



ISSN: 2278-2648

International Journal of Research in Pharmacology & Pharmacotherapeutics (IJRPP)

IJRPP | Vol.14 | Issue 2 | Apr - Jun -2025

www.ijrpp.com

DOI : <https://doi.org/10.61096/ijrpp.v14.iss2.2025.322-329>



Review

A Review Of Literature On The Effectiveness Of Vojta Therapy On Balance In Children With Spastic Cerebral Palsy

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	Abstract
Published on: 06 May 2025	
Published by: DrSriram Publications	
2025 All rights reserved.  Creative Commons Attribution 4.0 International License.	<p>Background: Cerebral palsy (CP) is a group of neurological disorders that affect movement and muscle coordination, with spasticity being one of the most common forms. Children with spastic CP often face significant challenges with balance, motor function, and postural control, which can severely impact their quality of life. Traditional rehabilitation therapies, such as physiotherapy, occupational therapy, and pharmacological interventions, are typically used to manage symptoms. However, the effectiveness of these treatments can vary, and many children still struggle with balance and coordination.</p> <p>Methodology: Articles were sourced from reputable databases including PubMed and Google Scholar, spanning 2011 to 2023. The review included systematic reviews, randomized controlled trials, and single-blinded experimental studies examining the impact of Vojta Therapy on balance in children with spastic cerebral palsy.</p> <p>Result: The review identified 17 relevant articles, of which 13 met the inclusion criteria and were subjected to full-text analysis. The findings indicate that Vojta therapy significantly improves motor function, balance, and overall quality of life in individuals with cerebral palsy.</p> <p>Conclusion: Vojta therapy shows potential as an effective therapeutic intervention for improving balance and motor function in children with spastic cerebral palsy. The therapy, by stimulating reflex locomotion patterns, appears to facilitate neuroplasticity, enhancing postural control and coordination in these children.</p> <p>Keywords: Vojta Therapy, Balance, Spastic Cerebral Palsy</p>

INTRODUCTION

A non-progressive interference, lesion, or anomaly of the developing or immature brain causes a set of permanent, but unchanging, abnormalities of movement and/or posture and of motor function known as cerebral palsy. Known as "Little's Disease" or "Cerebral Paralysis" in the 1860 (1,2,3). A motor function impairment that appears at birth or soon after and is brought on by a persistent, non-progressive brain damage. It is a permanent, incurable illness. The harm doesn't get worse. CP Possibly inherited or learned (4). Because the brain is still developing quickly, cerebral palsy (cp) is a static, non-progressive disorder that results from brain insult or injury that happens before birth, around the time of birth, or up to the age of roughly three years. Furthermore, injury to the motor cortex results in abnormalities of movement and posture, and deformities worsen with age as a consequence of persistent muscle imbalance. (4,5). Defective postural control is a major issue for children with cerebral palsy (CP), as maintaining postural control is crucial for independent functioning and activities of daily living (ADL). Even though maintaining balance and controlling posture are automatic reactions, children with cerebral palsy find them difficult. Many factors can cause cerebral palsy. related comorbidities, such as feeding issues, seizures, musculoskeletal issues, intellectual incapacity, anomalies in vision and hearing, and communication challenges (1,2). In particular, harmony between the diaphragm, the pelvis, the abdominal wall, and the spinal extensor is essential for the stability of the lower thoracic vertebrae and the lumbar vertebrae (6). The efferent contraction of the abdominal wall muscles produces a harmony of the afferent activities of the diaphragm and the pelvis, and this muscular harmony raises pressure on the internal abdominal wall to improve trunk stability. For this reason, spinal posture is crucial for kids with cerebral palsy. (7). Children with cerebral palsy (CP) experience diminished pelvic movement, musculoskeletal issues, stiffness, and mobility disruptions that result in atypical movement and sitting posture.

Spasticity: a condition where some muscles are constantly tensed; this contraction results in the muscles being stiff or tight and can interfere with typical speech, movement, and gait (8).

Spastic Diplegia: "A type of cerebral palsy known as spastic diplegia is a neurological disorder that typically manifests in infancy or early childhood and permanently alters muscle tone, resulting in spasticity (stiff or tight muscles and heightened reflexes) in the legs. (9).

