

# Early Childhood Motor Development:

## Descriptive study in moslem kindergarten school

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**Abstract**—The early childhood is critical period in lifetime. The purpose of this study is to figure the children fine and gross motor development in four and five years old. The research methodology used Ex-post Facto in early childhood students who have attended in Kindergarten school. The population four and five years old children from Moslem Kindergarten School. Amount of sample is twenty children. Motor development measured by Ages and Stages Questionnaire (ASQ) 3rd Edition. The result of this study showed the differences among gross and fine motor skill in four and five years old children. Both of fine and gross motor skill is very important to children health and academic achievement in future. Then, so the parents and teachers need to giving stimulate for developing the two of them with proportionally.

**Keywords**—motor development; early childhood; moslem kindergarten school

### I. INTRODUCTION

Human infants are born with very little control over their bodies. Yet within a year or so, they are able to sit, stand, walk, reach, manipulate objects. Feed themselves, gesture, and even speak a few words [1]. Gross and fine motoric development is very important for next child lifetime, in order to become an independent individual. The activities such as eating, drinking, writing are activities of fine motor skill. The activity of walking, running, kicking the ball, catching the ball, is an important basis for doing more complex sports movements. Thus, parents provide a stimulus for children's development by providing toys and games that are beneficial for children.

The ability of FMS (Fundamental Movement Skills) to interact with the ability of self-perception in motor skills with physical fitness to predict the level of physical activity and obesity from children to adults. Clearly, individuals with movement difficulties who do not like to participate in motion opportunities are also less interested, skills and self-confidence, produce low physical fitness, and ultimately poor health outcomes [2].

Motor development is very important for academic and non-academic achievement. Also encourages the development of other aspects, one of which is children's social development. Child's life is very close with playing. Many games require high motor skills, so children need to be given a moving experience that stimulates their motoric development. Playing

also can be a way of socializing children, if children are not able to play, it is unlikely that children can be involved in the game because they cannot balance the abilities of their peers. Bouffard's research [3] showed that the low competence of basic motion skills in children (6-9) had a negative influence when children interacted socially with their peers. Clearly, then it is very important to monitor the competence of basic motion skills from childhood from childhood to the next period of development, in an effort to identify potential delays or decrease in motor development. This initial effort was made to reduce the negative impact on participation in physical activity in later life, and also to avoid the secondary effects of psychosocial consequences such as self-concept irregularities and increase anxiety or medical conditions such as diabetes and cardiovascular disease problems.

Motor development is influenced by many environmental factors. Children learn about the environment and themselves through motor activities. Movement itself is a form of perception because the proprioceptive and haptic senses are continuously receiving information, information that is perfectly coupled with information from the external senses such as vision and hearing. Thus, movement is an integral part of the ensemble of all our experience, including the times when we are just looking at something, because looking involves movements of the eyes, head, and neck [1]. So that in early childhood need to be given the opportunity to move as much as possible and as broad as possible so that children have a rich vocabulary of motion so that children can participate actively in physical activity and exercise well. Many research results show positive effects and physical activity and exercise, which are very useful for the development of social emotional aspects, cognitive aspects, and can prevent cardiovascular problems and degenerative diseases such as diabetes.

Gross motor skills are abilities displayed by individuals in dominant activities by using large muscles. These skills are carried out to improve the quality of life. Fundamental Motor Skills (FMS) are considered to build skills beams for complex motor skills, and FMS skills also contribute to success and satisfaction in physical activity and sports participation [3]. Dellas's research [3] shows that there are many motor skills FMS can effect factors: (1) explosive strength and coordination, (2) frequency of movement and coordination in rhythm; (3) flexibility and (4) static strength ". Gender differences in motor abilities during the FMS learning process

and their specific influence on the successful performance. The study conducted by Dordic showed that motor growth and development was positively related to children of students 5-6 years, without any relationship between domain and intelligence in this study [4]. Short children with lower body weight are less competent in motor skills. While children who are taller, heavier, and more competent in motor skills.

Motor skills are very important in the effort to achieve prosperity in life. The benefits of physical activity participation not only have an impact on health, it is also able to improve social and emotional aspects that are also beneficial for children's lives in the future. The key to a child's success in being able to actively participate in physical activity and sports is that the child must experience and master basic motoric movement or FMS.

## II. METHOD

Descriptive research method with research design ex-post facto. The study population included children aged 4-5 years in the city of Bandung. The subjects of this study were 20 children who came from kindergarten based on Moslem Religion. The sample is determined by simple random sampling technique. Motor development was measured using Ages and Stages Questionnaire (ASQ) 3rd Edition [5,6]. Processing data using percentage techniques.

