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# The impact of the balance beam on early age balance skills at DBL Academy Yogyakarta

*Wpływ belki równoważnej na zdolność równowagi w młodym wieku w Akademii DBL w Yogyakarta*

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## Abstract

The key foundation for a child's overall development is their early years. As children learn new things and acquire new types of movement, they require continuous and appropriate support for their cognitive development and movement abilities at this stage. Children's lives revolve around play because it gives them the opportunity to engage with others, explore their surroundings, and acquire new skills. Stability of posture, or postural balance, is important for young children's development. A child's general health can suffer as a result of decreased muscle strength, coordination, and cognitive function brought about by accidents, sports injuries, or aging. This increases the risk of a child falling. Children have the opportunity to exercise and enhance their balance while walking on a balance beam, which is a stable board with supports underneath. Open-ended play, such as that involving a balance beam, can foster children's imagination and creativity. Data for this study were collected through an online survey method. The entire existing population was used as the sample in a targeted sampling strategy. The online survey was given to 11 participants, and the results showed that 84.3% observed an improvement in balance in young children, 66.9% understood the advantages and risks of using a balance beam, and 87.2% of coaches had used a balance beam when they were younger. One of the training methods to enhance balance skills in young children is the balance beam.

## Keywords

balance beam, early age, fundamental, motoric

## Streszczenie

Kluczowym fundamentem dla ogólnego rozwoju dziecka są jego pierwsze lata. Gdy dzieci uczą się nowych rzeczy i uczą się nowych rodzajów ruchu, potrzebują ciągłego i odpowiedniego wsparcia dla ich rozwoju poznawczego oraz zdolności ruchowych na tym etapie. Życie dzieci kręci się wokół zabawy, ponieważ daje im to możliwość nawiązywania kontaktów z innymi, badania otoczenia oraz nabywania nowych umiejętności. Stabilność postawy, czyli równowaga posturalna, jest ważna dla rozwoju młodych dzieci. Ogólne zdrowie dziecka może ucierpieć w wyniku zmniejszonej siły mięśniowej, koordynacji oraz funkcji poznawczych spowodowanych wypadkami, urazami sportowymi czy starzeniem się. Zwiększa to ryzyko upadku dziecka. Dzieci mają możliwość ćwiczenia i poprawiania równowagi chodząc po belce równoważnej - stabilnej desce z podporami poniżej. Zabawa z belką równoważną może rozwijać wyobraźnię i kreatywność dzieci. Dane do tego badania zostały zebrane za pomocą metody ankiety online. Jako próbkę w celowanej strategii próbkowania została użyta cała populacja. Ankieta online została przekazana 11 uczestnikom, a wyniki pokazały, że 84,3% zaobserwowało poprawę równowagi u młodych dzieci, 66,9% rozumiało zalety i ryzyko używania belki równoważnej, a 87,2% trenerów korzystało z belki równoważnej, gdy byli młodszy. Jedną z metod szkoleniowych do poprawy zdolności równowagi u młodych dzieci jest trening na belce równoważnej.

## Słowa kluczowe

belka równoważna, wczesny wiek, podstawy rozwoju, motoryka



## Introduction

Early childhood refers to a child's rapid growth and development between the ages of two and six [1]. In all areas of growth and development, instruction must be centered on the child's journey, discovery, curiosity, and play [2]. Skeletal maturation has been proven to have only minor effects on fundamental motor abilities and motor performance in children between the ages of 3 and 6 [3]. Playing helps kids develop their motor skills, reasoning abilities, and problem-solving skills. It also offers them the chance to adapt to others and their environment [4]. Maintaining equilibrium is especially crucial when your child is playing. The ability to maintain balance helps prevent falls, keep the body's center of gravity on the ground, and allow for necessary movements [5]. Striking a balance between using children's experiences, needs, and interests as the foundation for education, while also providing opportunities for fresh insights and knowledge, is difficult [2].

Government guidelines have been produced in the UK, containing the following suggestions for young children under the age of five: A minimum of 60 minutes should be spent physically active each day, up to 180 minutes [6]. Because early infancy is a delicate golden age in a child's life, it's a crucial time for their continued development and growth [7]. Children's worlds are synonymous with play, and through play in daily life, kids interact with and learn about their surroundings—both essential for their physical safety [8]. Offering children the opportunity to improve their balance skills is preferable to other activities [5]. Children spend the majority of their time playing, aiding their growth and development on all fronts—physical, mental, verbal, and behavioral. Through body-centered play, children receive motivational, multimodal, and sensory training [9].

Physical activity plays a critical role in children's development, helping to build and refine their motor skills. This is achieved by including as many basic movement patterns as possible in their workouts [10]. The perceptual-motor skills dimension is present in many human activities [11]. Several studies have shown that preschoolers' levels of physical fitness are worryingly declining, and they still fall far short of the International Physical Fitness Guidelines, such as those established by the National Association for Sport and Physical Education [12]. Technology has rapidly changed people's lifestyles and routines, including those of young children. In the past, children often spent more time playing video games and watching TV than engaging in physical activity with their peers and parents. The agency has dealt with 17 cases of kids with gadget addiction since 2013, asserting that device addiction is evident. Similarly, since 2016, the National Child Protection Board has addressed 42 cases of technology-reliant children [13]. These behaviors can negatively impact a child's growth and motor skill development.