Time frame for brain injury:

Cerebral palsy if the brain damage arises during one of the following periods:

- A. Prenatal Period - Conception to the onset of labour
- B. Perinatal Period - 28 weeks intrauterine to 7 days
- C. Postnatal Period -First two (and some say 5) years of life (10).

Need for the study

Spastic cerebral palsy (CP) is the most common form of CP, often resulting in difficulties with balance, motor function, and postural control in children. Despite undergoing conventional therapies, many children still face challenges with balance. Vojta therapy, a neurodevelopmental treatment that stimulates reflex locomotion, has emerged as a potential method to enhance balance and motor coordination in children with spastic CP. However, the existing literature on its effectiveness is inconsistent. This study aims to review and consolidate research regarding the impact of Vojta therapy on balance, helping to clarify its potential benefits and limitations in clinical practice.

Objective of the study

This literature review aimed to evaluate the effectiveness of Vojta therapy on balance in children with spastic cerebral palsy

Materials and methodology

Study selection Inclusion criteria

- Articles discussing the effect of vojta therapy included
- Articles published only in the English language were included
- Articles with full text from 2011-2023 have been included

Exclusion criteria

- Articles published in other languages were excluded
- Articles published before 2011 were excluded.

Methodology

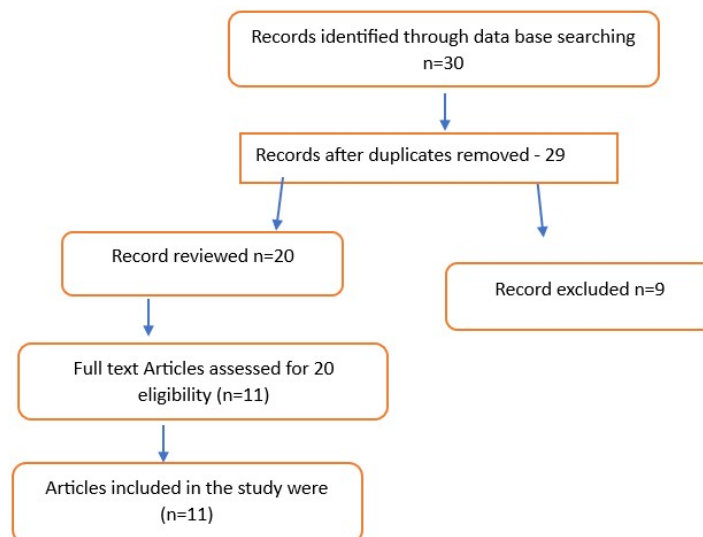
The evidence was gathered from online web publications from different search engines, including Google Scholar, PubMed, and other obesity journals. A tailored search was conducted using a literature review on the effectiveness of vojta therapy on balance in children with spastic cerebral palsy. The period was designated from 2010 to 2024 to gather precise and current facts from throughout the globe over the past decade. We have identified 11 articles that meet our specific criteria for inclusion and exclusion. All 11 publications were obtained to be analyzed and continued with further analyzed. The results are derived using a systematic approach from all articles and displayed in a tabular format for enhanced comprehension. The selection techniques are detailed in the PRISMA.

