EDUCATIONAL INSIGHTS
Vol. 2, No. 1, June 2024, pp. 72-78
e-ISSN: 3025-6658, URL: https://eduinsights.id

Stimulating Spinal Cord Function Through Rhythmic Gymnastics for Children Aged 5-6 Years

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Article Information

Article History:

Received June 21, 2024
Revised June 26, 2024
Published June 27, 2024

DOI: https://doi.org/10.58557/eduinsights.v2i1.45

Keyword:

Spinal Cord
Rhythmic Gymnastics
early childhood education

ABSTRACT

The spinal cord is a collection of nerve fibers located along the spine, stretching from the bottom of the brain to the lower back. part of the body which is also called the medical term finalistic medulla. As is known, the brain is the central organ that gives orders to other body organs, even the smallest cells in the body. Meanwhile, the spinal cord is a bridge that connects messages from the brain to the body parts and vice versa. Often the spinal cord is not stimulated properly and this has a big impact on its development, so in order for the spinal cord to function well it needs to be stimulated in one way, namely rhythmic gymnastics. With rhythmic gymnastics, the child will be free to move his body while following the rhythm so that the child's spinal cord or spinal cord can move well.

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1. INTRODUCTION

The first 5 years of a child's growth and development are often referred to as the golden age because during that time the child's physical condition and all abilities are developing rapidly. For example, a child's running speed will increase as his age increases. Apart from that, physically, the child will also look taller or bigger. In kindergarten age children, the development of children's abilities will also be very visible. One of the abilities of kindergarten children that is developing rapidly is their physical or motor skills. The process of growth and development of children's motor skills is related to the process of growth and development of children's motor skills (Siyoto & Sodik, 2015). The development of children's motor skills will be clearly visible through the various movements and games they can do. Therefore, improving children's physical skills is also closely related to playing activities which are the main activities of early childhood. The stronger and more skilled a child's movements are, the more children enjoy playing and are tired of moving all their body parts when playing. The movement of children's body parts while playing has many benefits for the growth of other aspects of children's abilities, such as aspects of cognitive development and aspects of children's social emotional development. Apart from that, improving children's movement and physical skills will play an important role in maintaining children's physical health (Qomariah & Hamidah, 2022).

In line with this, it is also necessary to stimulate the spinal cord, because this has a big impact on the child's physical and motor development. The spinal cord (spinal cord) works together with the brain in carrying out the functions of the central nervous system which regulates daily body activities, such as moving, feeling pain sensations and others (cold, heat, vibration, etc.), as well as controlling various functions. body which includes blood pressure, breathing, and heart rate (Braken MB: 2002). As is known, the brain is the central organ that gives orders to other body organs, even the smallest cells in the body. Meanwhile, the spinal cord is a bridge that connects messages from the brain to the body parts, and vice versa.

The first function of the spinal cord is to control body movements and functions. In this case, the spinal cord will be an intermediary for the brain to send signals to certain parts of the body. Apart from sending commands to control conscious (voluntary) body activities, the spinal cord is also tasked with carrying signals to control unconscious (involuntary) body activities, such as breathing and heartbeat (autonomous function).

The spinal cord also controls the reflex movements of the human body without processing it in the brain, for example reflex movements in the legs when someone touches the knee. In knee reflex movements, sensory neurons are directly connected to motor neurons in the spinal cord without passing through the brain, so this process occurs more quickly than motor movements in general.

The next function of the spinal cord is to send signals from the body's five sense organs to the brain. This process allows the body to feel a number of sensations, such as pain, cold, heat, touch, and so on. There are many ways to stimulate the spinal cord in children, one of which is movement or rhythmic exercises.

