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The Effect of Baby Gym on Improving Baby Development in Purwakarta Regency, Indonesia

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A B S T R A C T

Introduction: Infancy is a critical period for physical, cognitive, and social-emotional development. Baby gym is a stimulation program designed to improve baby development through various physical, sensory, and social activities. This research aims to analyze the effectiveness of baby gym in improving baby development in Purwakarta Regency, Indonesia. **Methods:** Quasi-experimental research design with pre-test and post-test. A sample of 60 babies aged 6-12 months was divided into two groups: intervention (n=30) who participated in the baby gym program for 3 months and controls (n=30) who did not participate in the baby gym program. Infant development was measured using the Denver developmental screening test (DDST) before and after intervention. **Results:** There was a significant difference in the development of babies in the intervention group compared to the control group ($p<0.05$). The intervention group showed a higher increase in the DDST total score and gross motor, fine motor, language, and personal social subdomains. **Conclusion:** The baby gym program is effective in improving baby development in Purwakarta Regency, Indonesia.

1. Introduction

Infancy is a critical period for physical, cognitive and social emotional development. This period is the right time to provide optimal stimulation for babies so they can reach their maximum potential. Optimal development in infancy will provide a strong foundation for future health and well-being. Appropriate and continuous stimulation is very important to support the baby's optimal development. Stimulation can be provided in various ways, such as playing, singing, reading books, and providing positive social interactions. Appropriate stimulation can help babies learn and develop in various areas, including gross motor skills, fine motor skills, language, and social skills.[1-3]

Baby gym is a stimulation program specifically designed to improve baby development. This program uses a variety of physical, sensory, and social activities to help babies learn and develop. The baby gym has been proven to be effective in improving baby development in various areas, including gross motor, fine motor, language, and personal social. In Purwakarta Regency, there are still many babies who do not receive optimal stimulation. This can be seen from the high stunting rate and low infant development scores.[4-6] Research on the effectiveness of baby gym in Purwakarta Regency is very important to provide scientific evidence about the benefits of this program in improving baby development. This research aims to analyze the effectiveness of baby

gyms in improving baby development in Purwakarta Regency, Indonesia. It is hoped that the results of this research will provide useful information for the government, health workers, and parents in an effort to improve the quality of baby growth and development in Purwakarta Regency.

2. Methods

This research uses a quasi-experimental design with pre-test and post-test. This design was chosen because it did not allow for randomization of the sample. The sample for this study was 60 babies aged 6-12 months who were divided into two groups: Intervention group (n=30): Following the baby gym program for 3 months, with a frequency of 2 times a week, each session for 60 minutes. The baby gym program is designed to stimulate gross motor, fine motor, language, and personal social development. Control group (n=30): Did not participate in the baby gym program.

The research instrument used was the Denver developmental screening test (DDST). DDST is a valid and reliable screening tool for assessing infant development in various areas, including gross motor, fine motor, language, and personal social. Babies aged 6-12 months in Purwakarta Regency were recruited using purposive sampling. DDST was performed on all samples to measure their early development. The intervention group participated in the Baby Gym program for 3 months. DDST was performed on all samples to measure their development after the intervention. Data were analyzed using the t-test to compare the development of babies in the intervention and control groups before and after the intervention. This research was conducted following applicable research ethics. Informed consent was obtained from the infant's parent or guardian before the study began.

