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EXPLORING HOW TAI CHI GROUPS INFLUENCE COMMUNITY-DWELLING ELDERS' SELF-RATED HEALTH

A Study of Tsuen Wan District in Hong Kong

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Abstract
This study aimed to explore why community-dwelling elders chose to practise in Tai Chi groups rather than individually and how it affected their self-rated health. The purposes of this study were to promote Tai Chi groups as an intervention by community nurses who work with elders, as well as to investigate the potential benefits of Tai Chi groups in preventing social isolation. 12 community-dwelling elders from Tsuen Wan District of Hong Kong chosen by snowball sampling were interviewed in August 2016. A semi-structured questionnaire which was modified from 12-Item Short Form Health Survey was used as an interview guide. All participants have practised in Tai Chi groups for more than three months. Raw data was coded with thematic analysis method. The findings lean towards a positive influence of Tai Chi groups on its participants. Participants rated their self-rated health better after joining Tai Chi groups. They all experienced changes in health and social life positively. To conclude, Tai Chi groups are found to be beneficial to the community-dwelling elders in Hong Kong. They may be a useful clinical intervention to combat social isolation and depression. Possible future research would be insightful to extend this study to be a comparison between Chinese and Western. For instance, how self-rated health of community-dwelling elders from different cultural background is influenced by participating in Tai Chi groups.

Keywords
Tai Chi; Community-dwelling elders; Self-rated health; Experienced health; Networking; Identity-building

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1 Introduction

Tai Chi is a type of Chinese martial art, that incorporates both physical and cognitive components. It consists of steady, fluid forms designed to calm oneself mentally, physically and spiritually. (Logghe, Verhagen, Rademaker, Bierma-Zeinstra, van Rossum, Faber, & Koes 2010, 223.) The psychological effects of Tai Chi on community-dwelling elders in addition to the physiological effects it has as a form of exercise are other main factors in this study. Community-dwelling elders refers to people of high age who live in their own flat instead of a nursing home (Steultjens, Dekker, Bouter, Jellema, Bakker, & van den Ende 2004, 453). The self-rated health of community-dwelling elders of Tai Chi groups in Hong Kong's Tsuen Wan District was chosen to be analysed. Self-rated health is a recognised and trusted tool for measuring the general health of those not cognitively impaired that sees wide use in clinical and demographical studies. (Bombak 2013, 1.)

This study aimed to explore why community-dwelling elders chose to practise in Tai Chi groups rather than individually and how it affected their self-rated health. The purposes of this study were to promote Tai Chi groups as an intervention by community nurses who work with elders, as well as to investigate the potential benefits of Tai Chi groups in preventing social isolation. Social interaction is the interaction of two actors, whereupon both are influenced by each other in terms of behaviour (Thompson & Hickey 2012, 124). In order to better understand self-rated health, more data is needed on the role of social interaction in self-rated health. Furthermore, Tai Chi has untapped potential as a broader, more common instrument of clinical intervention, and this study aims to illuminate the possible benefit of Tai Chi as a social interaction as opposed to Tai Chi practised alone.

2 Overview of Tai Chi and Its Health Benefits

The word ‘Tai’ signifies ‘Great’, and ‘Chi’ means ‘Source’. Tai Chi is based on Taoism and Confucianism and promotes a mix of deliberate movements and focused breathing that form a fluid sequence. Body awareness and a peace of mind is sought through the slow execution of Tai Chi forms (see Figure 1), as a wholesome harmony of body and soul. (Guo, Qiu, & Liu 2014, 4; Lan, Chen, Lai, & Wong 2013, 1.)

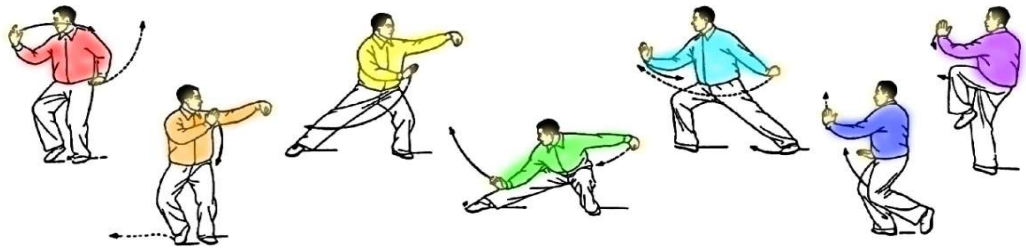

Figure 1. Different postures ([post-edited] adapted from Lan et al. 2013, 2)

Tai Chi’s effects on health started to be noticed at the onset of the 20th century (The Telegraph 2011). Both experimental and observational methods have been used within the last decades to establish a scientific evidence base for the health benefits of Tai Chi. To meet contemporary needs, Tai Chi’s function in fitness, meditation and self-defence has been broadened to preventing chronic illnesses, maintaining bodily and mental health and working as part of clinical intervention for various medical condition (Guo et al. 2014, 3).

Tai Chi employs a semi-squat posture, while the forms themselves utilise concentric and eccentric contractions. For the average citizen and cardiovascular disease patients, the most reliable mortality predictor is their aerobic capacity, or peak oxygen uptake. 12 subjects whose ages are between 20 and 45 gained muscular strength in knee extensors after doing 108-form Tai Chi thrice a week for 12 weeks. (Lan et al. 2013, 3.) Elder Tai Chi practitioners were reported to possess an improved balance and motor

control in comparison with a control group, when using the method of sensory organisation testing. In a visual system experiment, elder Tai Chi hobbyists showed a superior postural stability with sway-referenced vision and support. Concerning the proprioceptive system, they also had better knee joint proprioceptive acuity than their peers, in fact closer to the level of younger participants. (ibid., 4.)

Tai Chi exercise has the potential to help maintain elders' activities of daily living, as elder Tai Chi participants reported improvement in all six functional status measures. This makes Tai Chi especially fit for elders due to the subdued force of the motions, emphasising smooth movement and coordination. Because of this, Tai Chi's different forms can be said to improve balance more than regular exercise, and therefore, reduce fear of falling (Reid-Arndt, Matsuda, & Cox 2012, 27; Logghe et al. 2010, 223; Li, Harmer, Fisher, & McAuley 2004, 2046; Li, Harmer, McAuley, Fisher, Duncan, & Duncan 2001, 230). Indeed, due to Tai Chi focusing on core muscles and body control, it is reported to strengthen musculoskeletal systems as well as respiratory and nervous systems (Guo et al. 2014, 4; Reid-Arndt et al. 2012, 26; Li et al. 2004, 2047). Being a meditative activity with mental focus on the body, Tai Chi may also develop overall tactile acuity and perceptual function. When tested with eyes closed and with sway-referenced support, Tai Chi-practising elders' vestibular system was better than that of their peers in maximal stability and average velocity. A better vestibular mechanism correlates with a stronger balance function, which is necessary for the prevention of falls. (Lan et al. 2013, 5.)

In a crowded environment like Hong Kong, an activity taking place in the urban open areas is suggested to be psychologically restorative due to the stress-relieving effect of green spaces (Chau, Wong, & Woo 2013, 50). Jin (1989) found elevated noradrenaline levels in the urine and lowered salivary cortisol concentration in Tai Chi participants. Reduced cortisol levels imply a stress-lowering reaction, and noradrenaline signals the activation of the sympathetic nervous system. (Lan et al. 2013, 6.) Though statistically insignificant, a group of depression patients randomly selected for Tai Chi intervention (Yeung, Lepoutre, Wayne, Yeh, Slipp, Fava, Denninger, &

Benson 2012, 866–867) experienced a higher rate of positive treatment-response and remission than the ones not selected for intervention. Other studies (Jimenez, Melendez, & Albers 2012, 465; Taylor-Piliae, Haskell, Waters, & Froelicher 2006, 321–323; Wang, Bannuru, Ramel, Kupelnick, Scott, & Schmid 2010, 1–3; Brown, Wang, Ward, Ebbeling, Fortlage, Puleo, Benson, & Rippe 1995, 773) corroborate Tai Chi's observed positive effect on mental health.

A plethora of clinical interventions were made within the last decade using Tai Chi. Clinical interventions are meant to 'improve, maintain or assess the health' of the selected participants (Australian Institute of Health and Welfare 2016). Selected people with a common characteristic participated in guided Tai Chi for a period of time in a clinical setting: In 2003, Easy Tai Chi, an 8-form version of Tai Chi designed for elders, was used for 48 elders aged 68 on average. The elders practised Easy Tai Chi for 45 minutes three times per week for three months. (Li, Fisher, Harmer, & Shirai 2003, 8.) In 2007, 137 women, 70 years of age or older, received Tai Chi intervention twice a week for 48 weeks. The allotted session time was slowly increased from 10 minutes to 50 minutes. (Greenspan, Wolf, Kelley, & O'Grady 2007, 5–10.) 25 men 60 or older did Tai Chi 45 minutes twice a week for 18 weeks (Maciaszek, Osiski, Szeklicki, & Stemplewski 2007, 1). A positive effect on the dynamic balance of the participants was indicated (ibid., 6). 18 diabetics, 50 or older, did Tai Chi 45 minutes twice a week for 16 weeks (Tsang, Orr, Lam, Comino, & Singh 2007, 2). Participants who practised Tai Chi were shown to perform better in habitual activity and social function (ibid., 7). In 2011, 50 heart failure outpatients, mean age 67, did Tai Chi for one hour twice a week for 12 weeks. The intervention investigated whether Tai Chi improves the quality of life of patients with heart failure. (Yeh, McCarthy, Wayne, Stevenson, Wood, Forman, Davis, & Phillips 2011, 1–3.) As yet, there are not many studies on the social interaction component of Tai Chi. The relation between the group aspect of Tai Chi and self-rated health has not been under much research. Previous studies focused on how Tai Chi as a form of exercise benefits health directly. There is a lack of research on social interaction as a factor in self-rated health. Self-rated health is influenced by many physiological factors as well as cognitive processes that require a multidisciplinary approach to study.

