



GROSS MOTOR SKILL PROFILE OF STUDENT WITH INTELLELCTUAL DISABILITIES AGED 6-10 YEARS AND TYPICALLY DEVELOPING CHILDREN ON TGMD-2

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Abstract. The study was carried out due to a lack of understanding of the methods of gross motor skills in children with intellectual disabilities. This study aims to evaluate and understand the motor skills performance of students with intel-lectual disabilities and typically developing children on TGMD-2. The sub-jects involved in the study are children with intellectual disabilities and stu-dents with the same age criteria and geographical conditions at the age of 6-10 years who are in the Blitar district Data collection was carried out using the Test of Gross Motor Development-2 (TGMD-2). The data analysis used is a quantitative descriptive survey, with the selection of samples Purposive sampling takes into account the criteria of age and geographic conditions of students with intellectual disabilities 10 and 21 typically developing students. Based on data and research, it is known that the motor skills of students aged 6-10 years at SLB Muji Utomo and SLBN Talun Blitar have the highest presentation in the category of Very Low. So it was necessary to develop a special education program that focuses on the rough motor skills of the stu-dents with intellectual disabilities that are distinct and specific.

Keywords: Gross Motor Skill, Intellectual Disabilities, TGMD-2

1. INTRODUCTION

Deaf children are individuals who have a level of intelligence that is significantly lower than average intelligence [1]. Deaf children are one type of intellectual disability that can hinder gross motor development in children so it requires special intervention [2]—based on data in 2018 from the Central Bureau of Statistics (BPS) of East Java, people with intellectual disabilities reached 6,360 people. Although motor disorders are not included in the diagnostic criteria for children with intellectual disabilities, many studies have shown significant motor

delays in children with intellectual disabilities, as said by (Setiawan et al., 2023) [1], the motor skills of children with intellectual disabilities also experience delays in their gross motor skills due to impairments in language, cognitive, social, and motor skills. children with intellectual disorders have a direct impact on children's gross motor development resulting in difficulty in moving (Dewi, 2022) [2].

The development of children with disabilities shows variations in their motor skills and they still face limitations in performing motor movements, both in the context of learning and everyday life. By having good motor skills, children can deal with limitations in everyday life (Agustina et al., 2019) [3]. This is in line with research written by Kamelia, (2019) [4] which states that the development that occurs sequentially is the basis for children's motor skills in their daily interactions. That way the diagnosis of motor development from an early age is very important for children with disabilities.

Early diagnosis is critical as it allows for early educational interventions that are effective in reducing the symptoms of deaf-blindness in children, as well as providing promising opportunities for prevention (Mahanani et al., 2019) [5]. Inclusive education aims to provide equitable access to education for all students, including those with special needs such as intellectual disabilities (Mahanani et al., 2019) [5]. Gross motor skills are very beneficial for children with disabilities (Humairah & Sitorus, 2023) [6]. Therefore, researchers are increasingly paying attention to the importance of motor function in the diagnosis of children with learning disabilities, given the presence of observable motor impairments.

Based on previous research, the use of TGMD-2 as an evaluation tool for measuring gross motor skills in children with special needs, especially the mentally retarded, is still limited, although current research still shows relevant results with evaluation methods using TGMD-2, but does not necessarily focus on the population of mentally retarded students in an inclusive education environment. based on the article (Spinosa et al., 2020) [7] using the Test of Gross Motor Development-Second Edition designed for 5-10 years old children used for motor skill demonstration which means that the second edition of the gross motor development test designed for 5-10 years old children is used for motor skills which can be used to measure mentally retarded children with motor problems. In another study comparing ASD students with typically developing children of the same age using the

TGMD-2 (Liu, 2014) [8], this statement is in line with (Juriana, et al., 2020) [9] which states that the use of the TGMD-2 as a measuring tool to measure gross motor skills can be used for children with disabilities, and also (Yoon et al., 2019) [10] mentions that the TGMD-2 can be used to measure gross motor skills of children with disabilities, so it can be concluded that the TGMD-2 can be used as a tool to measure gross motor skills.

