



Balance Board Sensory to Increase Body Balance's Children with Special Needs

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Abstract

Children with special needs is a child who has obstacles in his growth and development. Children with special needs with multiple disabilities are children who have special learning needs and barriers caused by a combination of barriers and special learning needs caused by a combination of physical, sensory, social, emotional, intellectual and others. The condition of this multiple obstacle varies greatly depending on the type of mild and severity of the obstacle experienced. This study aims to produce an educational game tool (APE) to assist teachers and parents coaches in stimulating motor skills related to static and dynamic balance's children with special needs. The research methods model used is ADDIE (Analysis, Design, Development, Implementation, and Evaluation), involving 4 teachers and 20 students with special needs (8-12 years olds). expert judgment in this study consisted of 4 experts, consisting 2 learning media experts, 1 psychologist, and 1 adaptive physical educator. Expert analysis of APE balance board sensory product using CVI and CVR, based on the result of the analysis, an average score of 0.7 which means the validity is high and it can be concluded that APE balance board sensory help teachers and parents stimulate the static and dynamic balance skill children with special needs.



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INTRODUCTION

The first five years is the golden age for children's motor development. Childhood is often referred to as the “ideal time” for learning motor skills. Early childhood development is holistic in nature, that is, it can develop optimally if the body is healthy, has enough nutrition and is educated properly and correctly. Children develop from various aspects, namely their physical development, both basic subtle movements, developing cognitive aspects, social and emotional aspects. At this age a child's gross motor or physical abilities are developing rapidly. Motor development is strongly influenced by the central nervous system and the stimulation it gets. Movement is the gateway for knowledge and stimulation to develop potential in children. If a child is unable to perform physical movements properly, it will develop a feeling of insecurity in carrying out physical movements. Apart from that, moving or playing involves emotions, feelings and thoughts which will also affect the child's socialization and psychological ability. One of the most important factors in children in carrying out daily activities and exercises is balance (Padafani, et al., 2019). Balance is the ability to maintain proper posture and body position when standing (static balance) or when performing movements (dynamic balance) (Widiastuti, 2015). balance according to Rubianto Hadi (2007), namely a person's ability to maintain proper posture and body position when standing (static balance) or moving (dynamic balance). balance is a person's ability to control the body's position on the fulcrum (Duane Knudson, 2007).

The second factor that affects balance is the line of gravity (LOG) the LOG begins at the top of the head and descends between the shoulders through the trunk, slightly anterior to the sacrum

and between the weight-bearing joints and the fulcrum. The relationship between the line of gravity, the center of gravity and the fulcrum is what determines the degree of stability of the body. The fulcrum (Base of Support/ BOS) or base of support is a balance factor which is the part of the body that relates to the supporting or supporting surface (Padafani, et al., 2019). Balance is formed through 3 integration processes from sensory, and sensory output. The balance system requires 3 systems, namely; (1) the innervation system of the senses which functions to process sensory for perception through visual, vestibular and somatosensory (tactile and proprioception), (2) the musculoskeletal system which includes postural alignment, muscle flexibility, joint integrity and muscle performance, (3) environmental systems, namely effects of gravity, pressure on the body various movements. Movement is a human effort to meet the needs of his life with activity. Humans carry out moving activities according to their needs, human movement activities ranging from simple movements to complex and complex movements are important elements in human life. Movement as an instrument to achieve the goals of all activities of human life, including movement in sports (January 2019).

Humans as social beings with complex life activities are very dependent on the surrounding environment. Various kinds of activities are carried out by humans to carry out their daily lives which include work activities, sports, mutual cooperation. In the activities of daily life, motion activity is always inherent in human life. Motion is one of the characteristics of living things or humans. The ability to move is a form that can maintain the survival of the human being himself. Movement is essential for humans. Movement development can describe the function of sensory-motor

perception, intellectual function and psychological emotional function. Development is a continuous process towards changes in functional capacity that is organized, specialized in the individual, and can function fully. Growth is a condition that shows a change in size, increase in height or weight. Movement development is a process that goes hand in hand with age. In order to get better quality of movement, we need a learning pattern or process about movement and movement development that cannot be separated from physical education, namely the learning process involved in learning movement skills for an active lifestyle (Rahayu, 2013).

