# Exploring the Perspectives of Experienced Healthy Older Adults Participating in a Community-Based Tai Chi Program

by
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## Abstract

Only 13% of older Canadian adults, often identified as individuals between the ages of 50 and 65, participate in the recommended 150 minutes of physical activity per week. Tai chi has been promoted as a form of physical activity that can help address this issue as it is a martial art that is gentle on the body and accessible to this population. Research has demonstrated tai chi's ability to enhance well-being among older adults who have chronic conditions and who are new to tai chi; however, no studies have investigated the perspectives of older adults who are healthy and experienced in practice. This is important because tai chi requires a sequence of movements that may be dependent on long-term participation, and the positive effects of practicing may increase with more experience. In an effort to provide information on potential strategies for promoting adherence to physical activity in older adults, the purpose of this study was to use qualitative inquiry to broadly explore the perspectives of experienced, healthy older adult tai chi practitioners' participating in a community-based program. Eleven participants (*M* age= 64.9 years; male *n*= 8) who self-identified as healthy and had been practicing tai chi for at least 1 year were recruited from a tai chi program in Thunder Bay, Ontario. One-on-one interviews were conducted and inductive content analysis was used to analyze the data. Five overarching themes were identified, along with associated subthemes: reasons for joining tai chi (e.g., becoming more physically active); principles related to tai chi and aging (e.g., being kind to an aging body); challenges to practice (e.g., personal barriers); facilitators for practice (e.g., physical and psychological health benefits), and group dynamics (e.g., group format). The findings of this research suggest that among healthy older adults, tai chi is a form of physical activity that is gentle and holistic, and the facilitators associated with practice outweigh the challenges, thus promoting long-term adherence. Future community-based programs should attempt to adopt similar program characteristics (e.g., group format, supportive instructors, facilitating expanding social network) to promote adherence to physical activity in older adults.

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## Introduction

Older adults (i.e., individuals between 50 and 65 years of age) comprise 16.9% of the Canadian population, and this age demographic is continuing to grow at a rapid rate (Manson, Rotondi, Jamnik, Arden, & Tamim, 2013; Public Health Agency of Canada, 2014; Statistics Canada, 2014). Health-related research accentuating the older adult population is needed as many older adults are at a heightened risk for chronic diseases and age-related declines in health (Diehr, Thielke, Newman, Hirsch, & Tracy, 2013). Older adults who participate in regular physical activity can preempt many of these health issues (Acree et al., 2006; Warburton, Charlesworth, Ivey, Nettlefold, & Bredin, 2010). However, few older adults participate in sufficient amounts of physical activity to incur health benefits (Statistics Canada, 2014) citing barriers such as lack of time, guidance, and knowledge, and health challenges (e.g., pain, discomfort; Bethancourt, Rosenburg, Beatty, & Arterburn, 2014; Manson et al., 2013) as reasons. One way of promoting physical activity in this demographic is by exploring diverse modes of exercise which may have fewer perceived barriers and more facilitators. For example, numerous reviews have identified that group-based exercise classes can facilitate physical activity in an older age cohort as they offer a social environment and social interaction (Blackstone, Reeves, Lizzo, & Graber, 2017; Burke, Carron, Eys, Ntoumanis, & Estabrooks, 2006; Dolan, 2012; Iverson, Fielding, Crow, & Christenson, 1985). The social relationships that can be developed in group-based exercises classes can also aid in older adults' interest and adherence to exercise programs (Dolan, 2012). Since many older adults who start an exercise program will drop out within six months of starting (Dishman, 1988), exploring the perspectives

of those who have adhered to an exercise program for a significant period, may provide valuable insight into the promotion of physical activity in this demographic.

Researching alternative modes of physical activity which are suitable for older adults, while also incorporating aspects of group exercise could provide researchers and health-care practitioners with avenues for developing future community-based interventions and exercise programs. One mode of physical activity which is completed in a group environment and may be more suitable for older adults is tai chi as is it characterized by slow, sequential movements over an individual's centre of gravity. Research has shown that tai chi can elicit similar health benefits (e.g., improved balance, strength, cardiovascular health) to traditional exercises (i.e., aerobic activities, weight-lifting; Jahnke, Larkey, Rogers, Etnier, & Lin, 2011; Nelson et al., 2007; Zheng et al., 2015). However, limited research has studied tai chi from a pragmatic perspective in a community-based setting with healthy older adults who are experienced in practice. It is important to know whether the findings of tai chi intervention studies will maintain ecological validity because many older adults will participate in a community-based (as opposed to a research-oriented) setting. Furthermore, tai chi is based on a series movements that may be dependent on long-term practice, and the positive effects of practicing may increase with more experience. Because more information on potential strategies for promoting adherence to physical activity in older adults is needed, the broad purpose of this study was to use qualitative inquiry to explore the perspectives of experienced healthy older adults who have adhered to a community-based tai chi program.

# Chapter 1- Background

To provide a contextual framework for this thesis, chapter one provides a detailed account of what is meant by "older adult," followed by an examination of the correlates of participation in physical activity among older adults, the Canadian physical activity guidelines for older adults, older adults' engagement in physical activity, and finally, an explanation as to why tai chi should be considered as an alternative form of exercise for this population.

## Operationalizing Older Adults

The literature in health-related fields defines older adults in different ways. For example, from a public health perspective, older adults have been described as individuals who are 65 years and older (Canadian Society of Exercise Physiology [CSEP], 2018; Public Health Agency of Canada, 2014; Statistics Canada, 2014). However, in past research, older adults have been identified as individuals as young as 50 years of age, to as old as 65 years of age (Chen et al., 2015; Frye, Scheinthal, Kemarskaya, & Pruchno, 2007; Morris, Sargent-Cox, Cherbin, & Anstey, 2013). This wide age range is connected with older adults' experience of age-related declines in health, which also represents a diverse age spectrum with many different functional capabilities (e.g., clinical conditions or physical limitations; Diehr, Thielke, Newman, Hirsch, & Tracy, 2013). Therefore, for the purposes of this study, older adults were defined as those who were 50 years of age or older.

## Correlates of Physical Activity Participation in Older Adults

**Physiological health benefits of physical activity.** The physiological benefits of physical activity in older adults are extensive and well-documented (British Heart Foundation National Centre for Physical Activity and Health [BHFNC], 2018; World Health Organization [WHO], 2018). Older adults who participate in aerobic physical activity three times per week

can increase their aerobic capacity eliciting several cardiovascular adaptations such as lowered resting heart rate, decreased blood pressure, increased oxygen uptake in muscles, and improved triglycerides, endothelial, and myocardial functions (Chodzko-Zajko, Schwingel, & Park, 2009; Maiorana, O'Driscoll, Taylor, & Green, 2003; Spina, Friso, Ewin, & Parker,1999; Warburton, Nicol, & Bredin, 2006). Aerobic physical activity also decreases total body fat mass and increases free fat mass in older adults, thus, serving as a fundamental contributor to weight control (Bamman et al., 2003; Campbell, Crim, Young, & Evans, 1994; Hunter, Wetzstien, Fields, Brown, & Bamman, 2000; Weinsier, Hunter, Desmond, Bryne, & Zuckerman, 2002). Weight maintenance is important in older adults as it can help mitigate functional limitations due to excess weight (Nelson et al., 2007). These improvements in physical health status among individuals can occur as a result of merely increasing physical activity, while not specifically improving aerobic fitness (e.g., cardiac output and oxidative potential; Warburton et al., 2006). By participating in physical activity, older adults can also substantially increase their muscle strength to promote and maintain health and physical independence, which is important regarding activities of daily living and overall quality of life (Chodzko-Zajko et al., 2009; Nelson et al., 2007).

