

## Radiographic follow-up in CPUP to prevent hip dislocation



Children with cerebral palsy (CP) have an increased risk of hip dislocation. Without a surveillance program, combined with subsequent indicated treatment, 10-20% of all children with CP develop hip dislocation. Several risk factors are known \*, but also children without these established risk factors are at risk of developing hip dislocation. To prevent hip dislocation, the child's hips should be followed both clinically and radiographically during the entire growth period.

### \* Risk factors

- GMFCS III-V
- Scoliosis
- Windswept deformity
- Adduction – flexion contracture
- Spasticity of hip adductor and flexor muscles

### Follow-up program

The program is based on the child's age and GMFCS level. The findings at the clinical examination must also be taken into account in the overall assessment. At times, it will be necessary to deviate from the program and perform examinations more often than the care program recommends.

GMFCS I	No radiographic examination, unless deterioration of hip and/or spine is noted during the clinical examinations.
GMFCS II	Radiographic examinations at 2 and 6 years of age. If MP is <33% and no deterioration is noted during the clinical examinations, no additional radiographic examinations are needed.
GMFCS III-V	Radiographic examination immediately following a confirmed/suspected diagnosis of CP followed by annual radiographic examinations until eight years of age. After age 8, the time interval between examinations is determined individually based on the result of the previous clinical and radiological examinations. Children > 8 years with normal radiology for several years and no deterioration noted during the clinical examinations are recommended to undergo radiographic examinations every two years until growth plate closure.

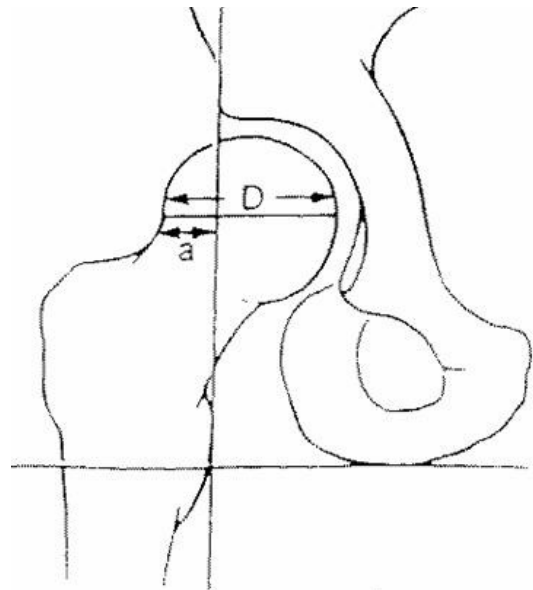
Children with pure ataxia or athetosis at GMFCS levels II-III and without deterioration noted during the clinical examinations may be excluded from further radiographic examinations - provided that the first radiographic examination is normal.

## Comments

The degree of lateral displacement is measured with the Reimers Migrations percentage (MP)

$$MP = a/D \times 100.$$

- Hips with MP < 33% need only to be followed further according to the program.
- In hips with MP 33-40%, the clinical examination and the development of MP over time determine whether preventive surgery should be performed.
- Most hips with MP > 40% need surgery to prevent further displacement.



## Radiation dose

The radiation dose of a pelvic radiograph is equivalent to the radiation dose that the average Swede gets exposed to from naturally occurring radiation in the environment in a 2 week span. The calculation is based on a person who weighs 40 kg. Small children are exposed to a lower dose; adults are exposed to a radiation dose equivalent to 8 weeks background radiation in the environment.

2013-02-10

Gunnar Hägglund



## Spinal follow-up in CPUP

### Background

Children with cerebral palsy (CP) have an increased risk of developing scoliosis. The treatment strategy depends on:

- The magnitude of the curve.
- The type and location of the scoliosis.
- The degree of flexibility.
- The child's age and level of gross motor function.

### Grading of scoliosis

#### Clinical examination

The spine is examined with the person in a sitting position. The degree of scoliosis is graded as:

- Mild:* discreet curve visible only on thorough examination in forward bending.  
*Moderate:* obvious curve in both upright and forward bending.  
*Severe:* pronounced curve preventing upright position without external support.

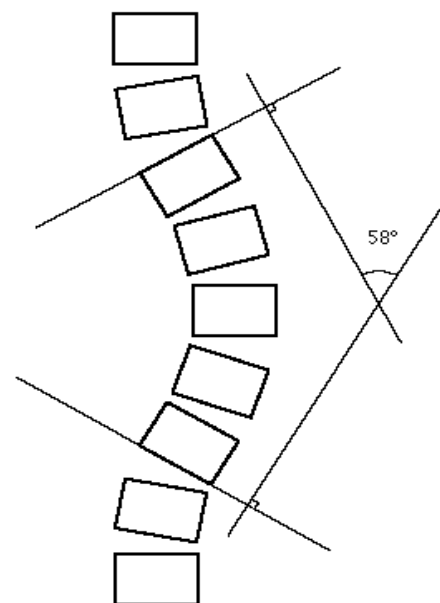
A scoliosis is further graded as flexible or not flexible.

