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Descriptive Analysis of Facilities, Infrastructure, and Supporting Factors for Physical Education, Sports, and Health Learning in Senior High Schools

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ABSTRACT

This study examines the facilities, infrastructure, and supporting factors of PJOK learning in senior high schools using a quantitative descriptive approach through observation, questionnaires, interviews, and documentation. The findings indicate that basic facilities such as sports fields, gyms, and simple equipment are generally adequate, while specialized and modern sports facilities remain limited and require regular maintenance. Non-physical supporting factors, including teacher competence, student motivation, and school support, generally contribute positively, although budget limitations and differing teacher-student perceptions present challenges. Overall, the study highlights that the effectiveness of PJOK learning depends on both the availability of facilities and infrastructure and non-physical supporting factors, and it is expected to serve as a reference for improving the quality and management of PJOK learning in schools.

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1. INTRODUCTION

Physical Education, Sports, and Health (Penjaskes) is one of the subjects that plays a strategic role in the holistic development of students. This subject not only aims to improve physical fitness, but also plays a role in character building, discipline, responsibility, and social skills through physical activities (Rian Andriansyah et al., 2025). Thus, Penjaskes has an important contribution to the achievement of national education goals, especially in producing a healthy, active, and productive generation.

The success of physical education learning is greatly influenced by various factors, both internal and external. Internal factors include student motivation, active participation, and physical ability, while external factors include the availability of facilities and equipment, teacher competence, and support from school administration. This aligns with the (UNESCO, 2015) guidelines, which emphasize that the quality of physical education is largely determined by student readiness and a supportive learning environment. Additionally, the (Suparman, 2025) states that a school environment providing adequate facilities for physical activity plays a crucial role in enhancing student participation and health.

According to (Putu et al., 2026) inadequate facilities and infrastructure can hinder the learning process, reduce student motivation, and limit the development of motor skills and physical abilities. For example, a lack of proper sports fields, damaged or incomplete equipment, and limited health facilities can make learning less effective. Conversely, complete and well-maintained facilities and infrastructure can increase student interest and participation, thereby optimizing physical education learning.

In addition to facilities and infrastructure, other supporting factors are also crucial, such as teacher competence, creativity in developing teaching methods, curriculum support, and a conducive school environment. Teachers who possess pedagogical competence, professionalism, and the ability to make the most of available facilities can create active, enjoyable, and safe learning experiences for students. This aligns with (UNESCO, 2015), which emphasizes that teacher quality, effective lesson planning, and the use of appropriate methods are key components in delivering effective and inclusive physical education. Furthermore, UNESCO also emphasizes that a safe learning environment, supported by sound school policies and management, plays a crucial role in fostering positive learning experiences and encouraging students' active participation in physical activities. Thus, a supportive school environment both in terms of facilities and management support also plays a vital role in creating a conducive learning atmosphere for the development of students' physical skills and health.

Conditions in the field show that many schools still experience limitations in physical education facilities and infrastructure, both in terms of quantity and quality. This raises questions about the extent to which the condition of facilities and infrastructure, as well as other supporting factors, affect the effectiveness of physical education learning in high schools. Therefore, this study was conducted to perform a descriptive analysis of the facilities, infrastructure, and supporting factors of physical education learning in high schools, with the aim of determining the current conditions, identifying existing obstacles, and providing recommendations that can improve the quality of learning.

By understanding the condition of facilities, infrastructure, and supporting factors, schools, teachers, and education stakeholders can take strategic steps to improve the effectiveness of physical education learning. In addition, this study is expected to serve as a reference for the

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development of better physical education policies and planning, so that the educational goal of developing healthy, active, and characterful students can be optimally achieved.

Furthermore, the effectiveness of Physical Education, Sports, and Health learning is also closely related to the concept of physical literacy, which emphasizes the development of motivation, confidence, physical competence, knowledge, and understanding to maintain physical activity throughout life (Haris et al., 2025). In line with this, schools that provide adequate facilities and structured learning programs are better able to foster physical literacy among students. Student engagement in well-designed activities supported by appropriate equipment also promotes improved motor skills and a positive attitude toward physical activity, as evidenced by the significant influence of physical literacy on students' physical activity (Andika, Endarman Saputra, 2025).

