



EFFICACY OF THE BOBATH METHOD IN IMPROVING POSTURAL CONTROL IN CHILDREN WITH DOWN SYNDROME: A CASE STUDY

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ABSTRACT

The study investigated the effectiveness of the Bobath Method in improving postural control in children with Down Syndrome, highlighting the importance of physical therapy interventions. The research involved a 4-year-old patient and used the Pediatric Balance Scale to assess balance, with promising results in motor functionality.

Keywords: Down syndrome, Bobath Method.

INTRODUCTION

Down syndrome (DS) is an autosomal genetic disorder that occurs in the distal segment of the long arm of chromosome 21, in the region of chromosome q22.13. It is caused by an error in the distribution of chromosomes in pair 21 cells, where an extra chromosome is found in this pair, present since intrauterine development (DOS SANTOS; SAINTS; NASCIMENTO, 2022).

In DS, the patient often presents typical characteristics and delayed neuropsychomotor development (PEREIRA; DOS SANTOS; XAVIER, 2021). Characteristics of DS include brachycephaly, palpebral fissures with superior inclination, epicanthal folds, flattened nasal base, short neck, protruding tongue, muscle and joint weakness, and generalized muscle hypotonia (CARDOSO et al., 2023). According to the Ministry of Health (2022), in Brazil, in 2020 and 2021, about 1,978 new cases of DS were reported.

The characteristics present in DS can interfere with motor development, such as generalized hypotonia, hypermobility of the joints, postural instability that reduce the speed and coordination of movements, and sensory deficits that can interfere with the control of posture, movements, balance and coordination, as well as motor learning (CARDOSO et al., 2023). Despite the changes presented above, children with DS are potentially capable

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of developing, especially when they are stimulated from the first months of life, due to neuroplasticity (DOS SANTOS; SAINTS; NASCIMENTO, 2022).

Therefore, it is essential that the treatment of DS be carried out by a multidisciplinary team. And among the team, the physiotherapist plays a fundamental role, as he aims to evaluate and develop physiotherapeutic conducts according to the patient's needs (FREITAS; SOFIATTI; VIEIRA, 2021).

One of the resources that the physiotherapist can use in the treatment is the Bobath Method, which aims to treat the alterations of individuals with movement disorder, motor function and postural control. The main objective of the Method is to perform handling through techniques of inhibition, facilitation and stimulation of normal movement patterns, enabling improvement of functional ability. To this end, atypical postural tone patterns are inhibited and normal movement patterns are facilitated, promoting the emergence of active and near-normal movements (CAMARGO et al., 2020).

OBJECTIVE

To verify the efficacy of the Bobath Method in improving postural control in children with Down Syndrome.

METHODOLOGY

TYPE OF STUDY

This is a descriptive and experimental case study, carried out at the Pilates Studio: Fernanda Souza Fisioterapia, located at Rua Rodrigues Seabra, nº 30, CEP: 37500078. Itajubá – MG, Brazil.

SAMPLE

It is a 4-year-old male patient with Down Syndrome. The volunteer's guardian was instructed about the study procedure, duly alerted to all the conditions.

METHODOLOGICAL PROCEDURE

A survey of scientific data was carried out with the keywords according to the DeCS (Health Sciences Descriptors): "Down Syndrome", "Postural Control", "Physiotherapy" and "Pediatrics" in Portuguese and English, in the following databases: Lilacs, Scielo, Pubmed and Bireme, 4 articles were included and 5 articles that did not correspond to the following theme were excluded for scientific basis and applicability of the research. The study was approved by the Research Ethics Committee of the Itajubá Teaching and Research



Foundation – FEPI, under opinion 6.503.714/2023, located at Rua Doutor Antônio Braga Filho, 687, Bairro Varginha, Itajubá – MG.

EVALUATION PROTOCOL

The volunteer's guardian, after acceptance, signed the Informed Consent Form (ICF). Subsequently, the physical therapy evaluation was carried out, consisting of data collection with the responsible person, physical examination of the volunteer using the Pediatric Balance Scale, and the patient was referred to start the physical therapy protocol using the Bobath Method.

