
ROBOTIC REHABILITATION IN CHILDREN WITH NEUROLOGICAL DISORDERS

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Robot-assisted therapy is a comparatively novel approach applied in the rehabilitation of children with congenital or acquired neurological conditions. Robotic therapy combines functional tasks with accurate and assembled movements and is usually integrated with biofeedback based on virtual reality. As a result the number of sessions, frequency, intensity and motivation of the patient is increased, which improves the functional outcomes and the compliance of the children. Most studies suggest that children with cerebral palsy benefit from robot-assisted gait therapy, regarding gait speed, endurance, standing ability, gross motor function in dimensions D and E. Robot systems for the rehabilitation of the upper limb in children with neurological disorders are scarce, particularly for the rehabilitation of hand control, but a growing number of studies find that robotic therapy can provide more opportunities for improving upper limb coordination and quality of movement.

The authors present the evidence about the effectiveness of robotic rehabilitation in children with neurological disorders based on systematic reviews and randomized control trials and share own experience about the effects of robotically assisted gait training and rehabilitation of the upper limb in children with cerebral palsy.

Conclusion: Robotic therapies for children with neurological disorders allow physical and cognitive integration, which is expected to lead to better treatment results. Virtual scenarios in combination with robotic devices provide promising results. The lack of longitudinal and enough randomized clinical trials and standardization about the outcome measures makes it difficult to analyze the benefits precisely. More RCTs with appropriate design and involving larger sample of patients are needed.