ABCS for DCD - Effectiveness of a structured training program for children with Developmental Coordination Disorder (DCD)

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Introduction
Developmental Coordination Disorder (DCD) is a neurodevelopmental condition characterized by poor motor proficiency that interferes with children’s activities. It is suggested that around 5-6% of school-aged children are affected by this condition. These children encounter difficulties in fine and gross motor skills leading to clumsiness in daily living and may adversely affect their academic achievement. Bruininks-Oseretsky Test of Motor Proficiency (BOT-2) is an assessment tool adopted by Child Assessment Centre (CAC) and Physiotherapy Department of Prince of Wales Hospital (PWH) to assess gross and fine motor development. It consists of 4 domains: Fine Manual Control, Manual Coordination, Body Coordination and Strength and Agility. It is suitable for assessing children from age of 4 to age of 21. It is proven to have high inter-rater reliability and test-retest reliability. Children diagnosed with DCD are referred to participate in a DCD training program in PWH.

Objectives
1. To understand the change of motor abilities after CAC assessment
2. To evaluate the effectiveness of structured physiotherapy program for DCD children

Methodology
Baseline BOT-2 assessment on five gross motor abilities including Upper limb coordination, Balance, Bilateral coordination, Running Speed and Agility and Strength was performed by CAC physiotherapist. Average waiting time for DCD children to receive physiotherapy was around 8-10 months. Prior to physiotherapy training, a second BOT-2 assessment was performed by PWH physiotherapist. Followed by the
assessment, a structured 6-week DCD training program, one hour per week training focusing on A-Agility, B-Balance, C-Coordination and S-Strength was offered to a class size of 4-6 children. One month after training, the third BOT-2 assessment was carried out to assess the effect of the training program. Individuals assessment results will be notified to parents via phone. Repeated measures ANOVA and paired t-test were used to analyze the change of standard deviation (SD) scores of BOT-2.

**Result**

38 DCD children aged from 6 to 11 years old participated in the study. Results showed that there were significant improvements in all five gross motor aspects after CAC assessment and exercise prescription. Further improvements in the above mentioned five gross motor aspects were found after 6-week structured physiotherapy program. In comparison, structured ABCS physiotherapy training provided a greater progress in all measured motor aspects. Therefore, a 6-week structured physiotherapy program and home exercise prescription was demonstrated to be effective in improving motor abilities and coordination for DCD children.