

Physical Activity Patterns of Hong Kong Adolescents 香港青少年的活動模式

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Abstract

The present study utilized the physical activity log to investigate the physical activity patterns of the adolescents in Hong Kong. Results indicated that walking and watching television are the most common activities. Of the top 10 ranked activities, only two of them were sport-related activities, including recreational volleyball and basketball.

摘要

本研究是利用自我紀錄方式表去探討青少年的活動模式。結果顯示青少年的活動偏向「走路」和「觀看電視」。在整體「等級排列」的頭十位，只有兩種屬於運動項目：康樂性質排球和康樂性質籃球。這方面是值得從事體育和康樂的專業人員留意的。

Introduction

Recent research evidence consistently pointed out that many contemporary health problems such as hypertension and cardiovascular disease are associated with low levels of physical activity (Blair, Kohl, Paffenbarger, Clark, Cooper, & Gibbons, 1989; Paffenbarger, Wing, Hyde, & Jung, 1983; Powell, Thompson, Caspersen, & Kendrick, 1987), and to some extent, this has been responsible for the surge of local interest to document the fitness and physical activity profiles of different populations.

Adolescence is the transitional stage between childhood and adulthood. For individuals going through this developmental period, it represents a time whereby they have to make adaptations to rapid physical, emotional, and social changes. To researchers, adolescents' reaction to these life challenges makes them a unique target population which warrants special attention. Physical educators generally believe that children enter this developmental stage with bodies and minds shaped by heredity and past experiences, but at the same time, they also believe that values and habits held by persons at this developmental stage are still malleable, and that as physical educators, they can play an active role in helping adolescents formulate positive health-related values.

In Hong Kong, the mortality rate for cardiovascular disease has been on the rise (Hong Kong Government, 1995) and as

recent research has identified physical inactivity to be a major risk factor of cardiovascular disease among adolescents (Armstrong, Williams, Balding, Gentle, & Kirby, 1991), the need to make further inquiry into adolescents' physical activity patterns is evident. Local studies such as those by Fu (1994), McManus & Armstrong (1996), and Ng (1996a, 1996b) had already provided some valuable physical activity data on Hong Kong adolescents, this study aims to extend their effort by identifying physical activity patterns of local adolescents with respect to day, district, gender, and age. By making such a compartmentalized presentation, a more micro understanding of physical activity patterns among adolescents is possible.

Physical activity patterns and levels could be assessed by a variety of methods. One commonly used method is the physical activity log which requires the subjects to keep a diary of activities they pursue on a daily basis. The advantage of the physical activity log is that it is a convenient and inexpensive method for collecting data on a large scale. In this study, the modified physical activity log developed by Bouchard, Tremblay, Leblanc, Lortie, Savard, & Theriault (1983) was given to the participants to log their daily activities. Then, from these daily activity logs, activities considered as "active" and "inactive" were identified. "Active" activities were those which require the individual to engage in movements involving large muscle groups such as walking and playing sports. "Inactive" activities were those which were of a sedentary nature such

as watching television, reading, and listening to music. By identifying the proportion of "active" and "inactive" activities and the types of "active" activities pursued by adolescents, a profile of Hong Kong adolescents' physical activity patterns was constructed.

Method

Sample

One hundred and forty-four Hong Kong junior secondary school children with age range of 12 to 15 participated in this study on a voluntary basis. Due to missing data or incomplete data, only 136 data sets were included for analysis. Informed consent was obtained from the participants' parents or guardians prior to data collection. The number of male and female participants in each age group is presented in Table 1.

Table 1. Male and Female Participants in Each Age-group

	Age-group	
	12-13	14-15
Male	41	25
Female	34	36

Data Collection

A briefing session was conducted by the investigator to familiarize participants with the method of completing the physical

activity log. The participants were asked to record their daily activities on three days as specified by the investigator and to begin recording on the school day immediately after the briefing. To ensure that data collected were unbiased, the three days selected for data recording were as follows: a school day with physical education lesson, a school day without physical education class, and a day during the weekend.

To log activities, the participants were asked to recall and record their daily activities twice per day in each of the target day selected for data collection. Recording times were at 2 p.m. and 8 p.m. At 2 p.m., they were to recall and record activities they pursued from 8 a.m. up to 2 p.m., and at 8 p.m., they were to recall and record activities they pursued from 2 p.m. up to 8 p.m.

