

Effectiveness Of Rhythmic Gymnastics For The Development Of Gross Motor In Preschool Age Children

Nandang Larasati¹, Almas Awanis^{2*}, Lilik Ariyanti³

^{1,2,3} Program Studi D IV Fisioterapi, Sekolah Tinggi Ilmu Kesehatan Nasional, Indonesia

Email : physio.almas@stikesnas.ac.id

Submission : 2024-07-25; Accepted : 2025-03-12 ; Published : 2025-06-01

ABSTRACT

Introduction: Gross motor skills are complex motor skills involving the large muscles of the arms, leg muscles, and most require coordination of all four limbs in children. Optimization is needed for gross motor development, one of which is by providing external stimulus, namely rhythmic gymnastics. Rhythmic gymnastics is a physical activity carried out with rhythmic accompaniment with complex movements and involving all body parts. The aim of this research is to determine the effectiveness of rhythmic gymnastics for the development of gross motor skills in preschool children. **Methods:** The type of research used in this research is quasi experimental, with a purposive technique sampling. The research sample was preschool aged children (5-6 years) with a total of 22 samples who were treated with rhythmic exercise 12 times for 4 weeks, with 3 times each week and 22 samples as the control group. The examination instrument in this study used TGMD-2 (Test of Gross Motor Development). **Results:** Based on statistical testers, it was found that rhythmic exercise was effective for the gross motor development of preschool children with $p\ 0.00 < 0.05$, which means that H_0 was rejected and H_a was accepted. **Conclusion:** In this study was that whether rhythmic exercise was given or not, children still experienced an increase in gross motor development in both groups with a significant difference of 0.01 in the control group and 0.00 in the intervention group.

Keywords: Children, Motor, Preschool, Gymnastics

ISSN 2722 – 9610
 E –ISSN 2722 - 9629

INTRODUCTION

Development is the process of increasing a person's psychological maturity and functioning. The concept of early childhood development includes several aspects such as cognitive, verbal, physical-motor, socio-emotional and moral aspects. All these aspects have criteria called developmental goals that can be addressed step by step and require appropriate stimulation (Talango, 2020). Development itself is based on influencing factors, in general there are intrinsic and extrinsic factors (Yunita, Luthfi and Erlinawati, 2020).

Intrinsic factors or factors from within the child which include the child's interests and genes, then extrinsic factors or factors from outside the child which include the living environment, school environment and parents' level of knowledge (Maryuqoh dan Sutapa, 2022). The gross motor development of preschool children is influenced by several factors such as

age, gender and a history of premature birth (Ananditha, 2017). Several factors above can influence a child's motor development to be less than optimal. Girls' gross motor development achievements are faster than boys', gender influences children's motor development to a greater or lesser extent (Azani, 2020).

Gender is not the main factor in development, here gender is one of the intrinsic factors which, at least, also includes things that influence the child's internal development (Liu et al., 2020). Women tend to achieve faster motor skills than men (Ananditha, 2017). Although boys tend to be more active than girls, in terms of achieving motor targets at their age, girls are faster than boys (Baan et al., 2020). Gender in this study was male dominating in the control group (54.5%), while in the intervention group it was dominated by women (72.7%). Birth history is a determining factor besides gender.

A history of premature birth has a higher risk of experiencing disorders in physical and motor development (Sulistiyowati et al., 2022). there are many problems including disability, sensory disability, poor cognitive function, disorders of the topological organization of the brain (Gadhiya & Jaithliya, 2024). especially the communication capacity of brain networks, and experiencing simple movement problems such as walking on heels, standing on tiptoes, and complex problems (coordination, balance, and manipulation skills) as well as poor performance in gross and fine motor skills (Dehghan et al., 2021). After birth, children must also receive adequate nutritional intake for the long process of regulating their motor development in the future, such as exclusive breastfeeding (Fehr et al., 2020).

Breastfeeding is very important for a child's development (Nurbaity, 2022). Breast milk contains important nutrients such as carbohydrates, protein, fat, vitamins and minerals as well as other probiotic components that children really need to support their body and development in the future (Fehr et al., 2020). A mother's awareness of providing nutrition to her child cannot be separated from the mother's level of understanding, therefore it is important that the mother's level of education is important for the child's brilliant development (Sarina & Widiastuti, 2023).

The mother's education level is another supporting factor for the child's motor development. The higher the mother's education, the more the mother understands her child's development, what the child needs for development, what deficiencies the child needs, and what obstacles hinder the child's development (Sulistiyowati et al., 2022). Apart from that, children also need to get stimulation as early as possible to mature their muscles and nerves (Larasari et al., 2021).

