Assisted Movement
Project in Vestfold County, Norway

Introduction/Purpose
The Public Health Department in Norway recommends a minimum of 60 minutes of daily physical activity for all children and youngsters. It is well known that most people with physical disabilities are less physically active than their able-bodied counterparts. The possibility for physical activity is limited for people with disabilities, but still as important. Based on this knowledge, physiotherapists at a rehabilitation center and the NAV technical aid center in Vestfold County in Norway decided to evaluate the effect of assisted movement in a standing position on children with former disabilities for over a period of one year. To provide assisted movement, the helping aid Innwalk was used. The project began in January 2010 and is still ongoing. Plan to finish testing in February 2012.

Case 1
Girl 12 years old.
Diagnoses: Spastic bilateral CP, GMFCS IV.
Before start up of the project: Typical asymmetric, with wind swept turning towards the right side. Corresponding curvature in the spine. Left hip was operated in 2007 because of hip dislocation. There is a high risk for dislocation of the right hip, with a Reimer’s index on 49% in June 2010. She has a contracture in both knees, respectively 15 and 10 degrees. She is highly distressed with obstipation and has problems with consuming enough fluid. She does not have any walking ability after operation in 2007. Before, she used to walk in the NF-Walker. Now she is just standing.
Goal: The goal with more movement for this patient was to increase range of motion in knees and hips, reduce spasticity, improve digestion and prevent obstipation.
End of project period: In the project period the patient has used the Innwalk up to one hour every day, excluding every fourth weekend and one day each week where she is at an auxiliary house. When using the Innwalk she always has a bottle of water with her. She complains, “I’m training and I need to bring water with me”. It’s normally a challenge to have her drink enough water, but when she is “training” she drinks a lot. Digestion is stabilized, and she does not need daily medical treatment. Medical treatment is just needed in the periods in which she is at the auxiliary house and does not have the Innwalk available. Range of motion in hips and knees have shown small changes, but Reimer’s Index on the right hip in April 2011 changes to 39% from 48%. She is now walking short distances in the NF-Walker.

Case 2
Boy 4.5 years.
Diagnoses: Spastic bilateral CP, GMFCS V
Before start up of the project: No head control and no voluntary movements. Very spastic. Especially seen in sitting and laying. Subluxation of the hips, respectively 50% and 45% of Reimer’s index. Operation was recommended and carried out in the project period. Is relying on daily medical treatment due to problems with digestion.
Goal: Improve digestion. Improve range of motion in legs and maintain or improve position of the hips.
End of project period: Uses Innwalk on average 4 times per week, up to 42-60 min each session. He shows positive expectation when he is transferred into the Innwalk, and is very satisfied when he is walking in the aid. While walking in the Innwalk, he is less spastic. Digestion has improved and he often has spontaneous evacuation immediately after walking. Bilateral hip surgery was carried out in the project period and Innwalk was a huge advantage in the recovery period after the bandage was removed. Head control has improved. This is seen in video taken before and after the project period. Parents also report that he is easier to handle now because of improved head control. The child is very demanding regarding continuous attention from the parents and is often dissatisfied. In the Innwalk he is very pleased and satisfied.
Method
The helping aid Innovale is used in the project. Innovale is an aid that provides assisted movement in a corrected standing position with weight bearing. The product is individually adjusted to each users size, movement pattern and function. A protocol for each child is completed by parents and responsible physiotherapists at the habilitation center. Registrations in the protocol are done before beginning the helping aid Innovale, and after 4 weeks, 4 months and 12 months of use.

Following is recommended in the protocol:

- Range of movement in hips
- Range of movement in knees and ankles
- Muscle spasms in thigh and calf
- Spasticity (Modified Ashworth)
- X-Ray hips
- Pain
- Bowel function
- Sleep pattern
- Movement pattern is filmed

In the project period, the Innovale should be used 3-5 times per week and a minimum of 30 minutes each session. Project is not completed yet, and a result summary will be ready March 2012. Three cases are presented here.

Participants
Children involved in the project have all applied to NAV technical aid center on a normal basis for the helping aid Innovale. The participants have applied in the period January 2010 until March 2011, and parents have consented to participate in the project. A total of 13 children with the following diagnoses were involved:

- CP GMFCS II (4), CP GMFCS III (1)
- CP GMFCS IV (2), CP GMFCS V (3)
- Rettsyndrom (2), Unspecified epilepsy (2)
- Brain injury Syndrome (1), Acquired Brain injury (1)

Results
The project is still ongoing and the results will be ready after all 12 month tests are finished during February 2012. The completed project will be presented at The Nordic Seating Symposium, Stockholm 22 - 24th May 2012.