3 Social Interaction and Social Isolation

In daily social interaction people choose the way they present themselves to others, the way they adjust to social norms and rules, and the way the actions of others are interpreted. Social interaction is the most fundamental unit of sociological analysis, and studying it is microsociology. There are five basic patterns of social interaction: exchange, cooperation, competition, conflict and coercion. (Thompson & Hickey 2012, 124.) The amount and quality of social relationships elders have affects their health physiologically, psychosocially and behaviourally (Umberson & Montez 2010, 55).

Physiologically speaking, benefits from social support are various. There has been observed a reduction of allostatic load, which is accumulated strain on the body's tissues, organs and cardiovascular system (ibid., 56). A higher activity of natural killer cells in peripheral blood was observed coinciding with higher social support. Having several active social networks independently from one another reportedly reduced the chance of developing a clinical cold. (Uchino 2006, 381.)

Psychosocially speaking, mechanisms can be different kinds of social support (e.g. peer support and familial support). They boost self-esteem, mitigate stress and reduce the need for comfort habits, such as snacking and smoking. Social support can lower blood pressure, heart rate, and most of all, it can improve mental health, which was deemed an essential component of overall health status. (Umberson & Montez 2010, 56.)

Behaviourally speaking, some behaviours (e.g. exercise and following a balanced diet) have been found to be beneficial to health, while other habits, such as smoking, drug abuse and excessive eating, have been shown to be detrimental to health. Network ties build collective norms and pressures that may directly or indirectly alter the health behaviour of the elders involved. One indirectly harmful norm would be the tolerance of smoking in the social

environment, causing second-hand smoking. (ibid., 55.)

A mutual reinforcement exists between possessing rich social connections and healthy behaviour (Umberson & Montez 2010, 55; Cohen-Mansfield, Marx, Thein, & Dakheel-Ali 2010, 68). This may be explained by the fact that people with more social relationships tend to live more actively and take part in more leisure activities. After the social relationships of elders' have met their psychological needs, leisure exercise has the biggest role in improving their health. When physical leisure activities provided ways for social interaction, an improvement in both physical and mental health was found.

In fact, among the four kinds of leisure activities, physical activity is the most advantageous (Chang, Wray, & Lin 2014, 516). Cardiovascular fitness and other physical boons have been suggested as long-term effects of physical leisure activity, leading to an improved mental health as well (Iwasaki, Mannell, Smale, and Butcher 2005, 82). Mental exercise has also been correlated with health improvement and can be a choice, when an elder engages less in physical activities. Those who design leisure activities as nursing and/or clinical interventions can aim to choose environments most inducive to the formation of friendships between elder participants. (Chang et al. 2014, 521.) Another study (Yeh, Wang, Wayne, & Phillips 2008, 87–89) has recognised a possible link between social relationships and well-being (Chau et al. 2013, 44).

Social interaction and social isolation may influence the quality of life of elders. Elders more content with their current life were likely to have a large social network, producing a stronger effect of perceived social support (Chan & Lee 2006, 104). Social isolation has been recognised as a key trigger for the onset of mental illnesses (Economic and Social Research Council 2013). Depressed participants in Schwerdtfeger and Friedrich-Mai's (2009) study expressed high negative affectivity alone compared to interacting with people (Knyazev, Savostyanov, Bocharov, & Rimareva 2016, 66). Loneliness has been described as having three dimensions: a lack of intimacy, of relational connectedness, and of collective connectedness. Loneliness is linked to sleeping and eating disorders, substance abuse, a compromised immune

system, depression and suicide, as well as financial insecurity through unemployment, emotional spending and the consequent lower income, as well as solitary leisure activities, most of which are not physical or outdoor. (Sodexo Institute for Quality of Life 2014, 3.)

Different forms of social interaction can hinder mobility or facilitate it depending on their nature. Social capital affects anxiety and self-esteem as well as health behaviour, leading to health developments. It also has a connection with self-rated health and mortality. Social relations and social engagement may be the way in which social capital affects mobility. The mobility of elders can be affected by the level of safety they feel, which is increased by positive neighbourhood social capital. (Rosso, Tabb, Grubesic, Taylor, & Michael 2014, 1302.) Social network is a crucial factor in the level of support elders can receive (Chan & Lee 2006, 90). Adducing to the theory on the role of positive neighbourhood social capital, it was found that people out of contact with their social networks were able to ameliorate their mental health by forming acquaintances with their neighbours. Similarly, volunteering, churchgoing and membership of clubs as a social interaction were all found to improve mental health. (Economic and Social Research Council 2013.)

The ageless movements of Tai Chi can be performed alone, but it enjoys popularity as a synchronised group activity in parks come morning (Hong Kong Tourism Board 2016; Lan et al. 2013, 1). Tai Chi groups are also a chance to befriend other group members and expand one’s social network. As a globally popular form of exercise and relaxation, it is a tool for cultural exchange. (Guo et al. 2014, 5.) For example, the most famous group performance of Tai Chi was in the 2008 Beijing Olympics opening ceremony.

4 Elders in Hong Kong

While the Senior Citizen Card, the official document for elders, is provided to Hong Kong residents aged 65 or older by Hong Kong Social Welfare Department (Hong Kong Social Welfare Department 2016), the Government

has not set a concrete definition for elders. Therefore, different departments have their own interpretations due to the various services they offer (Hong Kong Press Releases 2016). In 2002, there were around 750,000 elders (aged 65 or above) living in Hong Kong (Chu, Chi, & Chiu 2007, 10). According to Hong Kong Census and Statistics Department (Hong Kong Census and Statistics Department 2015a), despite immigration, the age pyramid of Hong Kong is getting top-heavy. The number of persons aged 65 and older set to increase from 15% in 2014 to 33% in 2064. In Hong Kong, 93% of elders dwell in communities (Chu et al. 2007, 10).

Hong Kong's residents currently have the longest life expectancy in the world regardless of gender. Women's lifespan is 87.32 years, whereas that of men's is 81.24. Second for women came Japanese at 87.05, and men in Switzerland and Iceland tied for the second spot at 81 years. (Hong Kong Census and Statistics Department 2015b.) Reported by South China Morning Post, Professor Lam weighed in that the recent downward trend in smoking explains the apparent increase in longevity in Hong Kong. Tobacco rates are significantly lower in Hong Kong than in Japan, Britain or America, according to Dr Ni. Although the Japanese are known for their long lifespans, nearly one third of Japanese men smoke as opposed to 19% in Hong Kong. Smoking seems less attractive for women in both countries, being a habit for 10% of Japanese and 3% of Hong Kongese women. (Lee & Cheah 2016.)

It is worth noting that various health concerns that occur frequently to elders, such as falls, and hampered mobility and autonomy, can be reduced if elders engage a Tai Chi lifestyle. Among elders, fall-related injuries are one of the main clinical concerns (Rubenstein 2006, 37). Elder falls easily have many complications, such as hampered mobility and autonomy, reduced range of motion due to fractures, and growing fearful of more falls. Around three quarters of the falls resulted in injuries, and 7.2% of the fallen were seriously injured, while 5.2% got fractures. (Chu et al. 2007; Chu, Chi, & Chiu 2005.) More data on local elder falls is needed in order to effectively launch a series of fall prevention programmes. Furthermore, elders in Hong Kong can suffer from a wide range of diseases and other health problems (Elderly Health Service 2016). The table below has them listed by category (see Table 1):

Table 1. Various ailments that are afflicting the elders of Hong Kong

A. Skeletal system	Neck pain
	Osteoarthritis
	Adhesive capsulitis
	Back pain
	Gouty arthritis
	Osteoporosis
	Spasticity and contractures
B. Mental health	Dementia
	Depression
C. Digestive and urinary system	Enlarged prostate
	Constipation
	Indigestion
	Incontinence
D. Cardiovascular system	Hypertension
	Coronary heart disease
	Stroke
E. Infections	Myiasis
	Scabies
	Tinea infection
	Influenza and avian influenza
	Food poisoning
F. Vision	Age-related macular degeneration
	Cataract
	Drooping of eyelids
	Dry eyes
	Presbyopia
	Floaters
	Blurred vision
G. Others	Cancer
	Diabetes

Hearing impairment
Chronic obstructive pulmonary disease
Parkinsonism

Elders in Hong Kong still face difficulties, such as social isolation and negative self-worth. The elders in Beijing were reportedly happier than those in Hong Kong due to the former having a bigger social network—retired elders tend to be more dependent on this kind of social support (Chau et al. 2013, 44). In addition to being unsatisfied with their social security, elders in Hong Kong feel they are portrayed as a strain on the economy by the media (ibid., 57), hence they fear bothering health professionals (Dickinson, Horton, Machen, Bunn, Cove, Jain, & Maddex 2011, 726). Indeed, there is a widespread negative association with being old (Mak & Woo 2013, 84). They also bemoan a lack of both affordability and variety in activities suitable for the elders, as well as a dearth of inter-generational activities (Chau et al. 2013, 57). Therefore, a socially excluded elder's psychological, and consequently, physical health may take a turn for the worse. According to Mak and Woo (2013, 85), Wong (2011) reported that 1,999 community-dwelling male elders participated in a health survey in 2001 and 11% of them reported a feeling of worthlessness. Despite all the circumstances, elders in Hong Kong still enjoy certain activities en masse. Tai Chi is a popular leisure activity, and elders generally congregate for Tai Chi routines early in the morning.

