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Physical Fitness Profile of Students with Intellectual Disabilities at SDN Babat Jerawat 1 Surabaya using TKSI TEST

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ABSTRACT

For students to be able to participate in physical education classes and do everyday tasks, they must be physically fit. Because each student's developmental traits and physical capabilities may differ, students with intellectual impairments need special care when it comes to their physical fitness. Using the Indonesian Student Fitness Test (TKSI), a tool created for students with special educational needs, particularly those with intellectual disabilities, this study attempts to characterize the physical fitness profile of Level 2 students with intellectual disabilities at SDN Babat Jerawat 1 Surabaya. Using a sample of five students, the study used a quantitative descriptive methodology. Five test components Durih, Komata, Dolan, Lipat, and Lalingku, were used to collect data. According to the evaluation results, the students' Durih scores varied from 1 to 8.5, Komata from 0 to 14, Dolan from 4.70 to 29.57, Lipat from 4.35 to 16.78, and Lalingku from 17 to 27. These results indicate variations in ability across each component of physical fitness. The most pronounced variations were observed in coordination and strength, whilst the Lalingku results showed a relatively narrower range of endurance ability. These findings highlight the importance of individual physical fitness assessments for pupils with intellectual disabilities as a basis for teachers to design Physical Education (PE) learning activities tailored to the pupils' abilities and needs. Future research should involve a larger sample size and include data on age, anthropometry, and TKSI categorisation norms to enable a more comprehensive interpretation of fitness level.

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INTRODUCTION

Physical fitness is a key aspect in supporting an individual's ability to carry out daily activities effectively (U.S. Department of Health and Human Services, 2018). In an educational context, physical fitness is not only related to the ability to perform physical activities, but also forms part of efforts to support pupils' physical development and their engagement in the learning process within Physical Education (Marques et al., 2021). The need for physical activity is also important for pupils with intellectual disabilities (Wang et al., 2022). The literature indicates that children and adolescents with intellectual disabilities face challenges in achieving adequate levels of physical activity (Yang et al., 2022). Furthermore, improved motor development has been reported to have a positive correlation with physical activity in this group (Sutherland et al., 2021).

These circumstances highlight the importance of physical fitness assessments that are conducted appropriately and tailored to the characteristics of the pupils (Nugroho et al., 2022). Assessments of pupils with intellectual disabilities cannot be treated in exactly the same way as those for pupils in general, as the administration of tests must take into account the pupils' ability to understand instructions, their motor skills, and their support needs (Downs et al., 2020). Wouters et al, (2017) of fitness tests for children and adolescents with intellectual disabilities indicates that the suitability and validity of a test may vary depending on age and the level of disability.

One instrument that can be used in the Indonesian educational context is the Indonesian Pupil Fitness Test (TKSI). The TKSI was developed as a tool to assist Physical Education teachers and practitioners in assessing pupils' fitness. Specifically for pupils with intellectual disabilities, the TKSI battery used includes measurements of body composition as well as several components of physical fitness, including Durih (Seated Reach), Komata (Eye-Hand Coordination), Dolan (Floor Push), Lipat (Sprint), and Lalingku (Running Around a Chair). The implementation of the TKSI for pupils with intellectual disabilities has also been applied in physical fitness mapping activities within educational institutions in Indonesia.

Based on this, physical fitness assessment of pupils with intellectual disabilities in primary schools is important to gain an understanding of the pupils' physical abilities. The assessment data can serve as initial information for Physical Education teachers in determining the types of activities and learning approaches appropriate to the pupils' conditions. This study focuses on describing the results of the five TKSI test components, namely Durih, Komata, Dolan, Lipat and Lalingku. Consequently, this study is not intended to test cause-and-effect relationships, but rather to provide an overview of pupils' physical fitness test results based on the assessment data obtained.

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METHODS

This study employs a quantitative descriptive approach. This approach was chosen because the study focuses on describing the results of the physical fitness assessments of pupils based on numerical data obtained through the TKSI instrument. The study is not intended to test the effect of a particular intervention or the relationship between variables. The focus of the study is to describe the results of the physical fitness assessments of pupils with intellectual disabilities at the study site.

