

# Effect of Multiple Intelligence based Perceptual Motor Activity Model on Motor Skill of Kindergarten Student

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**Abstract:** Motor skill needs to be developed for children at the level of kindergarten. Development can be done through perceptual motor activities based on multiple intelligences. The research aimed to determine the effect of multiple intelligences based perceptual motor activity model on kindergarten student motor skill. This research was pre-experimental research. Research design was done using one group pre-test and posttest design. Research subjects were 25 kindergarten students. The research instrument was the Test of Gross Motor Development-2 (TGMD-2) from Ulrich (2000). Data analysis was done using t-test by comparing the mean results of the pre-test with the mean post test results. Research resulted in all components of motor skills, namely run, gallop, hop, leap, horizontal jump, slide, striking stationary ball, stationary dribble, catch, kick, overhand throw, and underhand roll, had significant value of  $0.000 < 0.05$ , so that it could be concluded that there was significant effect of multiple intelligences based perceptual motor activity model on motor ability of kindergarten students.

## 1 INTRODUCTION

Preschool is a golden age in the range of development of an individual's movement. At this time, children experience extraordinary growth and development, both in terms of physical, environmental, cognitive and psychosocial aspects. Children development takes place in a holistic or universal process. Therefore, stimulation is necessary for holistic activities. Stimulation is needed because not all children experience normal movement development. Based on the research done Rachman (2015) related to gross and fine motor skills in 109 preschool children, the results showed that in terms of gross motor skills, 19 children were in very good category, 55 children in good category, 30 children in medium category, and 2 children in less category. Also, in terms of fine motor skills, 7 children were in very good category, 38 children in good category, 53 children in medium category, 6 children in less category, and 2 children in very poor category. Based on the description above, it is necessary to do further studies on the development of the movement of

preschool children by providing stimulation to help preschool children achieve the movement development based on development stage they are supposed to. Provision of stimulation referred to is the provision of motor perceptual activities given to preschool children in physical activities in the school to ensure the development of their movements in accordance with the stages of development of preschool children.

In kindergarten children, forms of physical activities contain perceptual motoric elements and are very important to be packaged in the form of play. This is based on the findings of several research results, including: 1) perceptual motor skills have correlation with children's academic abilities, (Nourbakhsh, 2006: 40); 2) perceptual abilities in visual, auditory and kinesthetic terms in children aged 4-6 years has relationship with academic achievement in terms of reading, spelling, and mathematics (Dhingra et al., 2010: 143); 3) programmed physical activity in certain period in the preschool period has an impact on children's

cognitive skills (Hosseini, et. al., 2011: 764); 4) appearance in perceptual motor is related to academic achievement and children who have good perceptual motor also have good cognitive (Morales, et. al., 2011: 410); 5) perceptual motor skills have significant relationship with academic ability at all three levels of kindergarten children (Cobb, Chissom, & Davis, 1975: 545); 6) several studies have shown an association between intellectual motor perceptual at various age levels from children to adults, where the relationship is best demonstrated in children (Thomas & Chissom, 1974: 152); 7) a physical education program that emphasizes directionality of movement having influence of perceptual motor development, visual perception, and readiness (Lipton, 1970); 8) there is perceptual motor relationship with cognitive behavior in 63 kindergarten children (Belka & Williams, 1980: 463), 9) perceptual motor and reading ability in kindergarten children, indicates that perceptual motor has direct relationship with learning and increases children's readiness (Smith, 1970: 44). Perceptual motor program is given, in the form of jumping into a circle, walking like an animal, touching and identifying body parts, climbing balanced beam, and manipulating a ball; 10) children aged 3-6 years is optimal age for developing perceptual motor (Johnstone & Ramon, 2011: V).

Yudanto (2018) has developed the model for developing multiple intelligences based through

perceptual motor activities for children in kindergarten. This research produced a model of perceptual motor activities consisting of 8 (eight) theme-based games, namely my personal-themed game, my family-themed game, my neighborhood-themed game, animal-themed game, plant-themed game, vehicle-themed game, universe-themed game, and my country themed game. For the model of perceptual motor activities, that has been developed, it is necessary to do a more in-depth study to determine the effect on motor skills for kindergarten students.

## 2 RESEARCH METHOD

This research was pre-experimental research. Research design was one group pretest and posttest design. Research subjects were 25 kindergarten students. Perceptual motor activity model based on multiple intelligences for kindergarten students used in this research was theme-based game, namely my personal-themed game, my family-themed game, my neighbourhood-themed game, animal-themed game, plant-themed game, vehicle-themed game, universe-themed game, and my country themed game. This model was given every day for 4 weeks. Research instrument was Test of Gross Motor Development-2 (TGMD-2) from Ulrich (2000). Data analysis used was by t test by comparing the mean of pre-test results with the mean of post-test results.

