

A PILOT STUDY OF MASTERY OF FUNDAMENTAL MOTOR SKILLS OF PRIMARY SCHOOL STUDENTS IN HONG KONG

Agnes Wai-Yin Pang^{1,3}, Daniel Tik-Pui Fong², Wan-Ka Chan¹ and Youlian Hong¹

¹Department of Sports Science and Physical Education,

²Department of Orthopaedics and Traumatology,

The Chinese University of Hong Kong, Hong Kong, China

³St. Stephen's College Preparatory School, Stanley, Hong Kong, China

The purpose of this study was to evaluate the current proficiency level of fundamental motor skills among primary students in Hong Kong. Three male and three female grade three students participated in this pilot study. The Test of Gross Motor Development Second Edition (TGMD-2) was employed. Four out of six students displayed an average mastery of the overall fundamental motor skills while two were rated as below average in their proficiency. The performance of the Locomotor subtests outweighed the performance of the Object Control subtests. Further studies with larger sample size and with subjects in different age groups will be conducted in order to have a better understanding of the mastery level of the whole school students and to suggest and implement appropriate intervention programs to improve their fundamental motor skills.

KEY WORDS: fundamental movement skills, locomotor test, object control test

INTRODUCTION: The mastery of fundamental motor skills among children and adolescent through quality physical education is a potentially important contribution to satisfying participation in sports, games and other physical activities (Booth et al, 1999). In Hong Kong, fundamental motor skills are regarded as the key learning activity of key stage one. Grade one to grade three students are expected to develop locomotor movement skills, stability movement skills and manipulative movement skills through fundamental movement activities. The Physical Education curriculum aims to help students to develop motor skills and acquire necessary knowledge through physical activities and cultivate positive values and attitudes for the development of an active and healthy lifestyle (Curriculum Development Council, 2002). However, few attempts have been made to determine the mastery level of fundamental motor skill among Hong Kong children. The purpose of this study was to evaluate the current proficiency level of fundamental motor skills among primary students of St. Stephen's College Preparatory School and to compare the results with the norms of the US samples.

METHODS: The Test of Gross Motor Development Second Edition (TGMD-2) was employed instead of systematic biomechanical motion analysis technique as it is simple, time-saving and more suitable for future large-scale field study. The TGMD-2 is composed of two subtests to measure gross motor abilities that develop early in life. The two subtests are Locomotor and Object Control. The Locomotor subtest measures running, galloping, hopping, leaping, horizontal jumping and sliding. The Object Control subtest measures striking, dribbling, catching, kicking, throwing and rolling. The TGMD-2 measures 12 gross motor skills that may be taught to children in preschool, early elementary and special education classes. It was designed to assess the gross motor functioning in children aged 3 to 10 (Ulrich, 2000).

Three male and three female participants, aged 7 to 8 were recruited in this study. The participants were grade three students of the St. Stephen's College Preparatory School. One male and one female participant were randomly chosen from each of the three different classes. Prior to testing, informed written consent from parents was obtained for students to participate in this study. Examiner was required to fill in the appropriate information on the cover of the Profile/Examiner Record Form and review all of the performance criteria for each motor skill. All participants were tested in the sports playground during class teacher period. Twelve gross motor skills (Locomotor and Object Control subtests) were assessed among the six participants. An accurate demonstration and verbal description of the skill were

performed by the examiner before the testing. Participants were given several practice trials before the assessment. Each participant had to perform two trials for each gross motor skill. Each gross motor skill consisted of several performance criteria. If the behavioral component was presented, 1 mark would be obtained. If the behavioral component was absent, 0 marks would be obtained.

The whole process of the assessment was videotaped. Based on the information in the video, examiner rated the performance of each participant in each gross motor skill in their own Record Form. Total scores of the two trials were summed to obtain a raw skill score for that particular gross motor skill. The skill scores were then added up to a raw Locomotor subtest score and Object Control subtest score, which were converted to standard scores. The two subtest standard scores were combined and converted to an overall Gross Motor Quotient. Descriptive statistics were obtained in this study.

RESULTS AND DISCUSSION: Four out of six subjects were rated as average in overall performance of the fundamental motor skills while two of them were rated as below average or poor in performance. All three girls were rated as average in overall performance while the three boys were rated as average, below average and poor in overall performance respectively (Table1). This implied that more effort was required to improve the overall proficiency of fundamental motor skills among students.

Half number of the participants was rated as above average in performing the Locomotor subtests. Two subjects were rated as average and one was rated as below average. Two girls and one boy were rated as above average respectively. One girl and one boy were rated as average while one boy were rated as below average in the overall performance of the Locomotor subtests. Half of the participants were rated as average in performing the Object Control subtests while the other half were rated as below average or poor. All girls were rated as average in the performance while one boy were rated as below average and two boys were rated as poor in the performance of Object Control subtests (Table 2). This indicated that students may have more difficulties in manipulating other objects than their bodies. Teachers may need to emphasize more about the manipulation skills in physical education lessons.

