



## **Preface**

Nowadays, people are more aware of their habitual physical activity, which is believed as an optimum way to maintain healthy life. Therefore, promoting health and living healthily, as well as understanding the effect of inactive lifestyle on health, is an important area of research interest in sport and health professionals.

To demonstrate the effect of regular physical activity on the health condition of Hong Kong adults, a study was commissioned by the Hong Kong Sports Development Board (SDB) to identify the difference in health care cost pattern between physically active and inactive groups in Hong Kong. Difference in number of hospitalisations, doctor visits and annual sick leave between them will be analysed as well.

The Hong Kong Sports Development Board (SDB) commissioned this study to establish a framework linking factors acting upon sport participation and individual health care expenditure in Hong Kong adults, which in turn may predict the health care costs based on sport participation outcome.

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# **A Study between Sport Participation and Individual Health Care Expenditure on Hong Kong Adults**

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The study was carried out for SDB by:

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**Hong Kong Sports Development Board**

**Research Report**

**A Study between Sport Participation and Individual Health Care Expenditure  
on Hong Kong Adults**

香港成年人參與體育活動及個人醫療支出的研究

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**Project Details:*****Objective:***

- To establish a framework linking influencing factors acting upon sport participation and individual health care expenditure in Hong Kong adults;
- To identify the possible underlying factors,
- To analyze the patterns of the sport participation and health care costs among the different age groups of the Hong Kong adults (age 18-30; 31-40; 41-50; 51-60) ;
- To produce reliable and valid research data in the aspect between sport participation and health care costs in Hong Kong;
- To predict the health care costs based on the sport participation outcome.

***2. Justification of the need for the project:***

Health may simply be defined as the absence of disease, or perhaps a sound mind in a sound body (Nevid, Rathus, & Rubenstein, 1998). However, health involves a variety of components, including mental health, physical health, and social health, etc. Health behaviour is defined as an activity undertaken by a person who believes him or herself to be healthy for the purpose of preventing disease or detecting it at an asymptomatic stage (Kasl & Cobb, 1966). Promoting health and living healthily, as well as understanding people's illness behaviour, is an important area of research interest in medical and allied health professionals (Bowling, 1997). Nowadays, people are more aware of their habitual physical activity, which is scientifically proved as an optimum way to maintain healthy life.

While considering the effects of physical activity on health and disease, the latest well-known Surgeon General Report (1996) rendered a series of thorough findings and discussions. It covered various domains such as:

1. higher levels of regular physical activity are associated with lower mortality rates for both older and younger adults;
2. regular physical activity decreases the risk of cardiovascular disease mortality in general and of coronary heart disease mortality in particular;
3. regular physical activity prevents or delays the development of high blood pressure, and exercise reduces blood pressure in people with hypertension;
4. regular physical activity lowers the risk of developing non-insulin-dependent diabetes mellitus;
5. regular physical activity lowers the risk of osteoarthritis and osteoporosis;
6. physical activity appears to relieve symptoms of depression and anxiety and improve mood;
7. physical activity appears to improve health-related quality of life by enhancing psychological well-being and by improving physical functioning in persons compromised by poor health.

This Surgeon General Report contains numerous updated information on health and disease. But very few data were found between the health care costs and those health-related lifestyle variables. One survey of US physicians found 92% reporting that they counseled patients about exercise (Mullen & Tabak, 1989), but in a more recent study, only 49% of primary care physicians stated they believed that regular daily physical activity was very important for the average patients (Wechsler et al., 1996).

The use of longitudinal study is the most appropriate methodology to analyze the relationships among the health and lifestyle variables. Pekkanen et al (1987) studied the influence of high physical activity on the incidence of premature death from any cause among 636 healthy Finnish men aged 45-64. A 20-year follow-up (1964-84) was observed. They concluded that the subjects who had been most active lived 2.1 year longer than those with less active. Another similar study was conducted utilising Harvard University alumni as subjects (Paffenbarger et al, 1984, 1986). A total 16,936 men had been followed from 1962 through 1978. This precise study indicated that playing sport was the most influential in leading to the decreased mortality in this 16-year follow-up study. The more active (>2,000 Kcal/week) of all the subjects had 28% lower risk of death from any cause than the less active men. Men with a sedentary lifestyle (<2,000Kcal/week) were at 31% higher risk of death during the follow-up interval than more active men. Sedentary men who become more active might reduce their risk of death by 24%. Moreover, university of California researchers tracked some 7,000 people for more than 20 years. They found that men with healthier habits lived an average of 11 years longer than those with more negative traits (Consumer reports on health, 1995).

Apparently speaking, the more physically active, the healthier body an individual has. Numerous studies demonstrated the benefits of being physically active. But there is no data indicating that such active lifestyle can save the health care costs. Although Erbsland, Ried, and Ulrich (1998) illustrated the German Model on the impact of the environment on the demands for health and health care, there still cannot consolidate sport participation linking significantly with health capital, visits to doctors, as well as hospital days. Since there are many latent factors

affecting the health care costs, it is rather complex for researchers to obtain an ideal model which contains all variables at the same time.

Many studies indicated the notable relationships between the health and physical activity. Investigations of physical activity and health commonly encounter problems of confounding or interaction with behavioural characteristics, such as eating behaviour, smoking or other social habits. However, there are almost no data obtained to determine the linkage between active participating in sport and the health care costs statistically.

Health care costs accounted for about 14% of the Gross National Product (GNP) in the United States, and around 4-6% of the Gross Domestic Product (GDP) in Hong Kong. There is a need for the local allied health professionals to collect substantial data to determine whether sport participation links with health care costs. Seemingly, doing sport can improve our body both physically and mentally. Thus, it is logical that participating more actively in sport can help minimize the health care expenditure due to achieving good health level. Such details will certainly provide us with valuable information for re-arrangement of health and sport spending in the future.

