



# The Effectiveness of Kinds of Rubber Rope Games Media to Improve Fine Motor Skills for Early Childhood

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**Abstract.** Early childhood aged 5-6 years should be able to control hand movements using fine motor skill. However, in Karawang Regency, most of early childhood aged 5-6 years have fine motor skills disorders which indicated by a lack of ability to hold a pencil, control hand movements, cut to follow patterns. The current study aims to identify and analyze the effectiveness of Kinds Rubber Rope Games (Kiorroga) Media on improving fine motoric skills for early childhood in Karawang Regency. This study was done using The One Group Pretest-Posttest experimental design with 8 early childhood aged 5-6 years as respondents. The experimental was carried out in 14 times. The collected data were analyzed using paired T-Test Technique. The results showed that Kind of Rubber Rope Games (Kiorroga) media has a significant effect on improving fine motor skills for early childhood aged 5-6 years. It was confirmed by increasing early childhood ability to hold a pencil, control hand movements, and cut to follow patterns. Kind of Rubber Rope Games (Kiorroga) media is an appropriate tolls for improving fine motor skills in early childhood aged 5-6 years.

**Keywords:** Kind of Rubber Rope Games (Kiorroga), Learning Media, Fine Motor Skills, Early Childhood

## 1 Introduction

The period in early childhood or called the golden age is a time when growth and development in children in obtaining information and education is so rapid [1]. Therefore, early childhood education is a coaching effort that is held for children at the age from birth until the child is six years old which is implemented through providing learning stimuli in an effort to grow and develop physically and spiritually so that children have preparations in continuing to the next level of education next. One aspect of development that is very urgent in the golden age of children is the physical motor aspect. If a child's physical motor abilities can develop properly, it will help every physical activity carried out by the child. There are two motor aspects, namely gross motor movements and fine motor movements. Therefore, it is very important to stimulate the fine motor skills of early childhood.

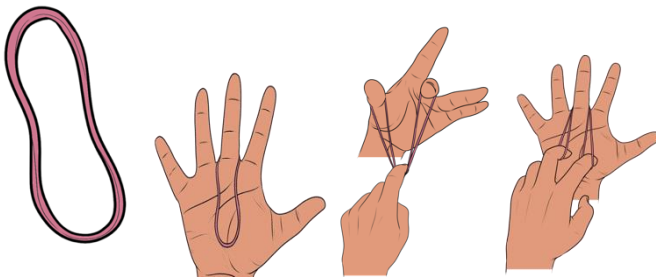
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Fine motor skills are the ability of children to carry out activities in moving fine muscles by coordinating eye movements with fingers that require accuracy [2]. Fine motor skills are abilities related to physical skills involving small muscles, eye coordination and also finger [3]. as for children's fine motor skills according to Sumantri is the use of small muscles such as fingers and eye coordination [4]. Then it can be concluded that fine motor skills are abilities related to small muscles such as fingers and eye coordination to carry out every physical activity [5].

Based on observations made by researchers at TKQ An-Namlu in class B aged 5-6 years, there is a problem that there are still children who cannot optimally grasp and cut [6]. Then there is also a lack of interesting and creative play media so that children are bored and their fine motor skills are not optimal [7]. So from this problem there needs to be a solution to improve fine motor skills in early childhood. In order to streamline Study from Home during the Covid-19 pandemic, motor development in Early Childhood is one aspect that is also important to note. Because motor development is often used as a benchmark to prove that children grow and develop well [8]. To address this, the author developed a learning media innovation "100 Kinds of Rubber Rope Games". This study has the aim of knowing, analyzing, and identifying the influence of development innovative learning media 100 Kinds of Rubber Rope Games in improving fine and gross motor skills of Early Childhood in Karawang Regency, West Java, Indonesia [9].

Kinds of Rubber Rope Games (Kiorroga) is one solution to improve children's fine motor skills [10]. Because according to Fahrurrohman with playing activities, children can socialize and learn to explore and get the opportunity to express their own feelings. The Kinds of Rubber Rope Games (Kiorroga) activities can improve children's fine motor skills with the following activities; (1) Stretching rubber, (2) Rubber walking, (3) Rubber painting, (4) Rubber collage, (5) Rubber yoyo, (6) Lomba lontar, (7) classifying color rubber, (8) Rubber spinner, (9) Rubber obstacle course, (10) Rubber walking pattern (Fig. 1). So from the media solution Kinds of Rubber Rope Games (Kiorroga) is expected to improve fine motor skills in class B at TKQ An-namlu.



