

# Assessment Methods in Physical Education

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## Abstract

This research has investigated diverse assessment methodologies in physical education to evaluate students' physical abilities, skill acquisition, and overall health outcomes. The study has critically examined the effectiveness of various assessment techniques, including traditional tests, skill-based assessments, and selfassessment strategies. Through a comprehensive literature review and empirical analysis, this research has explored the strengths, limitations, and applicability of different assessment methods in measuring students' progress and performance in physical education. It aimed to identify innovative and reliable assessment approaches that align with the multifaceted nature of physical skill development and activity. The insights derived from this research are intended to inform educators, curriculum developers, and policymakers about the significance of appropriate assessment practices in physical education. By highlighting the importance of valid and reliable assessment tools, this research aims to play a part in the refinement of assessment strategies, thereby enhancing the quality of physical education programs.

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### Abstract

This research has investigated diverse assessment methodologies in physical education to evaluate students' physical abilities, skill acquisition, and overall health outcomes. The study has critically examined the effectiveness of various assessment techniques, including traditional tests, skill-based assessments, and self-assessment strategies.

Through a comprehensive literature review and empirical analysis, this research has explored the strengths, limitations, and applicability of different assessment methods in measuring students' progress and performance in physical education. It aimed to identify innovative and reliable assessment approaches that align with the multifaceted nature of physical skill development and activity.

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### Keywords

Physical education, assessment techniques, self-assessment, physical activity

## Introduction

### *Study Background*

In the fast-moving world of technology, we tend to forget to look after our physical health. We focus on our mental health but often forget that physical fitness is equally important to our well-being. There is already a rise in genetic indicators of pathological and hereditary diseases. Deteriorating physical health can become a problem, especially for the young generation, who should exercise, increase motor activities, and improve their physical health.

The effectiveness of the current physical education practices implemented by the education sector and analyzing the curriculum prescribed to the children play a vital role for children in the long run. The motor competence of a child impacts not only their physical health but also their

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cognitive abilities and social development. In recent studies, children and adolescents were found to have low motor competency rates and declining physical measurements after an assessment was carried out (Hardy et al., 2012; Gaul and Issartel, 2016; O'Brien et al., 2015; Sheehan and Leinhard, 2018). These days, youth are not focusing on developing their motor skills to promote average growth and physical well-being. Specific health-associated efficient programs are implemented to promote numerous aspects of motor competence.

Physical education in schools plays as much of a pivotal role as academia. Physical education not only benefits a child's motor skills, but early schooling in physical education also rewards their academic achievements. Numerous studies of evidence across the US and Britain showed that practicing motor skills and focusing on physical well-being enhanced the children's academic skills, for example, Math, Science, and reading. This empirical evidence displays that physical competence and education should become a part of the school's curriculum (Grissmer et al., 2010). Further support for this motor-cognitive connection has come from independent studies, which have demonstrated that kindergarten students' fine motor abilities predict first-grade reading proficiency (Suggate et al., 2019).

Moreover, the influence of physical education has been debated since the 1960s (Whittle, 1961). This study has demonstrated the consequences of physical education at the elementary school level and how it benefits the physical and motor development of the participants of this study. Hence, this secondary study focuses mainly on the comprehensive literature review of present studies regarding physical education and assessing the prescribed strategies contributing to the quality of physical health. The prescribed methods for reliable assessment tools and processes have been discussed in this research.

### ***Research Objectives***

The objectives of this study are:

- To explore the strengths, limitations, and applicability of different assessment methods in measuring students' progress and performance in physical education,
- To identify innovative and reliable assessment approaches that align with the multifaceted nature of physical activity and skill development,
- To contribute to the refinement of assessment strategies, thereby enhancing the quality of physical education programs.

### ***Research Questions***

The research questions of this research are described below:

Q1: What are the traditional tests and other assessment techniques to evaluate physical abilities and skill acquisitions?

Q2: What are the strengths and limitations of those assessment methods?