Participants and Sampling

The research subjects comprised five pupils with intellectual disabilities at SDN Babat Jerawat 1. Based on the assessment data, the subjects consisted of four boys and one girl in Years 3 to 6. To protect the pupils' confidentiality, the research findings should be presented using participant codes, namely S1, S2, S3, S4 and S5.

Instruments and Apparatus

The instrument used was the Indonesian Pupil Fitness Test (TKSI) for pupils intellectual disabilities (Wardoyo et al., 2023). The test series for Level 2 intellectual disabilities covers several fitness components, including Durih (Seated Reach), Komata (Eye-Hand Coordination), Dolan (Floor Push), Lipat (Sprint), and Lalingku (Running Around a Chair). These five tests are used to gain an insight into the pupils' physical abilities, including flexibility, hand-eye coordination, strength, speed and endurance.

Data Analysis

The data were analysed using descriptive statistics to describe the physical fitness profiles of the five pupils with intellectual disabilities. The assessment results from the five TKSI components, namely Durih, Komata, Dolan, Lipat, and Lalingku, were organised by participant and analysed by calculating the minimum, maximum, mean, and standard deviation (SD) for each component. These statistics were used to summarise the distribution and variability of the participants' performance. The interpretation considered the scoring characteristics of each test, particularly the Lipat test, in which a lower completion time indicated faster performance. The results were presented in tables to facilitate the identification of individual performance variations across the five components. Given the descriptive design and small sample size, the analysis did not involve inferential statistical tests, and the findings were interpreted only as a description of the assessed pupils' physical fitness profiles at SDN Babat Jerawat 1 Surabaya.

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RESULTS

The assessment results for five pupils with Level 2 intellectual disabilities at SDN Babat Jerawat 1 are presented according to the five components of the TKSI.

Table 1. Results of the TKSI

Subject	Durih	Komata	Dolan	Lipat	Lalingku
S1	3	0	13.41	16.78	17
S2	1	0	4.70	6.29	17
S3	3.5	3	28.91	4.35	26
S4	8.5	14	29.57	4.66	22
S5	1.5	0	7.09	7.56	27

Table 2. Descriptive Statistics of Test Results

Components	Min	Max	Mean	SD
Durih	1.00	8.50	3.50	2.98
Komata	0.00	14.00	3.40	6.07
Dolan	4.70	29.57	16.74	11.85
Lipat	4.35	16.78	7.93	5.12
Lalingku	17.00	27.00	21.80	4.76

Based on Table 2, the test results indicate variations in ability across all components measured. In the Durih test, pupils' scores ranged from 1.00 to 8.50, with an average of 3.50. In the Komata test, scores ranged from 0 to 14, with an average of 3.40. Three participants scored 0, whilst two others scored 3 and 14 respectively. This indicates a considerable variation in hand-eye coordination ability amongst the research subjects. In the Dolan test, scores ranged from 4.70 to 29.57, with an average of 16.74. The difference between the minimum and maximum scores indicates a considerable variation in ability regarding the component measured by this test. In the Lipat test, results ranged from 4.35 to 16.78, with an average of 7.93. As the results of this test relate to completion time, the interpretation of performance must take into account that a lower time value indicates a faster completion time. Meanwhile, the Lalingku results ranged from 17 to 27, with an average of 21.80. Compared with some of the other components, the range of Lalingku results is relatively narrower, although it still indicates differences in ability amongst the pupils. Overall, the assessment results show that the pupils' physical fitness abilities are not uniform (Tan et al., 2026). Each pupil exhibits a different ability profile across the various test components.

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DISCUSSION

The study's findings show variances in physical fitness capacities among five students with intellectual disabilities at SDN Babat Jerawat 1 Surabaya. These differences were found across all test components, particularly in the Komata and Dolan exams. This implies that the physical abilities of students with intellectual disabilities need to be tested on an individual basis, as each pupil's ability may differ (Wouters et al., 2017b).

