A correlational study between exercising behavior and social support of elderly in Hong Kong

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Chapter 1

INTRODUCTION

According to “Hong Kong 2011 Population Census Thematic Report: Older Persons”, there were 941,312 older persons in Hong Kong in 2011. And According to the findings of the “Healthy Exercise for All campaign – Physical Fitness Test for the Community” released in 2012, over 60% of the elderly were overweight or obese. According to the “Consultancy Study on Sport for All – Participation Patterns of Hong Kong People in Physical Activities” submitted by the Chinese University of Hong Kong, the “Baseline Indicator” for physical activities requires participation in physical activity of moderate or above intensity at least three days a week with an accumulation of at least 30 minutes a day. The campaign also revealed that less than 40% of the elderly may be considered “Active”. This reflected that most elderly people did not carry out sufficient physical activities to maintain good health.

Social support might be a factor that motivates elderly to engage in a healthier lifestyle. A Study from America that focused on middle to old age women found that participants that had low social support level would
result in a low physical activity level. (Eyler, 1999). That is, physical activity level were positively correlated to social support level. Yet, the correlation between types and styles of social support and exercise behavior in Hong Kong has not been established. The purpose of this study was to examine the correlation among types and styles of social support and exercise behavior in Hong Kong elderly. The ultimate aim of this study is to examine the effectiveness of giving more social support to elderly in order to increase their physical activity level.

Statement of problem

The purpose of this study was to examine the correlation between the exercise behavior and the level of social support of the elderly. The Chinese Version of the Physical Activity Scale for the Elderly [PASE-C] (Ngai, 2012) was used to describe the exercise behavior of the elderly. Besides, the level of social support was tested by the Social Support questionnaire in Chinese (Sarason et al. 1983). So after correlating the data in the two questionnaires, I could find whether the elderly’s exercise behavior was related to their level of social support.
The following hypotheses were set.

1. There would be a positive significant correlation between the PASE-C scores and the SSQ score.

2. There would be a positive significant correlation between the PASE-C and the Emotional support score.

3. There would be a positive significant correlation between the PASE-C and the Tangible support score.

4. There would be a positive significant correlation between the PASE-C and the Acceptability score.

5. The PASE-C score of male participants would be significantly greater than the PASE-C score of female participants.

6. There would be no significant gender difference in the SSQ score.

Definition of terms

These terms were defined.
Exercising behavior

Exercise behavior was defined as the frequency, type and intensity of physical activity that a person performs in his or her normal behavior. This was described by the Physical Activity Scale for the Elderly (PASE).

The “Baseline Indicator” for physical activities requires participation in physical activity of moderate or above intensity at least three days a week with an accumulation of at least 30 minutes a day.

Social support

Albrecht and Adelman (1987) defined social support as “verbal and nonverbal communication between recipients and providers that reduces uncertainty about the situation, the self, the other, or the relationship, and functions to enhance a perception of personal control in one’s life experience” (p. 19). In this study, Social support had 3 subscales: tangible support means the provision of financial assistance, material goods, or services; emotional support means the provision of nonmaterial support such as love or caring; Acceptability of the support means how much the participants welcome to the support giving to him or her.
Delimitations

The study was delimited to the followings:

1. The participants of the study were delimited to elderly aged above 65 years old in Hong Kong.

2. The participants of the study would answer a survey on the Social Support questionnaire to test their level of social support.

3. Convenience sampling was used to reach to the participants.

Limitations

The study was limited by the following factors:

1. The participants’ attitude of the test would affect the result of the study.

2. Since convenience sampling were used, sampling error would occur which might affect the result of study.
Significance of study

Firstly, this study could find out the descriptive statistics about the exercise behavior of the elderly in Hong Kong. By comparing the statistics, By knowing the correlation between the Exercise Behavior and the level of social support of the elderly, further studies could be done to investigate the cause-and-effect relationship between these two factors. This study may arouse awareness among government in the promotion of Leisure and Cultural Activities for the Elderly, also strengthening the Community Support Services for them. The Study would be very helpful for researcher to find out solution to increase the exercise participation of the elderly as well.
Chapter 2

REVIEW OF LITERATURE

The present study was to examine the correlation between Exercise behavior and Social Support of Hong Kong’s elderly. The review of literature for the present study focused on eight aspect: a) Definition Of Social Support, b) Social Support Questionnaire, c) physical activity scale for the elderly, d) Reliability and Validity of the questionnaires, e) Social support of Hong Kong elderly, f) Health and exercise behavior, g) Similar articles and h) Summary.

Definition Of Social Support

Social support is the perception and actuality that one is cared for, has assistance available from other people, and that one is part of a supportive social network (Langford, 1997). In this research, Social support would be categorized in 3 division, one is emotional support while the other is tangible support and acceptability.

Emotional support

Emotional support means the warmth and nurturance provided by sources of social support (Taylor, 2011).
Besides, Langford et al. (1997) describe Emotional Support as the offering of empathy, concern, affection, love, trust, acceptance, intimacy, encouragement, or caring.

