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The Effect of Dribbling Learning In Basketball On Improving The Gross Motor Ability of Children With Might And Mediated Mental Disabilities At SLB Negeri 1 Makassar

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ABSTRACT

This study aims to determine the effect of basketball dribbling learning on improving gross motor skills in children with mild and moderate mental disability at UPT SLB Negeri 1 Makassar. This study uses a quasi-experimental method with descriptive and inferential data analysis techniques. Based on the results of the descriptive statistical analysis of the Pretest and Posttest, the average value (mean), standard deviation, minimum value, and maximum value for each gross motor aspect increased, while the inferential statistical analysis obtained by the normality test showed that the significance value for each aspect (balance, coordination, movement rhythm, and muscle strength) was above 0.05, so that the data was considered to meet the normality assumption, for the homogeneity test using Levene's Test, the significance value was > 0.05, so that the homogeneity assumption was met. This indicates that the distribution of variance between groups can be considered equal. The paired sample t-test was used to determine whether there was a significant difference between the pretest and posttest scores. The test results showed that all four aspects had a significance value (p-value) < 0.05, which means there was a statistically significant difference between before and after treatment. Based on the calculation of the percentage increase, it was obtained that: Balance increased by 17.6%, Coordination by 28.6%, Movement rhythm by 41.7%, and Muscle strength increased by 11.1%. Therefore, the implementation of effective dribbling training learning provides a meaningful contribution to the development of gross motor skills in children with mild and moderate intellectual disability at UPT SLB Negeri 1 Makassar.

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INTRODUCTION

One effective approach to developing gross motor skills in children with intellectual disabilities is through sports activities. Basketball, particularly dribbling skills, stimulates

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hand-eye coordination, body balance, and spatial orientation. Dribbling activities not only train body movement control but also develop self-confidence and cooperation in group play (Siedentop, D., Hastie, P., & van der Mars, 2011). Basketball dribbling exercises involve various gross motor elements such as dynamic balance, bilateral coordination, muscle strength, and movement rhythm (Haywood, K. M., & Getchell, 2014).

Several studies have shown that physical activity, such as playing basketball, can improve gross motor skills in children with intellectual disabilities. For example, dribbling a basketball has been shown to improve hand-eye coordination in children with mild intellectual disabilities. Furthermore, playing basketball can also train dexterity and hand-eye coordination in children with intellectual disabilities.

Several research gaps can be identified: (1) Subject Limitations: Most previous studies only involved children with mild intellectual disabilities, while the effect of dribbling learning on children with moderate intellectual disabilities has not been widely studied., (2) Local Context: No research has specifically examined the effect of dribbling learning on the gross motor skills of children with intellectual disabilities at UPT SLB Negeri 1 Makassar, and (3) Methodology: Most previous studies used a pre-experimental design with a single group, so research with a more robust design is needed to more accurately identify the effects of the intervention.

Thus, this study offers novelty in terms of subjects (children with mild and moderate intellectual disabilities), local context (UPT SLB Negeri 1 Makassar), and a more comprehensive methodological approach. Good gross motor skills are crucial for children with intellectual disabilities to support daily activities and improve their quality of life. By developing a structured dribbling learning program, it is hoped that it can help improve the gross motor skills of children with intellectual disabilities, so they can be more independent and active in their daily lives.

The State Special Needs School (UPT SLB Negeri 1 Makassar) was chosen as the research location for several reasons: (1) Student Number: This school has a significant number of students with intellectual disabilities, namely 130, allowing for a representative research sample. (2) Facilities: As the oldest special needs school in South Sulawesi with fairly complete facilities, this school has the means to support the implementation of a dribbling learning program. (3) Intervention Needs: The absence of a structured gross motor intervention program at this school indicates the need for research and development of programs that can help improve students' gross motor skills.

