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# Evidens och effekter av CI terapi för barn med unilateral CP

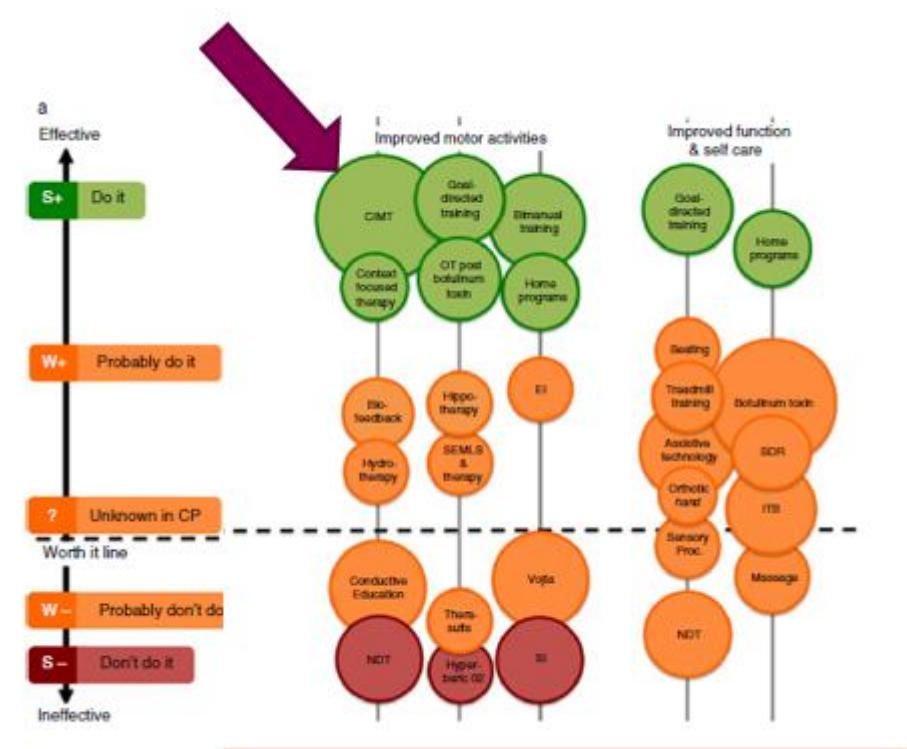


Professor Ann-Christin Eliasson  
arbetsterapeut

KAROLINSKA  
*Universitetssjukhuset*

# HANDTRÄNING GÖR SKILLNAD!

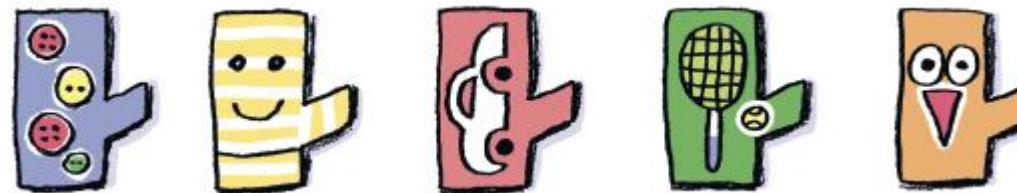
-för barn med unilateral CP



# CI-terapi - Constraint Induced Movement Therapy för barn med hemiplegi

Karakteristiskt:

- Begränsad användning av “bästa” hand
- Intensiv träning



# Typ av begränsning

- Vante
- Slinga
- Gipsning
- Hålla bort handen





Constraint-induced movement therapy improves upper limb activity and participation in hemiplegic cerebral palsy: a systematic review

Hsiu-Ching Chiu<sup>a</sup>, Louise Ada<sup>b</sup>

<sup>a</sup>Department of Physical Therapy, I-Shou University, Kaohsiung, Taiwan (ROC); <sup>b</sup>Discipline of Physiotherapy, The University of Sydney, Sydney, Australia



# Effekt av CI-terapi mot ordinarie behandling

Aktivitet, 19 studies:

JebSEN-Taylor, Nine-Hole Peg, BO, Quest,  
Melbourne, Box and blocks

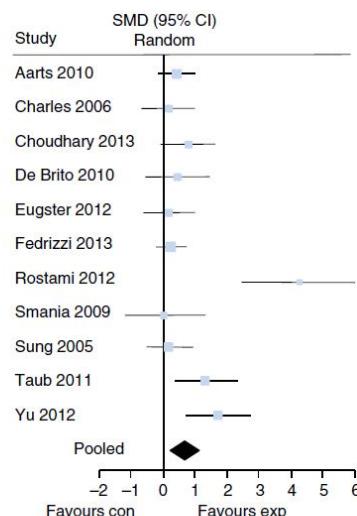


Figure 2. SMD (95% CI) of effect of constraint-induced movement therapy compared with no/sham intervention on upper limb activity immediately after intervention by pooling data from 11 trials ( $n = 302$ ) using a random-effects model ( $I^2 = 65\%$ ).