Tangible support

Tangible support is defined as the provision of financial assistance, material goods, or services. (Heaney, 2008), this form of social support encompasses the concrete, direct ways people assist others.

Acceptability

Acceptability is defined as the level of using the support by the subjects (肖水源, 1994). This is affected by whether the participants want to accept or consume the support or not. For example, some of the participants get a high level of tangible support and emotional support, but they think they do not need the support so they have a low Acceptability to the support.

For prior study, it has shown that Hong Kong elderly adults were living relatively inactive lifestyles. In motivating elderly persons to participate in a physically active lifestyle, their support networks must
be strengthened. More incentives and encouragement for older adults to be physically active and enjoy the health benefits resulting from participation in physical activity and exercise are necessary.

Social Support questionnaire

Social Support questionnaire (Cohen, 1985) is meant to establish how people within a society associate with one another and enlist other people’s help in need. The survey carried out through such questionnaires reflect how people in a specific community relate, how they trust each other and the level of actions and support that they give to others. It measures the strengths of a person’s social network and his or her chances of getting help should a need arise. The English version of the initial 27-item social support questionnaire was invented in 1983 (Sarason, 1983). Cohen (1985) invented a shorten version of social support questionnaire which contains 12 items. Base on these, a Chinese professor Xiao invented the 10-item Chinese version of Social Support questionnaire (PASE-C) (肖水源, 1994). It contains 3 subscales (tangible support, emotional support and the Acceptability of the support).

The scoring method was discussed in chapter 3.
the Physical Activity Scale for the Elderly

Physical Activity Scale for the Elderly measures the level of self-reported physical activity in individuals aged 65 years or older and is comprised of items regarding occupational, household, and leisure activities during the previous 7-day period. The scoring method of PASE is quite complicated. The questions are scored differently. Participation in leisure-time and strengthening activities are scored as never, seldom (1-2 days per week), sometimes (3-4 days per week), and often (5-7 days per week). Duration of these activities is scored as less than 1 hour, 1-2 hours, 2-4 hours and more than 4 hours. Household and work related activities are scored as yes or no. In work related activities, paid or unpaid work is scored in hours/week. The total PASE score is computed by multiplying either the time spent in each activity (hours per week) or participation (i.e., yes/no) in an activity, by empirically derived item weights and then summing overall activities. The overall PASE score ranges from 0 to 400 or more. The detailed scoring method was shown in chapter 3.
Reliability and Validity of the Questionnaires

The Reliability and Validity of the Chinese Version of the Physical Activity Scale for the Elderly [PASE-C] was well established. According to the research of done by Ku et al (2013), PASE-C is a reliable and valid instrument for assessing the energy expenditure of overall lifestyle physical activities among community-dwelling older adults. They correlated 263 elderly participants’ PACE score, accelerometer measures and their handgrip strength, and found that the Chinese Version of the Physical Activity Scale for the Elderly [PASE-C] was reliable and valid.

According to the research done by Wen et al. (2008), the social Support questionnaire (Chinese Version) are found to have a high reliability and validity. Totally 268 participants were checked under cluster sampling. The social support scale was divided into 3 subscales, the tangible support, the emotional support and the Acceptability. The three factors could explain 55.84% of total scale variance. The correlated coefficients between 3 subscales ranged 0.462-0.664, which were lower than the correlated coefficients between total scale and three subscales, and showed high construct validity of the scale. Reliability Coefficient of the total score, the
tangible support subscale, emotional support subscale and the acceptability to the support were 0.896, 0.849, 0.825, 0.833 respectively, which revealed that SSQ and its subscales had high reliability.

Social support of Hong Kong elderly

Recently, there were lack of researches focused on the level of social support given to the elderlies in Hong Kong. An older research showed that majority of elderlies received sufficient support from family members, including money and help (Siu, 2000). However, there were not much Recent figure describing the social support situation in Hong Kong.

Health and exercise behavior

Exercise Behavior was found to be one of the important factors of elderly’s health. According to a research done by the Chinese University of Hong Kong, the mortality risk is reduced with increasing physical activity, daily fish intake and moderate alcohol consumption, and avoidance of smoking; hospitalization is inversely associated with increasing activity (Woo, Ho & Yu, 2002). So, keeping elderly to join more physical activities and do more exercise in their daily behavior is the first priority to do in order to improve the health status of
them. So, if their exercise behavior is correlated with social support, government can have a new direction to enhance the health status of the elderly.

Similar articles

Similar researches had been done in foreign countries. Resnick et al. (2005) aimed to find out the effect social support on exercise behavior in older adults in USA. It was found that Friend support indirectly influenced exercise through self-efficacy and outcome expectations. This suggested intervention to improve exercise behavior in older adults should incorporate social supports to strengthen self-efficacy and outcome expectations related to exercise.

However, there were some research could not find the relationship between social support and exercise behavior. According to another research done by Saint Louis University in USA (Kao, 2008), it focused on the correlation of Social support, exercise behavior, and quality of life. The only findings from this research was exercise behavior had a positive and direct effect on quality of life and accounted for 9% of the variance in the quality of life, but it failed to find a positive relationship between social support and exercise behavior nor lifestyle.
So, performing this research was worth to find the demographic statistics in Hong Kong, and to examine the correlation between the social support and exercise behavior of elderly in Hong Kong.

