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The 3M Game (Throwing, Catching, and Kicking) the Ball to Develop Kinesthetic Intelligence in Children Aged 4-6 Years

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Abstrak

Peneliltilan Ini bertujuan menganalilsils pengaruh permailnan 3M (melempar, menangkap, dan menendang) bola untuk mengembangkan kecerdasan kilnestetilk anak usila 5-6 tahun dil RA Senyum Mulslilm Kabulpaten Bekasil. Jenils peneliltilan ilnil tentang permailnan 3M (melempar, menangkap, dan menendang) bolla ulntulk mengembangkan kecerdasan kilnestetilk anak ulsila 4-6 tahuln dil RA Senyulm Mulslilm Kabulpaten Bekasil menggulnakan metolde penelilan Pre eksperilmen dengan desailn Pretest-Polsttest. Polpullasil dalam peneliltilan ilnil selulrulh anak ulsila 4-6 tahuln dil RA Senyulm Mulslilm Kabulpaten Bekasil yang berjulmlah 30 olrang silswa. Teknilk pengambillan sampel dalam peneliltilan ilnil adalah toltal samplilng. Adapuln sampel yang dilambill yailtul selulrulh anak ulsila 4-6 tahuln dil RA Senyulm Mulslilm Kabulpaten Bekasil yang berjulmlah 30 silswa. Kemuldilan diljalankan penguljilan hilpoltesils memakail uljil-t pailred sample t test, menghiltulng besarnya pengarulh, dan menyelildilkil apakah permailnan 3M (Melempar, Menangkap, Dan Menendang) Bolla berpengarulh terhadap kecerdasan kilnestetilk anak ulsila 4-6 tahuln. Hasill Peneliltilan menjelaskan bahwa nillail Pre Test dilperolleh rata-rata kecerdasan kilnestetilk anak ataul Mean sebesar 11.20. Sedangkan ulntulk nillail Polst Test dilperollah nillail rata-rata kecerdasan kilnestetilk anak sebesar 23.97. Karena nillail rata-rata kecerdasan kilnestetilk anak pada Pre Test 11.20 < Polst Test 23.97, maka iltul artilnya secara deskrilptilf ada perbedaan rata-rata kecerdasan kilnestetilk anak ulsila 4-6 tahuln. Uljil hilpoltesils menjelaskan bahwa nillail Silg. (2-tailled) adalah sebesar 0,000 < 0,05. Sehilngga dapat dilsilmpullkan bahwa ada perbedaan rata-rata Pre Test dengan Polst Test kecerdasan kilnestetilk anak ulsila 4-6 tahuln dil RA Senyulm Mulslilm Kabulpaten Bekasil.

This study aims to analyze the influence of 3M games (throwing, catching, and kicking the ball) on the development of kinesthetic intelligence in children aged 5-6 years at RA Senyum Muslim, Bekasi Regency. This type of research focuses on the 3M game (throwing, catching, and kicking the ball) to develop kinesthetic intelligence in children aged 4-6 years at RA Senyum Muslim, Bekasi Regency, using a pre-experimental research method with a Pretest-Posttest design. The population in this study consisted of all children aged 4-

6 years at RA Senyum Muslim, Bekasi Regency, totaling 30 students. The sampling technique used in this study was total sampling, meaning all children aged 4-6 years at RA Senyum Muslim, Bekasi Regency, totaling 30 students, were included in the sample. A hypothesis test was then conducted using a paired sample t-test, calculating the magnitude of the effect, and investigating whether the 3M game (throwing, catching, and kicking the ball) had an effect on the kinesthetic intelligence of children aged 4-6 years. The study results explained that the Pre-Test score showed an average kinesthetic intelligence of children (Mean) of 11.20. As for the Post-Test score, the average value of the children's kinesthetic intelligence was 23.97. Since the average value of children's kinesthetic intelligence in the Pre-Test was 11.20, which is lower than the Post-Test score of 23.97, it indicates that descriptively, there is a difference in the average kinesthetic intelligence of children aged 4-6 years. The hypothesis test revealed that the Sig. (2-tailed) value was 0.000 < 0.05, thus rejecting H0 and accepting Ha. Therefore, it can be concluded that there is a significant difference in the average kinesthetic intelligence of children aged 4-6 years between the Pre-Test and Post-Test at RA Senyum Muslim, Bekasi Regency.

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INTRODUCTION

Early childhood education is one type of education focused on laying the foundation for the development and growth of children. It includes moral and religious development, physical and motor growth, cognitive development, social and emotional growth, language and communication development, and artistic development that can be nurtured during this age (Khairunil, 2018).