**Psychological health benefits of physical activity.** In addition to the physiological health benefits, reviews have provided support for physical activity participation and improvements in overall psychological health and well-being (Chodzko-Zaijko et al., 2009; McAuley, Lox, & Duncan 1993; Warburton et al., 2006). Physical activity plays a primary role in reducing negative psychological (e.g., lack of self-esteem) and emotional (e.g., depression) states by inducing positive psychological (e.g., increased self-esteem) and emotional (e.g. reduced depression) states (Lox, Martin Ginis, & Petruzzello, 2010). The positive impacts of

physical activity on psychological health can be experienced through both acute and chronic bouts of exercise. Moreover, one single bout of exercise can produce instantaneous temporary psychological benefits, while routine exercise provides more enduring ones (Lox et al., 2010).

**Social health benefits of physical activity.** Synonymous with the physiological and psychological benefits of physical activity, an individual can experience social benefits (Lox et al., 2010; Yip, Sarma, & Wilk, 2016). Research is continuing to address the direct social benefits and influences of participation in physical activity. Social influences, in particular, refers to the social interactions and social support an individual receives when participating in a group-based activity (Lox et al., 2010). Social support in an exercise setting refers to the perceived comfort, caring, assistance, and information that a person receives from others in an exercise group (Lox et al., 2010). Social support is said to be the most important influence with regards to physical activity intention, participation, and adherence (Chogahara, Cousins, & Wankel, 1998; Lox et al., 2010). Individuals of all ages and genders can reap the social benefits of exercise; however, older adults are more prone to experiencing these benefits as they tend to have a stronger sense of community and support during difficult situations such as medical conditions and loss (Lox et al., 2010; Yeh et al., 2016). Therefore, social support is an important component to consider when seeking to promote physical activity in older adults.

## Canadian Physical Activity Guidelines for Older Adults

In order to help older adults engage in physical activity, CSEP (2018) created a set of guidelines specific to this population. It is suggested that older adults accumulate 150 minutes of moderate to vigorous aerobic physical activity in bouts lasting longer than 10 minutes per week (CSEP, 2018). Moderate-intensity physical activities include brisk walking and bicycling while vigorous-intensity physical activities are listed as jogging, swimming, and cross-country skiing.

In addition to aerobic activities, CSEP (2018) suggests that older adults complete muscle-strengthening activities at least two times per week. Examples include lifting free weights or using weight-lifting machines. The Canadian Society of Exercise Physiology (2018) also recommends that older adults perform flexibility exercises in order to improve balance and reduce risk of falls; however, no examples are provided. Nonetheless, older adults who regularly participate in physical activity may experience a number of health benefits and prevent physical and mental health-related issues (WHO, 2018).

## Older Adults' Engagement in Physical Activity

Despite the fact that there are many benefits associated with physical activity, only 13% of older adults participate in the recommended 150 minutes per week (Statistics Canada, 2017), thereby increasing sedentary lifestyles (Chodzko-Zaijko et al., 2009; Manson et al., 2013). Sedentary lifestyles often increase as an individual ages due to the decline in exercise capacity (WHO, 2018). For instance, younger individuals may require less exercise capacity to complete the same activity, whereas older individuals may find the activity more physically demanding (Chodzko-Zaijko et al., 2009). The low physical activity rates throughout the lifespan coupled with an unhealthy older population underscores the need to help older adults become more active.

**Perceived barriers and facilitators of physical activity.** Restriction in the participation of physical activity in older adults may be due to the perceived barriers associated with involvement. Understanding both the barriers of and facilitators to physical activity participation in this group is important in order to determine optimal avenues to enhance engagement rates. Older adults are a distinct population group with their own unique barriers to physical activity participation (O'Neil & Reid, 1991). Aerobic and muscle-strengthening activities are

recommended for older adults (Nelson et al., 2007); however, for an older population, some of these activities may not be ideal. For example, running may irritate an older individual's lower limb joints by causing pain or discomfort (Bethancourt et al., 2014; Chodzko-Zaijko et al., 2009; Nelson et al., 2007). Muscle-strengthening activities can be physically demanding, requiring older adults to lift free weights or use weight-lifting machines. Some older adults may not want to go to the gym and use free weights or machines as they can be intimidating, or they may not have been taught how to use the equipment properly by a professional (Manson et al., 2013). Acknowledging the fact that some aerobic activities may not be ideal, and resistance activities can be both physically demanding and intimidating, researching alternative modes of physical activity with fewer perceived barriers is needed.

Bethancourt et al. (2014) identified group-based activities as an important facilitator for participation in physical activity. Group exercise classes have been shown to offer a variety of benefits for exercisers including a social environment and accountability (Blackstone, Reeves, Lizzo, & Graber, 2017; Dolan, 2012). Social comradery often develops among the participants and instructors which, according to Dolan (2012), appears to help in maintaining the participant's interest and increase adherence to exercise programs. Because physical activity rates are still low among older adults, a number of intervention strategies to promote participation have been examined in other contexts including individually-based (e.g., home-based) and group-based (e.g., structured classes; Burke et al., 2006; Iverson, Fielding, Crow, & Christenson, 1985) formats.

In a meta-analysis by Burke et al. (2006), four possible contexts of physical activity were compared to determine which was superior. Burke et al., (2006) indicated that within the two common contexts of physical activity (group- or individually-based), there are also differences

concerning contact from other individuals (e.g., health-care professional, other exercisers, and instructors). Four contexts were thus compared: home-based programs with no contact, home-based programs with some contact, standard group exercise classes, and group exercise classes where activities were completed to increase cohesiveness known as "true groups" (Burke et al., 2006). Burke et al. (2006) found that exercising in a "true group" is superior to a standard group exercise class, which in turn is more superior to an individually-based context no matter how much contact an individual receives. True groups were the superior physical activity context because in the true groups, cohesiveness was increased via the instructor assigning team building strategies (e.g., team building tasks). When groups are cohesive in a physical activity context, individuals are more likely to adhere to said activity (Burke et al., 2006). This conclusion, that true groups are the superior physical activity context, is interesting because in health care fields, there is a growing appreciation for patient/client-centered outcomes (Yeh, Chan, Wayne, & Conboy, 2016) which can be achieved by creating individualized programs to enhance personal and individual strengths. Yet, according to Burke et al. (2006), the most superior context of physical activity is group-based exercise. This contrast suggests that researching physical activities which incorporate individual elements while also integrating the benefits of a group may provide new facilitator-related evidence for physical activity promotion in older adults.

In light of the barriers experienced by an older population (e.g., pain and discomfort) some literature has revealed that tai chi may be an alternative that addresses some of the challenges associated with physical activity participation among older adults (e.g., Chou et al., 2004; Jahnke et al., 2011; Li, Yuan, & Zhang, 2014; Sun, Buys, & Jayasinghe, 2014; Yeh et al., 2016). Because running, cycling, and aquatic activities may not appeal to everyone, activities

like tai chi have been identified as viable alternatives that promote similar physiological, psychological, and social benefits (Kenney, Wilmore, & Costill, 2012).

**Tai Chi**

Developed in the 17th century, taijiquan or "tai chi" is based on the ancient Chinese philosophy of Taoism (Lam, 2007). The Taoism point of view identifies the natural balance in all things and the need for living in spiritual and physical accord with nature (Lam, 2007). According to this philosophy, everything is composed of two complementary opposites: the ying and yang. Ying and yang work together to form a relationship in perpetual balance, creating a state of harmony (Lam, 2007). It is said that when elements are in perfect balance and harmony, they are at peace, and being at peace can lead to longevity (Lam, 2007). A perfectly harmonized individual will therefore show a perfect balance of ying and yang as well as wholeness and peace of mind (Lam, 2007; Lin, 2016).

