

THE EFFECT OF PLAYING ORIGAMI ON CHILDREN'S FINE MOTOR DEVELOPMENT USING DENVER II AT AGE 3-5 YEARS AT TK SOLA FIDE SCHOOL MEDAN

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ABSTRACT

Playing origami is an activity of folding paper with fingers to train the development of hand and finger muscles and to train children's imagination. The purpose of this study was to determine the effect of children's fine motor skills before and after playing origami in children aged 3-5 years at Sola Fide School Medan Kindergarten. The type and design of the research used was a quasi experiment (pseudo experiment) with a one group pretest-posttest research design. Data collection using the Denver II checklist sheet, which is a standardized instrument that can measure the ability of fine motoric development of children aged 0-6 years. The tools used are 8 cubes, pencils and drawing paper while the tools used for the origami play intervention are origami paper of various colors, scissors and glue or adhesive. The population in the study were children aged 3-5 years who were students at Sola Fide School Medan Kindergarten. The sample was taken with a total sampling technique of 19 children.

The purpose of this study was to determine the effectiveness of playing origami in improving the fine motor skills of children aged 3-5 years at Sola Fide School Medan Kindergarten in 2021.

The results of the t-test statistical test showed that fine motor skills after the origami play intervention were 0.004 where the p value was <0.05 and increased by 2.42 times better after receiving the origami play intervention. It can be concluded that there is an effect of playing origami on the fine motor skills of children aged 3-5 years at Sola Fide School Medan Kindergarten. Researchers suggest that children aged 3-5 years do more origami play activities to improve children's fine motor skills.

Keywords : Origami Play, Fine Motoric

INTRODUCTION

Ages 3-5 are in the initiative vs. guilt phase. At this time the child's curiosity and imagination develops so that the child asks a lot about everything around him that he does not know yet. At the age of 3-5 years, children begin to recognize ideals, learn to draw, write and recognize numbers and shapes/colors of objects (Nursalam, Rekawati Susilaningrum, 2008). Fine motor is a movement that involves small muscles with skill coordination of 20 fingers with the child's five senses carefully.. Papalia, (2011) revealed that there are two aspects in fine motor in early childhood, which involve small muscles and also eye-hand coordination. At the age of 3-4 years, children's fine motor development is getting better, allowing children to coordinate, improve the

development of a child's skills in using their fingers, especially the thumb and index finger as the basis for writing in early childhood..

The development of motor skills is an early signal of the start of physical development in early childhood that is needed to control body movements. When children perform motor activities, they practice to develop the ability to coordinate physical movements through controlling the functions of the nerve center, nerves and muscles (Hurlock, 1978). The inability of children to coordinate small muscle movements such as hand and finger movements flexibly causes children to experience delays in fine motor development. Some children have delayed fine motor development caused by brain trauma during conception or in utero or lack of opportunity to develop fine motor skills after birth (Hurlock, 1991). The lack of opportunities for children to learn to do activities due to overprotective parents, lack of exploration of the environment from an early age. Fine motor training that is not carried out continuously, limiting children to do self-feeding activities or children are not interested in doing activities independently results in children experiencing delays in fine motor development (Hurlock, 1991).

Providing the right stimulation for children is very important to help children's development. Children who are able to achieve optimal fine motor development can encourage better focus, high self-confidence, independence in daily life and more skillful. Conversely, children who experience delays in fine motor development will experience problems in everyday life because they experience low self-esteem, feel jealous of other children, feel disappointed in parental parenting, experience social rejection, have high dependence and have difficulty adapting to the environment and peers (Hurlock, 2007). Child development can be stimulated with various activities that interest children. In line with research (Amalia, 2018) The relationship between fine motor skills and intelligence is influenced by developmental aspects, especially those related to the physical and intellectual aspects of children aged 3-5 years. Children who receive consistent stimulation have an impact on increasing fine motor skills faster. If children are able to learn and master fine motor skills well, they can carry out activities, especially activities that involve coordination of small muscles. For example, arranging blocks, folding, moving fingers, especially in coordinating the hands. One of the fun activities for children that can stimulate the development of children's fine motor skills is the art of paper folding or playing origami. Playing origami is a paper folding exercise that will strengthen the muscles of the child's palms and