Delaktighet, 12 studies:

AHA, Motor Activity log, Caregiver  
Functional Use Survey

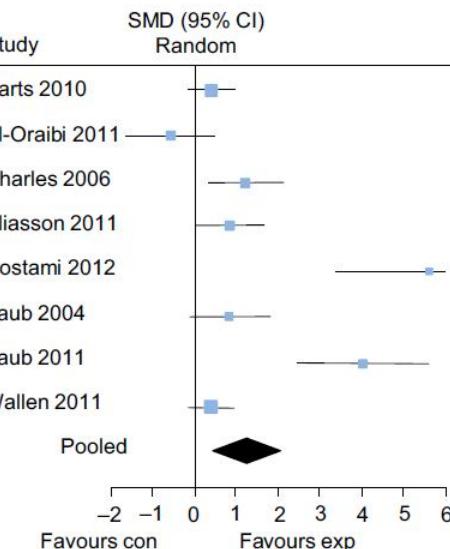
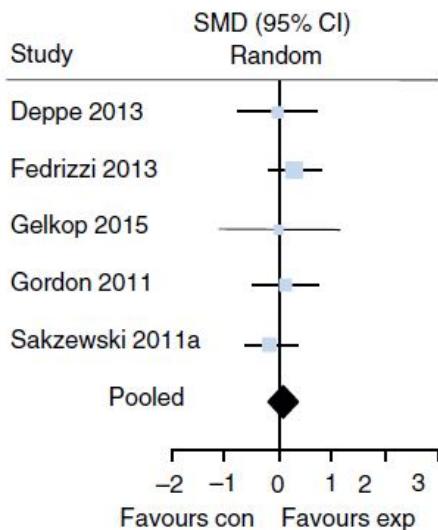


Figure 4. SMD (95% CI) of effect of constraint-induced movement therapy with no intervention on upper limb participation immediately after intervention by pooling data from eight trials ( $n = 215$ ) using a random-effects model ( $I^2 = 84\%$ ).

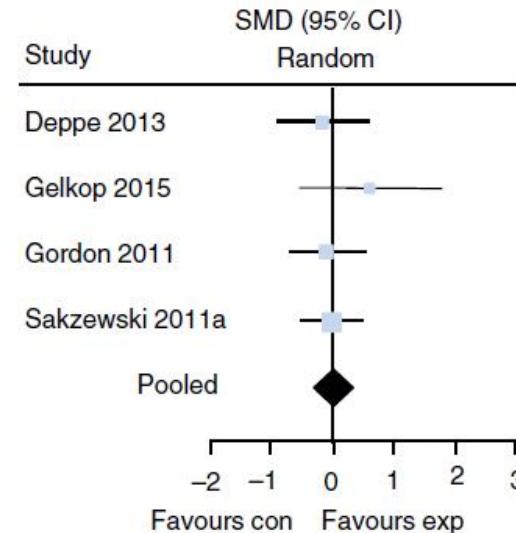
# CI-terapi mot annan behandling samma dos

