

The Effect of Brain Gym on Improving Fine Motoric and Gross Motoric Skills in Pre-School Children

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ABSTRACT

Preschoolers are a period of very rapid growth and development. Where this period is the golden age experienced by children and is a very unique phase of life. Brain development, fine and gross motor skills at this time really need attention for the development of children. The incidence of developmental disorders in children aged 3-17 years in the United States has increased from 5.76% in 2014 and 6.9% in 2016. This type of research is *Quasi-experimental* with the research *design* used *one group pre test-post test with control design*. Population and sample: all of Assa'adah's early childhood students are 22 preschoolers, that is then shared to in 2 group that is 11 children group intervention and 11 children group control. This research was conducted at Assa'adah Early Childhood Education. The collection method is observation using the SOP *Brain Gym measuring instrument*, to assess progress using the Developmental Pre Screening Questionnaire (KPSP). The results of the univariate study of fine motor skills and *pre-test gross motor skills* in the intervention group were 8 doubtful (72.73%), 1 (9.09%) suitable minority. Whereas in the control group the majority doubted 6 (54.55%), the minority agreed 2 (18.18%). Fine motor skills and gross motor skills *post-test* in the intervention group the majority matched 8 (72.73%), the minority doubted 3 (27.27%). Whereas in the control group the majority doubted 6 (54.55%), the minority agreed 2 (18.18%). Average bivariate results ability pretest motor rough and smooth children group intervention (7.90) while the average posttest (9,35). Results test statistics with *wilcoxon* show *p.s value* $0.005 < 0.05$ so that there is influence *brain therapy gym* on ability development gross motor skills of children. Researchers suggest for apply *Brains Gym* environment early childhood for further improve fine motor and gross motor in preschool children with good.

Keywords:

Brain Gym, Fine Motoric, Gross Motoric

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1. INTRODUCTION

The human quality of a nation will be determined by the quality of children as toddlers, which can be seen from the process of growth and development. The growth and development of toddlers is something that needs great attention. This is because infancy is a period with very rapid and critical growth, usually known as the golden age or golden age. *The golden age* that occurs during the toddler years is a very important period in the child's growth and development phase, because the formation of personality and character begins at this time. Therefore growth and development during infancy must be optimal.

Based on the World Health Organization (WHO) that 5-25% of preschool-age children in the world experience minor brain dysfunction, including fine motor development disorders [28]. The incidence of developmental disorders in children aged 3-17 years in the United States has increased from 5.76% in 2014 and 6.9% in 2016 [24]. The growth and development of children in Indonesia still needs serious attention. The rate of delay in growth and development is still quite high, namely around 5-10% experiencing general developmental delays. Two out of 1,000

babies experience motor development disorders and 3 to 6 out of 1,000 babies also experience hearing loss and one in 100 children has less intelligence and speech delays The population of children in Indonesia shows around 33% of the total population, which is around 83 million and every year the children will increase [19]

According to the 2021 Indonesia Health Profile nationally the coverage of infant, toddler and preschool health services tends to decrease compared to 2021, this is due to the impact of the COVID-19 pandemic, the percentage of toddlers monitored for growth and development in Indonesia in 2021 is 69.6%. Meanwhile, the 2021 Strategic Plan target is 70%. The results of national achievements per province still show disparities in the percentage coverage of under-fives monitored by growth and development between provinces, ranging from 2.1% in West Papua and 88.2% in Banten. Provinces with a high percentage of under-fives are monitored for growth and development, namely Banten (88.2%), South Sumatra (80.1%), DKI Jakarta (78.9%), Bali (78.6%) and South Sulawesi (78.3%), Central Sulawesi (78.2%) and East Java (77.8%). Provinces with the lowest percentage coverage of under-fives monitored for growth and development were West Papua (2.1%), Papua (25%) and North Sulawesi (30.3%).

Brain Gym is a way that can be used as a method to help improve fine motor and gross motor skills in preschool children. This research was conducted on pre-school children in Early Childhood Education (PAUD). Assa'adah PAUD”

2. METHOD

This type of research is *Quasi-experimental* with the research design used *one group pre test-post test with control design*. Population and sample: all of Assa'adah's early childhood students are 22 preschoolers, that is then shared to in 2 group that is 11 children group intervention and 11 children group control. This research was conducted at Assa'adah Early Childhood Education, Jalan Medan Area, gg Usman, Kec. Medan City Area of Medan. The collection method is observation using the SOP *Brain Gym measuring instrument* , to assess progress using the Developmental Pre Screening Questionnaire (KPSP).