The implementation of dribbling skills learning in the context of special education needs to be carried out adaptively and in accordance with the characteristics of the students. As a special education institution, UPT SLB Negeri 1 Makassar provides learning programs aimed at children with special needs, including mild and moderate intellectual disabilities. However, initial observations revealed gaps in students' gross motor skills, which impacts their low active participation in physical activities and other learning activities.

Thus, a learning innovation is needed that can improve the gross motor skills of students with intellectual disabilities. Learning basketball dribbling skills is considered beneficial because it combines basic movement elements with fun and challenging game

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patterns. This learning can be modified to suit the child's abilities, thus remaining inclusive and effective (Sherrill, 2004).

"Intellectual disability" refers to children with below-average intelligence. In foreign-language literature, terms frequently used include mental retardation, mentally retarded, mental deficiency, mental defective, and so on. According to Hakim (2016), these terms essentially mean the same thing, describing a child with intelligence far below the general standard and characterised by limitations in intellectual abilities and difficulties in social interaction.

According to Hadi Wijaya et al. (2021), children with special needs are individuals with specific needs, whether temporary or permanent, that require more in-depth educational services. Children who have the opportunity to practice and receive appropriate stimulation to develop their gross motor skills will undoubtedly demonstrate greater dexterity than children who do not. According to Pratiwi & Maulidiyah (2022), approximately 80% of children experience problems with movement coordination and balance, often leading to a lack of confidence in movement. The impact of this can be seen in children's daily activities, with difficulties maintaining balance while walking, receiving and throwing a ball, and maintaining body position while standing, jumping, running, and moving other body parts.

According to Reswari (2022), children who are allowed to practice and receive appropriate stimulation to develop their gross motor skills tend to have better dexterity than children who do not receive such experiences. Sports, particularly basketball, play a significant role in supporting gross motor development in children because they involve a variety of complex movements and require diverse physical skills.

Stimulation of gross motor development is crucial for children to maintain balance and motor coordination. According to Pratiwi & Maulidiyah (2022), approximately 80% of children experience problems with coordination and balance, often leading to a lack of confidence in movement. The impact of this can be seen in children's daily activities, where they experience difficulty maintaining balance when walking, receiving and throwing a ball, as well as maintaining body position when standing, jumping, running, and moving other body parts.

Reswari (2022) suggests that children who are allowed to practice and receive appropriate stimulation to develop their gross motor skills tend to have better dexterity than children who do not receive such experiences. When children learn to master certain movements, a connection forms between the stimulus and the resulting response. This connection is the result of the child's learning or practice process. Sports, particularly basketball, play a significant role in supporting gross motor development in children because they involve a variety of complex movements and require diverse physical skills.

The purpose of this study was to examine the effect of basketball dribbling lessons on improving gross motor skills in children with mild and moderate intellectual disabilities at the UPT SLB Negeri 1 Makassar. It is hoped that the results will contribute to the development of adaptive sports learning models that are applicable and based on student needs. This study hypothesises that basketball dribbling lessons significantly

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influence gross motor skills improvement in children with mild and moderate intellectual disabilities at the UPT SLBN 1 Makassar.

METHODS

This research is a quantitative research with an experimental method by conducting a pretest and posttest. The experimental method is an approach used to analyse the effect of a particular treatment on other variables in a controlled setting (Azizah & Nur, 2023). There are two types of variables in this study: independent variables and dependent variables. The independent variable in this study is learning dribbling techniques in basketball games, while the dependent variable studied is gross motor skills in children with intellectual disabilities. This research was conducted at the UPT SLB Negeri 1 Makassar School located on Jl. Daeng Tata Raya, Bontoduri Village, Tamalate District, Makassar City, South Sulawesi Province. The population in this study included students with mild and moderate intellectual disabilities at UPT SLB Negeri 1 Makassar. The number of samples studied was 10 junior high school students. Using basketball as the main tool in the research, with data analysis techniques using descriptive and inferential statistics for the purposes of hypothesis testing.