Q3: How can these assessment strategies be refined and enhanced to improve physical education programs?

## ***Methodology***

### ***Research design***

This study's research design includes secondary basis data, which includes several studies of previously conducted research. This qualitative study discusses and sheds light upon the

assessment techniques used to evaluate and examine the physical well-being of children and the methodologies adopted to assess them.

### *Data Collection*

The data was collected from a pool of online resources from Google Scholar, Scopus, and Science Direct. Specific keywords were used to extract the relevant articles and studies needed for this research.

### *Data Analysis*

The analysis was carried out comprehensively and was thoroughly examined. This was done to avoid irrelevance from the topic and to delve deeply into the field of PE and the assessment methods required to evaluate the appropriate action that should be taken to counter the problem.

### *Ethical Considerations*

This is secondary research that was carried out while keeping the primary ethical considerations in check. This research adheres to the ethical considerations that no content was copied or lifted directly without proper citations and references.

## **Analysis and Discussion**

### *Physical Activity in Youngsters*

A study was conducted to assess physical activity in adolescents and children (Pate, 1993). It has been highlighted in this study that it is important to apply accurate methods to determine and evaluate children's physical activity to narrow down the right policy to benefit children's physical health. It has been suggested after many considerations that accurate assessment of the child's physical activity can benefit the formation of precise interventions and policies for the child's betterment in their lifestyle. A variety of techniques to monitor physical activity have been discussed in this study. These include heart rate monitors that can be used for any age. This instrument relies on the linear relationship between oxygen consumption and heart rate. Heart rate may be significantly impacted by coffee, some drugs, psychological stress, and environmental stress (Emons et al., 1992). To keep a check-and-balance on the heart rate, this device, either the electric version or the optical version, is used to check the heartbeat and monitor the physical well-being of pupils of any age.

Another instrument emphasized in this study is the use of pedometers. Pedometers are simple devices that track how many steps you have walked in a given time. This device can assess children's physical activity, note down their motor activities, and keep a check on them. Pedometers are very straightforward and only measure the number of steps taken by an individual, and they are also relatively inexpensive and reusable. This does not calculate the intensity of physical activity and focuses only on counting steps. This is seen as a disadvantage because it does not measure the intensity or pattern of physical activity.

On the contrary, the use of Accelerometers is suggested in this extensive research. This device can measure physical activity on a detailed level, including the intensity of the physical activity. Accelerometers are used in various fitness trackers, which use sensors and vibrations to detect the

movement of the person wearing them. It has the potential to carry out and measure bodily activities on a detailed level, which also includes counting footsteps and other movements of the body (Troiano et al., 2014). All of these devices can be used to assess the physical development and progress of children and adults. Nowadays, the inclusion of these techniques can be found in almost all gadgets that are in the possession of our youth. They should be guided and educated about their physical assessments.

The proper techniques and tools can be used, but it is all the more important to accurately calculate and measure the physical children's motor skills and activities. A comprehensive literature review was analyzed and evaluated for this matter, which discussed the crucial accuracy of measuring physical activity and development in adolescents and children (Kohl et al., 2000). This article discusses in length the evaluation of teenagers' and children's physical activity levels. This article discussed in detail the various categories of techniques used to assess the physical development of adolescents and children. Around 50 papers were evaluated and reviewed, and it was found that there was low validity for monitoring measures and self-report of physical activity. They have emphasized the significance of good health and discussed at length that physically active individuals are less likely to fall prey to natural diseases such as cardiovascular diseases, cancer, obesity, diabetes, and many others (Fletcher et al., 1992; Bijnen et al., 1994; Pate, 1995; Physical Activity and Health: A Report of the Surgeon General, 1996). Given an increasing collection of research demonstrating the health advantages of a physically active lifestyle, attempts to boost physical activity among adults have flourished. Furthermore, specialists urge the encouragement of physical exercise among children and adolescents in order to improve their health and implant lifetime behavioral patterns that will lead to a brighter future for them, fostering healthier and more active adults. Several strategies have been tried to measure children's and teenagers' physical activity. Direct observation, direct or indirect calorimetry, mechanical or electronic monitoring, self-reporting, and the doubly labeled water method are among the approaches used. However, each of these techniques has a unique process and application system. The article emphasizes the importance of precise and reliable techniques for measuring physical activity in order to promote and monitor children's and teenagers' health successfully.