Rhythmic gymnastics are gymnastic movements or free movements accompanied by music or singing according to the rhythm that follows. With this rhythmic exercise, it is hoped that spinal cord function can be stimulated properly. The elements contained in rhythmic gymnastics include: flexibility, continuity of movement, and precision of rhythm. A series of rhythmic gymnastics can be done by walking, running, jumping, jumping, swinging and rotating the arms. Rhythmic gymnastics. Rhythmic gymnastics, also known as rhythmic gymnastics, is gymnastic movements done to the rhythm of music, or free exercises done rhythmically. Rhythmic gymnastics can be done using equipment or without equipment. The tools that are often used are doubles, hoops, sticks, balls, ribbons and hats (Bénony et al., 2002). With rhythm, we need to master the movement techniques in rhythmic gymnastics in order to achieve harmonious movements that are beneficial for the body and mind. This is in accordance with the aim of exercise, namely to build body beauty, fitness and strength.

Gymnastics in early childhood education (PAUD) which is often used is "rhythmic gymnastics, which are gymnastic movements accompanied by music." For young children, the exercises used are not complicated exercises, nor aerobic exercises which are often done by adults in general. injury. Children can usually use rhythmic gymnastics because these gymnastic movements can be done using tools or without tools and this gymnastics is done using more rhythmic music (Pandha Hs, Kirby RS: 1991). There are three things that must be emphasized in rhythmic gymnastics, namely precision of music/rhythm, flexibility (flexibility), continuity of movement.

2. METHOD

The research method used in this research is the experimental method. with experiments, research is carried out actively to manipulate one or more independent variables to see their effect on the dependent variable (Aji Sofanudin: 2011). The design used in this research is pretest-posttest, which is a research approach where participants are tested before and after the treatment or intervention given. At the pretest stage, basic data is collected before treatment or intervention is given. After that, treatment or intervention was given to the experimental group, while the control group did not receive the treatment. After the treatment was completed, both groups were tested again to measure the effects of the treatment by comparing their posttest results with the pretest results. This helps researchers to assess the effectiveness of the treatment or intervention provided.

The data collection techniques researchers used for this research were observation and documentation. Observations can be made to monitor children's participation and activity during rhythmic gymnastics. Meanwhile, functional tests such as muscle strength tests or balance tests can be used to measure the effect of rhythmic exercise on spinal cord function (Dimyaty, 2013). Meanwhile, the sample was 4 children. In this context, children aged 5-6 years will be involved in rhythmic gymnastics and the population is all children aged 5-6 years in the school environment (Sugiyono: 2016).

3. RESULT AND DISCUSSION

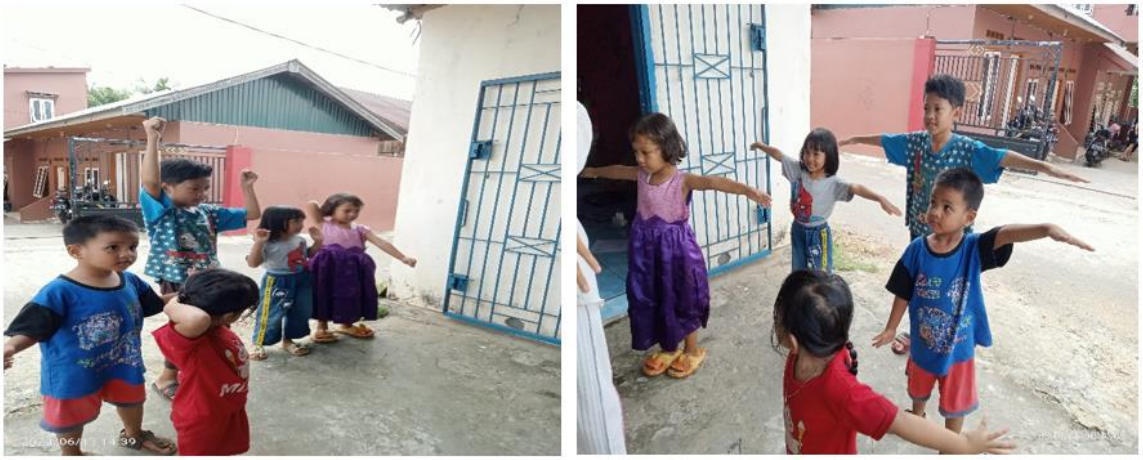
Early childhood children experience very rapid development through good stimulus and appropriate aspects of child development, through an experimental study conducted in one of the Telaga Dewa housing complexes in Bengkulu involving four children aged 5-6 years, each of whom was given stimulation to improve their spinal cord function. This research aims to explore the effects of this stimulation on children's body responses in developing their motor and sensory abilities. The research method involved providing planned and closely supervised stimulation over a period of time, with structured measurements of their progress in terms of movement, coordination and sensory sensitivity.