## III. RESULTS AND DISCUSSION

The results of the study in Figure 1 show that the gross motoric development of children aged 4-5 years in the high category is more than the moderate category. In contrast to the aspects of fine motor development, the high category is less than the medium category.

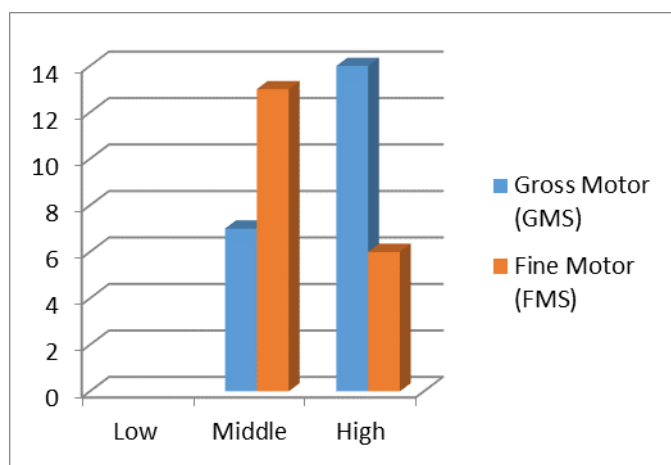


Fig. 1. Motor gross skill and fine motor skill in 4-5 years old children.

Based on these data, all children have experienced a fairly good development. However, there are differences in terms of the developmental achievements of both gross and fine motor aspects. Based on these data, it can be seen that gross motor development in children aged 4-5 years is more developed than fine motor development. Characteristics of children who like to

move, and explore the environment, become one of the factors that cause gross motor development to develop first than fine motor development. As for the data obtained information that in children who have high motor skills gross motor skills fine motor skills are not so prominent. Likewise, children with high motor scores have high motor skills, have no higher motor skills than obtaining gross motor skills.

Fine motor development is no less important than gross motor development. Fine motor development is very useful for children's independence. The activity of eating and buttoning clothes is one example of fine motor activity that is useful for children's independence. Early fine motor skills were quickly becoming recognized as an important school reading skill associated with later academic success. Similar to other academic skills, such as reading and maths, the development of handwriting, and the extent to which children are able to produce legible writing at the beginning, well before a kindergarten child enters [7]

Mastery of gross motor skills at an early age is very important, so that children remain involved in physical activity into adulthood. So that children will be prevented from non-infectious diseases. Various types of research show a relationship between physical activity and prevention of obesity. DuBos research shows that [8]. Low levels of PA not only affect motor skills development, but are likely to contribute to higher rates of obesity in children. Regarding the independent relationship between PA levels and motor skills, more time spent in MPA and MVPA, but not VPA, was related to higher Total motor skills scores. These findings are similar to other reports of higher PA participation with higher motor scores among children. However, other studies found VPA to be positively related to motor skills

Motor skills provide the basis for intentional movement and are the foundation for complex movement patterns used in physical activity (PA). Motor skills proficiency typically improves continuously throughout infancy and childhood. Higher motor skills have been related to better academic performance, cardiorespiratory fitness, and children's self-perception [8].

The relationship between motor skills and PA is complex, and it has been suggested that this relationship changes as children age. In young children, PA helps improve motor skills, but as children age, motor skills may influence PA participation. In support of this hypothesis of altered directionality in this relationship, de Sousa (DeBos) reported that over three years, the PA levels in 6-year-old children with high motor skills were stable, whereas the PA levels of children with lower motor skills decreased. Further, motor skill development in early childhood may impact PA later in childhood as motor skill levels in young children have been found to be positively associated with PA levels during adolescence [8].

Another research showed that developing object control skills that are primarily associated with individual and team sports during early childhood appear to be more impactful than locomotor skills on fitness during adolescence. This prospective study is one of the first of its kind, and provides strong predictive support for the development of fundamental

motor skills in preschool and early childhood. More specifically, object control skills are in general a greater predictor of future fitness for both boys and girls than locomotor skills. Thus, governing bodies and sporting organizations that promote physical activity during childhood should consider focusing on the development of fundamental motor skills necessary for success in sport, a byproduct of which is physical activity. Doing so provides the child with more opportunities to be successful in sports and exercise, and leads to further physiological, psychological, and behavioral benefits [9].