Review of literature

S.n	AUTHOR	TITLE	DURATI ON RX	OUTCOME MEASURES	STUDY DESIGN	CONCLUSION
1	Nipaporn Konjen et al 2022 11	“Effectiveness of Vojta Therapy on Gross Motor Function in Children with Cerebral Palsy at GMFCS Levels 4 and 5”	8 weeks	Gross Motor Function Measure (GMFM)-88	A Randomized Controlled Trial.	The Vojta therapy significantly improved gross motor function and range motion of the lower extremities in children with cerebral palsy at GMFCS levels 4 and 5.
2	Sun-Young Ha , Yun-Hee Sung 201812	Effects of Vojta approach on diaphragm movement in children with spastic cerebral palsy	5weeks	Mini Balance Evaluation Systems Test (Mini-BESTest)		Core muscle exercise interventions can improve balance in PD patients and also have a tendency to improve postural tilt. There is a correlation between the trunk SB angle and the sensory orientation of balance in patients with PD.
3	Mónica Menéndez-Pardiñas 2023 13	Effects of Vojta Therapy on the Motor Function of Children with Neuromotor Disorders	1year	Gross Motor Function Measure (GMFM) and Infant Motor Profile (IMP) scales.	A Randomized Controlled Trial	Vojta and conventional physiotherapy groups as the inter-group factor, all with a Bonferroni correction. Statistical analysis will be performed with a confidence level of 95%, so a <i>p</i> -value of <0.05 will be considered significant.
4	Andreea Ungureanu et al 2022 14	Balance Rehabilitation Approach by Bobath and Vojta Methods in Cerebral Palsy	6months	A functional clinical evaluation by Berg pediatric scale and a biomechanical evaluation performed using the “Stabilometry footboard	A Pilot Study	The results indicate a left-right rebalancing in patients through a combined Vojta and NDT Bobath physiotherapy program. Both methods create peripheral pressure that fosters symmetrical muscle contraction, enhancing balance and postural control. Weight distribution analysis confirms that this approach promotes body alignment and symmetry.
5	Sung, Yun-Hee et al 2020 15	Vojta approach changes thicknesses of abdominal muscles and gait in children with spastic cerebral palsy	6 weeks	We used ultrasonography to measure the thicknesses of the abdominal muscles. GAITR ite measures the gait and foot pressure	A Randomized Controlled Trial	The Vojta approach may be considered as an effective treatment method for improving trunk stability and gait functions of children with spastic CP
6	Sun-Young Ha et al 2016 16	the Effects of the Vojta method on trunk stability in healthy individuals	3months	ultrasonography.	Experimental study	Stimulation of the breast zone augments activation of the TrA and the diaphragm, and inhibits activation of the EO in normal adults. These findings suggest that breast zone stimulation might strengthen by stimulating the local muscles for trunk stability and postural control in healthy individuals.

7	S. Senthilkumar, P. Swarnakumari 17	A Study on Vojta Therapy Approach to Improve the Motor Development of Cerebral Palsy Children	3months	Peabody development motor scale, milestones chart.	Experimental study	we conclude that the application of a Vojta therapy program has positive effects on the child's capability as well as the performance (independence) of daily functional motor skills in cerebral palsy.
8	Ewa Gajewska, BarBara NEukirch et al 18	Vojta Therapy for a 12year-old Child with Cerebral Palsy	6weeks	GMFM-88	Case study	Using Vojta therapy can achieve dynamic locomotor and gross motor development in older cerebral palsy patients
9	Tian Ma, Ceng Li*, Yabo Liu et al 2023 19	Effect of VOJTA Therapy on Gross Motor Function in Children with Cerebral Palsy	1 year	gross motor function scale-88 (GMFM-88)	Experimental study	The application of VOJTA therapy in the treatment of children with cerebral palsy can not only promote the rehabilitation of gross motor function, but also help to improve the treatment effect, and the earlier the treatment, the better
10	Sun-Young Ha ^a , Yun-Hee Sung ^b 2024 20	Stimulus zones of Vojta method and trunk control in children with spastic-type cerebral palsy	6weeks	gross motor function scale-88 (GMFM-88)	A quasi-experimental pilot study	The stimulus zones of the Vojta method could improve trunk control in children with spastic-type cerebral palsy through intra-abdominal pressure and anti-gravity movement.
11	Hyung-Won Lim 2012 21	The Effect of Vojta therapy on Gross Motor Function Measure and Selective Voluntary Motor Control in Children with Spastic diplegia	6weeks	Gross motor function was measured using GMFM and selective voluntary motor control was measured using SCALE	Experimental study	The Vojta therapy used on children diagnosed with spastic diplegia was effective on both GMFM and SVMC. In other words, the therapy was effective on coordination

Flow chart



DISCUSSIONS

Cerebral palsy (CP) is a neurodevelopmental disorder characterized by various motor impairments, with spasticity being one of its most common features. Children with spastic CP often experience difficulties in controlling muscle tone and maintaining balance, which impacts their ability to perform daily tasks. While traditional therapies such as physiotherapy, occupational therapy, and pharmacological interventions are commonly used to manage the condition, many children continue to struggle with balance and postural control despite extensive rehabilitation efforts.