It is hoped that the results of this experiment will provide teachers and parents with new insight into child development and the potential for improving spinal cord function in young children. Through appropriately directed stimulation, children can train eye-foot coordination, balance, proprioception (body awareness), and also creativity in exploring new movements. Stimulation of the spinal cord through this activity can support optimal gross motor development of children (Siyoto & Sodik, 2015). In an experiment conducted at the Telaga Dewa housing complex in Bengkulu, four children participated with different characteristics and responses to rhythmic gymnastics activities carried out to stimulate their spinal cord function. Based on Minister of Education and Culture Regulation no. 137 of 2014 concerning National Standards for Early Childhood Education covering aspects of child development, including gross motor development, namely:

Table 1. Child Development Achievement Levels

Development	Child Development Achievement Level	
	5 Year Old Child	6 Year Old Child
Rough motoric	1. Coordination movement: Children 5 years old Already can coordinate movement hands, feet and body with Good. Involving rhythmic gymnastics movements coordinated, like swing hands and feet, you can increase ability coordination motion child. 2. more balance Good. Movements in rhythmic gymnastics, such as stand with one leg, turning, and jumping, can train and improve balance child. 3. Agility: Children of age This Already start agile in move. Involving rhythmic gymnastics movements fast and changing direction, like running, jumping, and spinning, can increase agility child. 4. Increase Strength Muscles: Movements in rhythmic gymnastics, such as lifting legs, jumping, and pushing, can help develop strength muscle child. 5. Increase Flexibility: Involving rhythmic gymnastics movements stretching and	1. Coordination complex movements: Children 6 years old Already can coordinate more movements complex, like movement Aligned hands, feet and body with rhythm music. Involving rhythmic gymnastics movements complex can help increase coordination motion child. 2. Balance and agility: 6 year old child generally Already own more balance and agility Good. Movements in rhythmic gymnastics, such as spin, jump, and move quick, got it train and improve balance as well as agility child 3. Strength and power stand Muscles: Movements in rhythmic gymnastics, such as lifting legs, jumping, and running, can help increase

Development	Child Development Achievement Level	
	5 Year Old Child	6 Year Old Child
	relaxing muscle can increase flexibility child.	strength and power stand muscle child. 4. Increase Flexibility: Involving rhythmic gymnastics movements stretching and relaxing muscle can increase flexibility child. Taking decision and 5. creativity: Rhythmic gymnastics can push children For take decision fast in respond instructions and rhythm music, as well explore with movements creative.



Picture 1. Rhythmic gymnastics

Rhythmic gymnastics is a form of physical activity that involves rhythmic and structured movements. The movements in rhythmic gymnastics help increase blood flow to the spinal cord, stimulate neurons, and strengthen nerve connections needed for motor coordination and balance (Purves et al., 2001). Physical activity such as rhythmic gymnastics can increase a child's desire to consume nutritious foods, which in turn supports optimal development and function of the spinal cord. Rhythmic gymnastics provides an environment rich in sensory and motor stimulation. Rhythmic music, body movements, and social interactions during exercise help stimulate children's neurological development, including the spinal cord (Gallahue & Ozmun, 2006).

The rhythmic movements in rhythmic gymnastics stimulate children's cognitive functions by increasing blood flow to the brain and spinal cord, which supports learning and attention (Diamond, 2000). Rhythmic gymnastics is an activity that can stimulate the gross motor development of young children. Rhythmic gymnastics is a series of regular and rhythmic movements carried out accompanied by music or a song. so that it can encourage children's creativity by giving them the freedom to explore in carrying out new movements and can train eye-foot coordination, balance, proprioception (body awareness), and also children's creativity in exploring new movements. Stimulation of the spinal cord through this activity can support optimal gross motor development in children. Stretching movements help increase flexibility of the spine and the muscles that support it, as well as increase blood flow to the spinal cord (Tortora & Derrickson, 2018).