Furthermore, research indicates that the implementation of modern teaching approaches in physical education, such as game-based learning and student-centered instruction, requires adequate infrastructure to be carried out effectively. In line with this, pedagogical models such as Teaching Games for Understanding (TGfU) and the Sport Education Model require flexible spaces and a variety of equipment so that students can actively engage in learning and develop both tactical understanding and technical sports skills. Without the support of such facilities, learning tends to revert to traditional teacher-centered methods and fails to provide an optimal learning experience for students (Muhammad Ivan Miftahul Aziz1, 2024).

Another important aspect is the role of safety and health standards in physical education facilities. Safe playing environments reduce the risk of injury and increase students' willingness to participate actively in lessons (Kuswanto et al., 2025). Schools with poor maintenance of fields, slippery floors, or damaged equipment may unintentionally create unsafe conditions, which not only hinder learning but also raise concerns among parents and the community. Therefore, regular evaluation and maintenance of facilities are crucial elements in ensuring the sustainability of quality physical education programs.

Moreover, collaboration between schools, local governments, and communities has been identified as a strategic approach to overcome limitations in facilities and infrastructure. Donkor (2025) found that high school students who engage in well-resourced and varied physical education environments show higher motivation and participation. Partnerships with community sports centers, universities, and private organizations can provide alternative spaces and resources for physical education activities, enabling schools to implement more comprehensive programs even when internal resources are limited (Hardman & Marshall, 2009).

Teacher professional development also remains a key supporting factor. Educators who receive continuous training are better prepared to utilize existing facilities creatively and to design adaptive learning strategies (Azzahra et al., 2025). Professional development programs focusing on classroom management, injury prevention, and innovative teaching methods have been proven to enhance the overall quality of physical education delivery. Thus, investment in human resources must go hand in hand with the improvement of physical infrastructure.

Considering these perspectives, it becomes clear that the improvement of Physical Education, Sports, and Health learning requires a holistic approach involving infrastructure development, teacher competence, curriculum innovation, and community support. Schools that are able to integrate these elements tend to produce students who are not only physically fit but also possess positive character traits and healthy lifestyles. This study,

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therefore, seeks to contribute to this broader effort by providing an in-depth description of current conditions and practical recommendations for stakeholders.

2. METHODS

2.1 Research Design

This study employed a quantitative descriptive method aimed at describing the condition of facilities, infrastructure, and supporting factors for Physical Education, Sports, and Health (PJOK) learning in senior high schools. The descriptive method was selected because it emphasizes the depiction of real facts in the field without manipulating variables (Sugiyono, 2013). This approach allows the researcher to systematically collect, analyze, and present data regarding the actual conditions of learning environments in a structured and objective manner.

2.2 Participants and Sampling

The study was conducted at five senior high schools in West Java, Indonesia, selected through purposive sampling based on the following criteria: (1) accredited senior high schools (both public and private), (2) schools that implement the national PJOK curriculum, and (3) schools located in both urban and suburban areas to ensure geographic diversity. The total participants comprised 156 respondents, consisting of 10 PJOK teachers (2 per school), 5 school administrators responsible for facility management (1 per school), and 141 students from grades X–XII selected through proportional stratified random sampling across the five schools. The distribution of participants is presented in Table 1.

Table 1. Distribution of Research Participants

No.	School	Location Type	PJOK Teachers	Administrators	Students	Total
1	SMA A	Urban	2	1	30	33
2	SMA B	Urban	2	1	30	33
3	SMA C	Suburban	2	1	28	31
4	SMA D	Suburban	2	1	27	30
5	SMA E	Suburban	2	1	26	29
	Total		**10**	**5**	**141**	**156**

2.3 Instruments

Four data collection instruments were used in this study. First, a structured observation checklist containing 25 items covering the availability, condition, and functionality of sports facilities and infrastructure. The checklist was adapted from the UNESCO (2015) Quality Physical Education guidelines and the Indonesian Ministry of Education standards for school sports facilities. Second, a closed-ended questionnaire with a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) consisting of 30 items divided into three dimensions: facility adequacy (10 items), infrastructure condition (10 items), and non-physical supporting factors (10 items). The questionnaire was administered separately to teachers and students. Third, semi-structured interview guides for teachers and school administrators consisting of 10 open-ended questions regarding challenges, strategies, and expectations related to PJOK facility management. Fourth, documentation in the form of photographs, school inventory records, and facility reports.

