

# IMPROVED GAIT AND GASTROINTESTINAL FUNCTION FOLLOWING INNOWALK TRIAL

## INTRODUCTION/AIM

The aim of the project was to evaluate the effect of 6 weeks Innowalk trial on gait and gastrointestinal function in a 13 year old child with spastic bilateral cerebral palsy, GMFCS level III.

Due to a small sample size (1), the results can not be generalized.



## First time intervention - testing Innowalk

**Patient:** 13 years  
**Diagnosis:** spastic bilateral cerebral palsy (CP)  
**GMFCS level III:** Walks using a handheld Mobility Device, limitations walking outdoors and in the local community (www.canchild.ca)

**6 weeks testing log**  
 Aug.-Oct.2009 shows:  
 A total of 37 sessions  
 Duration 20 minutes - 1 hour  
 45 minutes, mainly approximately 1 hour.

## An illustration of standing alignment

1 - Key Walker



2 - Innowalk



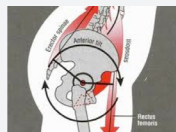
## RESULTS

### Rectus femoris tightness

**Duncan Ely\*** - test for rectus femoris dysfunction (PROM, tested by slow knee flexion):

**Before**  
 Right: 50 degree angle  
 Left: 30 degree angle

**After**  
 Right: 50 degree angle  
 Left: 60 degree angle



In our patient, measured by the angle between the base of support and the calf as the pelvis rises.

Source: www.oslo-universitetssykehus.no

Source: www.google.no (searchword: rectus femoris dysfunction)

### Resistance against rapid passive stretch

#### Hip extensors:

<b>Before</b>	<b>After</b>
Right: 2	Right: 1
Left: 2	Left: 1

Measured by the Asworth scale

#### Hip adductors:

<b>Before</b>	<b>After</b>
Right: 2 +	Right: 1 +
Left: 2 +	Left: 1 +

Measured by the Asworth scale

Spasticity: "disordered sensorymotor control, resulting from an upper motor neurone lesion, presenting as intermittent or sustained involuntary activation of muscles" (JH. Burridge et al, 2005).

### Gastrointestinal function

**Before (registration period of 2 weeks prior to the 6 week Innowalk trial):**

- 2-3 toilet accidents, 3 days complained of stomach pain, one of these days, the patient had to go home from school because of pain.
- Use medicine for Gastrointestinal Function

**During Innowalk trial (6 weeks):**

No complaints of stomach ache, 1 toilet accident.

**Now:** No medicine for Gastrointestinal Function.

#### Additional effects:

##### Muscle circumference

<b>Calf</b>	<b>Before:</b>	Left (affected leg): 21 cm circumference
	<b>After:</b>	Left (affected leg): 21.5 cm circumference

##### Blood flow

- Warm feet after each session (usually they are cold)

## GAIT PATTERN - BEFORE TRIAL

The feet are significantly **outwards rotated** throughout the gait cycle, so that the left leg consistently **nudges** into the back of the right foot in the swing phase when walking at normal speed. This is less pronounced when the patient is walking faster. The **upper body is clearly stooping forwards** and there is **flexion in the hips and knees**. Walks with "kissing knees".

## GAIT PATTERN - AFTER TRIAL

The feet are **slightly less outwards rotated** so that the toes are pointing more forward throughout the gait cycle. We can also see that **the left foot now and then is nudging** the right foot in the swing phase when the patient is walking at normal speed, but **not consistently**. There is **longer distance between the feet** in the gait cycle. The **upper body is more upright and the patient is walking with slightly less flexion in the hips**. The patient still walks with "kissing knees".

**Our professional impression is that walking function has improved.**