Table 1 Comparison of the gross motor quotient with the US norms.

American samples		Results of this study
Gross Motor Quotient	Descriptive Ratings	Frequency
121-130	Superior	0
111-120	Above Average	0
90-110	Average	4
80-89	Below Average	1
70-79	Poor	1
<70	Very Poor	0

Table 2 Comparison between the results of this study and the US norms.

American samples		Results of this study	
Subtest Standard Scores	Descriptive Ratings	Locomotor	Object Control
17-20	Very Superior	3	0
15-16	Superior		
13-14	Above Average		
8-12	Average	2	3
6-7	Below Average	1	3
4-5	Poor		
1-3	Very Poor		

The scoring pattern of the twelve Locomotor and Object Control tests were shown in Figure 1. The high proportion of students displayed nearly full scores in running and sliding. It may be because running and sliding were part of their daily movement. Students could master these skills without extra teaching effort. However, it was obvious that much more effort would be required to enhance the performance of galloping, hopping, leaping and horizontal jumping among students. The perfect scores of dribbling showed that students could master dribbling skills without any problems. While for striking, catching, throwing, kicking and rolling, more effort would be required to improve their manipulating performance.

Physical Education instructors take important roles to implement fundamental motor skills among students during early childhood. If children miss the opportunity to develop motor skill proficiency in their early childhood, they will likely be hampered from enjoying recreational and sport activities later in their life. TGMD-2 provides quick and easy method to identify the mastery level of fundamental motor skills of children. Physical Education instructors can provide progressive teaching instructions and clear demonstration when teaching students the key components of all the gross motor skills. Future large-scale epidemiology study may provide details with normative data for Hong Kong children, which can help Physical Education instructors to evaluate and modify their teaching strategies, and to implement appropriate intervention programs to improve the children's fundamental motor skills.

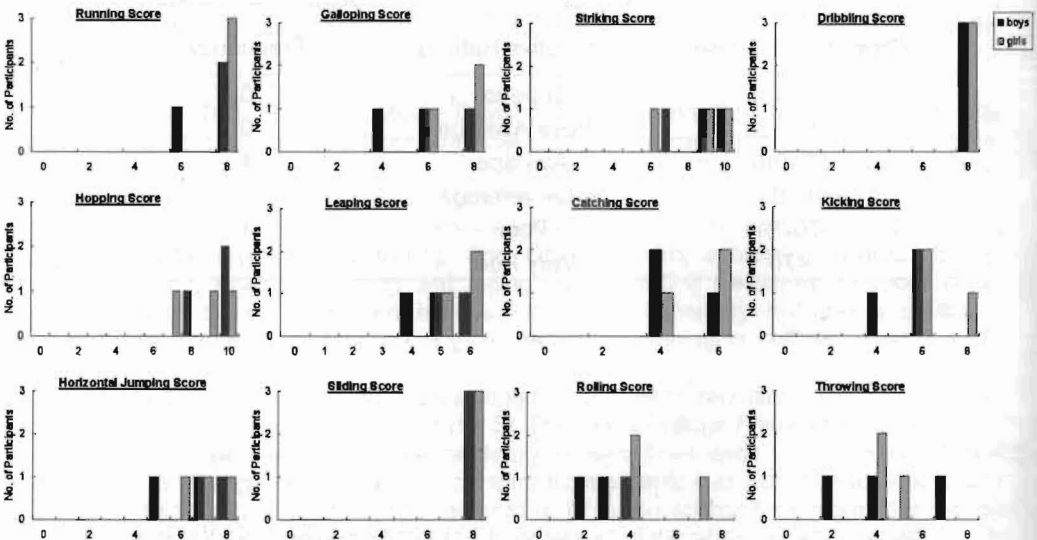


Figure 1 Scoring pattern of the twelve Locomotor and Object Control tests.

CONCLUSION: This study provides a pilot study of mastery of fundamental motor skills of primary school students. Further studies are needed to increase the sample size and to involve different age groups in order to have a better understanding of the mastery level of the school students in Hong Kong. Appropriate intervention programs can be implemented to improve their fundamental motor skills with the findings.

REFERENCES:

Booth ML, Okely T, McLellan L, Phongsavan P, Macaskill P, Patterson J, Wright J, & Holland B (1999). *Journal of Science and Medicine in Sport*, 2 (2), 93-105.

Curriculum Development Council. (2002). Physical education key learning area curriculum guide. Hong Kong.

Ulrich DA (2000). *Test of Gross Motor Development-Second Edition*. Texas: Pro-ed, Inc.