5 Aim, Purposes and Research Questions

This study aimed to explore why community-dwelling elders chose to practise in Tai Chi groups rather than individually and how it affected their self-rated health. The purposes of this study were to promote Tai Chi groups as an intervention by community nurses who work with elders, as well as to investigate the potential benefits of Tai Chi groups in preventing social isolation. Two research questions developed from a wide range of relevant literature formed the basis of this study: a) How does community-dwelling

elders' self-rated health differ before and after practising in Tai Chi groups? and b) What are the subjective experiences from practising in Tai Chi groups?

6 Interview with Semi-Structured Questionnaire

This is a qualitative study that consists of interviews with semi-structured questionnaires. According to Brinkmann (2013, 21), semi-structured questionnaire (or also known as semi-structured interview in other contexts) is defined as a method of inquiry that obtains description 'of the life world of the participants in order to interpret the meaning of the described phenomena' (Kvale & Brinkmann 2008).

Self-rated health is part of the 36-Item Short Form (SF-36) Health Survey Instrument (Ware & Gandek 1998), and standard health surveys (Robine et al. 2003; World Health Organisation 1996) tend to include it (Jylhä 2009, 308). The simplest and most common way to enquire patients' self-rated health is asking them to evaluate their general health by one word, scoring from one to five. One represents very good health, while five stands for very bad health. The exact question used in the interviews was 'Generally, how would you rate your health in one word?' The lower the score, the better the health would be. (Stanford Patient Education Research Center 2016; Bombak 2013, 1; Mossey & Shapiro 1982, 800.)

This study used a modified questionnaire (see Appendix 2) that contains properties from both the standard 12-Item Short Form (SF-12) Health Survey (RAND Corporation 2016; China Medical University Hospital 2012, 26–27) and the Hong Kong specific SF-12 (Lam, Tse, & Gandek 2005, 546). A majority of closed-ended questions with two open-ended questions formed this modified questionnaire. Closed-ended questions consist of four elements: a) diagnosed chronic diseases, b) self-rated health, c) activities of daily living and d) understanding of Tai Chi philosophy. Due to the nature of closed-ended questions, the results are self-explanatory. There were two open-ended questions: 'In your opinion, what did you benefit from practising in Tai Chi

groups (or Tai Chi in general)?' and 'Why did you choose to practise in a group instead of alone?'. These questions allow the interviewer to investigate unexpected angles and information. Participants were given a chance to express their points of view on how practising Tai Chi as a group benefits health instead of being solely lead by the interviewer. (Loiselle, Profetto-McGrath, Polit, & Beck 2010, 233.) Therefore, the interviewer has more freedom in steering the conversation towards issues deemed relevant to the research project. The response section has been modified to contain answers: very good, good, moderate, bad, and very bad, instead of the usual self-rated health scoring system (i.e. one to five score to represent very good to very bad).

6.1 Participants

This study recruited study participants with the snowball sampling method (also known as network sampling). It is a form of non-probability sampling as it selects elements by convenience. This sampling method is best suited as a way to probe into new areas of research, or to bypass ethical problems that stop other methods from being used. (Loiselle et al. 2010, 209.) Regardless of other factors, Tai Chi practitioners who fulfilled the following inclusion criteria as study participants were selected as soon as they were found (see Table 2):

Table 2. Inclusion and exclusion criteria

Inclusion	Exclusion
Hong Kongese Chinese	Non-Hong Kongese Chinese
Community-dwelling elders in Tsuen Wan District	Institutionalised elders or elders from other districts
Aged 65 or above	Aged under 65
Practised in a Tai Chi group for more than three months	Practised Tai Chi individually
Cognitively competent to communicate	Demented

During the recruitment process, 55 potential participants were approached by the researcher in Tsuen Wan District during morning practice in total, with 15 of them were referred or introduced by other candidates. 26 out of 55 agreed to participate, however, 14 of them did not fit the inclusion criteria of sampling. Those who met all the inclusion criteria and agreed to participate were invited to an interview. At last, a total number of 12 participants from Tsuen Wan District participated in this study. Gender distribution of community-dwelling elders who participated in this study was balanced with six male and six female participants. Their mean age was 74.9 years old. Their marital status was mainly either married or widowed with 41.7% each. The remaining ones with 8.3% each were either single or divorced. They were given a pseudonym (e.g. Practitioner 1–12) in order to keep their identities confidential.

6.2 Data Collection

All interviews were personally conducted by the author of this study. They took place in Tsuen Wan Park every morning in August 2016. Each interview lasted between 20 minutes to 40 minutes, with a total of 352 minutes, and they were all carried out in Cantonese Chinese. For the sake of efficiency, the modified questionnaire was arranged on Google Form beforehand. Closed-ended questions and open-ended questions were used during the interview because both types of questions have their advantages. Closed-ended questions can be compared easily and directly (Conrad & Schober 2008, 173), whereas open-ended questions allow participants to express meanings and their perspectives that would not be found outside the structure (Brinkmann 2013, 18).

Tsuen Wan was chosen as the research site for several reasons. Firstly, 18.4% of its population of over 300,000 are elders. Secondly, Tsuen Wan is an active district in terms of ‘age-friendly’ promotion. The district launched the ‘Age-friendly Community Scheme’ in 2013. (World Health Organisation 2014.) Two years later, Tsuen Wan further promoted their scheme to an international level by teaming up with World Health Organisation’s Global Network of Age-Friendly Cities and Communities. 48 elder volunteers were selected within the district and given the training to act as ‘Senior Community Ambassadors’.

Their duties include inspecting communities and attending regular meetings with both government officials and non-governmental organisations. They play a vital role in offering the district suggestions for better matching the criteria of an ‘age-friendly city’ during the meetings. (Tsuen Wan District Council 2015.) Moreover, as one of the first ‘satellite towns’, Tsuen Wan is relatively mature in urban planning. There are a number of open areas where people gather for recreational activities such as Tai Chi. This provides a good source for selecting potential research participants.

6.3 Data Analysis

The method chosen to classify and categorise the bulk data is thematic analysis. Themes are a qualitative term for findings and they are used as a platform for future research (Averill 2015, 7). For efficiency’s sake, raw data was recorded on Google Form with an iPad and transcribed in Microsoft Word afterwards. Field notes in Chinese were translated into English by the bilingual researcher, then summarised likewise on Microsoft Word. In addition, the milieu of all interviews was taken into account in the data analysis.

A five-step-method devised by Braun and Clarke (2006, 87) was simplified and adapted in data analysis and theme construction. Transcripts and field notes were printed out into hard copies. The researcher read them thoroughly multiple times to become familiar with the data. Important information was highlighted manually for coding. The marked data items were given initial codes by adding comments next to each highlighted section. The highlighted sections remained in the same document to keep the data items contextual. Initial coding criteria was broad in order to find as many themes as possible. After all data was coded, sections were gathered under their respective codes in a separate Microsoft Word document to sort the data. Each code was reviewed and sorted into subthemes or main themes, if possible. Codes without enough relevance were discarded. Since this study had a direction set by the research questions and theoretical framework, the theme creation was theory-based (Braun & Clarke 2006, 89). By outlining all the relationships between the formed main themes and subthemes, a thematic map was created (see Figure 2):

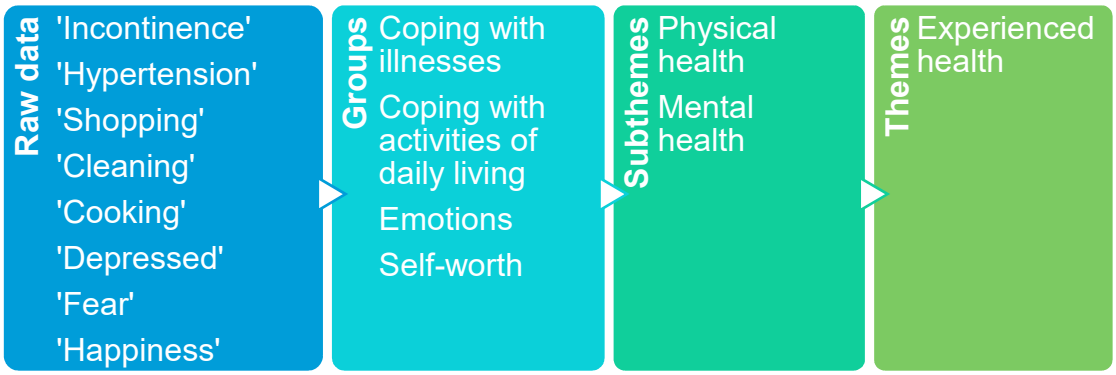

Figure 2. Example of coding flow chart

The data collected from the interviews was analysed separately in two sections: a) the closed section containing the closed questions comprised of the formulated answers of the respondents and the interviewer's notes on each respondent's behaviour, and b) the open section formed the bulk of the qualitative data, and contained the discussions between the interviewer and the respondents as well as the interviewer's notes. Information collected from closed-ended questions was first analysed, as it provides insight into the background of the participants. Hence, it helps with the analysis of the open-ended questions later on.

The main focus of analysis on closed-ended questions was either to summarise the findings or to discover their correlations. Analysis of the two open-ended questions was done together as they share similarities. The raw data generated by the open-ended questions was coded into groups and subthemes to illustrate two main themes. These two themes were summarised by using a thorough thematic analysis that involved creating several layers of coding. Tables and bar charts were used to supplement the presentation, not to provide any statistical analysis. This study maintains a qualitative approach.