## Aktivitet



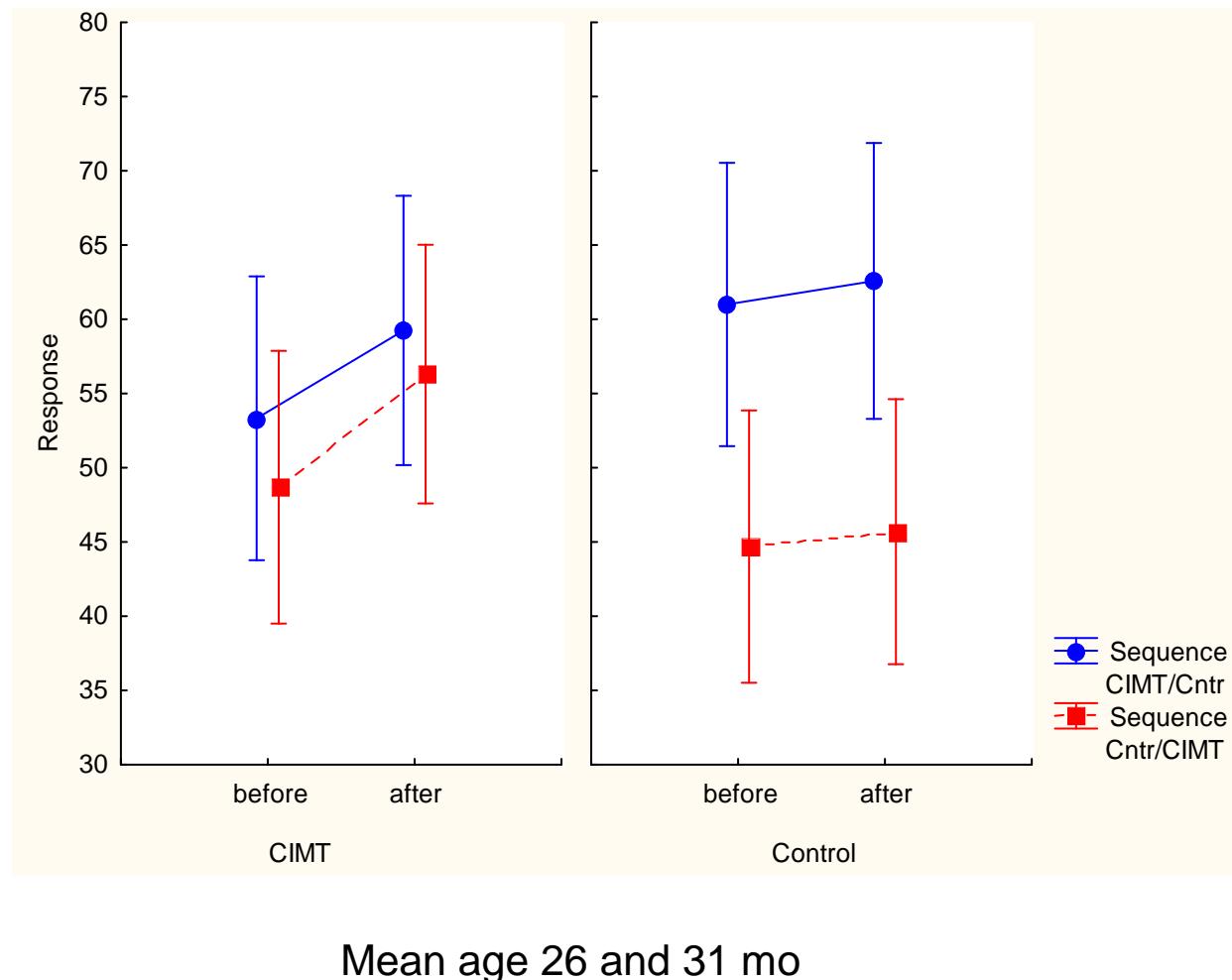
**Figure 6.** SMD (95% CI) of effect of constraint-induced movement therapy with same dose of upper limb therapy on upper limb activity immediately after intervention by pooling data from five trials ( $n = 218$ ) using a random-effect model ( $I^2 = 0\%$ ).

## Delaktighet



**Figure 8.** SMD (95% CI) of effect of constraint-induced movement therapy with same dose of upper limb therapy on upper limb participation immediately after intervention by pooling data from four trials ( $n = 146$ ) using a random-effects model ( $I^2 = 0\%$ ).

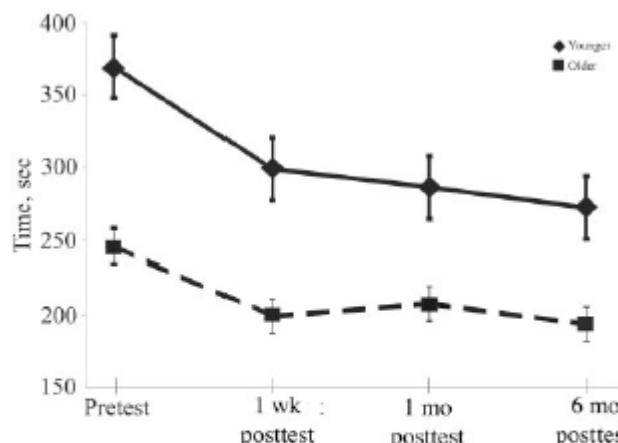
# Effekter efter 2 månaders träning



# Påverkas resultatet av barnets ålder?

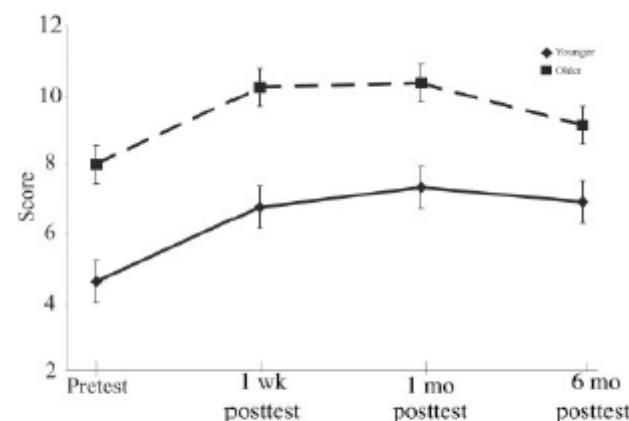
En grupp barn 4-8 år jämförs med en grupp på 9-13 år