#### Radiographic examination

The spine is examined in standing or sitting position.

If the examination is performed in a lying position, the degree of scoliosis cannot be reliably determined. In these cases, the Cobb angle must be related to the degree of scoliosis at the clinical examination.

The degree of scoliosis is measured according to the Cobb angle (See Figure)



## Follow-up program

The follow-up program includes yearly spinal examinations by the child's physiotherapist.

- Children < 8 years with a flexible scoliosis are followed with clinical examinations according to the follow-up program. Treatment (brace, seating support, positioning) depends on the clinical evaluation.
- Children < 8 years with a non-flexible scoliosis graded as moderate or severe are examined radiographically with anteroposterior and lateral views of the entire spine. The findings from the radiographic examination (the Cobb angle) and the clinical evaluation determine the course of treatment. For continued radiographic examinations only an anteroposterior view is needed.
- Children > 8 years with a moderate or severe scoliosis (whether it is flexible or not) are examined radiographically as described above. The continued follow-up and treatment is determined by the degree of scoliosis (Cobb angle) and the factors described previously.

### Guidelines for follow-up based on Cobb angle

Cobb angle < 15 degrees: Stimulate positioning to the "other" side in sitting, lying and standing positions. Treatment with brace or seating support is determined by the child's postural ability. If the scoliosis is flexible further clinical examinations are sufficient as long as the curve magnitude is not increasing. A non-flexible scoliosis is checked radiographically after one year.

Cobb angle < 30 degrees: Stimulate positioning to the "other" side in sitting, lying and standing position. Treatment with brace or seating support is determined by the child's postural ability. Radiographic examinations after one year.

Cobb angle 30 – 60 degrees: Possibly brace treatment in young children. Radiographic examination every 6 months if the Cobb angle is increasing, if no increase annual radiographic examinations are recommended. In children with Cobb angle > 40 degrees surgery should be considered.

## **Comments**

A scoliosis with a Cobb angle  $> 40$  degrees almost always progresses, even after completion of growth. This means that these children often need surgery, unless the child's general condition makes surgery too risky. The surgery is technically easier to perform at a Cobb angle of 40-60 degrees than at larger curves. However, surgery at a young age could make the spine shorter due to the spinal fusion. Therefore, at times, it is recommended to treat with a brace and postpone the surgery until the child is older.

## National Health Care Programme CPUP – Physiotherapists



Personal ID Number (birth date, client number) \_\_\_\_\_

Surname \_\_\_\_\_ First name \_\_\_\_\_

County of residence (County, state) \_\_\_\_\_

Residential District \_\_\_\_\_

Assessment date (year-month-day) \_\_\_\_\_

Assessment carried out by \_\_\_\_\_

**Dominant neurological symptom:**

Spasticity  Dyskinesia  Ataxia  Unclassified/mixed type

**Gross Motor Function Classification System – E&R:** I  II  III  IV  V

**Functional Mobility Scale (FMS)**

1. How does your child move around for short distances in the house? (5 m)
2. How does your child move around in and between classes at school? (50 m)
3. How does your child move around for long distances such as at the shopping centre? (500 m)

Ask the child/parent to rate the child's most frequent mobility method for all three distances. FMS is a performance measure, rate what the child actually does. Note one score for each distance.

\_\_\_\_\_ 5 metres \_\_\_\_\_ 50 metres \_\_\_\_\_ 500 metres

N= Does not apply: e.g., child does not complete the distance.

C= Crawling: child crawls for mobility at home (5 m).

1= Uses wheelchair: may stand for transfers, may do some stepping supported by another person or using a walker/frame.

2= Uses a walker or frame: without help from another person.

3= Uses crutches: without help from another person.

4= Uses sticks (one or two): without help from another person.

5= Independent on level surfaces: Does not use walking aids or need help from another person.\* Requires a rail for stairs. \*If uses furniture, walls, fences, shop fronts for support, please use 4 as the appropriate description.

6= Independent on all surfaces: Does not use any walking aids or need any help from another person when walking over all surfaces including uneven ground, curbs etc. and in a crowded environment.

**Sitting – performance (most common)**

Floor-sitting	Not sitting	<input type="checkbox"/>
	In parents arms	<input type="checkbox"/>
	W-sitting	<input type="checkbox"/>
	Long-sitting	<input type="checkbox"/>
	Side-sitting right (weight on left buttock, legs to the right)	<input type="checkbox"/>
	Side-sitting left (weight on right buttock, legs to the left)	<input type="checkbox"/>
	Cross-legged	<input type="checkbox"/>
	Knee-sitting	<input type="checkbox"/>
Chair-sitting	Not sitting	<input type="checkbox"/>
	Regular chair	<input type="checkbox"/>
	Adaptive seating	<input type="checkbox"/>
	High chair	<input type="checkbox"/>

**Sit to stand and stand to sit – performance (most common)**

Without support (includes support against the child's own body, such as hands on knees).

