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The effect of resistance training on gait kinematics and kinetics in children with cerebral palsy: A systematic review

Background: Secondary problems associated with Cerebral Palsy (CP) affect normal gait mechanics compared to healthy people. Those with CP have shown to be significantly weaker than their healthy counterparts. Muscle weakness has been found to negatively affect walking speed and gait efficiency.

Aim: This paper reports a systematic review of Progressive Resistance Training (PRT) interventions for children with cerebral palsy. The sum of Randomized Controlled Trials (RCT's) within this review, aims to quantify if regular strength training increases gait velocity.

Methods: A comprehensive literature search identified all studies of those which contained the key words cerebral palsy, gait and resistance training. It included 4 electronic database journals and two internet search engines. Language was limited to English and was dated from 1998-2012. Progressive resistance training studies and there effects on gait parameters were selected for review.

Results: An overall mean affect 0.06 (-0.33-0.46) showed that gait velocity favored the intervention over the control group.

Conclusion: Muscle weakness may not be the only contributor to poor gait performance. To achieve a greater overall mean increase in gait velocity, resistive exercise design that targets both agonist and antagonist training simultaneously should be combined with other interventions such as gait training, balance and proprioception. If gait velocity is to be maximized it is imperative to treat the cause of gait compensations and to address impaired selective voluntary motor control, abnormal stretch reflexes and to ensure sufficient heel strike at initial contact.

Biography

Daniel Yazbek has graduated bachelor degree in the field of Exercise and Sports Science from the Australian Catholic University in 2012. He has completed Master's graduate in Chiropractic from Macquarie University. Throughout his professional and academic career, he has extended his clinical understanding in the development of both diagnostic and treatment disciplines, of which include dry needling, management of migraine headache, spinal diagnosis and selected functional movement assessment, along with co-management of dizziness, balance and postural disorders. He has engaged with and consulted many clinicians within the healthcare spectrum. His unique combination of clinical experience and credentials, places him in a distinctive position to successfully and harmoniously interact with exercise/medical rehabilitation based practitioners in driving positive clientele outcomes. He understands the current literature examining the complexity of human motor control and its inter-relationship with movement biomechanics. As an Exercise Scientist and Chiropractor, he is able to unite both professional disciplines in order to provide a holistic approach to health.

Notes:

yazebeckel@gmail.com