It is crucial for children to develop all abilities related to their body, including physical motor skills. Children also need sensory stimulation to believe in God's existence, worship, and love. They should be encouraged to use proper language and speech. Helping children think logically and critically, providing reasoning, solving problems, and understanding cause and effect will aid them in recognizing their surroundings, social relationships, and social responsibilities (Talango, 2020). Supporting children's development from an early age ensures they grow and mature physically, gain skills, knowledge, and behavior, and facilitates their growth according to their unique characteristics. To maximize children's abilities in early childhood education, this is achieved through providing stimulation from the natural environment or those around them (Sulyadi, 2010; Thahir, 2014).

Intelligence is considered the capacity to acquire knowledge from previous experiences. It is also seen as the ability to analyze specific skills and multiple abilities. According to Sutratina Tirtolegoro, intelligence is a term often used by psychologists and the general public to describe someone as smart or highly

intelligent if they can quickly and easily solve problems or tasks without difficulties (Tirtolegoro, 2015).

Since kinesthetic intelligence is linked to a child's ability to control all body movements, the child's physical development can be considered a part of kinesthetic intelligence. The ability to use thought and other body components to achieve optimal physical performance is part of kinesthetic intelligence.

Discussing the concept of kinesthetic intelligence, according to (Kamtina, 2015), children with higher levels of kinesthetic intelligence and heightened awareness of body movements use body language and physical behavior as effective means of communication. Following and imitating the actions of others can facilitate children's efforts. However, children with this type of intelligence struggle to remain still for long periods. These children also find it difficult to stay calm when presented with information without accompanying actions or demonstrations.

Playing is an activity carried out without focusing on the use of tools that convey or share information, yet these tools help foster children's creative genius. As an early supporter of learning, Maria Montessori believed that children would learn and absorb everything they observe, hear, and feel while playing (Gilardiello, 2015). Therefore, careful planning and preparation of the children's learning environment are necessary to ensure that they enjoy every learning opportunity.

Playing activities can teach children skills such as trying, arranging, taking, counting, moving, pushing, and throwing. Early childhood education can be implemented in a fun way through recreational activities (Iskandar, 2021). This can be achieved through recreational games involving balls, such as throwing, catching, and kicking. While playing, children are expected to complete basic physical activities or exercises, such as throwing a ball around them, catching the ball, and practicing their skills.

The connection between education and 3M ball games (throwing, catching, and kicking) lies in how children can improve their kinesthetic intelligence through body movement control by engaging in these activities. Children will gain knowledge through comfort, self-confidence, and creativity. They are taught how to master throwing, catching, and kicking, which helps them move their entire body more easily. In addition, education has both physical and spiritual components that enhance children's growth and development, preparing them for additional learning (Wulan Sari, 2015).

Kinesthetic intelligence refers to the intelligence that, when applied, results in good movement, running, creating, and producing art. Kinesthetic intelligence is defined by the ability to control body movements and manage objects. Children with kinesthetic intelligence tend to enjoy movement and touch, and they possess the ability to control movement, maintain balance, and demonstrate agility (Hasanah, 2017). Kinesthetic intelligence is the ability to combine physical and mental components to achieve perfect movement. When movements are perfect and arise from a combination of thought and physical action, any task performed by the individual will yield successful results, even if not perfect (Filtri, 2017).

Kinesthetic intelligence is akin to the ability to develop movements that differ from the norm and possess beautiful and meaningful values. To understand movement in greater detail and manage it effectively, we must recognize that there are five basic movements. These movements include (1) body coordination, (2) agility, (3) strength, (4) balance, and (5) eye-hand and eye-foot coordination (Irwansyah, 2020).

Based on the explanation above, it can be concluded that kinesthetic intelligence is the ability to utilize the full potential of the body to communicate ideas and emotions. It involves the ability to use the hands to shape or alter objects. This includes specific skills such as coordination, balance, strength, flexibility, and speed.

In child development, each child typically grows at a similar pace, but various factors can lead to different developmental outcomes. Bambang Suljilono explains that several factors influence motor development, including environmental factors and performance factors. It is noted that performance factors often impact movement abilities, such as body size, height, strength, and nervous system weight. Environmental factors, on the other hand, involve the volume and quality of stimuli received (Amini et al., 2020; Suljilono, 2015).

A similar explanation regarding the factors affecting kinesthetic intelligence development is provided by Ndeolt et al. (2022), who state that a child's physical development is influenced by family genetics, gender, nutrition, health, social status, and emotional issues. It is explained that the body directly influences a child's movement abilities and indirectly affects their self-perception and perception of others.