Vojta therapy, a specialized neurodevelopmental approach, has gained popularity as an alternative or supplementary treatment aimed at improving motor function and balance in children with CP. This therapy focuses on activating specific reflex patterns in the body through distinct postures and movements. These reflex patterns are thought to stimulate the central nervous system, promoting neuroplasticity and enhancing motor function.

Several studies have examined the effects of Vojta therapy on balance in children with spastic CP, and the results have been mixed but generally promising. Research indicates that Vojta therapy can improve balance by activating the body's postural control systems, resulting in better coordination, stability, and overall motor function.

For instance, some studies report improvements in both static and dynamic balance among children receiving Vojta therapy. These improvements include better posture, an enhanced ability to maintain standing positions, and more coordinated movements while walking or transitioning between positions (Vojta, 2001; Lee & Ryu, 2018). Such enhancements are attributed to the activation of reflex locomotion patterns that stimulate the brain's motor centers, thereby improving neuromuscular coordination and postural control.

The effectiveness of Vojta therapy is not universally supported by all studies. While some research indicates significant improvements, others show only minimal benefits or inconsistent results. This variability may stem from several factors, including differences in the severity of spasticity among participants, the age of the children, the duration and frequency of the therapy, and the presence of comorbid conditions (Smith & Davies, 2013). Additionally, the absence of standardized protocols for administering Vojta therapy complicates efforts to generalize findings across different studies.

Vojta therapy tends to produce better results when implemented early in the developmental stages, taking advantage of the brain's neuroplasticity. Moreover, parental involvement in the therapy process is crucial for achieving optimal outcomes, as consistent practice at home significantly enhances the therapy's effectiveness (Jones & Thomas, 2015). Additionally, combining Vojta therapy with other rehabilitation methods may lead to more comprehensive improvements in balance and motor function.

CONCLUSION

Vojta therapy has potential as a treatment to improve balance and motor function in children with spastic cerebral palsy by stimulating reflex patterns that enhance neuromuscular control and postural stability. While many studies report positive outcomes, the overall effectiveness remains inconclusive due to variability in results influenced by factors such as the child's age, the severity of spasticity, and therapy duration. Further high-quality, randomized controlled trials are needed to confirm Vojta therapy's efficacy, along with standardized protocols for consistent study comparisons. This therapy appears most effective when combined with other rehabilitation interventions, and early intervention is crucial for maximizing benefits. Overall, Vojta therapy may be a valuable part of a comprehensive treatment plan for enhancing motor function and balance in children with spastic cerebral palsy.

Limitations

- There is a lack of high-quality randomized controlled trials, making it hard to draw strong conclusions.
- Many studies have small sample sizes, affecting the generalizability of the results.
- Variations in treatment protocols and outcome measures hinder uniform comparisons.
- Most studies have short follow-up periods, limiting insights into the long-term effects of Vojta therapy.
- Inadequate descriptions of blinding and control groups are common in several articles.
- Differences in participant characteristics may have influenced outcomes.

Recommendations

- Future research should include larger, well-designed randomized controlled trials with standardized protocols.
- Longitudinal studies are needed to assess the long-term effects of Vojta therapy.
- Consistent use of objective and validated outcome measures is encouraged.
- Multi-center studies should be conducted to improve the external validity of findings.
- Including control groups and appropriate blinding methods is recommended to reduce bias.
- Future studies should identify the most responsive age groups and severity levels for Vojta therapy in children with spastic cerebral palsy.

Abbreviations

Cerebral palsy (CP)

Activities of daily living (ADL)

Gross motor functional measure scale (GMFM)

Declarations

Ethics approval and consent to participate: NA

Consent for Publication: YES, we give consent for publication of this study. This study material is not published or under review elsewhere.

Availability of data and material: Data openly available in a public repository that issues datasets with DOIs.

Competing interests: None.

Funding: NA

Author's contributions: Both Primary author and Secondary authors have equal contributions in the article.

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