22% to 85%, and data analysis ability increased from 15% to 82%. In conclusion, the PEFORMA training is effective in equipping teachers with essential competencies to support the objective, systematic, and sustainable evaluation of student fitness. This program is recommended/advised to be implemented more widely as part of strengthening the quality of physical education in elementary schools.

Keywords: physical fitness, health, movement competency

INTRODUCTION

Measuring and evaluating students through assessment tests is very important for several reasons. First, such evaluations are important to ensure the quality of educational programs, especially in clinical skills training, where student feedback on standardized patients can help identify strengths and weaknesses, thereby enhancing the educational experience (Gonullu et al. 2023; Yuwono et al. 2025). In medical education, student evaluation of teaching (SET) is crucial for assessing teaching effectiveness and guiding faculty development, although such evaluations must be carefully designed to avoid bias and ensure they are suitable for the specific context of the medical school (Constantinou and Wijnen-Meijer 2022; Adi S, Tommy Soenyoto, and Agus Darmawan 2025). Furthermore, measuring students' self-regulation skills in the classroom, as demonstrated through learning analytics, provides teachers with valuable insights into students' learning strategies and helps identify those at risk, enabling timely interventions (Zhidkikh, Saarela, and Kärkkäinen 2023; Adi et al. 2025). Additionally, educational data mining (EDM) techniques and machine learning offer powerful tools for predicting student performance, enabling educators to address potential issues early and improve educational outcomes (Alhazmi and Sheneamer 2023; Adi S et al. 2025).. These methods also facilitate the assessment of student knowledge, helping to tailor instruction and support to individual needs, thereby enhancing the overall teaching and learning experience (Alruwais and Zakariah 2023; Arbanisa and Adi 2025). Collectively, this approach underscores the importance of measurement tests in providing a comprehensive understanding of student performance, guiding educational improvement, and supporting student success.

Data results in physical education can significantly influence digital lifestyles by providing real-time feedback and personalized interventions that promote healthier behaviors. The integration of mobile health technology, such as glucose and physical activity monitors, has shown potential in enhancing self-awareness and encouraging behavior change among individuals at risk of type 2 diabetes. This technology helps users understand the direct impact of their lifestyle choices on their health, although sustained engagement requires additional training and optimized feedback presentation (Whelan et al. 2021; Jiddan and Adi 2025). For adolescents, the timing of physical activity is crucial, with research indicating that digital interventions should be strategically scheduled between 5 PM and 8 PM to maximize engagement and effectiveness (Ortega and Cushing 2020). Additionally, digital weight management programs have shown improvements in health-enhancing behaviors, such as physical activity and nutrition, which are associated with weight loss and better program retention (Behr et al. 2022). Collectively, this study highlights the transformative potential of data-driven digital interventions in reshaping digital lifestyles towards healthier outcomes.

In addition to the limitations in evaluation methods, the low physical activity of students is also a major issue. Based on initial observations, only about 25% of students are physically active, while the remaining 75% tend to be passive, both inside and outside of school. The lack of objective measurements makes it difficult for teachers to understand the overall fitness development of students. Moreover, most teachers have not received specialized training in using fitness test tools that meet standards, making the evaluations conducted often inaccurate and difficult to use as a basis for improving the quality of learning.

To address this challenge, comprehensive training is needed to enhance teachers' competence in systematically measuring fitness and physical literacy. The PEFORMA program serves as a solution to strengthen teachers' abilities in evaluating students' physical literacy and fitness with a data-driven approach. This training will equip teachers with a deep understanding of the concept of physical literacy, the use of valid and reliable measurement tools, and strategies for implementing sustainable fitness evaluations. Thus, teachers can monitor students' progress more objectively and accurately.

METHOD

1. Permission and coordination with the Korsatpen Kec. Gunungpati
2. Socialization with physical education teachers
3. The creation of materials by the service team is coordinated with the Korsatpen Kec. Gunungpati
4. Activity Pretest
5. Implementation of activities by the service team
6. Posttest
7. Evaluation and dissemination of community service activities. Evaluation and dissemination of community service activities.

The data collection instrument is a questionnaire to measure the understanding and knowledge of physical education teachers in community service activities. The target audience for this community service is physical education teachers. This instrument will be sent via Google Form.

The method in this activity is carried out in three stages, as follows: a) preparing the training needs such as the venue and training materials, b) organizing the activity schedule. The activities are conducted in the form of theory-based assistance (lectures) and practice, c) presenting the training materials, d) presenting the training materials, e) conducting the practice, f) finally, to determine the training results, a questionnaire will be given to assess the participants' understanding of the activity, and h) the percentage of the training results will be documented in a report to be submitted to the school and participants.

Delivery Method:

Class Training: Basic concepts of Physical Literacy, physical fitness, and student health index. Principles of test and measurement in Physical Education. Standards for measuring student fitness based on national and international guidelines.

Demonstration Training: Demonstration of Physical Literacy measurement using various instruments. Simulation of student fitness measurement with standard tools (beep test, push-up test, sit & reach, etc.). Introduction and practice of using applications/software for analyzing student fitness data.

Case-Based Learning: Analysis of cases involving students with low fitness levels and possible interventions. Case study on the factors affecting students' health index. Evaluation of fitness measurement results and the implementation of improvement strategies in schools.