Summary

According to prior researches, the amount of exercise in an elderly’s daily life was found to be contributing a lot in his or her health. However, the physical activity level of elderly in Hong Kong is in a low level. In order to encourage elderly to exercise more, this research’s aim was find whether there was a relationship between exercise behavior and social support in Hong Kong elderly. Similar researches had been done in USA and some of the research supported this hypothesis but some did not. So, this research aimed to find out the real situation of elderly in Hong Kong.
Chapter 3

Method
The method of this study was divided into the following sections: (a) sample of selection; (b) measuring instruments; (c) testing procedures; (d) method of analysis and (e) Scoring method of the questionnaire.

sample of selection

In this study, the target sample of elderly consisted of 75 males and 75 female aged above 65 years old from Hong Kong. Convenience sampling method was used to select participants.

Instruments

The questionnaire that distributed to the participants contains two main parts, the first part is the social Support questionnaire (Chinese Version) (Sarason et al. 1983) and the second part is the Physical Activity Scale for the Elderly questionnaire (Chinese version) (Ngai, 2012). SSQ describes the level of social support in three domains: tangible support, emotional support, and the level of acceptance to the support. The two
questionnaires have been proved to be reliable and Valid as shown in the review of literature (Wen et al., 2008).

Procedures

Elderly answered the face-to-face administrated questionnaire which is mainly combined the Physical Activity Scale for the Elderly questionnaire and the social Support questionnaire. Elderly answered the questionnaire individually administrated by the present investigator. The questionnaire took 10 to 15 minutes to complete by each elderly. Moreover, the present investigator helped the elderly to fill the form following the procedures printed in the manual so that reliable and accurate data could be obtained.

Data analysis

Variables analyzed included gender, Physical Activity score (PASE) and the 3 subscales of Social Support Score(SSS), the mean and standard deviation, as well as minimum and maximum values of above variables were calculated by the Statistical Package for Social Science (SPSS). A One-Sample Kolmogorov-Smirnov Test was used to check the normality of the PES-score, SSQ-score and the
subscales. Also, Pearson Product Moment Coefficient of Correlation (r) was used to determine the correlations among variables. The main dependent variable was the Physical activity level of the participants. The main independent variable was the Social support score of the participants. Independent Samples T-Test was computed to determine the gender difference between male and female participants in both tests. An alpha level of .05 was used to determine significance.

Scoring method of the questionnaires

The scoring Method of social support questionnaire is described as follows:

1. For question 1-4 and 8-10, items 1, 2, 3 and 4 represent 1, 2, 3 and 4 points respectively.

2. For question 5, there are 4 sub-questions. A, B, C and D represent 1, 2, 3, 4 points. A mean of the 4 sub-questions were taken as the score of question 5.

3. For question 6 and 7, if none of the items was chosen, no points were counted. Each item chosen count one points. If four items were chosen, still four points would be counted.

4. The total Social support score was get by adding the score of question 1 to 10.
5. For the 3 subscales:

The Tangible support score was gotten by Summing up question 2, 6 and 7. The Emotional support was gotten by summing up question 1, 3, 4 and 5. The Acceptability of the support was gotten by Summing up question 8, 9 and 10.

The scoring Method of the physical activity scale for the elderly (PASE-C) is shown in the following table. Question 1 count no marks.

