Physical activity patterns of Singaporeans in 2001

K C Teh, V T H Ong

ABSTRACT

Introduction: This study was conducted on Singaporean males and females to determine the extent of involvement in sport, work-based and home-based physical activities, and other activities such as walking and stairclimbing.

Methods: A Physical Activity Questionnaire was designed and data collected in conjunction with the Singapore National Sports Participation Survey 2001.

Results: Three hundred and ten households with 605 respondents (287 males and 318 females) completed the questionnaire, representing a response rate of 81 percent. Males spent more time doing sports, work-based physical activity and walking and stairclimbing activities while females spent more time in housework. However, females spent more time (568 versus 410 minutes per week) on overall physical activity, mainly due to their heavier involvement in housework. Compared with a similar study in 1997, males and females were doing more sports activities and walking and stairclimbing activities, but had reduced involvement in work-based and home-based activities. Overall, respondents in 2001 were spending about 31 percent less time (457 versus 598 minutes per week) on physical activities than respondents in 1997. There was a reduction in physical activities among males from 476 minutes per week to 410 minutes per week, and a sharper drop among females from 904 minutes per week to 567 minutes per week.

Conclusion: Singaporean males and females in 2001 are spending less time on overall physical activities. The trend towards a reduction in overall physical activities from 1997 to 2001 is cause for concern. Relevant organisations would, therefore, need to continue promoting sports and physical activities to the Singapore population.

Keywords: housework, physical activities, physical activity questionnaire, sports, walking

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INTRODUCTION

The current trend towards a more sedentary lifestyle has arisen as a result of modern technological inventions, advances and conveniences. We are spending more leisure time in sedentary pursuits such as watching television and computer work, and using machines such as cars, lifts and escalators, instead of human power. The benefits of engaging in physical activity are well known. The Surgeon General's report on physical activity and health in the United States of America (USA)[1] concluded that people could improve their health and quality of life by including moderate amounts of physical activity in their daily lives. The report also stated that moderate physical activity could reduce the risk of premature mortality and, in particular, coronary heart disease, hypertension, colon cancer and diabetes mellitus. Recent studies on physical activity have also shown that physical activity brings more benefits to all, including children, adults and the elderly[2-5]. This study determines the physical activity status of Singaporeans, compares physical activities of males and females in Singapore, and physical activities between respondents in 1997 and 2001.

METHODS

A questionnaire was designed with various types of physical activities classified in four broad categories, namely: "sports that are physical in nature", which includes both competitive as well as recreational sports, but excludes board games such as scrabble, chess and mahjong; "work-based physical activity", which includes all physical activities that are carried out while at work; "home-based physical activity", which includes both light housework (performed with minimal effort and includes tidying, dusting, sweeping the floor, polishing, ironing, dishwashing, cooking, food preparation and mopping) and heavy housework (requires more effort and this includes scrubbing floors and walls, indoor gardening, carpentry, repair jobs and painting); and "other physical activities", which includes walking, stairclimbing, cycling and washing the car (non-discretionary activities).

For this study, only walking and stairclimbing activities were reported as both activities constitute

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Table I. Mean duration (minutes) spent per week on physical activities by respondents in 1997 and 2001.

Gender	Sports		Work-based physical activity		Housework		Walking / stairclimbing		Total	
	1997	2001	1997	2001	1997	2001	1997	2001	1997	2001
Male	48	48	286	103*	73	58	69	201	476	410
Female	21	23	123	25*	625	331*	135	189	904	568
Total	33	34	200	56	283	172	82	195	598	457

* $p<0.05$.

99.5% of the "other physical activities" in terms of number of minutes spent. Others such as cycling and washing the car, which constituted 0.5% of "other physical activities", were excluded as the number of minutes spent was insignificant. Respondents were required to indicate the physical activity in a typical week for the previous three months. They were also required to indicate the number of sessions per week and the mean duration of each session of that physical activity. The physical activity questionnaires, together with the categorisation of physical activity, were identical for the two studies in 1997 and 2001.

Two sampling techniques were employed to recruit respondents for this study. A two-stage stratified sampling technique was selected from the Master List of Dwellings maintained by the Department of Statistics to obtain respondents for the National Sports Participation Survey 2001. From this sample, randomised systematic sampling was administered. Every tenth household from the National Sports Participation Survey 2001 was selected to complete the Physical Activity Questionnaire. Every member (≥15 years old) in the family was interviewed to minimise bias. The data was collected from interviews carried out in the respondents' homes. The data collection period was from 16 April 2001 to 9 September 2001. All completed questionnaires were checked by the field supervisor prior to data entry; 20% of all responses were randomly selected to authenticate the interviews and to verify the interviews had been conducted in the required manner.

Statistical analyses were performed using the Statistical Package for the Social Science (SPSS Inc, Chicago, Illinois, United States of America). Descriptive statistics were reported in percentage frequency while inferential statistics were reported using independent t-tests. A value of $p<0.05$ is considered statistically significant.

