

Effectiveness of Play Therapy over Conventional Physiotherapy in Spastic Diplegic Cerebral Palsy Children

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Abstracts: Background: Play therapy has become an important part of physiotherapy treatment program to improve functional outcome in children with cerebral palsy. This study is to examine the effectiveness of play therapy together with conventional therapy to improve the hand function ability in children with spastic diplegic cerebral palsy. Methods: 30 spastic diplegic cerebral palsy children were divided into two groups, Group-I received conventional physiotherapy alone where as Group-II received play therapy and conventional therapy (n=15) both. The treatment was given 3 days a week for 6 weeks continuously for both the groups. Results: After the treatment period Group II who received play therapy in addition to conventional therapy scored significantly higher on the Box and block test and Nine hole peg test for grasp and release showing $p < 0.05$. Conclusion: Play therapy along with conventional physiotherapy was found to be much effective in improving the hand function in children with spastic diplegic cerebral palsy. This study may help the physiotherapist to utilize and evaluate the functional outcomes using play therapy in cerebral palsy children. [Buddhadev N. NJIRM 2012; 3(2): 159-162]

Key Words: Spastic diplegic cerebral palsy, Play therapy, Conventional physiotherapy, Box and block test, Nine hole peg test.

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Introduction: Cerebral Palsy is a common non progressive but changing neurological disorder in childhood. It is caused by static lesion to the developing nervous system, resulting in motor and possibly sensory abnormalities. A small percentage of children who show signs of neuromotor developmental delay in infancy outgrow their impairments and become completely normal gradually. Others are left with neurological impairments ranging from mild to severe.¹ The child is subjected to different types of professional management due to the permanent limitations in activity and participation in daily life. There is no permanent treatment for cerebral palsy, hence early intervention programs are necessary in children where impairment exists. Many treatment techniques are used nowadays to improve hand function.²

Various techniques like Neurodevelopmental therapy, Vojta's technique, conductive education and conventional methods like icing and stretching are usually applied to the children with cerebral palsy.³ Apart from the techniques mentioned above, play therapy is among one of the recent advances in physical therapy. Play therapy is helpful in developing hand-eye coordination, fine

motor skills and gross motor skills.^{4,5,6} In this study play therapy has concentrated on the hand function. Impaired hand function is a major disability in spastic cerebral palsy children. As a result, children with cerebral palsy often fail to use the upper extremities and learn to perform most tasks.

Skilled hand movements, involving independent finger movements, usually develop poorly in children with cerebral palsy. Such children typically learn to grasp with the whole hand, slowly and with excessive force.⁷ In the present study attempts have been made to analyze the effects of conventional methods with play therapy to improve the hand function in children with spastic diplegic cerebral palsy and thus provide better outcome functionally.

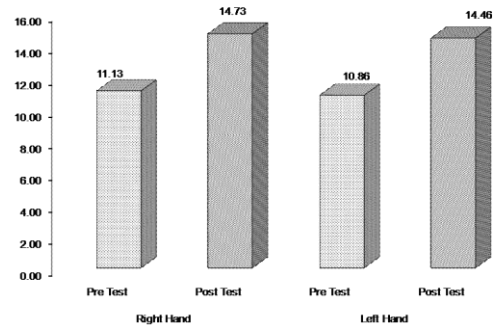
Methodology: It was the experimental study involving the comparative analysis of play therapy along with conventional therapy versus conventional therapy alone to improve hand function in children with spastic diplegic cerebral palsy. Thirty children with spastic cerebral palsy (both males and females) were selected based on following inclusion and exclusion criteria from a

complete list of children aged between 3 and 7 years coming to Department of Physiotherapy, CAEHS, Meerut and randomly assigned to the group I (conventional therapy alone) or the group II (play therapy with conventional therapy). Inclusion criteria: Children between age 3 and 7, diagnosed medically as spastic cerebral palsy falling under grade I spasticity according to Modified Ashworth Scale and have achieved up to the fine motor milestone of extended reach and grasp. Exclusion criteria: Children below 3 years and more than 7 years, children with other type of cerebral palsy or with cardio vascular disorder or recent trauma in upper limb. Ethical approval was taken from the institute ethical committee and informed consent statement was signed by parents. The demographic data was collected from each subject and the purpose of the study was explained to the attendees of the subjects.