7 Results

Participants from this study sample subjectively rated their self-rated health better after taking Tai Chi groups. As can be seen from the bar chart below (see Figure 3), the general rating improves from moderate-bad to good-moderate. Therefore, common denominators to the reported self-rated health of all participants post-Tai Chi groups were that they all changed as well as improved.

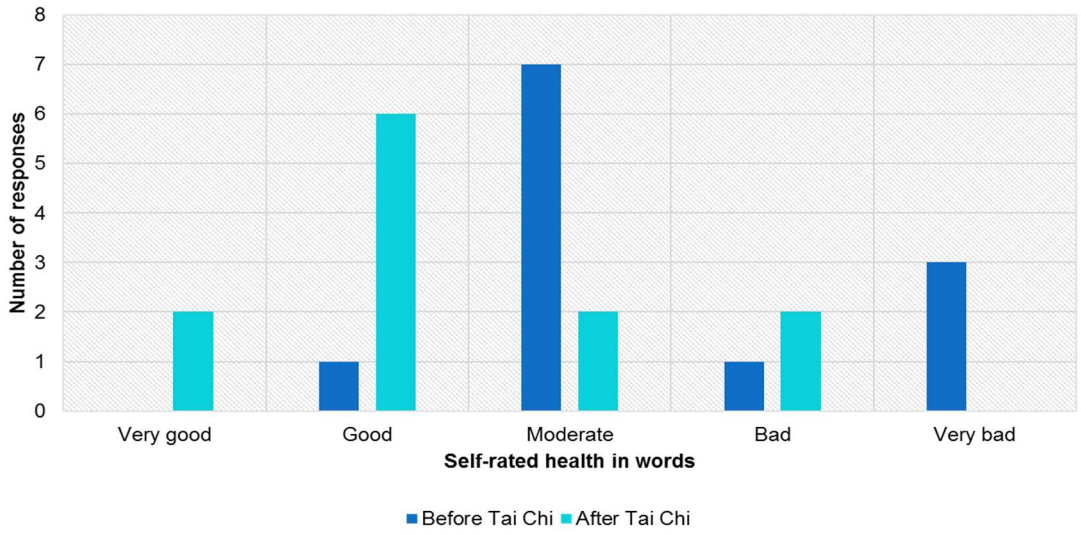

Figure 3. Self-rated health before and after taking up Tai Chi groups

The two main themes are ‘experienced health’ and ‘subjective benefits of Tai Chi groups’. ‘Experienced health’ has two subthemes, physical health and mental health. Through the concepts of activities of daily living, illnesses, emotions and self-worth, it shows how overall health was experienced and expressed by elders before and after practising in Tai Chi groups. The subthemes of ‘subjective benefits of Tai Chi groups’ are ‘social support’ and ‘identity-building’. They contain the social support elders received from both family and peers, as well as the network and social environment that Tai Chi groups offered to them. Finalised themes and subthemes are displayed below (see Figure 4):

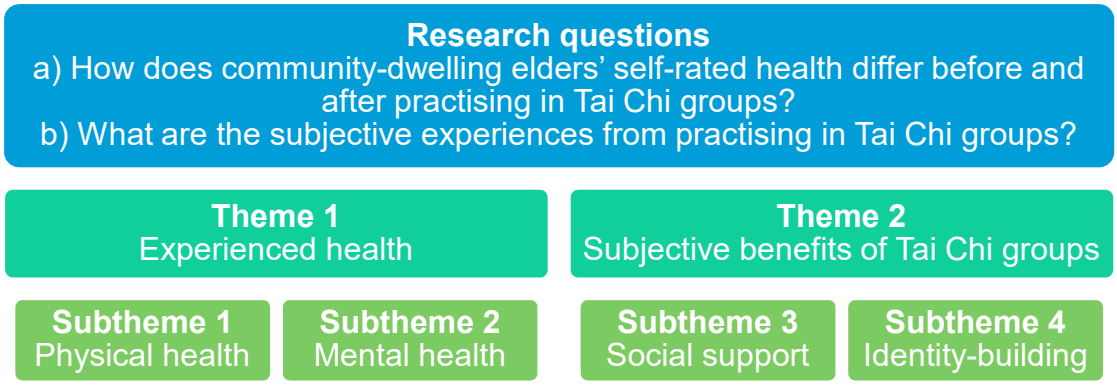

Figure 4. Final themes and subthemes

7.1 Health Condition of Participants

In the course of the interviews, participants revealed numerous chronic medical conditions, which bear relevance to their self-rated health. The most common chronic conditions were cardiovascular-related—hypertension, heart disease and stroke. Other reported conditions were osteoarthritis, constipation, cancer, Parkinsonism, cataract, incontinence, gouty arthritis, hearing impairment, depression, and adhesive capsulitis. Moreover, the participants compared their activities of daily living before and after taking up Tai Chi groups to reflect the overall change in their experienced health. In terms of self-care, they found it slightly easier to climb upstairs or upslope and vigorous activities. Bending and moderate activities were reported to be much easier. Most respondents placed themselves in the 'moderately limited' group both before and after taking up Tai Chi groups.

7.2 Experienced Health

Physical health

The groups within physical health were coping with illnesses and activities of daily living. The fact that Tai Chi groups helped age healthily was most commonly shared by all the participants, and they were often subjectively mentioned first as the benefits the participants perceived themselves as

getting from Tai Chi groups. Everyone agreed that Tai Chi movements are against age-related physiological changes. Adverse effects of medication on chronic conditions speed up the deterioration of health. Participants with previous falls expressed that Tai Chi groups provided the mental capacity to overcome the fear of falling hence increasing in confidence at avoiding falls during activities of daily living. Standing balance during functional activities, such as reaching, bending, transferring and standing, was boosted and demonstrated by a reduced dependency on walking aids. Muscle strength, especially on the lower extremity, was improved, resulting in better gait and balance. Participants who suffer from cataract commented that diminished vision affected their vestibular balance and motion, since vision and balance are highly integrated in the brain. Practising in a Tai Chi group was beneficial in keeping a steady focus on objects even when the body is moving. Participants with incontinence frowned while recalling how frequent toileting led to harmful falls. Ever since the participation in Tai Chi groups, they both started to manage this with the use of diapers and a regular toileting schedule. Moreover, Tai Chi group practices were especially effective on participants with a history of cardiovascular diseases. They reported having a more stable blood pressure after taking up Tai Chi groups. One said she received positive feedback from her husband, who was pleased with the fact that she was complaining about her nightly shoulder pain less frequently after taking up Tai Chi groups.

Mental health

Compared to physical health, participants generally found it harder to describe their mental health. By paying attention to physical health, they managed to keep their body in shape thus self-esteem, self-image and self-worth were elevated. As a whole, this improved their self-confidence. A couple of the participants who claimed themselves to be restless revealed that practising in Tai Chi groups saved them from insomnia, and sleeping quality was assured. Aside from the points mentioned above, a participant who recovered from depression burst into tears, when she talked about how Tai Chi groups brightened her darkest period of life. Here is what she shared:

I just can’t imagine this gentle sport is so powerful in transforming

> *a person. I often have loads of worries in mind but every morning after going to a Tai Chi group, my stress seems to be relieved and my shoulders feel lighter as well. The more regular I attend my Tai Chi group, the less the depression symptoms I experience.*

A few participants also reported a feeling of joy and elation. Participants with Parkinsonism were joking about how they felt smarter after joining Tai Chi groups, as they were handling different movements and catching up other members with ease. With a big grin on their faces, most participants strongly agreed that they felt younger after practising in Tai Chi groups. They said they went home with lots of happiness every morning after practices.

7.3 Subjective Benefits of Tai Chi Groups

Social support

Before taking up Tai Chi groups, all participants were feeling helpless and not knowing where to seek help. Deteriorated health made them afraid of being a burden to people around them. After joining Tai Chi groups, they slowly noticed different sources of support from their family and peers. Almost all participants claimed that emotional support from peers was the most important aspect in their Tai Chi group experiences. Many of them found buddies with similar medical history and they further developed into different kinds of support groups where they shared about experiences in self-care, coping and recovery. It was easy for them to open up in the support group as every member was showing empathy and kind understanding. One joined a Tai Chi support group directly at the recommendation of their home nurse. Furthermore, some of them took part in Tai Chi groups as a means of strengthening the relationship within their family. One of them said cheerfully:

> *I initially joined a Tai Chi group to accompany my wife, but now I also want to stay healthy so I don't end up in an institution like my older brother. By staying active I can keep visiting him and other relatives when I want. My family is overjoyed that I am keeping fit, and they told me to keep going.*

Identity-building

Almost all of the participants expressed their happiness in increasing their social network through their Tai Chi group, although most of them had

originally joined for physical health reasons. Tai Chi groups were found to be a reliable daily routine for going outside home and staying active. Tai Chi groups consisted of people from different backgrounds, but they all shared one thing in common—their passion for Tai Chi. One of the participants regarded Tai Chi as the key in linking them together as they extended their fellowship from Tai Chi group practice to friendship. Their favourite pastimes together included going for ‘yum cha’ (i.e. drinking tea) and eating ‘dim sum’ (i.e. hot bite-sized food in bamboo steamer baskets) for brunch, playing Mahjong (i.e. a traditional Chinese game that trains memory and calculus), watching Chinese opera, playing Chinese chess, and going on a one-day sightseeing tour. Participants with limited activities of daily living said they built new social circles because they had lost their old ones due to physical limitations. Some participants reported joining Tai Chi groups to fill a social void left out by retirement. They went on to praise the community spirit in Tai Chi groups for making them feel important as members. One participant in particular mentioned ‘a sense of unity’ within the group. Where the effect of Tai Chi groups on the dignity of the elders was concerned, a couple of participants celebrated reduced embarrassment and shame in their public life due to better body-control.

