

# Neuro Developmental Treatment (NDT) for Cerebral Palsy: - A Clinical Study

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## Abstract:-

### ➤ Aim

The intention of this research was to create a model for (RCTR) Randomized Controlled Trial Research, and to deal with the effectiveness of Neuro Developmental Treatment for cerebral palsy (CP) Children. Children ages 3-9 with CP were randomly assigned to a Gross motor and Neuro Developmental Treatment group (NDT). Pre-tests and post-tests measured with Gross Motor Functional Measure scale GMFMs. Results identified that, there is significant positive changes were seen for both groups more significant changes occurred in the NDT group and a significant improvement seen in gross motor activities for children with cerebral palsy. No other results were significant.

**Keywords:-** Cerebral Palsy, NDT Neuro Developmental Treatment, Bobath and Bobath, GMFMs Gross Motor Functional Measure scale, Intervention, Endurance and MR Mental Retardation.

## I. INTRODUCTION

A. Cerebral Palsy is a child hood neurologic condition most commonly encountered by pediatric occupational therapist and physiotherapist. It is a permanent but not unchanging neurodevelopmental impairment caused by a non-progressive defect or injury in a single or numerous locations in the immature brain. The defect or lesion can occur in utero or during or shortly after birth and create motor impairments and possible sensory deficits that are normally evident in early infancy.

B. CP involves one or more limbs and frequently the trunk; it causes disturbances of voluntary motor function and creates range of symptoms. Nevertheless, Cerebral Palsy itself an artificial concept, comprising numerous causes and clinical features that have been lumped together because of a commonality of management. The impaired control and co-ordination of voluntary muscles is accompanied by mental retardation or learning disabilities in 50 to 75% of children and by disorders of speech 25%, auditory impairment, seizure disorders (25 – 35%), or abnormalities of vision (40-50%) (Batshaw & perret, 1992; schanzenbacher, 1989). Social and family problems

may occur secondary to the presence of primary deficits. <sup>3</sup>  
& <sup>4</sup>

C. In few conditions do therapists play such a central task or have as much potential to control the outcome of children's lives. Their interventions have not only immediate but also ultimate result and can be proficient and cost-effective, Treatment of children is specialized: occupational therapist and physiotherapist offer services that will help them to achieve their full possible in their home and communities. <sup>2</sup> & <sup>4</sup>

D. The aim of the management for cerebral palsy children with disabilities owing to brain damage is to plan and direct them towards their maximum level of functional independence and to prepare them for as a typical adolescences and adult lives as can be achieved (Bobath, 1984) <sup>5</sup> & <sup>6</sup>

E. Neurodevelopmental Treatment (NDT) originated with work by Bobath and Bobath in the 1940s for the treatment of individual with neurological disorder of posture and movement. The bobaths developed the approach specifically to guide the therapist who manage and treat individual diagnosed with CP. <sup>6</sup>

NDT is a holistic and interdisciplinary clinical practice model, the theory of NDT into what is presently accepted as the dynamic systems theory. In this way NDT is a "living concept" it adapt and grows as knowledge of the brain's functions are revealed. <sup>1-6</sup>

Using the dynamic systems theory, NDT Trained therapists are able use the variety of treatment techniques. These particular techniques encourage active use of proper muscles and diminish involvement of muscle not necessary for the completion of a particular task. <sup>7</sup>

F. NDT based on the theory that inhibiting or modifying impairments of spasticity and abnormal reflex patterns can recover movement, for infants handling techniques promote active movement and thus they experience normal movement sensations.

The ultimate aim of the treatment is the acquisition of functional movements that permit children the greatest degree of independence possible to train them for as normal

adolescence and adult life as can be achieved (Bobath & Bobath 1984)

Neurodevelopment procedures are one of the important procedures aiming to increase the functional improvement and Occupational therapists play pivotal roles in the rehabilitation of children with cerebral palsy.

## II. METHODOLOGY

### A. Participants

Participants of this study were a convenience sample of children diagnosed with CP Cerebral Palsy. All children were between ages 3 – 9 [Mean] age 5 .8 attended 6 week OT Occupational Therapy service / program.

A total of 13 children included 8 male and 5 female children diagnosed with cerebral palsy were participated in this study. All children were attended intervention phase of this study, 7 of them were received the NDT intervention and 8 of them were received the gross motor (GM) intervention.

### B. Procedure

The selected children were erratically assigned in to, two treatment group. NDT Group and Gross Motor Activity group, Occupational therapy evaluation, group activities and NDT Technique and intervention, pre & post test were done in front of parents and care givers. Standardized assessment tool which include Occupational therapy neurological assessment and clinical observation, intervention were provided for the duration of 6 weeks activities program with appropriate treatment and training of NDT and Gross Motor Activities for children with Cerebral Palsy.

C. All 13 participant were received intervention of 45 min each over a 6 week period, NDT intervention were based on a theory which was initially developed by bobath and bobath, to normalize the muscle tone, and to maintain positioning of children through involving of meaningful therapeutic activities characterized by enhanced sitting balance, neck co-contraction, sitting endurance, positioning, weight bearing and weight shifting and other gross motor activities were given for cerebral palsy children.

### D. Inclusion Criteria

Children with Cerebral Palsy for both male and female with all categories of CP were selected for this study.

### E. Exclusion Criteria

Cerebral Palsy with MR

## III. RESULT

The Gross Motor Functional Measure scale GMFMs score have revealed an increase in the mean values of pre therapy management and post therapy management. Which

shows a statistical considerable result among pre and post therapy management in VI weeks report at  $p$  value is  $P < 0.001$

## IV. DE-MERITS OF THE STUDY

- ❖ Appropriate outcome measures were not identified in my study
- ❖ The number of children and the period of treatment might increase. Further study may warrant.

## V. CONCLUSION

Through this study, it is concluded that, the NDT program is more effective then the treatment of gross motor activities for children with cerebral palsy. Parent also reports that Neuro developmental treatment approach improves positioning and daily function in children with cerebral palsy.

## REFERENCES

- [1]. M L, Kerkovich D Mast J, et all. Cerebral palsy clinical care and neurological rehabilitation, lancet neuro 2011
- [2]. Neuro developmental treatment - a guide to NDT clinical practice by judith C. bier man PT.,DPT.,C/NDT
- [3]. Suzann K Campbell: Physical therapy for children by W.B. Saunders company
- [4]. Bobath, B., bobath, K., 1964. The Facilitation of normal postural reactions and movements in the treatment of cerebral palsy. Physiotherapy, London.
- [5]. Bobath K. A, bobath B: neuro development treatment, in scruton D (Ed) management of the motor disorders in children with cerebral palsy 2<sup>nd</sup> Ed, Philadelphia, JB Lippincott 1984.
- [6]. Freeman Miller MD: Physical therapy of cerebral palsy by Springer
- [7]. Tatjana Dolenc: Veli kovi, Milivoj Veli kovi Perat 2 basic principles of the neuro developmental treatment
- [8]. Batler PB et al: effectiveness of trunk targeting in achieving independent sitting balance children with cerebral palsy. 1998, 12(4): 281: 293

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## CONFLICT OF INTEREST

I declared no potential conflict of interest with respect to the research.

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