This assessment checklist was carried out on June 13 2024 with a sample of children aged 5-6 years with rhythmic gymnastics activities carried out at Gang Telaga Dewa 10 RT 14 RW 03 with the observation results in the form of the following table:

Table 2. Checklist sheet Development child

No	Check points	Observation result	Amel			Hanum			Naura			Debi		
			BB	MB	BSH	BB	MB	BSH	BB	MB	BSH	BB	MB	BSH
1.	Purpose of rhythmic gymnastics	To stimulate the spinal cord												
2	Movements made	Starting from lining up, stretching your arms, walking in place, jumping and turning												
3	Implementation duration	For 20 minutes												
4.	Movement Instructions	The movement instructions start from the count of 123 and then follow the gymnastics movements for early childhood which are displayed on the laptop.												
5.	Supplies/equipment	Laptop/Hendphone/Speaker												
6.	Development monitoring	Goes well		✓				✓		✓				✓
7.	Safety	Safe and Strategic												
	Record of results/Changes	Amel is a 5 year old girl. She is a child who is a little quiet, but when the gymnastics activities are going on, Amel is very active in following the movements, she even makes reflex movements or herself when the rhythmic gymnastics starts.												

Information:
BB: Not Yet Developed
MB: Starting to Grow
BSH: Developing According to expectations

Based on the results of observations in table 2 regarding aspects of monitoring the development of 4 children through rhythmic gymnastics activities aged 5 to 6 years. There are 2 children, namely Amel and Naura, who are at the starting level, while the other 2 children, namely Hanum and Debi, are at the developing level as expected. These results mean that the ages of children have differences in development, some are starting to develop and some are already developing according to expectations.

In children aged 5-6 years, the spinal cord plays a role in developing gross and fine motor skills, as well as coordination and balance. Spinal cord stimulation can help accelerate the development of children's nerves and motor skills (Malina, 2004). Rhythmic gymnastics helps improve coordination between the hands, feet and other parts of the body, which involves optimal work of the spinal cord (Gallahue, 1989).

Performing rhythmic movements helps coordinate signals between the brain and spinal cord, which strengthens neural pathways and improves motor responses (Kandel et al., 2000). This activity stimulates proprioceptive development through the spinal cord, which helps children recognize their body position in space and improves balance. Rhythmic gymnastics is an effective method for stimulating spinal cord function in children aged 5-6 years. Through structured and rhythmic movements, children can develop good motor skills, balance and coordination, as well as supporting cognitive and neurological development.

Rhythmic gymnastics movements that involve coordination between the hands, feet and the body as a whole help develop gross and fine motor coordination. This process involves the processing of sensory and motor information through the spinal cord, which contributes to the development of motor skills (Gallahue, 1989).

4. CONCLUSION

After experiments carried out through rhythmic gymnastics activities on children aged 5-6 years, this rhythmic gymnastics method was quite effective in stimulating and improving motor responses and children's involvement in the context of stimulating spinal cord function. Rhythmic gymnastics is an activity that can stimulate the gross motor development of young children. Rhythmic gymnastics is a series of regular and rhythmic movements carried out accompanied by music or a song. so that it can encourage children's creativity by giving them the freedom to explore in carrying out new movements and can train eye-foot coordination, balance, proprioception (body awareness), and also children's creativity in exploring new movements. Stimulation of the spinal cord through this activity can support optimal gross motor development in children. This study underlines the importance of considering children's individual characteristics in designing stimulation programs, as well as the potential to develop their creativity and engagement through structured physical activity. Thus, the use of rhythmic exercise as part of a therapeutic intervention or rehabilitation approach can provide significant benefits in improving motor and sensory function in young children.

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