Improving motor coordination can prevent a decline in motor function and the resulting dependency on motor assistance [14]. Balance is essential for preventing falls and enabling necessary actions by maintaining or regaining the body's center of gravity within the base of support [5]. It's believed

that the nervous system's continuous development during childhood means that appropriate training stimuli can influence motor coordination. If balance is lacking, it can negatively affect a child's physical health.

Fundamental Motor Skill Management (FMS) is regarded as crucial for leading an active lifestyle and supports a child's physical, cognitive, and social development. These skills are often established in childhood and then further refined into situational and support-related abilities. These encompass movement skills such as catching and throwing, as well as stability skills like balance and turning [15]. Balance is vital for recovery and for reducing musculoskeletal injuries [16]. Children between the ages of 2 and 18 actively explore and experiment with various body movements during the early phases of motor development [17]. Basic Movement Competence (FMS) is composed of three constructs: movement skills, object skill, and stability [17].

Sports require coordination skills, sometimes referred to as dexterity. These are vital as they allow children to effectively control their motor functions [18]. Children with developmental coordination disorders struggle with planning and executing motor tasks, making it hard for them to engage in extracurricular activities and sports [19]. Data from surveillance specialists indicate that nearly 7-9% of children have developmental issues [20].

Consistent balance training is vital because it addresses muscular shortening, muscle weakness, and abnormal movement patterns. All these factors positively influence the reduction or elimination of functional impairments in the various components of the musculoskeletal system [21]. The activities provided are balance games that enhance a child's dynamic and static balance, benefitting their future. Dynamic balancing exercises can be performed by walking sideways with arms extended. Balance is defined as the body's ability or capacity to maintain a specific position or point.

Children can use balance beams, which are sturdy boards with support beneath, to assist their walking. Children consistently have various techniques, each with potential applications, at their disposal [22]. Free-form balance beam activity offers children an ideal opportunity to nurture unique creativity [23]. On the balance beam, both static and dynamic balance are essential [24]. Dynamic balance involves maintaining equilibrium during movement, while static balance pertains to holding a still body posture [24]. The purpose of the balance beam is to evaluate how children employ different strategies to address balance challenges [25]. If children don't receive sufficient stimulation for balance training, their motor development may be hindered [26]. Both static and dynamic balance are integral to balance training [27]. Balance exercises aim to enhance postural stability.

Early childhood physical education should emphasize postural balance or stability, crucial for recovering from injuries, sports-related or not, and for reducing the likelihood of falls in later life [28]. The challenging capacity in question pertains to achieving or regaining balance, whether stationary, readying, moving, or halting [29]. Simply put, balance is the ability to prevent most of the body from falling to the ground [30]. Several factors can lead children with poor balance to fall more

frequently: weak muscle strength, poor coordination, and cognitive impairment, all of which negatively impact balance and general health [31]. Children with balance and coordination problems can actually experience detrimental effects on their academic performance, social development, self-esteem, and safety [27]. Strength, flexibility, speed sensitivity, and tactile abilities all play significant roles in coordinating and balancing bodily movements and are essential for all kinds of physical activity. Being able to use the body efficiently in diverse tasks improves both gross and fine motor skills [14]. Dynamic balance pertains to maintaining balance during physical activity, while static balance refers to maintaining body stillness. Therefore, balance is critical when using the balance beam [24].

The Development Basketball League is abbreviated as DBL. The DBL Academy is a basketball institution that offers nutrition lectures, character development programs, and basketball coaching to assist children in Indonesia between the ages of 3 and 18 in adopting healthy lifestyles. Parents aim to celebrate and support their children's athletic achievements while mitigating risks. They also wish to provide youth with

sports activities and coaching that can help them succeed, along with opportunities for character development, time management skills, and a range of health benefits, social interactions, and wellness [23].

Given the concerns outlined above, researchers should undertake a study titled "The Impact Of The Balance Beam On Balance Skills In Early Childhood."

## Method

For this study, an online survey method was employed. The entire existing population was sampled using targeted sampling [32]. Eleven participants were given an online questionnaire for data collection. The participants were coaches at the DBL Academy, ranging from those teaching 3-year-olds to those instructing middle school students in Yogyakarta. The researcher developed a set of 15 questions based on three specific criteria for the study tool. For these questions, responses were rated on a Likert scale: Excellent (SB), Good (B), Fairly Good (CB), Poor (KB), and Very Poor (SK). The primary method of data analysis for this survey involved quantitative data.