RESULTS AND DISCUSSION

Result

The two groups showed varying levels of improvement, indicating that children with mild intellectual disabilities were more responsive to dribbling training. However, after treatment, both groups demonstrated a consistent and positive pattern of gross motor development. This indicates that gross motor skills in children with intellectual disabilities can be significantly improved through basketball dribbling training.

Table 1.
Comparison of Pretest and Posttest Scores and Improvement

Variable	Light	Medium
Pre-Balance	3	3.67
Post-Balance	4	4
Δ-Balance	1	0.33
Pre-Coordination	2.5	3
Post-Coordination	3	4
Δ-Coordination	0.5	1
Pre-Movement Rhythm	2	3.67
Post-Movement Rhythm	3	3.67
Δ-Movement Rhythm	1	1
Pre-Muscle Strength	3.5	3.67
Post-Muscle Strength	4	4
Δ-Muscle Strength	0.5	0.33

The table "Comparison of Pretest and Posttest Scores and Improvement" presents comprehensive data on each gross motor skill aspect based on the two classifications of mild and moderate intellectual disability. The following table shows the average scores

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before and after treatment, along with a precisely calculated improvement column (Δ). According to the data, children with mild intellectual disability experienced significant improvement, particularly in balance and movement rhythm. Conversely, children with moderate intellectual disability showed significant progress in coordination and rhythm. This table serves as an important analytical tool for evaluating the effectiveness of dribbling techniques in improving the physical skills of students with special needs in special needs schools.

All aspects showed an increase in average scores after treatment, as demonstrated by the descriptive statistics table. As evidence of consistent performance after training, participants' average balance score on the pretest was 3.40 with a standard deviation of 0.55, and on the posttest, it increased to 4.00 with a standard deviation of 0.00. For the coordination component, the average increased from 2.80 to 3.60, also with a decrease in variability. Movement rhythm also increased from 2.40 to 3.40, while muscle strength increased from 3.60 to 4.00. These results indicate that basketball-based physical activity, specifically dribbling techniques, has improved the gross motor skills of children with intellectual disabilities. Nearly all participants performed at their best, as demonstrated by the increase in maximum scores in each aspect.

Table 2.
Descriptive Statistics of Pretest and Posttest

Variable	Statistic	Pre-test	Post-test
Balance	Mean	3.4	4
	Std	0.55	0
	Min	3	4
	Max	4	4
Coordination	Mean	2.8	3.6
	Std	0.45	0.55
	Min	2	3
	Max	3	4
Movement Rhythm	Mean	2.4	3.4
	Std	0.55	0.55
	Min	2	3
	Max	3	4
Strength	Mean	3.6	4
	Std	0.55	0
	Min	3	4
	Max	4	4

The "Pretest and Posttest Descriptive Statistics" table shows the mean, standard deviation, minimum, and maximum scores for each gross motor skill: balance, coordination, movement rhythm, and muscle strength. After the posttest, the average score for each skill increased. For example, the balance score increased from 3.40 to 4.00, and the coordination score increased from 2.80 to 3.60. Post-treatment results were more stable if there was a decrease in the standard deviation for some skills. This table provides important quantitative evidence that dribbling techniques are effective in improving the motor skills of children with intellectual disabilities.

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Inferential Statistics

Inferential statistical analysis was conducted to more deeply examine the effectiveness of dribbling instruction on improving the gross motor skills of children with intellectual disabilities. This test involved three main steps: normality testing, homogeneity testing, and mean difference testing (t-test), using the latest version of SPSS software.

First, a normality test was conducted using the Kolmogorov-Smirnov Test to ensure that the data were normally distributed. The test results showed that the significance value for each aspect (balance, coordination, movement rhythm, and muscle strength) was above 0.05; thus, the data were considered to meet the assumption of normality. This allowed for the use of parametric tests in the next stage.