The philosophical underpinnings of tai chi have been incorporated into a martial art. According to ancient philosophies, if both sides of combat use brute force, an injury is said to occur (Wile, 1996). Instead, apprentices of tai chi are taught not to fight directly or resist an oncoming force, but to make contact with a softness and coddling motion until the force of the attack is exhausted (Wile, 1995): employing the ying and yang philosophy. Not only is tai chi a type of martial art and a philosophical point of view, it is also a way to keep in good health, and a medicinal treatment for some diseases (Lin, 2016).

In North America, approximately 57% of individuals who practice tai chi are aged 50 years and older (Hartman et al., 2000; Jiang et al., 2015). Tai chi is practiced in a semi-squat stance positioning the practitioner's body weight over the centre of gravity (Hartman et al., 2000, Jahnke et al., 2011; Zheng et al., 2015). From this stance, the practitioner moves to

different positions using slow, sequential movements amalgamated with deep diaphragmatic breathing (Hartman et al., 2000). These movements are beneficial for improving balance (Jahnke et al., 2011), strengthening the musculoskeletal system (Guo, Qiu, & Liu, 2014), and improving cardiovascular health in older adults (Zheng et al., 2015). Participating in tai chi can elicit some of the same health benefits as traditional aerobic and muscle-strengthening activities; however, it eliminates the intimidation and demand of lifting weights, as well as irritation caused by pain or discomfort from aerobic activities (Bethancourt et al., 2014; Chodzko-Zaijko et al., 2009; Jahnke et al., 2011; Nelson et al., 2007; Zheng et al., 2015). Although tai chi emphasizes aspects of individual exercise (i.e., sequential movements, deep breathing), it is an activity that is practiced in a synchronized group, which may allow for practitioners to expand their social network (Guo et al., 2014) and receive health benefits from an exercise group (Burke et al., 2006). Moreover, because tai chi has been described as "relatively gentle and accessible to even the elderly and deconditioned" (Yeh et al., 2016, p.2) it has been used increasingly as part of an intervention protocol for older adults.

# Chapter 2- Review of the Literature

Chapter two of this thesis provides a detailed synopsis of the tai chi literature as it relates to an older adult population. Quantitative investigations of participation in tai chi among chronically ill and healthy older adults are described first. Then, qualitative explorations of participating in tai chi among older adults are reviewed. Lastly, the limitations, gaps, and purpose of this study are stated at the end of this chapter.

## Quantitative Investigations on the Impact of Participating in Tai Chi

**Older Adults with Chronic Conditions.** An extensive body of research has been conducted to examine the use of tai chi in unhealthy populations (i.e.., individuals with morbidities), and found that tai chi exercise interventions may be beneficial for improving the physiological and psychological health of individuals with chronic conditions such as heart failure, cardiovascular disease, diabetes, arthritis, cancer, and chronic obstructive pulmonary disease (Chen et al., 2015; Chou et al., 2004; Jahnke et al., 2011; Li, Yuan, & Zhang, 2014). For example, Chen et al. (2015) conducted a systematic review and meta-analysis summarizing evidence on the effectiveness of tai chi as it relates to four common chronic conditions: cancer, osteoarthritis, heart failure, and chronic obstructive pulmonary disease. Specifically, in populations affected by these conditions, the researchers attempted to address whether tai chi is an effective form of physical activity to improve symptoms, physical function, quality of life, and depression. Thirty-three studies totaling 1584 participants older than 50 years of age were included in the review. None of the participants who were assigned to the tai chi intervention groups were familiar with or had experience with the practice of tai chi. The findings revealed that tai chi can improve some physical function outcomes (e.g., knee strength) and symptoms (e.g., pain and stiffness), as well quality of life and other aspects of psychological health in all

four chronic conditions. Thus, the researchers concluded that tai chi may be an appropriate exercise for individuals with several comorbidities (Chen et al., 2015).

Similarly, Li et al. (2014) conducted a systematic review of randomized controlled trials that examined the effects of tai chi on health-related quality of life in individuals with chronic conditions. Twenty-one studies including 1200 participants with a mean age of 64 met the eligibility criteria. None of the participants who were randomly assigned to the tai chi groups had experience with the practice of tai chi. Eighteen of 21 studies found significant improvements to health-related quality of life in patients with chronic diseases such as diabetes, heart failure, cancer, and chronic obstructive pulmonary disease (Li et al., 2014). All of the studies included in the review used tai chi as the main exercise intervention and compared potential improvements to control groups completing other types of exercise (i.e., aerobic exercises, stretching) or no exercise (i.e., usual medical care, health education). Upon the review's completion, Li et al. (2014) concluded that tai chi improved quality of life among older individuals with chronic conditions.

In combination, these studies demonstrate that there are positive effects when an individual with a chronic condition participates in tai chi (Chen et al., 2015; Li et al., 2014). Given that tai chi is a viable physical activity option for individuals with chronic conditions, studies have also been conducted in an effort to identify whether similar effects are seen in individuals without chronic conditions.

**Healthy Older Populations.** Favourable documentation exists on tai chi and unhealthy older adult populations; however, research on healthy older adults is less documentated. For instance, in a systematic review and meta-analysis, Zheng et al., (2015) investigated the effectiveness and safety of tai chi on cardiovascular fitness in healthy community-dwelling older

adults. Twenty studies with 1783 participants and an age range of 45 to 75 years old were included in the review. Throughout the 20 studies, none of the participants who were in the tai chi intervention groups had experience with tai chi. The researchers found that participating in tai chi from eight weeks to one year had positive effects on cardiovascular function including improvements in blood pressure, stroke volume, cardiovascular output, lung capacity, and cardiorespiratory endurance, compared to no exercise (Zheng et al., 2015).

One study which was not included in the systematic review was completed by Frye, Scheinthal, Kemarskaya, and Pruchno (2007). This study involved a randomized controlled trial comparing the effects of tai chi and low impact exercise on physical function and psychological well-being in sedentary older adults. Seventy-two relatively healthy older adults aged 52 to 82 who were previously inactive and had no prior experience with tai chi were randomized into one of three groups: tai chi, low impact exercise, or non-exercise. After a 12-week intervention, post assessments of upper body strength, balance, cardiovascular endurance, lower body strength, sleep disturbances, and anxiety were measured. Results showed that the tai chi group experienced significant reductions in anxiety, as well as significant improvements in sleep, upper and lower body strength, balance, and aerobic endurance compared to the low impact and non-exercise group (Frye et al., 2007). Frye et al. (2007) also noted that the tai chi group reported significant improvements in subjective health (i.e., personal evaluation of health status). Taken together, these studies have provided some framework for further investigation on the subjective benefits of tai chi in healthy older adult populations; however, none have explored the benefits of tai chi from the perspectives of healthy older adults who are experienced in practice.

**Qualitative Explorations of Tai Chi Among an Older Adult Population**

A variety of studies have examined the effects of tai chi in older adults using quantitative research designs (e.g., Frye et al., 2007; Li et al., 2014; Sun, Buys, & Jayasinghe, 2014; Yeh et al., 2011). However, few studies using a qualitative research design exist and could be used to complement existing data. One example of this is a series of studies conducted by Yeh et al., (2011, 2016). Using a randomized control trial, Yeh et al. (2011) investigated whether a 12-week tai chi intervention improved functional exercise capacity and quality of life in older patients with heart failure. One-hundred participants were sampled from ambulatory clinics and randomly assigned to an educational group or tai chi treatment group. Outcome measures of 6-minute walk test, $VO_2$peak, self-efficacy, and health-related quality of life were taken pre- and post-intervention. Upon completion of the study, the researchers found significant changes in quality of life and self-efficacy, and modest changes in functional exercise capacity in the tai chi intervention group compared to the educational group (Yeh et al., 2011).