The questionnaire was validated through expert judgment by two PJOK education specialists and one measurement and evaluation expert. Content validity was assessed using the Content Validity Index (CVI), yielding a score of 0.87, which is considered acceptable. Reliability was tested through a pilot study with 30 students from a non-sample school using

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Cronbach's Alpha, resulting in a coefficient of 0.83 for the facility adequacy dimension, 0.79 for infrastructure condition, and 0.86 for non-physical supporting factors, all of which exceed the minimum threshold of 0.70.

2.4 Procedures

Data collection was conducted over a period of eight weeks from September to October 2025. Observations were conducted during PJOK learning sessions at each school on three separate occasions to capture varied activity types. Questionnaires were distributed and completed by respondents during school hours under researcher supervision. Interviews with teachers and administrators were conducted individually, each lasting approximately 30–45 minutes, and were audio-recorded with participant consent for transcription purposes.

2.5 Data Analysis

Data analysis was conducted using descriptive statistics, including frequency distributions, percentages, means, and standard deviations, calculated using SPSS Version 26. Observation checklist data were analyzed by calculating the percentage of available and functional items against total required items. Questionnaire data were categorized into four levels: excellent (mean 3.26–4.00), good (2.51–3.25), fair (1.76–2.50), and poor (1.00–1.75). Interview data were transcribed and analyzed thematically to supplement and triangulate quantitative findings. Results were presented in tables, graphs, and descriptive narratives.

3. RESULTS

3.1 Availability and Condition of Sports Facilities

Observation results across the five senior high schools revealed that basic sports facilities were generally available, although with varying conditions and completeness. A summary of facility availability and condition is presented in Table 2.

Table 2. Availability and Condition of Sports Facilities Across Five Schools

No.	Facility/Equipment	Available (n/5 schools)	Good Condition (%)	Minor Damage (%)	Major Damage / Unavailable (%)
1	Outdoor sports field	5	60	40	0
2	Indoor gymnasium	3	67	33	0
3	Basketball court markings	4	50	50	0
4	Volleyball net and posts	5	40	40	20
5	Footballs/Futsal balls	5	60	30	10
6	Basketballs	5	50	40	10
7	Gymnastic mats	4	25	50	25
8	Badminton rackets	5	40	40	20
9	Athletics equipment (hurdles, shot put)	2	50	50	0
10	Fitness/health monitoring equipment	1	100	0	0
11	Changing rooms	4	50	25	25
12	Equipment storage room	5	40	40	20
13	First aid kit	3	67	33	0
14	Information/safety boards	2	50	50	0

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The observation data showed that all five schools had outdoor sports fields and basic ball equipment, while indoor gymnasiums were only available in three schools (60%). Specialized equipment such as athletics tools (hurdles, shot put) were present in only two schools (40%), and fitness or health monitoring equipment was available in only one school (20%). Regarding condition, gymnastic mats had the highest damage rate, with only 25% in good condition and 25% categorized as major damage, primarily due to torn surfaces and deteriorated padding. Volleyball nets and badminton rackets also showed relatively high damage rates at 20% major damage.

3.2 Perceptions of Facility Adequacy

The questionnaire results regarding perceptions of facility adequacy from both teachers and students are presented in Table 3.

Table 3. Comparison of Teacher and Student Perceptions on Facility Adequacy

No.	Dimension	Teachers (n=10)		Students (n=141)		Perception Gap (Teacher – Student)
		Mean	Category	Mean	Category	
1	Availability of basic sports equipment	3.2	Good	2.74	Good	0.46
2	Variety of sports equipment	2.6	Good	2.18	Fair	0.42
3	Physical condition of facilities	2.8	Good	2.35	Fair	0.45
4	Safety standards of playing areas	2.9	Good	2.41	Fair	0.49
5	Availability of changing rooms and storage	2.5	Good	2.12	Fair	0.38
6	Availability of health/first aid facilities	2.3	Fair	1.98	Fair	0.32
7	Cleanliness and maintenance of facilities	2.7	Good	2.28	Fair	0.42
8	Adequacy of facilities for curriculum needs	3.1	Good	2.56	Good	0.54
9	Comfort of learning environment	2.9	Good	2.47	Fair	0.43
10	Overall satisfaction with PJOK facilities	2.8	Good	2.31	Fair	0.49
	Overall Mean	**2.88**	**Good**	**2.34**	**Fair**	**0.54**

The data revealed a consistent perception gap between teachers and students across all ten dimensions. Teachers rated the overall facility adequacy as "Good" (M=2.88, SD=0.41), while students rated it as "Fair" (M=2.34, SD=0.52). The largest gap was observed in the dimension of "Adequacy of facilities for curriculum needs" (+0.54), where teachers perceived the facilities as sufficient for delivering the required curriculum content, whereas students

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assessed them based on the variety and quality of activities available to them. The smallest gap was in "Availability of health/first aid facilities" (+0.32), where both groups acknowledged the limitation.