JebSEN Hand function test



**FIGURE 2**  
Mean  $\pm$  SEM time to complete the 6 timed items (writing excluded) of the Jebsen-Taylor Test of Hand Function for the younger (solid line;  $n = 12$ ) and older (dashed line;  $n = 8$ ) age groups at each testing session. Faster times correspond with better performance. The maximum allowable time to complete each item was capped at 120 seconds, resulting in a maximum score of 720 seconds.

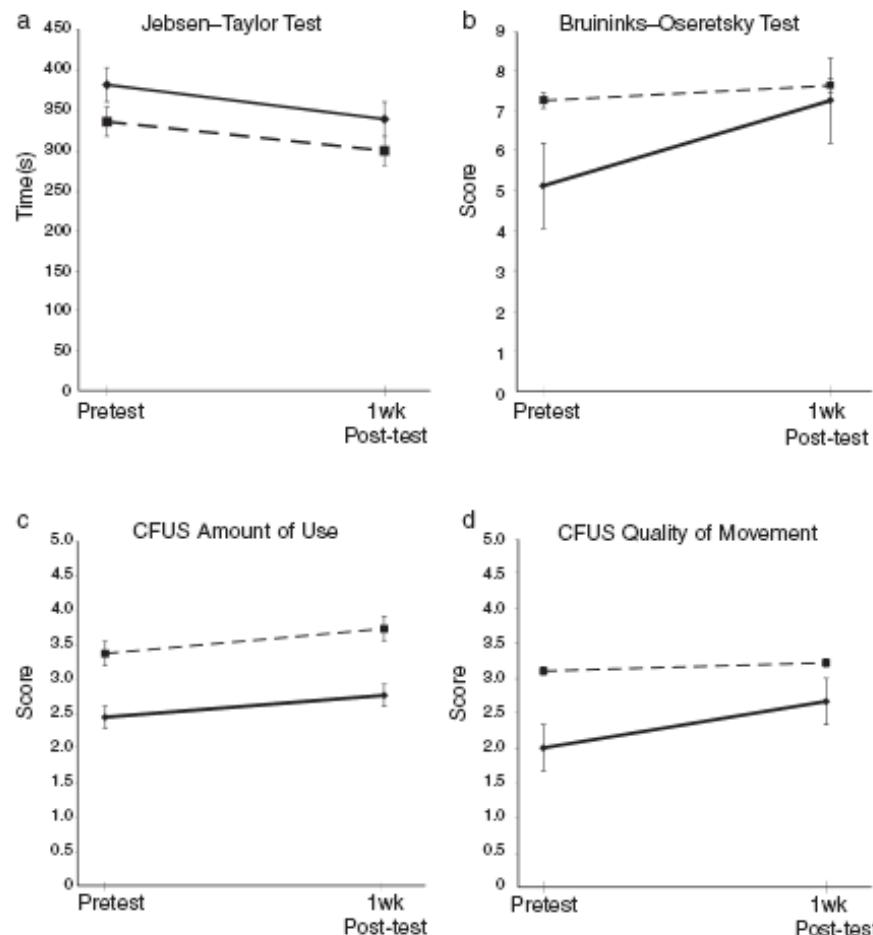
BO-Test



**FIGURE 3**  
Mean  $\pm$  SEM score on the Bruininks-Oseretsky Test of Motor Proficiency (subtest 8) for the younger (solid line;  $n = 12$ ) and older (dashed line;  $n = 8$ ) age groups at each testing session. Higher scores correspond with better performance.

