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The Effectiveness of the Game Reaching for Stars and Achieving Hope on the Static Balance of Children with Flat Foot Conditions

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Abstract

Balance in children plays an important role in maintaining body posture in static and dynamic conditions, regulating and controlling motion stability, and supporting the maturation of motor skills. Motor-related movement disorders in balance and posture are influenced by the impact of flat foot. This research aims to determine the effectiveness the game consists of reaching for stars and achieving hope of the static balance of children with flat foot. The research method used is quantitative with a pre-experimental research group design after testing. The population of this study was the class B group of Samarinda City Kindergarten aged 5-6 years, totaling 60 people. Sampling used a purposive sampling method with the qualifications of respondents who identified the condition of the flat foot as 15 children. The data collection techniques used are observation, experiments, and documents. The data analysis technique used is statistical analysis tif description, Kolmogorov Smirnov normality test, and test paired sample test. Based on the research results, there are significant changes in the abilities of the child's static balance as shown by the results of the paired sample test as big as Sig. (2-tailed) 0.001<0.05, then H_0 is rejected and H_1 is accepted, meaning that the effectiveness of the game of reaching for stars and achieving hope has a significant influence on children's static balance abilities.

Keywords**: **Static Balance, Reaching Stars, Achieving Hope

INTRODUCTION

The preschool period for children aged 0-6 years is a phase in the process that is undergoing rapid development so it needs to be maximized by providing appropriate educational stimulation (Fadlillah, 2018). Preschool education is given to children from birth to six years of age and is not a prerequisite for attending basic education, which is achieved by providing educational simulations to support the growth and development of children who are physically and psychologically ready to continue learning to continue their education. (Antara, et al., 2017). This stage is the ideal time to lay the foundation for children's development starting from cognitive, motor, language, social-emotional, religious, moral, and artistic abilities. Every child has their level of maturity and intelligence, including the essential aspect of motor skills, and can also develop and support physical fitness components well.

Physical fitness is a physical ability that makes it possible to carry out physical activities according to the body's functional movement capacity. Physical activity includes body movements produced by skeletal muscles and its implementation requires energy expenditure. In this case, physical activity also plays a role in developing coordination, speed, agility, balance, endurance, and increasing self-confidence, including adopting a healthy lifestyle. Physical fitness is divided into two groups, namely physical fitness which is related to health in physical conditions, and physical fitness which is related to ability in the aspect of movement skills. Components of physical conditions related to health, such as cardiovascular capacity, respiratory capacity, endurance, muscle strength, flexibility, and body position. Meanwhile, the components of physical fitness related to skills are as follows: speed, agility, dexterity, balance, reaction speed, coordination, and body composition.

Physical fitness is the core of the physical education, sports, and health learning process which encourages physical activity and supports the capacity of physical skills. More specifically, sport and health refer to the relationship between movement and other forms of education, such as the relationship between physical development and aspects of growth and development. At the age of 5 years, children begin to involve themselves in games with greater complexity which include elements of cooperation and competition (Giriwijoyo & Sidik, 2012). Physical fitness is a person's ability to carry out excessive physical activity without feeling excessively tired so that they can adjust the function of their body organs and can still enjoy activities in their free time (Mubaraq, et al., 2022). According to Irianto (2004:17), during the growing period, students should do physical activity in the form of sports with a frequency of around 3-5 times a week to maintain their physical condition, especially their fitness level. Physical condition in terms of fitness can decrease by 50% after stopping regular exercise or training for 4 to 12 weeks and will continue to decrease up to 100% within 10 to 30 weeks.

Students at a kindergarten education level will be provided with a basic level of scientific discipline, one of which is games applied to learning that support growth and development. participants both in cognitive and physical aspects. Physical education cannot be separated from the component aspects that support health and development in every physical activity that involves movement elements according to the child's age. Therefore, this can be used in counseling to monitor the growth and development and health of students based on their condition to detect early the occurrence of health problems related to functional movement when carrying out physical activities. Health problems are not only related to the metabolic system or immune system but can also occur in movement disorders related to children's motor skills which involve the role of balance and body posture. According to Zuhriyah and Kumaningtyas (2015), physical motor development, especially children's body balance, also includes efforts to optimize body growth and development through types of supportive play activities.

Movement disorders related to motor skills in balance and body posture are influenced by the impact of flat foot conditions. Flat foot is a condition where part or all of the soles of the foot touch the floor or other stepping surfaces when standing. The condition of the medial arch of the foot results in pressure on the subtalar joint which causes internal rotation of the tibia (Safitri et al., 2019). Structural abnormalities in the foot can affect the physiological condition of the plantar fascia and muscles. Most cases of flat foot manifest physiologically, if not detected early, this condition will cause symptoms of disturbance in functional leg movements which can affect one of the physical components that play a role in physical activity, namely balance. Balance in children plays an important role in maintaining body posture in static and dynamic conditions, controlling and controlling the stability of movement, and supporting the maturation of motor skills.