fingers, when the child folds and presses the folds (Yuanita, Syaiful, 2014). Folding origami paper will help children to be able to fold their own clothes, or fold objects that are easy to fold. Playing origami also helps children develop patience and accuracy. Play is a reflection of physical, intellectual, emotional, and social skills (Hurlock, 1980). Playing origami is an activity of folding origami paper of various colors directly using fingers, palms freely on paper because children can explore free ideas to develop their fine motor skills (Andrimeda, 2012). Finger folding is an exciting experience and memorable activity for every child. Fine motor skills involve fingers and hand-eye coordination, such as folding, drawing, and coloring (K. Dwi Selia, 2015)

Playing origami trains children's abilities, namely, a). helps develop imagination, b). helps develop memory, c). helps intellectual development, d). trains fine motor skills of both hands, e). trains perseverance and patience, f). develops creativity, g). focuses attention, h). coordination and activation of the right brain and left brain, i). stimulates pleasure, satisfaction, and pride in his own work, j). provides fun playtime for early childhood (ANS Hazizah, 2014). Research results (Lestari Wiji, 2015) stated that playing origami can reduce the anxiety level of children undergoing hospitalization. Playing origami can also develop children's creativity (Nugraha, 2013).

Based on preliminary studies conducted by researchers, it was found that out of 19 children aged 3-5 years at Sola Fide Kindergarten Medan, data showed that there were 1 child who was not interested in doing drawing and coloring activities, 2 children lacked the ability to control emotions so that they often caused noise in the classroom, and 4 children who were not able to hold pencils properly. The results of the survey above led to an interest in conducting research on children's fine motor skills by applying origami play activities with the aim of training children's fine motor skills by training the coordination of the muscles of the fingers, hands and eyes and training children's imagination. Playing origami can also train children's patience, provide kinesthetic experiences, can be calming and exciting, encourage expression and make children experiment with various colored papers..

The population in this study were all children aged 3-5 years at the Sola Fide Medan Kindergarten Foundation, totaling 19 people in 2021. The sample selection technique used in

this study is total sampling, which is a technique that should only be used when each unit or member of the population is homogeneous or assumed to be homogeneous. The purpose of this study was to determine the effect of playing origami on improving fine motor skills in children at Sola Fide School Kindergarten Medan in 2021.

METHOD

The design in this study was a quasi-experimental with a one group pretest-posttest research design used to analyze differences in children's fine motor skills before and after playing origami. Measurement of fine motor skills using Denver II instrument.

The design in this study was quasi-experimental with a one group pretest-posttest research design used to analyze differences in children's fine motor skills before and after playing origami. Measurement of fine motor skills using the Denver II instrument. The research was conducted for 4 days. The first day was a). introducing the respondents, b). explaining the activity plan, c) explaining the objectives, d). explaining the stages of the activity, e) measuring fine motor skills using the Denver II item test for 2 hours, f) giving examples by forming umbrellas, caterpillars and fish using origami paper of various colors,. g). distributing origami paper of various colors, straws, paper scissors, glue, color pencils and markers, h) with kindergarten teachers accompanying children to make origami shapes for one hour, i). giving praise for the results obtained. The second day was: a) gave greetings, b) gave examples by forming flowers, small pots and caterpillars that can move, c) distributed origami paper of various colors, yarn, paper scissors, glue, colored pencils and markers, d) together with kindergarten teachers accompanied children to make origami shapes for two hours, e). giving praise for the results obtained. The third day was: a) giving greetings, b) giving examples by forming stemmed flowers and making moving decorative pots, c). distributing origami paper of various colors, pipettes, rubber, paper scissors, glue, color pencils and markers, d) together with kindergarten teachers accompanying children to make origami shapes for two hours, e). giving praise for the results obtained. The fourth day was to measure children's fine motor skills using the Denver II instrument. Activities were carried out for 4 consecutive days from Monday to Thursday.