With support (includes all external support or assistance such as walls, furniture, persons).

	Without support	With support	Cannot
Floor-sitting to standing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standing to floor-sitting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chair-sitting to standing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standing to chair-sitting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Standing – performance (most common)**Not standing Standing with aids/support (includes support from furniture or walls) Standing without aids (includes support against the child's own body) **Uses standing aids** No  Yes Days per week: 1-2  3-4  5-6  7 Times per day: 1  2  3  >3 Hours per day: <1  1-2  3-4  >4 **Type of standing aid** (several options may be chosen):Tilt table / Standing frame  Standing brace  Standing wheelchair **Standing aids used together with:**Orthoses  Spinal brace/jacket

**Wheelchair indoors – performance** (complementary to the FMS)

Manual wheelchair: Does not use  Attendant pushed  Self-propels   
 Powered wheelchair: Does not use  Attendant operated  Self-operates

**Wheelchair outdoors – performance** (complementary to the FMS)

Manual wheelchair: Does not use  Attendant pushed  Self-propels   
 Powered wheelchair: Does not use  Attendant operated  Self-operates

**Stair climbing****Moves independently up the stairs**

no   
 jumps, crawls   
 walks

**Walks up the stairs**

person assisting + handrail   
 person assisting   
 handrail   
 without support

**Moves independently down the stairs**

no   
 jumps, crawls   
 walks

**Walks down the stairs**

person assisting + handrail   
 person assisting   
 handrail   
 without support

**Cycling** (All kinds of cycling e.g independent, with or without support on a bicycle, tricycle, tandem, armbike etc.)

Frequently (daily)  Sometimes (once a week)  Rarely (once a month)  Never



**Orthoses** (Several options may be chosen)Uses orthoses? No  Yes **Orthoses used to prevent contractures:**

	Average use, hours per day		<1	1–2	3–4	5–6	7–9	≥10
	Right	Left						
AFO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KAFO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Orthoses used to facilitate function:**

Aim (several options may be chosen):

	Right		Left		1. Improve walking ability	2. Improve balance, provide stability	3. Facilitate training	4. Other
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<b>FO</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The aim of the orthosis is achieved					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AFO</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The aim of the orthosis is achieved					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>KAFO</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The aim of the orthosis is achieved					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>KO</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The aim of the orthosis is achieved					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>HO</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The aim of the orthosis is achieved					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Have skin irritation/sores appeared in connection with the use of the orthosis? No  Yes **Pain – Does the person experience pain (or reported by his/her proxy)?** No  Yes If yes, where? Head, neck  Back  Arms, hands  Hips  Knees  Feet   
Teeth  Stomach  Pressure  Ulcers 

Other \_\_\_\_\_ N.B. Note only localisation not right, left or comments

**Fracture – Has the person had any fractures since the last assessment?**No  Yes

**Surgery or treatment to reduce spasticity**

Has the person had any surgery since the last assessment? No  Yes

If yes, please specify type of surgery \_\_\_\_\_ Date \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Has the person had any Botox injections since the last assessment? No  Yes

If yes, please specify to which muscles \_\_\_\_\_ Date \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Does the person get medical treatment to reduce spasticity such as Baclofen?

No  Yes

**Spasticity/Muscle tone**

**Scissoring when walking/during activity** none  mild  pronounced

**Scissoring at rest** none  mild  pronounced

**Foot clonus Right** No  Yes

**Left** No  Yes

**Assessment of muscle tone at rest according to the Modified Ashworth Scale (see manual)**

0 = No increase in muscle tone.

1 = Slight increase in tone with a catch and release or minimal resistance at end of range.

+1 = As 2 but with minimal resistance through range following catch.

2 = More marked increase in tone through ROM.

3 = Considerable increase in tone, passive movement difficult.

4 = Affected part rigid.

	<b>Right</b>						<b>Left</b>					
	<b>0</b>	<b>1</b>	<b>+1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>+1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Hip flexors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hip extensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hip adductors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knee flexors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knee extensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plantar flexors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: \_\_\_\_\_

**Joint Range of Motion** – (for standardised positions, see the manual)**Supine Lying****Right    Left****Differs from  
standardised position****Hip****Abduction (obligatory)**Lower legs outside the plinth,  
extended hips, flexed knees

\_\_\_\_ ° \_\_\_\_ °

No Yes **Abduction (optional)**

Extended hips and knees

\_\_\_\_ ° \_\_\_\_ °

No Yes **Knee****Popliteal angle**

90° hip flexion (full knee extension = 180°)

\_\_\_\_ ° \_\_\_\_ °

No Yes **Extension**

Extended hip (full knee extension = 0°)

\_\_\_\_ ° \_\_\_\_ °

No Yes **Ankle****Dorsiflexion (flexed knee)**

\_\_\_\_ ° \_\_\_\_ °

No Yes **Dorsiflexion (extended knee)**

\_\_\_\_ ° \_\_\_\_ °

No Yes **Prone Lying****Hip****Internal rotation**

Extended hip, flexed knee

\_\_\_\_ ° \_\_\_\_ °

No Yes **External rotation**

Extended hip, flexed knee

\_\_\_\_ ° \_\_\_\_ °

No Yes **Elys' test (length of rectus)**

Pelvis fixed, flex knee

\_\_\_\_ ° \_\_\_\_ °

No Yes **Extension**Legs outside the plinth, extend one leg,  
Secure the pelvis with the other hand.

