

# *Long-term effects of orthopaedic interventions on gait in adults with Cerebral Palsy and bilateral lower limb spasticity*

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The aim of the current study was to describe the gait pattern of adults with CP and bilateral lower limb (BLL) spasticity, who received soft-tissue and/or bony orthopaedic surgery more than 15 years ago. A secondary aim was to determine if there was a relationship between current gait status, and pre-operative walking ability and age.

Thirty adults (12 male, 18 female) with CP and BLL spasticity (ORTHO group) were recruited from a specialised school in Cape Town, South Africa. Besides demographic and orthopaedic surgical information, three-dimensional gait analyses (3DGA) were completed.

The median follow-up time after first orthopaedic interventions was 27.7 years, (interquartile ranges (IQR): 21.6-33.7 years), resulting in median age at initial surgery of 4.6 years (IQR: 3.6-7.3 years) and current age of 32.8 years

(IQR: 28.2-39.5 years). Walking ability was defined by Gross Motor Classification System (GMFCS) levels, with GMFCS level I (n=9), level II (n=14) and level III (n=7) before first surgery. Most gait parameters of the ORTHO group were different compared to a CONTROL group. In addition, no relationship was found between current GDI and pre-operative GMFCS levels and age.

Currently Single-event Multilevel Surgery (SEMLS) is the preferred treatment method, however this study shows that multiple orthopaedic interventions also results in positive outcomes with all adults in the ORTHO group still being ambulant. Future research should determine if and how SEMLS interventions potentially result in even better gait improvements and if a multiple surgery approach can also be used when SEMLS is not possible.