When analyzed by school location type, urban schools (SMA A and SMA B) demonstrated higher mean scores for both teachers (M=3.12) and students (M=2.58) compared to suburban schools (SMA C, D, and E), which recorded lower means for teachers (M=2.72) and students (M=2.18). This suggests that geographic location and associated resource allocation influence facility quality and stakeholder perceptions.

3.3 Non-Physical Supporting Factors

The assessment of non-physical supporting factors is presented in Table 4.

Table 4. Assessment of Non-Physical Supporting Factors for PJOK Learning

No.	Supporting Factor	Teachers (n=10)		Students (n=141)	
		Mean	Category	Mean	Category
1	Teacher pedagogical competence	3.4	Excellent	3.05	Good
2	Teacher creativity in learning methods	3.2	Good	2.87	Good
3	Teacher ability to adapt to student needs	3.1	Good	2.79	Good
4	Student motivation for popular sports (futsal, basketball)	3.5	Excellent	3.42	Excellent
5	Student motivation for specialized sports (swimming, athletics)	2.2	Fair	2.05	Fair
6	School administrative support for scheduling	3	Good	2.68	Good
7	Budget allocation for facility maintenance	2.1	Fair	—	—
8	Inter-teacher coordination	3.1	Good	—	—
9	Parental support for student sports activities	2.6	Good	2.45	Fair
10	School policy on sports and physical activity	2.8	Good	2.52	Good
	Overall Mean	**2.9**	**Good**	**2.73**	**Good**

The results showed that non-physical supporting factors were generally in the "Good" category for both teachers (M=2.90, SD=0.47) and students (M=2.73, SD=0.44). The highest-rated factor was student motivation for popular sports such as futsal and basketball, rated as

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"Excellent" by both teachers (M=3.50) and students (M=3.42). In contrast, the lowest-rated factor was budget allocation for facility maintenance (M=2.10, "Fair" category), followed closely by student motivation for specialized sports requiring specific equipment such as swimming and athletics (M=2.20 for teachers; M=2.05 for students), both in the "Fair" category.

Teacher competence-related factors scored consistently high, with pedagogical competence rated "Excellent" by teachers (M=3.40) and "Good" by students (M=3.05). Interview data corroborated this finding; eight out of ten teachers reported regularly attending professional development workshops organized by the local education office, and all teachers stated that they adapted lesson plans based on available equipment and student characteristics. However, during interviews, seven out of ten teachers identified budget constraints as the primary obstacle, noting that annual facility maintenance budgets had remained stagnant for the past three years despite increasing equipment wear.

3.4 Comparative Analysis by School Type

A comparative analysis between urban and suburban schools revealed notable differences in both facility adequacy and supporting factors, as summarized in Table 5.

Table 5. Comparative Analysis of Facility Adequacy and Supporting Factors by School Location

No.	Indicator	Urban Schools (n=2)	Suburban Schools (n=3)	Difference
1	Average number of facility types available	12.5 / 14	9.3 / 14	3.2
2	Percentage of facilities in good condition	68%	42%	26%
3	Teacher perception of facility adequacy (Mean)	3.12	2.72	0.4
4	Student perception of facility adequacy (Mean)	2.58	2.18	0.4
5	Teacher competence score (Mean)	3.35	3.1	0.25
6	Student motivation score (Mean)	2.95	2.58	0.37
7	Budget allocation adequacy (Mean)	2.4	1.9	0.5

Urban schools demonstrated higher scores across all indicators. The most significant difference was in budget allocation adequacy (+0.50), indicating that urban schools receive relatively better funding for facility procurement and maintenance. The difference in facility condition was also notable (+26%), with suburban schools showing a higher proportion of damaged or poorly maintained equipment. Interview data from suburban school administrators confirmed that limited local government funding and geographic distance from suppliers contributed to maintenance delays and equipment shortages.

