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Evaluation of clinical outcome measures for children with
cerebral palsy.

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ABSTRACT

There are a lack of reliable and valid clinical outcome measures to assess the effects of medical interventions in children with cerebral palsy, potentially compromising research and clinical practice in this area. The objective of this thesis was to identify and develop reliable outcome measures that could be used to evaluate the effects of botulinum toxin A in children with cerebral palsy.

Six studies were undertaken in both normative and cerebral palsy populations to address this aim. Two studies investigated the reliability and validity of commonly used measures of lower limb function; three-dimensional gait analysis and visual gait assessment. Four studies investigated measures of upper limb function in children with cerebral palsy. An objective three-dimensional measure of upper limb function was developed and used to examine the reliability and validity of additional upper limb measures of muscle tone and arm function and to complete an objective assessment of upper limb botulinum toxin use in this population.

The results demonstrated that three-dimensional and visual gait analyses are reliable and valid measures for children with cerebral palsy. For the upper limb this work has resulted in the development of an objective and reliable three-dimensional kinematic measure of upper limb function. A reliability assessment of the modified Tardieu scale found this measure to have poor reliability in detecting dynamic muscle tone in children with cerebral palsy, indicating limited value as a research tool. The results of the pilot study examining upper limb botulinum toxin A use in a group of ten children with hemiplegia, found small functional gains following treatment, as determined by the three-dimensional kinematic measure and Melbourne Assessment. These two measures were found to have moderate agreement in the determination of range of motion during specific upper limb functional tasks.

This work has established the reliability and validity of a range of measures appropriate for use in children with cerebral palsy. The use of valid and reliable outcome measures provides a greater understanding of the complexities of cerebral palsy and ultimately will lead to improved outcome and greater treatment opportunities for families and children with cerebral palsy.

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