

Research Article

## Effects of Task Oriented Approach on Affected Arm Function in Children with Cerebral Palsy

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### ABSTRACT

**Objective:** To study the effect of task – oriented approach on affected arm function in children with cerebral palsy. **Design:** Quantitative pre and post experimental design. **Settings:** The study was conducted in local rehab centres at Chennai. **Participants:** Subjects were selected based on inclusion and exclusion criteria. **Outcome measures:** Box and Blocks test and WeeFIM . **Result:** The result indicate there was significant differences in the scores of the post-test when compared to the pre-test score. Over 6 weeks training period, a significant difference was observed in the BBT, and WeeFIM scores of the participants. **Conclusion:** The result indicates that task-oriented arm training significantly improved functional activities of the affected arm. Have concluded that task-oriented training also reduced the dysfunction in affected arm.

### Keywords:

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### INTRODUCTION

Cerebral palsy is a chronic motor disorder resulting from a non-progressive brain lesion acquired at a time of rapid brain development and characterized by muscle fibrillation or paralysis. Spastic hemiplegia is the most common type of CP among full-term infants and is the second common type of CP next to diplegia among preterm infants (Kriger KW 2006).

Children with spastic hemiplegia generally experience various motor and sensory impairment such as muscle weakness, spasticity, abnormal movement and sensory dysfunction and approximately 50% of these children show more disabilities of the upper extremities than of lower extremities. Dysfunction in upper extremities activities such as reaching, grasping and object manipulation in children with CP result in dependency in daily activities and a lack of successful social integration (Jaspers E 2009). Task-oriented training has showed to be effective and efficient in improving the performance of the affected arm in patient with neurological disorders (Hubbard IJ, 2009). Task-oriented arm approaches promote intensive, meaningful and goal –oriented training in subject and the voluntary functional activities of these subjects possibly reduce their motor disabilities (French B, 2008).

A Task-oriented approach to treatment of the affected arm has direct application to occupational therapy practice for motor training of the upper extremity (Page SJ: 2003).

Task-oriented training essentially helps to improve daily activity performance and arm function because the training consists of play activities and basis activities of daily living such as reaching, grasping and object manipulation (van Heartstringst M 2012)

Children with Cerebral palsy primarily show complex deviation in movement when using the affected arm, although disabilities in the affected arm principally depend on the injured brain areas and induced upper extremity dysfunction. Task-oriented approaches should target more than one disability of the affected arm in children with Cerebral palsy in order to improve their functional abilities, basic Activity of daily living , and social skills. The primary objective of the present study was to investigate the effect of a task-oriented approach which focused on activities such as reaching, grasping, and manipulation of objects of various size and shape on functional activities of the affected arm in children with Cerebral palsy.

#### *Justification and need of the study:*

Previous studies have been reported that the most important factor for motor skill recovery is muscle strengthening and the amount of practice devoted to learning a particular skill.

In 1994, McGuigan A stated that Task – oriented approach improve the skill and experience of the participant, select a context that enables performance, change aspect of the context to allow participant to performance task and change the course of the event by predicting barriers to performance. The primary objective of the present study was to investigate the effect of task-oriented approach on affected arm function in children with cerebral palsy.

### METHODOLOGY

It is Quantitative and experimental design . A design Pre and Post-test experimental design is used to compare the mean between two independent groups. Children with cerebral palsy with the age group of 6 to 12 years were

Table 1: Protocol of task oriented training:  
Subparts of protocol Contents

Bilateral manipulation	Unilateral activities
1. Handling a sword.	1. wooden blocks
2. Beating the drums.	2. Eating dinner with a spoon.
3. Age-appropriate play with dolls or construction materials.	3. Holding a drinking cup.
4. Cutting with scissors and pasting.	4. Carrying and dragging
5. Games using a ball.	

selected with the presence of abnormal muscle tone {Ashworth muscle tone grade >2} based on the non-probability convenient sampling.. Children with other co morbid disorder, seizure and Children undergone surgical procedures within the past 6 months were excluded from the study..The following tools were used in this study, Box and Blocks (BBT) and Wee Functional independence measure(WeeFIM). The Box and Blocks test, a test of manual dexterity, has been used by occupational therapists and other to evaluate physically handicapped individual. The Box and Block Test is an easy, feasible, valid, and reliable measurement for gross manual dexterity in young children. The Reliability for Box and Blocks test is between 0.93 and 1.00. The functional independence measure for children (WeeFIM) includes 18 items and covering six areas, self-care, sphincter control, transfer and locomotion item: cognitive scale includes cognitive scales include communication and social cognition item.The WeeFIM Reliability is between 0.84 to 0.94