\_\_\_\_ ° \_\_\_\_ °

No Yes



**Physiotherapy**

Has the person received physiotherapy interventions apart from the CPUP assessment since the last assessment? No  Yes

**If yes, how often?**

< 1 time/month  1–3 times/month   
1–2 times/week  3–5 times/week  > 5 times/ week

**How often has the physiotherapist been present on these occasions?**

< 1 time/month  1–3 times/month   
1–2 times/week  3–5 times/week  > 5 times/ week

**Has the person had one or more periods of intense training, since the last assessment?**

No  Yes

**Physical activity**

Has the person actively participated and performed physical activities/sports in school/ pre-school, since the last assessment? No  Yes

**If yes, how often?**

< 1 time/ week  1–2 times/week  3–5 times/week

Has the person participated and performed physical leisure activities/sports, since the last assessment? No  Yes

**If yes, how often?**

< 1 time/ week  1–2 times/week  3–5 times/week

What kinds of physical leisure activities?

Swimming  Riding  Basketball  Sledge hockey  Strength training   
Gymnastics  Skiing  Skating  Boules  Soccer  Archery  Dance

Other \_\_\_\_\_

**Body functions and Body structures**

Has the person received physiotherapy interventions to improve and affect the following movement related functions and structures since the last assessment?

	No	Specific training	Integrated into everyday activities	Both specific and integrated
Muscle strength (force)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muscle tone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muscle endurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Joint range of movement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Joint stability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oxygen uptake/Endurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Balance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Body image	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respiration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Has the person had specific documented aims/goals?**

No

Yes

**Activities and Participation – Maintain a body position**

Has the person been training to maintain a body position, since the last assessment?

	No	Specific training	Integrated into everyday activities	Both specific and integrated
Lying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sitting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kneeling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Has the person had specific documented aims/goals?**

No

Yes

**Activities and Participation – Change a basic body position**

Has the person been training to change a body position, since the last assessment?

	No	Specific training	Integrated into everyday activities	Both specific and integrated
Lying to sitting?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sitting to standing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Has the person had specific documented aims/goals?**

No

Yes

**Activities and Participation – Mobility**

Has the person been training any of the following movement-related activities since the last assessment?

	No	Specific training	Integrated into everyday activities	Both specific and integrated
Bottom shuffling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rolling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Crawling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Running	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jumping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobility** <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\* shorter or longer distances with or without aids

\*\* with wheelchair or other means of transportation

**Has the person had specific documented aims/goals?**

No

Yes

**Activities and Participation – Self-care**

Has the person been training any activities/participation towards self-care since the last assessment?

	No	Specific training	Integrated into everyday activities	Both specific and integrated
Eating and drinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Personal hygiene/washing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Toileting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dressing, undressing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Has the person had specific documented aims/goals?**

No

Yes

**GMFM and PEDI**

If the following assessment tools have been used, the results may be recorded here

**GMFM** Performed (year-month-day)\_\_\_\_\_

**GMFM-66**

GMFM-66 points\_\_\_\_\_ SE\_\_\_\_\_ 95% KI\_\_\_\_\_ - \_\_\_\_\_

**GMFM-88**

Total (%)\_\_\_\_\_

Target score (%)\_\_\_\_\_

Dimension score (%) A\_\_\_\_\_ B\_\_\_\_\_ C\_\_\_\_\_ D\_\_\_\_\_ E\_\_\_\_\_

Define target areas: A  B  C  D  E

**PEDI** Performed (year-month-day)\_\_\_\_\_

<b>Part I</b>			<b>Part II</b>		
Functional skills	Scale score	SE	Need for assistance	Scale score	SE
Personal care			Personal care		
Mobility			Mobility		
Social ability			Social ability		

<b>Part III</b>				
Presence of number of adaptations	None	General	Assistive devices	Extensive
Personal care				
Mobility				
Social ability				

**Comments:**





### National Health Care Programme CPUP Occupational therapists

Version 9, 2011-04-11  
English version dated 2011-12-25

Personal ID Number (birth date, client number) \_\_\_\_\_

Surname \_\_\_\_\_ First name \_\_\_\_\_

County of residence (County, state) \_\_\_\_\_

Residential District \_\_\_\_\_

Dominant neurological symptom:

Spasticity  Dyskinesia  Ataxia  Unclassified/mixed type

Assessment carried out by occupational therapist \_\_\_\_\_

Assessment date (year-month-day) \_\_\_\_\_

CLASSIFICATION OF HANDFUNCTION according to MACS I-V (Manual Ability Classification System)	Comment
I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> V <input type="checkbox"/>	