In order to facilitate participants' actual data entry, each twelve hour log sheet was marked at 15 minutes intervals such that there were 48 periods per log sheet. In making entries, participants were expected to enter an activity code in each of the 48 periods. The activity codes were numbered from 1 to 9 with each number representing a particular activity. In the case when an unlisted activity was pursued, the participants were asked to add a code and specify the activity performed. Completed log sheets were returned to the teachers the next day.

Results

The mean time for all the reported activities were ranked on a spreadsheet in descending order. The top 10 activities are listed. Rankings of activities according to day of the week, district, gender and age are given in Tables 2 to 6.

Table 2. Overall Rank Order of Physical Activities

Rank Order	Activity Item	Duration(Minutes)
		Mean(SD)
1	Walking	346.80(72.12)
2	Television	144.99(46.64)
3	Standing	81.99 (35.07)
4	Reading	63.48 (30.86)
5	Volleyball, recreational	60.54 (30.13)
6	Basketball, recreational	55.32 (28.81)
7	Computer games	44.01 (25.69)
8	Shopping	36.39 (23.36)
9	Listening to music	27.78 (20.41)
10	Housework	20.52 (17.54)

Note: Only the top ten activities are listed

Day of the Week

Walking was shown to be the activity taking up most of the time of the subjects, with watching television being second in all activity days (see Table 3).

Table 3. Rank Order of Physical Activities by Day of the Week

Rank Order	PE (n=136)		NPE (n=136)		WKEND (n=136)	
	Activity	Duration (Min)	Activity	Duration (Min.)	Activity	Duration (Min.)
		Mean(SD)		Mean(SD)		Mean(SD)
1	Walking	368.10(74.31)	Walking	389.46(76.43)	Walking	283.08(65.16)
2	Television	110.19(40.66)	Television	104.07(39.51)	Television	220.71(57.54)
3	Volleyball, recreational	107.88(40.23)	Standing	78.57 (34.33)	Reading	111.51(40.90)
4	Standing	85.05 (35.72)	Reading	39.21 (24.25)	Computer Games	101.91(39.10)
5	Basketball, recreational	83.55 (35.40)	Volleyball, recreational	38.70 (24.09)	Shopping	88.68 (36.47)
6	Gymnastics, recreational	45.51 (26.13)	Listening to music	20.19 (17.40)	Standing	82.38 (35.15)
7	Reading	39.72 (24.41)	Computer games	17.22 (16.07)	Basketball, recreational	67.17 (31.74)
8	Basketball, competitive	19.53 (17.12)	Housework	14.40 (14.70)	Listening to music	49.95 (27.37)
9	Listening to music	14.07 (14.53)	Homework	13.74 (14.36)	Housework	35.07 (22.94)
10	Housework	13.23 (14.09)	Shopping	13.56 (14.26)	Volleyball, recreational	33.09 (22.28)

Note: Only the top ten activities are listed
 PE denotes Weekday with Physical Education Class
 NPE denotes Weekday without Physical Education Class
 WKEND denotes Weekend (Saturday / Sunday)

District

Some notable differences were observed between districts. Although walking and watching television were ranked similarly by adolescents from both districts, urban adolescents tend to

spend more time in reading, standing, computer games, and shopping whereas rural adolescents tend to spend more time in recreational basketball and volleyball (see Table 4).

Table 4. Rank Order of Physical Activities by District

Rank Order	Activity	Rural (n=69)	Activity	Urban (n=67)
		Duration(Min.) Mean(SD)		Duration(Min.) Mean(SD)
1	Walking	343.04(71.73)	Walking	350.82(72.54)
2	Television	130.76(44.29)	Television	159.63(48.93)
3	Standing	99.89(38.71)	Reading	86.42(36.00)
4	Basketball, recreational	85.87(35.89)	Standing	63.58(30.88)
5	Volleyball, recreational	85.76(35.87)	Computer games	51.72(27.85)
6	Reading	41.20(24.86)	Shopping	46.79(26.49)
7	Computer games	36.52(23.41)	Volleyball, recreational	34.48(22.74)
8	Listening to music	30.00(21.21)	Listening to music	25.52(19.57)
9	Shopping	26.30(19.86)	Housework	23.96(18.96)
10	Housework	24.13(19.02)	Basketball, recreational	16.79(15.87)

Note: Only the top ten activities are listed

Gender

One major difference between the male and female was the male's participation in basketball and computer games as compared to the female's preference in volleyball and shopping (see Table 5).