It is important to understand abilities related to Gross Motor to develop and improve these skills. Understanding gross motor abilities should be very significant because although Intellectual disabilities children have weaknesses in mental abilities, their motor abilities remain average. Therefore, it is necessary to conduct tests to measure their gross motor abilities. One way to assess the gross motor skills of children with learning disabilities is through sports activities, for example, the TGMD (Test of Gross Motor Development) can be used to assess gross motor skills. In this test, activities such as running, jumping, and hopping can be used as a gross motor assessment method.

Based on observations that have been made, the gap arises because there has been no research specifically applying TGMD-2 to mentally retarded students at SLB Muji Utomo, SLBN Talun, and regular schools with student age criteria of 6-10 years. This research was conducted by measuring the motor abilities of children with intellectual disabilities and typically developing students of the same age which were used as supporting data for gross motor conditions on the criteria of the same age so that gaps in motor abilities appeared in children with intellectual disabilities and typically developing so that through this research it could provide insight related to the needs of gross motor development in both of those student categories.

2. METHOD

Based on the problems to be examined, this research is a survey study where research is non-experimental using a research approach method with a quantitative descriptive research design. This research was conducted at SLB Muji Utomo and SLBN Talun Blitar. With a total sample size of 31 students from two schools with sample determination using purposive sampling. This study focuses on locomotor conditions and control objects of students with special needs or intellectual disabilities. This study used the Test of Gross Motor Development-2 (TGMD-2) instrument. The subjects of this study were

mildly retarded students and elementary school students aged 6-10 years. The variable to be examined is the level of Gross Motor Skills of intellectual disabilities students at SLB Muji Utomo and SLBN Talun Blitar and regular schools as supporting data which is still within the scope of the same region.

2.1 Participant Characteristics

There was a population of 193 students in all schools from SD Soso 02 SLB Muji Utomo and SLBN Talun located in Blitar Regency. The method used to de-termine the sample in this study was purposive sampling. Sampling must include population characteristics so that the information obtained later is by the re-search objectives.

Table 1. Characteristics Student

Characteristics	Student with Intellectual Disabilities		Typically Developing Children	
	F	%	F	%
Gender				
Male	4	40%	10	45%
Female	6	60%	11	55%
	10	100%	21	100%
Age				
10	3	30%	0	0%
9	2	20%	11	52%
8	1	10%	5	24%
7	2	20%	3	14%
6	2	20%	2	10%
Total	10	100%	21	100%

2.2 Sampling Procedures

In this study, the researcher made a sample decision that must include characteristics, namely students with disabilities with intellectual disabilities using the Purposive Sampling technique, so students who were identified as having intellectual disabilities were 10 students and typically developing students were 21 students, so the total sample in this study became 31 students.

2.3 Research Design

The Test of Gross Motor Development-2 (TGMD-2) is a test that refers to norms and criteria for assessing gross motor skills of children aged 3-10 years. TGMD-2 has 12 items. There are two subtests, namely locomotor and object control subtests. In this study, student subjects were based on the age of 6-10 years with the same location demographics. The use of TGMD-2 as a measuring instrument for

measuring gross motor has been tested for validity and reliability where (Yoon et al., 2019) [10] revealed that "TGMD-2 for assessing gross motor function and physical fitness tests is quite reliable and acceptable for use in children with developmental disorders such as intellectual disabilities". This statement is supported by studies from (Capio, Eguia, and Simons 2016) [11] and (Rey et al., 2020) [12] These studies provide sufficient evidence regarding the content validity and reliability of the TGMD-2 for children with intellectual disabilities in the Philippines. When selecting a robust psychometric test, the TGMD variant may be a good choice. However, to ensure acceptable reliability, a standardized training protocol for coding TGMD variants seems necessary for both researchers and practitioners. Thus, the TGMD-2 can be used to measure the gross motor skills of children with special needs. intellectual disabilities.