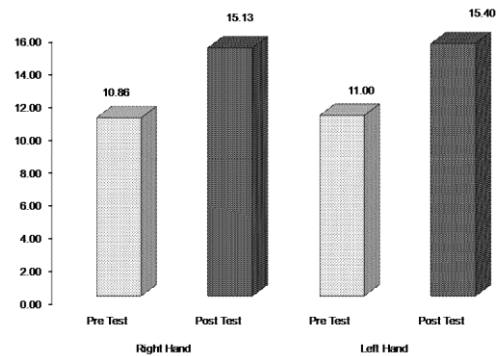
All of these subjects were assessed for the pre test measurement of the Box and Block test and Nine Hole Peg test and were recorded in form.^{8,9,10} Group I where subjects were treated with routine conventional physiotherapy method like icing on long flexors of forearm, stretching of long flexors of forearm and sponge ball exercises for hand. Group II was where subjects were treated with above mentioned routine conventional physiotherapy methods along with play exercise like make hand impression in play dough, roll play dough to ball and snakes, cut with scissors, play in water with toys in sink or tub, play with wooden puzzles, play with clay, blocks and pegboards frames, play in sand.¹¹ The participants were given play therapy for 15 to 20 minutes daily 3 times per week for 6 week. For both the group to assess the hand function, the child was asked to perform Box and Block test and Nine Hole Peg test before the treatment and at the end of six weeks of intervention. The data was entered into a computer using statistical software SPSS 11.0. The statistical tool used in this analysis was measures of central tendency, variation and parametric test i.e. independent 't' test.

Results: Eighteen boys and twelve girls participated in the study. The participants' age ranged from 44 to 77 months with a mean of 63 and standard deviation of 11 months. All subjects

in the study were diagnosed medically as spastic cerebral palsy falling under grade 1 spasticity according to modified ashworth scale. A study group that has been exposed to play therapy is comparable to control group with variable such as age and sex. All of these subjects' pre test and post test measurement were recorded using the box and block test and nine hole peg test.

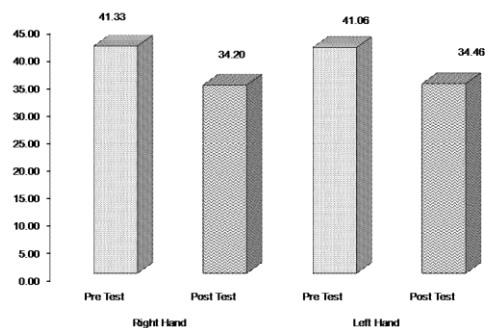


Graph 1: Pre and Post test measurement of box and block test – control group



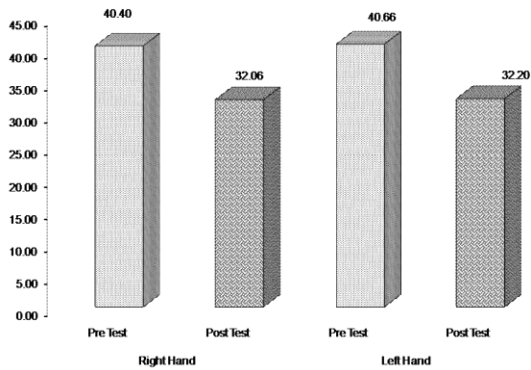
Graph 2: Pre and Post test measurement of box and block test – Intervention group

Graph 1 and 2 shows the mean values of pre and post test measurement of the box and block test of right and left hand of control and intervention group respectively. The mean difference between pre and post test was statistically significant.



Graph 3: Pre and Post test measurement of Nine Hole Peg Test – Control group

Graph 3 and 4 shows the mean values pre and post test measurement of the nine hole peg test of right and left hand of control group and intervention group respectively. The mean difference between pre and post test was statistically significant.



Graph 4: Pre and Post test measurement of Nine Peg Hole Test – Intervention group

Table 1 shows the mean improvement in right and left hand function in control group (1) and intervention group (2). The mean difference between the mean improvements of both the hand in both the group is statistically significant.

Table 1: Mean improvement (Pre Vs Post) in hand function by block and box test (no. of blocks / minute) and nine hole peg test (in seconds) in group 1 and group 2

Test	Right Hand		Left Hand	
	Group 1	Group 2	Group 1	Group 2
Block and Box Test	3.6	4.3	3.6	4.4
Nine Hole Peg Test	7.13	8.34	7.14	8.46

Discussion: In this study Interventional Group that received play therapy along with conventional therapy showed the improvement of hand function as measured with Box and block test and Nine hole peg test. That shows that play therapy had better outcome than the group who received only conventional therapy.

These results strong support the studies done by Smith J et al (2000) and Schaff R (1990) which states that play therapy enhances the fine motor outcomes in spastic cerebral palsy.

Conclusion: This study shown that the interventional group that is children with spastic diplegic cerebral palsy who has received play therapy for 20 minutes thrice a week for 6 weeks along with conventional therapy (icing, passive stretching and sponge ball exercise to the hand) showed a better outcome than the group who has received only conventional therapy. This short term play therapy program demonstrates a positive functional outcome for children with spastic cerebral palsy.

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