8 Discussion

8.1 Main Findings

Many previous studies have shown that Tai Chi has a positive effect on improving elders’ quality of life. Findings from this study show that Tai Chi groups are effective in enhancing community-dwelling elders’ self-rated health. They have an obvious reduction in negative emotions and feel more grounded and energetic than before. Tai Chi groups also help them turn the practice into a daily habit. Both current and previous studies indicate that the social element of Tai Chi groups can greatly benefit Tai Chi practitioners who practise in a Tai Chi group. With the adequate amount of peer support they receive from each other, community-dwelling elders have a better mood

hence self-rated health. All participants rated their self-rated health better currently than before beginning Tai Chi practice. However, considering the high age of the participants, it would be more likely for their actual health condition to be worse. Their understanding of Tai Chi rose concurrently with the increase in time spent practising, implying a long-term process. Getting similarly positive results with Tai Chi groups in clinical interventions may require a long period of time. Although physical health improves relatively linearly between individuals in comparable physical condition, behavioural processes, such as social interaction and the meditative effect of a Tai Chi group, are unpredictable in length and vary from person to person.

Improvements to either areas of physical health, coping with diseases and activities of daily living, were most keenly shared by the participants, as they were the first areas, where participants and the people around them could observe the effectiveness of Tai Chi. Changes to physical health are easy to understand and explain in practical terms, and physical health also improves rather linearly over time. Physical health problems arise more commonly as well, making it easier for elders to share about them. When the activities of daily living are not enough to prevent the muscle atrophy and gradual loss of balance of individual elders, physical activities such as Tai Chi form the core of physical maintenance that they are able to do regularly. The diminished number of ‘severely limited’ respondents implies an improvement brought on by regular practice in Tai Chi groups, the disappearance of respondents from the ‘not limited’ end of the scale can be explained by other factors, such as ageing. Although participants practising in Tai Chi groups found more inner confidence in the aforementioned tasks of cooking, cleaning and other activities of daily living, they still needed to put a lot of effort into them. Since the improvement in their daily mood can also be said to have helped increase their perceived vitality and vigour, it is a possible reason for the improved self-rated health results. Through increased mental energy, activities of daily living and other physical activities might feel less tiring to do. The willingness of elders to perform physically intimidating tasks may be a factor in the prevention of the deterioration of their physical condition. The effects of ageing bring more than physical weakness. Elders are prone to a plethora of medical conditions due to many factors related to advanced age, such as a weakened

immune system, accumulated mutations and advanced lifestyle diseases. A Tai Chi group is not selective in who gets to practise in it, however. Even Parkinson's patients are welcomed to be in Tai Chi groups and perform the motions at their own pace. For all participants, Tai Chi groups have been reported to strengthen the immune system, something that becomes more vital as a person ages. Even small infections can become chronic or escalate into serious ones, when the body is too old to fight them off quickly. People in a weakened physical state have a weaker immune system as well.

Most elders expressed delight at being in the company of people other than their family. Finding new friends was attributed to a wide range of beneficial effects, such as overcoming depression, boosting self-image, providing a constant source of excitement in life as well as making it hold meaning. The emotional support elders gain from their peers in Tai Chi groups can encourage them to maintain a healthy lifestyle, as they regain their sense of self-worth and have a source of new stories to tell their relatives from their time spent with their Tai Chi friends. As elders experience joy and friendship and have new memories worth keeping, the brain stays active and the mind keeps from dulling. As even those among elders craving for silence can enjoy peace and quiet in Tai Chi groups, it can offer a way to combat loneliness without generating social fatigue. Elders dealing with difficult life situations can also meditate during Tai Chi in order to reduce their stress levels and relieve anxiety. It helps that there is no social stigma about practising Tai Chi in Hong Kong, where it is a normal part of life. The focus of Tai Chi on achieving and maintaining balance is the most relevant to its elder practitioners.

The influence of the fear of falling is an aggravating factor in the diminishment of activities elders take part in. In addition to the physical injuries, the experience of falling may leave a lasting mark on an elder's psyche. Whereas risk avoidance can be construed and lauded as health-preserving, it is too easy to overdo it. For elders frightened of the outdoors, home can become a prison as well as a shelter. Despite facing several limitations to lifestyle brought on by age, elders fully retain the natural need for human interaction. Most communities, such as those built around workplaces and hobbies, do not persist once one has entered retirement. The lack of meaningful community

membership almost invariably leads to elders having low self-esteem and self-worth, causing self-imposed seclusion from activities and, ultimately, social isolation. Elders can easily be trapped in a vicious circle, where being physically incapable of keeping hobbies leads to having less contact with the people related to said hobbies, further reducing the opportunities to leave the house and stay in shape.

8.2 Ethical Considerations

Since distinguishing standard nursing practice and research data collection from each other can be difficult, nursing research commonly contains ethical concerns (Polit & Beck 2013, 77). The participation of those in this study was purely voluntary and without any rewards in order to minimise any dishonesty. The participants were informed of the purpose of the interview, and of the nature of information that would be asked of them before they could consent to being interviewed. Thus, each participant signed an informed consent (see Appendix 3–4) before the interview. Any necessary sharing of their personal information was made clear to them in advance, and their wishes for anonymity were respected. The confidentiality and secure storing of research data was assured. The freedom to withdraw from the interview at any point was offered to all participants, as was the freedom to object to any of the questions asked. The pace of the interviews was kept at a comfortable level of around 30 minutes to avoid rushing or pressuring the participants. Vulnerable participants with limited autonomy (i.e. cognitively incompetent) were not chosen for this study. (Johnson & Long 2010, 28–30.)

8.3 Credibility, Validity and Reliability

There is a consensus on mortality being most objective as a measurement of a person's general health (Quesnel-Vallée 2007, 1162). Due to strong evidence of the predictive power of self-rated health for subsequent mortality, Self-rated health is seen as a valid measurement technique (ibid., 1161). Since SF-12 has been found to be valid for a Chinese population (Lam et al. 2005, 546), it was chosen as a tool for measuring self-rated health. Global self-rated health was chosen instead of comparative self-rated health to maximise accuracy. Being a semi-structured interview, the reliability of most

questions is moderately high due to having the exact same questions as well as directly comparable answers between each participant. The few open-ended questions at the end of the interview have unpredictable answers that are prone to changes each time they are asked. With one researcher behind it, this study suffers from a lack of validity. In addition, the participants rated their pre-Tai Chi self-rated health in the same interview as their post-Tai Chi self-rated health. By being months, even decades after the start of the Tai Chi group activity, the participants' point of view is positively biased in favour of Tai Chi. It may explain why not one respondent kept their self-rated health the same, considering other factors in life could have negated the reported beneficial impact of Tai Chi in their self-rated health. On the other hand, the fact that two-thirds of respondents had done group Tai Chi for at least five years helps explain the change in their self-rated health. During the sampling process, potential participants who are demented were excluded from the study in order to maintain the reliability of this study.

As opposed to other methods of information gathering, interviews receive a high percentage of responses. One reason for this may be that interviewing makes participants feel that their responses are appreciated, since they warrant the time and effort of an interviewer. Additionally, respondents might be willing to give more in-depth or personal answers in interviews due to the more engaging nature of interviewing. Face-to-face interviews improved mutual communication, since it was easier to make sure the participants understood the questions. It was helpful that the interviewer and researcher were the same person, eliminating any loss of information that would have occurred between a separate interviewer and researcher. (Brinkmann 2013, 27–29.) Although individual interviews would have enabled the use of comparative self-rated health without peer pressure, it was not chosen as a method. Comparative self-rated health asks respondents to compare their self-rated health to that of their peers. Two studies (Vuorisalmi, Lintonen, & Jylhä 2006; Dening, Chi, Brayne, Huppert, Paykel, & O'Connor 1998) concluded that elders rate themselves more positively compared to their peers than younger respondents. This is explained by the lowered expectations elders have of themselves in terms of health, and the high probability of knowing a peer who has deceased. (Chang et al. 2014, 521; Jylhä 2009, 310.)

Therefore, having chosen elders as the demographic, global self-rated health was deemed more accurate than its alternative.

There was a need to consciously maintain a professional distance to the information sources. At the same time, it was necessary to ensure the clarity of the interview in order to record the conversation correctly. Data interpretation of this study aimed at objectively following participants' points of view as a mean to maintain trustworthiness. (Polit & Beck 2013, 54.) Tai Chi groups in Tsuen Wan were observed for a month to gather data for a naturalistic study with focus groups. Unfortunately, due to the sensitive content of the discussion, individual interviews were performed in the end. An unavoidable complication in data analysis was having to translate the answers of the participants from Cantonese Chinese into English even though the researcher is fluent in both languages. Since the researcher is also the interviewer, original meanings and body language were taken into account in data analysis in order to avoid the translation gap leading to misunderstandings. By having both closed and open-ended questions, the interviews resulted in a large amount of data—both qualitative and quantitative—that complemented each other and could be triangulated to strengthen the study's validity.

8.4 Reflexivity and Bias

Regardless of the type of interviews, both conducting and analysing them requires a sizable investment of resources from the researcher. The interviewer may end up influencing the flow and results of interview sessions, making personal bias a significant risk. The post-positivist acceptance of unavoidable bias has been accepted by the author. The responsibility of the interviewer is further increased by ethical considerations, when asking personal or invasive questions from participants. (le May & Holmes 2012, 83.) In the culture among Chinese population, people traditionally maintain their dignified image even in private settings. Although participants' body language did not directly conflict their speech, several participants seemed to have implicitly avoided any embarrassing details in their replies. Such random bias was more difficult to identify in each participant than their level of fatigue.