In addition, with the recent establishment of the Research Grant in the Sports Development Board, more domestic research data on sport and related field are being collected. For example, the sport participation study (1997) provides us with meaningful findings in the role of sport promotion. It is no doubt that sport participation contributes a positive effect to the society and raises better productivity. Understanding the underlying factors between sport participation and

health care costs will surely lead to a better sport delivery system to the Hong Kong people and possibly help to minimize individual's health care expenses by taking active part in physical activities.

The effort of the researcher was directed at investigating the level and patterns of sport participation associated with personal health care costs. Was there any evidence that the more physically active a person was, the less amount of money he or she spent in the health care aspect? What were the perceptions on individual health status between the active and inactive sport participants? What would be the trends involved while people get older? All these interesting questions might be resolved in this study.

### 3. *Methodology of Study:*

- **Subjects**

Hong Kong Chinese residents aged 18-60 were selected as subjects. The age group distribution was arranged as group 1 (age 18-30), 2 (31-40), 3 (41-50), and 4 (51-60). These classifications followed the recent SDB funded project entitled ‘The Wellbeing of Hong Kong People’ conducted by the Hong Kong Baptist University, which allowed for easier and consistent interpretations of the research findings in Hong Kong.

A total of 2,612 subjects responded in this study, including 1170 males and 1442 females.

Table 1 to 5 illustrated the profiles and backgrounds of the respondents.

**Table 1. Gender x Age Group Distribution.**

**age \* gender Crosstabulation**

Count

		gender		Total
		male	female	
age	18-30	335	453	788
	31-40	273	466	739
	41-50	275	251	526
	51-60	287	272	559
Total		1170	1442	2612



**Table 2. Gender x Occupation.****occupation \* gender Crosstabulation**

Count

		gender		Total
		male	female	
occupation	professionals	330	131	461
	clerical/service	367	480	847
	blue collars	203	31	234
	student	126	199	325
	housewives	5	526	531
	retire/no work	135	74	209
	others	4	1	5
Total		1170	1442	2612

**Table 3. Educational Level x Gender Distribution.****education \* gender Crosstabulation**

Count

		gender		Total
		male	female	
education	univeristies/ college	299	305	604
	higher secondary	365	480	845
	lower secondary	307	332	639
	primary	172	255	427
	no education	27	68	95
	others		2	2
Total		1170	1442	2612

**Table 4. Gender x Individual Monthly Income.****income \* gender Crosstabulation**

Count

		gender		Total
		male	female	
income	under 5000	275	726	1001
	5001-10000	230	275	505
	10001-15000	250	204	454
	15001-20000	154	102	256
	20001-30000	134	83	217
	30001 or above	127	52	179
Total		1170	1442	2612

**Table 5. Respondents from Various Regions.****region \* gender Crosstabulation**

Count

		gender		Total
		male	female	
region	HK	343	399	742
	Kowloon	350	348	698
	NT	471	688	1159
	Island	6	7	13
Total		1170	1442	2612

- ***Measurement Instrument***

A structured questionnaire containing the sport participation and personal health care costs variables was developed in Chinese (see Appendix). It contained four areas: (1) profiles and background information of the respondents; (2) sport participation levels and patterns; (3) perception of current health and fitness condition; (4) individual monthly health care expenditures. Underlying factors such as number of visits to doctors, consultation fee, purchase of medicine, sick leave days, and hospital days were investigated.

- ***Procedures***

Cross-sectional and retrospective surveys were employed in this study. Due to limited resources, no longitudinal study would be used. The present research design merely aimed at investigating whether there was a link between sport participation and personal health care expenditure and no intention was made by the researcher to determine any cause-and-effect association.

Each subject was asked to complete the attached questionnaire. The respondents were invited to recall their past experience in sport participation and health care expenditure within past one month.

### Data Collection

- a. Face-to-face interview in public venues
- b. Telephone interview;
- c. Mailing Questionnaires.

### Data Analysis

- a. Internal consistency among all items was checked prior to further analysis;
- b. Descriptive statistics were computed for preliminary review;
- c. Correlation coefficients were calculated between variables under health care costs and sport participation, where necessary;
- d. Comparisons between the active and inactive sport participation groups were made to determine any significant effects on the individual health care expenditure.
- e. Trend analysis might be utilized to determine whether there was significant trends involved with various age groups;
- f. Recommendations were to be made according to the present findings.

● ***Financial Report*** (up to present)

Please see the attached financial report prepared by the Finance Office, Hong Kong Baptist University.

- *Findings*

The findings contained the following sessions: (1) sport participation level and patterns; (2) perception of current health and fitness condition; (3) Individual health-related problems and expenses; and (4) a summary of the major finding.

### *Sport Participation*

Table 6 presented the types of sports preferred by the respondents.

**Table 6. Types of Sports Participation x Gender****Types of sport participation \* gender Crosstabulation**

Count		gender		Total
		male	female	
Types of sports	golf	10	3	13
	jogging	183	221	404
	fitness	82	148	230
	rope jumping	2	16	18
	table tennis	25	19	44
	basketball	108	28	136
	badminton	79	182	261
	squash	17	35	52
	walking	47	81	128
	swimming	104	157	261
	cycling	35	30	65
	soccer	123		123
	hiking	44	44	88
	judo	3	1	4
	volleyball	12	25	37
	tennis	29	23	52
	chinese kung fu/ taichi	32	47	79
	bowling	7	10	17
	ball games	5	3	8
	snooker	14		14
	track & field		1	1
	ice skating		2	2
	dance	3	70	73
	handball	1		1
	taekwondo	2	2	4
	yoga	1	10	11
	water sport	7		7
	war game	1		1
	archery	1		1
	fishing	4		4
	gateball	1		1
Total		982	1158	2140