To further their understanding of the significant changes seen with respect to health-related quality of life and self-efficacy (Yeh et al., 2011), Yeh et al. (2016) then conducted a qualitative component to allow for a more comprehensive assessment and investigation into abstract concepts that are difficult to measure. They explored the perceived physical and psychosocial effects and overall patient experience associated with the 12-week tai chi intervention. Thirty-two participants ($n$=17 in tai chi; $n$= 15 educational) taken from a random subset of the initial 100 participants in the 2011 study completed interviews after the 12-week intervention. Five important themes emerged; social support, empowerment, resiliency, awareness/mindfulness, and renewed social role (Yeh et al., 2016). Regarding social support, findings showed that participants expressed a strong sense of group social support and described

a sense of belonging and comfort in being a part of a group (Yeh et al., 2016). Related to the empowerment theme, participants described being in control of their health and feeling empowered to do activities that beneficially impacted their heart condition. The theme of resiliency encompassed the ability of the participants to act more resiliently to negative emotions associated with stress from their condition. Under the awareness and mindfulness theme, participants described a cultivation of self-awareness as they became more cognizant of their breath and bodily sensations. Lastly, the theme of renewed social role involved improvements in relationships with family members as there was a redefinition of important social roles that offered new purpose or meaning in their daily lives.

The aforementioned themes which transpired through the qualitative component were not mirrored in Yeh et al.'s (2011) previously reported quantitative results. Thus, the qualitative sub-study provided further explanatory understanding of the tai chi intervention and its outcomes (Yeh et al., 2016). Overall, these findings reflect the general purpose of qualitative study designs and their utility for providing rich, in-depth accounts that quantitative research is typically unable to produce (van den Hoonaard, 2012; Yeh et al., 2016). To the student researcher's knowledge, Yeh et al., (2016) is the only study which has used a qualitative research design to explore the benefits of tai chi in an older adult population.

**Limitations, Gaps, and Purpose**

The review of literature revealed that there are promising beneficial results associated with participation in tai chi among older adults (e.g., improvements in physical function, health outcomes, and quality of life) and a number of studies support this premise (e.g., Chen et al., 2015; Frye et al., 2007; Sun et al., 2014; Zheng et al., 2015). However, some limitations in the studies conducted to date still exist.

First, the majority of tai chi studies have evaluated a wide spectrum of clinical patients (i.e., heart failure patients) and chronic conditions (i.e., chronic obstructive pulmonary disease, cardiovascular disease, diabetes) in intervention-based (e.g., controlled or clinical environments) contexts (Chen et al., 2015; Yeh et al., 2016; Zheng et al., 2015). Despite positive findings, no study to date has explored whether the findings can be generalized to other contexts like community-based tai chi programs. It is important to know if tai chi intervention studies will maintain ecological validity (Cole, 2004), because many individuals who participate in tai chi will practice in a community-based setting.

Second, since tai chi is often practiced as a group-based form of exercise, older adults may experience a variety of social benefits (e.g., social support, social environment and accountability; Blackstone et al., 2017; Dolan, 2012). Although Yeh et al. (2016) found that older adults with chronic heart failure had social support after a 12-week tai chi intervention, the social benefits of tai chi experienced among older adults have not been studied extensively through a group dynamics lens. The connection with the instructor, other participants, and the group environment need to be explored more in depth as this may provide further information on the social benefits of tai chi among older adults.

Third, given that tai chi has demonstrated beneficial results among unhealthy older adults (e.g., Chen et al., 2015; Frye et al., 2007; Yeh et al., 2011), it stands to reason that tai chi may also be a beneficial health promoting exercise for healthy older adults (Zheng et al., 2015). However, based on the review of literature, there is minimal research on older healthy individuals, especially those who are experienced tai chi practitioners (Lee et al., 2010; Tsang & Hui-Chan, 2006). This latter point is important as tai chi requires performing a sequence of movements that may be dependent on long-term practice, and the positive effects of practicing

tai chi may increase with more experience (Li et al., 2014). Studying older individuals who are experienced in tai chi over a more extended period may provide information on avenues for overcoming the general decline in physical activity as an individual ages (Statistics Canada, 2015), while also highlighting potential strategies for promoting adherence in this age demographic.

Finally, the vast majority of studies on tai chi have adopted a quantitative approach (Yeh et al., 2016). While quantitative data can provide valuable information via tests and measurements, it has been noted that qualitative research is beneficial for expanding upon ideas and thoughts, providing a better understanding of a phenomenon from a participant's perspective (Cypress, 2017). As such, qualitative inquiry has the potential for exploring a wide variety of topics; especially topics which have not been examined before. The expansion of ideas and thoughts was represented by Yeh and colleagues (2016) who used qualitative inquiry to explore perceived physical and psychosocial effects and the overall experience associated with participating in a 12-week tai chi intervention in patients with heart failure. The researchers subsequently found five themes which were not previously mirrored in the quantitative parent study (Yeh et al., 2016), thereby demonstrating the merits of an exploratory approach. Moreover, the study by Yeh et al. (2016) was the only study which has used a qualitative research design to explore the benefits of tai chi in older adults.

In following, the purpose of this study was to use qualitative inquiry to broadly explore the perspectives of experienced healthy older adults who have adhered to a community-based tai chi program. Generally, this involved exploring reasons for participation, as well as views on program structure including the role of the group. It was thought that the findings from this study could be used to identify avenues to promote uptake and adherence among older adults

with respect to enrolling in community-based tai chi programs. This knowledge could further be applied to design community-based exercise programs and help promote physical activity rates in an aging population.

# Chapter 3 - Methods

Chapter three of this thesis details the methods including the study design, participants and sampling techniques, data collection, and related procedures. Finally, the data analysis procedures are described.

## Study Design

A descriptive qualitative research design was employed to address the study purpose. Qualitative descriptions are generally informed by a naturalistic paradigm examining a phenomenon in its natural state (Kim, Sefcik, & Bradway, 2017). For the present study, each older adult was assumed to have a unique perspective of his/her involvement in an existing community-based tai chi program. Recognizing that the individual experience is just as important as tests and measurements, a descriptive design integrating qualitative methodologies allows for the exploration into concepts that are difficult to conceptualize quantitatively (Kim et al., 2017).

## Targeted Participants and Sampling Techniques

Participants were healthy individuals who participated in tai chi at Peng You International Tai Chi Academy in Thunder Bay, Ontario. Older adults were included if they: (a) were over the age of 50 (WHO, 2012; Diehr et al., 2013; Morris et al., 2013); (b) participated in a structured tai chi program for a minimum of 1 year at least twice a week (Sun et al., 2014; Tsang & Hui-Chan, 2006); and (c) self-identified as healthy (i.e., had no significant illness(s) that would be contraindicative to physical activity participation; Griffin, Posner, & Barker, 2013; Royal College of Physicians, 1986). The World Health Organization's (2012) lower cut-off for older adults begins at 50 years of age. Likewise, many academic publications have defined older adults as an age range between 50 and 65 years of age (Chen et al., 2015; Frye et al., 2007;

Morris et al., 2013). Furthermore, more than 50% of older adults who practice tai chi are over the age of 50. Thus, 50 years of age was set as the minimum age for participation in this study. The criteria of twice per week and minimum of one year participation in a structured tai chi program was chosen because it signified a level of adherence to practice. This is an important delimitation because greater than 50% of older adults who begin an exercise program will dropout within the first six months (Dishman, 1988). Thus, these experienced individuals could identify reasons they overcame dropout rates and adhered to tai chi. In order to corroborate if an individual self-identified as healthy, he/she completed the Get Active Questionnaire (GAQ; see Appendix A) which was given to potential participants after they read the informative invitational letter and signed the informed consent form. The GAQ is often used as a pre-participation screening tool for physical activities and helps individuals identify risk factors that should be considered before engaging (CSEP, 2018). For the purpose of this study, the GAQ was used to validate if a potential participant was healthy and had no chronic or significant illness(s) that would preclude physical activity participation. A participant was deemed healthy and included in the study if the individual answered “No” to all questions. Given the study rationale, it was important that the homogeneity of the sample be upheld as much as possible and that "special populations" (e.g., those with chronic diseases such as diabetes, heart disease, cancer) be excluded. If an individual answered “Yes” to any questions on the GAQ, they were advised, per the tool, to contact a health care provider regarding participation in physical activity and excluded from the study.

