**New challenge: a stimulating fitness program with exercise testing for children with Cerebral Palsy**

Ng KP, Chan NC, Ung TT, Yuen KY, Lao LM, Poon YHP

*Physiotherapy Department, Tuen Mun Hospital, Hong Kong.*

**Keywords:**
Cerebral Palsy  
Physiotherapy  
exercise testing  
fitness program

**Introduction**
Children with Cerebral Palsy (CP) often encountered different forms of physical dysfunctions which limit participation in daily activities or sports. This phenomenon will then further lead to crisis of hypo-activity. Therefore, providing regular training and maintaining their physical fitness for children with CP are as important as in healthy children. Thus, an exercise program was introduced for this group of patient in the past two summer holidays. The goal was to improve their physical functions and change their attitude on physical activity.

**Objectives**
The aims of this study are to (1) Evaluate the effectiveness of fitness program in children with CP. (2) Investigate the profile of physical fitness of children with CP in local setting.

**Methodology**
Children with CP of Gross Motor Function Classification System (GMFCS) Type I and II were recruited for this program. Those with cardiac, pulmonary or systemic disease were excluded. The subjects were then randomly divided into two groups: The Conventional group received usual physiotherapy training, whereas the Intervention group received a fitness program in addition to conventional physiotherapy training. Children in the intervention group received fitness training twice a week for 6 weeks included aerobic exercise, anaerobic training and core stability training. Evaluation was performed at baseline and at the end of the 6-week training. Main outcome measures included Shuttle Run Test (SRT) for testing the cardiopulmonary fitness, and the Muscle Power Sprint Test (MPST) for testing the musculo-skeletal fitness. Physical Activities Questionnaire for Children (PAQ-C) was also conducted to
evaluate their general levels of physical activities.

**Result**

27 patients in total were recruited during 2013 and 2014 summer holidays – 15 allocated to the interventional group and 12 to the conventional group. There were 9 boys and 18 girls with mean age of 13.2 ± 4.1 years old. The preliminary result demonstrated an improvement of SRT in the intervention group. The mean level of SRT in the intervention group increased from 6.10 ± 3.70 (25th percentile of foreign study) to 7.40 ± 4.35 (50th percentile), which was statistically significant (p=0.014) whereas the mean level of SRT in the conventional group had no significant difference. For MPST, only intervention group showed trend of improvement, the mean time was decreased from 6.55 ± 2.18 to 6.44 ± 1.84 seconds while conventional group was increased from 6.62 ± 2.77 to 6.68 ± 3.01 seconds. Although the improvement was no statistical significance, the result in the intervention group was better than the conventional group. Besides, PAQ-C self-report questionnaire showed that 85% of children in the interventional group improved their physical activity levels after completed the exercise program. A stimulating fitness program appeared to be effective in improving the physical function in children with CP. Significant clinical results were achieved; children became more active in participating daily activities or sports after the training. The profile of physical fitness in local children with CP was at the 25th to 50th percentile which was similar finding in foreign study.