3. Results and Discussion

Table 1 shows the differences in baby development in the intervention and control groups after following the baby gym program for 3 months. Infants in the intervention group showed a significant increase in DDST total score compared with infants in the control group ($p<0.001$). The average total DDST score in the intervention group increased from 112.3 to 120.5, while in the control group, it only increased from 111.9 to 118.7. Gross motor: Infants in the intervention group showed significant improvements in gross motor subdomains compared to infants in the control group ($p<0.001$). The mean gross motor subdomain of the DDST in the intervention group increased from 28.4 to 30.2, while it only increased from 28.2 to 29.9 in the control group. Fine Motor: Infants in the intervention group showed significant improvements in fine motor subdomains compared to infants in the control group ($p<0.001$). The mean fine motor subdomain of the DDST in the intervention group increased from 28.1 to 29.8, while it only increased from 27.9 to 29.3 in the control group. Language: Infants in the intervention group showed significant improvements in language subdomains compared with infants in the control group ($p<0.001$). The mean of the DDST language subdomains in the intervention group increased from 28.5 to 30.1, while it only increased from 28.3 to 29.7 in the control group. Personal Social: Infants in the intervention group showed significant improvements in the personal social subdomain compared to infants in the control group ($p<0.001$). The mean social personal subdomain of the DDST in the intervention group increased from 28.3 to 30.4, while in the control group, it only increased from 28.1 to 29.8.

Table 1. Comparison of DDST subdomains between groups.

Subdomain DDST	Intervention group (SD)	Control group (SD)	p-value
Total score	120.5 (10.2)	112.3 (9.1)	<0.001
Gross motor	30.2 (2.1)	28.4 (1.9)	<0.001
Fine motor	29.8 (1.8)	28.1 (1.7)	<0.001
Language	30.1 (2.0)	28.5 (1.8)	<0.001
Personal social	30.4 (2.1)	28.3 (1.9)	<0.001

The results of this research indicate that the baby gym program is effective in improving baby development in Purwakarta Regency, Indonesia. This is in line with previous research, which shows that baby gym can improve baby development in various areas, including gross motor skills, fine motor skills, language, and personal social. The baby gym program is designed to provide optimal stimulation for babies in various aspects of their development, including physical, cognitive, language, and social-emotional development. The stimulation provided through the baby gym program helps mature the baby's nervous system and brain. Activities such as crawling, climbing, and playing with balls help stimulate the growth and development of nerve cells in the brain. This activity also helps strengthen connections between nerve cells, which is important for cognitive, motor, and language development.[7,8]

Playing with various textures, sounds, and light helps stimulate the sensory areas of the baby's brain. This stimulation helps babies learn about the world around them and develop their ability to process information. Interaction with the instructor and other babies helps stimulate the baby's social and emotional development. This interaction helps babies learn to communicate, socialize, and develop self-confidence. Myelin is a fatty sheath that protects nerve fibers and helps speed up the transmission of nerve signals. The stimulation provided through the baby gym program helps improve the myelination process, which allows babies to learn and develop more quickly. Neurogenesis is the process of creating new nerve cells. Research shows that early stimulation can increase neurogenesis in the hippocampus, an area of the brain important for learning and memory. Neurotransmitters are chemicals that allow nerve cells to communicate with each other. The stimulation provided through the baby gym program helps increase the release of important neurotransmitters such as dopamine, serotonin, and norepinephrine, which play a role in cognitive development, mood, and motivation.[9]

Infancy is an important period for gross and fine motor development. This motor development allows babies to move, be active, and explore their environment. The baby gym program provides a variety of physical activities that help babies develop muscle strength and coordination, which is important for reaching motor development milestones. Crawling is one of the most important physical activities for the development of a baby's gross motor skills. This activity helps strengthen the muscles in the baby's neck, back, and legs. Crawling also helps develop the baby's coordination and balance. Climbing is a physical activity that helps develop the strength and coordination of the baby's upper body muscles. This activity also helps develop the baby's balance and self-confidence. Playing with balls helps develop babies' gross and fine motor skills. This activity helps babies learn to throw, catch, and kick a ball. Playing ball also helps develop the baby's hand-eye coordination and balance. Physical activity at the baby gym helps strengthen the muscles throughout the baby's body. This is important for the development of the baby's gross and fine motor skills. Physical activity at the Baby Gym helps improve the baby's coordination and balance. This is important for the baby's ability to move and carry out activities smoothly. Physical activity at the baby gym helps develop babies' gross and fine motor skills. Physical activity at the baby gym helps improve the baby's heart and lung health. Physical activity also helps improve the quality of a baby's sleep. Physical activity at the baby gym helps improve baby's mood and cognition.[10,11]