**Table 7. Types of Sports Participation x Age Groups.****Types of Sports \* age Crosstabulation**

Count		age				Total
		18-30	31-40	41-50	51-60	
Types of Sports	golf	1	1	8	3	13
	jogging	100	150	79	75	404
	fitness	58	59	37	76	230
	rope jumping	4	6	5	3	18
	table tennis	13	10	9	12	44
	basketball	103	11	9	13	136
	badminton	127	85	27	22	261
	squash	32	12	5	3	52
	walking	8	33	48	39	128
	swimming	85	64	51	61	261
	cycling	21	20	18	6	65
	soccer	64	32	16	11	123
	hiking	16	27	17	28	88
	judo	4				4
	volleyball	33	1	3		37
	tennis	22	12	6	12	52
	chinese kung fu/ taichi		3	25	51	79
	bowling	5	11	1		17
	ball games	3	2	2	1	8
	snooker	9	2		3	14
	track & field			1		1
	ice skating	1	1			2
	dance	20	17	13	23	73
	handball	1				1
	taekwondo		4			4
	yoga		1	1	9	11
	water sport	6	1			7
	war game	1				1
	archery			1		1
	fishing			1	3	4
	gateball				1	1
Total		737	565	383	455	2140

***Perception of current health status by the respondents***

Table 8 showed the current health status perceived by the respondents. A majority of the subjects indicated that they perceived their current health situations as 'normal' and 'good'. Similar distributions were found between males and females.

**Table 8. Current Health Perception by the Respondents.**

**Current Health Status Perceived by the Subjects**

Count

		age				Total
		18-30	31-40	41-50	51-60	
current health status	very good	73	64	53	91	281
	good	273	250	181	245	949
	normal	372	390	266	182	1210
	poor	63	33	23	41	160
	very poor	7	2	3		12
Total		788	739	526	559	2612