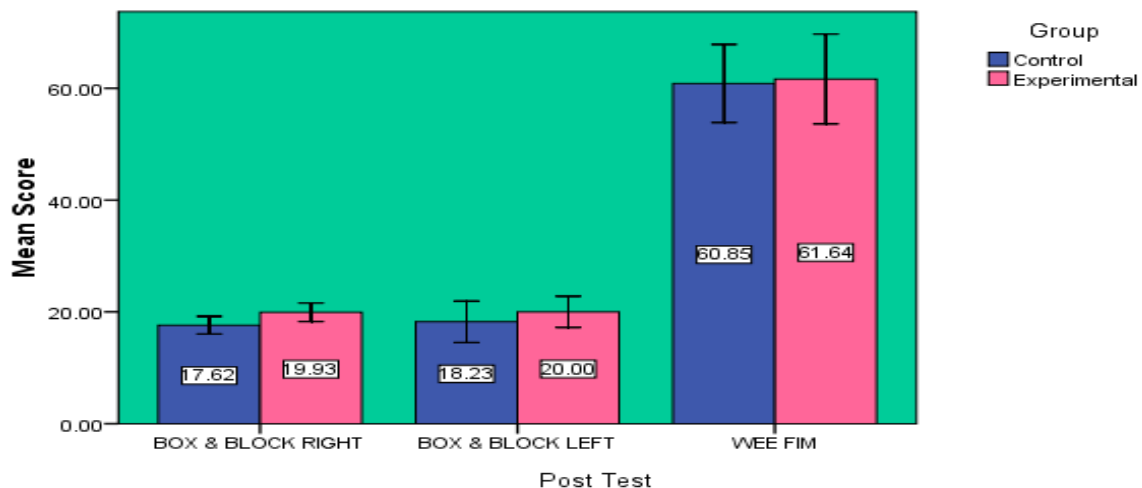
**STUDY PROCEDURE**

Children with cerebral palsy (age 6 to 12 years) will be recruited based upon inclusion and exclusion criteria. The purpose of the study will be explained to the subject. Written consent form will be obtained from each subject. The participants with cerebral palsy children will be administered individually with box and block, manual ability measure, WeeFIM scales. Followed by make the children to undergo for task- oriented training through the

protocol. The participants underwent the task- oriented arm training lasting 40 minutes/ session, 5 times per week for 6 weeks. The training protocol(Table;1) were followed during the treatment session for the 6 weeks.The general characteristics of the participants were analyzed using descriptive statistics. T- test were used to examine the effects of task oriented functional activities with the affected arm of children in cerebral palsy. The collected data were analyzed using SPSS version 18.0. Independent t test used to find the difference between the two groups. There exists difference in post test scores of BOX & BLOCK right and BOX & BLOCK left of control and experimental group

**DISCUSSION**

The purpose of the present study was to evaluate the effect of task-oriented arm approach on functional activities of the affected arm in children with cp. The result of the present study support the efficacy of task-oriented training for improving functional activities of the affected arm in children with cp. After training, the improvements in the BBT and WeeFIM scores indicate that task-oriented arm training reduced dysfunction in the affected arm as well as basic ADL in the study participants. The change in the BBT scores indicates that manual dexterity improved after the task-oriented arm training. Finally, the change in the WeeFIM scores of the participants indicates that basic ADL improved after task-oriented training. These findings suggest that task-oriented arm training may help children with cp to independently perform basic ADL, which is important for their successful social integration. Previous studies have been reported that the most important factor for motor skill recovery are muscle strengthening and amount of practice devoted to learning a particular skill. Task-oriented approach improves the skill and experience of the participant. Select a context that enables performance. Change aspects of the context to allow participant to perform task and change the course of event by predicting barriers to performance. Recently, several studies reported that functional activities significantly improved after implementing task-oriented approaches in children with cp. Ketelaar et al. performed a randomized



Graph 1: Comparison of post test scores between experimental group and control group

Table 2: Comparison of scores between experimental group and control group.

		Group	N	Mean	Std. Deviation	t statistic	P Value
PRE TEST	Box & BLOCK RIGHT	Control	13	17.6	2.6	1.137	0.266
		Experimental	14	16.1	3.9		
	BOX & BLOCK LEFT	Control	13	18.2	6.2	1.407	0.172
		Experimental	14	15.1	5.5		
POST TEST	WEE FIM	Control	13	60.5	12.2	1.088	0.287
		Experimental	14	55.1	13.4		
	Box & BLOCK RIGHT	Control	13	17.6	2.6	-2.19	0.03*
		Experimental	14	19.9	2.9		
BOX & BLOCK LEFT	Control	13	18.2	6.2	-3.835	0.02*	
	Experimental	14	20.0	4.8			
WEE FIM	Control	13	60.8	11.5	-0.161	0.873	
	Experimental	14	61.6	13.9			

controlled study that investigated the effects of functional therapy program on motor abilities of children with CP and reported that a task-specific therapy programmer improved capabilities and the level of independency in performing daily motor task in these children. Blundell et. Al conducted the training program comprising four week of group circuit training that focused on functional activities that use lower limb strength and reported that the task-specific exercise program resulted in improved functional performance that was maintained overtime in children with CP. Ahl et al. also reported significant improvement in the ability to perform daily activities in 14 children with CP after 5 months functional training program. However these studies analyzed lower extremity functions or daily activities and not upper extremity functions of children with CP. Because upper extremity function don't affect locomotion rehabilitation research and clinical setting have mainly focused on improving lower extremity function for independent walking in children with CP. Therefore, children with CP may have difficulty in social integration because of the dependency in basic ADL, although they are capable of independent walking. The result of the present study shows the feasibility of task oriented arm training in improving functional activities and basic ADL in children with CP. Task oriented approach generally include daily activities and play activities. The practice activities of the present study also include repetitive practice of functional activities used in daily activities or play activities.

The result indicates that task-oriented arm training significantly improved functional activities of affected arm. The limitations that the research encountered in the course of this study includes: Lack of practice while doing a particular skill, Lack of time on children part. Children with CP may have difficulty in social integration because of their dependency in basic ADL, although they are capable of independent walking. The Task oriented training also reduced the dysfunction in the affected arm. The result indicated that task-oriented arm training significantly improved functional activities of the affected arm. The study concluded that task-oriented training also reduced the dysfunction in affected arm. Based on the study that the researcher has carried out to make the following recommendations, Future study is therefore

needed to determine the long term effects of a task-oriented training program and to examine the long-term retention and transfer of the training effects. Further studies are needed to compare the task-oriented arm approach with the effects of other therapeutic exercise for reducing the affected arm dysfunction of the affected arm in children with CP.

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