The concept of motion is the stages or understanding of motion to develop and mature a child's movement skills that involve the basis of the child's motion. the concept of motion which includes the concept of the body, the concept of space, the concept of business and the concept of connectedness. According to him, there are four main concepts of movement, namely (1) the body which represents the means of action or the tool used to move, (2) space is the place where the body moves, (3) effort is the quality of the movement performed, and (4) relationship is a connection or the interaction of tools when the body moves either with objects, people or circles (Mahendra, 2017). Children with special needs require more intense services compared to normal children of the same age. Services are provided to children with special needs, because children have abnormalities from birth or because they are exposed to economic, political, social conflicts and deviant behavior (Divine, 2013). According to Sigit (2019), playing is an activity carried out for the pleasure it causes without considering the end result. Playing is done voluntarily, there is no element of coercion or pressure from

outside, and is not an obligation. Playing is a fun activity, therefore this method of playing is intended to avoid boredom in the teaching and learning process. Playing is one form of activity in physical education. Therefore playing in the educational endeavor has the same duties and goals as those of physical education (Matakupan, 2002).

Motor development at the beginning depends on the process of maturity, then maturity depends on learning and knowledge and experience. Family and environment are one of the important factors in how children gain experience of movement. Children's basic movement abilities and skills need to be trained as early as possible, including ABK. This motor process involves a system of coordinated movement patterns (brain, nerves, muscles, and skeleton) with very complex mental processes, referred to as motion creation processes. The four elements cannot work independently, but are always coordinated. If one of the elements is disturbed, then the movement that is carried out can be disturbed (Komaini, 2018).

Factors that influence the development of motion, between others, genetics, environment, stimuli, and nutritional status (Rosidi, 2012). According to Patmonodewo (2000) growth is influenced by the amount and type of food consumed by the body. The relationship between the food consumed by the body and body growth is the concern of nutritionists, while the development is influenced by the pattern of interaction of children with the environment. For children, play activity is an activity that is serious, but exciting, through play activities, various jobs are realized. Playing is an activity that children choose themselves because it is fun not because they will get prizes or praise, playing is one of the main tools

that becomes an exercise for their growth, if children play freely according to their will or according to their own pace, then they train their abilities (Semiawan, 2002). Playing activities are all spontaneous activities that are fun and have a positive value for children, do not have extrinsic goals, but the motivation is more intrinsic, involving children's active participation using either tools or without tools, without thinking about the end result which is done without coercion from others, and expect nothing in return or praise. Through playing a child will gain various advantages including maturity in the physical, motor, cognitive, social, language, and emotional aspects as well as personality, as well as learn various things that can broaden horizons, knowledge and skills that can be used when they become adults. There are many types of games that children can play. Whether it's a game played individually or in groups (Komaini, 2018).

Play is considered a central component of healthy growth through which children develop cognition, language, social competence, self-regulation, and self-esteem (Kesumawati et al., 2020). Requirements in the selection of playing media must be adjusted to the learning to be achieved. According to Zulkifli (1991) a good game has several conditions including: (a) Easy to assemble and disassemble. Easy-to-assemble, self-repairing play equipment is more ideal than self-propelled toy cars. Game tools that are sold in stores are more a spectacle than functioning as a game tool. Children are not attracted by the good and perfect game equipment that is produced in the factory. (b) Developing Fantasy Power Game tools that are easy to shape and change are very suitable for developing fantasy power, which gives children the opportunity to try and practice their fantasy power. (c) Not Dangerous Experts who have examined

the types of play equipment agree about play equipment that poses a danger to children, namely ladders, tricycles and seesaws. In addition, there are other tools that are classified as dangerous, such as scissors with sharp ends, sharp knives, stoves, and so on. From the opinion above, playing media must be adjusted to the learning to be achieved. The criteria for selecting playing media depend on the conditions and characteristics of students and learning materials. Good play has several conditions, including being easy to assemble and disassemble, developing fantasy power, and being harmless.