Case 3
Girl 5 years old

Diagnose: Spastic bilateral CP, GMFCS IV (alternating tone)

Before start up of the project: She does not have any walking ability with an assistive mobility device, but can walk in the NWalker. She is not fond of walking in the NWalker and prefers to move around by crawling or moving on her knees. For longer distances she uses a wheelchair.

Goal: Increase muscle strength, reduce spasticity and succeed with walking by use of an assistive mobility device.

End of project period: Over a period of one year, she has used Innovale in average 3-4 times per week, up to 30 min each session. She has gained independent walking using a walker. She has been moved from a GMFCS level IV to a GMFCS level III. From being a girl who mainly moved around using a wheelchair, she is now a girl who is walking around by an assistive mobility device, a walker. Muscle strength and spasticity have been hard to measure and no changes are therefore seen.
Assisted Movement
Project in Vestfold County, Norway

**Introduction/Purpose**
The Public Health Department in Norway recommends a minimum of 60 minutes of daily physical activity for all children and youngsters. It is well known that most people with physical disabilities are less physically active than their able-bodied counterparts. The possibility for physical activity is limited for people with disabilities, but still as important. Based on this knowledge, physiotherapists at a rehabilitation center and the NAv technical Aid Center in Vestfold County in Norway decided to evaluate the effect assisted movement in a standing position has on children with former disabilities for over a period of one year. To provide assisted movement, the helping aid Innwalk was used. The project began in January 2010 and is still ongoing. Plan to finish testing in February 2012.

**Case 1**
Girl 12 years old.
**Diagnose:** Spastic bilateral CP GMFCS IV.
**Before start up of the project:** Typical asymmetric, with wind swept turning towards the right side. Corresponding curvature in the spine. Left hip was operated in 2007 because of hip dislocation. There is a high risk for dislocation of the right hip with a Reimer’s index on 49% in June 2010. She has a contraction in both knees, respectively 15 and 10 degrees. She is highly distressed with obstructions and has problems with consuming enough fluid. She does not have any walking ability after operation in 2007. Before she used to walk in the NF-Walker. Now she is just standing.
**Goal:** The goal with more movement for this patient was to increase range of motion in knees and hips, reduce spasticity, improve digestion and prevent obstructions.
**End of project period:** In the project period the patient has used the Innwalk up to one hour every day, excluding every fourth weekend and one day each week where she is at an auxiliary house. When using the Innwalk she always has a bottle of water with her. She exclaimed, “I’m training and I need to bring water with me”. It’s normally a challenge to have her drink enough water, but when she is “training” she drinks a lot. Digestion is stabilized, and she does not need daily medical treatment. Medical treatment is just needed in the periods in which she is at the auxiliary house and does not have the Innwalk available. Range of motion in hips and knees have shown small changes, but Reimer’s Index on the right hip in April 2011 changes to 39% from 48%. She is now walking short distances in the NF-Walker.

**Case 2**
Boy 4.5 years.
**Diagnose:** Spastic bilateral CP GMFCS V.
**Before start up of the project:** No head control and no voluntary movements. Very spastic. Especially seen in sitting and laying. Subluxation of the hips, respectively 50% and 45% of Reimer’s Index. Operation was recommended and carried out in the project period. Is relying on daily medical treatment due to problems with digestion.
**Goal:** Improve digestion, improve range of motion in legs and maintain or improve position of the hips.
**End of project period:** Uses Innwalk on average 4 times per week, up to 42-60 min each session. He shows positive expectation when he is transferred into the Innwalk, and is very satisfied when he is walking in the aid. While walking in the Innwalk, he is less spastic. Digestion has improved and he often has spontaneous evacuation immediately after walking. Bilateral hip surgery was carried out in the project period and Innwalk was a huge advantage in the recovery period after the bandage was removed. Head control has improved. This is seen in video taken before and after the project period. Parents also report that he is easier to handle now because of improved head control. The child is very demanding regarding continuous attention from the parents and is often dissatisfied. In the Innwalk he is very pleased and satisfied.