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Title: Factors that affect gait patterns in children with spastic diplegia in a South African school setting

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ABSTRACT

Background: Spastic diplegia is the most common form of cerebral palsy (CP) globally. Little is known about the gait patterns of South African children with spastic diplegia and the factors which may influence it.

Aim: The aim of this study is to describe the gait patterns of children with spastic diplegia and identify what factors affect the gait pattern by assessing their muscle strength, muscle tone, lower limb sensation.

Methods: Participants with spastic diplegia (Gross Motor Function Classification Scale [GMFCS] I to III) between the ages of five and 17 were selected at two special schools in Johannesburg. Thirty participants were assessed using the Edinburgh Visual Gait Score (EVGS) for gait, the Modified Ashworth Scale (MAS) for muscle tone, handheld dynamometer (HHD) for muscle strength, and Brief Peripheral Neuropathy Screen (BPNS) and pin-prick sensation test for lower limb sensation.

Results: There were no statistically significant relationships between EVGS, MAS, muscle strength, BPNS and the pin-prick test. Thirty percent of participants tested positive in the BPNS and pin-prick test and almost 90% of those participants had HIV (P=0.034). There was an age trend for gait pattern amongst participants: older children presented with crouch gait and younger children presented with jump gait. There was a relationship between muscle strength and gait quality (p=0.021) but no relationship between muscle tone and gait quality (P=0.234; P=0.703).

Conclusion: In conclusion, there were relationships between age, muscle strength and gait, however, due to the small sample, these relationships were statistically insignificant. The prevalence of HIV-related peripheral

neuropathies was high amongst participants; however, no relationship was found between gait and lower limb sensation. Future studies should focus on sensation and gait as HIV sensory deficits are prevalent in this country. A small sample size was a limitation in this study.