3.5 Summary of Key Findings

Overall, the results indicated that the availability of basic PJOK facilities and infrastructure in the five senior high schools studied was adequate but not yet optimal. Key findings can be summarized as follows: (1) basic facilities such as outdoor sports fields and standard ball

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equipment were available in all schools, but specialized and modern equipment remained limited; (2) a consistent perception gap existed between teachers and students, with teachers rating facilities as "Good" and students as "Fair"; (3) non-physical supporting factors, particularly teacher competence and student motivation for popular sports, were strong, while budget allocation and motivation for specialized sports were weak; (4) urban schools demonstrated better facility conditions and stronger supporting factors compared to suburban schools; and (5) budget constraints were identified as the primary obstacle to facility maintenance and improvement across all schools. These findings are consistent with previous studies indicating that a combination of adequate facilities and non-physical supporting factors significantly influences the effectiveness of PJOK learning (Nova et al., 2022; Susilowati & Arianto, 2023).

4. DISCUSSION

The results of the study indicate that the availability of physical education facilities and infrastructure in the high schools studied is adequate, but there are still several obstacles that affect the optimality of learning. Sports fields, gyms, and basic equipment such as balls, mats, rackets, and net posts are available in most schools. However, specialized facilities such as fitness equipment, swimming equipment, and modern sports equipment are very limited. These findings are in line with Pamungkas & Suroto (2025), who stated that limited variety of sports equipment can limit the variety of PJOK learning activities and potentially reduce students' interest in participating in learning.

In addition to availability, the physical quality of facilities and infrastructure is an important factor. Some facilities have minor damage, such as torn mats, deflated balls, and uneven fields, which affect the smooth running of learning activities. This shows that even though the facilities are available, their use is not optimal due to limited maintenance and budget. Pesi et al. (2025) emphasize the importance of regular maintenance to keep facilities safe, usable, and supportive of effective learning.

Differences in perception between teachers and students were also an important finding. Teachers considered the facilities and infrastructure to be adequate because they focused on basic availability and the ability to fulfill the curriculum, while students assessed them in terms of comfort, completeness, and variety of activities. This shows the need for collaboration and communication between teachers and students in managing PE facilities/infrastructure to increase student satisfaction and engagement.

Non-physical supporting factors, such as teacher competence, student motivation, and school administrative support, showed relatively positive results. PJOK teachers are highly competent and able to develop varied learning activities that suit the conditions of the students. Student motivation is quite high for popular sports such as futsal, basketball, and gymnastics, but decreases for activities that require special equipment. Administrative support, such as scheduling, coordination between teachers, and maintenance of facilities, is generally adequate, but budget constraints remain a major obstacle. These findings (Ulya et al., 2025), which states that non-physical factors, such as motivation, competence, and administrative support, play a significant role in the effectiveness of learning, especially when physical facilities are limited.

The results of the comparative analysis of facilities/infrastructure and supporting factors (Table 1) show that although basic facilities are adequate, limitations in specialized facilities and routine maintenance are obstacles to optimizing learning. In addition, differences in perception between teachers and students can affect the effectiveness of learning activities

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if not managed properly. This confirms that the success of PJOK learning does not only depend on the availability of facilities, but also on the quality of non-physical supporting factors, including teacher competence, student motivation, and school management support.

The practical implications of these findings are the need for more effective facilities and infrastructure management strategies, including:

1. Increasing the number and variety of facilities/infrastructure, especially modern sports equipment and special facilities such as fitness or swimming equipment.
2. Routine maintenance of facilities, including repairing damaged facilities to keep them safe and usable.
3. Improving teacher-student communication regarding the use of facilities, so that students' perceptions and satisfaction with the facilities are more balanced.
4. Strengthening administrative support, including budget planning and schedule management, to ensure that non-physical supporting factors can work optimally.

In addition, this study emphasizes the importance of integrating facilities/infrastructure and non-physical supporting factors. For example, complete facilities but teachers who lack competence or motivation will be less than optimal, and vice versa. A balanced combination of adequate facilities/infrastructure and strong supporting factors will increase the effectiveness, quality, and comfort of PJOK learning, as well as encourage active student participation. These findings are in line with the research by Sarpan et al. (2022), which shows that effective PJOK learning requires an optimal combination of physical facilities and non-physical supporting factors.