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
<th>decoding</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>strolling (days)</td>
<td>(1)=0 (2)=1.5</td>
<td>Q(2)<em>Q(2.1)</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3)=3.5 (4)=6</td>
<td>20/7</td>
</tr>
<tr>
<td>2.1</td>
<td>strolling (hours)</td>
<td>(1)=0.5 (2)=1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3)=3 (4)=5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Light exercise</td>
<td>(1)=0 (2)=1.5</td>
<td>Q(3)<em>Q(3.1)</em></td>
</tr>
<tr>
<td></td>
<td>(days)</td>
<td>(3)=3.5 (4)=6</td>
<td>21/7</td>
</tr>
<tr>
<td>3.1</td>
<td>Light exercise</td>
<td>(1)=0.5 (2)=1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(hours)</td>
<td>(3)=3 (4)=5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Moderate exercise</td>
<td>(1)=0 (2)=1.5</td>
<td>Q(4)<em>Q(4.1)</em></td>
</tr>
<tr>
<td></td>
<td>(days)</td>
<td>(3)=3.5 (4)=6</td>
<td>21/7</td>
</tr>
<tr>
<td>4.1</td>
<td>Moderate exercise</td>
<td>(1)=0.5 (2)=1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(hours)</td>
<td>(3)=3 (4)=5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Heavy exercise</td>
<td>(1)=0 (2)=1.5</td>
<td>Q(5)<em>Q(5.1)</em></td>
</tr>
<tr>
<td>Days</td>
<td>Activity</td>
<td>Hours</td>
<td>Days</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>5.1</td>
<td>Heavy exercise</td>
<td>(1)=0.5</td>
<td>(2)=1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3)=3</td>
<td>(4)=5</td>
</tr>
<tr>
<td>6</td>
<td>Strength exercise</td>
<td>(1)=0</td>
<td>(2)=1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3)=3.5</td>
<td>(4)=6</td>
</tr>
<tr>
<td>6.1</td>
<td>Strength exercise</td>
<td>(1)=0.5</td>
<td>(2)=1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3)=3</td>
<td>(4)=5</td>
</tr>
<tr>
<td>7</td>
<td>Light housework</td>
<td>(1)=0</td>
<td>(2)=1</td>
</tr>
<tr>
<td>8</td>
<td>Heavy housework</td>
<td>(1)=0</td>
<td>(2)=1</td>
</tr>
<tr>
<td>9.1</td>
<td>Repair housework</td>
<td>(1)=0</td>
<td>(2)=1</td>
</tr>
<tr>
<td>9.2</td>
<td>Heavy gardening work</td>
<td>(1)=0</td>
<td>(2)=1</td>
</tr>
<tr>
<td>9.3</td>
<td>Light gardening work</td>
<td>(1)=0</td>
<td>(2)=1</td>
</tr>
<tr>
<td>9.4</td>
<td>Take care of others</td>
<td>(1)=0</td>
<td>(2)=1</td>
</tr>
<tr>
<td>10.2</td>
<td>Work that need to stand or walk</td>
<td>(1)=0,</td>
<td>(2)(3)(4)=</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The total PASE score = Q(2)*Q(2.1)* 20/7 + Q(3)*Q(3.1)* 21/7 + Q(4)*Q(4.1)* 21/7 + Q(5)*Q(5.1)* 23/7 + Q(6)*Q(6.1)* 30/7 + Q(7)*25 + Q(8)*25 + Q(9.1)*25 + Q(9.2)*25 + Q(9.3)*25 + Q(9.4)*25 + Q(10.1)*3
The score ranged from 0 to 400.
Chapter 4

Result

The participants in this research were 75 male and 75 female participants that aged above 65 years old. Questionnaires were given to the participants. The Questionnaire contains two parts, the social support part and the physical activity part. The social support contained 3 subscales: tangible support, emotional support and the Acceptability of the support. So, there were totally five scores: Total score of physical activity questionnaire (PASE-C), Total score of social support questionnaire (SSQ), Tangible support score (SSQ-T), Emotional support score (SSQ-E) and Acceptability score (SSQ-A). The age of the participants were shown in table 2.

Table 2 age of the participants

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>71.9</td>
<td>4.839</td>
<td>65</td>
<td>82</td>
</tr>
</tbody>
</table>
A brief statistic of the age of participants was shown below. The 65-69 age group contains 51 participants, which was about 33% of total number of participants. The 70-74 contains 61 participants, which was about 40% of total number of participants. The 75-79 age group and “80 or above” age group contains 23 participants (15%) and 15 participants (10%) respectively. Since participants were randomly chosen parks and play grounds, most of participants interviewed were around 70-74 years old.
All data were inputted in SPSS for calculation. Final scores of each participant were calculated according to the scoring method of the questionnaire. The following Table 4 shows the basic descriptive result of the five main score.

<table>
<thead>
<tr>
<th>Table 4 Descriptive Statistics of 5 main score</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>PAS</td>
</tr>
<tr>
<td>SSQ</td>
</tr>
<tr>
<td>TANGIBLE</td>
</tr>
<tr>
<td>EMOTIONAL</td>
</tr>
<tr>
<td>ACCEPTABILITY</td>
</tr>
</tbody>
</table>

*All data were rounded to 3 significant figures

A two-tailed One-Sample Kolmogorov-Smirnov Test was computed to check the normality of the score. The significant level was taken to 0.05. Table 5 shows the result of One-Sample Kolmogorov-Smirnov Test.
Table 5 One-Sample Kolmogorov-Smirnov Test

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSQ_SCORE_NEW</td>
<td>0.070</td>
</tr>
<tr>
<td>PASE_SCORE_NEW</td>
<td>0.072</td>
</tr>
<tr>
<td>TANGIBLE_SSQ</td>
<td>0.130</td>
</tr>
<tr>
<td>EMOTIONAL_SSQ</td>
<td>0.097</td>
</tr>
<tr>
<td>ACCEPTABILITY_SSQ</td>
<td>0.115</td>
</tr>
</tbody>
</table>

*All data were rounded to 3 significant figures

The total SSQ Score and total PASE Score have a p value of 0.068 and 0.200 respectively, which were greater than 0.05. The null hypothesis "The distribution is not normal" was rejected, there was insignificant evidence to suggest the distribution was not normal. So, the normality of the two scores (total SSQ Score and total PASE Score) were accepted.