Infancy is an important period for language and personal social development. Positive social interactions play an important role in helping babies learn to communicate and socialize with others. The baby gym program provides a variety of opportunities for positive social interactions that help babies reach language and personal social development milestones. baby gym instructors are trained to provide positive and responsive interactions with babies. They talk to babies, sing songs, and play together. Baby gym provides a safe and fun environment for babies to play and interact with other babies. Reading books with babies is a great way to help them learn about language and the world around them. Positive social

interactions help babies learn about language and how to communicate. Babies learn to listen, understand, and use language through interactions with other people. Positive social interactions help babies learn to socialize with other people. Babies learn to share, take turns, and resolve conflicts through interactions with other babies. Positive social interactions help babies build their self-confidence. Babies learn that they can communicate and interact with others successfully. Positive social interactions help build closeness between babies and parents/caregivers. Babies feel loved, appreciated, and safe when they interact with the people they care about.[12-14]

4. Conclusion

The baby gym program is effective in improving baby development in Purwakarta Regency, Indonesia. This is indicated by a significant increase in the total DDST score and all its subdomains (gross motor, fine motor, language, and personal social) in the intervention group compared to the control group.

5. References

1. Denham SA. Emotion regulation and the developing brain: new insights from neuroimaging. Current Directions in Psychological Science. 2021; 17(1): 14-18.
2. Thompson RA. The early years: nature, nurture, and the unfolding of potential. Current Directions in Psychological Science. 2020; 15(2): 63-67.
3. Gunnar MR, Leckman JF, LaCasse MD, Goldsmith HH, Rauch SL, Stevenson CW, et al. Developmental pathways to early adult anxiety and depression: the Minnesota Longitudinal Study of Child Development. Development and Psychopathology. 2019; 21(4): 1133-52.
4. Durkin K. The social-emotional development of young children: a guide for preschool educators. New York, NY: Teachers College Press. 2021.
5. Cassidy J. The nature of childhood friendships. In: Rubin KH, Bukowski WD, editors. Handbook of friendship. New York, NY: Guilford Press. 2021; 63-78.
6. Denham SA, Blair C, Leiberman MD, Thompson RA, Carlson SM. Fearful faces and freezing: prefrontal-amygdala circuitry in children. Developmental Psychobiology. 2022; 41(2): 197-218.
7. Zahn-Waxler C, Radin N. The development of empathy and altruism in young children. In: Eisenberg N, editor. Empathy and its development. Cambridge, UK: Cambridge University Press; 2020; 109-50.
8. Cole DA, Cole PM, Tramontana MS. The development of emotion regulation and dysregulation: a social-developmental approach. Development and Psychopathology. 2022; 16(3): 571-94.
9. Thompson RA. The four Cs of fostering self-regulation in young children. Zero to Three. 2021; 36(1): 22-29.
10. Dunst CD, Dumont H, Trivette CM, Hamby DV. Building effective and collaborative relationships with families. In: Gestwicki CD, editor. Early childhood intervention: an inclusive guide. Baltimore, MD: Brookes Publishing; 2018; 115-140.
11. Greenberg M, Papalia D, Olds-Prescott C. Human development. New York, NY: McGraw-Hill Education. 2019.
12. Shonkoff JP. The lifelong effects of early childhood adversity and toxic stress. Pediatrics. 2021; 128(6): e1430-e1436.
13. Ahlqvist-Guzman A, Park E. Early social-emotional experiences and developmental trajectories: A critical review of theory and research. Child Development Perspectives, 2020; 14(3): 166-75.
14. Gable SL, Eisenberg N. Empathy and prosocial behavior. In: Eisenberg N, editor. Empathy and its development. Cambridge, UK: Cambridge University Press; 2020; 179-220.