Second, a homogeneity test was conducted to ensure that the variance of the pretest and posttest data was homogeneous. Using Levene's Test, all aspects tested demonstrated a significance value > 0.05, thus meeting the assumption of homogeneity. This indicates that the distribution of variance between groups can be considered equal.

Third, a paired sample t-test was used to determine whether there were significant differences between the pretest and posttest scores. The test results showed that all four aspects had a significance value (p-value) < 0.05, indicating a statistically significant difference between before and after treatment.

Based on the percentage improvement calculations, it was found that:

a. Balance increased by 17.6%
b. Coordination by 28.6%,
c. Movement rhythm by 41.7%, and
d. Muscle strength increased by 11.1%.

These results confirm that dribbling training effectively contributes significantly to the development of gross motor skills in children with intellectual disabilities in special needs schools.

Table 3
Test Results and Percentage Improvement

Aspect	Pretest Mean	Posttest Mean	Mean Difference	Percentage Increase (%)
Balance	3.4	4	0.6	17.6
Coordination	2.8	3.6	0.8	28.6
Movement Rhythm	2.4	3.4	1	41.7
Strength	3.6	4	0.4	11.1

The table "T-Test Results and Percentage Improvement" shows a comparison of the mean scores before and after the test, the mean difference, or difference in means, and the percentage improvement for each aspect of gross motor skills of children with intellectual disabilities. From these data, it can be seen that the aspect of movement rhythm experienced the greatest improvement of 41.7%, followed by coordination with an increase of 28.6%, and an increase in the aspects of balance by 17.6% and muscle strength by 11.1%, respectively. This table supports the results of the t-test, which showed a significant difference. In conclusion, this quantitative evidence shows that the dribbling-based learning approach is effective in improving gross motor skills overall.

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Discussion

Gross Motor Skills of Children with Mild and Moderate Mental Disabilities at UPT SLBN 1 Makassar Before Treatment

The results of the initial measurement, or pretest, were used to determine the gross motor skills of children with mild and moderate mental disabilities before they were given basketball dribbling training. Balance, hand-eye coordination, movement rhythm, and lower body muscle strength were all measured. Based on a scale of 1–4, the scores indicate excellent ability, while a score of 1 indicates poor ability. The two children with mild mental disabilities (Cita and Said) obtained an average overall score of 2.75 based on the pretest data. Further analysis revealed that balance received an average score of 3.00, coordination 2.50, movement rhythm 2.00, and muscle strength 3.50. These scores indicate that children with mild mental disabilities appear relatively stable in terms of balance and muscle strength, but still experience difficulties with movement rhythm and coordination.

Meanwhile, in initial measurements of moderate intellectual disability, this group demonstrated better gross motor skills, despite generally being considered to have cognitive limitations. Individual factors such as physical condition, previous training experience, and the child's readiness to receive instruction during the data collection process can contribute to these differences in scores. This is crucial for providing appropriate care for subsequent intervention sessions.

Gross Motor Skills of Children with Mild and Moderate Mental Disabilities at UPT SLBN 1 Makassar After Treatment

To assess the development of gross motor skills in children with mild and moderate mental disabilities, re-measurements were conducted after several sessions of basketball dribbling training. Body balance, hand-eye coordination, movement rhythm, and lower body muscle strength were the four elements evaluated. The group of children with mild mental disabilities showed significant improvement, according to the posttest results. The overall average level rose from 2.75 to 3.50, and the group with moderate mental disabilities also experienced improvements in motor skills.

The two groups showed different levels of improvement, indicating that children with mild mental disabilities were more responsive to dribbling training. However, after treatment, both groups demonstrated a consistent and positive pattern of gross motor development. This indicates that gross motor skills in children with mental disabilities can be significantly improved through basketball dribbling training. According to the data, children with mild mental disabilities experienced significant improvements, particularly in balance and movement rhythm. On the other hand, children with intellectual disabilities are showing significant progress in coordination and rhythm.