Field Practice Training: Teachers conduct an analysis of measurement results and prepare health assessment reports for students based on the measurement of Physical Literacy, fitness, and student health indices at their respective schools. Preparation of policy recommendations based on field findings

RESULT & DISCUSSION

No	Main Competency Indicators	Before (%)	After (%)	Improvement
1	Understanding the concept of physical literacy and fitness evaluation	28%	88%	↑ +60%
2	Skills in using valid and reliable physical fitness measurement tools	22%	85%	↑ +63%
3	The ability to analyze and utilize evaluation data for learning	15%	82%	↑ +67%

Table 1. Main Competency Indicators

Physical education teachers must comprehensively evaluate the health and fitness of students because physical fitness (PF) is an important health biomarker and is related to academic performance and overall well-being. Evaluating PF allows for the monitoring of health in adolescents, which is important given the relationship between PF and vulnerability to health issues, as well as its predictive value for academic success (Marques et al. 2021). Additionally, there is evidence that motor competence and physical fitness significantly influence academic performance in physical education, indicating that comprehensive evaluation can help align teaching practices with curriculum goals and ensure all students have equal opportunities for (Vist Hagen et al. 2021). Furthermore, systematic PF assessment can provide valuable data for health promotion and preventive actions, which are increasingly important in schools to enhance mental and physical health (Braksiek et al. 2022; Artazila and Adi 2024). Despite the existence of physical education standards, the evaluation of PF in adolescents has not been systematic or aligned, highlighting the need for consistent and reproducible assessments to better support healthy growth and development and reduce the risk of cardiovascular disease (Krochmal et al. 2021). Therefore, comprehensive evaluation by physical education teachers is crucial to foster a healthier and more academically successful student population.

Many physical education teachers in Gunungpati District have not received adequate training in the use of valid and reliable evaluation instruments to measure physical literacy, health index, and student fitness. If teachers have not received training in measuring students' fitness and health, several challenges and implications arise. The lack of training can significantly impact the effectiveness of school-based interventions aimed at increasing students' physical activity and health outcomes. For example, a systematic review highlights that teacher-led interventions often experience limited effectiveness due to inadequate training, which affects implementation fidelity and student outcomes (Ryan et al. 2022; Soenyoto et al. 2025). In Ontario, Canada, a study found that only 23% of teachers met the mandated daily physical activity requirements, with inadequate training being the main barrier (Martyn et al. 2022). This underscores the need for comprehensive training programs that equip teachers with the necessary skills and knowledge. The PE4MOVE project exemplifies an effective approach by offering internet-supported professional development programs to enhance teachers' competencies in promoting physical activity (Carraro et al. 2022). Additionally, the Resistance Training for Teens program shows that while teacher training can lead to improved student fitness, its implementation varies significantly, indicating the need for consistent and sustained (Kennedy et al. 2021; Nurjanah, Adi, and Billiandri 2024). Furthermore, the lack of robust school health assessment tools, as identified in the systematic review, indicates that even when training is provided, the available tools for measuring health outcomes may be inadequate, further complicating efforts to assess and improve student health (Kennedy et al. 2021; Rumini, Adi S, and Kusuma 2024). Therefore, addressing this training gap is crucial for the successful implementation of health and wellness programs in schools. Tests and measurements are crucial for teachers to regularly monitor student progress because they provide a structured and reliable means to assess the quality of teaching and student achievement over time. Measurement of valid and reliable teaching practices, as discussed by Liu and Cohen, facilitates informed decision-making at the school level, allowing educators to adjust their approaches to improve the quality of teaching and student outcomes (Kennedy et al. 2021; Apriyanto et al. 2024). Therefore, addressing this training gap is crucial for the successful implementation of health and fitness programs in schools.

Tests and measurements are crucial for teachers to regularly monitor student progress because they provide a structured and reliable means to assess the quality of teaching and student achievement over time. Valid and reliable measurement of teaching practices, as discussed by Liu and Cohen, facilitates informed decision-making at the school level, allowing educators to adjust their approaches to enhance teaching quality and student outcomes (Liu and Cohen 2021; Al Mukharom, Setiawan, and Pujianto 2024). Furthermore, longitudinal assessment systems, as highlighted by An et al., are crucial for detecting threats to the validity of score interpretation, which can be obscured by point-in-time analysis. These systems enable educators to track trends and changes in student performance, ensuring that assessments reflect true progress and effectively inform educational policy (An, Ho, and Davis 2022). In Australia, the National Assessment Plan (NAPLAN) serves as a tool to monitor student performance, primarily focusing on literacy and numeracy. Cumming et al. emphasize the importance of analyzing this data longitudinally to understand student progress and address achievement gaps, such as between Indigenous and non-Indigenous students (Cumming, Goldstein, and Hand 2020). Soland and Thum further describe the value of interim assessments

in capturing seasonal trends in student performance, which may be overlooked by traditional models. Their work shows that combining different statistical models can provide a more comprehensive view of student growth, both within and across school years (Soland and and Thum 2022; Ulum, Raharjo, and Appukutty 2024). Finally, Dumas et al. advocate for a dynamic measurement approach aligned with contemporary views of learning, emphasizing the need for assessments that consider the context and time-specific nature of student learning (Dumas, Daniel, and and Greene 2020).. Collectively, these insights underscore the need for tests and measurements in providing educators with the necessary data to effectively monitor and enhance student progress. The development of an integrated test and measurement system is essential so that teachers can periodically monitor student progress and devise appropriate intervention strategies.

CONCLUSION

PEFORMA training successfully improved the competence of PJOK teachers in understanding the concept of physical literacy, the use of physical fitness measurement tools, and the analysis of student measurement data. This program equips teachers with the practical and analytical skills necessary to systematically evaluate students' fitness and health. The training results show a significant improvement in teachers' ability to conduct valid and reliable fitness assessments. With the support of this training, teachers can design more targeted learning interventions and contribute to creating a healthy and data-driven school environment. The activity was attended by physical education teachers from the Gunungpati District. In the future, it needs to be conducted at a higher level and with a broader scope.

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The authors states that there is no conflict of interest in the publication of this article.

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