



## The Utilization of Differentiated Learning in Improving Physical Fitness and Active Lifestyle of Junior High School Students: Literature Review in Physical Education

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### ABSTRACT

There are still very limited studies that integrate differentiated learning with physical education subjects that need to be studied more deeply, even though differentiated instruction is a learning model that adheres to the principles of Developmentally Appropriate Practice (DAP), where every learning experience must align with the characteristics and needs of students. This study aims to review the scientific literature in several countries regarding differentiated learning in physical education to improve physical fitness and active lifestyle. Article search is carried out with the help of the Harzing Publish or Perish program based on the Scopus database. The analysis of the search and screening of articles was carried out by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) procedure. Of the 51 articles identified, only six remain in the criteria after the implementation of the exclusion stage. This research found that the application of differentiated learning (DL) in physical education (PE) to improve junior high school students' physical fitness and active lifestyle is still very limited and requires further research. In addition, in some literature, there is no previous research that specifically explores the impact of this model on junior high school students, so it is recommended for future researchers to add searches through various other databases, such as Web of Science, PubMed, and Google Scholar.

### Keywords

Customer loyalty,  
Health and fitness clubs,  
Repurchase intention,  
Service quality

### Article History

Received 10 July 2024

Revised 28 November 2024

Accepted 24 December 2024

Available Online 30 December 2024

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## INTRODUCTION

Physical ability is a person's ability to carry out the physical activity he is undergoing; the better a person's physical ability, the longer the activity is carried out (Lopez-Sanchez et al., 2019). In carrying out daily activities, a person needs a fit physical state because with a fit physique, a person will do a job to the maximum (Ferdianto & Prihanto, 2017). Physical fitness is the length of time a person takes to do physical activity. The U.S. Department of Health & Human Services defines physical fitness as a set of physical components that a person possesses in carrying out physical activity (The President's Council on Physical Fitness and Sports, 2012). Having good physical abilities or fitness makes a person work more optimally because not only physical aspects are good, but also other aspects, such as psychological and intellectual, can be good (Levine et al., 2021; Yorks et al., 2017).

Physical fitness is closely related to an active lifestyle, an active person tends to have a higher level of physical fitness compared to a less active person (Kapoor et al., 2022). Physical fitness indicates the degree of a person's health; the fitter the person is, it can be said that the quality of health degree is higher (Lang et al., 2019), and in general, health can be achieved by leading a more active lifestyle (Edgy & Aaron, 2019). An active lifestyle reflects healthy living because engaging in physical activities directly contributes to physical fitness. Adequate physical activity enhances both physical and mental health, including improving immune system function (Filgueira et al., 2021); this is in line with the theory that physical fitness can be affected by physical activity (Nylén et al., 2019), the leading cause of the decline in students' physical fitness is due to their lack of activity in moving (Fajar & Iswahyudi, 2018). Physical activity is a promotion to get physical health and is also beneficial in dietary arrangements (Galan-Lopez et al., 2018; Kapoor et al., 2022); in addition, Physical fitness encompasses key components such as cardiorespiratory endurance, muscle strength, and flexibility, all of which are closely related to an individual's overall health status (Filgueira et al., 2021). The importance of physical fitness and an active lifestyle requires everyone, especially junior high school students, to continue to strive to improve the quality of their fitness and health (Hills et al., 2012; Yuksel et al., 2020) because, At this age, students are in a very crucial stage of development where healthy habits and an active lifestyle need to be instilled in order to continue into adulthood (Lawrence et al., 2017).

However, the achievement and application of physical activity for physical fitness and a good active lifestyle among junior high school students remain a concern. This is evidenced by several research results, such as the results of the SDI report (Sport Development Index)

which measured 1,578 subjects aged 10-15 years spread across 34 provinces, that As many as 77.12% of children from early adolescence (10-15 years old) have a low to one level of physical fitness, and this is influenced by participation in sports activities (Mutohir et al., 2023). Then, the data shows that 20% of junior high school students have a moderate level of physical fitness, while 80% have a low level of physical fitness (Fadria, 2015). Furthermore, other studies showed that the level of physical fitness of junior high school students was in the category of less, with details of 0% for very good, 1.68% for good, 47.90% for the medium category, 37.82% in the poor category, and 12.61% in the very poor category (Dartini et al., 2017), even research conducted in West Java shows that at the first school level, students' fitness is still lacking because 36.87% of their physical fitness level is still at a low level (Sulistiono, 2014). Some of these studies indicate that the physical fitness level of children is still in the low category, which is quite worrying, even though children aged 5-17 should have at least a good fitness level (World Health Organization, 2010).