## 3 RESEARCH RESULT

Table 1. Descriptive Statistics of Motor Skill Improvement

Componet	n	Pre Test		Post Test		Persentase (%) Improvement
		M	SD	M	SD	
Run	25	5.08	1.19	6.8	1.26	33.86
Gallop	25	5.32	1.11	7	1.19	31.58
Hop	25	5.48	1.23	7.44	0.92	35.77
Leap	25	3.52	1.23	4.96	1.17	40.91
Horizontal Jump	25	4.6	1.80	6.76	1.36	46.96
Slide	25	5.16	2.21	6.84	1.57	32.56
Striking a Stationary Ball	25	6.16	1.77	8.4	1.63	36.36
Stationary Dribble	25	4.16	1.40	5.84	1.43	40.38
Catch	25	3.76	1.74	5.44	1.19	44.68
Kick	25	6.32	1.18	7.84	0.47	24.05
Overhand Throw	25	3.76	1.51	5.4	0.96	43.62
Underhand Roll	25	4.44	1.04	6.16	1.49	38.74

Table 2. T Test of Motor Skill of Kindergarten Student with Wilcoxon

<b>Component</b>	<b>Z</b>	<b>Asymp. Sig. (2-tailed)</b>
Run	-4.427 <sup>b</sup>	0.000
Gallop	-4.4562 <sup>b</sup>	0.000
Hop	-4.344 <sup>b</sup>	0.000
Leap	-4.512 <sup>b</sup>	0.000
Horizontal Jump	-4.417 <sup>b</sup>	0.000
Slide	-3.981 <sup>b</sup>	0.000
Striking a Stationary Ball	-4.374 <sup>b</sup>	0.000
Stationary Dribble	-4.304 <sup>b</sup>	0.000
Catch	-4.304 <sup>b</sup>	0.000
Kick	-3.920 <sup>b</sup>	0.000
Overhand Throw	-4.165 <sup>b</sup>	0.000
Underhand Roll	-4.288 <sup>b</sup>	0.000

The table shows the results of t test for all components of motor skills obtained sig values 0.000 <0.05, it can be concluded that there is significant influence on perceptual motor activity model based on multiple intelligences on kindergarten student's motor skills.

Development of basic movement and its improvement are important in preschool age. All normal children are able to develop and learn various kinds of movements and more complicated ones. Basic movements are repetitive movements done continuously from habits and make it as the basis of their experience and environment. The development of basic movement is a process to obtain movement that is constantly evolving based on: 1) process of developing nerves and muscles that are also affected by heredity, 2) result of previous movement experiences, 3) current movement experience, and 4) movement described in relation to certain movement patterns. Aryamanesh & Sayyah (2014: 648) found that early childhood is a critical period for the development of basic movement abilities. Basic movement abilities depend on several internal and external factors, such as biological, psychological, social, motivational, cognitive, and others. Intervention of basic movement abilities in preschool may affect the mastery of basic movement in elementary school. Furthermore, Giannakidou, et.al. (2014: 53) state that basic movement ability at preschool age is needed in structured and unstructured physical activity involvement. Exercise for basic movement skills at the beginning in preschool plays an important role and describes physical, social and cognitive developments of children.

Similar opinion is also conveyed in Fisher, et.al. (2005: 684) claiming that basic movement ability has significant relationship with daily physical

activities. Hands & Mc Intyre (2015: 1) say that development of basic mobility in children has an important role for physical, cognitive and social development, and is important to build the foundation for an active lifestyle. Similar opinions are also expressed by Iivonen (2013: 643-644) by saying that there was relationship between basic movement and daily physical activity in preschool children. Nurtajudin, Rahayu, & Sulaiman, (2015: 155) state that early age is an ideal opportunity for children to learn developing control over their muscles and movements. Children at this time still like movements that are simple in shape such as jumping, jumping, running, throwing and kicking. Sujarwo (2010: 36) found that 3-6 years old children can be considered as a period of learning skills and development of gross and fine skills. Hartono, et. al, (2003: 72) stated that for children who were still in kindergarten, naturally like to explore their movements and daily activities dominated by movement activities, need to be given experience and basic movement skills (locomotor, non-locomotor, and manipulative) through physical education. Rumini (2014: 102) stated that physical activities in childhood are in the form of basic movements, which include locomotor movement, stability and manipulative movements that are packaged in the form of games will be fun. Sumantri (2015: 36) suggested development of basic locomotor, non-locomotor, and manipulative movements play a role in the formation of children's talents.

In preschool childhood, multilateral activities need to be given to develop all physical aspects. Furthermore, Komputerisna & Diana, (2016: 2) stated that various kinds of gross motor skills in children provide important role for physical activity in their lives. Permana, (2013: 25) said that gross motoric ability is very influential in a child's development. If they experience delays in motor skills, the child will likely experience delays in development and growth. Smith (2014: 10-11) further stated that before learning basic skills in a game, children need to master basic motor skills. Meanwhile Sutapa (2002: 86) stated that right mastery of the basic movement patterns will be very beneficial when studying complex movements. Right basic movement is the foundation for movement in the smoothing and performance stages so that they will get their best quality of movement.

Development of basic movement elements in multiple intelligences based perceptual motor activity model in this research includes locomotor movement, non-locomotor movement, and manipulative movement. Locomotor movement is a movement to move, where certain body parts move. Non locomotor movement is a non-migratory movement, where only certain body parts are moved but do not move or change. On the other hand, manipulative movement is movement that involves an object to be moved or manipulated. Development of basic movement elements contained in the perceptual motor activity model are 1) locomotor basic movement stimulated in perceptual motor-based physical activity model, including running, walking, jumping, and *engklek/* crank game, 2) stimulated non-locomotor basic movement in perceptual motor-based physical activity model, including pulling, twisting, and bending, and 3) stimulated manipulative basic movements in perceptual motor-based physical activity model, including throwing, catching, reflecting, hitting, and kicking.

#### 4 CONCLUSION

The research shows that multiple intelligences based perceptual motor activity model affects the motor skills of kindergarten student. Based on this research, it is expected that teachers can apply the model of perceptual motor activity based on multiple intelligences to improve children's motor skills in kindergarten.

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