The Pediatric Balance Scale is used in school-age children, consisting of 14 items (Chart 1) that assess static and dynamic balance. Contains tasks that simulate children's Activities of Daily Living (ADLs). Each item is scored from 0 to 4 points, adding up to a total score of 56 points.

Chart 1 – Description of the items of the Pediatric Balance Scale.

DESCRIPTION OF ITEMS
1. Sitting position for standing position.
2. Standing position for sitting position.
3. Transfer.
4. Standing without support.
5. Sitting without support.
6. Standing with eyes closed.
7. Standing with your feet together.
8. Standing with one foot forward.
9. Standing on one foot.
10. Rotating 360 degrees.
11. Turning to look back.
12. Picking up an object from the floor.
13. Placing alternating foot on the step/footrest.
14. Reaching forward with arm outstretched.

Source: Adapted from Cordeiro et al. (2021).

PHYSIOTHERAPY PROTOCOL WITH BOBATH METHOD

After the physical therapy evaluation, the consultations were initiated where warm-up activities were started (Chart 2) for 5 minutes and, later, the main activities were performed through the Bobath Method (Chart 3 and Figure 1) for 40 minutes. 10 consultations were proposed, 2 times a week, lasting 45 minutes. However, the volunteer had 2 absences.

Table 2 – Warm-up activities.

Rhythmic movements with music.
Imitation game (animals).
Dynamic balance training and single-leg support – "Hopscotch".
Dynamic balance training on cushions – "Jumping from stone to stone".

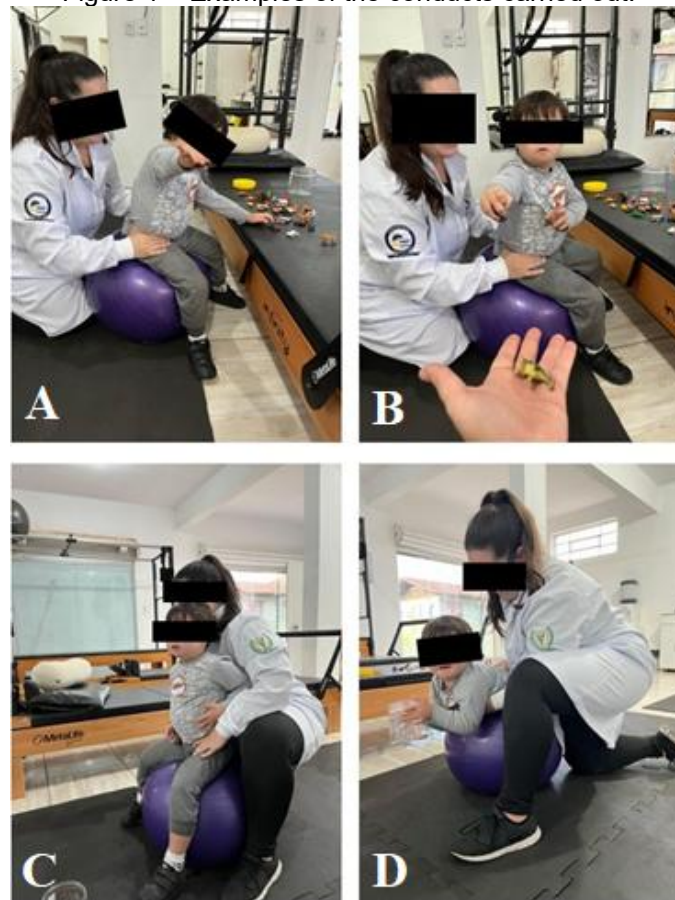
Source: Prepared by the authors.

Chart 3 – Physiotherapeutic Conducts through the *Bobath Method*.

Bobath <i>method</i> with key hip point with patient performing sedation and orthostatism.
Bobath <i>method</i> with key hip point with patient in secession on the Swiss ball associated with the functional range of objects at different heights and directions.
Bobath <i>method</i> with patient sitting on the Swiss ball, rolling the ball in different directions.
Bobath <i>method</i> with a key hip point with the patient in the prone position on the Swiss ball associated with visual stimuli.
Bobath <i>method</i> with ankle key stitch with patient in prone position on the Swiss ball associated with visual stimuli
Static balance training in orthostatism associated with the <i>Bobath tapping method</i> of inhibition.
Weight bearing training by performing weight transfer with trunk rotation.
Weight-bearing training with single-leg support.