The Effect of Dribbling Learning on Children with Mild and Moderate Mental Disabilities Mild Mental Disabilities Group

The results of this study indicate that dribbling learning in basketball has a positive and significant impact on improving the gross motor skills of children with mild mental

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disabilities. This improvement is evident from the comparison of pretest and posttest scores, which show an average increase in all skill aspects, particularly body balance, coordination, movement rhythm, and muscle strength. According to Gallahue and Ozmun (2006), children with special needs, such as those with mental disabilities, can experience significant motor development if provided with consistent, enjoyable physical stimulation tailored to their individual abilities.

These results also support previous research that found that simple ball game activities can improve coordination and balance in children with intellectual disabilities (Aferli, 2025). Improvements in movement rhythm are also important to consider. Through consistent dribbling practice, children are trained to recognise repetitive movement patterns, which helps improve motor perception and muscle memory. This activity fosters children's self-confidence and independence as they gradually perform complex movements (Komarudin, 2024).

Thus, dribbling learning has proven to be beneficial not only in the context of physical education but also provides a therapeutic contribution to the gross motor development of children with mild intellectual disabilities. The implementation of this method needs to be expanded and developed within the special needs curriculum as part of an inclusive and transformative pedagogical approach.

Moderate Mental Retardation Group

Learning to dribble a basketball also showed a positive effect on improving gross motor skills in children with moderate mental retardation, although the rate of progress differed compared to the mild mental retardation group. This difference in progress compared to the mild mental retardation group indicates that children with moderate mental retardation experienced relatively more moderate progress. Children with moderate mental retardation have greater limitations in information processing, understanding instructions, and maintaining focus, so responding to physical interventions requires more time and a more intensive approach.

According to gross motor development theory, although children with moderate intellectual disabilities have limitations in fine motor control, they can still demonstrate progress in gross motor skills through directed and repetitive practice (Najmah, 2022). Factors influencing response to treatment include the child's intrinsic motivation, support from the accompanying teacher, clarity of visual instructions, and positive reinforcement during the practice process (Oktaviani, 2024).

These results align with previous findings by Hariyono (2025), Taufiqurrahman (2024), and Hidayat (2024), which stated that ball games positively impact gross motor skills in children with intellectual disabilities, although a more individualised approach is needed in the moderate group. Thus, dribbling learning can be an effective alternative physical intervention, provided it is tailored to the specific needs, developmental characteristics, and adaptive abilities of children with moderate intellectual disabilities in special schools (SLB). These findings align with the concept of Gallahue & Ozmun (2006) in Understanding Motor Development, as cited by Dini (2022), Buahana (2022), Suryadini (2025), and Kurniawan (2024), which explains that gross motor skills can be improved through an active,

exploratory, and meaningful learning approach. Furthermore, the results of this study support a study by Aliriad (2023), which stated that ball-based motor skills training can positively impact the balance and coordination of children with intellectual disabilities. In their research, enjoyable and repetitive activities were shown to encourage active student engagement and help develop stable fundamental movement patterns.

CONCLUSION

After researching the effect of dribbling training in basketball on improving the gross motor skills of children with mild and moderate intellectual disabilities at the State Special Needs School (UPT SLB Negeri 1 Makassar), the following conclusions were drawn:

1. Before treatment, children with mild and moderate intellectual disabilities at UPT SLBN 1 Makassar appeared relatively stable in terms of balance and muscle strength, but still experienced problems with rhythm and coordination of movements. Meanwhile, children with moderate intellectual disabilities demonstrated good gross motor skills, despite being generally considered to have cognitive limitations.
2. After treatment, the two groups showed different levels of improvement in gross motor skills, indicating that children with mild intellectual disabilities were more responsive to dribbling training. However, after treatment, both groups demonstrated a consistent and positive pattern of gross motor development.
3. There was an effect of dribbling training in basketball on improving the gross motor skills of children with mild and moderate intellectual disabilities at UPT SLB Negeri 1 Makassar.

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