Descriptive analysis was used to describe the TGMD-2 data. The TGMD-2 has 12 gross motor skill items divided into two subtests, namely locomotor movements and control objects. TGMD-2 has a fairly high level of validity and reliability so this research instrument can be applied to children with special needs or intellectual disabilities (Apriyani et al., 2018) [13] Locomotor movements include run, gallop, leap, catch, kick, overhand throw, and underhand roll. In locomotor movements, there are 22 assessment criteria which are divided into four for run, three for gallop, five for hop, three for jump, four for horizontal jump, and three for slide. Object control motion has 21 assessment criteria which are divided into four on strike, three on stationary dribble, three on catch, three on kick, and four on overhand roll. The skill test assessment is done with two trials. A score of 1 was given if the movement criteria were correct, and a score of 0 if incorrect. The scores from the two trials were summed to get the total criterion score. The total criterion score is then summed to obtain the subtest raw score (0-48). This subtest raw score is then converted into standard scores (1-20) and percentiles (<1-99) according to age based on the norm table in the Test of Gross Motor Development-2 (TGMD-2) guidebook. Standard scores from the locomotor and object control subtests were summed to produce gross motor quotient. This gross motor quotient was used to categorize.

3. RESULTS AND DISCUSSION

3.1 Result

This study aims to measure the level of gross motor skills of students with disabilities in special schools (SLB) and elementary schools (SD). The results of this study show the average standard score which includes locomotor score object control score and Gross motor quotient. Analysis of the research results is expected to provide a clear understanding of the differences or similarities in locomotor ability and object control between special school students and regular elementary school students, and can also provide insight into the importance of gross motor skills for children with disabilities. The following is data on the results of student's gross motor skills tests that have been presented in the form of diagrams, percentages, and descriptions.

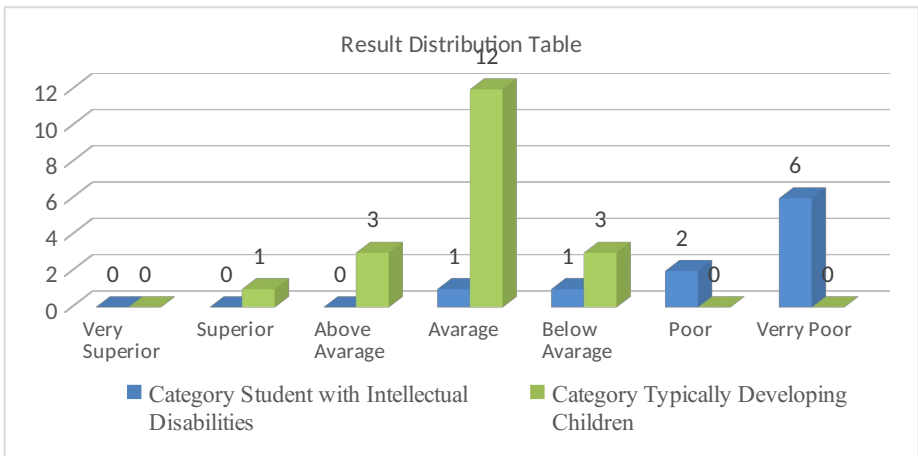


Figure 1. Result Distribution

The overall distribution table of the results of the gross motor skills of Intellectual disabilities Sekolah Luar Biasa (SLB) students and regular elementary school students is classified into six different categories. In this context, the gross motor skills of special education students were distributed into four categories, namely the average, below average, low, and very low categories. In contrast, the gross motor skills of primary school students were distributed into four different categories: excellent, above average, average, and below average.