### *Self-Assessment in Physical Education*

The inclusion of self-assessment processes in physical education plays a pivotal role in the betterment of children's motor skills. Self-assessment is a process in which children and adults carry out introspection and self-reflection in order to ponder and evaluate their own physical performance and progress. A recent study conducted a systematic review of self-assessment in physical education in which the authors reviewed the literature regarding physical education students (Otero-Saborido et al., 2021). Most of the research reviewed in this study was conducted in Europe and included secondary or higher education students. There is a slight indication that self-assessment and self-regulation are interlinked. There are a number of processes that collectively make up self-regulation. Those processes have an essence of self-assessment in them, which is also known as metacognition (Martin, 2020). The results of this research showed that self-assessment strategies improved the students' health and had positive effects on the participants' well-being. It was suggested in this study to carry out more research as all other research has been outdated, and the fast-moving world of technology has brought about rapid changes in physical education.

With the inclusion of self-assessment in physical education policies, children and adults would be more aware of their physical capabilities. They would be able to recognize themselves and differentiate between their strengths and weaknesses by thoroughly evaluating their performances

based on self-evaluation. Through this method, they would feel motivated and responsible for their physical well-being, and they would see visible improvements and psychological improvements as well. Self-assessment and evaluation would bring about a specific strength and tenacity in themselves, which would push them to new paths of confidence and encourage them to pursue their physical fitness goals.

### *Intervention Programs to Promote Physical Activity*

Physical exercises and fitness regimes are essential additions to monotonous school life routines in order to avoid cardiovascular risk factors and obesity in youngsters. A literature review carried out by researchers discusses in detail the limitations and strengths of the various techniques of assessing physical activity in children (Sirard and Pate, 2001). Previously identified physical assessment techniques and instruments are discussed here, and suggestions are also presented in this review. The use of heart rate monitors, accelerometers, and pedometers has been becoming increasingly popular among youngsters. These instruments have the potential to measure and conclude a generic result of physical activity, i.e., sedentary, somewhat active, highly active.

Numerous intervention techniques and programs have been prescribed, for which strategies are lined up to increase the physical activities of children as well as adults. Recommendations are specified in a relatively recent study (Tuso et al., 2015). In order to work towards the increase of physical activity rates in children and adolescents, it is vital to assess and evaluate the signs and work towards the betterment of physical health. The main focus of this study is to promote physical fitness and activity in order to improve health and prevent disease. According to the Telegraph, every extra 15 minutes given to a suggested minimum of 15 minutes of exercise reduces the mortality rate by 4% and cancer death by 1%. Recent studies have shown that low exercise rates cause high obesity rates and vice versa (Tuso, 2014). It is outlined in this study that people should create healthy environments, which include being physically active. These activities and environments may consist of extra-curricular activities of sports or physically productive weekends away from the city. Following the regimes lined out by this study can benefit people of all ages.

### **Practical Implications**

The findings of this study should be evaluated and applied by policymakers and school directors in their curricula. Primary study and experimental research are required in this area as most of the research on physical education included outdated studies that no longer apply. Firstly, policymakers should establish and outline clear guidelines in which the allocation of resources to the respective department is mentioned. Appropriate time should be given to physical activities in the curriculum of children's academic schedules. Proper training should be provided to PE instructors at educational institutions, and they should also be eligible to coach the children in the physical aspects of their personal lives. These instructors should collaborate with healthcare workers and educationalists to design programs that cater to the diverse set of every student's needs. School directors and stakeholders should emphasize their focus on not just physical education but also cognitive skills and the emotional well-being of children. By including PE in the school's curriculum, officials would be diverting their focus toward the multitude of advantages of physical education.