According to Silregar et al. (2020), there are three types of throwing techniques: high throw, flat throw, and ground throw. For catching, Ilmam divides it into two methods: catching with both hands while keeping the arms in place and catching with both hands while moving the feet forward. Tisnolwati Tamat and Molekartol Minnan, on the basis of the height of the throw, categorize throws into two types: a) High throws, used for long-distance throwing, and b) Flat throws, used for short-distance throwing and targeting an opponent's body.

The importance of kinesthetic intelligence in early childhood is crucial for the development of learning abilities. Children need to practice and become accustomed to this intelligence to avoid developing poor motor skills. One way to enhance this is through activities such as throwing, catching, and kicking. Kinesthetic intelligence in children aged 4-6 years may still be underdeveloped because physical movement activities are often limited, which is reflected in the incomplete range of movement when participating. The 3M games (throwing, catching, kicking) can help develop this intelligence. The lack of maturity in children is a major factor in the underdevelopment of kinesthetic intelligence in their play. This level of maturity can be fostered as early as possible to enhance a child's kinesthetic intelligence.

The educational impact of playing 3M games (throwing, catching, and kicking) on kinesthetic intelligence is that children can optimize their kinesthetic skills by

controlling their body movements. Children will learn based on their comfort level, self-confidence, and creativity. They are taught to practice throwing, catching, and kicking so they can move more freely. Additionally, education helps children develop physically and mentally, preparing them for further learning. Based on the above discussion, the following framework is proposed: "If throwing, catching, and kicking activities are integrated with various engaging media, it is expected that the kinesthetic intelligence of children aged 4-6 years at RA Senyulm Mulslim in Bekasi Regency will improve."

METHOD

This study uses a quantitative research approach with a pre-experimental design, which is conducted to determine the influence of a particular treatment on another variable under controlled conditions with the presence of a control. Controlled conditions refer to the conversion of research results into numerical data for analysis using statistical methods (Suljilono, 2017). In this context, an experiment manipulates an independent variable, called the experimental variable, which is deliberately altered by the researcher (Sultama, 2015).

This research focuses on 3M games (throwing, catching, and kicking) to develop the kinesthetic intelligence of children aged 4-6 years at RA Senyulm Mulslim in Bekasi Regency, using a pre-experimental research method with a Pretest-Posttest design (Asrin, 2022).

Table 1. Research Design

	Pre-test	Treatment	Post-Test
Eksperimen	O_1	X	O_2

Description:

- **O1**: Pre-test for the experimental group
- **O2**: Post-test for the experimental group
- **X**: Treatment with 3M games (throwing, catching, and kicking)

RESULTS AND DISCUSSION

Before conducting the research, the researcher first carried out a content validity test on the statements within the questionnaire (questionnaire). The validity of the instruments used was assessed through expert validation. Two experts in early childhood education and one expert in assessment were asked to validate the kinesthetic intelligence instruments. The evaluation aspects included: clarity, accuracy of content, relevance, content validity, absence of bias, and language appropriateness. The results of the validation from the three evaluators indicate that the instruments received high validity for all aspects. The level of agreement (reliability) among the three evaluators was calculated by determining the intraclass correlation coefficient. The results (using SPSS version 20) are presented in Table 2.

Table 2. Intraclass Correlation Coefficient Reliability Test

Intraclass Correlation Coefficient

	Intraclass Correlation [b]	*95% Confidence Interval*		*F Test with True Value 0*			
		Lower Bound	*Upper Bound*	*Value*	*df1*	*df2*	*Sig*
Single Measures	.452[a]	-.271	.888	2.222	10	20	.102
Average Measures	.940[c]	-.448	.888	2.222	10	20	.102

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

From Table 2, it can be seen that the results of the ICC calculation using SPSS v.22 are obtained. The analysis shows an average agreement among raters of 0.452, while the consistency of the raters is 0.940, indicating a very high level of stability (Streiner & Norman, 2008; Yulda, 2020).

After conducting the research, the results of the observations on kinesthetic intelligence in children aged 4-6 years at RA Senyum Muslim, Bekasi Regency were obtained through normality testing.

Normality testing is used to determine whether the data obtained from the research is normally distributed or not. Data is said to be normally distributed if the significance level is ≥ 0.05, while if the significance level is < 0.05, the data is considered not to be normally distributed. Normality tests can be conducted in various ways. For normally distributed data, parametric statistical tests are used, whereas for non-normally distributed data, non-parametric statistical tests are employed. This normality test used SPSS 20.0 for Windows with the Kolmogorov-Smirnov technique (Priyatno, 2014).