Moreover, the synergy between facilities and non-physical supporting factors is closely related to the creation of a meaningful learning environment in Physical Education, Sports, and Health. Adequate infrastructure provides students with opportunities to practice various motor skills, while competent teachers are able to transform these opportunities into structured learning experiences that develop cognitive and affective aspects (House et al., 2025). Without proper pedagogical guidance, even the most complete facilities may not significantly contribute to learning outcomes, as students require direction, feedback, and motivation to maximize their potential.

Recent studies also underline that student participation in PJOK is strongly influenced by the perception of learning quality and comfort. When facilities are safe and well organized, students demonstrate higher levels of engagement, confidence, and enjoyment during activities (Husna et al., 2025). Enjoyable learning experiences encourage students to be more active, which in turn improves physical fitness and mastery of basic sports techniques. Therefore, infrastructure should be viewed not merely as physical assets, but as educational instruments that interact with teaching strategies and student characteristics.

In the Indonesian context, several empirical studies confirm that schools with better management of facilities and stronger institutional support tend to show higher achievement in PJOK learning indicators. (Mulyana et al., 2024; Nur Wahyuni et al., 2025; Putri et al., 2024) reported that the availability of standard equipment combined with systematic lesson planning significantly improved students' motor skill performance. This indicates that educational policies should not focus solely on procurement of facilities, but also on strengthening teacher capacity and school management systems.

Additionally, parental and community involvement has been identified as an important non-physical factor. Support from parents in the form of encouragement and provision of sports needs outside school hours contributes to students' readiness to participate in PJOK activities (Ngurah et al., 2024; Zheng, 2025). Collaboration between schools and local sports

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organizations can also expand learning resources and provide students with broader experiences beyond the classroom.

Thus, the integration between facilities/infrastructure and non-physical factors must be implemented in a comprehensive and sustainable manner. Educational stakeholders need to design policies that combine infrastructure improvement, teacher professional development, curriculum innovation, and community participation. Such an approach will not only enhance the effectiveness of PJOK learning but also support the long-term goal of developing a healthy, active, and character-based generation.

Overall, this discussion confirms that although the high schools studied have provided basic facilities/infrastructure, efforts to improve, maintain, and strengthen non-physical supporting factors are still needed to achieve more effective, varied, and enjoyable PJOK learning for students. With the right strategy, PJOK learning can optimally improve students' physical competence, health, and motivation.

5. CONCLUSION

Based on the results of the research and discussion, it can be concluded that the learning facilities and infrastructure for Physical Education, Sports, and Health (PJOK) in the high schools studied are generally adequate, especially basic facilities such as sports fields, gyms, and simple sports equipment. However, special facilities such as fitness equipment, swimming equipment, and modern sports equipment are still limited. The quality of the facilities also varies; some facilities have minor damage, so their use is not optimal.

Non-physical supporting factors, including teacher competence, student motivation, and school administrative support, tend to support the success of PJOK learning, although budget constraints and differences in perception between teachers and students are obstacles that need to be considered. These findings indicate that the effectiveness of PJOK learning is highly dependent on a combination of the availability of facilities/infrastructure and non-physical supporting factors. Adequate facilities without good teacher and administrative support, or vice versa, will limit the quality of learning.

Based on these conclusions, it is recommended that schools make several efforts to improve the quality of PJOK learning. First, increase the number and variety of facilities and infrastructure, especially modern sports facilities, so that learning activities can be more varied and enjoyable for students. Second, routine maintenance and repair of facilities need to be carried out so that the facilities are always usable, safe, and comfortable. Third, strengthening communication and collaboration between teachers and students is important to minimize differences in perceptions regarding the suitability of facilities. Fourth, administrative support such as budget management and learning planning must be strengthened so that non-physical supporting factors work optimally. In addition, regular development of PJOK teacher competencies is also recommended so that facilities can be utilized optimally and learning becomes more creative and effective.

With the implementation of these measures, PJOK learning in high schools is expected to increase student participation, physical competence, and awareness of the importance of health, while creating a more effective, enjoyable, and quality learning environment.

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6. AUTHORS' NOTE

The author declares that there is no conflict of interest regarding the publication of this manuscript. The research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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