Robot-assisted upper limb physical rehabilitation in hemiplegic cerebral palsy

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Cerebral palsy (CP) is the most common lifelong disability affecting motor development in children. Hemiplegic CP is the most common syndrome in children born at term. Numerous rehabilitation approaches have been reported in children with CP. Recent studies have shown that robot-assisted training can complement conventional therapies in children with cerebral palsy. In this study we present a case of a 18 year- old girl with spastic hemiparesis as a form of cerebral palsy, who came to our clinic for rehabilitation treatment using Armeo Spring system. Since her birth and before coming to our clinic she received standard physical therapy using Bobath treatment, administered by a physiotherapist, for 1 hour per day, 5 days a week. The locomotor system was assessed at the beginning and end of the treatment programme with Armeo Spring. Main outcome measurements included Fugl-Mayer (FM) total score as a measure for motor assessment of the upper extremity, Functional Independence Measure (FIM) as a parameter for global functional evaluation and modified Ashwort Scale as a measure od muscle spasticity. Training frequency was 5 times per week for 12 weeks. One session lasted 40 minutes. Baseline FM was 42, FIM 116 and modified Ashworth scale was 2. Afer treatment with the arm weight support device the FM score increased siginicantly to 50, FIM increased to 120 and modified Ashworth Scale decreased to 1+. The results of treatment with Armeo Spring showed significant improvement measured in FM score and FIM comparing to treatment with conventional physical theraphy by Bobath metod. Armeo Spring system has shown to bes a useful method for improving upper limb functionality. It is advisable to implement its use additionaly to conventional therapy so that children with CP could achieve the best possible outcomes.