Morse (2000) identified that the number of participants needed for qualitative research is dependent on four attributes: (a) the scope of the study; (b) the nature of the topic; (c) the quality of the data; and (d) the study design. This qualitative research focused on obtaining rich information from individuals’ experiences in a tai chi program; therefore, a relatively small

sample size was deemed to be sufficient. This was also completed for feasibility purposes, and to enable a thorough and rich analysis of the semi-structured interview data (Azulai & Rankin, 2012).

Purposeful sampling was utilized in order to recruit potential participants. Purposeful sampling is the most common sampling strategy in qualitative research (Mack et al., 2005). Purposeful sampling involves selecting participants based on the inclusion criteria relating to the research question, study's objectives, and resources and time available (Mack et al., 2005). This type of sampling is particularly useful in descriptive qualitative studies for obtaining broad insights and rich information related to the phenomenon of interest (Kim et al., 2017; Palinkas et al., 2015). In the present case, potential participants were recruited based on their age, health status, and history of participation in tai chi (Mack et al., 2005).

**Situating the Study.** Peng You International Tai Chi Academy is located in Thunder Bay, Ontario, Canada. As a city in Northwestern Ontario, some 1400 kilometres from Ontario's Capital (Toronto) and 700 kilometres from Manitoba's Capital (Winnipeg), there are some economic and health-related challenges inherent to its isolated geographical location. For instance, the outmigration of younger adults, especially in communities like Thunder Bay, presents a significant issue as these communities are aging at a rapid rate compared to other metropolitan locations (e.g., Southern Ontario; Statistics Canada, 2017a). Furthermore, many older adults within Northern communities are living at a distance from their families (Canadian Population Health Initiative, 2006); in particular, they are living apart from family members who might otherwise act as caregivers or supports. As such, aging Northern communities have a higher incidence of chronic disease, complex co-morbidities, and specific social determinants of health that affect the well-being of older adults (Health Quality Ontario, 2017). As a result, the

health status for Thunder Bay residents tends to be less favourable than for those living in Southern Ontario (Health Quality Ontario, 2017; Statistics Canada, 2017b), thereby emphasizing the need for health promotion efforts.

Peng You International Tai Chi Academy opened in 1998 and offers a wide variety of tai chi classes. Classes at the Academy are spilt into two, seven week sessions that are sequential (i.e., at the end of the second seven-week session a new class will begin the following week). Prior to development of this study, the researcher gathered information from a gatekeeper, the owner of the Academy, who relayed that the vast majority of tai chi practitioners at Peng You International Tai Chi Academy continuously sign up to participate in new classes once the former class has finished. Therefore, the period in which the researcher conducted interviews and collected observations was rolling and not defined by a specific start and end date.

**Situating the Researcher.** An integral part of conducting qualitative research is positioning oneself. Positionality is the act of ensuring validity in relation to researcher orientation and research stance (Weingarten Learning Resources, 2017). As such, the researcher recognized that her position (i.e., a young, educated, active Caucasian female) may have influenced the direction of the research study, data collection, analysis, and findings (Lincoln & Guba, 1985). Although this research project was well situated within the researcher's academic background, experiences, and knowledge, she was an "outsider" to both the physical location (i.e., the Academy) and the demographic disposition (i.e., age) of participants; all of which could impact the research findings. Attempts to reduce the impact of the researcher's position on data collection processes, analysis, and findings are discussed more in detail in the *trustworthiness and rigor* section below.

## Data Collection

**Semi-structured interviews.** One of the most powerful qualitative research tools for gaining an understanding of human behaviour and exploring topics thoroughly is interviewing (Carter et al., 2014). Semi-structured interviews foster the collection of rich information associated with personal experience and perspectives, and allow for spontaneity and responsiveness among individuals (Carter et al., 2014). One-on-one, semi-structured interviews were chosen for the present study due to their versatility and flexibility (Kallio, Pietilä, Johnson, & Kangasniemi, 2016); this format enables participants to voice their own opinions and share personal experiences regarding program involvement. In an effort to address the purpose of this thesis, an interview guide was created to provide a framework for the researcher to follow (see Appendix B; Lee et al., 2010; Yeh et al., 2016). The interview guide was comprised of four parts. The first encompassed the tai chi experience (e.g., entry into tai chi); the second surrounded tai chi participation (e.g., barriers and facilitators for participating); the third related to the tai chi program delivery (e.g., instructor and teaching style); and the final involved the class structure (e.g., environment where tai chi was practiced). The questions for the interview were open-ended to stimulate responses that facilitated comments about the participant's experience and behaviour, opinions, values, feelings, and knowledge (Malagon-Maldonado, 2014). The researcher followed the interview guide; however, also developed new questions and probes based on the answers, topics, or ideas provided by the participants. This idea of flowing with the participant's dialogue was important for gleaning information that was meaningful to the participant. The questions in the interview guide were also phrased in a way that the interviewees could coherently understand (e.g., identifying a specific form of tai chi instead of just tai chi, avoiding the use of jargon). The interviews with the participants were digitally

recorded after the participant consented at the outset of the interview.

***Observations.*** To enrich the data derived from the interview process and gain further insight into the study context, unstructured observations were completed. Unstructured observations are an informal way to view participants and record their spontaneous behaviours in their natural environment (Neutens & Rubinson, 2010; Tammemagi, 2014). Since the researcher was unfamiliar with the practice of tai chi, prior to and during the interview process, observations of a variety of tai chi forms were completed and recorded afterwards using detailed field notes. The researcher used these data in order to gain a greater understanding of the study setting and how it might be used to enrich the interview process (e.g., probe in a meaningful way during the interviews). For example, some of the observations were focused on circumstances such as the physical space, mannerisms of the participants, elements of the group (i.e., groupness, cohesion, dynamics), and social interactions (Bailey, 2007; Lofland & Lofland, 1984; Mills et al., 2010). The researcher began with an initial observation of the research setting and continued to observe Tuesday and Thursday from 9:30am to 10:30am (Tai Chi 48 Forms), Wednesdays from 1:30pm to 3:30pm (Old Frame 1), and Saturdays from 11:00am to 2:00pm (Tai Chi 30 & 42 Forms) until all interviews were complete.

**Demographics.** Preceding each interview, participants were asked to complete a short demographic questionnaire in order to obtain information on personal characteristics and involvement in tai chi. The demographic questionnaire was adapted from a previous pilot study and is provided in Appendix C. Regarding personal characteristics, participants were asked to provide gender, age, height, and weight. Regarding tai chi involvement, participants were asked to provide the length of time they participated in tai chi, length of participation at the Academy, number of times they participated in tai chi per week, and length of a typical tai chi session.

Participants were provided with space to respond to these questions.

## Procedure

**Participant recruitment.** After obtaining ethical approval from the Lakehead University Research Ethics Board in April 2019, the student researcher contacted the owner of Peng You International Tai Chi Academy by email and notified him that the study had been approved. The primary recruitment strategy was to work in collaboration with the owner of the Academy, who served as a gatekeeper to potential participants. The researcher contacted the gatekeeper and informed him of the present study (see gatekeeper information letter in Appendix D), and asked if he would be willing to work together to recruit participants for the study. A second recruitment strategy was to recruit participants directly via announcements prior to and/or after the following tai chi classes: (a) Old Frame 1 Form; (b) Tai Chi 30 & 42 Forms; and (c) Tai Chi 48 Forms. All of these tai chi classes were scheduled twice a week for one hour, with the exception of Tai Chi 30 & 42 Forms, which were scheduled once a week for two hours. These classes were selected due to their popularity and number of practitioners. Furthermore, poster advertisements were also displayed throughout the Academy. The posters, which were hung around the academy, described the purpose, inclusion criteria, and basic procedures for the study and requested that interested potential participants contact the researcher for more information.