Furthermore, the rising need for the significance of physical education should be addressed and promoted in order to foster a supportive environment in our society. In this way, the new generation would benefit from the prescribed methods and techniques discussed. Collaborations should be carried out with parents and teachers along with the local communities for the purpose of creating a cohesive and productive environment of physical education awareness. The appropriate

authorities at educational institutions should take charge and invest in professional and physical development that extends beyond the classroom. With high-quality resources and educators, the youth of this world would benefit greatly from physical activities and wellness programs. By fostering these values of physical health and well-being, children would thrive physically, emotionally, and academically.

## **Conclusion**

In conclusion, this secondary study had its primary focus on the various aspects of physical education and assessment techniques. The strengths and limitations of this research emphasized the effectiveness of the current PE practices implemented in the education sector. This study's findings are designed to guide educators, policymakers, and stakeholders on the need for effective assessment procedures in physical education. This research is also intended to contribute to the refining of assessment procedures, consequently improving the quality of physical education programs by emphasizing the necessity of accurate and reliable evaluation instruments. After a thorough analysis of the available literature, suggestions were given for the appropriate authority to bring about the change that this world needs in the world of physical education and development.

The techniques that were outlined in this research emphasized the importance of accuracy in evaluating the child's physical activity levels. Pedometers and heart rate monitors have significantly evaluated and assessed a person's physical activity. However, the mention of accelerometers has been significantly specified in this study. Other than these techniques, the inclusion and significance of self-assessment strategies have also been outlined. It has been noted to enhance the child's motor skills as well as their well-being. Positive reviews of self-assessments are seen in this comprehensive literature review. They are cultivating a supportive environment for the teachers and parents to cater to the needs of individual children. It is up to the policymakers and other authoritative figures to incorporate these methods and train the instructors.

## **Limitations and Recommendations**

Numerous limitations were faced in this research. A limited amount of time was allocated to conduct this research, which caused hindrances in the quantity of literature to be reviewed. During the data collection, it was noticed that most of the studies were incredibly outdated, and only a handful of studies could be found in recent years. More extensive research is required on this topic, which would play a pivotal role in the upcoming research in this field.

## **References**

- Hardy LL, Reinten-Reynolds T, Espinel P, et al. (2012) Prevalence and Correlates of Low Fundamental Movement Skill Competency in Children. *Pediatrics* 130(2). American Academy of Pediatrics: e390–e398. DOI: <https://doi.org/10.1542/peds.2012-0345>
- Gaul D and Johann Issartel (2016) Fine motor skill proficiency in typically developing children: On or off the maturation track? *Human Movement Science* 46. Elsevier BV: 78–85. DOI: <https://doi.org/10.1016/j.humov.2015.12.011>
- O'Brien W, Belton S and Issartel J (2015) Fundamental movement skill proficiency amongst adolescent youth. Available at: <https://doi.org/10.1080/17408989.2015.1017451>
- Sheehan D and Leinhard K (2018) Gross Motor Competence and Peak Height Velocity in 10- to 14-Year-Old Canadian Youth: A Longitudinal Study. Available at: <https://doi.org/10.1080/1091367X.2018.1525385>
- Grissmer D, Grimm KJ, Aiyer SM, et al. (2010) APA PsycNet. Available at: <https://doi.org/10.1037/a0020104>.
- Suggate S, Pufke E and Stoeger H (2019) Children's fine motor skills in kindergarten predict reading in grade

