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Effects of minimally invasive surgery and functional physiotherapy on motor function of children with cerebral palsy: A non-randomised controlled trial

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ABSTRACT

Purpose: This non-randomised controlled trial investigated whether a combined programme of functional physiotherapy and minimally invasive orthopaedic surgery improves the level and degree of capacity and performance of gross motor function in children with spastic cerebral palsy (CP).

Methods: Fifty-two children with spastic CP aged 5–7 years, Gross Motor Function Classification System (GMFCS) levels II-IV, were allocated to two equal groups: experimental group (selective percutaneous myofascial lengthening [SPML] procedure and 9-month functional strengthening physiotherapy programme) and control (standard physiotherapy) groups. At baseline and at the end of the 9-month intervention, the capacity and performance of gross motor function were assessed with the Gross Motor Function Measure (GMFM) D and E subcategories and Functional Mobility Scale (FMS), respectively. The level of gross motor function was measured with the GMFCS.

Results: There was a statistically significant difference in the post-intervention improvements in the GMFM D (experimental mean difference = 19.63 ± 10.46; control mean difference = 2.40 ± 4.62) and E (experimental mean difference = 19.33 ± 11.82; control mean difference = 4.20 ± 6.26) between experimental and control group ($p < 0.001$). There was a significant improvement in the GMFCS level and each FMS distance for the experimental group ($p < 0.001$), but not for the control group ($p > 0.05$).

Conclusion: SPML procedure combined with functional physiotherapy improves gross motor function in children with spastic CP, by raising the degree and level of motor independence.

1. Introduction

Cerebral palsy (CP) is the leading cause of childhood motor disability worldwide, with the prevalence being around 2 cases per 1000 live births in the Greek metropolitan area of Athens, a ratio similar to that observed in Europe.[1] CP describes an impaired gross motor function, due to non-progressive lesion in the developing or immature central nervous system. Even though CP is primarily a static neurological pathology,

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