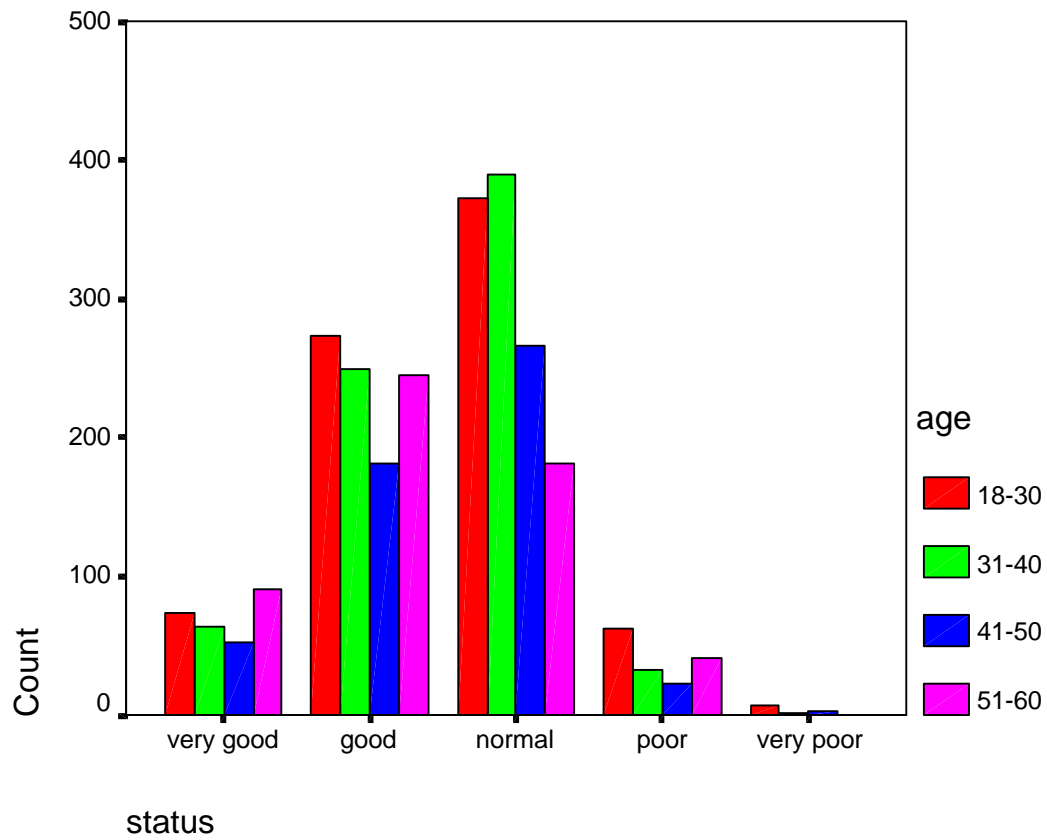
**status \* gender Crosstabulation**

Count

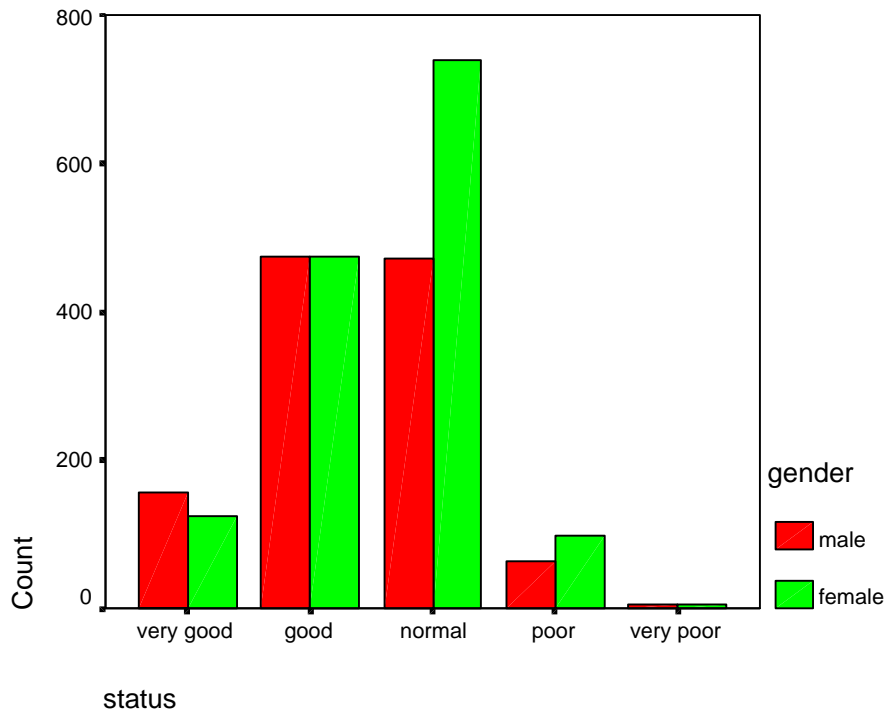
		gender		Total
		male	female	
status	very good	156	125	281
	good	474	475	949
	normal	471	739	1210
	poor	63	97	160
	very poor	6	6	12
Total		1170	1442	2612



**Figure 1. Current Health Status Perceived by the Various Age Groups.**



**Figure 2. Current Health Status Perceived by the Male and Female Respondents.**



An in-depth understanding on the perception of the respondents regarding the effects from sport participation has been explored. Four items has been asked including (1) sport participation can improve health; (2) sport participation can reduce psychological stress; (3) sport participation can reduce personal health care expenditure; and (4) sport participation can enhance daily work performance. Table 9 to 12 summarized these findings.

**Table 9. Sport Participation Improved Health Perceived by the Respondents.**

			Sport Participation Can Improve Health Perceived by the Subjects					Total
			very agree	agree	no comment	disagree	very disagree	
status	very good	Count	131	127	15	8		281
		% within status	46.6%	45.2%	5.3%	2.8%		100.0%
		% within improve health	22.9%	6.9%	9.3%	25.0%		10.8%
		% of Total	5.0%	4.9%	.6%	.3%		10.8%
	good	Count	221	669	50	9		949
		% within status	23.3%	70.5%	5.3%	.9%		100.0%
		% within improve health	38.6%	36.4%	31.1%	28.1%		36.4%
		% of Total	8.5%	25.7%	1.9%	.3%		36.4%
	normal	Count	178	931	85	11	2	1207
		% within status	14.7%	77.1%	7.0%	.9%	.2%	100.0%
		% within improve health	31.1%	50.6%	52.8%	34.4%	66.7%	46.3%
		% of Total	6.8%	35.7%	3.3%	.4%	.1%	46.3%
poor	Count	41	104	10	4		159	
	% within status	25.8%	65.4%	6.3%	2.5%		100.0%	
	% within improve health	7.2%	5.7%	6.2%	12.5%		6.1%	
	% of Total	1.6%	4.0%	.4%	.2%		6.1%	
very poor	Count	2	8	1		1	12	
	% within status	16.7%	66.7%	8.3%		8.3%	100.0%	
	% within improve health	.3%	.4%	.6%		33.3%	.5%	
	% of Total	.1%	.3%	.0%		.0%	.5%	
Total	Count	573	1839	161	32	3	2608	
	% within status	22.0%	70.5%	6.2%	1.2%	.1%	100.0%	
	% within improve health	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	22.0%	70.5%	6.2%	1.2%	.1%	100.0%	

**Table 10. Sport Participation Reduce Psychological Stress Perceived by the Respondents.**

		release stress					Total	
		very agree	agree	no comment	disagree	very disagree		
status	very good	Count	70	151	45	12	2	280
		% within status	25.0%	53.9%	16.1%	4.3%	.7%	100.0%
		% within release stres	27.6%	8.8%	10.0%	7.0%	20.0%	10.7%
		% of Total	2.7%	5.8%	1.7%	.5%	.1%	10.7%
good		Count	107	658	131	50	2	948
		% within status	11.3%	69.4%	13.8%	5.3%	.2%	100.0%
		% within release stres	42.1%	38.2%	29.0%	29.2%	20.0%	36.3%
		% of Total	4.1%	25.2%	5.0%	1.9%	.1%	36.3%
normal		Count	68	809	234	93	4	1208
		% within status	5.6%	67.0%	19.4%	7.7%	.3%	100.0%
		% within release stres	26.8%	47.0%	51.8%	54.4%	40.0%	46.3%
		% of Total	2.6%	31.0%	9.0%	3.6%	.2%	46.3%
poor		Count	9	97	39	14	1	160
		% within status	5.6%	60.6%	24.4%	8.8%	.6%	100.0%
		% within release stres	3.5%	5.6%	8.6%	8.2%	10.0%	6.1%
		% of Total	.3%	3.7%	1.5%	.5%	.0%	6.1%
very poor		Count		6	3	2	1	12
		% within status		50.0%	25.0%	16.7%	8.3%	100.0%
		% within release stres		.3%	.7%	1.2%	10.0%	.5%
		% of Total		.2%	.1%	.1%	.0%	.5%
Total		Count	254	1721	452	171	10	2608
		% within status	9.7%	66.0%	17.3%	6.6%	.4%	100.0%
		% within release stres	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	9.7%	66.0%	17.3%	6.6%	.4%	100.0%