Motor development depends on the maturity of muscles and nerves so that children will find it difficult to demonstrate certain skills when they are not yet mature. In its implementation, rhythmic gymnastics with high frequency and repetition is one of the sensory motor activities that can stimulate synaptogenesis in nerve cells which makes it possible for nerve

maturation (Daulay, 2017). Rhythmic gymnastics movements also involve the use of large muscles in the body, which, when carried out as often as possible, can stimulate muscle maturation, so that children's motor skills can be stimulated and developed (Ulfah et al., 2021).

Rhythmic gymnastics can facilitate children's movement in a patterned and regular manner, which can create optimal stimulation of the nervous system, encourage a state of relaxation and calm in the body's muscles, stimulate rhythmic movements, help internalize motor skills, and improve motor skills in children (Ulfah et al., 2021). Rhythmic gymnastics here is narrowed down into 5 basic movements, namely walking, running, jumping, swinging and rotating the arms. Each movement itself trains the large muscles of the body to be coordinated with the movements produced (Saranani, 2022). Where the process of movement can be explained through a sequence of movements. Starting from a stimulus received by the five sense receptors, carried by sensory nerves to the brain, the stimulus is processed in the brain, to provide feedback through motor nerves or effectors such as muscles, bones and joints so that humans can move, where muscles are active movers according to with the biomechanics of movement (Menolotto et al., 2020).

Biomechanics during basic movements of walking, running and the dominant muscles that contract are the quadriceps femoris group, hamstring group, gluteus maximus, iliopsoas and gastrocnemius (Wardani, 2020). Frequent stimulation of the lower limb muscle groups can improve balance and coordination in maintaining body balance against the center of gravity by determining a balanced base and off support (Recenti et al., 2021). The movement of swinging and rotating the arms involves the deltoid, trapezius and rotator cuff muscles which in their own stimulation can increase the child's ability to master movements with control objects in the hand such as hitting the ball, throwing and catching the ball and dribbling the ball (Handayani, 2020).

METHODS

This research is research that uses a pretest-posttest group design with a control group. The



type of research used is quasi experimental. The health research ethics commission of the Sekolah Tinggi Ilmu Kesehatan Nasional has issued an ethical clearance agreement with number 81/EC/KEPK/V/2023 then distributed informed consent sheets to agree to be subjects in this research.

This study used one group that was given intervention in the form of rhythmic exercise and one group as a control. Before the intervention is given, a pretest is carried out on the sample, then the intervention is given and after the intervention is given, a posttest is carried out. The reason this type of research was chosen was because researchers wanted to know the effectiveness of providing rhythmic exercise on gross motor development for preschool children. Children's gross motor skills were measured in the pretest and posttest using the TGMD-2 measurement instrument (Bandeira, 2020), measurements were carried out in both groups on the same day before and after giving rhythmic exercises to the intervention group.

Providing rhythmic exercise for 4 weeks with an additional 2 days for pretest and posttest measurements with a timeline from 14 August 2023 to 18 September 2023 at TK BA Aisiyiyah Lemahbang Polokarto as an intervention group with a sample size of 22 people and PAUD Sahabat Mulia Polokarto as a group control with a sample size of 22 people, the total sample was 44 people.

Data analysis with SPSS did not begin with a normality test, so a paired test was immediately carried out for the intervention and control groups on the pretest and posttest results, carried out using the Wilcoxon test to observe the effectiveness in both groups, the Mann Whitney unpaired test to determine the difference in pretest and posttest results.

RESULTS

The total number of general characteristics data in this study initially amounted to 110 people, after going through the selection stage based on inclusion and exclusion criteria, the number of respondents was 51 people. When filling out the informed consent the number of respondents was reduced to 48 people, after that it was filtered using dropout criteria, namely the

absence of respondents. The final total was 44 people in two groups, where the intervention group was 22 people and the control group was 22 people. The following is an explanation of the characteristics of the respondents in this study.

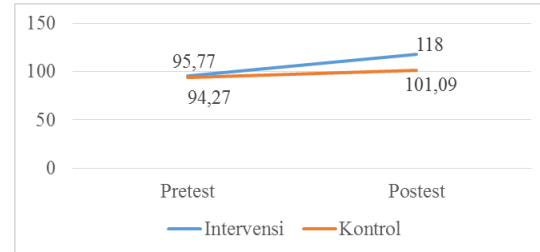


Figure 1. Average TGMD Value of Two Groups

In the following figure it can be seen that gross motor skills in the intervention group increased with a difference in posttest and pretest results of 22.23 and in the control group there was also a smaller increase compared to the intervention group with a difference in posttest and pretest results of 6.89. Between the two groups, there was a difference in posttest and pretest results of 15.34.