Once individuals who were interested in participating in the study made contact, the researcher made sure they met the age and experience requirements by informally asking if they were over the age of 50 and how long they had participated in tai chi. If the individuals met these inclusion criteria, they were provided with information about the study in an informative invitational letter (see Appendix E), which was distributed to them in person to read at their own time. If, after reading the information letter, individuals were still interested in participating they

then completed the GAQ. If any individual answered “No” to all the questions on the GAQ, he/she was included in the study. If an individual answered “Yes” to any of the questions, he/she was advised by the researcher to contact a health care provider regarding participation in tai chi and excluded from the study. Participants were then asked to sign an informed consent form (see Appendix F; then the researcher and the participant scheduled a time for the interview to be completed.

**Data collection.** Data collection began with unstructured observations of the research setting for the researcher to become familiar with the Academy. This was completed one time prior to a tai chi class. Once a descriptive observation of the research setting was completed, both interviews and subsequent observations were completed simultaneously. In doing so, the researcher’s understanding of the participants’ experiences during the data analysis process was aided.

Interviews were scheduled once the participant read the information letter, filled out the GAQ, met the inclusion criteria, and signed the informed consent form. The interviews were conducted in-person by the student researcher in a private office in the Academy at a time which was convenient for the participant (i.e., before or after a tai chi class). Each interview was audio-recorded and typically lasted 20-30 minutes.

**Data Analysis**

The identities of all participants were held as anonymous throughout the duration of the study via numerical ID codes. No personal information, including names, was included in the data analysis. The information from the demographic questionnaires was entered into SPSS (IBM, 2019) and descriptive statistics were calculated to determine the means, standard

deviations, and range of the participant demographics (e.g., average age, length of participation, frequency, and duration of tai chi participation, etc.).

Data collected from the semi-structured interviews were audio recorded, transcribed verbatim into Microsoft Word documents, and analyzed using inductive content analysis (Elo et al., 2014; Pope, Ziebland, & Mays, 2000). Data collected from the observations were also transcribed; however, the interview data were the primary data source for the analysis. The observational data were used to confirm and provide greater context for the themes derived through the interview data (Marvasti, 2014).

**Inductive Content Analysis.** Analysis of the interview data was conducted manually by the student researcher in line with Braun and Clarke's (2006) guide to thematic analysis. Reflective of that guide, the first step in the analysis is to *familiarizing yourself with the data*. This entailed transcribing the interviews, reading and re-reading the data, as well as jotting down initial ideas (Braun & Clarke, 2006). After becoming familiar with the data, the second step is *generating initial codes*. In this step, the researcher coded interesting features across the data set, collating relevant data to each code (Braun & Clarke, 2006). Third, the researcher *searched for themes* by collating codes into potential themes and gathering all relevant data related to that potential theme. The researcher then moved to the fourth step of *reviewing themes* to check if the themes worked in relation to the "coded extract" (p.87) and the entire data set, which generated a thematic map of the analysis. Step five in Braun and Clarke's (2006) guide is *defining and naming themes*. This ongoing analysis was used to refine the specifics of each theme, and the overall story the analysis tells, generating a clear definition and designation for each theme. The sixth and final step of Braun and Clarke's (2006) guide to thematic analysis involved *producing a*

*report* by selecting vivid and compelling examples of interview quotes relating back to the research purpose (Braun & Clarke, 2006).

**Trustworthiness and rigor.** The term trustworthiness was established by Lincoln and Guba (1985) to evaluate and support qualitative data content analysis. The aim of trustworthiness in qualitative inquiry is to support the argument that the findings have concluded (Elo et al., 2014; Lincoln & Guba, 1985). Lincoln and Guba (1985) provided four strategies to ensure trustworthiness in reporting findings accurately: credibility, transferability, confirmability, and dependability. Several strategies were integrated into the data collection and analysis phases to support these criteria. Credibility was accomplished by member checks (e.g., reviewing and verifying themes with the participants; Lincoln & Guba, 1985). To establish transferability (i.e., the findings are applicable in other similar contexts), the researcher used thick and detailed descriptions of the research process (Lincoln & Guba, 1985; Fried & Irwin, 2016). Confirmability (i.e., degree of neutrality and attempts to remove bias; Lincoln & Guba, 1985) was established by applying reflexivity (i.e., the researcher recognizing that her experiences and status may have affected the way participants answered questions; van den Hoonaard, 2012). For instance, the researcher is a young, active female and some of the participants may have tried to answer the questions in accordance with these attributes (van den Hoonaard, 2012). Lastly, dependability (i.e., the findings are consistent and could be repeated) was accomplished by an external evaluation of the findings provided by one of the student's supervisors, Dr. Erin Pearson. This involved both researchers reviewing the interview transcriptions and deriving themes independently in order to confirm the accuracy of the findings in line with the data presented (Lincoln & Guba, 1985).

Another aspect to increase the trustworthiness of the data is promoting rigor in a qualitative inquiry (Morse et al., 2002). Rigor is the quality or state of being exact, careful, precise, thorough, or accurate (Cypress, 2017). To promote rigor, methodological coherence was fostered via congruency between the purpose and methods. Selecting an appropriate sample was promoted by recruiting older adults who were experienced in the practice of tai chi. Lastly, collecting and analyzing data concurrently was upheld via transcribing interviews as they occurred. Together, these verification strategies incrementally contributed to the study's trustworthiness, thus promoting the rigor of this qualitative research (Morse et al., 2002).

# Chapter 4 - Findings

In chapter four of this thesis, the findings of the study are detailed. The participant demographic results are provided at the outset of this chapter. Next, the research setting is contextualized. Finally, the interview findings are explained.

## Participant Demographics

A total of 12 participants indicated interest in participating and met the inclusion criteria. Eleven participants (male *n*=8, female *n*= 3) then completed the interview protocol while one forgot about the meeting and chose not to rebook due to a busy schedule. Participant demographics are presented in Table 1. A crucial highlight is the fact that the average length of participation in tai chi for the participants was 13.6 years. Over this period, participants participated in tai chi, on average, 8.4 times per week for 76.7 minutes per session. The remaining demographic data show that the participants were homogenized as healthy older adults.

Table 1.

Demographic Data on Participants (*n* = 11)

| | *Mean* (Standard Deviation) | *Range* |
|---|---|---|
| Age (years) | 64.9 (±7.6) | 53-77 |
| Weight (kg) | 77 (±11.5) | 50-92 |
| Height (cm) | 177.8 (±5.7) | 168-186 |
| BMI (kg/m2) | 24.5 (±2.7) | 18.3-28.6 |
| Length of participation in tai chi (years) | 13.6 (±8.6) | 5-30 |
| Length of participation in tai chi at Academy (years) | 7.5 (±2.5) | 2.5-10 |
| Number of times per week participating in tai chi | 8.4 (±5.9) | 2-20 |
| Duration of each tai chi session (minutes) | 76.7 (±24.9) | 60-120 |

## Contextualizing the Setting

Observations conducted prior to and during the data collection period at Peng You International Tai Chi Academy gave the impression of a positive, bright, and joyful atmosphere,

which according to some participants during the interviews, promoted enthusiasm among participants the moment they arrived. The number of practitioners in the classes observed ranged from four to 16, and was dependent on the form being taught and the time of the class. For instance, classes which were simpler (e.g., tai chi 48 form) and were taught in the mornings or evenings tended to have more participants compared to more complex forms (e.g., Old Frame form) taught during the afternoon. The majority of participants would arrive shortly before the class started, change footwear, and hang up outerwear (if applicable). Before the class started officially, practitioners would either engage socially with other participants, or practice tai chi moves in front of the floor length mirror or with a more experienced practitioner.