FUNCTIONAL CLASSIFICATION according to HOUSE 0 - 8	Right	Left	Comment
	<input type="checkbox"/>	<input type="checkbox"/>	
DOMINANT HAND (preferred hand)	Right	Left	Both
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BIMANUAL ABILITY	Comment
Has bimanual ability	<input type="checkbox"/>
No bimanual ability, never uses the hands together	<input type="checkbox"/>

### PASSIVE JOINT RANGE OF MOTION, Upper Limbs

Assessment of internal and external rotation of the shoulder performed in supine.

sitting

supine

Mark position for the other measurements

SHOULDER	Right	Tenseness present		Left	Tenseness present		Comment
		Yes	No		Yes	No	
Abduction 180	___	<input type="checkbox"/>	<input type="checkbox"/>	___	<input type="checkbox"/>	<input type="checkbox"/>	
Flexion 180	___	<input type="checkbox"/>	<input type="checkbox"/>	___	<input type="checkbox"/>	<input type="checkbox"/>	
External rotation 90	___	<input type="checkbox"/>	<input type="checkbox"/>	___	<input type="checkbox"/>	<input type="checkbox"/>	
Internal rotation 80	___	<input type="checkbox"/>	<input type="checkbox"/>	___	<input type="checkbox"/>	<input type="checkbox"/>	

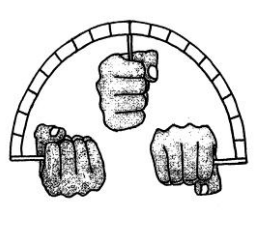
Showing signs of pain during examination    Yes     No

ELBOW	Right	Tenseness present		Left	Tenseness present		Comment
		Yes	No		Yes	No	
Extension 0	___	<input type="checkbox"/>	<input type="checkbox"/>	___	<input type="checkbox"/>	<input type="checkbox"/>	
Flexion 150	___	<input type="checkbox"/>	<input type="checkbox"/>	___	<input type="checkbox"/>	<input type="checkbox"/>	

Showing signs of pain during examination    Yes     No

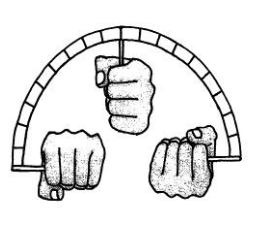
FOREARM	Right	Tenseness present		Left	Tenseness present		Comment
		Yes	No		Yes	No	
Supination 90	___	<input type="checkbox"/>	<input type="checkbox"/>	___	<input type="checkbox"/>	<input type="checkbox"/>	
Pronation 90	___	<input type="checkbox"/>	<input type="checkbox"/>	___	<input type="checkbox"/>	<input type="checkbox"/>	

**Right**                      **0°**



**90°**                                      **-90°**

**Left**                              **0°**



**-90°**                                      **90°**

	<b>Right</b>	<b>Left</b>
Active supination	___	___
No active supination	<input type="checkbox"/>	<input type="checkbox"/>

Showing signs of pain during examination    Yes     No

WRIST	Right	Tenseness present		Left	Tenseness present		Comment
		Yes	No		Yes	No	
Extension 70	—	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/>	<input type="checkbox"/>	
Extension, extended fingers	—	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/>	<input type="checkbox"/>	
Flexion 80	—	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/>	<input type="checkbox"/>	
Ulnar deviation 30	—	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/>	<input type="checkbox"/>	
Radial deviation 20	—	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/>	<input type="checkbox"/>	

**Showing signs of pain during examination**    Yes     No

THUMB	Right	Tenseness present		Left	Tenseness present		Comment
		Yes	No		Yes	No	
Volar abduction	—	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/>	<input type="checkbox"/>	

THUMB POSITION	Right	Left	Comment
No thumb-in-palm	<input type="checkbox"/>	<input type="checkbox"/>	
Classification of thumb-in-palm according to House Type I-IV	—	—	

SIMULTANEOUS WRIST- AND FINGER EXTENSION	Right	Left	Comment
	According to Zancolli group 1, 2A, 2B or 3	—	
Can actively extend the fingers with the wrist extended 20° or more	<input type="checkbox"/>	<input type="checkbox"/>	
Wrist or finger extension could not be assessed according to Zancolli	<input type="checkbox"/>	<input type="checkbox"/>	

**OCCUPATIONAL THERAPY interventions towards hand function since the last assessment or during the last year if this is the first CPUP assessment**

	Yes	No	
Therapy combined with Botulinum toxin or hand surgery	<input type="checkbox"/>	<input type="checkbox"/>	
Hand training	<input type="checkbox"/>	<input type="checkbox"/>	
Guidance	<input type="checkbox"/>	<input type="checkbox"/>	
CI-therapy (constraint induced therapy)	<input type="checkbox"/>	<input type="checkbox"/>	
NIT (Network-based intensive training)	<input type="checkbox"/>	<input type="checkbox"/>	
Group activity	<input type="checkbox"/>	<input type="checkbox"/>	
Alternative treatment affecting hand function,	<input type="checkbox"/>	<input type="checkbox"/>	please specify.....
Are there any goals for hand function?	<input type="checkbox"/>	<input type="checkbox"/>	
Are the goals concerning hand function attained?	<input type="checkbox"/>	<input type="checkbox"/>	<b>Partially</b> <input type="checkbox"/>

**Comments:**.....  
 .....

**ASSISTIVE DEVICES to improve hand function**

	Yes	No	
Assistive devices or adaptations to improve hand function?	<input type="checkbox"/>	<input type="checkbox"/>	which (see manual).....