**Fig. 1.** Example of Chiorroga Games in Fine Motor Skills

Source: Personal Documentation

## 2 Method

This research was conducted to find out, analyze, and evaluate the effect of the innovation "100 Kinds of Rubber Rope Game" in an effort to improve fine and gross motor skills of Early Childhood during the Covid-19 pandemic. In this regard, the data needed in this study is data on the level of fine and gross motor development in early childhood in the age range of 5-6 years where there is a tendency to assume changes through the application of media games or innovative learning resources. Rubber rope in the implementation of learning from home during the Covid-19 pandemic. The application of innovative media or learning resources of the 100 Kinds of Rubber Rope Game is integrated into the implementation of Learning from Home Early Childhood Education, which is given 8 times a month with an intensity of 2 times a week in an experimental group. Therefore, the method that is suitable and selected to be used in this study is the experimental method.

This research was actualized in one of the Early Childhood Education in Karawang Regency. The reasons for the researchers choosing this location were in accordance with some of the missions of Singaperbangsa Karawang University, namely: (1) Developing professional quality human resources and having noble morals; (2) Creating, applying and developing useful and efficient science, technology and art; and (3) Carry out active community service activities to improve people's welfare, thereby supporting the efforts of Universitas Singaperbangsa Karawang in carrying out each of its missions. The development of innovative media or learning resources for 100 Types of Rubber Rope Games is carried out in order to realize this challenge. The application of learning from home in early childhood is considered an effective and efficient way to keep learning activities alive in the midst of the Covid-19 pandemic.

The research variables contained in this study are: (a) Independent variables, namely the effectiveness of using innovative media or learning resources 100 Kinds of Rubber Rope Games and (2) Dependent variables, namely fine and gross motor development of early childhood in Karawang Regency. The research design used in this research is The Randomized One-Group Pretest-Posttest Design [11]. The research sample is taken by using the Cluster Random Sampling technique, where the sample is not selected from each individual, but taken from groups or regions which are then called clusters. So TKQ An-namlu was selected as the experimental school group for class B students, totaling 15 children with an age range of 5-6 years. This study did not use a comparison class, but used an initial test (pretest), treatment (treatment), and a final test (posttest) so that the effect or influence of the effectiveness of using media or innovative learning resources can be known with certainty [12].

The research instrument used in this study was a student learning motivation test in the form of a fine and gross motor test questionnaire developed based on the document of the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 137 of 2014 concerning National Standards for Early Childhood Education [13]. The collection and processing of information data needed in this research is using the following data collection techniques: (1) Pretest; (2) Treatment for 12 meetings; and (3) Posttest [14].

The treatment given to children in this study is to use Kinds of Rubber Rope Games (Kiorroga) [9]. Based on the researcher's initial observations, there are several children who have not optimally developed their fine motor skills (Fig. 2.) [15]. In this game there are 50 play media innovations from rubber bands that contain fine motor aspects in it. The play activities include, (1) Stretching rubber, (2) Rubber walking, (3) Rubber painting, (4) Rubber collage, (5) Yoyo rubber, (6) Lomba lontar, (7) classifying color rubber, (8) Rubber spinner, (9) Rubber obstacle course, (10) Rubber walking pattern [16].



**Fig. 2.** Implementation of Kiorroga Treatment in Fine Motor Skills

Source: Personal Dokumentation

### 3 Result and Discussion

Based on the data obtained from the results obtained from the treatment using Kinds of Rubber Rope Games (Kiorroga), it can be concluded that the results and discussion are related to the Kinds of Rubber Rope Games (Kiorroga) which aims to improve and develop abilities in fine motor skills in early childhood. In this study, researchers conducted a normality test, homogeneity test and hypothesis testing. SPSS 22 was used to analyze and process the data. This was done with the aim of knowing whether there was an average difference between the pretest results and the posttest average. There is a hypothesis assumption that can be observed in this study, namely if the sig. (2-tailed)  $< 0.05$ , therefore there is a significant difference between the gross motor results data processing on the pretest and posttest value data. However, if sig. (2-tailed)  $> 0.05$ , so there is no significant difference between the data on fine motor skills in the data obtained from the pretest and posttest. Table 1 show the pretest and posttest data processing result in this study.

