

The Relations Between the Sit-to- Stand Functional Muscle Strength and Walking Capacity in Children with Mild Spastic Diplegia

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Purpose: to investigate the relations between sit-to-stand functional muscle strength and walking function in children with spastic diplegia (SD). **Methods:** Twenty-nine children with SD, aged 5-12 years were recruited in North Taiwan. A newly developed functional muscle strength test, the loaded sit-to-stand test was used to obtain the normalized one repetition maximum (NSTS1RM). The NSTS1RM was the index of sit-to-stand functional muscle strength. The variables of walking function included the self-selected walking speed and the physiological cost index (PCI). The self-selected walking speed was measured during 10 meters' walking by stopwatch. The PCI was calculated from the walking speed and the change between the resting heart rate and walking heart rate that were recorded by Polar Sport Tester. Pearson product-moment correlation coefficient (one-tailed, $\alpha=0.05$) tests the correlation between NSTS1RM and 2 variables of walking function. **Results:** The NSTS1RM correlated significantly with walking speed ($r=0.37$) and the reciprocal of PCI that represented the energy efficiency ($r=0.39$) ($p<0.05$). The children with SD who loaded heavier in loaded sit-to-stand test could walk faster with higher energy efficiency. **Conclusion:** The sit-to-stand functional muscle strength significantly but weakly correlated with walking function in children with mild SD. (FJPT 2004;29(3):176-183)

Key Words: Cerebral palsy, Children, Muscle strength, Sit-to-stand, Locomotion

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Received: Nov 6, 2003 Accepted: Mar 1, 2004