Fine motor skills are equally important for children. Skills to control pencils such as in writing lines and circles, it is very important to prepare them in achieving academic achievement in the future. Some studies show the relationship between writing skills and academic achievement. The current literature on handwriting is primarily focused on school-age children, both in clinical and non-clinical populations, and is less on the writing skills of children before they enter formal schooling. Yet, in early childhood, developing 'handwriting readiness' may be beneficial for two reasons: (1) recent evidence suggests that it supports the development of reading skills and (2) the association between handwriting and academic achievement, the development of 'handwriting readiness' skills may increase the likelihood of academic success in later years [7].

Another research reported that children in a preschool setting spent approximately 37% of their day engaged in fine motor activities and only 10% of those activities involved paper and pencil tasks. Producing legible writing quickly may feel like an automatic process for most adults, but for young children, the development of handwriting is a complex task requiring the coordination of several cognitive, motoric and neuromotor processes. As children age and their fine motor skills develop, they become more able adequately to manipulate objects in their hands. Fine motor skills are a key variable in handwriting development, as fine motor control has been implicated in the writing errors commonly made by first graders [7].

Some studies show gross motor skills are the basis for acquiring skills in sports or more complex skills. Late motor development at an early age indicates low involvement of children in physical activity as adults. This is because the characteristics of children are easily formed and settled by plasticity seen in some of the results of neurological studies. Experience moulds the brain. What may have previously been considered as autonomous maturational changes in brain function may indeed be driven by children's everyday actions in the world. But the loop is still closed: Just as experience reorganises the brain, so also the resulting improvements in perceptual discrimination, memory, and motor control provide children with new opportunities for experience to further remap the brain. Neurones responding to both spatial localisation of visual targets and to intended movements are found in many areas of the cortex. At the same time, a single neurone may be activated by the visual, planning, memory, and movement aspects of a task. These findings reinforce the idea that perception and action, and its cognitive counterparts, are part of

the same continuous and coupled process. The functional mapping of the brain is subsequently experience-dependent, especially through perceptual-motor exploration [1].

#### IV. CONCLUSION

Both of gross and fine motor development which are equally important for children's health and academic performance in the future. Parents and teachers are an important part of a child's life. Stimulus and strengthening of both motor aspects are important early. Characteristics of physical abilities of children who have surplus energy, provide encouragement to continue to explore the broadest possible environment. Gross and fine motor activity needs to be given in a balanced manner. Teachers and parents need to try to provide game activities and play tools that are appropriate for the child's developmental age. Still not proportional to gross and fine motor stimulation, is a problem that must be solved immediately. Learning program that regulates the balance of the two aspects is very much awaited. The attention of parents also needs to look at the importance of gross and subtle motor development in an effort to prepare children for school.

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#### REFERENCES

- [1] E. Thelen, "Motor development as foundation and future of developmental psychology," *International Journal of Behavioral Development*. Vol. 24 (4), pp. 385–397. 2000.
- [2] B. Hands and F McIntyre, "Assessment of fundamental movement skills in Australian children: the validation of a fundamental motor skills quotient (FMSQ).," *Malaysian Journal of Sport Science and Recreation*, Vol. 11 No. 1, 1 - 12, 2015.
- [3] Bardid, "The effectiveness of a fundamental motor skill intervention in pre-schoolers with motor problems depends on gender but not environmental context.," *Research in Developmental Disabilities*. Vol. 34. pp. 4571–4581. 2013.
- [4] Delas, "The influence of motor factors on performing fundamental movement skills – the differences between boys and girls.," *Physical Education and Sport*. Vol. 6(1), pp. 31 – 39. 2008.
- [5] Dordic, "The relationship between physical, motor, and intellectual development of preschool children.," *Procedia - Social and Behavioral Sciences*. Vol. 233. pp. 3 – 7. 2016
- [6] *Ages & Stages Questionnaires®, Third Edition (ASQ-3™)*, Squires & Bricker. © 2009 Paul H. Brookes Publishing Co.
- [7] L. H Dinehart, "Handwriting in early childhood education: Current research and future implications.," *Journal of Early Childhood Literacy*, Vol.15 issue: 1, pp. 97-118. 2015.
- [8] K. DuBose, A G. McMillan, A P. Wood, S B. Sisson, "Joint Relationship Between Physical Activity, Weight Status, and Motor Skills in Children Aged 3 to 10 Years. Perceptual and Motor Skills. Vol. 125(3), pp. 478–492. 2018.
- [9] T. M Baghurst, M. Mwavita. *Preschool Motor Development Predicting High School Health-related Physical Fitness: a Prospective Study. Perceptual & motor skills: physical development & measurement*. Vol. 119, 1, 279-291. 2014.