소아재활

게시일시 및 장소 : 10 월 19 일(토) 08:30-12:30 Room G(3F)

질의응답 일시 및 장소 : 10 월 19 일(토) 11:00-11:30 Room G(3F)

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## Cardiorepiratory Exercise Test in Children with Cerebral Palsy

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**Introduction**

Children with cerebral palsy (CP) have lower aerobic exercise capacity, and a higher oxygen cost for activities of daily living compared with typically developing children, and the oxygen cost increases with increasing disability. Progressive exercise testing on a cycle ergometer or treadmill may be useful for evaluating exercise tolerance and cardiopulmonary response to exercise in children with CP. However, studies on cardiopulmonary exercise tests(CPX) have been rarely reported in CP. The purpose of this study is to investigate the applicability of the modified Naughton protocol in children with CP, GMFCS level I and II.

**Method**

Thirty-seven children with CP (21 GMFCS level 1 and 16 GMFCS level 2; median age, 7.0 years) participated in this study. The children underwent CPX with continuous monitoring of the ECG, blood pressure, peak oxygen uptake (VO2peak), minute ventilation (VE), and respiratory exchange ratio (RER) according to the modified Naughton protocol. Gross motor capacity was measured by Gross Motor Function Measure (GMFM) 88, GMFM 66, Pediatric Balance Scale (PBS), Timed Up and Go (TUG) test, and 6-minute walk test (6MWT).

**Results**

All children with CP successfully performed CPX according to the modified Naughton protocol. 43% (16 out of 37) performed maximal exercise test based upon RER. There was moderate to high correlation between the exercise time of the treadmill test and GMFM66 (r=.714, p=.000), GMRM88 (r=.717, p=.000), PBS (r=.690, p=.000), TUG (r=-.537, p=.001), and 6MWT (r=.706, p=.000). There was low-moderate correlation between the VO2peak and GMFM66 (r=.353, p=032), GMRM88 (r=.369, p=.000) PBS (r=.460, p=.004), and 6MWT (r=.409, p=.012).

**Conclusions**

Assessment of cardiorespiratory fitness(VO2max) using modified Naughton protocol was feasible in children with CP (GMFCS level I, II). Exercise time of CPX showed strong

correlation with motor capacity. However, VO2peak showed weak correlation with motor capacity.

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