

Differences of Gross Motor Development of Early Year Children in Swimming Activities

Taufik Rihatno¹, Sri Nuraini¹, Yufiarti^{2a}, Ahmad Syukri Sitorus³, Suharti³

¹*Dept of Physical Education, Jakarta State University, Rawamangun, Jakarta, Indonesia*

²*Dept of Psychology, Jakarta State University, Rawamangun, Jakarta, Indonesia*

³*Postgraduate Programs, Jakarta State University, Rawamangun, Jakarta, Indonesia*

Keywords: Swimming activity, gross motor development, early childhood education

Abstract: This study aims to determine the differences in gross motor development of children who take swimming activities in school. This study used a survey method for 146 children aged 4-5 years in Jakarta. The data collection technique uses observations on early childhood education institutions that have been randomly selected. The results of this study indicate that children who take swimming activities have locomotor skills of gross motor development better than children who do not take swimming activities in school. The implication of this research is that swimming activities can be used as extracurricular activities that must be followed by children aged 4-5 years in a school institution that provides a choice of swimming activities.

1 INTRODUCTION

Early childhood at a golden age has developed from various aspects. The process of growth and development of children cannot be separated from each other. One important aspect that is easily observed and influences other aspects of development is motor development. Motor development is closely related to gestures. Motor development is a process of increasing a person's ability to move, movements carried out by children are the result of interactions of various parts and systems in the body that are controlled by the brain. Motor development is divided into gross motor and fine motor. The focus of this study is on the gross motor development of children aged 4-5 years.

Various activities can be carried out to stimulate children's gross motor development. Among the stimulation of motion is done by doing various physical activities that train the movement of a child, for example, running, jumping, walking, gymnastics, swimming, and others. Swimming is one type of water sport that can stimulate gross motor development. Early childhood education institutions provide programs that facilitate renewal activities for their students. Swimming activities are included in extracurricular programs that are not mandatory or optional. So that there will be differences in the gross

motor development of children who take swimming and those who do not.

Swimming programs at school provide opportunities for children to exercise their abilities, especially gross motor skills. The lack of adequate learning facilities influenced negatively provision of quality education (Chepkonga, 2017). Hurlock revealed that motor development means controlling physical movement through the activity of coordinated nerve, nerve, and muscle centers. From controlling the body above, it contributes to children's motor development. Participation in physical activity requires basic gross motor proficiency in early childhood (Roberts, Veneri, Decker, & Gannotti, 2012).

Instead, children actively build skills to achieve goals within the limits determined by the body and environment. Nature and learning, children and the environment, both works together as part of an interconnected system. Motor ability, should not be construed as static, but may be developed differentially and changed through practice and experience (that is, exposure to environmental influences) (Hands & McIntyre, 2018). The more active and creative, the more children can develop motoric development because motor development is related to the child itself, the environment and ongoing training

2 LITERATURE REVIEW

2.1 Gross Motor Development

In the early years of childhood, a group of motor skills known as fundamentals motor skills (FMS) who children will begin to learn. Locomotor skills and object control skills are part of FMS. Locomotor skills involve moving the body through space and including skills such as running, jumping, sliding, and jumping. Object control skills consist of manipulating and projecting objects and include skills such as throwing, catching, bouncing, kicking, attacking, and rolling. These skills form the basis for future movements and physical activity (Ali, Hassan, & Elazeim, 2017).

Gross motor skills are skills that involve large muscle activity, such as walking, moving foot coordination between the hands and eyes. Gross motor (physical) skills are those which require whole body movement and which involve the large (core stabilising) muscles of the body to perform everyday functions, such as standing, walking, running, and sitting upright. It also includes eye-hand coordination skills such as ball skills (throwing, catching, kicking)(Kid Sense, 2017). According to Santrock, gross motor skills are changes in the ability of motion associated with large muscles, control of body movements through coordinated activities as follows: (1) nervous system, (2) muscle, (3) brain, (4) spinal cord.

Gross motor skills are movements that involve total movement and multi-limb movements, such as walking jumping or swimming and shooting (Kid Sense, 2017). Gross motor skills are movements that involve all movements of limbs and limb movements, such as walking, jumping, or swimming, shooting. Skills have several functions, including: abilities related to energy that has been released (activities related to perception of the five senses), main processes (organization, management, decision making), results achieved (motor functions and utilization of feedback) Functions and benefits motoric, social, language, cognitive and moral skills of children. When a child plays, he will get a lot of experience and knowledge. The childhood experience is prevalently acquired through games, and it makes the transition from biological helplessness to cultural superiority (Burac, 2015). The benefits gained in playing and playing are very many, for example, children can interact directly with other children, make children responsible, make children happy and happy, can hone children's imagination. The gross motor skills have three dimensions they are

locomotor skills, non-locomotor and manipulative skills (Mitchell & Fisette., 2016). The stages of gross motor development proposed by Helen Bee are as follows:

Table 1: The stages Locomotor skill of gross motor development

Age	Skill
18-24 months	Run rigid (20 months), climb the stairs with both feet at each step
2-3 years	Run easily, climb and descend the tables without help, jump to the floor with both feet
3-4 years	Go up the stairs one foot per ladder, jump on 2 feet, walk tiptoe
4-5 years	Go up and down the stairs with one foot

Table 2: The stages Nonlocomotor skill of gross motor development

Age	Skill
18-24 months	Push and pull the box or toy wheeled, open the lid
2-3 years	Pull and push the big toy around the groove, throw it according to the target, use the arm
3-4 years	Peddalling and driving a 3-wheeled bike, walking in various directions, turning around when throwing using arms
4-5 years	Most boys

Table 3: The stages Manipulative skill of gross motor development

Age	Skill
18-24 months	Shows the dominance of the hand, arranges 4-6 beams, turns the page, takes objects without losing balance
2-3 years	Taking a small object, using crayons, throwing a small ball is stable.
3-4 years	Starting to be able to attach and remove buttons, catch a large ball by stretching your arms and body, cutting paper, holding a pencil
4-5 years	Hit the ball, catch the ball

There are differences in gross motor development based on gender. The boys performed significantly better on individual object control skills and raw skill (Aye et al., 2018). Gross motor development boys better than girls. Preschool physical size in play area affects children’s locomotor skills but not object control skills (Chow & Louie, 2013). Children in the kindergarten who have limited playing area, their gross motor development is not optimal. The primary needs of children in the early stages of development are motor activity, active play, and exercise. Schools can provide important arrangements for developing motoric competencies and for promoting physically active lifestyles through correct interdisciplinary programs (Colella & Morano, 2011).

The critical to children’s development and mastery of gross motor skills are on Preschool and the early elementary school years. Teachers and parents can identify the strengths and weaknesses of a child's gross motor development. the earlier it identifies, the better the results will be (Khalaj & Amri, 2014).

2.2 Swimming Activity in Early Age

Swimming is a movement activity carried out in water. Early childhood who start learning swimming, can move all their limbs. This is good for gross motor development. Besides being good for gross motoric development, learning to swim for early childhood can also stimulate other aspects of development. Children who learn to swim show early development in: (1) Motor skills, (2) Reaction time, (3) Power of concentration, (4) Intelligence, (5) Social behavior, (6) Social interaction, (7) Self-confidence, (8) Independence (Amelia, 2012).

When starting to learn to swim, children are first encouraged to like swimming and condition their peers in the group to like swimming too. Children who glorify learning to swim with a sense of liking will have the ability to swim better. As reported by USA Swimming fondation (2017), if their best friends enjoy swimming, then they will have a higher level of swimming ability. The aspect of swimming has a significant impact on the very young child swimming ability (Irwin, Pharr, Layne, & Irwin, 2017).

In the process of learning swimming for early childhood, the role of parents and teachers is absolutely necessary. Children still need external motivation from outside themselves to continue to do swimming exercises. Parental factors have a strong influence on the frequency of swimming in which children engage (Pharr, Irwin, & Irwin, 2014).

3 RESEARCH METHOD

This study used a qualitative approach with empirical inductive strategy. The data were collected from the teachers and pupils based on real experience in the form of either the speech or behaviours of the respondents and existing field situations because this study intended to find out the phenomena experienced by the elementary school pupils.

4 RESULT AND DISCUSSION

Based on observations locomotor skills of gross motor development 146 children in institutions that provide swimming activities can be seen in the table below:

Table 4: Frequency children of Swimming Activity

Swimming Activity	F
Who take part swimming activities	73
No take part swimming activities	73

Table 5: Mean of observation score gross motor development

Swimming Activity	Mean of observation score
Who take part swimming activities	65.89
No take part swimming activities	45.88

Table 6: Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Gross Motor Development	Equal variances assumed	.006	.937	-.462	71	.645	-1.01959	2.20591	-5.41805	3.37887
	Equal variances not assumed			-.448	53.480	.656	-1.01959	2.27776	-5.58723	3.54805

Table 6: Result of t-Test Group Statistics

	Swimming Activities	N	Mean	Std. Deviation	Std. Error Mean
Gross Motor	Who take part swimming activities	73	65.89	9.172	1.074
	No take part swimming activities	73	45.88	6.886	.806

Table 7: Result of *t*-Test Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Gross Motor	Equal variances assumed	4.822	.030	14.909	144	.000	20.014	1.342	17.360	22.667
	Equal variances not assumed			14.909	133.594	.000	20.014	1.342	17.359	22.669

