

Robot-assisted rehabilitation for children with neurological disabilities: Results of the Italian consensus conference CICERONE

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Abstract: BACKGROUND:The use of robotic technologies in pediatric rehabilitation has seen a large increase, but with a lack of a comprehensive framework about their effectiveness. OBJECTIVE:An Italian Consensus Conference has been promoted to develop recommendations on these technologies: definitions and classification criteria of devices, indications and limits of their use in neurological diseases, theoretical models, ethical and legal implications. In this paper, we present the results for the pediatric age. METHODS:A systematic search on Cochrane Library, PEDro and PubMed was performed. Papers published up to March 1st, 2020, in English, were included and analyzed using the methodology of the Centre for Evidence-Based Medicine in Oxford, AMSTAR2 and PEDro scales for systematic reviews and RCT, respectively. RESULTS:Some positives aspects emerged in the area of gait: an increased number of children reaching the stance, an improvement in walking distance, speed and endurance. Critical aspects include the heterogeneity of the studied cases, measurements and training protocols. CONCLUSION:Many studies demonstrate the benefits of robotic training in developmental age. However, it is necessary to increase the number of trials to achieve greater homogeneity between protocols and to confirm the effectiveness of pediatric robotic rehabilitation.

Keywords: Robots, rehabilitation, gait, upper limb, lower limb, children

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