**Table 1. The formula used to determine the likert scale**

Alternate answers	Positive rating	Negative ratings
Excellent	5	1
Good	4	2
Fairly good	3	3
Poor	2	4
Very poor	1	5
Scoring rules	$\frac{\text{Total points earned}}{\text{Maximum total points}} \times 100\%$	

**Table 2. Percentage Categories**

Alternate answers	Positive rating
81-100%	Excellent
61-80%	Good
41-60%	Fairly good
21-40%	Poor
0-20%	Very poor

The function of the balance beam:

- Appropriate for young children, which is one of the benefits of using it.
- Fostered an interest in balance training using the balance beam during my early childhood.
- A balance beam can assist young children in developing their courage.
- Children's confidence can grow on the balance beam.
- Kids can use the balance beam to enhance their reflexes and body control.

Risks associated with using the balancing beam:

- If used incorrectly, the balance beam can cause minor injuries to children.
- Balance beams are heavy and difficult to handle.
- They are made of hard material without any edge protection, making them a potential hazard.
- Balancing beams can sometimes be used incorrectly.
- They lack protection on the bottom, which may damage the floor.



Coaches' response to using the balance beam:

- a. A balancing beam is beneficial for training young children's balance.
- b. Children find balance beam training both enjoyable and advantageous.
- c. The application of the tool can vary depending on the movement being practiced.
- d. The balance beam can be used to train and develop children's movement, courage, balance, and lower limb muscles.
- e. Coaches can gauge a child's confidence in maintaining balance using the beam.

### Results and discussion

Following is a list of the 11 respondents with the highest scores.

#### Benefits of employing a balance beam include

- a. 63.6% of respondents gave the balance beam a "good" rating for its suitability for young children.
- b. 54.5% of respondents said they would be very interested in balance training on the balance beam when they were young and gave it an "excellent" rating.
- c. According to 54.4% of respondents, using the balance beam in early infancy helps children develop courage.
- d. According to 63.6% of respondents, the balance beam is "good" at boosting confidence in young children.
- e. The balance beam can help kids improve their body control and reflexes, which 45.5% of respondents evaluated as "good".

#### Risks associated with using the balance beam

- a. According to 45.5% of respondents, improperly supervised usage of the balance beam can cause minor injuries in children.
- b. Hard material and a lack of edge protection are two factors that 36.4% of respondents deemed "poor" for the balance beam.
- c. While balance beams are assessed as "fairly good" by 45.5% of respondents, they are heavy and difficult to transport.
- d. Sometimes, inappropriate use of the balance beam was assessed as "poor" by 36.4% of respondents.
- e. According to 45.5% of respondents, the balance beam's lack of protection on the underside, which could result in floor damage, is a "poor" quality.

#### The balance beam is highly acclaimed for use in teaching early childhood balance

- a. 45.5% of respondents evaluated it as "excellent," and 36.4% rated it as "good."
- b. According to 54.5% of respondents, children seem to enjoy and benefit from balance beam training, rating it "excellent".
- c. 63.6% of respondents gave this use of the balance beam a "good" rating, and it can vary based on the type of movement.
- d. Children's movement, courage, balance, and lower limb muscles are perceived as being trained and developed by the balance beam, rated as "good" by 54.5% of respondents.

e. Trainers can gauge a child's confidence in maintaining their balance, which was assessed as "good" by 72.7% of respondents.

The study on the use of the balance beam to improve young children's ability to balance was conducted at DBL Academy Yogyakarta. The questionnaire used to collect data consisted of 15 questions based on 3 criteria. According to the results, 3% of the 11 respondents met the requirements for an exceptional rating, while 8% did so for a good rating.

These results reveal that while the majority of respondents performed at a good level, a small number of respondents displayed excellent performance in terms of early childhood balancing ability. The study offers insights into the efficacy of the balance beam in enhancing participants' early childhood balance skills at DBL Academy Yogyakarta. To develop the quality of balance abilities, the principles of methodical training (repetitive exercises that increase in number, volume, intensity, and difficulty) must be followed, along with ensuring sufficient motivation for children [33].

### Conclusion

From the survey data obtained from 11 respondents, focusing on the use of the balance beam at DBL Academy Yogyakarta to enhance balance in children between the ages of 3 and 6, the following findings can be derived:

Early childhood balance skills are said to improve by 84.3% when using the balance beam. This indicates that a significant majority of respondents believe using the balance beam has improved their balance.

According to the data, 66.9% of risks are associated with using the balance beam. It's emphasized that improper supervision during training might result in both minor and major injuries. This underlines the importance of using the balance beam with proper supervision and safety precautions.

A significant majority of trainers (87.2% of respondents) agreed that the balance beam is beneficial in enhancing balance, promoting movement development, boosting self-confidence, and providing young children with an enjoyable experience.

Research conducted at DBL Academy Yogyakarta on the use of a balance beam in young children (ages 3-6) suggests that equilibrium is essential to achieve optimal dynamic balance. The recommendations derived from this research will serve as valuable information, especially for DBL Academy Yogyakarta and the general public. They can utilize this research as a guide to understand the importance of maintaining a balance between static and dynamic improvements. Future researchers can use this study as a reference to conduct similar investigations with larger and more consistent sample sizes. DBL Academy Yogyakarta encourages children aged 3 to 6 to perform more balance drills at home to improve both their static and dynamic balance.

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