Andrew M. Gordon, Jeanne Charles and Steven L. Wolf, Pediatrics 2006

# Effekt av upprepad CI-terapi



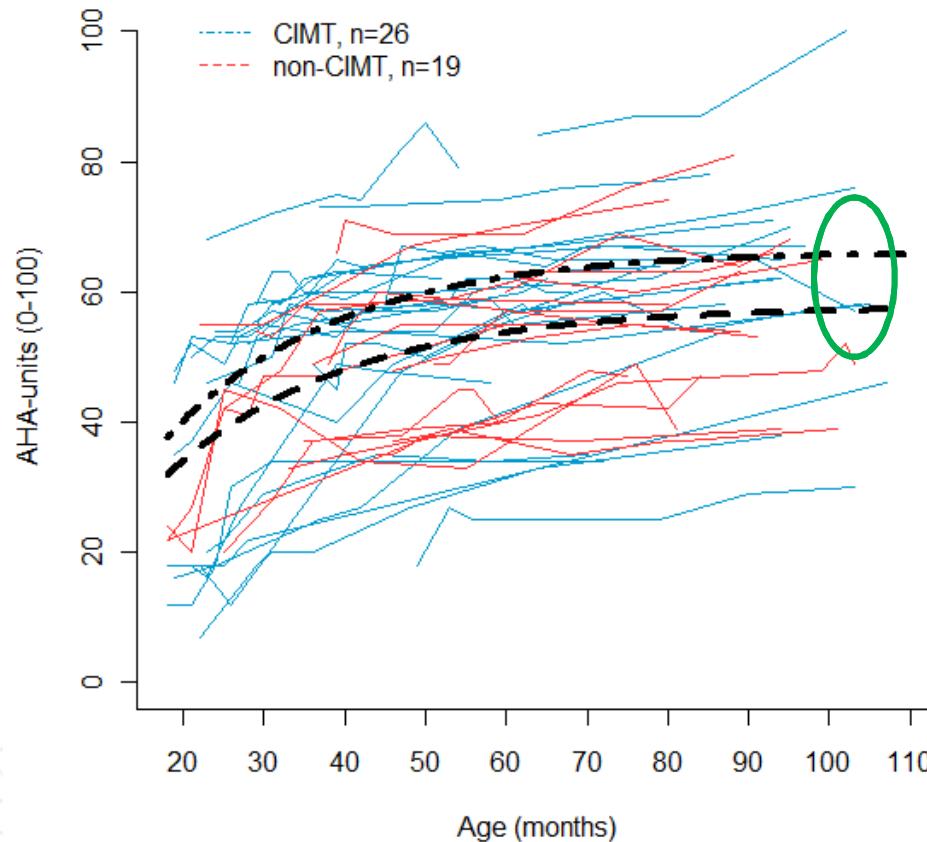
8 barn, 5-11år  
Upprepade träning ett år senare  
6 timmar/2 veckor

Charles and Gordon 2007

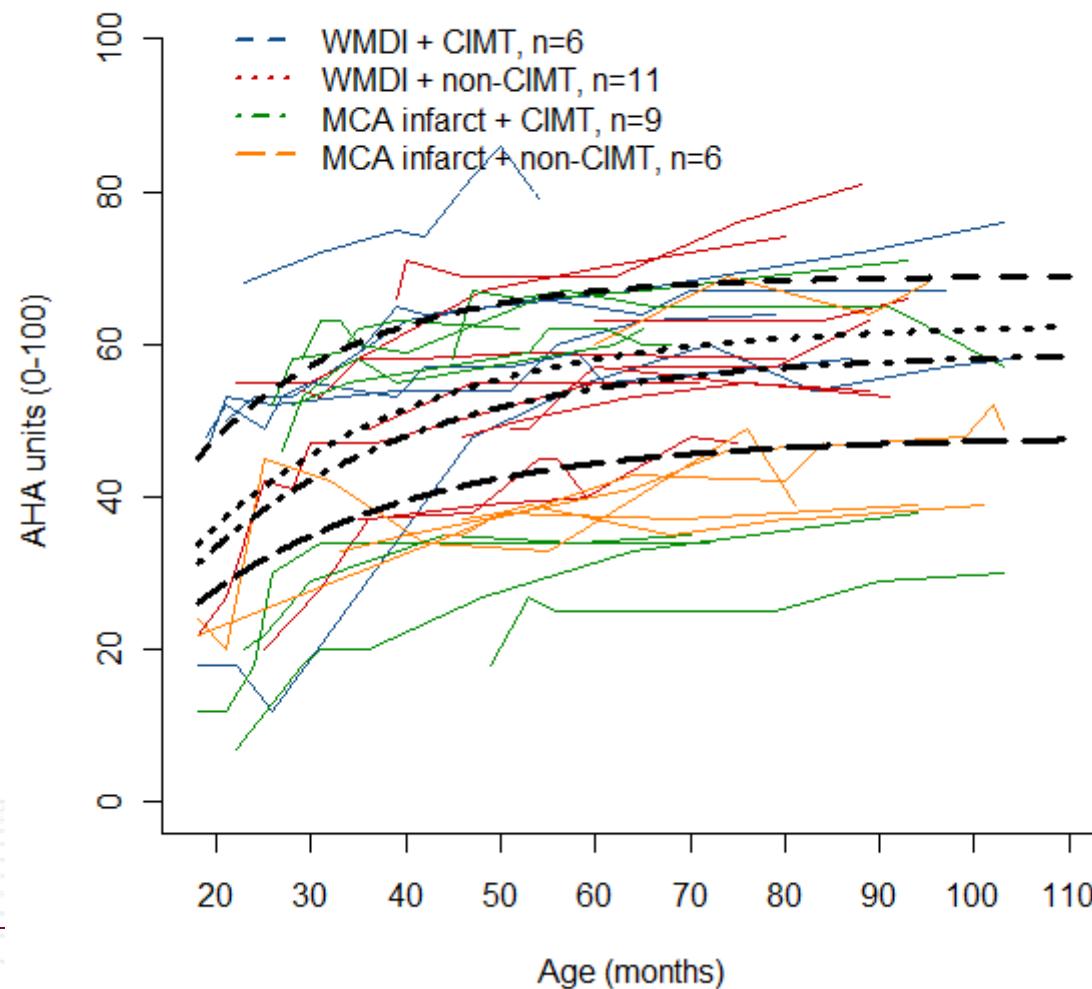
# Långsiktig påverkan av 1 behandlingsperiod