Some of these problems are certainly influenced by several factors, such as lack of space for movement in doing physical activities at school. Physical education that should ensure the breadth of students' movement activities seems to be limited, even though it has been recommended to maintain health and fitness, the physical activity carried out must be 3-5 days for aerobic exercise, 2-3 sessions for strength training and flexibility training between 2-3 sessions (American College of Sports Medicine, 2006). Furthermore, it is also recommended to do physical activity with moderate intensity for at least 30 minutes with a frequency of five days a week, and some even recommend doing it every day with a duration of 60 minutes (Kurniarobbi et al., 2013; Lee et al., 2007). In addition to the lack of physical education hours provided at school, factors such as a sedentary lifestyle (sedentary lifestyle) is also alleged to be of the factors that inhibit children's physical development, such as watching television, playing games, Opening the internet, and playing social media are done by 2/3 of children in developing countries (Dicaraka et al., 2014; Katzmarzyk & Lee, 2012), most 10-year-olds are active for only 20 minutes a day, especially in girls only 4% of their time (except sleep) is spent doing light activities, when ideally it is done for 60 minutes a day (Pearce et al., 2012). This will be a challenge for the physical education learning process in the future: how to maximize the applicable curriculum program with the process of children's activities outside of school hours so that children's physical fitness does not decrease.

An initial step is to analyze and identify the impact of the physical education program in schools, then develop one suited to students' characteristics and needs. This poses a challenge for teachers to implement an effective model that meets all students' needs, with

differentiated learning being a potential solution. Differentiation learning is a very important thought in preparing for the learning process in the 21st century (Akhbar et al., 2019). This concept of differentiated learning aligns with the philosophy of Ki Hajar Dewantara, that learning must be adjusted to the needs, readiness and level of students (Ayu Sri Wahyuni, 2022). Differentiated learning is born based on the idea that each individual is not the same as other individuals; they have their own strengths and weaknesses, thus affecting their learning style (Haelermans, 2022). Teachers facilitate students with different applications of the teaching process, both in terms of methods, materials, media, and also standards for achieving learning outcomes (Dapa, 2020). Differentiated learning is a set of learning activities that pay attention to the learning needs of students and are in line with the school of progressivism, which strongly supports student-centered education (student center; Adisjam & Saparia, 2023). Differentiated learning is a learning concept that uses a variety of learning approaches (multiple approaches) in terms of content, process, and product (Tomlinson, 2001). Content includes what students learn; the process is how students process ideas and information, and products include how students show what they have learned (Mulyawati et al., 2022).

In the context of differentiated learning, several studies have examined the effectiveness of this approach in improving physical fitness and active lifestyles. For example, a study by Smale-Jacobse et al. (2019) found that differentiated learning in physical education can increase student motivation and participation and help students achieve individual fitness goals. Research by González-Cutre et al. (2014) also supports these findings, showing that differentiated learning can increase students' engagement in physical activity and improve their physical fitness levels. However, other studies have shown that there are challenges in the implementation of differentiated learning. Rock et al. (2008) Identify some of the obstacles teachers face, including time constraints, lack of training, and inadequate resources. In addition, there are also challenges when it comes to assessment, where teachers must develop assessment methods that are fair and appropriate for all students, which can be a complicated and time-consuming process (Atjonen, 2014).

In this study, we will review the existing literature to better understand how differentiated learning can be effectively applied in physical education in junior high schools. By understanding the best practices and challenges, we hope to provide recommendations to help teachers implement differentiated learning to improve physical fitness and encourage an active lifestyle among middle school students.

## METHODS

### *Research Design*

This study employs a literature review design to collect and analyze data from various existing studies to answer specific and clear research questions (Snyder, 2019). A systematic literature review is an approach. This design was chosen because it allows researchers to obtain a comprehensive picture of the researched topic and identify trends and gaps in the existing literature related to the use of differentiated learning in improving the physical fitness and active lifestyle of junior high school students. It should be emphasized that in this study, the researchers did not enroll in PROSPERO because the main focus was on reviewing physical education literature, not on medical studies or clinical interventions.