The tai chi classes were set up traditionally like other exercise classes whereby the instructor was positioned at the front of the group. However, untraditionally, it became apparent via observations that individuals with more tai chi experience were stationed in the four corners of the group, with less experienced practitioners positioned in the middle of the group (versus those with the least experience stationing themselves at the back of the group). The experienced participants did this naturally, without being instructed by the instructor. Warm up consisted of qigong, which is predominantly used for this purpose before all the tai chi classes at the academy. Traditional Chinese instrumental music was played throughout the duration of these classes, which gave a sense of tranquility and attention in the room. Very rarely would participants stop to rest; however, individuals stopped whenever they wanted to take drink breaks throughout the duration of the class. The tai chi classes appeared to be very accommodating and inclusive for various physical activity levels and physical capabilities. Habitually, the instructor would suggest less physically demanding alternatives for the more difficult movements: for example, lifting the knee to hip height instead of completing a full high kick. Practitioners at Peng You International

Tai Chi Academy were predominantly older adults. More popular tai chi classes were evenly split between males and females, whereas less popular, complex classes were mostly male dominated.

**Interview Findings**

To address the purpose of this study, one-on-one interviews were conducted in a private office located in the Academy. The duration of the interviews varied between 20 minutes to 30 minutes. Thematic saturation (whereby no new additional information was provided from the interviews; Braun and Clarke, 2006) occurred following the eighth interview; however, to enhance the trustworthiness of data, three additional interviews were included in analysis. Nine themes were generated after the initial coding process (i.e., steps two and three of Braun and Clarke's guide). Figure 1 represents the final step of Braun and Clarke's (2006) with the main themes and subthemes that were derived from the data and are in line with the study's purpose. Five main themes (and associated subthemes) emerged: (1) reasons for joining tai chi (culture and novelty, becoming more physically active, and quiet, gentle, and holistic exercise); (2) participant principles related to tai chi and aging (value of "doing it right," being kind to an aging body, and having a routine); (3) challenges to practicing tai chi (personal barriers, large class size, and difficulty of movements for an aging population; (4) facilitators for practicing tai chi (commitment to lifelong learning, environmental harmony, energy from softness, and health benefits); and (5) group dynamics (energy from synchronized group movement, social benefits, and group delivery format). With the exception of *Challenges for Participating in Tai Chi*, which according to participants' accounts, appeared to be associated with *Participant Principles Related to Tai Chi* only, all of the themes are interconnected and appeared to be influenced by or associated with one another. Each theme and associated subthemes are described in detail below.

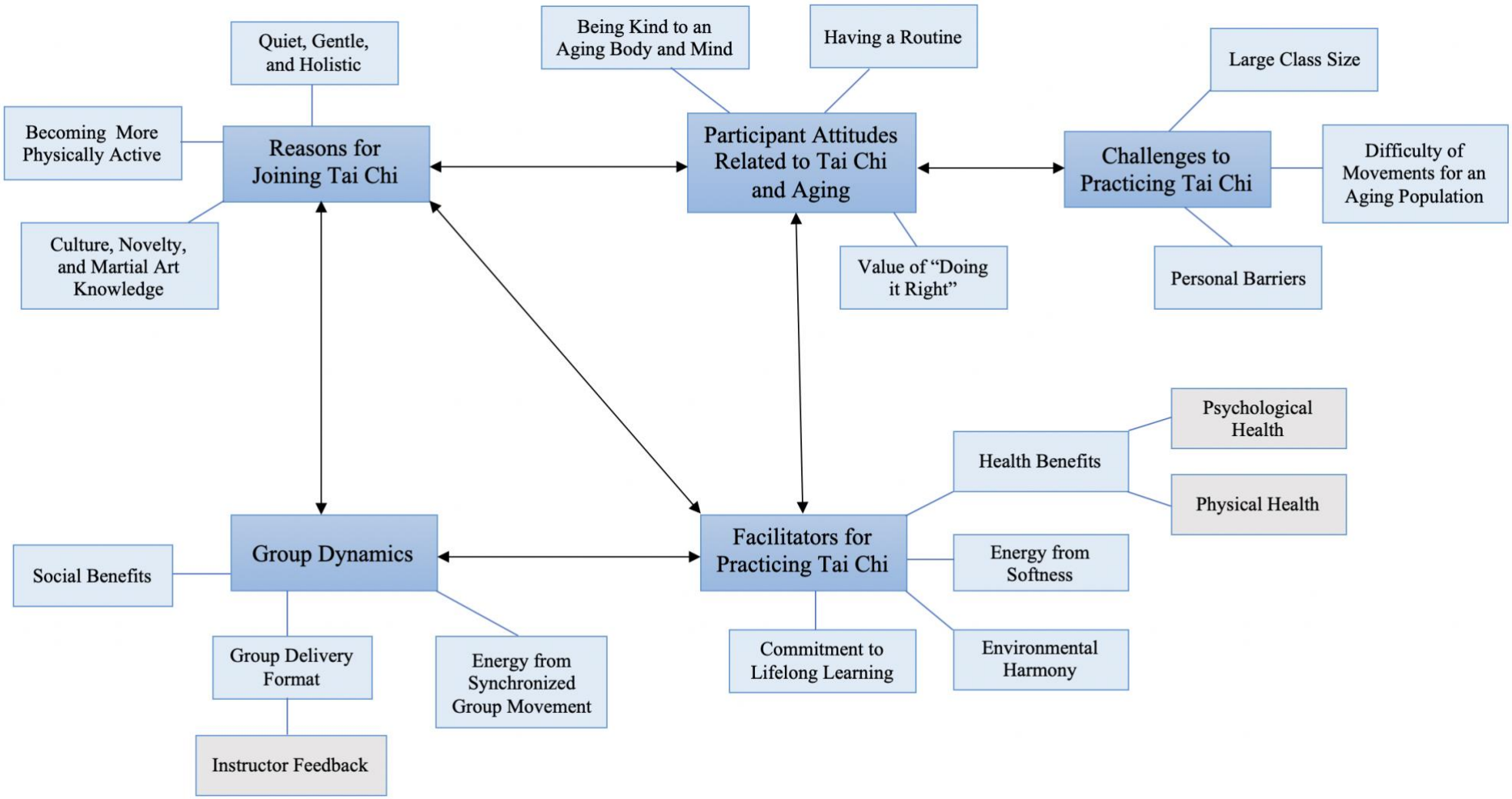


*Figure 1.* Thematic Map Summary

**Reasons for joining tai chi.** This theme is defined as reasons that contributed toward the participant's decision to enroll in tai chi initially. Generally, participants discussed three main contributors as reasons for joining tai chi: culture and novelty, being more physically active, and a desire for quiet, gentle, and holistic exercise. Reasons for joining tai chi was related to facilitators for practicing as they influenced or were influenced by each other. This relationship is represented by a bi-directional arrow between these two themes. Quotes representing reasons for joining tai chi and coupled subthemes can be found in Table 2.


*Figure 2.* Reasons for joining tai chi subthemes

***Culture, novelty, and martial art knowledge.*** The majority of participants had prior knowledge of or experience with martial arts and this was the main way they discovered tai chi. Some participants identified that they had participated in combative martial arts previously (e.g., karate, kung fu), and stated that now that they are older, they are less interested in the harsh and aggressive movements associated with these types of activities. Previous historical interest in martial arts led to tai chi practice. Some participants noted that their reason for joining was because of their interest in Chinese *culture*, and tai chi was an interesting way to learn more about Eastern philosophies. Although many participants had prior knowledge of martial arts, some

participants joined tai chi because it was a *novel* activity to try. One participant described that both he and his daughter were very established athletes, but decided to try tai chi as it was something they were both unfamiliar with.