**Table 11. Sport Participation Reduced Personal Health Care Expenditure Perceived by the Respondents.**

			reduce medical cost					Total
			very agree	agree	no comment	disagree	very disagree	
status	very good	Count	49	145	63	18	5	280
		% within status	17.5%	51.8%	22.5%	6.4%	1.8%	100.0%
		% within reduce medical cost	31.8%	10.3%	8.4%	6.4%	25.0%	10.7%
		% of Total	1.9%	5.6%	2.4%	.7%	.2%	10.7%
	good	Count	54	544	261	86	4	949
		% within status	5.7%	57.3%	27.5%	9.1%	.4%	100.0%
		% within reduce medical cost	35.1%	38.8%	34.7%	30.7%	20.0%	36.4%
		% of Total	2.1%	20.9%	10.0%	3.3%	.2%	36.4%
	normal	Count	39	636	378	147	7	1207
		% within status	3.2%	52.7%	31.3%	12.2%	.6%	100.0%
		% within reduce medical cost	25.3%	45.4%	50.3%	52.5%	35.0%	46.3%
		% of Total	1.5%	24.4%	14.5%	5.6%	.3%	46.3%
poor	Count	12	71	48	26	3	160	
	% within status	7.5%	44.4%	30.0%	16.3%	1.9%	100.0%	
	% within reduce medical cost	7.8%	5.1%	6.4%	9.3%	15.0%	6.1%	
	% of Total	.5%	2.7%	1.8%	1.0%	.1%	6.1%	
very poor	Count		6	2	3	1	12	
	% within status		50.0%	16.7%	25.0%	8.3%	100.0%	
	% within reduce medical cost		.4%	.3%	1.1%	5.0%	.5%	
	% of Total		.2%	.1%	.1%	.0%	.5%	
Total	Count	154	1402	752	280	20	2608	
	% within status	5.9%	53.8%	28.8%	10.7%	.8%	100.0%	
	% within reduce medical cost	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	5.9%	53.8%	28.8%	10.7%	.8%	100.0%	

**Table 12. Sport Participation Enhance Daily Work Performance Perceived by the Respondents.**

			help work					Total
			very agree	agree	no comment	disagree	very disagree	
status	very good	Count	59	146	56	15	4	280
		% within status	21.1%	52.1%	20.0%	5.4%	1.4%	100.0%
		% within help work	28.1%	9.2%	9.5%	7.4%	26.7%	10.7%
		% of Total	2.3%	5.6%	2.1%	.6%	.2%	10.7%
	good	Count	67	625	192	62	2	948
		% within status	7.1%	65.9%	20.3%	6.5%	.2%	100.0%
		% within help work	31.9%	39.3%	32.5%	30.7%	13.3%	36.3%
		% of Total	2.6%	24.0%	7.4%	2.4%	.1%	36.3%
	normal	Count	69	725	300	108	6	1208
		% within status	5.7%	60.0%	24.8%	8.9%	.5%	100.0%
		% within help work	32.9%	45.6%	50.8%	53.5%	40.0%	46.3%
		% of Total	2.6%	27.8%	11.5%	4.1%	.2%	46.3%
poor	Count	14	88	41	15	2	160	
	% within status	8.8%	55.0%	25.6%	9.4%	1.3%	100.0%	
	% within help work	6.7%	5.5%	6.9%	7.4%	13.3%	6.1%	
	% of Total	.5%	3.4%	1.6%	.6%	.1%	6.1%	
very poor	Count	1	6	2	2	1	12	
	% within status	8.3%	50.0%	16.7%	16.7%	8.3%	100.0%	
	% within help work	.5%	.4%	.3%	1.0%	6.7%	.5%	
	% of Total	.0%	.2%	.1%	.1%	.0%	.5%	
Total	Count	210	1590	591	202	15	2608	
	% within status	8.1%	61.0%	22.7%	7.7%	.6%	100.0%	
	% within help work	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	8.1%	61.0%	22.7%	7.7%	.6%	100.0%	

Approximately 60% of the total respondents agreed with the fact that sport participation could reduce personal health care expenditure. Even for those subjects responded with poor current health status, there were still over 50% of the subjects indicating that sport participation could reduce their personal health care cost.

Significant inter-item correlations were obtained between the item 'sport participation level' and some major variables:  $r = -0.339$  ( $p < 0.01$ ) 'perceived current health status';  $r = -0.255$  ( $p < 0.01$ )

‘sport participation can improve personal health’;  $r = -0.205$  ( $p < 0.01$ ) ‘release stress’;  $r = -0.073$  ( $P < 0.01$ ) ‘sport participation can reduce personal medical cost’; and  $r = -0.158$  ( $p < 0.01$ ) ‘enhance work performance’. The most interesting correlational finding was between ‘sport participation level’ and ‘amount of money to pay for doctor visits’,  $r = -0.087$  ( $P < 0.05$ ). The more physically active an individual, the less money he or she pays for medical treatment.

In order to determine any statistical difference between ‘active’ and ‘inactive’ sport participation groups, the researcher operationally defined the ‘active’ sports participants as the respondents took part in any types of sports twice or more a week, with a minimum of 20 minutes each time during past one month. The ‘inactive’ group referred to those subjects with no sport participation within last one month, and never achieving a 20-minute exercise period. (see Table 13)

**Table 13. Distribution of Active and Inactive Subjects.**

Gender x Activity Level					
			active vs inactive		Total
			active	inactive	
gender male	Count		173	255	428
	% within gender		40.4%	59.6%	100.0%
	% within active vs inactive		46.3%	39.5%	42.0%
	% of Total		17.0%	25.0%	42.0%
female	Count		201	391	592
	% within gender		34.0%	66.0%	100.0%
	% within active vs inactive		53.7%	60.5%	58.0%
	% of Total		19.7%	38.3%	58.0%
Total	Count		374	646	1020
	% within gender		36.7%	63.3%	100.0%
	% within active vs inactive		100.0%	100.0%	100.0%
	% of Total		36.7%	63.3%	100.0%