Children who experience falling easily due to low ability to maintain balance and experience obstacles when walking due to decreased motor skills in children. Flat foot conditions will get worse if not treated as early as possible. Low balance ability in children can cause children to be prone to falling and experiencing obstacles when walking affecting the decline in children's productivity (Abrar, 2018). Children with both excessive joint laxity and delayed development are more likely to suffer from flat foot. The findings of this study can serve as a reference for clinical workers to deal with foot issues in children with delayed motor development (Chen et al., 2014). In general, the arch of a flat foot tends to be over-pronated, so that when walking, especially in a standing position, the position of ground reaction forces will shift inward or medially. Meanwhile, in the condition of a cavus foot, the position of the foot tends to be over-supinated so that when walking, especially in the standing or stance phase, ground reaction forces will shift more to one side or move laterally (Hillstrom et al., 2013).

This activity takes classes that have an age range of 5-6 years with a total of 60 children. Health checks and education have been carried out previously in the form of measurements, posture, weight, and height. Based on data collection of observations of children's activities in kindergarten, the partners propose to help children to gain knowledge about the importance of early detection of flat foot. The risks of flat foot cases are impaired balance, easy fatigue when walking for a long time, and injury to children it can reduce productivity and interfere with the functional movement of children. Efforts to detect the early stages of the risk of disorders from flat foot conditions require follow-up. After obtaining the data and knowing the priority problems in the Samarinda City Kindergarten, the researchers provided preventive solutions which were delivered to the children, accompanying teachers, and parents through games and stretching exercises in the form of reaching for the stars and achieving hope which can be done inside or outside class. For this reason, it is necessary to carry out an initial examination or screening to help detect the risk of balance disorders related to flat foot conditions. This research aims to determine the effectiveness of games in reaching for stars and achieving hope static balance in children with flat foot 5-6 years old in Samarinda City Kindergarten.

RESEARCH METHODS

The first stage begins by collecting respondents as a sample, namely students from class B Samarinda City Kindergarten, and coordinated with the school and kindergarten accompanying teachers to apply the game of reaching for stars and achieving hope during 16 meetings. Before playing the game of reaching for the stars and achieving hope, researchers examined the archeus pedis using the wet footprint test method by instructing the sample to alternately step their right and left foot on the painted part and then place their foot on the paper which is then identified using Clarke's angle test method, which is followed by carrying out calculations using 2 angle lines (the first line connects the medial edges of the metatarsal heads one with the heel, the second line connecting the edge of the first metatarsal head with the center of the longitudinal arch of the medial side). Next, identify the results according to the test result criteria using the Clarke angle test method by classifying the examination results into three categories, namely: a) Flat foot: <31°, b) Normal foot: 31° -< 45°, c) Cavus foot: > 45°.

Then proceed with identifying students' static balance abilities using the Stork Stand Test, where respondents are instructed to maintain body balance by standing up straight with their hands on their waist, then lifting one leg attached to the medial side of the knee of the other leg and closing their eyes, and the time is recorded using a stopwatch. Results obtained from data analysis and the initial examination classification are used to determine the intensity of the game program and stretching exercises through the game of reaching for stars and achieving hope which will then be conveyed to the accompanying teacher.

The research method used is a quantitative approach with a pre-experimental research group design after testing. The population of this study was 60 Samarinda City Kindergarten students. The samples taken in this study used purposive sampling with the qualifications of respondents aged 5-6 years who were identified as having flat foot as 15 children. The data collection techniques used are observation, experiments, and documents. The data analysis techniques used are descriptive statistical analysis, normality tests using the Kolmogorov-Smirnov statistical test, and difference tests using the paired sample t-test. This data analysis technique was used to determine the effectiveness of the game of reaching for the stars and achieving hope for the static balance of children with flat foot in Samarinda City Kindergarten

RESULT AND DISCUSSION

Based on the distribution of respondents in this study, shows that the number of female students was 37 people and 23 male students. The number of female respondents surveyed was 29 people who had normal arches or foot arches, and 8 children had flat foot conditions, while of the male respondents who had been identified by the initial examination, 16 children had normal foot arches and 7 children had the condition. flat foot. Therefore, it can be concluded that the incidence of flat foot in men is higher than in women. So the results of the initial examination analysis of respondents whose flat foot condition was identified were 15 people.

Table 1. Characteristics of Respondents

Characteristics		N	Percentage (%)
Woman	Flat foot	8	21.6
	Normal	29	78.4
Man	Flat foot	7	30.4
	Normal	16	69.6

Furthermore, research results related to static balance in girls with flat foot conditions were worse at 30.7% in the very good category and then compared with the static balance test results for boys in the very good category at 32.3%. According to Sahabuddin (2014) states that the balance ability of boys is better than that of girls because it is influenced by environmental factors in the play habits of boys who are more active and often carry out excessive activities in the form of challenges, whereas girls tend to be passive. and femininity is limited to playing outside the home and is influenced by parental stigma regarding physical activity and play limits imposed on boys and girls.