Table 5. Rank Order of Physical Activities by Gender

Rank Order	Activity	Male (n=66)	Activity	Female (n=70)
		Duration (Min.) Mean(SD)		Duration(Min.) Mean(SD)
1	Walking	289.43(65.89)	Walking	401.04(77.56)
2	Television	166.82(50.02)	Television	124.39(43.20)
3	Basketball, recreational	96.14(37.97)	Standing	91.93(37.13)
4	Computer games	75.91(33.74)	Volleyball, recreational	84.86(35.68)
5	Reading	71.48(32.74)	Reading	59.36(29.84)
6	Standing	67.84(31.90)	Shopping	45.00(25.98)
7	Volleyball, recreational	35.32(23.02)	Listening to music	27.32(20.24)
8	Basketball, competitive	34.77(22.84)	Gymnastics, recreational	25.18(19.43)
9	Listening to music	28.30(20.60)	Housework	22.07(18.19)
10	Shopping	27.27(20.22)	Homework	18.54(16.68)

Note: Only the top ten activities are listed

Age Group

For both age groups, the leading activity was walking, followed by television and standing. The rank order of other physical activities of the two age groups are presented in Table 6.

Table 6. Rank Order of Physical Activities by Age

12-13 (n= 75)			14-15 (n=61)	
Rank Order	Activity	Duration(Min.)	Activity	Duration (Min.)
		Mean(SD)		Mean(SD)
1	Walking	318.60(69.13)	Walking	381.64(75.66)
2	Television	155.70(48.33)	Television	131.80(44.46)
3	Standing	77.80(34.16)	Standing	87.17(36.16)
4	Reading	73.60(33.23)	Volleyball, recreational	82.13(35.10)
5	Basketball, recreational	58.70(29.67)	Reading	51.02(27.66)
6	Volleyball, recreational	43.00(25.40)	Shopping	46.69(26.46)
7	Computer games	41.60(24.98)	Computer games	45.00(25.98)
8	Shopping	29.40(21.00)	Listening to music	36.52(23.41)
9	Basketball, competitive	23.80(18.89)	Housework	21.39(17.91)
10	Listening to music	20.70(17.62)	Homework	15.60(15.30)

Note: Only the top ten activities are listed

Discussions

From the result of the overall rank order, walking is found to be on the top of the list and watching television is the second most frequently pursued activity. Within the limitation imposed by the design of data collection, only activities from 8 a.m. to 8 p.m. were recorded. If the activity log were to be extended to cover time slots beyond 8 p.m., watching television might rise to the first position. If this is the case, then the finding would be similar to those obtained by previous researchers such as Janz and Mahoney (1992) and Ng (1996a). Tucker (1986) suggested that children should limit their time spent on television viewing for better health. Groves (1988) further pointed out that excessive television viewing could lead to medical problems related to obesity.

Standing and reading share with the first two activities of walking and watching television in being not socially involved. One can walk, watch television, stand and read for hours without interacting with other people.

The fifth activity on the list is volleyball, an open-skill sport with a low-risk characterized by moderate or no contact.

The sixth activity on the list is basketball, another open-skill sport with a higher risk or more body contact or collision. Next on the list are the activities of computer games, shopping, listening to music and doing housework, which could be pursued in solitude or in company. When the top ten activities are viewed collectively, a general trend is detected. It appears that adolescents spent more time on solitary activities than activities requiring interaction. Also, when the relative time spent on "active" (walking, volleyball, basketball, shopping, and housework) and "inactive" (television, standing, reading, computer games, listening to music) activities is compared, local adolescents spent more time pursuing "active" activities (24%) than "inactive" activities (16%).

On school days in which there are physical education classes, adolescents were able to pursue a variety of sports. On school days when physical education was not part of the schedule, only one sport, namely volleyball (team sports/open skill/low risk), was pursued. Volleyball was also the only sport played by adolescents over the weekends. This suggested that physical education classes might be the only opportunity when adolescents can experience different types of sports.

Several observations are noted from the rank order of physical activities by gender. Basketball, a high-risk sport, appears in the top ten list of activities for the male participants but not for the females. Males were also found to have participated in both recreational and competitive basketball.

Volleyball, the relatively non-contact sport, was ranked highly by adolescents of both age groups, and especially by the females (see Tables 5 & 6). Combination of the above observations indicated that males and younger persons spend relatively more time on contact sports activities than females and older persons. This finding concurred with results gained by McManus and Armstrong(1996), who assessed the physical activity patterns of a group of Hong Kong girls and boys.

Conclusions

The present research has shown that the physical activity log can be used to track physical activities of adolescents. Only two kinds of sports activities appear on the overall rank order of this study, namely recreational volleyball and recreational basketball. This implies that recreational activities might be more popular than the sports activities. This aspect should be considered in the development and promotion of sports activities among adolescents.

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