## Age x Activity Level

			active vs inactive		Total
			active	inactive	
age	18-30	Count	122	114	236
		% within age	51.7%	48.3%	100.0%
		% within active vs inactive	32.6%	17.6%	23.1%
		% of Total	12.0%	11.2%	23.1%
	31-40	Count	54	238	292
		% within age	18.5%	81.5%	100.0%
		% within active vs inactive	14.4%	36.8%	28.6%
		% of Total	5.3%	23.3%	28.6%
	41-50	Count	59	162	221
		% within age	26.7%	73.3%	100.0%
		% within active vs inactive	15.8%	25.1%	21.7%
		% of Total	5.8%	15.9%	21.7%
	51-60	Count	139	132	271
		% within age	51.3%	48.7%	100.0%
		% within active vs inactive	37.2%	20.4%	26.6%
		% of Total	13.6%	12.9%	26.6%
Total		Count	374	646	1020
		% within age	36.7%	63.3%	100.0%
		% within active vs inactive	100.0%	100.0%	100.0%
		% of Total	36.7%	63.3%	100.0%



Table 14. Doctor Visits between Active and Inactive Subjects within Last One Month.

		Number of Doctor Visits/Month		Total	
		active vs	inactive		
		active	inactive		
doctor	.00	Count	274	407	681
		% within doctor	40.2%	59.8%	100.0%
		% within active vs inactive	73.3%	63.0%	66.8%
		% of Total	26.9%	39.9%	66.8%
	1.00	Count	61	131	192
		% within doctor	31.8%	68.2%	100.0%
		% within active vs inactive	16.3%	20.3%	18.8%
		% of Total	6.0%	12.8%	18.8%
	2.00	Count	19	66	85
		% within doctor	22.4%	77.6%	100.0%
		% within active vs inactive	5.1%	10.2%	8.3%
		% of Total	1.9%	6.5%	8.3%
	3.00	Count	13	27	40
		% within doctor	32.5%	67.5%	100.0%
		% within active vs inactive	3.5%	4.2%	3.9%
		% of Total	1.3%	2.6%	3.9%
	4.00	Count	6	9	15
		% within doctor	40.0%	60.0%	100.0%
		% within active vs inactive	1.6%	1.4%	1.5%
		% of Total	.6%	.9%	1.5%
	5.00	Count		1	1
		% within doctor		100.0%	100.0%
		% within active vs inactive		.2%	.1%
		% of Total		.1%	.1%
	6.00	Count		3	3
		% within doctor		100.0%	100.0%
		% within active vs inactive		.5%	.3%
		% of Total		.3%	.3%
	8.00	Count	1		1
		% within doctor	100.0%		100.0%
		% within active vs inactive	.3%		.1%
		% of Total	.1%		.1%
	10.00	Count		2	2
		% within doctor		100.0%	100.0%
		% within active vs inactive		.3%	.2%
		% of Total		.2%	.2%
Total		Count	374	646	1020
		% within doctor	36.7%	63.3%	100.0%
		% within active vs inactive	100.0%	100.0%	100.0%
		% of Total	36.7%	63.3%	100.0%

**Table 15. Medical Expenditures between Active and Inactive Subjects within Last One Month.**

Comparisons between Active and Inactive Groups on Health Care Expenses

active vs inactive		N	Mean	Std. Deviation	Std. Error Mean
doctor amount	active	94	228.2340	337.3334	34.7933
	inactive	227	302.0617	424.9533	28.2051
medicine amount	active	374	26.5027	77.2004	3.9919
	inactive	644	45.1460	135.5728	5.3423
insurance amount	active	130	341.6308	360.8955	31.6526
	inactive	192	401.2161	379.4273	27.3828

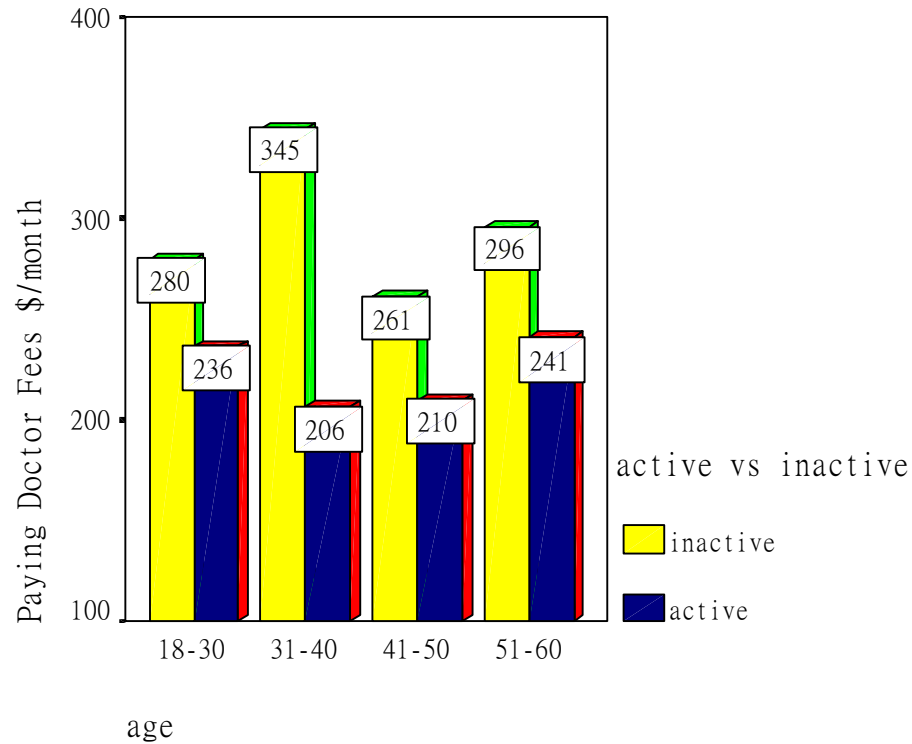
Based on these data recalled from the respondents within last one month, the mean amount of money spent on paying doctor fees and purchasing medicine were both reduced by \$73.80 and \$18.60, respectively as shown in the present data set. The mean amount of paying doctor fees was decreased from \$302 to \$228 whereas the amount of purchasing medicine was dropped from \$45 to \$26.50, indicating that a potential linkage between these active and inactive sport participants on personal health care cost.