**ORTHOSES**

Orthoses are not used

Mark for which joints/body parts the orthosis is used and if the purpose is to affect hand function (function) or range of motion (ROM):

	Function			ROM	
	Right	Left		Right	Left
<b>Elbow</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Elbow</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Forearm</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Forearm</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Wrist</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Wrist</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Thumb</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Thumb</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Fingers</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Fingers</b>	<input type="checkbox"/>	<input type="checkbox"/>

Time worn, to maintain ROM  $\geq 6$  hours/day  $< 6$  hours/day

Comment:

**Since the last assessment:**

<b>Has had hand/arm surgery?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	What surgery?	Date
			.....	.....
			.....	.....
<b>Has received Botulinum toxin injections in the upper limbs?</b>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Which muscles?	Date
			.....	.....
			.....	.....

**Medical treatment to reduce spasticity (such as Baclofen)?**    Yes     No

**PEDI** (Pediatric Evaluation of Disability Inventory)

The results from the last PEDI assessment can be registered according to local agreements.

**AHA** (Assisting Hand Assessment)

If AHA has been performed since the last CPUP assessment the results can be registered here. Total score and scale points are recorded.

**National Follow-Up program- CPUP Pediatric Neurology**

Personal nr (unique identifier): \_\_\_\_\_

Last name: \_\_\_\_\_ First name: \_\_\_\_\_

Region child belongs to : \_\_\_\_\_

District child belongs to: \_\_\_\_\_

Assessment /Evaluation performed by:

First name: \_\_\_\_\_ Last name: \_\_\_\_\_ Title: \_\_\_\_\_

Date of assessment (year – month – day): \_\_\_\_\_

**Criteria for CP diagnosis met:**Yes  No, CP diagnosis removed/withdrawn  Cannot be determined at present **PREGNANCY – DELIVERY-NEONATAL PERIOD:****Country of birth**Sweden Denmark Norway 

Other, please specify: \_\_\_\_\_

**Was this a multiple birth ( i. e. twins, triplets):** Yes  No  Unknown **Gestational age at birth:**Known  gestational week: \_\_\_\_\_ + days: \_\_\_\_\_Unknown, but at term or past expected due date Unknown, but preterm Completely unknown **Birth weight:**Known  Birth weight (grams): \_\_\_\_\_Unknown, normal Unknown, too low Completely unknown **Length at birth (cms):** \_\_\_\_\_**Head circumference at birth:**Known  Head circumference (cms): \_\_\_\_\_Unknown

**Apgar scores:**  
 Known  1 minute:\_\_\_\_\_ 5 minutes:\_\_\_\_\_ 10 minutes:\_\_\_\_\_  
 Unknown, but well baby   
 Unknown, other

**Infant admitted to neonatal care unit post delivery (more than routine care):**  
 Yes  No  Unknown

**Respirator treatment during neonatal period:**  
 Yes  No  Unknown

**Cooling treatment/therapeutically induced hypothermia during neonatal period:**  
 Yes  No  Unknown

**Seizures within 72 hours post delivery:**  
 Yes  No  Unknown

**Neonatal diagnoses:**  
 ICD code – 3 digits unless birth defect (Q-nr) then 5-digit code from the ICD-code list  
 P10 Intracranial laceration and haemorrhage due to birth injury  
 P11 Other birth injuries to central nervous system  
 P14 Birth injury to peripheral nervous system  
 P20 Intrauterine hypoxia  
 P21 Birth asphyxia  
 P35 Congenital viral diseases  
 P37 Other congenital infectious and parasitic diseases  
 P52 Intracranial nontraumatic haemorrhage of fetus and newborn  
 P53 Haemorrhagic disease of fetus and newborn (Vitamin K deficiency)  
 P55, P57, P58 Haemolytic disease of fetus and newborn, Kernicterus; Neonatal jaundice due to other excessive haemolysis  
 P70 Transitory disorders of carbohydrate metabolism specific to fetus and newborn  
 P90, P 91 Convulsions of newborn, other disturbances of cerebral status of newborn  
 Q – Congenital malformations, diagnosis/es codes \_\_\_\_\_  
 Z001 Healthy child

**Post-neonatally acquired CP (time span: after first 28 days of age until before the second birthday)**  
 Yes  No  Unknown   
 If yes, date \_\_\_\_\_ or age ( year ) at injury \_\_\_\_\_