The use of the type of convenience sampling known as snowball sampling makes it difficult to suggest hypotheses on community-dwelling elders at large, since the chosen participants do not truly represent any population sample. By using convenience sampling, this study carries the highest risk of bias, especially in heterogeneous populations. There is no way to control for the biases in the sampling, and subsequent results cannot be conclusive without supportive evidence. (Loiselle et al. 2010, 209.) Furthermore, any generalisations from the results are inconclusive due to the small sample size of 12. Bias based on participants' marital status and gender seems unlikely based on their diversity.

8.5 Recommendation and Conclusion

Possible future research could clarify the differences between Tai Chi groups and individual Tai Chi by having solitary Tai Chi practitioners switch to Tai Chi groups for four weeks (to match the standard recall period of SF-12), and do self-rated health before and after they joined the group. Self-rated health provided both qualitative and quantitative material for this study. It has scoring algorithms, that can provide unique data for quantitative studies. Likewise, the use of licensed Optum SF-12 Health Survey (possible localised version) is recommended. A larger sample of the population than what was recruited in the current study would be more representative.

It would be insightful to extend this study to be a comparison between Chinese and Western. For instance, how self-rated health of community-dwelling elders from different cultural background is influenced by participating in Tai Chi groups. Another variation that may be done is to replicate the current study in a Western setting. Individualism and materialism are highlighted in Western societies, causing social isolation among Western elders (Eckersley 2006, 253–254). Chinese, on the other hand, are very used to group activities due to social norm (Xu & Norstrand 2012, 148–150) and strong familial bonds (Ho, Lo, Chan, & Leung 2012, 181–182).

To conclude, joining Tai Chi groups as a form of social interaction is found to

be beneficial to the self-rated health of community-dwelling elders in Hong Kong as shown by the results. Based on current results, Tai Chi groups may be a useful clinical intervention to combat social isolation and depression. Perhaps Western nurses can consider implementing it within their community so that elders on the other side of the globe can also experience the magic of Tai Chi groups. As a clinical intervention, recommending Tai Chi groups to patients in cultures not used to it may have a lower rate of success.

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Appendix 1. Literature Search Strategy

The literature search of publications was conducted in advance of the thorough literature review through the electronic journal databases of CINAHL, Cochrane Library, Ovid, PubMed, SAGE and Science Direct. The following search terms were used both individually or as a combination: ‘Tai Chi’, ‘groups’, ‘social interaction’, ‘community-dwelling’, ‘elders’, ‘self-rated health’ and ‘Hong Kong’. The search was limited to Chinese and/or English academic articles from 2006 to 2016. More relevant articles were discovered through the citations of found articles. Besides electronic journal databases, other resources such as books, newspaper articles, websites of different government departments and non-governmental organisations are used.

Database	Search date	Search terms and limiters	Results
CINAHL	14 May 2016	Search saved as ‘Tai Chi’	1,229
		Search saved as ‘Tai Chi’ (limited to Chinese and English)	1,221
		Search saved as ‘Tai Chi’ (limited to Chinese and English; Asia)	39
		Search saved as ‘Tai Chi’ and ‘groups’	284
		Search saved as ‘Tai Chi’ and ‘groups’ (limited to Chinese and English)	284
		Search saved as ‘Tai Chi’ and ‘groups’ (limited to English)	281
		Search saved as ‘Tai Chi’ and ‘groups’ (limited to Chinese and English; Asia)	17
		Search saved as ‘Tai Chi’ and ‘social interaction’	3
		Search saved as ‘Tai Chi’, ‘groups’ and ‘social interaction’	1
		Search saved as ‘social interaction’	3,344
		Search saved as ‘social interaction’ (limited to Chinese and English)	3,221
		Search saved as ‘social interaction’ (limited to Chinese and English; Asia)	47
		Search saved as ‘social interaction’ and ‘community-dwelling’	42
		Search saved as ‘social interaction’,	2

		‘community-dwelling’ and ‘elders’	
		Search saved as ‘Tai Chi’ and ‘community-dwelling’	53
		Search saved as ‘Tai Chi’, ‘community-dwelling’ and ‘elders’	6
		Search saved as ‘self-rated health’	2,170
		Search saved as ‘self-rated health’ and ‘community-dwelling’	136
		Search saved as ‘self-rated health’, ‘community-dwelling’ and ‘elders’	13
		Search saved as ‘Tai Chi’ and ‘Hong Kong’	37
		Search saved as ‘Tai Chi’, ‘Hong Kong’ and ‘self-rated health’	0
		Search saved as ‘social interaction’ and ‘Hong Kong’	29
		Search saved as ‘social interaction’, ‘Hong Kong’ and ‘self-rated health’	1
		Search saved as ‘social interaction’, ‘Hong Kong’, ‘self-rated health’ and ‘elders’	0
		Search saved as ‘Tai Chi’, ‘Hong Kong’, ‘elders’ and ‘self-rated health’	0
		Search saved as ‘Tai Chi’, ‘social interaction’, ‘elders’ and ‘self-rated health’	0
Cochrane Library	15 May 2016	Search saved as ‘Tai Chi’	847
		Search saved as ‘Tai Chi’ (limited to 2006 to 2016)	727
		Search saved as ‘Tai Chi’ and ‘groups’	583
		Search saved as ‘Tai Chi’ and ‘groups’ (limited to 2006 to 2016)	516
		Search saved as ‘Tai Chi’ and ‘social interaction’	72
		Search saved as ‘Tai Chi’ and ‘social interaction’ (limited to 2006 to 2016)	70
		Search saved as ‘Tai Chi’, ‘groups’ and ‘social interaction’	72
		Search saved as ‘Tai Chi’, ‘groups’ and ‘social interaction’ (limited to 2006 to 2016)	70
		Search saved as ‘social interaction’	4,859
		Search saved as ‘social interaction’ (limited to 2006 and 2016)	3,748
		Search saved as ‘social interaction’ and ‘community-dwelling’	120
		Search saved as ‘social interaction’ and ‘community-dwelling’ (limited to 2006 and 2016)	114

		Search saved as ‘social interaction’, ‘community-dwelling’ and ‘elders’	18
		Search saved as ‘Tai Chi’ and ‘community-dwelling’	74
		Search saved as ‘Tai Chi’, ‘community-dwelling’ and ‘elders’	13
		Search saved as ‘self-rated health’	1,241
		Search saved as ‘self-rated health’ (limited to 2006 to 2016)	922
		Search saved as ‘self-rated health’ and ‘community-dwelling’	56
		Search saved as ‘self-rated health’ and ‘community-dwelling’ (limited to 2006 to 2016)	46
		Search saved as ‘self-rated health’, ‘community-dwelling’ and ‘elders’	10
		Search saved as ‘Tai Chi’ and ‘Hong Kong’	81
		Search saved as ‘Tai Chi’, ‘Hong Kong’ and ‘self-rated health’	10
		Search saved as ‘social interaction’ and ‘Hong Kong’	178
		Search saved as ‘social interaction’, ‘Hong Kong’ and ‘self-rated health’	36
		Search saved as ‘social interaction’, ‘Hong Kong’, ‘self-rated health’ and ‘elders’	6
		Search saved as ‘Tai Chi’, ‘Hong Kong’, ‘elders’ and ‘self-rated health’	1
		Search saved as ‘Tai Chi’, ‘social interaction’, ‘elders’ and ‘self-rated health’	1
Ovid	21 May 2016	Search saved as ‘Tai Chi’	4,146
		Search saved as ‘Tai Chi’ (limited to 2006 to current)	3,302
		Search saved as ‘Tai Chi’ and ‘groups’	1,023
		Search saved as ‘Tai Chi’ and ‘groups’ (limited to 2006 to current)	821
		Search saved as ‘Tai Chi’ and ‘social interaction’	56
		Search saved as ‘Tai Chi’ and ‘social interaction’ (limited to 2006 to current)	48
		Search saved as ‘Tai Chi’, ‘groups’ and ‘social interaction’	21
		Search saved as ‘Tai Chi’, ‘groups’ and ‘social interaction’ (limited to 2006 to current)	14
		Search saved as ‘social interaction’	62,737
		Search saved as ‘social interaction’	44,436

		(limited to 2006 to current)	
		Search saved as ‘social interaction’ and ‘community-dwelling’	392
		Search saved as ‘social interaction’ and ‘community-dwelling’ (limited to 2006 to current)	280
		Search saved as ‘social interaction’, ‘community-dwelling’ and ‘elders’	26
		Search saved as ‘social interaction’, ‘community-dwelling’ and ‘elders’ (limited to 2006 to current)	13
		Search saved as ‘Tai Chi’ and ‘community-dwelling’	253
		Search saved as ‘Tai Chi’ and ‘community-dwelling’ (limited to 2006 to current)	182
		Search saved as ‘Tai Chi’, ‘community-dwelling’ and ‘elders’	36
		Search saved as ‘Tai Chi’, ‘community-dwelling’ and ‘elders’ (limited to 2006 to current)	16
		Search saved as ‘self-rated health’	12,013
		Search saved as ‘self-rated health’ (limited to 2006 to current)	9,306
		Search saved as ‘self-rated health’ and ‘community-dwelling’	845
		Search saved as ‘self-rated health’ and ‘community-dwelling’ (limited to 2006 to current)	620
		Search saved as ‘self-rated health’, ‘community-dwelling’ and ‘elders’	78
		Search saved as ‘self-rated health’, ‘community-dwelling’ and ‘elders’ (limited to 2006 to current)	44
		Search saved as ‘Tai Chi’ and ‘Hong Kong’	285
		Search saved as ‘Tai Chi’ and ‘Hong Kong’ (limited to 2006 to current)	21
		Search saved as ‘Tai Chi’, ‘Hong Kong’ and ‘self-rated health’	1
		Search saved as ‘social interaction’ and ‘Hong Kong’	464
		Search saved as ‘social interaction’ and ‘Hong Kong’ (limited to 2006 to current)	347
		Search saved as ‘social interaction’, ‘Hong Kong’ and ‘self-rated health’	4
		Search saved as ‘social interaction’, ‘Hong Kong’ and ‘self-rated health’ (limited to 2006 to current)	1