**Table 16. Breakdown on Paying Doctor Fees between Age Groups and Activity Level.****Descriptive Statistics**

Dependent Variable: doctor amount

active vs inactive	age	Mean	Std. Deviation	N
active	18-30	236.3750	315.7778	24
	31-40	206.2500	171.0811	12
	41-50	209.7143	216.3890	21
	51-60	240.5946	441.2947	37
	Total	228.2340	337.3334	94
inactive	18-30	279.8511	285.6377	47
	31-40	344.6145	562.8708	83
	41-50	261.0741	319.2968	54
	51-60	295.6744	358.9116	43
	Total	302.0617	424.9533	227
Total	18-30	265.1549	294.6324	71
	31-40	327.1368	530.9787	95
	41-50	246.6933	293.6200	75
	51-60	270.2000	397.4818	80
	Total	280.4424	402.1715	321

**Figure 3. Paying Doctor Fees Amount between Age and Sport Participation Level.**



***Personal health care related items between active and inactive respondents***

This present survey deliberately collected descriptive data concerning the general patterns on personal health care expenditures with regard to sport participation. Table 17 showed only 3.8% of the total respondents experienced sport injury.

**Table 17. Injury Resulted from Sport Participation.**

**Injury caused by sport participation**

			gender		Total
			male	female	
injury	yes	Count	65	34	99
		% within injury	65.7%	34.3%	100.0%
		% within gender	5.6%	2.4%	3.8%
		% of Total	2.5%	1.3%	3.8%
	no	Count	1103	1407	2510
		% within injury	43.9%	56.1%	100.0%
		% within gender	94.4%	97.6%	96.2%
		% of Total	42.3%	53.9%	96.2%
Total		Count	1168	1441	2609
		% within injury	44.8%	55.2%	100.0%
		% within gender	100.0%	100.0%	100.0%
		% of Total	44.8%	55.2%	100.0%

**Table 18. Injury Frequencies from Sport Participation**

**Injury Frequency**

			gender		Total
			male	female	
Injury times	1.00	Count	56	30	86
		% within injury time	65.1%	34.9%	100.0%
		% within gender	86.2%	88.2%	86.9%
		% of Total	56.6%	30.3%	86.9%
	2.00	Count	5	3	8
		% within injury time	62.5%	37.5%	100.0%
		% within gender	7.7%	8.8%	8.1%
		% of Total	5.1%	3.0%	8.1%
	3.00	Count	1	1	2
		% within injury time	50.0%	50.0%	100.0%
		% within gender	1.5%	2.9%	2.0%
		% of Total	1.0%	1.0%	2.0%
	4.00	Count	1		1
		% within injury time	100.0%		100.0%
		% within gender	1.5%		1.0%
		% of Total	1.0%		1.0%
	5.00	Count	2		2
		% within injury time	100.0%		100.0%
		% within gender	3.1%		2.0%
		% of Total	2.0%		2.0%
Total		Count	65	34	99
		% within injury time	65.7%	34.3%	100.0%
		% within gender	100.0%	100.0%	100.0%
		% of Total	65.7%	34.3%	100.0%

*Average monthly sport participation expenses reported by the subjects*

Table 19 summarized the general monthly expenses by taking part in sport between active and inactive subjects. The average sport participation costs were relatively small. However, these figures may not be necessarily representing the real situations as the standard deviations were rather diversified. The range of monthly expenses in sport was also quite broad.

**Table 19. Average Monthly Expenses on Sport Related Items**

Average Expenses from Sport Participation/Month

	N	Range	Minimum	Maximum	Mean	Std. Deviation
training cost	374	800.00	.00	800.00	31.2059	95.8222
booking fee	374	2000.00	.00	2000.00	56.3743	199.5699
sport equipment	374	2000.00	.00	2000.00	45.7032	180.2331
sport wear	374	1500.00	.00	1500.00	43.8770	136.4617
Valid N (listwise)	374					

● *Summary of the Findings – Potential Linkage between Sport Participation and Individual Health Care Expenditures*

**Table 20. Average Health Care Service between Physically Active and Inactive Adults within One Month Period.**

Medical Service	Physically Active	Physically Inactive	Difference
Percent hospitalized	0.5%	1.1%	- 0.6%
Length of hospital stay (Median)	2.5 days	4 days	- 1.5 days
Require operation	0.5%	0.9%	- 0.4%
Taking sick leave	10.4%	18.4%	- 8%
2 days	17.1%	24.8%	- 7.7%
3 days or more	17.3%	21.1%	- 3.8
Doctor visits			
None	73.3%	63%	+ 10.3%
1	16.3%	20.3%	- 4%
2	5.1%	10.2%	- 5.1%
3 or more	5.4%	6.6%	- 1.2%
Mean medical expense/ person	\$228.20	\$302.0	- \$73.80
Mean medications expense/ person	\$26.50	\$45.10	- \$18.60
*Mean health care insurance/ person	\$341.60	\$401.20	- \$59.60
Total Direct Medical Expenses Per Person Including Insurance Expenses	\$596.30	\$748.30	- \$152
Total Direct Medical Expenses Excluding Insurance Expenses	\$254.70	\$347.10	- \$92.40

\*Insurance expenses may be included in paying doctor fees and purchasing medicine.