The learners' Durih component scores varied from 1.00 to 8.50. This exam is used to assess physical ability in the TKSI program for children with intellectual challenges. Differences in outcomes between students suggest disparities in ability in the component tested by this test. The Komata component revealed significant diversity, with three students scoring 0 and one earning 3, and one scoring 14. This finding is important to note in Physical Education lessons, as hand-eye coordination is a skill that underpins various motor activities, such as throwing, catching, hitting, and other manipulative activities (Sutherland et al., 2021). In the Dolan component, the range of results from 4.70 to 29.57 also indicates considerable differences in ability amongst the pupils. These differences can provide information for teachers in determining the level of difficulty of physical activities. Pupils with different abilities do not always require the same type of activity. Therefore, teaching must be adapted to individual abilities. The results of the Lipat test fell within the range of 4.35–16.78. As the test data consists of times, the interpretation must take into account the direction of the scores. A shorter time indicates a faster completion of the movement. In this study, S3 and S4 recorded the lowest times, whilst S1 recorded the highest. For the Lalingku component, the results fell within the range of 17–22f27. This test provides an indication of the pupils' endurance capacity. S5 achieved the highest result with a score of 27, whilst S1 and S2 scored 17.

The findings of this study are consistent with the literature, which indicates that measuring fitness in children and adolescents with intellectual disabilities presents specific challenges and requires consideration of individual characteristics and the level of disability. A systematic review shows that certain field tests can be used appropriately with specific groups, but the results cannot automatically be generalised to all age groups and levels of disability.

Furthermore, previous research indicates that the level of physical activity among children and adolescents with intellectual disabilities tends to be a key concern in the context of health and development (Kapsal et al., 2019). Motor development factors has been reported to be associated with physical activity; consequently, Physical Education lessons that provide opportunities for structured movement appropriate to individual abilities are crucial (Moon et al., 2024; Zhang et al., 2022).

The research findings also have implications for Physical Education teaching in schools. Teachers can use the information from assessment results as a basis for differentiating activities, for example by modifying the difficulty level of movements, distance, duration, number of repetitions, or the form of instruction (Bertills & Björk, 2024; Suherman et al., 2026). This approach is important because pupils with intellectual disabilities have a wide range of ability characteristics (Wouters et al., 2017). Structured physical activity also has the potential to benefit the fitness and health of pupils with intellectual disabilities (Wang et al., 2026). Borland et al, (2022) indicate that physical activity interventions can yield benefits across several health-related fitness indicators, although evidence regarding certain other outcomes remains limited.

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Consequently, the results of the TKSI assessment in this study serve not only as measurement data but can also form the basis for evaluating Physical Education learning (Akhiruyanto et al., 2022). Teachers can identify components that require relatively more attention and then design learning activities that are safe, progressive, adaptive, and appropriate to the pupils' abilities (Hao & Razman, 2023; Pan et al., 2020).

LIMITATION

When evaluating the results, it is important to keep in mind that this study has a number of limitations. The results are unique to the group under study and cannot yet be applied to other students with intellectual disabilities because there were only 5 students in the sample.

CONCLUSION

Based on the research findings, it can be concluded that pupils at SDN Babat Jerawat 1 demonstrate varying levels of physical fitness across the five TKSI components, namely Durih (Sit and Reach), Komata (Eye-Hand Coordination), Dolan (Push-up), Lipat (Sprint), and Lalingku (Run Around Chairs). The assessment results show a range of scores for Durih of 1.00–8.50, Komata 0–14, Dolan 4.70–29.57, Lipat 4.35–16.78, and Lalingku 17–27. This variation in results indicates that pupils' physical abilities are not uniform; therefore, a Physical Education teaching approach that takes individual characteristics and abilities into account is required.

The research findings can serve as preliminary information for PE teachers to map pupils' physical abilities and design adaptive learning activities. Teaching should not only be oriented towards achieving specific movements but must also take into account safety, the ability to understand instructions, the level of difficulty of the activities, and the individual needs of the pupils

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest regarding the publication of this article.

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