Table 1. Paired Hypothesis Test Results

Groups	<i>Pretest</i> (M)	<i>Posttest</i> (M)	<i>P</i> <i>Value</i>
Intervention	95,77	118,00	0,00*
Control	94,27	101,09	0,01*

From the following table, the results obtained in both groups have significant values with $p < 0.05$, so it can be concluded that whether or not rhythmic exercise is given to children, their gross motor development continues to increase in both groups.

Table 2. Unpaired Hypothesis Test Results

Groups	N	Mean	p-value
Intervention	22	23,32	,000
Control	22	21,68	
Amount	44		

To determine the effect of giving rhythmic exercises on gross motor development using Mann-Whitney analysis. The final statistical results show a p-value of $0.00 < 0.05$ so it can be concluded that rhythmic gymnastics is effective

for preschool-aged children's gross motor development.

Providing rhythmic gymnastics is not the most basic thing for improving the gross motor skills of preschool aged children. The results of this study show that the gross motor development of children in the intervention and control groups both increased, where the results of the hypothesis test obtained showed that there was significant effectiveness in providing gymnastics. rhythm in the intervention group. Meanwhile, the control group also experienced an increase in gross motor skills because in both groups there was also a weekly physical activity program from the school (Hakim et al., 2022).

Physical activity programs held by the school, such as SKJ activities and weekly health walks, also have a big influence in stimulating children's gross motor development (Syafil et al., 2020). Rhythmic gymnastics itself is also one of the efforts that can be provided to stimulate the motor development of preschool aged children (Baiti & Rahman, 2022).

Rhythmic gymnastics that is done in a pattern, regularly and with as much frequency as possible can teach children habitual patterns (Azani, 2020). The child will store it in memory and apply stimulating movements that include complex movements to stimulate the motor achievements of children his age (Yuniarni et al., 2019). The rhythmic gymnastics that is carried out also contains fun children's songs so that when carried out it will increase the child's energetic enthusiasm and feelings of joy due to the release of the hormone dopamine or the happy hormone, this can improve the child's motor skills optimally (Riyanto et al., 2022).

CONCLUSION

Based on the results of the research and discussion, it can be concluded that providing rhythmic gymnastics is effective for early childhood gross motor development in children aged 5-6 years in class B at the BA Aisyah Lemahbang Polokarto Kindergarten.

REFERENCES

Ananditha, A. C. (2017). Faktor-Faktor Yang Berhubungan Dengan Perkembangan Motorik Kasar Pada Anak Toddler. *Jurnal*

Keperawatan Muhammadiyah, 2(1).
<https://doi.org/10.30651/jkm.v2i1.924>

Azani, S. R. (2020). Pengaruh Kirigami Terhadap Kemampuan Motorik Halus Anak Kelompok B Di Tk Asyiyah Bustanul Athfal Iv Kota Jambi. *Jurnal Kesehatan Medika Saintika*, 11(2), 226–235.

Baan, A. B., Rejeki, H. S., & Nurhayati. (2020). Perkembangan Motorik Kasar Anak Usia Dini. *Jurnal Bungamputi*, 6(0), 14–21.

Bandeira, P. F. R., Duncan, M., Pessoa, M. L., Soares, Í., da Silva, L., Mota, J., & Martins, C. (2020). TGMD-2 short version: evidence of validity and associations with sex, age, and BMI in preschool children. *Journal of Motor Learning and Development*, 8(3), 528-543.

Daulay, N.-. (2017). Struktur Otak dan Keberfungsiannya pada Anak dengan Gangguan Spektrum Autis: Kajian Neuropsikologi. *Buletin Psikologi*, 25(1), 11–25.
<https://doi.org/10.22146/buletinpsikologi.25163>

Dehghan, M., Ghasemi, A., Kashi, A., Arabameri, E., & Molanorouzi, K. (2021). The Effect of Early Exercise Interventions on Gross Motor Skills of Children with Preterm Birth Aged 3 to 6 Years. *Jorjani Biomedicine Journal*, 9(3), 4–12.
<https://doi.org/10.29252/jorjanibiomedj.9.3.4>

Fehr, K., Moossavi, S., Sbihi, H., Boutin, R. C. T., Bode, L., Robertson, B., Yonemitsu, C., Field, C. J., Becker, A. B., Mandhane, P. J., Sears, M. R., Khafipour, E., Moraes, T. J., Subbarao, P., Finlay, B. B., Turvey, S. E., & Azad, M. B. (2020). Breastmilk Feeding Practices Are Associated with the Co-Occurrence of Bacteria in Mothers' Milk and the Infant Gut: the CHILD Cohort Study. *Cell Host and Microbe*, 28(2), 285-297.e4.
<https://doi.org/10.1016/j.chom.2020.06.009>

Gadhiya, J., & Jaithliya, T. (2025). *International Journal of Trend in Scientific Research and Development (IJTSRD)*. November, 660–661.