1. Early Childhood Research Quarterly 47. Elsevier BV: 248–258. DOI: <https://doi.org/10.1016/j.ecresq.2018.12.015>.
- Whittle HD (1961) Effects of Elementary School Physical Education upon Aspects of Physical, Motor, and Personality Development. <https://doi.org/10.1080/10671188.1961.10613141>
- Pate RR (1993) Physical activity assessment in children and adolescents. Critical Reviews in Food Science and Nutrition 33(4-5). Taylor & Francis: 321–326. DOI: <https://doi.org/10.1080/10408399309527627>.
- Emons G, Groenenboom DC, Westerterp KR, et al. (1992) Comparison of heart rate monitoring combined with indirect calorimetry and the doubly labelled water (2H2 18O) method for the measurement of energy expenditure in children. European journal of applied physiology and occupational physiology 65(2). Springer Science+Business Media: 99–103. DOI: <https://doi.org/10.1007/bf00705064>
- Troiano RP, McClain JJ, Brychta RJ, et al. (2014) Evolution of accelerometer methods for physical activity research. British Journal of Sports Medicine 48(13). BMJ: 1019–1023. DOI: <https://doi.org/10.1136/bjsports-2014-093546>.
- Kohl HW, Fulton JE and Caspersen CJ (2000) Assessment of Physical Activity among Children and Adolescents: A Review and Synthesis. Preventive Medicine 31(2). Elsevier BV: S54–S76. DOI: <https://doi.org/10.1006/pmed.1999.0542>.
- Fletcher GF, Blair SN, Blumenthal JA, et al. (1992) Statement on exercise. Benefits and recommendations for physical activity programs for all Americans. A statement for health professionals by the Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology, American Heart association. Circulation 86(1). Lippincott Williams & Wilkins: 340–344. DOI: <https://doi.org/10.1161/01.cir.86.1.340>
- Bijnen FC, Caspersen CJ and Mosterd WL (1994) Physical inactivity as a risk factor for coronary heart disease: a WHO and International Society and Federation of Cardiology position statement. Bulletin of the World Health Organization 72(1). Switzerland: 1–4. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2486506/>.
- Pate RR (1995) Physical Activity and Public Health. JAMA 273(5). American Medical Association: 402–402. DOI: <https://doi.org/10.1001/jama.1995.03520290054029>
- US Department of Health and Human Services (1996) Physical activity and health: A report of the Surgeon General Atlanta. GA: Centers for Disease Control and Prevention.
- Sirard JR and Pate RR (2001) Physical Activity Assessment in Children and Adolescents. Sports Medicine 31(6). Springer Science+Business Media: 439–454. DOI: <https://doi.org/10.2165/00007256-200131060-00004>.
- Tuso P (2015) Strategies to Increase Physical Activity. The Permanente Journal 19(4). The Permanente Press: 84–88. DOI: <https://doi.org/10.7812/tpp/14-242>.
- Fernando Manuel Otero-Saborido, Víctor Torreblanca-Martínez and José Antonio González-Jurado (2021) Systematic Review of Self-Assessment in Physical Education. International Journal of Environmental Research and Public Health 18(2). Multidisciplinary Digital Publishing Institute: 766–766. DOI: <https://doi.org/10.3390/ijerph18020766>.
- Ruiz Martin, H (2020) ¿Cómo aprendemos? Available at: [https://books.google.com.pk/books?hl=en&lr=&id=WkAgEAAAQBAJ&oi=fnd&pg=PT3&dq=Ruiz+Mart%C3%ADn,++2020.&ots=gTXtM2BHVm&sig=1WBqd29zPBAyqSh6d5MgR3ni4Ow&redir\\_esc=y#v=onepage&q=Ruiz%20Mart%C3%ADn%2C%20%202020.&f=false](https://books.google.com.pk/books?hl=en&lr=&id=WkAgEAAAQBAJ&oi=fnd&pg=PT3&dq=Ruiz+Mart%C3%ADn,++2020.&ots=gTXtM2BHVm&sig=1WBqd29zPBAyqSh6d5MgR3ni4Ow&redir_esc=y#v=onepage&q=Ruiz%20Mart%C3%ADn%2C%20%202020.&f=false)