Thin table explained that the pretest and posttest results of 8 children who were given treatment using Kinds Rubber Rope Games (Kiorroga) media had a total pretest data score of 598 and a total posttest score of 661, then the pretest mean score was 74, 75 and the posttest mean score is 82.63, then the pretest median score is 72.5 and the posttest median score is 83, the pretest standard deviation score is 5.12 and the posttest standard deviation score is 4.069 then the pretest variance score is 26.214 and the posttest is 16.554. In this study using hypothesis testing and assumption testing in the form of testing on data normality and data homogeneity testing as one of the references in the

use of t-test analysis. The following are the prerequisite tests that the researcher will describe;

**Table 1.** Pretest and Posttest Result Data

| No             | Student Name                   | Pretest | Posttest |
|----------------|--------------------------------|---------|----------|
| 1              | Althaf Aldian Nurfalah         | 81      | 87       |
| 2              | Alby Luthfy Hidayat            | 84      | 88       |
| 3              | Muhamad Albyan Fachry          | 72      | 77       |
| 4              | Risyam Neezard Rachmadiyansyah | 75      | 82       |
| 5              | Daffa Auliya Rahman            | 72      | 84       |
| 6              | Asshila Nur Adiba Hermawan     | 73      | 85       |
| 7              | Nabila Nur Rabbani             | 69      | 78       |
| 8              | Alfariel Akmal Hamid           | 72      | 80       |
| Sum            |                                | 598     | 661      |
| Mean           |                                | 74,75   | 82,63    |
| Median         |                                | 72,5    | 83       |
| Std. Deviation |                                | 5,12    | 4,069    |
| Variance       |                                | 26,214  | 16,554   |

### 3.1 Normality Test

The normality test is calculated using SPSS 22.0 to determine whether the sample that has been studied is normally distributed or not. Normality tests were carried out on pretest and posttest data on early childhood fine motor skills. Based on the decision making that the data is normal or not normal is to compare the results of the parried t test data with a significance level (2-tailed) of 0.05. If the value obtained is significant  $> 0.05$ , it can be concluded that the data is normally distributed and if the value obtained is  $< 0.05$ , it can be concluded that the data is not normally distributed. Furthermore, the acquisition of sata normality test results can be seen in the elaboration of table 2 below:

**Table 2.** Kolmogorov – Smirnov Normality Test

| One-Sample Kolmogorov-Smirnov Test |                |                   |                     |
|------------------------------------|----------------|-------------------|---------------------|
|                                    |                | Pretest           | Posttest            |
| N                                  |                | 8                 | 8                   |
| Normal Parameters <sup>a,b</sup>   | Mean           | 74,75             | 82,63               |
|                                    | Std. Deviation | 5,120             | 4,069               |
| Most Extreme Differences           | Absolute       | ,259              | ,132                |
|                                    | Positive       | ,259              | ,122                |
|                                    | Negative       | -,171             | -,132               |
| Test Statistic                     |                | ,259              | ,132                |
| Asymp. Sig. (2-tailed)             |                | ,123 <sup>c</sup> | ,200 <sup>c,d</sup> |

In Table 2 above, it can be observed that the normality test results from the processing of fine motor skills in early childhood with a significant value of 0.123 with this value reflecting greater than 0.05 so that it can be described that the pretest data processing results reflect a normal distribution. Whereas the results of the normality test obtained from the posttest data for fine motor skills in early childhood have a significant value of 0.200, this value means greater than 0.05 so the conclusion can be interpreted that the posttest results mean that the distribution is normal.

### 3.2 Homogeneity Test

The homogeneity test in this study is a test carried out to be able to find out whether or not there are variants of 2 or more distributions. Then the Table 3 are the results obtained from data analysis on homogeneity testing:

**Table 3.** Homogeneity Test

|        |   | <b>Test of Homogeneity of Variance</b> |     |       |      |
|--------|---|--|-----|-------|------|
|        |   | Levene Statis-<br>tic                  | df1 | df2   | Sig. |
| Result | Based on Mean                           | ,210                                   | 1   | 14    | ,654 |
|        | Based on Median                         | ,006                                   | 1   | 14    | ,941 |
|        | Based on Median<br>and with adjusted df | ,006                                   | 1   | 9,759 | ,941 |
|        | Based on trimmed<br>mean                | ,169                                   | 1   | 14    | ,687 |

The basis for the conclusion of the homogeneity test is that if the significant value is  $> 0.05$ , the distribution of the data can be said to be homogeneous. Meanwhile, if the significant value is  $< 0.05$ , the distribution of the data cannot be said to be homogeneous. Based on Table 3 above, it can be seen that the significant value is  $0.687 > 0.05$ , which means that it can show that the data is homogeneous.