### *Search Strategy*

The search strategy in this study uses the help of the Harzing Publish or Perish application program. The search began using data based on Scopus, this is because Scopus is still one of the preferred citation indexing systems used by researchers around the world (Pranckute, 2021). Search strategies include combinations of keyword variations ("differentiated instruction AND physical education AND physical fitness OR active lifestyle AND junior high school"), and where the search is conducted by the procedures of the Preferred Reporting Item for Systematics Reviews and Meta-Analyses (PRISMA) which emphasizes review reports to evaluate randomized trials that can also be used as a basis in reporting systematic reviews for other types of research (Moher et al., 2010).

### *Exclusion Criteria*

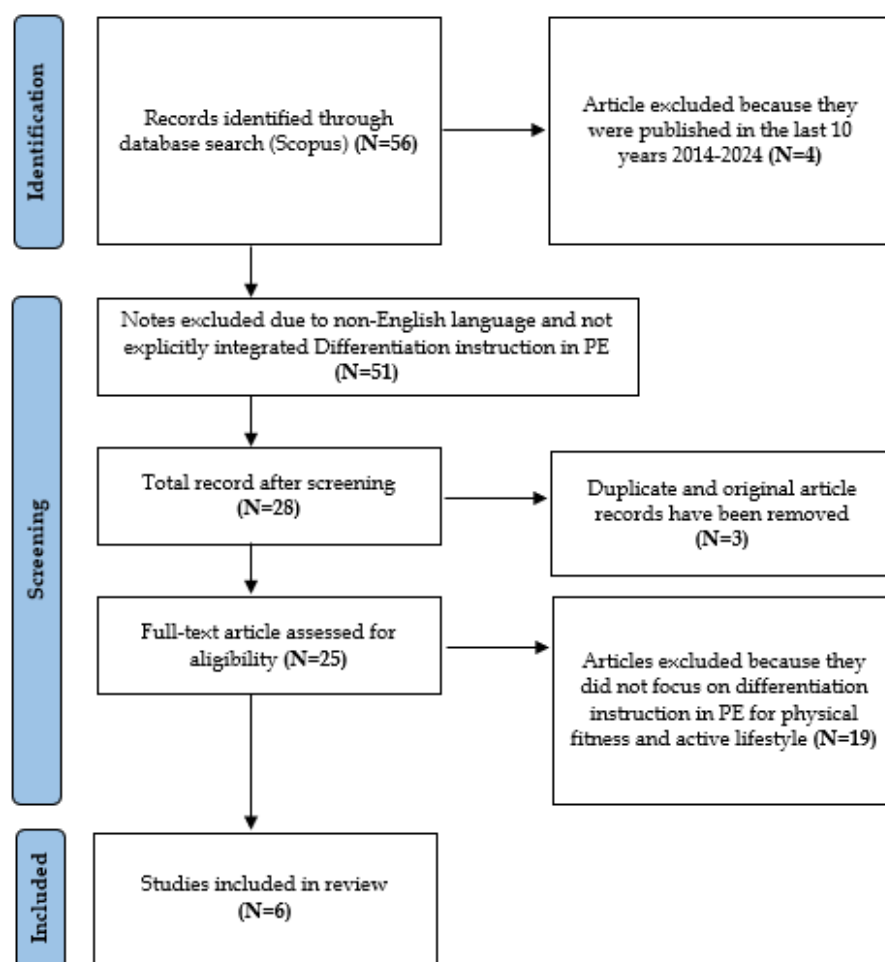
The exclusion criteria used in this study are as follows: (1) Articles that are not published in journals that are based on Scimago Journal Rank (SJR) data, (2) The language used is not English, (3) Articles published in a period other than the last 10 years, (4) Articles that do not explicitly mention differentiated learning in physical education to physical fitness and active lifestyle of school students junior high school.

### *Procedures*

Initially, as many as 861 publications were identified through a data-based search (Scopus: 56 articles). After adjusting to the exclusion criteria, there are only 6 articles left (Figure 1). Most of the articles were discarded because they did not mention differentiated learning in improving junior high school students' physical fitness and active lifestyle. All articles are extracted from the source and then analyzed through the Mendeley program to deduplicate articles. Data extraction was performed by two independent reviewers using

Mendeley to manage references and avoid duplication. Any discrepancies in the quality assessment were resolved through discussion until a consensus was reached. The selection of Scopus data is based on the broad coverage of academic journals. However, it is possible that in the future, the search can also be extended to other databases such as PubMed, WoS, and PsycInfo for more comprehensive coverage.