RESULTS AND DISCUSSION

The population in this study were all children aged 3-5 years at Yayasan Sola Fide School Medan, totaling 19 people in 2021. Data analysis includes univariate and bivariate analysis.

Univariate Analysis

Presented in the form of a frequency distribution table, namely the characteristics of respondents based on chronological age, gender, gestational age, number of children, and caregivers with the aim of obtaining a description of the distribution (frequency distribution) of each variable.

Bivariate Analysis

Conducted on two variables that are suspected of being related or correlated. The proposed hypothesis is convincing enough to be rejected or accepted, using a paired sample t-test. The results of statistical analysis are considered meaningful if the p value is <0.05 and not meaningful if $p>0.05$ or in other words H_a is accepted if $p<0.005$ and H_a is rejected if $p>0.05$.

a. Univariate Analysis

Table 1. Frequency Distribution of Fine Motor Skills based on Chronological Age Before Playing Origami at Sola Fide School Medan Kindergarten in 2021

Chronological Age	Fine Motor Skills									
	Advanced		Normal		Caution		Delayed		No Opportunity	
	n	%	n	%	n	%	n	%	n	%
3 years 0 months	0	0	1	5.3	0	0	0	0	0	0
3 years 3 months	0	0	1	5.3	2	10.5	1	5.3	0	0
3 years 6 months	0	0	0	0	1	5.3	0	0	0	0
3 years 9 months	0	0	0	0	0	0	0	0	0	0
4 years 0 months	0	0	2	10.5	2	10.5	0	0	0	0
4 years 3 months	0	0	3	15.8	0	0	0	0	0	0
4 years 6 months	1	5.3	1	5.3	0	0	0	0	0	0
4 years 9 months	0	0	2	10.5	0	0	0	0	0	0
5 years 0 months	0	0	0	0	1	5.30	1	5.3	0	0
Total	1	5.3	10	52.6	6	31.6	2	10.5	0	0

Table 1 shows that at the age of 3 years and 3 months, there were 1 child (5.3%) with the ability "Delayed" and 2 children (10.5%) with the ability "Caution" while at the age of 5 years and 0 months, there were 1 person (5.3%) with the ability "Delayed" and 1 person with the ability "Caution". It can also be seen that out of 19 respondents, 6 respondents have fine motor skills at

the "Caution" stage. In line with the explanation in the background, the data above shows that children at Sola Fide Kindergarten really need stimulation to improve their fine motor skills.

Table 2. Frequency Distribution of Fine Motor Skills based on Chronological Age After Playing Origami at Sola Fide School Medan Kindergarten in 2021

Chronological Age	Fine Motor Skills									
	Advanced		Normal		Caution		Delayed		No Opportunity	
	n	%	n	%	n	%	n	%	n	%
3 years 0 months	1	5.3	0	0	0	0	0	0	0	0
3 years 3 months	1	5.3	2	10.5	0	0	0	0	0	0
3 years 6 months	0	0	1	5.3	0	0	0	0	0	0
3 years 9 months	0	0	0	0	0	0	0	0	0	0
4 years 0 months	2	10.5	1	5.3	0	0	0	0	0	0
4 years 3 months	0	0	1	5.3	0	0	0	0	0	0
4 years 6 months	3	15.8	1	5.3	0	0	0	0	0	0
4 years 9 months	2	10.5	0	0	0	0	0	0	0	0
5 years 0 months	2	10.5	0	0	0	0	0	0	0	0
Total	11	57.9	6	31.6	0	0	0	0	2	10.5

Table 2. shows that of the 19 respondents, the majority had the ability of "Advanced", namely 11 people, followed by the ability of "Normal" as many as 6 people and 2 children "No Opportunity" because they were in poor health..

