

The Relations Between Sit-to-Stand Functional Muscle Strength and Gross Motor Function, Muscle Strength of Lower Extremities in Children with Spastic Diplegia

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Purposes: To investigate the relations of the sit-to-stand functional muscle strength with gross motor abilities and the individual muscle strength in children with cerebral palsy. **Methods:** 20 children with spastic diplegia and age range of 72 to 122 months were recruited. The scores of Gross Motor Function Measure (GMFM), normalized one repetition maximum of the loaded sit-to-stand test (NSTS1RM), and normalized maximum isometric strength in lower extremities with Nicholas hand-held dynamometer were obtained for each child within 2-7 days. **Results:** There was significant correlation between NSTS1RM and the GMFM total scores and goal dimension scores ($r=0.76\sim 0.80$, $p<0.01$), and between NSTS1RM and muscle strength of 8 muscles of lower extremities and trunk extensor strength. The stepwise regression found that the muscle strength of knee extensor and hip abductor were the best predicting factors for NSTS1RM ($R^2=0.72$, $p<0.01$). **Conclusion:** The NSTS1RM was highly correlated with the gross motor function and the muscle strength of hip abductors and knee extensors in children with spastic diplegia. The loaded sit-to-stand test can be used for quantitative muscle strength testing and for investigating the optimal strengthening load in children with cerebral palsy. (FJPT 2005;30(5):207-216)

Key Words: Cerebral palsy, Sit-to-stand, Gross motor function, Muscle strength

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