Table 2. Stork Stand Test Pre-test Results (Static Balance)

Characteristics		Percentage (%)
Girls	Flat foot	30.7
Boys	Flat foot	32.3

Post-test results for respondents with flat foot conditions using *the stork stand test* or test on the ability to perform static balance after receiving treatment in the form of a game of reaching for stars and achieving hope 16 times in meetings with repetition or repetition 30 times for each meeting, there was an increase in time. will be explained in the following table. The results of the difference test between the pre-test and post-test in this study through *the paired sample t-test* showed that there was a difference in the results of the increase in the post-test static balance time in children aged 5-6 years with a significance value of 0.000 ($p < 0.05$). From this test, the average difference in static balance and average results were obtained the post-test data obtained a result of 16.35 which was greater than the average result in the pre-test with a figure of 9.12. So it can be concluded that the results of the static balance post-test in children with flat foot after receiving training treatment in the form of games for reaching for stars and achieving hope are better than the results in the pre-test or before receiving treatment.

Table 3. Difference in Mean Results of Pre-Test and Post-Test

Data source	N	Mean	SD	p
Pre-test	15	9.12	1.547	0.001
Post-test	15	16.35	1.603	

People suffering from flat foot experience weakness in the intrinsic or inner muscles of the foot, such as the supporting structure of the foot (longitudinal arch), which can affect the

body's levers when the foot collides and pushes, thereby disrupting the balance (Hasbiah, et al. 2023). Flat foot conditions cause a tendency for the foot to overpronate, which continuously affects the entire structure of the foot, causing the tibia to also experience internal rotation (Safitri, et al., 2019). This disorder causes injury caused by the arch structure growing abnormally, affecting the child's balance, continuing deformity, and causing pain. The impact of this condition results in a decrease in the ability to maintain postural balance or body balance in children. Balance is defined as the ability to control the body's center of mass or center of gravity relative to the base of support. When the body structure changes, the COG (center of gravity) also changes (Naufal & Wahyuni, 2022). Several factors influence the increase in the condition of flat foot, namely male gender, childhood, obesity, weak ligaments, a family or genetic history of flat foot, and the habit of wearing footwear during childhood (Mien, V.A., et al., 2017). As a child gets older, the physiological condition of the tendon tissue in the foot, which functions as a support for the joints, will tighten and form an arch in the foot.

Providing game designs and stretches in the form of exercises for reaching for stars, achieving hope and footprints aims to train balance which can affect the physiology of the archcus pedis. So that the form of playing and stretching that is applied is dominated by prioritizing training of body posture to stay in an upright position, stretching the body upwards through the game target of the star that has been achieved, and maintaining body position on tiptoe to achieve hope by sticking the star that has been achieved as high as possible. on targets that have been attached to the wall (Cahyaningrum, et al., 2023). Next, the game of reaching for stars and achieving hope is given, which is focused on training children to follow game instructions by taking pictures of star characters at a height that is higher than their height so that students have to reach for star characters and after that students stick to targets that have been attached to the wall as targets to reach. The tiptoe method prioritizes flexibility, precision, and balance of the body which is done repeatedly.

Games in the form of reaching for the stars and achieving hope can reduce the impact of overpronation on the ankle thereby minimizing the ongoing impact which will cause internal rotation of the tibia and femur thereby inducing a shift in pelvic alignment towards the anterior area which can be reduced. According to Bagiartana and Huriah (2022), providing exercises that emphasize strengthening the muscles in the legs and back is very important to improve the body's postural function, improve balance, and reduce the risk of falls. So that the distribution of COG's role in body mass can be evenly formed and will influence body posture to become more trained in maintaining a state of balance. This condition shows that the game of reaching for the stars and achieving hope has a good influence on the static balance of children with flat foot. One of the benefits of playing the game of reaching for the stars and achieving hope is that there is an increase in muscle strength, including the muscles of the pelvis, foot, and legs which play an active role in static balance and prevent or slow down functional muscle loss, so that with the game reaching for the stars and achieving hope can improve and maintain body posture balance when still.

CONCLUSION

Based on the results of data analysis and discussion of this study, it is obtained that the difference in the average static balance in the post-test data obtained a result of 16.35 is greater than the average result in the pre-test with a result of 9.12, there are significant changes in the abilities of the child's static balance as shown by the results of the paired sample test as big as Sig. (2-tailed) 0.001<0.05, then H_0 is rejected and H_1 is accepted. So it can be concluded that the effectiveness of the games reaching for stars and achieving hope has a significant effect on

improving static balance abilities in children with flat foot conditions. In this way, the game of reaching for the stars and achieving hope, which is applied according to the child's growth and development age with the right dose and training program, can be used as a way to prevent disorders that arise due to flat foot and exercises to improve the child's stasis balance ability.

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