Table 3. Frequency Distribution of Fine Motor Skills based on Gender at Sola Fide School Medan Kindergarten in 2021

Gender	Fine Motor Skills									
	Advanced		Normal		Caution		Delayed		No Opportunity	
	n	%	n	%	n	%	n	%	n	%
Male	1	5.3	6	31.6	1	5.3	0	0	1	5.3
Female	0	0	3	15.8	4	21.1	2	10.5	1	5.3
Total	1	5.3	9	47.4	5	26.3	2	10.5	2	10.5

Based on gender, girls have lower fine motor skills than boys, with 2 girls (10.5%) at the "Delayed" level and 4 girls (21.1%) at the "Caution" level. In boys, the majority had "Normal" ability as many as 6 people (31.6%) of the total respondents.

Table 4. Frequency Distribution of Fine Motor Skills based on Gestational Age at Sola Fide School Medan Kindergarten in 2021

Gestational Age	Fine Motor Skills									
	Advanced		Normal		Caution		Delayed		No Opportunity	
	n	%	n	%	n	%	n	%	n	%
<37 week	0	0	0	0	1	5.3	0	0	0	0
37-40 week	1	5.3	7	37.1	4	21.2	1	5.3	2	10.5
>40 week	0	0	2	10.5	0	0	1	5.3	0	0
Total	1	5.3	9	47.4	5	26.5	2	10.5	2	10.5

Based on gestational age, 2 children (10.5%) were found with "Delayed" ability, each at gestational age 37-40 weeks and >40 weeks. The majority of respondents had a history of gestational age of 37-40 weeks, namely as many as 15 people.

Table 5. Frequency Distribution of Fine Motor Skills based on Which Child at Sola Fide School Medan Kindergarten in 2021

Urutan anak dalam keluarga	Fine Motor Skills									
	Advanced		Normal		Caution		Delayed		No Opportunity	
	n	%	n	%	n	%	n	%	n	%
I	1	5.3	8	42.4	4	21.2	2	10.5	0	0
II	0	0	0	0	1	5.3	0	0	0	0
III	0	0	1	5.3	0	0	0	0	1	5.3
IV	0	0	0	0	0	0	0	0	1	5.3
Total	1	5.3	9	47.4	5	26.5	2	10.5	2	10.5

In table 5, it can be seen that 2 children (10.5%) who experienced the ability "Delayed and 4 children (21.2%) experienced the ability "Caution" were the first child in the family. The majority of respondents are the first child in the family, namely 15 people (78.8%).

Table 6. Frequency Distribution of Fine Motor Skills based on Caregivers at Sola Fide School Medan Kindergarten in 2021

Care giver	Fine Motor Skills									
	Advanced		Normal		Caution		Delayed		No Opportunity	
	n	%	n	%	n	%	n	%	n	%
Mother	0	0	6	31.8	5	26.5	1	5.3	2	10.5
Father	1	5.3	2	10.5	0	0	1	5.3	0	0
Grandparents	0	0	1	5.3	0	0	0	0	0	0
Play Caregiver	0	0	0	0	0	0	0	0	0	0
Total	1	5.3	9	47.7	5	26.5	2	10.5	2	10.5

Table 6 shows that 1 (5.3%) of children raised by mothers experienced Delayed fine motor development and 5 (26.5%) Caution, while in children raised by fathers, out of 4 children, 1 (5.3%) experienced Delayed ability, 2 (10.5%) with normal ability and 1 (5.3) with more ability. The majority of children were raised by mothers, namely 14 people (74.1%).

Table 7. Frequency Distribution of Fine Motor Skills based on Chronological Age Before and After Playing Origami at Sola Fide School Medan Kindergarten in 2021

Category	Before		After	
	n	%	n	%
Advanced	1	5.3	11	57.9
Normal	9	47.4	6	31.6
Caution	5	26.3	0	0
Delayed	2	10.5	0	0
No Opportunity	2	10.5	2	10.5
Total	19	100	19	100

Table 7 shows that after the origami play intervention, there were no children who experienced "Caution" and "Delayed", where before the origami play intervention, there were 2 children with "Delayed" ability (10.5) and 5 children with "Caution" ability (26.3). Before the intervention, the majority of respondents had the ability of "Normal" as many as 9 people while after the intervention, the majority of respondents had the ability of "Advanced" as many as 11 people (57.9%).