**CP CLASSIFICATION**

Subgroup level 1 Dominating neurological symptom	Subgroup level 2 SCPE-type	Subgroup level 3 Swedish classification
Spasticity <input type="checkbox"/>	Unilateral Bilateral <input type="checkbox"/>	Hemiplegia Right <input type="checkbox"/> Left <input type="checkbox"/> Diplegia Tetraplegia <input type="checkbox"/>
Dyskinesia <input type="checkbox"/>	Choreoathetotic Dystonic <input type="checkbox"/>	Choreoathetosis <input type="checkbox"/> Tonus changing <input type="checkbox"/>
Ataxia <input type="checkbox"/>	Ataxic <input type="checkbox"/>	Simple ataxia <input type="checkbox"/> Ataxic diplegia <input type="checkbox"/>
Non-classifiable/mixed type	Non-classifiable type <input type="checkbox"/>	Mixed <input type="checkbox"/>

**If not possible to classify CP type, please give reason why:**

Child's age  Not enough information about child  Criteria for the subtypes do not fit with the child's symptoms

**BRAIN IMAGING**

Ultrasound Yes  No  Unknown   
 Computed tomography (CT scan): Yes  No  Unknown   
 Magnetic Resonance Imaging (MRI): Yes  No  Unknown

Date of last MRI: \_\_\_\_\_

Performed at what hospital (last MRI): \_\_\_\_\_

**Dominating morphology finding (pathology) Please check only one alternative!**

White matter injury of immaturity (PVL, PVH etc.)   
 Focal cortical injury   
 Diffuse cortical injury   
 Basal ganglia pattern   
 Malformation   
 Normal finding   
 Information missing

**Injury/ies location/s**

Bilateral injuries: Yes  No  Information missing

*Please note check only one alternative below!*

Injury right = Injury left   
 Injury located on right side or greatest injury on right side   
 Injury located on left side or greatest injury on left side   
 Information missing

**Additional findings: More than one alternative can be checked**

Cerebellum Normal  Pathological finding  Information missing   
 Corpus callosum Normal  Pathological finding  Information missing   
 Signs of infection (Ca++) Yes  No  Information missing

**Comments:****OTHER FUNCTIONAL LIMITATIONS/DISEASES****Cognitive function Please only mark one alternative**

Estimated/clinical evaluation  Date: \_\_\_\_\_ Age (years): \_\_\_\_\_  
 Assessed but cognitive level not determined  Date: \_\_\_\_\_ Age (years): \_\_\_\_\_  
 Assessed, cognitive level determined  Date: \_\_\_\_\_ Age (years): \_\_\_\_\_  
 Not estimated or assessed

**Cognitive level based on ICD 10: Please check only one alternative**

Moderate-profound mental retardation   
 Mild mental retardation   
 Clearly below average or low average (borderline)   
 Average or above   
 Unknown

**Comments:**



**Vision:**

Last vision assessment date: \_\_\_\_\_ Age (years): \_\_\_\_\_

Visual impairment/blind (Visual acuity in the better eye with best correction &lt; 0,3 or non-useful vision).

Yes  No  Not assessed/not possible to assess 

Other vision problems that even with correction limits everyday life

Yes  No  Unknown **Hydrocephalus** – treated neurosurgically (undergone ventriculostomy or shunt inserted):Yes  No  Unknown **Epilepsy** (defined as having had at least 2 unprovoked seizures after the neonatal period)Never Yes, has or have had epilepsy - if yes, Child is currently being treated with antiepileptic medication Child is currently not on antiepileptic medication Not known if child is on antiepileptic medication or not Unknown if epilepsy or not **OTHER CONDITIONS/HEALTH RELATED PROBLEMS ACCORDING TO ICD (code or text)****Diagnoses (Codes)****Diagnoses (text)**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**FUNCTIONS/ACTIVITIES according to ICF (how things are most of the time, i.e. everyday function)****b 134 Sleep functions**No functional limitation Functional limitation Unknown **b 230 Hearing functions**No functional limitation 

Functional limitation, bilateral/unilateral deafness, or hearing impairment

requiring hearing device Unknown **b 3 Voice and speech function, i.e. the making of sound and speech (excluding mental functions of language)**No functional limitation Functional limitation Not applicable (e.g due to severe mental retardation or deafness) Unknown

<b>b 4 Breathing Function</b>	
No functional limitation	<input type="checkbox"/>
Functional limitation	<input type="checkbox"/>
Unknown	<input type="checkbox"/>
<b>b510 Ingestion function</b>	
No functional limitation	<input type="checkbox"/>
Functional limitation	<input type="checkbox"/>
Unknown	<input type="checkbox"/>
<b>b530 Weight maintenance function</b>	
No functional limitation (i.e. good weight gain in accordance to growth curve)	<input type="checkbox"/>
Functional limitation (i.e. too fast or too slow weight gain according to growth curve)	<input type="checkbox"/>
Unknown	<input type="checkbox"/>