3. RESULTS AND DISCUSSION

Result

1. Univariate analysis

Table 1. Frequency Distribution of Respondents by Gender

Type Sex	Amount	Percentage (%)
Woman	14	63,64
Man	8	36,36
Amount	22	100

Based on table 1. the majority of female respondents were 14 (63.64%), and the male gender minority were 8 (36.36%)

Table 2 Frequency Distribution of Respondents by Age of Preschool Children

Age	Amount	Percentage (%)
48 Month	6	27,27
60 Month	16	72,73
Total	22	100

Based on table 2, the majority of respondents are 60 months old as many as 16 (72.73%) and minorities aged 48 months (27.27%)

Table 3 Motor Abilities Fine and motor Rough before the Intervention (Pre-Test)

Gross and Fine Motor Skills	Group			
	Intervention		Control	
	Amount	Percentage (%)	Amount	Percentage (%)
In accordance	1	9,09	2	18,18
Doubtful	8	72,73	6	54,55
deviation	2	18,18	3	27,27
Amount	11	100	11	100

pre-test fine motor and gross motor skills in the intervention group, the majority doubted 8 (72.73%), the minority matched 1 (9.09%). Whereas in the control group the majority doubted 6 (54.55%), the minority agreed 2 (18.18%)

Table 4 Motor Ability Fine and motor Rough after Intervention (Post-Test)

Gross and Fine Motor Skills	Group			
	Intervention		Control	
	Amount	Percentage (%)	Amount	Percentage (%)
In accordance	8	72,73	2	18,18
Doubtful	3	27,27	6	54,55
deviation	0	0,00	3	27,27
Amount	11	100	11	100

post-test fine motor and gross motor skills in the intervention group, the majority matched 8 (72.73%), the minority doubted 3 (27.27%). Whereas in the control group the majority doubted 6 (54.55%), the minority agreed 2 (18.18%)

2. Bivariate Analysis

Table 5 Improved Fine Motor and Gross Motoric in Pre-test and Post-test Preschool Children BrainGym

Variable	Group	Means	t	P-value
Gross Motor and Fine Motor (Intervention)	<i>Pre-test</i>	7,90 _	-	0,005
	<i>Post-test</i>	9,35 _	2,810	
Gross Motor and Fine Motor (Control)	<i>Pre-test</i>	7,0	-	0,027
	<i>Post-test</i>	7,45 _	2,232	

Based on table 5 average _ pretest ability motor rough and smooth children group intervention (7.90) while the average posttest (9,35). Results test statistics with *wilcoxon* show *p.s value* $0.005 < 0.05$ _ so that there is influence *brain therapy gym* on ability development child's gross motor skills .

Discussion

a. Description Characteristics Age and Type sex

The results of the study of children at As Sa'adah PAUD , based on the characteristics of the majority of the female sex as many as 14 (63.64%), and the minority male sex as much as 8 (36.36%), and based on the age of the majority of respondents aged 60 months as many as 16 (72.73%) and a minority of 48 months (27.27%). Development motor different from every individual, there is child which development motor very good, like athlete, however there is also which have limitations physique. Besides it is also affected by differences type sex (gender). Child woman on age *middle childhood* flexibility physically 5% 10% better than boys man, but ability physique athlete like run, jump, and throw more tall on child man from on woman [1].

b. The Effect of Brain Gym on Fine Motoric Improvement and motor Rough In Children Preschool

pre-test fine motor and gross motor skills in the intervention group were doubtful, the majority being 8

(72.73%), the minority being 1 (9.09%). Whereas in the control group the majority doubted 6 (54.55%), the minority agreed 2 (18.18%). Fine motor skills and gross motor skills *post-test* in the intervention group the majority matched 8 (72.73%), the minority doubted 3 (27.27%). Whereas in the control group the majority doubted 6 (54.55%), the minority agreed 2 (18.18%).

Education given from an early age will affect the development of children. This development is an increase in the ability (skills) of more complex body structures and functions, in an orderly pattern as a result of the maturation or maturity process. It also includes cognitive development, language, motor (gross and fine), emotion, and behavioral development as a result of interaction with the environment. Children who receive regular and directed stimulation will develop faster than children who receive less or no stimulation. Stimulation is important and can be used as a reinforcement in the developmental period so that there are no obstacles in child development that cause deviations in social and motor behavior in children [17].