CIMT, n=26  
Non-CIMT, n=19

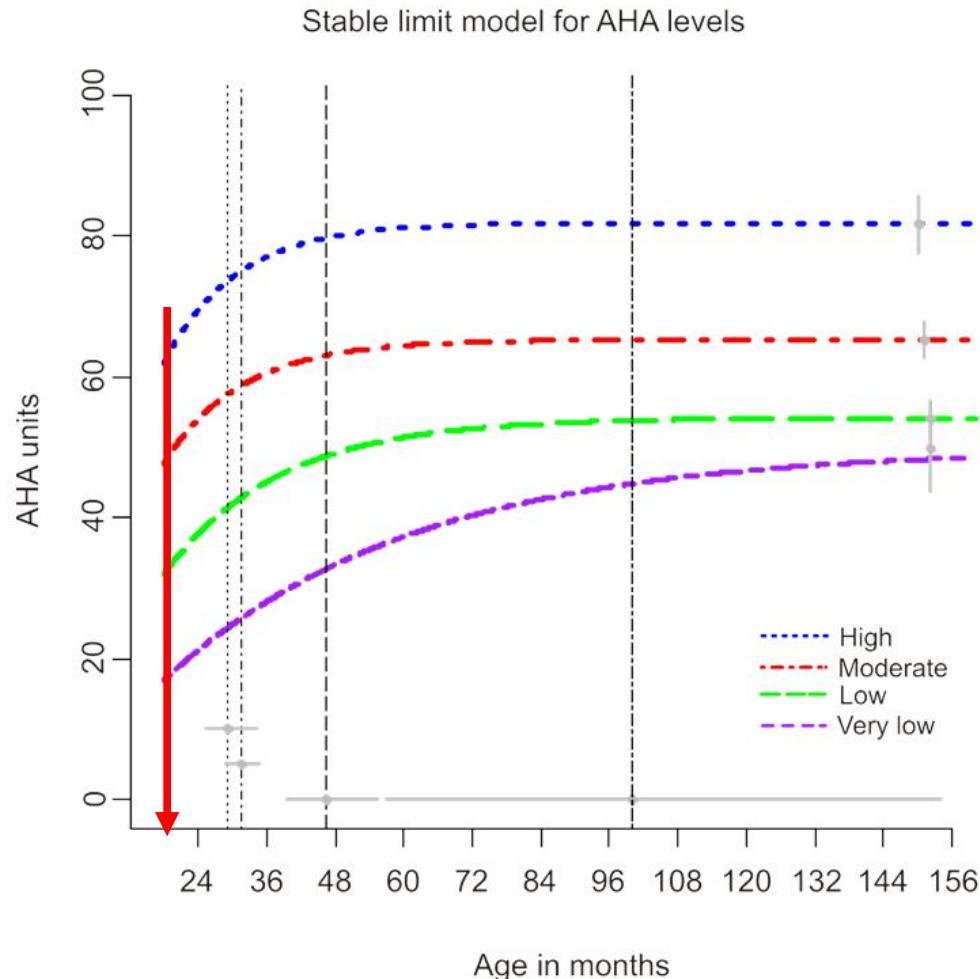
Difference in limit  
8,5 AHA-units  
 $p=0.022$



# Långsiktig påverkan av 1 behandlingsperiod - kontrollerat för typ hjärnskada



# När ska träningen starta?



Mätt med AHA, en videoinspelning  
leksituation på 10-15 minuter

Rådata är omvandlade till en  
intervallskala, 0-100 AHA-units



Nordstrand et al 2016



Improvements in bimanual hand function after baby-CIMT in two-year old children with unilateral cerebral palsy:  
A retrospective study

