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### MANAGEMENT PHYSIOTHERAPY FOR CEREBRAL PALSY (CP) DIPLEGI TO IMPROVE TRUNK CONTROL WITH SATCO (SEGMENTAL ASSESMENT OF TRUNK CONTROL) EXERCISE COMBINATION TOA (TASK ORIENTED ACTIVITY)

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#### Abstract

**Introduction:** Physiotherapy treatment in CP diplegi for improved trunk control with satco Exercise combination TOA. to report the results of the FT program on CP diplegi to improve trunk control capabilities with satco exercise combined with TOA.

**Case Presentation:** Patients aged 3 years with the main diagnosis of CP diplegi with less (ugly) trunk control who are currently undergoing therapy using SATco Exercise combination TOA. The implementation of physiotherapy is carried out for approximately 6 weeks with the frequency of therapy a week 3 times. The patient sits 90 degree in stool then installed pelvic straps for pelvic stabilization then given trunk control exercises with satco exercise for approximately 30 min / session into 3 parts namely static control, active control and reactive control each - 10 minutes each .and combined with TOA in the frontal sagittal and transverse fields (reach / grab and insert puzzle ring donut) Management and Outcome: after 18 treatments in the results there was an increase in control trunk which was initially at the upper thoracic control level with the level of support on the axilla currently there is an increase in the upper lumbar control level with a level of support below ribs (L3). Discussion: SATco or these is combined the TOA (Task Oriented of Activity) wich is the therapy that takes stage by stage down through the trunk and then in those children are able through the lower limbs working on their posturalcontrol and from that their function then evolves. TOA (Task Oriented Activity Based) is one of the NDT principles that has been proven effective and efficient in improving performance promoting meaningful and goal-oriented intensive training. Both treatments effectively help improve trunk control in patients. Conclusion: In these cases there was a significant increase in trunk control with SATco exercise combined with TOA.

**Keyword:** Physiotherapy, CP Diplegi, Trunk Control, SATco Exercise, TOA.



## Introduction

Cerebral Palsy (CP) is a pathological condition in the CNS or brain of a child during immature. The brain is considered mature approximately at age 4 years or ends at age 5<sup>11</sup>. Among different types of CP, spastic dysplasia is the most common type of 35% after spastic CP, hemiplegia as much as 25% and quadriplegia 20% with heavier motion problems in the lower extremities than upper extremities that mostly affect trunk control, functional performance and walking activity<sup>12</sup>. CP diplegia etiology is most commonly caused by risk factors due to premature birth/BBLR<sup>1</sup>.

Some of the main problems in CP diplegia include weakness of head and neck, trunk control disorders, hypertonus in the lower extremities and association reaction<sup>1</sup>. Trunk control instability in children CP diplegia is evident from greater oscillations of pressure center observed in anteroposterior and mediolateral directions that cause changes in balance and impair functional performance. Stimulation of the five senses is very beneficial in training cognitive cortical stimulus berupa, motion, motivating as well as practicing communication in patients with CP cases. In addition to stimulating motion also stimulates attention (inserts) cortical exercises so that the understanding of the child also increases. In positioning CP patients during therapy, cortical exercises of various senses are included.

## Case Presentation

In one of the hospitals in Semarang, there is a patient named [An.NH](#) who is 2 years and 5 months old with a diagnosis of cerebral palsy diplegia. The main complaint from the patient's mother who complained that her son could not walk independently and both legs tended to be stiff and still tiptoe when he was denied walking. Pre Christmas history G3, P1, A2 due to bleeding. Mothers often feel pain in the lower abdomen from the beginning to the end of pregnancy. There is no bleeding while pregnant, vomiting until the 4th month the mother is only easily tired during activities so it does not work during pregnancy. The history of mother Christmas at birth is 30 years. premature birth patient 7 months with BB 1,5 Kg. Childbirth per vagina, there are no difficulties during the delivery process. The baby was born crying instantly. Post natal history of patients treated in the NICU for 2 weeks. Forgot to breathe for a few seconds. Never fever or seizures after birth. 4 months have been able to nape, 1 new year is able to sit from the nape position, 2 new years can run with a handle (rambatan). Childbirth per vagina, there are no difficulties during the delivery process. The baby was born crying instantly. Post natal history of patients treated in the NICU for 2 weeks. Forgot to breathe for a few seconds. Never fever or

seizures after birth. 4 months have been able to nape, 1 new year is able to sit from the nape position, 2 new years can run with a handle (rambatan).

In the static position of sleep lying in the semiflexi knee position, when sitting trunk khyposis and sitting pattern W sitting. In a dynamic position the patient is able to move around by crawling when he is standing on his kneeflex and ankle plantr flexes(jinjit) there scissor gait on the road with help. Muscle strength with XOTR at upper extremity (X) and in lower extremities extensor knee and dorsal ankle flexion (R). Asworth scale spasticity flexors and knee extensors (2) dorsal flexors (3) trunk control capabilities with SATco rating are at upper lumbar control level. Physiotherapy program is carried out 3 times a week for 6 weeks with the modality of exercise therapy, namely SATco Exercise combination TOA (Task of Activity).