Table 6 Skewness and Kurtosis of the SSQ and PASE Score

<table>
<thead>
<tr>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Std. Error</td>
</tr>
<tr>
<td>SSQ_SCORE_NEW</td>
<td>0.172</td>
</tr>
<tr>
<td>PASE_SCORE_NEW</td>
<td>0.272</td>
</tr>
</tbody>
</table>
Further, Skewness and the Kurtosis of the score were calculated. As $0.172 < 2(0.198)$, $\text{abs}(0.272) < 2(0.198)$, $0.057 < 2(0.394)$, $\text{abs}(-0.74) < 2(0.394)$, both Skewness and Kurtosis statistic were lower than 2 times of the standard error. So, the two total scores (the Total SSQ score and the total PASE score) were assumed to be normally distributed.

For the 3 subscales, the p values were all less than 0.05. So, the null hypothesis “The distribution is not normal” was accepted, there was significant evidence to suggest the distribution was not normal. We assume that the 3 subscales were not normally distributed.
After checking the normality of the score, the
descriptive statistics of the physical activity scale for
the elderly questionnaire was firstly computed. The
result was shown in Table 7.

<table>
<thead>
<tr>
<th>Physical Activities</th>
<th>Number of days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>strolling</td>
<td>3(2%)</td>
</tr>
<tr>
<td>Light exercise</td>
<td>72(48%)</td>
</tr>
<tr>
<td>Moderate exercise</td>
<td>86(57.3%)</td>
</tr>
<tr>
<td>Heavy exercise</td>
<td>109(72.7%)</td>
</tr>
<tr>
<td>Strength exercise</td>
<td>128(85.3%)</td>
</tr>
</tbody>
</table>

The physical activity behavior of the participants was
shown in table 6. 98% of the elderly had spent at least 1
day or above in strolling or similar activities.
Strolling was the activity that had the highest
participation rate in this study. 32(21.3%) participants
did go for a walk for 3-4 days per week and 66(44%)
participants had gone for a walk for 5-7 days per week.
This shown that many elderly in Hong Kong had a regular
habit of strolling. However, half of the participants
(48%) did not join any light exercise in one week. 78(52%)
participants had joined light exercise in 7 days and most of them spent 1-2 days on it. 74(43%) participants had joined moderate exercise in 7 days and most of the participants spent 1-2 days on it. 41(28%) participants had joined heavy exercise in 7 days, most of them spent 1-2 days on it. Only 22(25%) participants had joined strength exercise in 7 days, most of the participants spent 1-2 days on it. It was a relatively low participation rate. This shown that elderly in Hong Kong did not have the habit of weight training. Except strolling, most of the elderly spent 1-2 days in the same level of physical activities. Table 8 shown the distribution of other activities.

Table 8 Other physical activities

<table>
<thead>
<tr>
<th>Activities</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light house work</td>
<td>127(84.7%)</td>
<td>23(15.3%)</td>
</tr>
<tr>
<td>Heavy housework</td>
<td>125(83.3%)</td>
<td>25(16.7%)</td>
</tr>
<tr>
<td>Repairing</td>
<td>68(45.3%)</td>
<td>82(54.7%)</td>
</tr>
<tr>
<td>Heavy gardening work</td>
<td>18(12%)</td>
<td>132(88%)</td>
</tr>
<tr>
<td>Light gardening work</td>
<td>82(54.7%)</td>
<td>68(45.3%)</td>
</tr>
<tr>
<td>Supervision of others</td>
<td>118(78.7%)</td>
<td>32(21.3%)</td>
</tr>
</tbody>
</table>

Light or heavy housework was the activity that had the second highest participation rate. About 80% of the
participants had done housework in 7 days. Besides, 78.7% of participants had been supervising kids or children, which had the third participation rate.

After confirming the normality of the score, a Pearson correlation test was computed between the total SSQ score and Total PASE score.

Using the Pearson correlation coefficient, the finding showed that the correlation between the two scores was significant. \((r = 0.725, \ p = 0.000)\). The shared of variance \((r^2)\) was 0.526. Hence, the null hypothesis “There would be significant positive correlation between the PASE-C scores and the SSQ score” was accepted.

As the 3 subscale (the tangible support score, emotional support score and the Acceptability score) were not assumed to be normally distributed, so a Spearman Correlation coefficient were calculated between the PAS score and the 3 subscales, the results were shown in table 9.
Table 9 Spearman Correlation between variables

<table>
<thead>
<tr>
<th></th>
<th>Tangible_SSQ</th>
<th>Emotional_SSQ</th>
<th>Acceptability_SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASE_SCORE_N</td>
<td>r</td>
<td>0.478*</td>
<td>0.085</td>
</tr>
<tr>
<td>EW</td>
<td>P</td>
<td>0.000</td>
<td>0.301</td>
</tr>
<tr>
<td></td>
<td>$r^2$</td>
<td>0.228</td>
<td>0.007</td>
</tr>
</tbody>
</table>

*significant at 0.05 level.

As shown in the table, the p values were less than 0.05 between PAS score, tangible score and the acceptability score, the correlation coefficient values (r) were 0.478 and 0.482 respectively. There was a weak but positive significant correlation between PAS score and the 2 SSQ subscales score. However, there was no significant positive correlation between PASE score and emotional support score. (p= 0.301). So, the two hypothesis “There would be positive significant correlation between the PASE-C and the Tangible support score” and the hypothesis “There would be positive significant correlation between the PASE-C and the Acceptability score” were accepted. Besides, the hypothesis “There would be positive significant correlation between the PASE-C and the Emotional support
score” was rejected.

