

Physical Activity Level among Hong Kong Secondary School Students during Physical Education Lessons and Extra-curricular Activities:

A Descriptive Study

初步探索香港中學生於體育課及課外活動的身體活動量

Lobo LOUIE Hou-wai YUEN

*Department of Physical Education,
Hong Kong Baptist University, HONG KONG*

雷雄德 阮可慧

香港浸會大學體育學系



Abstract

The purpose of this study was to collect preliminary physical activity data of Hong Kong secondary school students during their physical education lessons, extra-curricular activity, and the whole regular school days. Physical activity was measured in terms of the step count device – pedometer. Preliminary findings suggested that gender difference existed and diversified trends were observed. Further investigations were necessary to understand the underlying factors in order to promote physical activity in school settings.

摘要

本文旨在收集本港中學生於體育課及課外活動時的身體活動量，作為初步的數據，以便日後進行全面性的研究。我們利用步數記錄儀量度身體的活動量，發現男生的活動量大大超越女生，而且觀察到不尋常的趨勢，值得我們關注。

Introduction

Technological progress has indeed added a great deal of convenience to our daily lives, leading to the fact that people are getting less physically active than in previous decades. Sixty percent of overweight children in the United States between the age of 5 and 10 already receive at least one risk factor for heart disease. In Hong Kong, recent health reports indicate that 14 percent of Hong Kong children are overweight (Leung, 1995). This figure tends to increase unceasingly.

Since the Surgeon General's Report on physical activity and health was launched few years ago, more public attention has been drawn particularly in school settings (Center for Diseases Control, 1997). The report emphasized that regular participation in moderate physical activity would be an essential component of healthy lifestyle. Being physically active is extremely importance

for growth and development of children and adolescence. It also enhances the chances to reduce the risk for adult chronic diseases.

Physical education has been imposed in the proposal for curriculum reforms in local educational system two years ago. Its aim is to help students set clear targets on regular participation in physical activities as well as to provide opportunities for students to achieve them. Additionally, school physical education establishes a foundation for skill and physical development through the childhood and adolescent period. Such life time sport skill has been learned, they help to build a natural immunizing effect against many sedentary lifestyle diseases in later years. The effort of researchers was directed at collecting initial physical activity data in Hong Kong secondary schools with the aid of user-friendly step count device – pedometers. It was hoped that the present study would provide us with a general picture about the Hong Kong children's physical activity in schools.

Methods

Subjects

A total of 230, including 118 males and 112 females, secondary school students were invited to take part in the present investigation. A government subsidized secondary school located in Tsuen Wan district was invited for data collection. The breakdown of the school levels among the subjects was shown in Table 1.

Table 1. Demographic Information among the Subjects in Each School Level.

	Male	Female	N	Percentage
Form 2	42	38	80	34.8%
Form 4	40	41	81	35.2%
Form 6	34	32	66	30.0%
Missing data	2	1	3	1.3%
Sub-total	118	112	230	100%

Procedures

The physical activity was collected by utilizing the conventional pedometer (Yamax Digiwalker DW-200). It was a simple mechanical motion sensor which counted the steps to the body vertical vibration. The device was validated in assessing children's physical activity by many researchers (e.g. Eston et al, 1998; Louie et al, 1999). The step counts obtained from the pedometer were served as the dependent variable (physical activity levels).

Each subject was asked to carry a pedometer on the right waist throughout the whole data collection. They wore the pedometers for two days: day one with PE lessons, and day two without PE lessons. The Physical Education teachers assisted in briefing the students prior to the data collection and explained the purpose of the study. Meanwhile, a brief questionnaire was asked to fill out at the end of the day in order to obtain descriptive data concerning the patterns of the daily physical activity.

Data were collected during regular physical education lessons (80 minutes), extra-curricular activities (after school, normally within 1 to 1.5 hours), and one regular school day without physical education lessons. Three school levels, including Form 2, 4, and 6 were selected. The normal daily school hours started from 8.15a.m. and ended in 3.15p.m. The step counts for the extra-curricular activity were taken immediate after 3.15p.m. until the activity was finished.

All data were treated utilizing the SPSS for windows 10.0. Descriptive statistics were chosen for preliminary analysis. In addition, the students' preferences of the activities were also presented for discussion. Since this study was only served as an initial analysis on investigating the secondary school students' physical activity in Hong Kong, no further advanced statistical analysis would be performed with such a relative small sample by the researchers.

Results

The purpose of this study was to obtain a descriptive data on the physical activity levels among the Hong Kong secondary school students during their physical education lessons, extra-curricular activities, as well as the regular school days without physical education lessons.

The subjects' ages ranged from 13 to 18, with a mean age of 15.9 for males and 15.4 for females. Three data were missing during the data collection due to error found in the pedometers. Table 2 presented the step counts obtained during a 80-minute physical education lessons across three school levels (Form 2, 4 and 6).

Table 2. Step Counts Taken during Physical Education Lessons.

	School Level	Mean	SD	N
Male	Form 2	5408	1237	42
	Form 4	2699	955	40
	Form 6	400	498	34
	Subtotal	3006	2252	116
Female	Form 2	3100	748	38
	Form 4	1564	783	41
	Form 6	342	352	32
	Subtotal	1737	1290	111
All Subjects	Form 2	4311	1549	80
	Form 4	2125	1038	81
	Form 6	371	431	66
Total		2385	1948	227

Table 3 showed the distributions of the step counts taken by the subjects during the after school extra-curricular activity

Table 3. Step Counts Taken during After School Extra-curricular Activity.