Table 8. Frequency Distribution of Fine Motor Skills based on Gender Before and After Playing Origami at Sola Fide School Medan Kindergarten in 2021

Category	Male				Female			
	Before		After		Before		After	
	n	%	n	%	n	%	n	%
Advanced	1	5.3	7	36.8	0	0	4	21.1
Normal	6	31.6	1	5.3	3	15.8	5	26.3
Caution	1	5.3	0	0	4	21.1	0	0
Delayed	0	0	0	0	2	10.5	0	0
No Opportunity	1	5.3	1	5.3	1	5.3	1	5.3
Total	9	47.4	9	47.4	10	52.6	10	52.6

The table above shows an increase in the fine motor skills of respondents, where before the intervention, the majority of respondents had the ability "Normal" while after the intervention the majority of respondents had the ability "Advanced as many as 7 people (36.8%). In female respondents, before the intervention, the majority of respondents had the ability of "Caution" as many as 4 people while after the intervention, 5 people (26.3%) had the ability "Normal" and 4 people (21.1%) had the ability "Advanced".

b. Bivariate Analysis

Bivariate analysis was conducted to determine the difference in ability before and after playing origami

Table 9. Differences in Fine Motor Skills Before and After Playing Origami at Sola Fide School Medan Kindergarten in 2021

Fine Motor Skills	Mean	SD	P Value
Before Playing Origami	2.73	36.8	0.004
After Playing Origami	5.15	5.3	

The table shows that there is an increase in fine motor skills by 2.42 times better than before being given the intervention of playing origami. It can be concluded that there is an effect of playing origami on fine motor skills because P Value = 0.004 or P Value <0.05

DISCUSSION

This study discusses the effect of playing origami on children's fine motor development at Yayasan Sola Fide School Medan in 2021. The design used is a quasi experiment in the form of a one group pretest-posttest design. Fine motor skills are the child's ability to observe something, perform movements involving small muscle body parts with careful coordination (Anik, 2010). Fine motor development is the maturity of motor functions, children begin to notice that by doing finger movements by playing origami can help develop creativity, improve children's thinking and physical motor skills (Cahyati Anis, Made sulastri, 2015).

Table 1 shows that at the age of 3 years and 3 months, there were 1 child (5.3%) with the ability "Delayed" and 2 children (10.5%) with the ability "Caution" while at the age of 5 years and 0 months, there were 1 person (5.3%) with the ability "Delayed" and 1 person with the ability "Caution". It can also be seen that out of 19 respondents, 6 respondents have fine motor skills at the "Caution" stage. In line with the explanation in the background, the data above shows that children at Sola Fide Kindergarten really need stimulation to improve their fine motor skills. Table 2 shows that of the 19 respondents, the majority had "Advanced" abilities, namely 11 people, followed by "Normal" abilities as many as 6 people and 2 children "No Opportunity" because they were in unhealthy conditions. Table 3. Based on gender, girls had lower fine motor skills than boys, with 2 girls (10.5%) at the "Delayed" level and 4 girls (21.1%) at the "Caution" level. In boys, the majority had the ability of "Normal" as many as 6 people (31.6%) of all total

respondents. In contrast to the results of research conducted (Andrimeda, 2012), which states that girls are earlier in fine motor intelligence especially in their dexterity.

Table 4. Based on gestational age, 2 children (10.5%) were found with "Delayed" ability, each at gestational age 37-40 weeks and >40 weeks. The majority of respondents had a history of gestational age of 37-40 weeks, as many as 15 people. Respondents with a gestational age of <37 weeks, as many as 1 person (5.3) and are in the ability to develop "Caution". Soetjningsih (2018) stated that babies who are born too soon before fulfilling the full term of pregnancy can have a negative impact and affect their growth and development. Children born prematurely will experience delays compared to normal children. In table 5, it can be seen that 2 people (10.5%) children who experience the ability "Delayed and 4 people (21.2%) children experience the ability "Caution" are the first child in the family. This can be caused by the over protective attitude of parents, who do not provide sufficient time and opportunities for children to be independent, where parents tend to serve all the needs of their children. The majority of respondents are the first child in the family, namely 15 people (78.8%). This is contrary to the results of the study. Saripah (2021) which states that parents who have their first child, they are always more attentive to their children and teach them about fine motor development.