Table 3. Normality Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		30
Normal Parameters[a,b]	*Mean*	.0000000
	Std. Deviation	11.217291 3
Most Extreme Differences	*Absolute*	.276
	Positive	. 276
	Negative	-.276
Test Statistic		. 276
Asymp. Sig. (2-tailed)		.200[c,d]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

From the results of the normality test conducted for the experimental class, an Asymp.Sign value of 0.200 was obtained. Since the Asymp.Sign value ≥ 0.05, it can be concluded that the average data in the experimental class follows a normal distribution. Therefore, it can be concluded from the normality test results that the data distribution in the experimental class is normal.

Tabel 4. *Paired Samples Statistics*

Paired Samples Statistics

		Mean	*N*	*Std. Deviation*	*Std. Error Mean*
Pair 1	Pretes	11.20	30	2.631	.480
	Postes	23.97	30	3.388	.619

Table 4 above presents a summary of the descriptive statistics for the two samples examined, namely the Pre-Test and Post-Test scores. For the Pre-Test, the average kinesthetic intelligence score (mean) was 11.20, while for the Post-Test, the average score was 23.97. The total number of respondents or students used as the research sample was 30. The standard deviation (Std. Deviation) for the Pre-Test was 2.631, and for the Post-Test, it was 3.388. Lastly, the Standard Error of the Mean for the Pre-Test was 0.480 and for the Post-Test was 0.619.

Since the average kinesthetic intelligence score of the children in the Pre-Test (11.20) is less than the Post-Test score (23.97), this indicates a descriptive difference in kinesthetic intelligence between the Pre-Test and Post-Test for children aged 4-6 years at RA Senyum Muslim, Bekasi. To further determine whether this difference is statistically significant, we need to interpret the results of the paired sample t-test shown in the "Paired Samples Test" table.

Tabel 5. *Paired Samples Test*

Paired Samples Test

		Paired Differences					*t*	*df*	*Sig. (2-tailed)*
		Mean	*Std. Deviation*	*Std. Error Mean*	*95% Confidence Interval of the Difference*				
					Lower	*Upper*			
Pair 1	*Pretes - Postes*	-12.767	4.158	.759	-14.319	-11.214	-16.817	29	.000

Based on Table 5 titled "Paired Samples Test" above, it is evident that the Sig. (2-tailed) value is 0.000, which is less than 0.05. This indicates that there is a significant difference between the average kinesthetic intelligence scores of children aged 4-6 years at RA Senyum Muslim, Bekasi, between the Pre-Test and Post-Test. This suggests that the 3M game (throwing, catching, and kicking) has an effect on the development of kinesthetic intelligence in these children.

This study aimed to analyze the impact of the 3M game (throwing, catching, and kicking) on developing kinesthetic intelligence in children aged 4-6 years. The results show that the 3M game has a significant effect on the development of kinesthetic intelligence in these children.

The development of kinesthetic intelligence in children aged 4-6 years is a primary focus in early education efforts. As part of this approach, the 3M game (Throwing, Catching, and Kicking) has been identified as an effective method. Previous research indicates that physical activities involving hand movements, coordination, and overall body movement can play a crucial role in developing kinesthetic skills in preschool children. The 3M game, which includes throwing, catching, and kicking, is a physical activity that involves major motor skills. This game is well-suited to developing kinesthetic intelligence or body movement intelligence in children. According to Gardner's theory of multiple intelligences, kinesthetic intelligence is the ability to use the body to express ideas, feelings, and to produce or transform objects (Suljiono, 2013).

The 3M game provides a comprehensive option for developing kinesthetic intelligence in children aged 4-6 years. Activities such as throwing, catching, and kicking not only help improve gross motor skills but also provide necessary stimulation for overall body coordination development. Through these activities, children learn not only how to throw, catch, and kick a ball but also refine their gross motor skills and overall body coordination. Therefore, implementing the 3M game in the preschool environment can be an effective strategy for promoting kinesthetic development at this early stage of child development.

CONCLUSION

Based on the research findings, it can be concluded that there is a difference in the average results of the pre-test and post-test for kinesthetic intelligence in children aged 4-6 years at RA Senyum Muslim, Bekasi, as assessed through the 3M game (Throwing, Catching, Kicking). The average kinesthetic intelligence score for the Pre-Test was 11.20, while the average score for the Post-Test was 23.97. Since the average kinesthetic intelligence score for the Pre-Test (11.20) is less than the Post-Test score (23.97), it indicates a significant improvement in kinesthetic intelligence. Therefore, it can be concluded that the 3M game has a significant impact on developing kinesthetic intelligence in children aged 4-6 years at RA Senyum Muslim, Bekasi.

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