

Does early application of medical aid devices make sense? Based on the example of the NF Walker.

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I am a physiotherapist working at an institution that provides 24-hour care and fostering re-education for some 50 children of ages ranging between a few months and young adulthood, all of whom suffer from multiple severe disabilities. In addition to the nursing personnel, educators and teachers, our team includes representatives of all professional rehabilitation and re-education health care provider groups.

The majority of these children and young people have an ICP (usually GMFCS Level V, more rarely Level IV), while the other children have rare syndromes or progressive diseases requiring close care and monitoring. ICP is characterised by being an acquired, non-progressive, incurable, but symptomatically changing posture and motor dysfunction caused by damage to the immature brain. It can vary in type and severity and, in addition to motor disorders, also encompasses other symptoms.

As a Bobath therapist, the focus of my work is on enabling participation, in some cases by means of an appropriate environmental setting, thus improving quality of life (with ICF-CY being the guideline).

Treatment must always be based on a detailed anamnesis, an intensive parent interview, careful analysis of doctors' reports, interdisciplinary case discussions with care and therapy provider colleagues and, of course, first and foremost, an assessment of the child as an individual.

Parents often wish for the child to become autonomous, the nursing personnel takes care of the breathing function and digestive problems such as constipation, the orthopaedists tend to consequential symptoms resulting from muscular imbalance, such as muscle contractions, shrinkage of fascia and ligaments, joint misalignments, instability and deformities (e.g. hip dislocation, scoliosis, contractures and many others) and the pain most certainly accompanying them.

Especially in the most severely disabled children and those with multiple disabilities this is unavoidable, but I am of the opinion that early mobilisation, close to the timeline of normal development, can be a good opportunity to delay such problems or even to keep them in check, thus improving quality of life.

I have used the NF Walker with a number of children aged approximately 18 months after having mobilised them into the standing frame at approximately 12 months of age, at first on a three-month trial basis.

I was able to make the following observations:

- Patients can alternate between active and passive standing, thus strengthening their muscles and preventing muscle imbalance
- By alternating between active and passive standing, they receive proprioceptive stimuli, which changes their perception (these legs are part of me) and contributes to the maturation of the hip joints
- The lower extremity joints can freely and actively be moved within one plane
- Because of their upright posture, they perceive space and themselves in a different way
- They are perceived more positively by others, especially by other children, and are more frequently integrated into play activities
- The field of view increases with better spatial head motion
- The lungs are ventilated in greater depth
- There is an improvement in the blood flow through the body
- The diaphragm muscles are stimulated and strengthened
- The pelvis becomes more stable, bringing about a gain in upright posture; the children also develop more strength to help them expectorate
- A more erect posture also changes the perspective on the child; it can thus leave the role of the “baby” and, unconsciously, signal other needs

Even if the children did not simply walk off as had been hoped for, the majority of these positive effects could quickly be recognised. After some time spent standing and trying things out, the children started lifting a foot, shifting back and forth, moving their feet, watching themselves in the mirror, and quite soon the first, even though strenuous, steps were taken. Each of these steps is a huge step forward in these children’s self-determination; they can go from A to B, leave things behind, approach people and toys, withdraw from any situation, thus signalling a “No” through their motor function, a development that normally takes place at around 18 months.

In some children, this developmental step can however prove to be applied too early. Then, the aids can be provided in intermediate steps (e.g. longer periods in the standing frame or on the tilt table) to ensure that no excessive demands are made on the child.

The NF Walker offers, on the one hand, the safety the children need, but on the other hand it enables progress both in their motor and socio-emotional development.

Early provision of aid devices became even more important for me when I approached the topic of “Neuroplasticity, or the plasticity of the brain”, as this is exactly what constitutes the foundation of learning. It is however largely dependent on activity and utilisation, and as the children with the most severe disabilities are often not autonomously able to target their own cognitive and motor stimuli, we, the therapists and device designers and manufacturers, are required to find out what we can and must offer these children. Here, too, it is essential to involve and provide guidance to the parents. I find this topic to be of enormous importance especially in those children who come to us for therapy as a result of brain damage, as the intensive utilisation and training of cognitive and motor functions can help compensate lost function. Even children who have had an entire hemisphere removed can compensate certain functions by means of the remaining hemisphere. In addition to pure function training it is also important to include the child’s emotions in the therapy. The child must have fun with what it is supposed to do and learn.

Without fun, motivation and social connections, the brain’s plasticity appears to present a lesser degree of development, thus hindering re-education. It would therefore seem to be certain that early, intensive support can achieve significant results; however, as the extent of such results is never known in advance, the therapist should, from the very beginning, not set limits, but, rather, stimulate children intensively and at an early stage.