**ANTHROPOMETRICS**

<b>Height or lying length at last assessment</b> (cms, round up): _____	Date: _____
<b>Weight at last assessment</b> (kgs, round up): _____	Date: _____
<b>Head circumference at last assessment</b> (cms, round up): _____	Date: _____
<b>Comments:</b>	

**MEDICATION**

<b>Ongoing oral medication for spasticity /dyskinesia:</b>
Yes <input type="checkbox"/> No <input type="checkbox"/>
Oral medication, preparation name/dose: _____

**Please fill in the CPUP surgery form on gastrostomy, gastroesophageal reflux disease, intrathecal baclophene, selective dorsal rhizotomy**

<b>Additional comments:</b>
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## Critical values for passive joint range of motion

### Upper limb

	Red	Yellow		Green
Shoulder Abduction	$\leq 120^\circ$	$> 120^\circ$	$< 160^\circ$	$\geq 160^\circ$
Shoulder Flexion	$\leq 120^\circ$	$> 120^\circ$	$< 160^\circ$	$\geq 160^\circ$
Shoulder External rotation	$\leq 0^\circ$	$> 0^\circ$	$< 45^\circ$	$\geq 45^\circ$
Shoulder Internal rotation	$\leq 0^\circ$	$> 0^\circ$	$< 40^\circ$	$\geq 40^\circ$
Elbow Extension	$\leq -30^\circ$	$> -30^\circ$	$< -10^\circ$	$\geq -10^\circ$
Elbow Flexion	None			
Forearm Supination	$\leq 45^\circ$	$> 45^\circ$	$< 80^\circ$	$\geq 80^\circ$
Forearm Pronation	$\leq 45^\circ$	$> 45^\circ$	$< 80^\circ$	$\geq 80^\circ$
Wrist Extension	$< 0^\circ$	$\geq 0^\circ$	$< 60^\circ$	$\geq 60^\circ$
Wrist Extension, extended fingers	$\leq -20^\circ$	$> -20^\circ$	$< 60^\circ$	$\geq 60^\circ$
Wrist Flexion	None			
Wrist Ulnar deviation	$\geq 45^\circ, < 0^\circ$			$< 45^\circ, \geq 0^\circ$
Wrist Radial deviation	$< 0^\circ$	$\geq 0^\circ$	$< 20^\circ$	$\geq 20^\circ$

## Lower Limb

<b>GMFCS I-III</b>	<b>Red</b>	<b>Yellow</b>		<b>Green</b>
Hip Abduction	$\leq 30^\circ$	$>30^\circ$	$<40^\circ$	$\geq 40^\circ$
Knee Popliteal angle	$\leq 130^\circ$	$>130^\circ$	$<140^\circ$	$\geq 140^\circ$
Knee Extension	$\leq -10^\circ$	$>-10^\circ$	$<0^\circ$	$\geq 0^\circ$
Ankle Dorsiflexion (flexed knee)	$\leq 10^\circ$	$>10^\circ$	$<20^\circ$	$\geq 20^\circ$
Ankle Dorsiflexion (extended knee)	$\leq 0^\circ$	$>0^\circ$	$<10^\circ$	$\geq 10^\circ$
Hip Internal rotation	$\leq 30^\circ$	$>30^\circ$	$<40^\circ$	$\geq 40^\circ$
Hip External rotation	$\leq 30^\circ$	$>30^\circ$	$<40^\circ$	$\geq 40^\circ$
Elys' test	$\leq 100^\circ$	$>100^\circ$	$<120^\circ$	$\geq 120^\circ$
Hip Extension	$<0^\circ$			$\geq 0^\circ$

<b>GMFCS IV – V</b>	<b>Red</b>	<b>Yellow</b>		<b>Green</b>
Hip Abduction	$\leq 20^\circ$	$>20^\circ$	$<30^\circ$	$\geq 30^\circ$
Knee Popliteal angle	$\leq 120^\circ$	$>120^\circ$	$<130^\circ$	$\geq 130^\circ$
Knee Extension	$\leq -20^\circ$	$>-20^\circ$	$<-10^\circ$	$\geq -10^\circ$
Ankle Dorsiflexion (flexed knee)	$\leq 0^\circ$	$>0^\circ$	$<10^\circ$	$\geq 10^\circ$
Ankle Dorsiflexion (extended knee)	$\leq -10^\circ$	$>-10^\circ$	$<0^\circ$	$\geq 0^\circ$
Hip Internal rotation	$\leq 30^\circ$	$>30^\circ$	$<40^\circ$	$\geq 40^\circ$
Hip External rotation	$\leq 30^\circ$	$>30^\circ$	$<40^\circ$	$\geq 40^\circ$
Elys' test	$\leq 90^\circ$	$>90^\circ$	$<110^\circ$	$\geq 110^\circ$
Hip Extension	$\leq -10^\circ$	$>-10^\circ$	$<0^\circ$	$\geq 0^\circ$