

# Physical Rehabilitation of a Spastic Diplegic Cerebral Palsy Patient - A Case Study

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## ABSTRACT

Cerebral palsy (CP) is a group of motor deficits induced by non-progressive brain damage in children. CP is a geographic ailment that affects both developed and developing countries with equal frequency. The study's purpose is to help Cerebral Palsy patients better their rehabilitation. The child's problems are being unable to stand without assistance due to truncal imbalance, having poor cognitive and social conduct, and being unable to do daily living activities independently. Children with CP usually have normal anatomic hip alignment when they are born. A variety of factors influence development, including delayed motor milestones and soft tissue anomalies, such as a muscle tone imbalance with strong hip flexors and adductors vs weaker hip extensors and abductors. When the GMFCS was used to evaluate the patient, the diagnosis of Spastic Diplegia cerebral palsy was confirmed. Physiotherapy intervention has been demonstrated to be useful in minimizing problems and improving patient outcomes.

**Results:** These studies revealed the difficulty of evaluating children with cerebral palsy. Clinical PTs must be aware of these complications and the fact that more than one assessment may be required to capture the children with CP's specific skills and behaviors.

**Conclusion:** Because of PT therapy, the patient was able to control his posture, regulate his head and neck, and stand with limited assistance despite wearing a KAFO.

**Keywords:** Cerebral palsy, Assessment, Spastic diplegia, Early intervention, Physiotherapy rehabilitation

## INTRODUCTION

Cerebral palsy (CP) is a diverse movement condition that affects kids born at all gestational stages but is more severe in preterm babies. As a result of non-progressive anomalies in the growing fetus or infant's brain, CP refers to a collection of chronic mobility and postural developmental illnesses that induce activity restriction. This type of cerebral palsy affects both sides of the body, with the lower limbs gaining precedence. Spastic diplegia has been linked to more global developmental delays and moderates to

severe intellectual disability in term-born children than in preterm-born children. The global incidence of cerebral palsy in the general population is estimated to be between 0.1 and 0.2 percent of all live births in developed countries, according to the data. (2). In poor countries, it is slightly higher, with the likelihood of increased CP with diminishing Gait also contributes to increases in muscle composition and alterations in motor function, resulting in an abnormal adaptation in body posture and an unstable gait. Ankle contractions are common in children with cerebral palsy, and

they are most likely caused by structural alterations in the gastrocnemius and soleus muscles (3). The majority of people with CP contracts show that passive mutual motion is not present (4). The mechanisms that cause contracture are unknown. Physical activity benefits all children since it has been related to improvements in energy, stamina, self-esteem, social participation, and overall enjoyment. Specific spatial and temporal muscle activation may be absent in children with cerebral palsy (CP) (5). Motor training and forced use throughout the early stages of development might cause physiological brain organization to be disrupted. On the other hand, children who were referred earlier improved their motor development more during the follow-up examination than those who were referred later. (6). Cerebral palsy (CP) affects youngsters and produces a wide range of symptoms and difficulties. The therapist must choose evaluations that appropriately represent the desired domain outcome metrics for the individual CP when conducting occupational therapy (OT) and physical therapy (PT) therapies (7).

### **PATIENT INFORMATION**

The paper presents a case of a 5-year-old male kid with spastic diplegia who was diagnosed with using the GMFCS evaluation scale, I was diagnosed with stage V spastic diplegic cerebral palsy. The patient was born on time and without any unusual signs or symptoms, according to a family member. When he was two months old, he met with an accident. His family members first recognized that he was unable to crawl or execute supported standing when he was two years old, but they ignored the problem. At the age of five, the youngster was diagnosed with spastic diplegia, and physiotherapy was immediately begun.

**CLINICAL FINDINGS:** The youngster in this study showed deficits across the body, with a focus on the lower limbs and trunk. Gross motor and self-care functions were both harmed. The patient was completely

reliant on the family member and would be unable to function without them. He could sit, but his truncal balance was severely damaged. The lower limbs showed symmetrical spasticity, tightness of the hip adductor and flexor muscles, and a scissoring gait pattern. The cardiovascular and respiratory systems were also normal. His social abilities had deteriorated as he grew older. GMFCS was used to further evaluate the youngster.

### **PHYSIOTHERAPY INTERVENTION:**

A qualified neuro-physiotherapist provided physiotherapy to the youngster for one 1modailyasis in the Neuro-physiotherapy OPD. The purpose of the workouts was to improve her head and neck control. Swiss ball to and fro movements were used to supplement the training. The patient was given proper brush and ice techniques as well as prolonged stretching. The patient's physiotherapy sessions were planned to assess his functional balance by stimulating movement variations to establish his automatic correction and equilibrium reactions in a variety of situations. The patient did static weight-bearing activities daily. The child's body was subjected to challenge-specific moderate pressure to modify the application of force in different directions, allowing the individual to respond to a novel environment. The entire exercise regimen was designed to improve truncal balance and movement transitions while maintaining necessary safety precautions. The patient's caretaker was instructed on how to perform the home exercises according to protocol. He was fitted with a Knee Ankle Foot Orthosis (KAFO) to help keep her balance while standing, and he was able to stand with minimal assistance.

### **RESULT**

His cognitive abilities improved faster than his gross motor coordination. After three months of physiotherapeutic operations, he was able to improve his head and neck control and balance her posture.

He was able to stand with minimal support using a Knee Ankle Foot Orthosis (KAFO).

## DISCUSSION

In industrialized countries, this is the most common clinical subtype of cerebral paralysis, while it is the second most common in developing countries. However, as indicated by a recent study found that the percentage of spastic diplegic cases increased from 22% to 34.5 percent over the last decade (8). Cerebral palsy (CP) is a term that refers to a group of developmental impairments that affect mobility and posture and create activity impairment. Hip dysplasia, which is caused by stiffness and rigidity of the hip adductor and hip flexor muscles, is the second most common musculoskeletal defect in cerebral palsy children (1).

It is only second to equines. Because children with GMFCS stages IV or V are at a higher risk of hip displacement, early use of posture control devices has been found to avoid hip difficulties. Standing services are recommended for children with cerebral palsy who are unable to stand by the age of 12–18 months and fall under the Postural Management System. Weight-bearing should be introduced into the standing regimen for CP-affected children aged 12–18 months. In addition to a regular physical treatment routine, the standing technique involved the use of a frame for hip abduction. The standing group began the program at the age of 12–14 months and completed it at the age of five years (3). At some point in their development, many children with high muscle tone (spastic CP) have limited passive range of motion and skeletal muscle abnormalities, which frequently worsen as they become older. The use of botulinum toxin, orthotics, and orthopedic procedures to treat restricted PROM has a significant impact on their mobility and quality of life. Although cerebral palsy is essentially a disease of gesture and posture, it also includes issues with vision and cognition, such as attention deficits and poor executive abilities, which

need the utilization of several components of the cognitive memory region. (5).

## CONCLUSION

According to the findings of the study, physiotherapy treatment such as weight-bearing exercises, the Roods approach, sensory integration, home exercise program, and the use of a Knee Ankle Foot Orthosis (KAFO) improved gross motor functions and social skills while having a minor impact on GMFCS.

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**Informed Consent:** Proper consent was taken from the patient for writing the case report.

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