## *Conclusions*

Table 20 summarized the major findings of this project. The following items were smaller in physically active individuals as compared with their inactive counterparts: (a) percent hospitalized, (b) length of hospital stay, (c) sick leave days, (d) number of doctor visits, (e) medical cost per person, (f) medications cost per person, and (g) health care insurance cost per person. With the recent financial cut in the Hospital Authority, it is time for us to discover some alternative ways to better protect our citizens from illness. Maintaining healthy bodies by being physically active seems the most cost-effective solution. The present findings provided evidence in Hong Kong that physically active is associated with individual health care financial benefits. It indicated that a positive financial return may result from possessing physically fit bodies. Future research is needed to refine and elucidate this linkage between sport participation and health care expenditures in Hong Kong.



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● *Appendix*

香港康體發展局 • 香港浸會大學許士芬博士體康研究中心  
體育參與及個人醫療支出的研究

問卷內容(甲部)

1. 過去一個月內，你曾參與體育活動約幾次? \_\_\_\_\_ 次/ (或每週 \_\_\_\_\_ 次)
2. 你若做運動，通常每次有否超過 20 分鐘？  
(1) \_\_\_\_\_ 有; (2) \_\_\_\_\_ 沒有; (3) \_\_\_\_\_ 有時
3. 請順序列出你最常參與的三項體育活動  
(1) \_\_\_\_\_; (2) \_\_\_\_\_; (3) \_\_\_\_\_
4. 你會如何評估你目前的健康狀況  
(1) \_\_\_\_\_ 很好; (2) \_\_\_\_\_ 好; (3) \_\_\_\_\_ 一般; (4) \_\_\_\_\_ 差; (5) \_\_\_\_\_ 很差
5. 請問你認為做運動對以下情況會否有影響？
 

	(1)	(2)	(3)	(4)	(5)
	極會	會	無意見	不會	極不會
5a 做運動會改善你的健康	(1)___	(2)___	(3)___	(4)___	(5)___
5b 做運動能減低你的精神壓力	(1)___	(2)___	(3)___	(4)___	(5)___
5c 做運動可以減少你的醫療支出	(1)___	(2)___	(3)___	(4)___	(5)___
5d 做運動能改善你目前的健康狀況，有助應付你的工作	(1)___	(2)___	(3)___	(4)___	(5)___
6. 在過去一個月內，你有否因健康問題而請假：
  - (1) \_\_\_\_\_ 有; 共 \_\_\_\_\_ 天 (到第 7 題)
  - (2) \_\_\_\_\_ 否 (到第 8 題)
7. 有沒有因此(因病請假) 而影響你的收入？
  - (1) \_\_\_\_\_ 有; 請註明大約多少金錢 \$ \_\_\_\_\_
  - (2) \_\_\_\_\_ 沒有
8. 你有否購買醫療保險？
  - (1) \_\_\_\_\_ 有; 個人平均每月支付約 \$ \_\_\_\_\_
  - (2) \_\_\_\_\_ 沒有
9. 你在過去一個月內，看門診醫生的次數：
 

\_\_\_\_\_ 次; 約共需多少錢 \$ \_\_\_\_\_

10. 你在過去一個月內，看專科醫生 (不包括門診) 的次數：  
\_\_\_\_\_ 次；約共需多少錢 \$\_\_\_\_\_
11. 你在過去一個月內，支付購買藥物約 \$\_\_\_\_\_ (包括中西成藥, 醫生費除外)
12. 你在過去一個月內，有否因健康問題而要住院  
(1)\_\_\_\_\_ 有 - 住院 \_\_\_\_\_ 天 ；  
(2)\_\_\_\_\_ 沒有
13. 你在過去一個月內，有否因健康問題而要做手術  
(1)\_\_\_\_\_ 有 - 支付費用 \$\_\_\_\_\_ ；  
(2)\_\_\_\_\_ 沒有
14. 當遇上一般疾病 (例如傷風感冒) 時，你會找 (只選一項)  
(1)\_\_\_\_\_ 公立門診服務  
(2)\_\_\_\_\_ 私家醫生  
(3)\_\_\_\_\_ 中醫師  
(4)\_\_\_\_\_ 不會看醫生  
(5)\_\_\_\_\_ 自行購買成藥  
(6)\_\_\_\_\_ 只作休息  
(7)\_\_\_\_\_ 其他 (請註明)\_\_\_\_\_
15. 過去一個月內，你有否因做運動而受傷  
(1) \_\_\_\_\_ 有； \_\_\_\_\_ 次 - 共需支付多少醫療費用：約\$\_\_\_\_\_  
(2) \_\_\_\_\_ 沒有
17. 你平均每月的運動消費約共多少錢? (例如訂場、用具等)  
(1) 運動訓練班\$\_\_\_\_\_ (2) 訂場\$\_\_\_\_\_  
(3) 購買運動用品\$\_\_\_\_\_ (4) 購買運動服裝\$\_\_\_\_\_

**(乙部)** 請勿填寫姓名

1. 性別：(1)\_\_\_\_\_ 男；(2)\_\_\_\_\_ 女
2. 年齡：(1)\_\_\_\_\_ 18-30；(2)\_\_\_\_\_ 31-40；(3)\_\_\_\_\_ 41-50；(4)\_\_\_\_\_ 51-60
3. 職業：

(1)	專業人士
(2)	文職 / 服務
(3)	藍領
(4)	學生

(5)	家庭主婦
(6)	退休 / 待業
(7)	其他 (請註明) _____

## 4. 教育程度：

(1)	大專或以上
(2)	高中
(3)	初中
(4)	小學
(5)	無受教育
(6)	其他 (請註明) _____

## 5. 每月收入：

(1)	\$ 5000 或以下
(2)	\$ 5001 - \$ 10000
(3)	\$ 10001 - \$ 15000
(4)	\$ 15001 - \$ 20000
(5)	\$ 20001 - \$ 30000
(6)	\$ 30001 或以上

## 6. 居住地區：(1)\_\_\_\_\_ 香港; (2)\_\_\_\_\_ 九龍; (3)\_\_\_\_\_ 新界; (4)\_\_\_\_\_ 離島

完

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