Linda Nordstrand <sup>a,\*</sup>, Marie Holmefur <sup>b</sup>, Annika Kits <sup>c</sup>, Ann-Christin Eliasson <sup>a</sup>

<sup>a</sup>Department of Women's and Children's Health, Karolinska Institutet, Stockholm, Sweden

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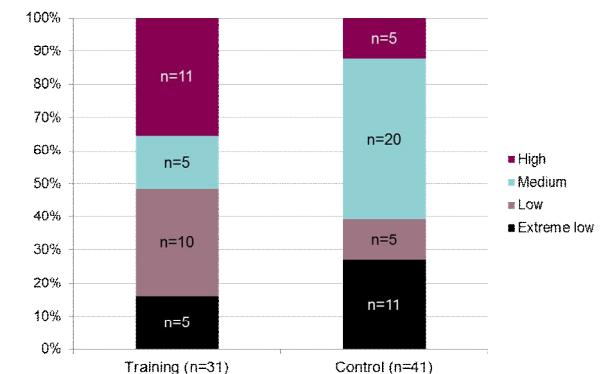


## Syfte

- Att undersöka om barn som haft baby-CIMT före ett åres ålder har bättre handfunktion vid 2 års ålder än de som fått typisk behandling

## Resultat av baby-CIMT

- Oddsen var 6 gånger högre att tillhöra den högst fungerande gruppen
- Tendens från att skydda dem från att tillhöra den lägst fungerande gruppen





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# Hand Assessment for Infants, HAI

Lena Krumlinde-Sundholm, Linda Ek, Elisa Sicola, Lena Sjöstrand, Giuseppina Sgandurra, Andrea Guzzetta, Ann-Christin Eliasson

HAI är ett nytt kriteriebaserat bedömningsinstrument för barn 3-12 månader

HAI kan kvantifiera tecken på asymmetrisk handfunktion

HAI mäter varje hand separat och ger ett mätvärde av båda händerna tillsammans

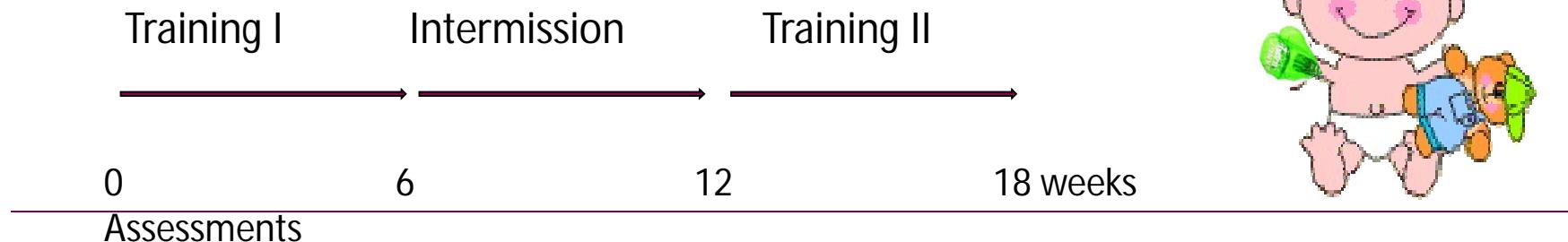


Hand Assessment for Infants (HAI) research version		
Name:	Gry Ek	Date:
Date of birth:	2014-05-15	Gender:
Date of first visit:	2014-06-16	Referrer:
Examinator:	ME	Referral date:
Referral:	Other Health	Referral ref:
Referral ref:		Referral reason:
Referral reason:		Referral information:
		Concurrent treatment:
1. Right forearm	2	2. Left:
1. Left forearm	2	3. Other:
1. Right elbow flexion	2	
1. Left elbow flexion	2	
1. Right shoulder mobility	2	
1. Left shoulder mobility	2	
1. Right arm length	2	
1. Left arm length	2	
2. Right hand	1	
2. Left hand	1	
3. Head control	1	
4. Head control	1	
5. Head control (right)	1	
5. Head control (left)	1	
6. Arm support (right)	1	
6. Arm support (left)	1	
7. Grip strength (right)	1	
7. Grip strength (left)	1	
8. Forearm rotation (right)	1	
8. Forearm rotation (left)	1	
9. Forearm pronation (right)	1	
9. Forearm pronation (left)	1	
10. Forearm supination (right)	1	
10. Forearm supination (left)	1	
11. Hand symmetry (right)	2	
11. Hand symmetry (left)	2	
12. Hand symmetry (total)	2	
13. Hand strength (right)	1	
13. Hand strength (left)	1	
14. Hand strength (total)	1	
15. Hand control (right)	0	
15. Hand control (left)	0	
16. Hand control (total)	0	
Multilateral performance (raw score): HAI	18	
Multilateral performance (raw score): HAI - Echelle	19	