The Effect of *Brain Gym* on Fine Motoric Improvement and motor Rough In Children Preschool. The results of the research show ability motor rough and smooth children group intervention (7.90) while the average posttest (9.35). Results test statistics with *wilcoxon* show *p.s value* $0.005 < 0.05$ so that there is influence *brain therapy gym* on ability development gross motor skills of children. The results of this study are also in accordance with research (Madyastuti, et al 2018) analysis with the Wilcoxon Signed Ranks Test statistical test in the treatment group obtained a significant value = .001 meaning $p < 0.05$ then H1 is accepted meaning that there is an effect of brain gymnastics on gross motoric improvement in children aged 4 -6 years. The results of the Wilcoxon Signed Ranks Test statistic in the control group before the intervention were worth 13.87 with a standard deviation value of 1,846 while after the intervention was 14.07 with a standard deviation value of 1,580. Analysis with the Wilcoxon Signed Ranks Test statistic in the control group obtained a significant value = .180 meaning $p > 0.05$ then H1 was rejected meaning that there was no effect of brain gymnastics on gross motoric improvement in children aged 4-6 years

The results of the study [6] in the intervention group showed that before stimulation, the majority of deviant developmental stages were 23 (69.7%), after stimulation the majority were normal 26 (78.8%). The results of the paired *t-test analysis* obtained a value of $p = 0.000$ ($p < 0.05$), meaning that there was an effect before and after giving stimulation. The results of the analysis in the control group showed that before stimulation, the majority of development stages were normal 26 (78.8%), after stimulation the majority were normal 28 (48.5%). The results of the paired *t-test analysis* obtained a value of $p = 0.012$ ($p > 0.05$) meaning that there was no effect before and after the stimulation was given.

Ability motor rough and smooth, the majority of children are appropriate and the minority is doubtful, while deviations are gone. Treatment with use *brain method gym* to ability motor rough and smooth children on group intervention has justify [3] that *brain gym* is series motion simple which fun and used to increase ability study they with use whole part brain, though simple *brain gym* capable make it easy activity study and To do adjustment to tensions, challenges, and demands life daily.

The first week of joining the *brain gym* the child has entered dimensions *lateral* (for cleavage brain right and left) that is child will hear, see, write, move, which is proven when done *brain gym* child hear, see, nor move in accordance with the direction of the researcher even though there are still students who do not move according to the directions of the researcher. The II and III weeks enter dimensions focusing that is on part behind brain/stem brain or *brainstem* and part front brain (*frontal lobes*), child already start concentrate in accept and follow *brain gym movements* and begin to understand the movements the *brain gym movements* that are performed. IV week the child enters concentration dimensions, (for the *limbic/midbrain system*) and cerebrum (*cerebral cortex*). *Brain Gym* movements also strengthen the *basal ganglia area*. This area is function arrange motor development fine on all person. The observation results show that children are still unable to walk backwards stepping from heel to toe and are still unable to draw and write various forms, based on gender characteristics indicating that children who have fixed results are due to factors that influence which gender is male. Boys like activities that involve gross motor skills. By giving brain exercise stimulation to children, it will train hand-eye coordination so that the more often children practice the easier it will be for children to do it, either because they usually do this stimulation. *Brain Gym* is great fun and lifts the mood for learning so learning is as easy as playing. Therefore brain gymnastics (*Brain Gym*) is usually given before the lesson starts or on the sidelines of the lesson when the child is getting bored with the lesson to restore their mood. *Brain Gym* which is done 1 time in 1 week for 1 month can improve blood and oxygen circulation so that the brain is more relaxed. So after giving *Brain Gym* the majority of children have appropriate fine and gross motor skills

4. CONCLUSION

1. *pre-test* fine motor and gross motor skills in the intervention group were doubtful 8 (72.73%), a minority according to 1 (9.09%). Whereas in the control group the majority doubted 6 (54.55%), the minority matched 2 (18.18%).
2. Fine motor skills and gross motor skills *post-test* in the intervention group the majority matched 8 (72.73%), the minority doubted 3 (27.27%). Whereas in the control group the majority doubted 6 (54.55%), the minority matched 2 (18.18%).

3. Average bivariate results ability pretest motor rough and smooth children group intervention (7.90) while the average posttest (9,35). Results test statistics with *wilcoxon* show *p.s value* $0.005 < 0.05$ so that there is influence *brain therapy Gym* on ability development gross motor skills of children

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