**Figure 1**  
PRISMA Flowchart in This Research



### *Data Analysis*

The data analysis in this study was conducted through a qualitative approach by synthesizing findings from the selected articles. The process involved coding and categorizing themes related to the application and outcomes of differentiated learning in physical education. Using thematic analysis, the extracted data was systematically reviewed to identify patterns, relationships, and gaps in the literature. To ensure rigor, all coding and thematic development were independently reviewed by two researchers. Any discrepancies were resolved through collaborative discussion, enhancing the reliability and validity of the analysis. The analysis highlights both the potential and limitations of differentiated learning

as a pedagogical approach in physical education, providing a foundation for empirical research in future studies.

## RESULTS

The literature review results aimed at Table 1 below are explained and discussed in one article. Country categories are not listed; article searches focus on differentiated learning in physical education for physical fitness and active lifestyles. The results can be seen in the following Table 1.

**Table 1**  
Article Summary on Differentiated Learning in Physical Education

| Author and Year              | Research Methods and Types  | Content   | Research Objectives   | Research Results   |
|------------------------------|---|---|---|--|
| (Adkins et al., 2015)        | Review literature with surveys, interviews, & observations  | The use of QR Code in PE learning   | To find out the application of QR codes in PE classes given through differentiated learning                                       | The application of QR codes in PE allows for increased student engagement and also allows for improved learning outcomes, and student participation in motor skills, as well as a positive impact if applied to differentiated learning  |
| (van Munster et al., 2019)   | Case study approach, through thematic analysis, observation, and interviews   | Application of Universal Design for learning (UDL) and differentiated learning in PE                              | To describe the UDL approach and differentiated learning used by PE teachers  | Differentiated learning and UDL can be applied and accommodate students with disabilities in their sports activities, and are the most commonly used approaches in New York.   |
| (Özbal et al., 2019)         | Classroom Action Research, analysis using qualitative and quantitative descriptive                                    | Application of differentiated learning in physical exercise and sports learning                                   | To test the application of differentiated learning approaches in physical exercise and sports in grade 5 elementary school        | There was a significant increase in student attitudes and data showed that students actively participated and moved more, socialized, cooperated, learned independently and obeyed rules, and showed respect for individual differences.   |
| (Dorfberger & Eyal, 2023)    | Survey research with data analysis using regression analysis, the DI-Quest questionnaire instrument                   | Teachers' perceptions and attitudes in implementing differentiated learning in elementary and junior high schools | To understand how a PE teacher views and applies differentiated learning as an effort to meet the diverse needs of students       | There is a significant relationship between a thriving teacher mindset and flexible group work, the higher the mindset the higher the application of differentiated learning and principle-related practices   |
| (Blegur & Hardiansyah, 2024) | Research the review literature with the help of the PoP program from google scholar data                              | Review of publications on differentiated learning in physical education   | To analyze the metrics and visualizations of differentiated learning publications using the VoSviewer program                     | Differentiated learning has great potential to be developed in physical education to contribute to the fulfillment of students' learning experiences according to their learning potential   |
| (Razali et al., 2024)        | Qualitative research, instruments using open-ended questions (conception, uses, problems to constraints and solutions | Exploring the experience of physical education teachers in promoting life skills using differentiated learning    | To explore several key areas in the context of teaching life skills through physical education (PE) using differentiated learning | Teachers already have well-integrated concepts and life skills in physical education, such as analytical and critical thinking, communication, and product development. Teachers promote students' life skills through differentiated learning that accommodates students' learning needs with diagnostic assessments through content, processes, products and learning environments |

## DISCUSSION

### *Research Methods and Types*

Based on the review of categories and types of methods, it can be seen that the six articles have different methods namely there are two types of literature review research (Adkins et al., 2015; Blegur & Hardiansyah, 2024), a type of classroom action research (Özbal et al., 2019), a survey study with a regression analysis approach (Dorfberger & Eyal, 2023), and the other two are qualitative research types (Razali et al., 2024; van Munster et al., 2019).

### *Content*

The results of the study show various kinds of content related to the application of differentiated learning in physical education lessons, such as the use of QR codes in physical education lessons as an effort to implement a differentiated learning model to meet the diverse needs of students (Adkins et al., 2015), the application of the UDL model and differentiation instruction in PE as an effort to accommodate students with disabilities in doing their sports (van Munster et al., 2019), the use of differentiated learning models in physical exercise and sports learning using classroom action research in grade 5 elementary school students (Özbal et al., 2019). In addition, there is content about teachers' perceptions and attitudes in implementing differentiated learning in elementary and junior high schools (Dorfberger & Eyal, 2023). The content reviews several studies on differentiated learning in physical education (Blegur & Hardiansyah, 2024). Finally, regarding the exploration of the experience of physical education teachers in promoting life skills using differentiated learning (Razali et al., 2024).