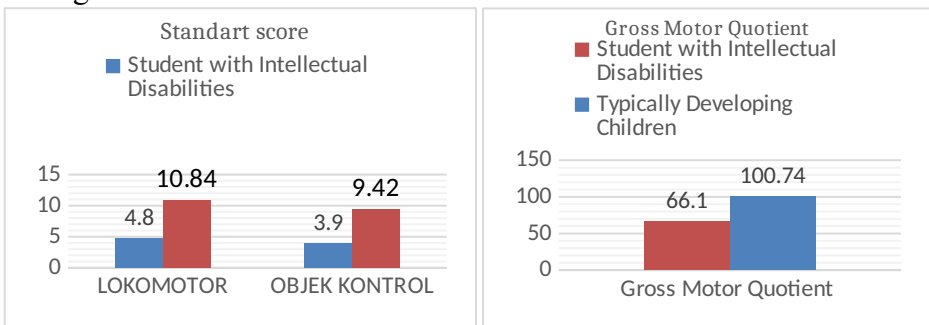


Figure 2. score

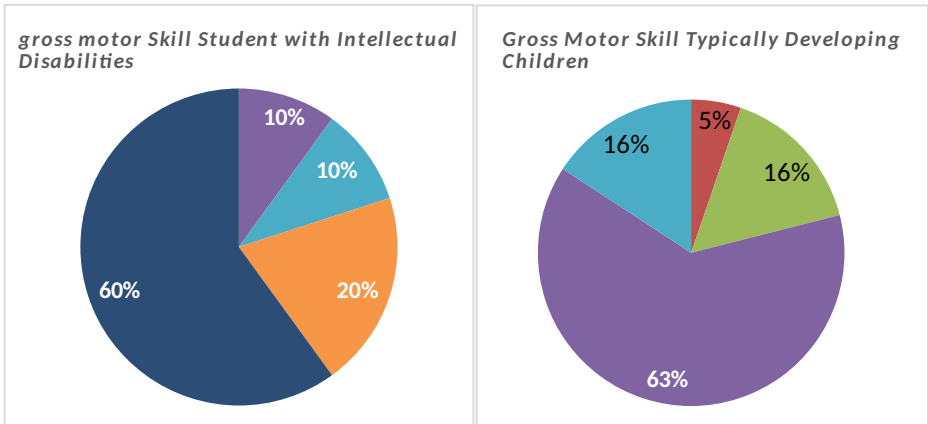


Figure. 3. result

The results of the study for the average score of the gross motor quotient of students with disabilities and typically developing students resulted in a score of 66.1 for students with disabilities and a score of 100.7 for typically developing students. then the locomotor standard score of students with disabilities is 4.8 while the average standard score of typically developing students is 10.8. Furthermore, the average standard score of the object control score of the intellectual disabilities students is 3.9 and the average standard score of the object control of typically developing students is 9.4.

Figure 3 shows 1 student who obtained a percentage of 10% reached the average category, 1 student who reached a percentage of 10% reached the below-average category, 20% reached the low category, and 60% reached the very low category. Figure 2 shows 1 student who obtained a percentage of 5% reaching the excellent category, 3 students reached a percentage of 16% reaching the above average category, 63% reached the average category, and 16% reached the below average category.

3.2 Discussion

In this study, researchers measured gross motor skills between students at Muji Utomo Special School (SLB), Talun SLBN, and students at SDN Soso 02 Gandusari Blitar Elementary School by taking into account the criteria of regional similarity and age category using the Test of Gross Motor Development (TGMD) instrument as a gross motor measurement tool. Motor skills are the basis of any body movement which is an intentional movement involving motor components or muscles (Hasanah, 2016) [14]. The test results of gross motor skills of Intellectual disabilities students at SLB Muji Utomo and SLBN Talun Blitar show that they are in a very low category. This analysis is based on the average standard score that reaches the low category in locomotor aspects and control objects corresponding to the age of 6-10 years. The results of the study are in line with a study which states that the gross motor skills of children with intellectual disabilities aged 5-14 years at SLB Reskiani in Makassar City are mainly located below the average standard, with a proportion of 36.8%. After obtaining the results of the motor measurement test of students with disabilities, a motor skill test was conducted on students aged 6-10 years at SDN Soso 02 Gandusari Blitar which showed results in the average category. Analysis using the TGMD-2 test norms shows the average standard score on locomotor aspects and object control is within the standard level according to the age category of 6-10 years. This re-search is supported by on the Gross Motor Skills of children in the city of Tehran aged 3-10 years with the results of the study showing that the skills of children based on data analysis, the development is in very good condition.

From the achievement of standardized scores, it can be seen through the GMQ of TGMD-2 that students with disabilities mostly lead to very low criteria, and typically developing students tend to show the achievement of scores dominated by the average category. Their gross motor skills test results show that they have gross motor skills that are in line with average expectations for their age group. This shows that their gross motor skills are significantly different. Where these differences can be caused by several factors including cognitive and affective factors. Several other factors such as biological factors and environmental factors can affect movement. Meanwhile, children with intellectual disability experience barriers and limitations in their gross motor development.