After examining the correlation between the questionnaires, independent t-tests were computed to see whether there were gender differences. The descriptive statistics of the two questionnaire’s scores by gender was shown in table 8.
Table 10 descriptive statistics by gender

<table>
<thead>
<tr>
<th>sex</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASE_SCORE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>75</td>
<td>138</td>
<td>40.5</td>
</tr>
<tr>
<td>female</td>
<td>75</td>
<td>125</td>
<td>44.8</td>
</tr>
<tr>
<td>SSQ_SCORE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>75</td>
<td>26.97</td>
<td>2.71</td>
</tr>
<tr>
<td>female</td>
<td>75</td>
<td>26.69</td>
<td>2.89</td>
</tr>
</tbody>
</table>

Table 11 Result of independent t-test for the gender difference in PASE & SSQ scores

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASE_SCORE</td>
<td>1.864</td>
<td>148</td>
<td>0.064</td>
</tr>
<tr>
<td>SSQ_SCORE</td>
<td>0.606</td>
<td>148</td>
<td>0.546</td>
</tr>
</tbody>
</table>

*Sphericity was assumed

Because the p value of the two t-tests computed were larger than 0.05, there were no significant gender difference in 2 questionnaires. So, the hypothesis “The PASE-C score of male participants would be significantly greater than the PASE-C score of female participants.” was rejected and “There would be no significant gender difference in the SSQ score” was accepted.
Discussion

As expected, the score of the PASE-C and the SSQ was positively correlated. According to the present study, it was found that there was significant correlation between total score of physical activity questionnaire (PASE-C) and the total score of social support questionnaire (SSQ) \((r = 0.705, p < 0.05)\). That is, Hong Kong elderly with a higher level of social support were more likely to do more physical activities. The result in this study was similar to the study did by Eyler (1999) in US. Eyler (1999) did a survey of 2914 female participants and concluded that elderly with low social support were more likely to be sedentary and Social support could provide the initial motivation to increase physical activity levels.

However, only 50.3% \((r^2 = 0.503)\) of the variance was shared. In other words, the coefficient of non-determination was 49.7%, which was attributed to factors other than the social support level of the elderly. It shown that there were other factors may affect the physical activities level of elderly. Focusing on the other factors, there were some research could not find
the relationship between social support and exercise behavior (physical activity). According to the study of Kao (2008), 194 participants with an average of 71.4 years old were selected. The correlations of Social support, exercise behavior, and quality of life were examined. The only findings from this research was exercise behavior had a positive and direct effect on quality of life and accounted for 9% of the variance in the quality of life, but it failed to find a positive relationship between social support and exercise behavior. The difference in the result between this study and Kao’s study may be explained by the racial difference. Elderly in US and the elderly in Hong Kong have different lifestyle, eating habit and transportation habit. So, their activity level would be affected by social support in a different degree. According to this study, besides, the questionnaire used in the study was not the same. Social Support Inventory for Exercise (SSIE) and the Modifiable Activity Questionnaire were used in Kao’s study. These were the reason why various result were found.
For the relationship between physical activity level and the 3 social support scales, there was weak positive significant correlation between physical activity level and 2 out of 3 subscales (tangible and acceptability). But there was no positive significant correlation between physical activity score and emotional support score. Using the spearman correlation coefficient, tangible support score and the acceptability score contributes more than the emotional score to the positive correlation between PASE and SSQ (r = 0.478, p < 0.05 between tangible score and PASE_SCORE, r = 0.085, p < 0.05 between emotional_SCORE and PASE_SCORE, 0.482 between the Acceptability score and PASE_SCORE). This showed that tangible support and the acceptability was the dominant subscales that lead to the positive significant relationship between the total social support score and the Physical activity score.

According to the research done in New England, the normative data of the PASE questionnaire were shown (Washburn et al, 1999). The mean of the PASE score of that research was 110.8, which was clearly lower than the mean PASE score of elderly in Hong Kong (132). This partly showed that Hong Kong elderly people have a higher
activity level when compared to elderly in New England. Noted that most of the participants selected in this study were being interviewed in parks or playground. The sample was biased to the group of elderly that had a relatively high physical activity level. The results of physical activity score was strongly affected by the age of the participants. So the score difference may not truly show the real difference between the Hong Kong Elderly and the Elderly in USA.

Because the scoring method of the social support questionnaire between English version and Chinese version was different, it had no meaning to compare the normative data with foreign studies. Instead, the standard created by 肖源 (1994) was used. If the participant got 30-40, 20-30, 0-20 points, they were treated as having a high, average and low level of social support respectively. Considering the score of Hong Kong elderly, just one participant got a score lower than 20 points. Other participants got scores higher than or equal to 20 points, which mean an average or a high level of social support. In conclude, the social support in Hong Kong was at a high level, according to the standard provided by the questionnaire.
The patterns of exercise behavior of a sample of Hong Kong elderly was obtained in this study. Most of the elderly would go for a walk (strolling) almost every day. Strolling is the most popular activity Hong Kong elderly would join. There was a characteristic in Hong Kong elderly; most of them had a frequency of 1~2 days/ week in different level of physical activities. This showed that most of the Hong Kong elderly did not want to repeats the same physical activity in one week. They want to do different activities in one week. Not as expected, the PASE score of male participants was not significantly greater than the female’s score. Noted that the mean score of male participants was still greater than the female participant’s mean score.