Handayani, S. G. (2020). *The Effect of*



- Implementing Rhythmic Gymnastics to Improve Motor Skills of Primary School Students*. 464(Psshers 2019), 777–779. <https://doi.org/10.2991/assehr.k.200824.173>
- Larasari, P. A., Bachtiar, I. G., & Jaya, I. (2021). Meningkatkan Kemampuan Bahasa Ekspresif pada Anak dengan Autisme Melalui Media Lotto Bergambar. *Jurnal Penelitian Pendidikan Khusus*, 9(1), 105–112.
- Liu, L., Escudero, P., Quattropiani, C., & Robbins, R. A. (2020). Factors affecting infant toy preferences: Age, gender, experience, motor development, and parental attitude. *Infancy*, 25(5), 593–617. <https://doi.org/10.1111/infa.12352>
- Maryuqoh, S., & Sutapa, P. (2022). Pengembangan Model Senam Si Buyung Untuk Peningkatan Kemampuan Motorik Kasar Anak. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(3), 2345–2358. <https://doi.org/10.31004/obsesi.v6i3.2126>
- Menolotto, M., Komaris, D. S., Tedesco, S., O'flynn, B., & Walsh, M. (2020). Motion capture technology in industrial applications: A systematic review. *Sensors (Switzerland)*, 20(19), 1–25. <https://doi.org/10.3390/s20195687>
- Nurbaity, N. (2022). Pelayanan Tumbuh Kembang Anak Pra Sekolah. *Community Development Journal : Jurnal Pengabdian Masyarakat*, 3(3), 1801–1803. <https://doi.org/10.31004/cdj.v3i3.8681>
- Recenti, M., Ricciardi, C., Aubonnet, R., Picone, I., Jacob, D., Svansson, H. Á. R., Agnarsdóttir, S., Karlsson, G. H., Baeringsdóttir, V., Petersen, H., & Gargiulo, P. (2021). Toward Predicting Motion Sickness Using Virtual Reality and a Moving Platform Assessing Brain, Muscles, and Heart Signals. *Frontiers in Bioengineering and Biotechnology*, 9(April), 1–13. <https://doi.org/10.3389/fbioe.2021.635661>
- Saranani, M. S. (2022). Efektivitas Model Pembelajaran Berbasis Multimedia dalam Pengembangan Bahasa Anak Autisme. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(6), 5827–5839. <https://doi.org/10.31004/obsesi.v6i6.2280>
- Sarina, D. D., & Widiastuti, S. (2023). Analisis Asuhan Keperawatan melalui Intervensi Clapping dan Postural Drainage dengan Masalah Bersihan Jalan Napas Tidak Efektif dengan Diagnosa Bronchopneumonia. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*, 6(3), 1101–1109. <https://doi.org/10.33024/jkpm.v6i3.8793>
- Sulistiyowati, E. M., Suherman, W. S., Sukamti, E. R., Rahmatullah, M. I., & Mitsalina, D. (2022). Specifics of Basic Biomotor Components for Rhythmic Gymnastics. *Proceedings of the Conference on Interdisciplinary Approach in Sports in Conjunction with the 4th Yogyakarta International Seminar on Health, Physical Education, and Sport Science (COIS-YISHPESS 2021)*, 43, 27–30. <https://doi.org/10.2991/ahsr.k.220106.004>
- Talango, S. R. (2020). Konsep Perkembangan Anak Usia Dini. *Early Childhood Islamic Education Journal*, 1(1), 92–105. <https://doi.org/10.54045/ecie.v1i1.35>
- Ulfah, A. A., Dimyati, D., & Putra, A. J. A. (2021). Analisis Penerapan Senam Irama dalam Meningkatkan Kemampuan Motorik Kasar Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 5(2), 1844–1852. <https://doi.org/10.31004/obsesi.v5i2.993>
- Wardani, D. sulistyo. (2020). Strategi Coping Orang Tua Menghadapi Anak Autis. *Iktisyaf: Jurnal Ilmu Dakwah Dan Tasawuf*, 2(2), 17–30.