APE Sensory Balance Board

Educational game tool (APE) is a tool for playing while learning which includes tools for free play and activities under the leadership of the teacher. APE is a game tool specifically designed for educational purposes. APE balance sensory board is a children's game media specifically designed to train lower leg and abdominal muscle strength in training static and dynamic balance in children with special needs, besides that it can also improve the motor sensors of children with special needs by providing various textures on the balance board.

Product Specification

The APE sensory balance board that was developed measures 30 cm long, 40 cm wide and 7 cm high. The material, made of wood, is coated with adjustable smooth and gross textures (pom-pom fabric material and pom-pom plastic material). APE balance board sensory was validated by 4 experts with assessment criteria related to aspects; 1) safety (materials used, methods and standard operating procedures for using tools, conformity to the characteristics of crew members), 2) price/cost of manufacture and ease of making tools

(cost) 3) suitability of functions and uses of tools for users.



Fig.1 APE Balance Board Sensory

METHODS

The research method used is the ADDIE development research method Analysis, Design, Development, Implementation and Evaluation. The subjects in this study were intellectual disability, autistic and down syndrome children with 20 people aged 8-12 years consisting of 12 women and 8 men. This study involved 4 experts, consisting of 2 learning media experts, 1 psychologist, and 1 Adaptive Physical Education teacher. The results of the assessment by experts were analyzed using CVI (Content Validity Index) and CVR (Content Validity Ratio) to see whether the APE balance board sensor was feasible for field trials (empirical validity).

RESULT

The results of the assessment by experts can be seen in the table 1 below:

Table 1. CVI and CVR

No.	E1	E2	E3	E4	ne	N	N/2	ne- (N/2)	CVR	C
1	4	4	4	3	3	4	2	1	0.5	V
2	4	4	3	3	2	4	2	0	0	V
3	4	4	4	4	4	4	2	2	1	V
4	4	4	4	4	4	4	2	2	1	V
5	4	4	4	4	4	4	2	2	1	V
6	4	4	4	4	4	4	2	2	1	V
7	4	4	4	4	4	4	2	2	1	V
8	4	3	4	4	3	4	2	1	0.5	V
9	4	3	4	4	3	4	2	1	0.5	V
10	4	3	4	4	3	4	2	1	0.5	V
Total	40	37	39	38		Total		7		
Mean	4.0	3.7	3.9	3.8		Mean		0.7	Valid	
Means								3.85		

Based on the results of the analysis using CVI and CVR, the sensory scooter board game tool obtained a mean score of 0.7 or high validity, which means that the APE balance board sensory has aspects that are safe to use, including; material and design, low cost if calculated based on the cost of manufacture and easy-to-obtain equipment, as well as having benefits in improving sensorimotor for children with special needs.

DISCUSSION

Movement is a characteristic and a person's way of surviving to live. A person needs movement to be able to live his daily life. Therefore learning to move is very important for individuals, including individual children with special needs. To be able to carry out effective and efficient movements, individuals need biomotor abilities and elements in motion, namely strength, speed, coordination, balance, agility and flexibility. These elements can be

developed through specially designed physical activities. Optimizing children's abilities needs the support of facilities, infrastructure and teachers who are creative and innovative in new things. Currently there are still many children who experience difficulties and optimize their abilities. Therefore, playing plays a very important role in helping teachers and children to achieve the desired learning outcomes.

CONCLUSION

This APE balance board sensory can be used as an alternative media learning movement especially to increase fundamental movement skill; static and dynamic balance children with special needs (intellectual disability, autism and low ability down syndrome).

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