	School Level	Mean	SD	N
Male	Form 2	945	1105	42
	Form 4	708	1134	40
	Form 6	1050	2226	34
	Subtotal	894	1521	116
Female	Form 2	728	1027	38
	Form 4	452	1086	41
	Form 6	220	509	32
	Subtotal	480	948	111
All Subjects	Form 2	842	1067	80
	Form 4	578	1111	81
	Form 6	647	1677	66
Total		691	1287	227

Table 4 showed the distributions of the step counts taken by the subjects during the whole school day, without PE lessons and extra-curricular activities, whereas Table 5 presented the steps counts recorded including PE lessons and extra-curricular activities in one regular school day.

Table 4. Step Counts Taken during One Whole School Day without PE Lessons and Extra-curricular Activities.

	School Level	Mean	SD	N
Male	Form 2	4798	2488	42
	Form 4	3715	1529	40
	Form 6	8222	25937	34
	Subtotal	5428	14125	116
Female	Form 2	2467	2889	38
	Form 4	2853	1402	41
	Form 6	2971	1288	32
	Subtotal	2755	2009	111
All Subjects	Form 2	3691	2915	80
	Form 4	3279	1520	81
	Form 6	5676	18690	66
Total		4124	10261	227

Table 5. Step Counts Taken during One Whole School Days Including PE Lessons and Extra-curricular Activities.

	School Level	Mean	SD	N
Male	Form 2	11152	3492	42
	Form 4	7123	2575	40
	Form 6	9672	25964	34
	Subtotal	9323	14247	116
Female	Form 2	6296	3368	38
	Form 4	4870	2288	41
	Form 6	3534	1430	32
	Subtotal	4973	2740	111
All Subjects	Form 2	8845	4195	80
	Form 4	5982	2671	81
	Form 6	6696	18783	66
Total		7199	10569	227

The preferences on the choices of activities were also reported by the subjects, in school day and non-school day, as shown in Table 6 and 7, respectively.

Table 6. Activities Preferred by the Subjects in School.

Activities	Frequencies	Percentage
Badminton	136	59.1
Playing Piano	93	40.4
Singing	85	37.0
Basketball	84	36.5
Swimming	82	36.5
Table-tennis	70	30.4
Revision	53	23.0
Reading newspapers	53	23.0
Volleyball	50	21.7
Athletic	44	19.1

Note. Students might respond to more than one choice.

Table 7. Activities Preferred by the Subjects during Non-School Day.

Activities	Frequencies	Percentage
Surfing the Net	147	63.8
Shopping	144	62.6
Watching TV	143	62.2
Sleeping	120	52.2
Eating	93	47.4
Watch Videos	87	37.8
Doing Homework	83	36.1
Ball Games	68	29.6
Doing Housework	41	17.8
Voluntary Work	17	7.4

Note. Students might respond to more than one choice.

The subjects were further being asked what motives would affect their participation in physical activity, as shown in Table 8.

Table 8. Participation Motives for Physical Activity.

Factors	Frequencies	Percentage
<i>Internal Factors:</i>		
Personal Interest	203	88.3
Peers	114	49.6
Teachers	61	26.5
Parents	41	17.8
Other Family Members	17	7.4
<i>External Factors:</i>		
Weather	121	52.6
Time	115	50.0
Participation Fees	95	41.3
Facilities	88	38.3
PE Lessons	70	30.4
Accessibility	40	17.4

Note. Students might respond to more than one choice.

Discussions

In an attempt to better understand the physical activity patterns among the Hong Kong secondary school students, the user-friendly pedometers appeared to be able to serve our purposes (Eston et al, 1998; Louie et al, 1999). Such simple step count device was able to discriminate the activity levels between boys and girls across all school levels.

Regarding the present findings, boys were more physically active than girls. This finding was also in line with similar local (Louie, 2002) and oversea studies (e.g. Sallis, 2000). Overall speaking, the obtained step counts for boys were twice more than those for girls. Perhaps the traditional Chinese cultures might play a role to explain such occurrence. Boys were encouraged to be physically active whereas girls are always advised to take part in musical instrument and art craft activities.

Apparently, there appeared to have a downward physical activity trend involved from Form 2 to Form 4, and occasionally in Form 6. During PE lessons in Form 6, the students were taught theories related matters, such as biomechanical principles during the PE lessons. Thus, a relative low level of step counts was recorded during Form 6 PE lessons. On the other hand, the overall step counts for Form 6 students were comparatively high. Perhaps the upper level students might understand the importance of physical activity for the purpose of relaxation and being physically fit. Another explanation was that Form 6 students often involved with school service that made them walk a lot within the school campus.

Interestingly, the preference for activity choices was found to be quite different between school days and non-school days. In school, physical and cultural activities were preferred whereas typical sedentary activities were major choices during non-school days, such as surfing the net and watching TV. Ball games activity was ranked quite low among the students' preferences.

Further studies were needed to conduct to investigate the associations among PE lessons, extra-curricular activities, and daily physical activity. Do the physically active children in PE lessons would also remain active during non-school days? Are the extra-curricular activities help to promote physical activity in schools? What would be trends involved with physical activity along with the increased age and school levels? The present study only served as a preliminary report before we could comfortably proceed to the sophisticated investigation.

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Correspondence:

Dr. Lobo Louie
Department of Physical Education,
Hong Kong Baptist University,
Kowloon Tong,
Hong Kong.

Tel: 3411 5631

E-mail: s62591@hkbu.edu.hk