The validity and the test-retest reliability of the two questionnaires were well-established by previous researches. So the errors occur in the questionnaires would be small.

The sampling may contribute error to the result became convenience. Sampling was used to select participants. Participants were selected randomly in the parks and play grounds during morning or evening, which was the time
that there were many elderly in the playground walking or doing exercise. So the participants would be bias to those elderly would go to the playground to do exercise. So, the physical activity score of the participants selected would be higher than average.
Chapter 5

Summary of Results

This study was designed to find the relationship between physical activity level and social support level of Hong Kong elderly. 75 male and 75 female participants were interviewed. Each participant answered two parts of questionnaire (PASE and SSQ). Collected data were analyzed by the Statistical Package for the Social Science (SPSS) for window 22.0 version computer program. Pearson correlation were computed to find the relationship between Physical activity level score, social support score and the 3 social support subscales. Independent t-test were computed to examine the gender difference. All tests were computed with an alpha level at 0.05. The results of this study were summarized as follows:

1. Physical activity score was significantly correlated to the total social support score.
2. Physical activity score was significantly correlated to the tangible support subscale score.
3. There was no significant correlation between physical activity score and emotional support subscale score.
4. Physical activity score was significantly correlated to the acceptability score.
5. There was no gender difference in the physical activity score.

6. There was no gender difference in the social support score.

Conclusion

From the findings, it shows that Social support level is one of the factor affecting physical activity level of elderly in Hong Kong. Tangible support and the acceptability of the elderly play a more important role in affecting the physical activity level than emotional support. Both the physical activity level and the social support level of Hong Kong elderly are quite good. There was no gender difference in the scores of the two questionnaires.

Recommendation of Further Study

Further study can be done to examine the effect of increasing different kind of social support to the exercise behavior of elderly. Also, it is suggested to use qualitative approaches instead of quantitative approaches because it can gather a more in-depth understanding between elderly’s and social support, like doing a case study will be a good way.
The research can be done to analyze the living environment as well, comparing the elderly who live alone and those live with family members to see whether there is any difference in social support and exercise behavior patterns.
Reference


肖水源（1994）。《社會支持評定量表》的理論基礎與研究應用，臨床精神醫學雜志，2，98-100。
Appendix: The questionnaire

問卷
您好，我是浸會大學體育學系的學生。我正在做一項關於長者社會支持和運動習慣的研究。下面的問題用於反映您在社會中所獲得的支持和運動的習慣，整個問卷需時約十至十五分鐘。請按各個問題的具體要求，根據您的實際情況來回答。謝謝您的合作。

第一部分

性別：男 / 女    年齡：    （歲）
職業：          婚姻狀況：
填表日期：    年  月  日

你最主要的運動是甚麼？______________

你做這項運動最主要理由是甚麼？______________

你通常和多少人一起做這項運動？______________

你通常和那些人一起做這項運動？______________

1. 在過去 7 天裡，您是否經常坐著從事一些活動，如：閱讀、看電視或做手工等？
   (1) 不曾 (跳第 2 題)
   (2) 很少 (1-2 天)
   (3) 有時 (3-4 天)
   (4) 經常 (5-7 天)

   1.1 平均一天坐著幾小時？
   (1) 少於 1 小時
   (2) 1 小時以上但少於 2 小時
   (3) 2-4 小時
   (4) 超過 4 小時

2. 在過去 7 天裡，您是否經常到戶外走動，如：散步、溜狗、購物等？
   (1) 不曾 (跳第 3 題)
   (2) 很少 (1-2 天)
   (3) 有時 (3-4 天)
   (4) 經常 (5-7 天)

   2.1 平均一天走路幾小時？
(1) 少於 1 小時
(2) 1 小時以上但少於 2 小時
(3) 2-4 小時
(4) 超過 4 小時

3. 在過去 7 天裡，您是否經常從事一些輕度的運動或休閒活動，如：做伸展運動、釣魚、唱歌或演奏樂器等？( 輕度是指：覺得不費力，呼吸與心跳與平時差不多，沒有流汗 )
(1) 不曾 ( 跳第 4 題 )
(2) 很少 (1-2 天 )
(3) 有時 (3-4 天 )
(4) 經常 (5-7 天 )

3.1 平均一天從事以上活動幾個小時？
(1) 少於 1 小時
(2) 1 小時以上但少於 2 小時
(3) 2-4 小時
(4) 超過 4 小時

4. 在過去 7 天裡，您是否經常從事中度的運動或休閒活動，如：健走、太極拳、元極舞、土風舞、用一般速度游泳或駕自行車等？( 中度是指：覺得有點費力，呼吸與心跳比平時快一點，有流一些汗 )
(1) 不曾 ( 跳第 5 題 )
(2) 很少 (1-2 天 )
(3) 有時 (3-4 天 )
(4) 經常 (5-7 天 )