### Management and Outcome

After 18 treatments were given trunk control exercises with satco exercise for approximately 30 minutes / session into 3 parts, namely static control, Active control and reactive control each 10 minutes .and combined with TOA in the sagittal and transverse frontal fields (reaching / grabbing and inserting puzzle ring donut) in the results of the initial increase in trunk control at the upper thoracic control level with the level of support in axilla currently there is an increase in the upper level lumbar control with a level of support below ribs (L3).

The following measurement results using SATCO before therapy for 18 times.

Tabel 1. SATCO Measured Pre Treatment

Level of Manual Support	Functional Level	Static	Active	Reactive
Pelvic/thight strep used except as indicated	Arm and hand in air except as indicated			
Shoulder girdle testers hand position may vary from horizontal	Head Control Arms may be supported throughout	√	√	NOT Tested for Head Control
Axillae	Upper Thoracic Control	√	√	√
Inferior Scapula	Mild Thoracic Control	√	√	√
Over Lower Ribs	Lower Thoracic Control	√	√	√
Below Ribs	Upper Lumbar Control	-	-	-
Pelvis	Lower Lumbar Control	-	-	-
No support given and pelvic/thight straps removed	Full Trunk Control	-	-	-

The following measurement results using SATCO after therapy for 18 times.

Tabel 1. SATCO Measured Post Treatment

Level of Manual Support	Functional Level	Static	Active	Reactive
Pelvic/thight strep used except as indicated	Arm and hand in air except as indicated			
Shoulder girdle testers hand position may vary from horizontal	Head Control Arms may be supported throughout	√	√	NOT Tested for Head Control
Axillae	Upper Thoracic Control	√	√	√
Inferior Scapula	Mild Thoracic Control	√	√	√
Over Lower Ribs	Lower Thoracic Control	√	√	√
Below Ribs	Upper Lumbar Control	√	√	√
Pelvis	Lower Lumbar Control	√	√	-
No support given and pelvic/thight straps removed	Full Trunk Control	-	-	-

## Discussion

The development of functional activity in CP children is largely determined by the development of posture. Surveillance results of cerebral palsy in Europe (SCPE) th.1976-1996 stated the prognosis of cerebral palsy based on the predictor of bilateral spastic subtype (CP diplegi) 57% able to walk<sup>3</sup>. While based on the ability to sit stated that children who are able to sit at the age of 2 years have a prognosis can walk by 98-100% moderately who are able to sit over 2 years able to walk about 60%<sup>2</sup>. Based on the above is expected in cp patients have a good prognosis because judging from the subtype is CP diplegi and the ability to sit supported by the development of trunk control that increases from thoracic control level to lower lumbar control level. At the beginning of SATco exercise therapy the patient is at the level of manual support over lower Ribs that is the patient sits 90 derajat in the stool that is lined by sitbelt then manual support on Th4-Th7 then perform static position, active and reactive control combined with TOA transverse field. After treatment for 6 weeks obtained significant results that increase the functional level of support to Lower lumbar control with manual level support in Pelvis. The use of exercise therapy modalities with SATco Exercise and toa combinations is considered effective in improving trunk control and goal-oriented sitting functional abilities.

SATco therapy is strategy for trying to help children to get control of being upright. It's this control if we like the neutral vertical posture but upright postural control because if we can get that

then we find the other skill<sup>5</sup>. For example rolling, crawling whatever also improve and so we have develop the Segmental assesment of control or SATco or these is combined the TOA (Task Oriented of Activity) wich is the therapy that takes stage by stage down through the trunk and then in those children are able through the lower limbs working on their postural control and from that their function then evolves. TOA (Task Oriented Activity Based) is one of the NDT principles that has been proven effective and efficient in improving performance promoting meaningful and goal-oriented intensive training. Both treatments effectively help improve trunk control in patients. Pathological conditions in the CNS or brain in a child during development. TOA's co-ordination exercise program in addition to stimulating trunk control and sitting balance also stimulates cortical attention so that the child's understanding will also increase<sup>11</sup>.

## Conclusion

CP diplegi is the most common subtype of spastic CP. Have a good prognosis if the child is able to sit at the age before 2 years 98-100% and able to sit above 2 years 58%<sup>2</sup>. Therefore it is very important to immediately activate trunk control in order to immediately achieve functional sitting activities. SATco is a test but it can also be a treatment .it's validated test for accessing upright postural control in a child that has disability, problem with movement controle so usually a child that just it slows to develop then movement skills. SATco combined with TOA is effective in goal-oriented trunk control treatment.

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