Source: Prepared by the authors.

Figure 1 – Examples of the conducts carried out.



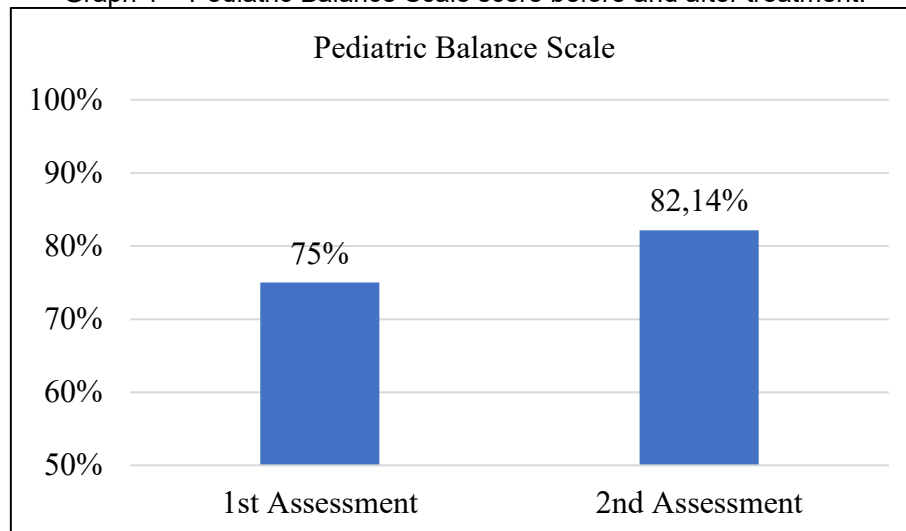
Legend: A and B – *Bobath Method* with key hip point associated with functional reach. C – *Bobath method* with patient sitting on the Swiss ball, rolling the ball in different directions. D – *Bobath Method* with patient in prone position on the Swiss ball associated with visual stimuli.

Source: Authorship.

DEVELOPMENT

After the physical therapy consultations through the Bobath Method, it was possible to observe an improvement in the score of the Pediatric Balance Scale, as observed in Graph 1.

Graph 1 – Pediatric Balance Scale score before and after treatment.



Source: Prepared by the authors.

In the present study, an initial score of 42 points was observed, representing 75% of the total score. After physical therapy treatment with the Bobath Method, the patient obtained 46 points, symbolizing 82.14% of the total score.

Camargo et al. (2020), conducted a case study with a 1-year-old male volunteer for 5 months and observed gains in motor skills, functionality, and independence. Corroborating this study, in a systematic review, carried out by Dos Santos et al. (2022), 3 case studies were included, where they observed that the Bobath Method promotes improvement in muscle tone gain, motor achievements, improved trunk balance, mobility, coordination, among others.

In the present study, an improvement in postural control was evidenced, in activities such as transfers from sitting to standing, and vice versa, static balance with closed eyes and in single-leg support. On the other hand, Santos et al. (2020), through a study with 4 volunteers, for 3 months, reported no significant difference between pre and post-treatment with the Bobath Method, they only observed that the Bobath Method reduces the delay in neuropsychomotor development of children with DS.

Da Silva and Silva Neto (2023) through an integrative literature review showed that the use of the Bobath Method in neuroevolutionary treatment to facilitate the natural movement of children with DS is through the use of key control points, inhibiting abnormal postural patterns, providing the patient with learning normal movements.



FINAL CONSIDERATIONS

The Bobath Method as a physiotherapeutic conduct in the treatment of children with Down Syndrome presents positive results, standing out for its effectiveness in improving postural control, which is essential for functionality and motor independence. The intervention uses techniques to facilitate and/or inhibit abnormal patterns, contributing to better body alignment and motor coordination. It is worth mentioning that each patient may have different neuropsychomotor development, which requires the adaptation of the exercises to their needs and capabilities.

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