Motor skills include all movements that can be performed by the body, while motor development refers to the process of maturation and control of body movements (Riza, 2018) [15]. Explained that motor skills include locomotor movements such as running, jumping, jumping sideways, jumping vertically, jumping from a height, running while jumping, galloping, sliding, and skipping. Manipulative movement is one of the basic forms of movement included in the locomotor and non-locomotor movement categories (Kurniawan et al., 2022) [16]. Motor skills must be learned and voluntarily produced to be able to perform goal-oriented tasks. Gross motor skills involve movements that use large muscles, such as crawling, standing, climbing stairs, walking, and running. In the early years of life, these skills develop because they are important for body stability and control and for exploring the surrounding environment. Then, according to Gross motor skills are explained as abilities that involve the use of the brain and muscle strength of the hands and legs to achieve achievements in certain exercises and movements. The better students' basic movement skills and abilities, the more fluently they can perform activities that require these movement skills and abilities.

Motor skills develop along with nerve and muscle maturation. Therefore, every movement a child makes, however simple, is actually the result of a complex interaction between various organs and body systems controlled by the brain. The development of motor skills in children with disabilities is an aspect that needs special attention. This condition has a direct impact on children's gross motor development making it difficult to carry out daily activities (Puspita et al., 2018) [17]. To help children recognize and understand their surroundings, they need to do physical activities. The more often children practice moving their muscles, the more honed and developed their motor skills (I. D. A. L. Dewi et al., 2021) [18]. Motor development is an interesting aspect to study, several things happen in the process of growth and development of children. Through the development of motor skills, children can perform various activities well. However, if these motor skills experience problems, this can hinder other abilities (Asmuddin et al., 2022) [19]. Gross motor development in children aged 6-10 is the focus and discussion because in this process the child's growth process can be influential in the future.

Children aged 6-10 years are in a very active period to explore various things (Sabani, 2019) [20]. The activities they do, such as

sports, foster a lot of children's enthusiasm in the process of developing their motor skills (Motimona & Maryatun, 2023) [21]. The development of motor skills is different for each individual. This also applies to children with special needs. Children with disabilities are included in the group of children who experience obstacles in intelligence and adaptation and have low thinking skills, so their motor development is different from typically developing children. Deaf children generally have weaknesses in movement skills, unhealthy physical conditions, poor coordination of movements, lack of awareness of the situation and the surrounding environment, and low gross and fine motor skills. The development of motor skills of children with disabilities requires special assistance and stimulation. The statement is supported by (Kurniawan et al., 2022) [22] Gross motor ability is one of the tools that can be used to measure the potential of children with disabilities. The goal is to identify skills and interests similar to those of other children.

In this study, the motor abilities of students with disabilities who have age criteria and geographical conditions aged 6-10 years in SLB Muji Utomo and SLBN Talun Blitar were tested based on the TGMD-2 test instrument. Based on the results of data and previous research, it can be seen that the motor abilities of 6-10-year-old students at SLB Muji Utomo and SLBN Talun Blitar with the highest percentage in the Very Low criteria, and then for the motor abilities of 6-10-year-old students at SDN Soso 02 Gandusari Blitar with the highest percentage in the average criteria.

4. CONCLUSION

Based on the points discussed earlier, it can be concluded that the criteria for children's motor skills vary widely. One of the conclusions is that the condition of gross motor skills of students in schools that are the subject of research is not so good. This is evident from the results of data analysis which shows that students with disabilities have basic locomotor movements and object control which are in the very poor category. From these results, parents, physical education teachers, and schools should increase attention to their students. This can be done by providing quality learning, including additional learning designed to improve students' coordination, agility, balance, and confidence, using a fun approach. The aim is to ensure optimal growth in students' gross

motor skills so that they can gain maximum benefit from these skills, which will be very useful in supporting their daily lives.

This study has several limitations including the small sample size. Future re-research is expected to use a larger sample size so that the results are more generalizable and allow for more in-depth data analysis. In addition, a similar study focusing on 6-10-year-old students with disabilities is recommended to use of an alternative TGMD-3 instrument (TGMD-3).

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