Various studies that discuss the content of differentiated learning, especially in physical education learning, are still very limited, even though research and publications on differentiated learning in various subjects have developed rapidly in the world (Struyven et al., 2019), therefore as an effort to promote pedagogical-didactic philosophy centered on the nature of student learning (Colquitt et al., 2017). This is certainly in line with the explanation that differentiated learning offers an inclusive teaching method so that teachers provide various learning opportunities based on students' backgrounds, readiness, interests, and profiles (Esther & DeCoito, 2023), to support social emotional and academic success for all students in a heterogeneous classroom context (Gaitas et al., 2022; Pozas et al., 2021). Meanwhile, content about differentiated learning that is directly aimed at improving physical fitness and active lifestyle is still not available until now, and perhaps this is one of the future opportunities that must be researched.



*Research Objectives and Results*

Based on the results of the review of several articles that have been summarized in Table 1 earlier, it can be seen that the purpose of the research and the results are divided into two major aspects, namely to find out the development of the application of differentiated learning in physical education theoretically (Adkins et al., 2015; Blegur & Hardiansyah, 2024) and the other aims to find out the impact resulting from the implementation of differentiated learning, especially for motor skills and also student participation in participating in the physical education learning process (Özbal et al., 2019), as well as his social life skills (Razali et al., 2024).

In more detail for the first article aims to find out the application of QR codes in PE classes given through differentiated learning, and to conclude that the application of differentiated learning with QR codes in PE allows increased student engagement and also allows for improved learning outcomes and student participation in motor skills (Adkins et al., 2015). The second article which aims to describe the Universal Design Learning (UDL) and differentiated learning (DI) approaches used by PE teachers, and the results of the research reveal that Differentiated Learning and UDL can be applied and will accommodate students, especially students with disabilities in their sports activities (van Munster et al., 2019). In the third study, which is a classroom action research with the purpose of the research is to test the application of differentiated learning approaches in physical exercise and sports in grade 5 elementary school, it was concluded that there was a significant increase in student attitudes, and the data showed that students were more actively participating and more active in doing sports activities, able to socialize, cooperation, independent learning and obeying regulations, and showing respect for differences between individuals (Özbal et al., 2019). This is supported by the concept of differentiation itself that in differentiated classrooms, students have differences in their needs, both in terms of their abilities and goals (Tomlinson, 2000), so teachers must be proactive in planning ways for students to be able to express their actions in their learning because differentiation instruction is a way of teaching based on different talents and learning styles of students (Magableh & Abdullah, 2020; Muh. Asriadi et al., 2023).

The following research aims to understand how a PE teacher views and applies differentiated learning as an effort to meet the needs of diverse students. The results of the study say that there is a significant relationship between a developed teacher mindset and flexible group work; the higher the mindset, the higher the application of differentiated learning and principle-related practices (Dorfberger & Eyal, 2023). Furthermore, the fifth research aims to analyze the metrics and visualization of differentiated learning publications

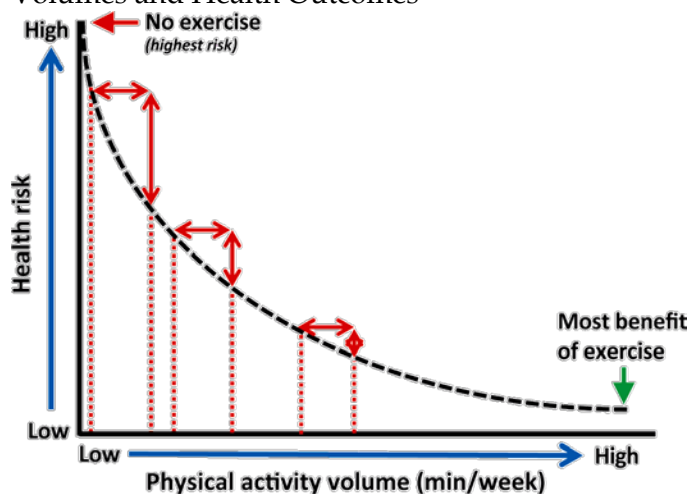
using the VoSviewer program, where data is obtained from Google Scholar sources through the Publish or Perish (PoP) application. This research is a literature review research and the results of the research reveal that differentiated learning has great potential to be developed in physical education to contribute to the fulfillment of student learning experiences following Learning Potential (Blegur & Hardiansyah, 2024). Then for the sixth research aims to explore several main areas in the context of teaching life skills through physical education (PE) using differentiated learning. The results of the research reveal that teachers in this research subject have well-integrated concepts and life skills of physical education, such as analytical and critical thinking, communication, and product development. Teachers promote students' life skills through differentiated learning that can accommodate students' learning needs with diagnostic assessments through content, processes, products, and learning environments (Razali et al., 2024).