		Search saved as ‘social interaction’, ‘Hong Kong’, ‘self-rated health’ and ‘elders’	1
		Search saved as ‘social interaction’, ‘Hong Kong’, ‘self-rated health’ and ‘elders’ (limited to 2006 to current)	0
		Search saved as ‘Tai Chi’, ‘Hong Kong’, ‘elders’ and ‘self-rated health’	0
		Search saved as ‘Tai Chi’, ‘social interaction’, ‘elders’ and ‘self-rated health’	0
Pubmed	22 May 2016	Search saved as ‘Tai Chi’	1,711
		Search saved as ‘Tai Chi’ and ‘groups’	373
		Search saved as ‘Tai Chi’ and ‘social interaction’	15
		Search saved as ‘Tai Chi’, ‘groups’ and ‘social interaction’	5
		Search saved as ‘social interaction’	309,123
		Search saved as ‘social interaction’ and ‘community-dwelling’	1,100
		Search saved as ‘social interaction’, ‘community-dwelling’ and ‘elders’	44
		Search saved as ‘Tai Chi’ and ‘community-dwelling’	93
		Search saved as ‘Tai Chi’, ‘community-dwelling’ and ‘elders’	8
		Search saved as ‘self-rated health’	7,773
		Search saved as ‘self-rated health’ and ‘community-dwelling’	599
		Search saved as ‘self-rated health’, ‘community-dwelling’ and ‘elders’	32
		Search saved as ‘Tai Chi’ and ‘Hong Kong’	112
		Search saved as ‘Tai Chi’, ‘Hong Kong’ and ‘self-rated health’	1
		Search saved as ‘social interaction’ and ‘Hong Kong’	923
		Search saved as ‘social interaction’, ‘Hong Kong’ and ‘self-rated health’	6
		Search saved as ‘social interaction’, ‘Hong Kong’, ‘self-rated health’ and ‘elders’	0
		Search saved as ‘Tai Chi’, ‘Hong Kong’, ‘elders’ and ‘self-rated health’	0
		Search saved as ‘Tai Chi’, ‘social interaction’, ‘elders’ and ‘self-rated health’	0
SAGE	28 May 2016	Search saved as ‘Tai Chi’ (limited to 2006 to 2016)	1,017
		Search saved as ‘Tai Chi’ and	661

		'groups' (limited to 2006 to 2016)	
		Search saved as 'Tai Chi' and 'social interaction' (limited to 2006 to 2016)	56
		Search saved as 'Tai Chi', 'groups' and 'social interaction' (limited to 2006 to 2016)	56
		Search saved as 'social interaction' (limited to 2006 to 2016)	18,569
		Search saved as 'social interaction' and 'community-dwelling' (limited to 2006 to 2016)	0
		Search saved as 'social interaction', 'community-dwelling' and 'elders' (limited to 2006 to 2016)	0
		Search saved as 'Tai Chi' and 'community-dwelling' (limited to 2006 to 2016)	0
		Search saved as 'Tai Chi', 'community-dwelling' and 'elders' (limited to 2006 to 2016)	0
		Search saved as 'self-rated health' (limited to 2006 to 2016)	0
		Search saved as 'self-rated health' and 'community-dwelling' (limited to 2006 to 2016)	0
		Search saved as 'self-rated health', 'community-dwelling' and 'elders' (limited to 2006 to 2016)	0
		Search saved as 'Tai Chi' and 'Hong Kong' (limited to 2006 to 2016)	101
		Search saved as 'Tai Chi', 'Hong Kong' and 'self-rated health' (limited to 2006 to 2016)	0
		Search saved as 'social interaction' and 'Hong Kong' (limited to 2006 to 2016)	1,114
		Search saved as 'social interaction', 'Hong Kong' and 'self-rated health' (limited to 2006 to 2016)	0
		Search saved as 'social interaction', 'Hong Kong', 'self-rated health' and 'elders' (limited to 2006 to 2016)	0
		Search saved as 'Tai Chi', 'Hong Kong', 'elders' and 'self-rated health' (limited to 2006 to 2016)	0
		Search saved as 'Tai Chi', 'social interaction', 'elders' and 'self-rated health' (limited to 2006 to 2016)	0
Science Direct	29 May 2016	Search saved as 'Tai Chi' (limited to 2006 to 2016)	8,021

		Search saved as ‘Tai Chi’ and ‘groups’ (limited to 2006 to 2016)	5,428
		Search saved as ‘Tai Chi’ and ‘social interaction’ (limited to 2006 to 2016)	1,308
		Search saved as ‘Tai Chi’, ‘groups’ and ‘social interaction’ (limited to 2006 to 2016)	1,196
		Search saved as ‘social interaction’ (limited to 2006 to 2016)	309,590
		Search saved as ‘social interaction’ and ‘community-dwelling’ (limited to 2006 to 2016)	9,121
		Search saved as ‘social interaction’, ‘community-dwelling’ and ‘elders’ (limited to 2006 to 2016)	1,042
		Search saved as ‘Tai Chi’ and ‘community-dwelling’ (limited to 2006 to 2016)	550
		Search saved as ‘Tai Chi’, ‘community-dwelling’ and ‘elders’ (limited to 2006 to 2016)	123
		Search saved as ‘self-rated health’ (limited to 2006 to 2016)	296,865
		Search saved as ‘self-rated health’ and ‘community-dwelling’ (limited to 2006 to 2016)	10,782
		Search saved as ‘self-rated health’, ‘community-dwelling’ and ‘elders’ (limited to 2006 to 2016)	1,396
		Search saved as ‘Tai Chi’ and ‘Hong Kong’ (limited to 2006 to 2016)	1,164
		Search saved as ‘Tai Chi’, ‘Hong Kong’ and ‘self-rated health’ (limited to 2006 to 2016)	295
		Search saved as ‘social interaction’ and ‘Hong Kong’ (limited to 2006 to 2016)	11,551
		Search saved as ‘social interaction’, ‘Hong Kong’ and ‘self-rated health’ (limited to 2006 to 2016)	0
		Search saved as ‘social interaction’, ‘Hong Kong’, ‘self-rated health’ and ‘elders’ (limited to 2006 to 2016)	0
		Search saved as ‘Tai Chi’, ‘Hong Kong’, ‘elders’ and ‘self-rated health’ (limited to 2006 to 2016)	0
		Search saved as ‘Tai Chi’, ‘social interaction’, ‘elders’ and ‘self-rated health’ (limited to 2006 to 2016)	0

Appendix 2. Semi-Structured Questionnaire

問題 Questions	*選擇* Choices
性別 Gender	*男* Male *女* Female
年齡 Age	
婚姻狀況 Marital status	*未婚* Single *已婚* Married *喪偶* Widowed *離婚* Divorced *其他* Others
1) *長期疾病* Chronic diseases	
1a) *閣下在開始練習太極前有沒有患上長期疾病？* Do you have any chronic diseases before starting Tai Chi?	*有* Yes *沒有* No → 2a) *繼續* Continue
1b) *如有，閣下所患的長期疾病為……？* If yes, what are your diagnoses?	*退化性關節炎* Osteoarthritis *肩周炎* Adhesive capsulitis *痛風症* Gouty arthritis *骨質疏鬆症* Osteoporosis *痙攣及關節攣縮* Spasticity and contractures *癌症* Cancer *認知障礙症* Dementia *便秘* Constipation *小便失禁* Incontinence *高血壓* Hypertension *心臟病* Heart disease *疥瘡* Scabies *抑鬱症* Depression *中風* Stroke *白內障* Cataract *柏金遜症* Parkinsonism *慢性阻塞性呼吸道疾病* Chronic obstructive pulmonary disease *失聰* Hearing impairment *其他* Others
1c) *閣下在開始練習太極小組前的日常生活有沒有被上述長期疾病限制？* Is your daily life	*有* Yes *沒有* No