4.1 平均一天從事以上活動幾個小時？
(1) 少於 1 小時
(2) 1 小時以上但少於 2 小時
(3) 2-4 小時
(4) 超過 4 小時

5. 在過去 7 天裡，您是否經常從事激烈的運動或休閒活動？如：跑步、爬山、打球、上樓梯、有氧舞蹈、快速游泳或快速騎自行車等？( 激烈是指：覺得非常費力，呼吸與心跳非常急促，流很多汗 )
(1) 不曾 ( 跳第 6 題 )
(2) 很少 (1-2 天 )
(3) 有時 (3-4 天 )
(4) 經常 (5-7 天 )

5.1 平均一天從事以上活動幾個小時？
6. 在過去 7 天裡，您是否經常從事強化肌力或肌耐力的運動，如：舉重、單槓、伏地挺身、仰臥起坐？
(1) 不曾 (跳第 7 題)
(2) 很少 (1-2 天)
(3) 有時 (3-4 天)
(4) 經常 (5-7 天)

6.1 平均一天從事以上活動幾個小時？
(1) 少於 1 小時
(2) 1 小時以上但少於 2 小時
(3) 2-4 小時
(4) 超過 4 小時

7. 在過去 7 天裡，是否有做一些輕鬆的家務，如：洗碗、掃地、清掃灰塵？
(1) 沒有
(2) 有

8. 在過去 7 天裡，是否有做一些粗重的家務，如：拖地、擦洗門窗？
(1) 沒有
(2) 有

9. 在過去 7 天裡，您是否有從事以下的活動：

9.1 整修居家環境，如：粉刷室內、貼壁紙、水電工。
(1) 沒有
(2) 有

9.2 整理前後院環境，如：清掃落葉、修剪樹枝、戶外栽花種草。
(1) 沒有
(2) 有

9.3 照顧配偶、孫子或其他家人。
(1) 沒有
(2) 有

10. 在過去 7 天裡，您是否曾做義工或做有領薪水的工作？
(1) 沒有
(2) 有

10.1 一個星期幾個小時：__________小時。

10.2 下列哪一個答案比較接近你的工作性質？
(1) 坐著用手工作，如：工廠作業員、司機。
(2) 坐或站，須走動，如：收銀員、辦公室員工。
(3) 須走動且搬動約小於 23 公斤的重物，如：郵差、服務生、建築工人。
(4) 須走動，並搬動約超過 23 公斤的重物。

第二部分

1. 您有多少關係密切，可以得到支持和幫助的朋友？(只選一項)
(1) 一個也沒有
(2) 1 — 2 個
(3) 3 — 5 個
(4) 6 個或 6 個以上

2. 近一年來您：(只選一項)
(1) 遠離家人，且獨居一室。
(2) 住處常常變動，多數時間和陌生人住在一起。
(3) 和朋友住在一起。
(4) 和家人住在一起。

3. 您與鄰居：(只選一項)
(1) 相互之間從不關心，只是點頭之交。
(2) 遇到困難可能稍微關心。
(3) 有些鄰居都很關心您。
(4) 大多數鄰居都很關心您。

4. 您與朋友：(只選一項)
(1) 相互之間從不關心，只是點頭之交。
(2) 遇到困難可能稍微關心。
(3) 有些朋友很關心您。
(4) 大多數朋友都很關心您。

5. 從家庭成員得到的支持和照顧 (在合適的框內劃"√")

<table>
<thead>
<tr>
<th></th>
<th>無</th>
<th>極少</th>
<th>一般</th>
<th>全力支持</th>
</tr>
</thead>
<tbody>
<tr>
<td>夫妻</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>父母</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. 過去，在您遇到急難情況時，曾經得到的經濟支持和解決實際問題的幫助的來源有：
(1) 無任何來源。
(2) 下列來源：(可選多項)

<table>
<thead>
<tr>
<th>配偶</th>
<th>其他家人</th>
<th>朋友</th>
<th>親戚</th>
<th>同事</th>
<th>工作單位</th>
<th>黨團工會等官方或半官方組織</th>
<th>宗教、社會團體等非官方組織</th>
<th>其它</th>
</tr>
</thead>
</table>

7. 過去，在您遇到急難情況時，曾經得到的安慰和關心的來源有：
(1) 無任何來源。
(2) 下列來源 (可選多項)

| 配偶 | 其他家人 | 朋友 | 親戚 | 同事 | 工作單位 | 黨團工會等官方或半官方組織 | 宗教、社會團體等非官方組織 | 其它 |
(1) 只靠自己，不接受別人幫助。
(2) 少請求別人幫助。
(3) 有時請求別人幫助。
(4) 有困難時經常向家人、親友、組織求援。

10．對於團體 (如黨團組織、宗教組織、工會、學生會等) 組織活動，您：(只選一項)
(1) 從不參加
(2) 偶爾參加
(3) 經常參加
(4) 主動參加並積極活動。