Spina Bifida – management towards optimal standing and walking

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**Muscle function classes (MFCs) and expected ambulation**

<table>
<thead>
<tr>
<th>Muscle Function Class</th>
<th>MFC I-V</th>
<th>I Sacral</th>
<th>II Low lumbar</th>
<th>III Mid-lumbar</th>
<th>IV High lumbar</th>
<th>V High lumbar/thoracic</th>
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<td>Muscle Strength grade 1-5, 1= no trace of contraction, 5=normal strength</td>
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- **'Low' lesion:** Active knee extension
- **'High' lesion:** Weak or No knee extension

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<th>Weakness of intrinsic foot muscles</th>
<th>Plantar flexion ≤ 3, fair or less Knee flexion ≥ 3, Hip extension and/or hip abduction ≥ 2-3</th>
<th>Hip flexion 4-5 Knee extension 4-5 good-to-normal Knee flexion ≤ 3, fair or less Trace of hip extension, hip abduction</th>
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<th>Community ambulation with need of orthoses. No need for walking aid. Wheelchair use only for long distances outdoors</th>
<th>Household ambulation with orthoses with/without walking aid Wheelchair use outdoors, (and for long distances indoors)</th>
<th>Household ambulation with orthoses and walking aids Wheelchair use both in- and outdoors</th>
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- **Orthoses**
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  - HKAFO, KAFO, AFO with condylar support
  - HKAFO
  - Orthotics in standing device
Spina bifida is a central neural system malformation associated not only with neurological deficits of motor and sensory function of the lower limbs, but also of impairments of a more central origin resulting in e.g. poor balance and sense of orientation. Ambulation is often possible if the child has knee extension power.

In this symposia, the Stockholm Spina Bifida Team will describe their management of children with spina bifida, with emphasis on encouragement to sit, stand and possibly walk at the same time point as typically developed peers. As a dislocated hip will result in reduced stability, attention is kept to keep the hips in joint, first by first by abduction orthotics, and then with bony surgery. Best possible mobility, stability and strength are emphasized. For a plantigrade foot, Ponseti-like management is used with serial casting and possibly Achilles tendon tenotomy. Stands are aligned for perfect balance, and so are hip-knee-ankle-foot orthoses (HKAFO), knee-ankle-foot orthosis (KAFO) and ankle foot orthoses (AFO). These prerequisites will help the child to ambulate without using crutches, enabling them to use their hands to other things. Cases will be presented and possible treatments will be discussed with the participants. The course is based on peer reviewed scientific research on spina bifida regarding e.g. classification, physiotherapy, orthotics, orthopaedic findings, gait analysis, spasticity and health related quality of life.
References