The table above concluded that there are differences between students who take part in swimming program activities with students who do not participate in swimming activities programs on gross motor skills. In some studies, the effective function of motor perception is very important to improve students in three fields (cognitive include language development (Wang, Lekhal, Aaro, Holte, & Schjolberg, 2014)(Londen, Juffer, & Ijzendoorn, 2007), affective and psychomotor) and also for the development of motor skills. This ability must be developed in the early stages of a child's life naturally; this means this ability and can be achieved at the age of 6 or 7 years if the child experiences normal development (3, 4). In fact, almost every movement is a kind of perceptual motor skills. Swimming through games contributes to the development of a balanced body and can be easily practiced by the children who do not have a very good physical condition and who usually don't like motion (Burac, 2015). in early age (4-5 years) in order to teach swimming is chosen a strategy (methods, materials, resources, principles, rules, style, forms of organization) able to fully exploit the underlying motivations and personality of children (the pleasure of play, playful behavior, the spirit of competition, the need for movement, the need to socialize, etc.) then the quality, efficiency and speed of swimming learning are notably increasing (Giconda, 2013). Human movements depend on the environment, situation, and position. To develop perceptual motor skills, the initial experience of the child's movement has a special interest. Facilities can help promote a positive workplace in an industry challenged to retain experienced teachers (Gillman & The, 2007). The number of educational facilities specialists will need to increase so they can serve the regional and local authorities entrusted with growing responsibilities for implementing educational programmes (Beynon, 1997).

5 CONCLUSIONS

Gross motor development of children who take part in swimming activities at school is better than those who do not participate in swimming activities. This means because of swimming can provide motion stimulation so that it helps develop the gross motoric development of children. Beside of that, facilities have a very important role in early childhood. Early childhood education institutions with various facilities have the opportunity to give children opportunities to move that do not directly stimulate children's motor development.

REFERENCES

- Ali, W. M., Hassan, F., & Elazeim, A. 2017. Norms for gross motor development in egyptian toddlers : pilot study. *International Journal of ChemTech Research*, 10(2), 295–300.
- Amelia, S. E. 2012. Methodology of learning swimming in the first part of life through a positive approach. *Science, Movement And Health*, Xn(1), 88–94.
- Aye, T., Kuramoto-Ahuja, T., Sato, T., Sadakiyo, K., Watanabe, M., & Maruyama, H. (2018). Gross motor skill development of kindergarten children in Japan. *The Journal of Physical Therapy Science*, 711–715.
- Beynon, J. 1997. *Physical facilities for education : what planners need to know*. Paris: UNESCO.
- Burac, D. G. 2015. The playful behavior in swimming and its interferences in 1-3 years child ' s development. *Procedia-Social and Behavioral Sciences*, 180(November 2014), 1229–1234.
- Chepkonga, M. C. 2017. Influence of Learning Facilities on Provision of Quality Education in Early Childhood Development Centres in Kenya, 5(6), 15–26.
- Chow, B. C., & Louie, L. H. T. 2013. Difference in Children's Gross Motor Skills Between Two Types of Preschool. *Perceptual & Motor Skills: Motor Skills & Ergonomics 2013*, 253–261.
- Colella, D., & Morano, M. 2011. Gross motor development and physical activity in kindergarten age children. *International Journal of Pediatric Obesity*, 6, 33–36.
- Giconda, B. D. 2013. Adapting didactic game in swimming teaching at an early age. *Physics Procedia*, 76, 146–150.
- Gillman, C. S. with A., & The. 2007. *Building Early Childhood Facilities*. New York.
- Hands, B., & McIntyre, F. 2018. The General Motor Ability Hypothesis : An old idea revisited. <https://doi.org/10.1177/0031512517751750>
- Irwin, C., Pharr, J., Layne, T., & Irwin, R. 2017. *Factors Impacting Swimming Participation and Competence*.
- Khalaj, N., & Amri, S. 2014. Mastery of gross motor skills in preschool and early elementary school obese children. *Early Child Development and Care*, 184

- (December 2014), 37–41.
<https://doi.org/10.1080/03004430.2013.820724>
- Kid Sense. 2017. What are gross motor skills ? Kid Sense Child Development Centre.
- Londen, W. M. Van, Juffer, F., & Ijzendoorn, M. H. Van. 2007. Attachment , Cognitive , and Motor Development in Adopted Children : Short-term Outcomes after International Adoption, *32*(10), 1249–1258.
- Mitchell, S., & Fiset., J. 2016. *The Essentials of Teaching Physical Education: Curriculum, Instruction, and Assessment*. Reston: SHAPE-America Society of Health and Physical Educators.
- Pharr, J., Irwin, C. C., & Irwin, R. L. 2014. Parental factors that influence swimming in children and adolescents. *Environmental & Occupational Health Faculty Publications*, *8*, 368–381.
- Roberts, D., Veneri, D., Decker, R., & Gannotti, M. 2012. Weight Status and Gross Motor Skill in Kindergarten Children, *01109*.
<https://doi.org/10.1097/PEP.0b013e3182680f19>
- Wang, M. V, Lekhal, R., Aaro, L. E., Holte, A., & Schjolberg, S. 2014. The developmental relationship between language and motor performance from 3 to 5 years of age : a prospective longitudinal population study, (Dcd).