Some of the studies that have been described can conclude that differentiated learning in physical education can meet every student's needs as a whole because the basic essence of the process and the purpose of this differentiation instruction model is to provide opportunities for each student to determine their success. It can increase student motivation and participation up to 20% higher compared to traditional methods (Smale-Jacobse et al., 2019); differentiation instruction has become increasingly significant in meeting the needs of students (Gibbs, 2023). Teachers are constantly shifting their focus to students as individuals by implementing effective and efficient approaches, methods, and learning strategies with their skills, personalities, and social relationships to explore students' maximum potential in responding to diverse student needs rather than focusing on a series of practices that individualize or adapt tasks in learning (Magableh & Abdullah, 2020; Santangelo & Tomlinson, 2012; Tomlinson, 2003). In this way, the main focus of each student is to determine physical activity to improve their physical fitness and health, which will be more appropriate to their abilities. This is as explained by Franklin et al. (2022) that there is a dose-response relationship between the volume of weekly physical activity and health outcomes, as can be seen in Figure 2.

However, differentiated learning also has shortcomings that require teachers to work more, such as in preparing evaluations or assessments. Since each student possesses different abilities and goals, the assessment must be individualized accordingly (Blegur & Hardiansyah, 2024; Dorfberger & Eyal, 2023). Meanwhile, the limitation of this research lies in the database used, which is only taken from one Scopus database, which may be taken from various national and international databases.

**Figure 2**

Conceptual Overview of the Dose-Response Association Between Weekly Physical Activity Volumes and Health Outcomes



## CONCLUSION

The results of this literature review have contributed to updating the study of differentiated learning in physical education to improve physical fitness and active lifestyle. However, explicitly there has been no research on differentiated learning on physical fitness and active lifestyle. At first, quite a lot of studies were found, but after applying the exclusion criteria, the number was reduced to just six. The findings of this review confirm that while differentiated learning has great potential for improving physical fitness and active lifestyles, its implementation remains limited. Further research using empirical methods is needed to evaluate the specific impacts of this approach. Future studies should explore how differentiated learning can improve measurable physical fitness outcomes. This is intended to explore the need for consistent research promotion to produce new knowledge about the application of differentiated learning in improving physical fitness and active lifestyles, especially for students at the junior high school level. Then, the findings of this study are in terms of the use of methods and types of research; there are quantitative and qualitative research using quantitative descriptive analysis and regression approaches. Especially in the research instrument section, many use open and closed questionnaires. However, from several studies studied in this study, no one has directly examined the impact of the application of differentiated learning to improve physical fitness and active lifestyle of junior high school students, so it is recommended for future researchers to add searches through various databases other than Scopus, such as Web of Science, PubMed, and Google Scholar.

## PRACTICAL IMPLICATIONS

The implications of the results of this study prove that the application of differentiated learning, especially in physical education subjects, is still very rarely published, especially in Indonesia. This indicates that each school's physical education learning process may still be oriented to the conventional model and does not look at the characteristics and needs of students in each individual. In addition, this study provides a challenge and opportunity in the physical education learning sector. The challenge is that a teacher must be able to design, implement, and assess the learning process specifically for each student because later teachers will be faced with a variety of characteristics, needs, and learning styles of students. However, the opportunity is that teachers will become more creative and able to think critically in dealing with each student and will have many types and grades of assessment to evaluate the progress of each student.

### Acknowledgments

The author would like to thank all parties who have been involved in the preparation of this manuscript so that this manuscript can be completed.

### Authors' Contribution

Designing ideas, determining methods, verifying data sources, analyzing findings, completing the final manuscript.

### Declaration of Conflict Interest

There is no conflict of interest in this study.

### Ethics Statement

This research only examines literature reviews, so ethnic approval from institutions or institutions is not required.

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