### 3.3 Hypothesis Test

Testing the data hypothesis in this study was used in an effort to analyze the data to be able to find out whether there is a difference between the data from the pretest results and the posttest results so that it can be concluded whether the media used to improve fine motor skills in children can have a significant effect or no effect.

For the basis of conclusion making if the sig value  $< 0.05$  then there is a significant difference between pretest data and posttest data. Meanwhile, if the sig value  $> 0.05$  there is no significance between the pretest data and the posttest data. Then the Hypothesis Test value can be seen in Table 4 below:

**Table 4.** Paired Samples Test Hypothesis Test

|        |                      | Paired Samples Test |                |                 |   |        |        |    |                 |
|--------|----------------------|---------------------|----------------|-----------------|---|--------|--------|----|-----------------|
|        |                      | Paired Differences  |                |                 |   |        | t      | df | Sig. (2-tailed) |
|        |                      | Mean                | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |        |        |    |                 |
| Pair   | Pre-test - Post-test |                     |                |                 | Lower                                     | Upper  |        |    |                 |
| Pair 1 | Pre-test - Post-test | -7,875              | 2,997          | 1,060           | -10,381                                   | -5,369 | -7,432 | 7  | ,000            |

Based on the presentation of the table above that the sig (2-tailed) value is 0.000 which means  $< \text{sig } 0.05$ , so based on this it can be concluded that there is a significant difference between the results of the pretest and posttest. This shows the influence of each variable.

## 4 Conclusion

In the Kinds Rubber Rope Games (Kiorroga) media studied to improve fine motor skills in early childhood. There are 100 items of media play activities in Kiorroga, 50 of which are designed to improve fine motor skills in early childhood. Then the Kinds Rubber Rope Game media is designed in such a way that children can maximize fine motor physical activities such as merging, cutting, painting and stretching. Therefore, Kiorroga is internalized into the form of play activities, because according to Fahrurrohman with play activities, children can socialize and learn to explore and get the opportunity to express their own feelings [17].

Fine motor skills are the ability of children to carry out activities in moving fine muscles by coordinating eye movements with fingers that require accuracy. Fine motor skills are abilities related to physical skills involving small muscles, eye coordination and also fingers [18]. as for children's fine motor skills according to Sumantri is the use of small muscles such as fingers and eye coordination. Then it can be concluded that fine motor skills are abilities related to small muscles such as fingers and eye coordination to carry out every physical activity [19].

Then the results of the research that have been obtained can be seen that there are significant results between the results of data on children's fine motor skills on the Kinds Rubber Rope Games (Kiorroga) media before treatment and after treatment [20]. Children's fine motor skills increase which can be seen from the results of the average value obtained by childre [21]. This is because the Kinds Rubber Rope Games (Kiorroga) media implemented in this study were made in accordance with the standard achievement level of the development of fine motor skills of early childhood. Kinds

Rubber Rope Games (Kiorroga in this study has 100 game media which includes several aspects of fine motor skills of grasping, merging, cutting, painting, and stretching [22]. The play activities contained in this Kiorroga media are finger gymnastics, forming geometric shapes by hand, rubber collage, beaded jewelry, rubber braids, prying, rubber painting [23]. Learning carried out using the Kinds Rubber Rope Games (Kiorroga) game is expected to optimize fine motor skills in early childhood.

From the results of data analysis calculations in this study indicate that the use of Kinds Rubber Rope Games (Kiorroga) media can improve fine motor skills in early childhood [24]. It is clearly seen that the comparison of the score on the child's ability before getting treatment with the score of the child's ability after getting treatment of the child's fine motor skills becomes more improved [25]. This increase in ability can be seen from the child's ability to do activities such as cutting, stretching rubber using hands, painting, and braiding using rubber.

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