RESULTS

Of the 383 households who were eligible to complete the Physical Activity Questionnaire in 2001, 310 households with 605 (287 males and 318 females) respondents responded to the Physical Activity Questionnaire, representing a response rate of 81%. Comparing the two physical activity studies in 1997 and 2001, the distribution of male and female respondents was quite similar. There were 338 (51.2%) females and 322 (48.8%) males in 1997. In 2001, there were 318 (52.6%) females and 287 (47.4%) males. Males and females were doing more sports activities, walking and stairclimbing in 2001 compared to 1997. However, they had reduced their involvement in work-based and home-based activities. Using independent t-tests, significant differences were found for duration in work-based physical activity between 1997 and 2001 for males ($t=2.994$, $p=.03$) and females ($t=2.633$, $p=.048$), and for home-based physical activity for females ($t=5.33$, $p=0.001$).

On average, the respondents spent most time in other physical activities (195 minutes/week), followed by home-based physical activity (172 minutes/week), work-based physical activity (56 minutes/week) and sports activity (34 minutes/week) (Table I). Overall, the respondents spent an average of 457 minutes per week (65 minutes per day) on all physical activities. Males spent more time doing sports, work-based physical activity and walking and stairclimbing activities while females spent more time in housework. However, females spent more time on all physical activities (568 minutes/week) than males (410 minutes/week). This translates into 59 minutes/day for males and 81 minutes/day for females. Although males were more active in sports and work-based activity, females spent more time on overall physical activity than males because of their heavy involvement in housework.

DISCUSSION

A comparison of two physical activity studies in 1997 and 2001 showed that males and females were doing more sport activities and walking and stairclimbing activities in 2001 than in 1997. However, they had reduced their involvement in work-based and home-based activities. The reduction in time spent in work-based and home-based physical activities was not compensated by an increase in participation in sports and walking and stairclimbing activities, which resulted in the drop in total duration spent per week in physical activity. In 1997, males spent 476 minutes on all physical activities compared with 410 minutes in 2001. For females, the drop is even more drastic, from 904 minutes spent on all physical activities in 1997 to 568 minutes in 2001.

Table II. Number of sessions spent by males and females on different physical activities in 2001.

Sessions per week	Sports (%)		Work-based physical activity (%)		Light housework(%)		Heavy housework(%)		Walking/ stairclimbing (%)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	54.4	65.7	61.3	75.2	48.1	12.0	59.9	41.5	20.9	16.4
1	15.0	11.6	3.5	3.5	10.1	7.3	23.3	24.5	0.3	0.3
2	9.8	7.5	2.4	2.8	10.5	7.3	9.8	15.4	0.7	0.3
≥3	20.9	15.1	32.8	18.6	31.4	73.6	7.0	18.6	78.8	83.0

Table III. Participation rates in different physical activities according to age groups in 1997 and 2001.

Age group (years)	Participation in sports (%)		Participation in work-based physical activity (%)		Participation in home-based physical activity (%)		Walk/stairclimbing (%)	
	1997	2001	1997	2001	1997	2001	1997	2001
<20	73.2	44.0	28.0	12.0	69.6	60.0	78.0	84.0
20-29	51.2	49.0	56.1	34.7	78.9	69.4	73.2	81.6
30-39	42.7	33.7	50.0	29.3	80.2	79.2	78.1	78.7
40-49	37.0	34.4	48.4	41.3	83.2	74.6	83.2	85.7
50-59	30.4	40.0	35.8	44.8	86.8	71.6	81.1	80.6
≥60	29.4	46.7	35.6	19.4	77.8	76.3	80.0	84.2

A higher percentage of males participated in sports and work-based physical activities while a higher percentage of females were involved in home-based physical activity and walking and stairclimbing activities (Table II). About 45.6% of males took part in at least one session per week in sports that are physical in nature compared with 34.3% of females who did so. One hundred and eleven out of the 287 (38.7%) males did at least one session of work-based physical activity per week compared to 79 out of 318 (24.8%) females.

A comparison of the frequency of participation in the various physical activities by respondents from different age groups in 1997 and 2001 showed that there was a decline in sports, home-based and work-based physical activities in those aged <50 years old. However, there was an increase in walking and stairclimbing activities. In the 50-59 age group, there was an increase in sports and work-based physical activities but a decline in home-based and walking and stairclimbing activities. Finally, for those aged ≥60 years old, there was a decline in work-based and home-based physical activities with an increase in sports and walking/stairclimbing activities (Table III).

This trend of reduction in physical activity is not confined to Singapore. In fact, it has been observed in most developed countries like Australia and the USA. In Australia[6], the mean number of times and duration spent each week in physical activity declined between 1997 and 1999. The proportion of physically- inactive Australians also increased between 1997 and 1999. At the same time, there was a decline in the number of Australians participating in sufficient physical activity to provide a health benefit. In the USA[7], surveys have shown that the prevalence of those reporting insufficient activity increased from 45% in 1990 to 45.9% in 1998.

The drop in the total duration spent on physical activities in Singaporeans between 1997 and 2001 may have serious implications. This trend may be harmful to health in the long run because this may result in more Singaporeans leading sedentary and unhealthy lifestyles. To compensate for this, Singaporeans must increase their participation in sports and walking and stairclimbing activities. Relevant organisations such as the Ministry of Health and the Singapore Sports Council would need to continue promoting sports and physical activity to the local population to address this trend.

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