restricted by the diseases mentioned above before practising in Tai Chi groups?	
2) *在開始練習太極小組前的健康狀況和生活限制* Health condition and its limitation on daily life before practising in Tai Chi groups	
2a) *閣下認為在開始練習太極小組前的健康狀況如何（請用一個字回答）？*Generally, how would you rate your health before taking up Tai Chi group practice(in one word)?	1 *非常好* Very good 2 *好* Good 3 *一般* Moderate 4 *差* Bad 5 *非常差* Very bad
2b) *以閣下在開始練習太極小組前的身體狀況來說，下列的日常生活活動受到甚麼程度的限制？*Before you started practising in Tai Chi groups, did your health condition limit you in these activities?	*自理（如：進食／更衣／清潔／如廁）* Self-care (e.g. eating/dressing/cleaning/toileting) *彎曲身體* Bending *上樓梯或上斜坡* Climbing upstairs or upslope *適中的活動（如：移動桌子／超市購物／家居清潔）* Moderate activities (e.g. moving a table/groceries shopping/home cleaning) *劇烈的活動（如：抬重物／跑步／劇烈運動）* Vigorous activities (e.g. lifting heavy objects/running/participating in strenuous sports)
	沒有限制 Not limited *輕微限制* Slightly limited *中度限制* Moderately limited *嚴重限制* Severely limited
2c) *閣下在開始練習太極小組前有沒有因為生理狀態導致工作或日常生活中遇到以下這些問題？*Before you started practising in Tai Chi groups, did you encounter the following problems due to your physical condition?	*完成的項目比要做的項目少* Completing less than what you are supposed to do *工作或日常生活中有不方便或限制* Inconvenience or limitations at work or daily life
	有 Yes *沒有* No
2d) *閣下在開始練習太極小組前有沒有因為心理狀態導致工作或日常生活中遇到以下這些問題？*Before you started practising in Tai Chi groups, did you encounter the following	*完成的項目比要做的項目少* Completing less than what you are supposed to do *工作或日常生活中有不方便或限制* Inconvenience or limitations at work or daily life
	有 Yes *沒有* No

problems due to your mental condition?	
3) *練習太極概況* Overview of the situation of Tai Chi group practice	
3a) *閣下在太極小組練習了多久？*How long have you practised in a Tai Chi group?	
3b) *閣下對太極概念的理解程度* How well do you understand the philosophy of Tai Chi?	0 *完全不了解* Not at all 1 *不太了解* Very poorly understood 2 *初步了解* Poorly understood 3 *一般了解* Fairly understood 4 *頗為了解* Well understood 5 *非常了解* Fully understood
3c) *閣下對太極好處的認知程度* How well do you know about the benefits of doing Tai Chi?	0 *完全不清楚* Not at all 1 *不太清楚* Very poorly known 2 *初步清楚* Poorly known 3 *一般清楚* Fairly known 4 *頗為清楚* Well known 5 *非常清楚* Fully known
4) *在開始練習太極後的健康狀況和生活限制* Health condition and its limitation on daily life after practising in Tai Chi groups	
4a) *閣下認為目前的健康狀況如何（請用一個字回答）？*Generally, how would you rate your health in one word?	1 *非常好* Very good 2 *好* Good 3 *一般* Moderate 4 *差* Bad 5 *非常差* Very bad
4b) *評估目前的疼痛狀況（疼痛程度數字評分法）* Current pain level (Numerical Rating Scale)	0 *沒有疼痛* No pain → 4d) *繼續* Continue 1–2 *有點痛* A bit of pain 3–4 *輕微疼痛* Mild pain 5–6 *中度疼痛* Moderate pain 7–8 *嚴重疼痛* Severe pain 9–10 *無法忍受的劇痛* Unbearable pain
4c) *疼痛情況有沒有在開始練習太極後得到舒緩？*To what extent your pain is relieved after practising in Tai Chi groups?	0 *完全沒有* Not at all 1 *不太舒緩* Poorly relieved 2 *輕微舒緩* Mildly relieved 3 *中度舒緩* Moderately relieved 4 *頗為舒緩* Effectively relieved 5 *完全舒緩* Completely relieved
4d) *以閣下目前的身體狀況來說，下列的日常生活活動受到甚麼程度的*	*自理（如：進食／更衣／清潔／如廁）* Self-care (e.g. eating/dressing/cleaning/toileting) *彎曲身體* Bending *上樓梯或上斜坡* Climbing upstairs or upslope

*限制？*Did your current health condition limit you in these activities?	*適中的活動（如：移動桌子／超市購物／家居清潔）* Moderate activities (e.g. moving a table/groceries shopping/home cleaning) *劇烈的活動（如：抬重物／跑步／劇烈運動）* Vigorous activities (e.g. lifting heavy objects/running/participating in strenuous sports)
	沒有限制 Not limited *輕微限制* Slightly limited *中度限制* Moderately limited *嚴重限制* Severely limited
4e) *閣下目前有沒有因為生理狀態導致工作或日常生活中遇到以下這些問題？*Did you encounter the following problems due to your current physical condition?	*完成的項目比要做的項目少* Completing less than what you are supposed to do *工作或日常生活中有不方便或限制* Inconvenience or limitations at work or daily life
	有 Yes *沒有* No
4f) *閣下目前有沒有因為心理狀態導致工作或日常生活中遇到以下這些問題？*Did you encounter the following problems due to your current mental condition?	*完成的項目比要做的項目少* Completing less than what you are supposed to do *工作或日常生活中有不方便或限制* Inconvenience or limitations at work or daily life
	有 Yes *沒有* No
5) *集體練習太極成效和心得* Effects and experiences of Tai Chi group practice	
5a) *養成了每天定時練習的習慣* Turning regular practice into a daily habit	0 *完全沒有* Not at all 1 *偶爾* Seldom 2 *經常* Always
5b) *顯著覺得體力比以前充沛* Feeling more energetic than before	0 *完全沒有* Not at all 1 *偶爾* Seldom 2 *經常* Always
5c) *顯著覺得步伐比以前穩固* Feeling more grounded than before	0 *完全沒有* Not at all 1 *偶爾* Seldom 2 *經常* Always
5d) *朋友多了因此社交活動變得活躍* More active social life with more friends	0 *完全沒有* Not at all 1 *偶爾* Seldom 2 *經常* Always
5e) *期待每天的太極練習因為能見到朋友好高興* Looking forward to daily practice because of the	0 *完全沒有* Not at all 1 *偶爾* Seldom 2 *經常* Always

joy of meeting friends	
5f) *負面情緒明顯減少* Obvious reduction in negative emotions	0 *完全沒有* Not at all 1 *偶爾* Seldom 2 *經常* Always
5g) *閣下覺得集體練習太極（或者普遍太極）對閣下的健康有甚麼好處？*In your opinion, what did you benefit from practising in Tai Chi groups (or Tai Chi in general)?	
5h) *閣下為甚麼選擇以團體代替單人模式練習太極？*Why did you choose to practise in a group instead of alone?	

Appendix 3. Consent Form (Chinese Version)

太極練習者自我身心健康評估訪問

親愛的研究參加者：

首先非常感謝閣下對是次訪問的興趣！本人李卓思 (Emilie) *為芬蘭於韋斯屈萊應用技術大學* (Jyväskylän ammattikorkeakoulu) *護理學系四年級學士學生，正在為學士畢業論文《*Exploring How Tai Chi Groups Influence Community-Dwelling Elders' Self-Rated Health: A Study of Tsuen Wan District in Hong Kong*》收集資料。此研究目的為探索* (exploring) *集體練習太極* (Tai Chi groups) *如何影響* (influence) *練習者的自我評估身心健康狀況* (self-rated health)*。訪問對象集中於香港* (Hong Kong) *荃灣區* (Tsuen Wan District) 65 *歲或以上神智清晰的社區居住長者* (community-dwelling elders)*，並集體練習太極超過三個月或以上。*

訪問內容以標準十二題簡明健康狀況調查表 (SF-12) *作藍本，並經過參考本港及海外學術文獻後修訂。問題涵括個人資料、整體健康、疾病、 體力、日常生活、疼痛、情緒、社交活動以及練習太極的情況等。是次訪問需時約* 30 *分鐘。回答內容不會引致任何不良後果，閣下亦有權不作答某些問題或要求隨時退出。*

本人作為研究負責人必遵守香港法例第 486 *章《個人資料(私隱)條例》，確保閣下於是次訪問中提供的任何資料僅作研究之用，並充分地嚴格保密閣下的個人身份。全部資料在是次研究結束後將會被妥善銷毀。如日後閣下對是次研究有任何疑問，歡迎致電* [redacted] *或電郵到* [redacted] *向本人查詢。最後再次衷心感謝各下抽空參與！*

敬祝
老如松柏　福壽康寧

研究負責人
李卓思 (Emilie)　*敬上*

本人明白和接受上述內容，並願意參與是次訪問。簽署作實。

_____

Appendix 4. Consent Form (English Version)

Tai Chi Practitioners' Self-Rated Health Interview

Dear Participants,

First of all, thank you for your interest in this interview! I am Emilie Lee, a final year nursing major from Jyväskylän ammattikorkeakoulu, Finland. Currently, I am collecting data for my bachelor thesis "Exploring How Tai Chi Groups Influence Community-Dwelling Elders' Self-Rated Health: A Study of Tsuen Wan District in Hong Kong".

The aim of this study is to explore the effects of Tai Chi groups on community-dwelling elders' self-rated health. Target participants are cognitively competent Hong Kongese Chinese community-dwelling elders (aged 65 or above) in Tsuen Wan District, who practised Tai Chi in a group for more than three months. This study is modified from both the standard and Hong Kong specific 12-Item Short Form (SF-12) Health Survey, as well as using Hong Kong's and overseas' academic articles as a reference. Personal information, general health, diseases, fitness, activities of daily living, pain, emotions, social life, and experiences of Tai Chi practice will be asked.

This interview will take approximately 30 minutes. Participation is entirely voluntary, which means that you can choose to stop at any time without negative consequences. As a data user, I follow the Personal Data (Privacy) Ordinance to ensure that all data are securely kept and used only for research purpose only. Participant will not be identified by name in any report of the completed study. Data containing personal identifiers will be erased after publication. If you have any questions about the study, please call me at [redacted] or email [redacted] for further information. Last but not least, thank you again for your time! Your help is very much appreciated.

Sincerely,
Emilie

I understand the contents described above and agree to participate in this research. Please sign below.

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