Table 6 shows that 1 (5.3%) of children raised by mothers experienced Delayed fine motor development and 5 (26.5%) Caution, while in children raised by fathers, out of 4 children, 1 (5.3%) experienced Delayed ability, 2 (10.5%) with normal ability and 1 (5.3) with more ability. The majority of children were cared for by mothers, namely 14 people (74.1%). This is not in line with the research obtained by (Ekawaty and Ruhaena, 2020), which states that responsible mothers will express their love and provide stimulation to improve fine motor development in children. Table 7 shows that after the origami play intervention, there were no children who experienced "Caution" and "Delayed", where before the origami play intervention, there were 2 children with "Delayed" ability (10.5) and 5 children with "Caution" ability (26.3). Before the intervention, the majority of respondents had the ability of "Normal" as many as 9 people while after the intervention, the majority of respondents had the ability of "Advanced" as many as 11 people (57.9%). Table 8. above shows an increase in the fine motor skills of respondents, where before the intervention, the majority of respondents had the ability "Normal" while after the intervention the majority of respondents had the ability "Advanced as many as 7 people (36.8%).

In female respondents, before the intervention, the majority of respondents had the ability of "Caution" as many as 4 people while after the intervention, 5 people (26.3%) had the ability "Normal" and 4 people (21.1%) had the ability "Advanced".

The results of the research analysis showed that there was an increase in fine motor skills 2.42 times better than before being given the intervention of playing origami. It can be concluded that there is an effect of playing origami on fine motor skills because P Value = 0.004 or P Value <0.05. This is in line with the results of research in line with research Vitamami (2013) that playing origami can improve children's fine motor skills with the researcher's results of 80%. Research results Ningtyas (2017) also found that playing origami has a positive influence on early childhood fine motor development. Children's fine motor skills will also support other aspects of development, because in essence each development cannot be separated from one another. (ANS Hazizah, 2014)

Based on the results of the overall research data analysis, it can be concluded that there is an effect of playing origami on children's fine motor development at Yayasan Sola Fide School Medan in 2021, this is in line with the results of the research below.:

1. Andrimeda (2012) which examines the effect of playing origami on the development of fine motor skills of group B children at TK Pembangunan in Lawan hamlet DS. Kedungwangi. Kec Sambing. Lamongan district. The results of the analysis showed that there was a difference in children's fine motor development before playing origami as much as 14.5% and after playing origami as much as 20.4%. This shows that there is a difference in children's fine motor skills before getting origami play activities and after getting origami play activities.
2. Askandari, Fadillah and Yusuf (2014) examined the effect of increasing fine motor skills through learning to play origami in children aged 3-5 years. The results of the research at the first meeting were 53.5%, the second meeting was 67% and the third meeting was 73.3%, so it can be stated that there is an effect of playing origami on children's fine motor development.
3. Cahyati Anis, Made sulastri (2015) examined the effect of applying the origami play method to improve children's fine motor skills. Based on the results of the analysis of the application of playing origami, it was found that there was an increase in children's fine motoric abilities from 65.95% on the first day of intervention to 82.93% on the second day of intervention and

it was concluded that the application of playing origami could improve children's fine motor development.

CONCLUSION

1. The level of children's fine motor skills is not influenced by age group, nor is the positive impact of the origami play intervention determined by age group.
2. Boys have better fine motor skills than girls.
3. Gestational age and the order of children in the family do not affect children's fine motor skills.
4. Father-raised children have better fine motor skills than mother-raised children. There is an increase in fine motor skills after the intervention of playing origami with an average increase of 2.42 times.
5. The results of the t-test statistical test show that fine motor skills after the origami play intervention are significantly different, namely 0.004 where the P value is <0.05 , which means that H_0 is rejected and H_a is accepted. So it can be stated that the implementation of playing origami can have an influence on the fine motor skills of children aged 3-5 years.

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