## Effectiveness of baby-CIMT: a randomised controlled trial on infants below the age of 12 months with clinical signs of unilateral CP

Eliasson AC, Nordstrand L, Ek L, Lennartsson F, Sjöstrand L, Tedroff K, Kruumlinde-Sundholm L

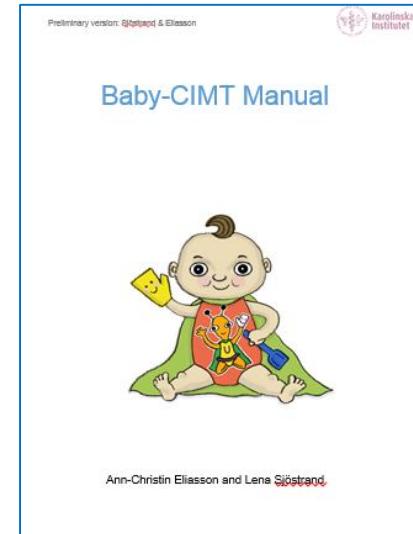
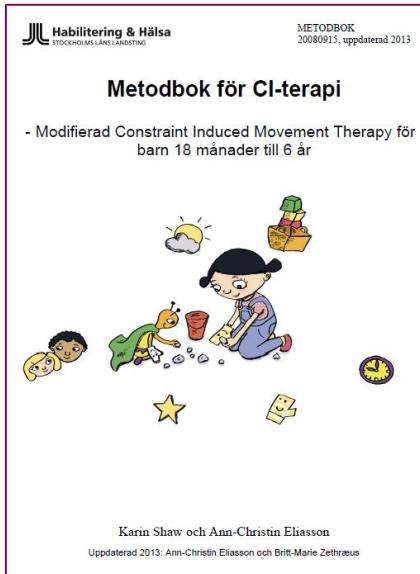
- En randomiserad, kontrollerad prospective studie
- Rekrytering
  - Barn med hög risk att utveckla unilateral CP pga en neonatal skada som påverkat hjärnan eller blivit remitterade till Astrid Lindgren Children's barnsjukhus pga av assymetrisk handfunktion.
- Inklusion
  - *Kliniska tecken på asymmetrisk handfunktion*
  - Ålder 3-8 månader, stratifierade utifrån ålder och typ av skada
- Study period:



# Referenser och metodböcker



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Gratis: Goggla på titeln

## Referenser:

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2. Eliasson AC, Krumlinde-Sundholm L, Shaw K, Wang C. Effects of Constraint-Induced Movement Therapy in young children with hemiplegic cerebral palsy: an adapted model. *Dev Med Child Neurol* 2005; 47: 266-275
3. Bonnier B, Eliasson AC, Krumlinde-Sundholm L. Effects of constraint induced movement therapy in adolescents with hemiplegic cerebral palsy — a day camp model. *Scan J Occupa ther* 2006; 13: 13-22
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5. AL-oraiib, S and Eliasson AC. Implementation of constraint-induced movement therapy for young children with unilateral cerebral palsy in Jordan: a home-based model. *Disabil Rehabil*. 2011;33(21-22):2006-12
6. Eliasson AC, Shaw K, Berg E, Krumlinde-Sundholm L. An ecological Constraint Induced Movement Therapy approach for preschool children; a randomized control trial. *Research in Dev Dis Res Dev Dis* 2011 RIDD-1253; No. of Pages 9
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8. Eliasson AC, Sjöstrand L, Ek L, Krumlinde-Sundholm L, Tedroff K. Efficacy of baby-CIMT: study protocol for a randomised controlled trial on infants below age 12 months, with clinical signs of unilateral CP. *BMC Pediatrics*. 2014, 14:141, DOI: 10.1186/1471-2431-14-141
9. Nordstrand L, Holmefur M, Kits A, Eliasson AC, Improvements in bimanual hand function after baby-CIMT in two-year old children with unilateral cerebral palsy: a retrospective study. *Research in Developmental Disabilities*, 2015 Jun 19;41-42C:86-93. doi: 10.1016/j.ridd.2015.05.003

# HANDTRÄNING GÖR SKILLNAD!

- Alla barn kan dra nytta av träningen
  - oavsett svårighetsgrad av nedsatt handfunktion
  - oavsett ålder
  - oavsett vem som genomför träningen om de får utbildning
  - oavsett typ av vante
  - oavsett modifikationer
  - i olika miljöer
  - träningen kan upprepas
- Effekterna är kvarstående