***Becoming more physically active.*** A large portion of the participants indicated that they joined tai chi to be *more physically active* or continue being physically active. Most of the participants noted that when they were younger, they lived very active lifestyles, enjoying activities such as running and cross country skiing. However, because of pain and discomfort associated with their aging bodies, participating in these types of activities was no longer possible. Some retired participants stated that they wanted to reduce their sedentary lifestyle which they associated with their former desk jobs.

***Quiet, gentle, and holistic exercise.*** In line with becoming more physically active, participants stated that tai chi is a light exercise compared to other exercises. Some participants still minimally participated in other forms of exercise; however, one participant described that tai chi has unique qualities for an older population not commonly associated with other forms of exercise. For example, one participant described these qualities as a *gentle*, calming, *quietness* that other activities do not have. In addition, a few participants appreciated that tai chi incorporates the mind, body, and spirit making the practice a *holistic* activity.

Table 2

*Reasons for Joining Tai Chi*

| Subthemes | Quotes |
|---|---|
| Culture, Novelty, and Martial Art Knowledge | "I wanted to learn a martial art but um, karate was too stressful, too much yelling … Tai chi seemed like a more gentle way to do it, more finesse, and less emphasis on brute force… [and] it's exotic it's outside our normal Canadian cultural experience so it's something new to explore and discover." (P8)<br><br>" [joined tai chi] Because I've always, uh, been interested in eastern philosophies and things like that." (P9)<br><br>"…I had a high interest in martial arts…And tai chi was just a natural extension of my interests in martial arts." (P11)<br><br>"I knew about tai chi for a long time because I studied karate when I was younger. So, you know, you hear about it. Never really understood the marital art application of tai chi…I study just Chen. It has a direct connection to the martial arts; it's the core of the Woo School of Kung Fu, really. And, uh, I had a knowledge of that when I was in high school." (P14)<br><br>"I discovered tai chi about, almost 30 years ago when my daughter and I needed to do some kinda bonding, you know? So we thought [we] should do something neither of us have done before." (P13) |
| Becoming More Physically Active | "Ya, the [Marina] park is really nice in the summer but not in the winter [laughs]…if we could practice outside all the time that would be great." (P1)<br><br>"Just getting more active ... Earlier in my career I was more active. I was out in the bush walking. So, being at the computer desk it was pretty sedentary, and [tai chi] was a way to get out in the evening and do some light exercise without overdoing it." (P5)<br><br>"I did a lot of other activities; anything that's a physical activity I'm down for. But um it's a good way to get out, especially in the winter time and in the evening for a few hours so you're not in front of a tv all evening which is easy enough to do in the dead of winter. So, it's good for that. And it's a lighter form of exercise … we do a lot of cross country skiing, downhill skiing. We do a lot of dog walking in the bush and that sorta thing, and we curl a lot. So, it's a good change of exercise from that; [a] good way to use your body in a different way." (P7) |

| | |
|---|---|
| Quiet, Gentle, and Holistic Exercise | "Just always liked the concept of it … 'cause it's a gentle exercise and, you know, I do other physical activities but this one is more of the mind, body, spirit type thing." (P1)<br><br>"I found tai chi much quieter [than karate]. And more meditative… and it was slower." (P6)<br><br>" [T]he practice of the tai chi completes a person in some ways, where other activities might not get there. The other activities really just focus on physicality, which is good, but tai chi can go beyond that and complete a person." (P7)<br><br>"You know, without tai chi, I don't think I could have imagined doing the things I'm doing now. I don't run anymore because of the pounding and tai chi is a little bit more gentle…" (P8)<br><br>"… I just enjoy the uh, the solitude, the quietness [said calmly and quietly]… the calming movements…Other activities don't have it." (P10) |

**Participant attitudes related to tai chi and aging.** This theme refers to attitudes and feelings participants identified as important for consideration when participating in tai chi. Since the average age of the participants was 64.9 years, some of the subthemes were specific to an aging population. These attitudes were also associated with reasons for joining tai chi, as well as linked to facilitators for practicing. For all participants, the attitudes related to tai chi were individually focused, meaning these subthemes were not associated with other participants in the tai chi program. Three subthemes emerged: the value of "doing it right"; being kind to an aging body and mind; and habitual routine. Representative quotes related to the theme of participant principles can be found in Table 3.

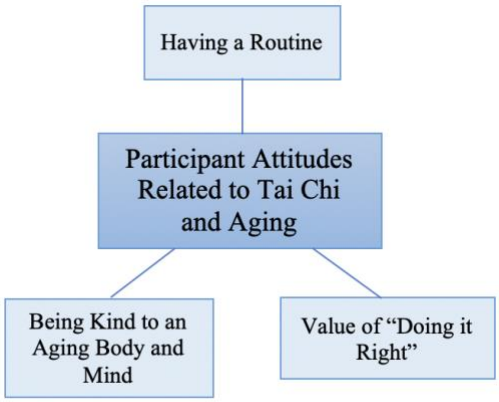


*Figure 3.* Subthemes for participant principles related to tai chi

***Value of "doing it right."*** Throughout the interviews, almost all participants spoke about the importance of developing fundamental and foundational knowledge of tai chi. The notion of "sequence" was particularly emphasized. For example, one participant compared this foundational knowledge to how babies need to learn how to crawl before they can walk. Participants discussed that in order to develop this foundational knowledge, a significant amount of time spent practicing tai chi is required. One participant suggested it can take up to three years to develop this foundational knowledge. Even after foundational knowledge is acquired, it can take an additional time to correctly perform the sequence of tai chi movements. All participants highlighted that although they had significant foundational knowledge, they still wanted to work continuously on doing the tai chi movements authentically and correctly, and emphasized *"doing it right"* as imperative. Many participants discussed that over time practicing tai chi they would develop bad habits. When participants developed a bad habit, they would work to fix it in order to do the movement correctly.

***Being kind to an aging body and mind.*** Most participants in the interviews were committed to understanding and learning more about their aging bodies. Participants were very aware, or because of tai chi became more aware, of their limits and abilities. These limitations did

not discourage participants from participating; rather, some participants stated they just needed to be kind to themselves when practicing tai chi. *Being kind* to themselves was not limited to their physical abilities, but also mentally in trying to learn tai chi and remember the sequences. Some participants identified that with time, they expected tai chi to get easier, and recognized that their physical abilities would improve. Many participants commented on the fact that tai chi has taught them ways to modify difficult or potentially painful movements to prevent injury. One participant indicated that they were taught the power of softness, thus increasing their ability to avoid pain and injury. Overall, participants expressed that tai chi is an activity for all physical activity levels and capabilities, and this is especially true for an older population.

***Having a routine.*** Some participants indicated that the time of the class and having a regular class schedule are important parts of their daily lives, especially since their retirement. Others recognized that it is important for them to find the time for tai chi and make a *routine* out of it to perpetuate the benefits associated with practice. Some participants shared that they always made time for tai chi as it allowed them to have time for themselves.

Table 3

*Participant Attitudes Related to Tai Chi and Aging*

| Subthemes | Quotes |
|---|---|
| Value of "Doing it Right" | "…Because, you know you wanna do it correctly. So like, I learned old frame 1 so I could do it on my own, but in that process, I learned a lot of bad habits … But then I went back and I started over again in order to learn it correctly. It's like I got that bug, to keep going and fix the mistakes. You know, the first 3 years of tai chi I was just trying to learn it, I wasn't actually concentrated on the form. I was just really concentrated on learning tai chi movements." (P9)<br><br>"Even the simplest of movements can be perfected and you don't need a big repertoire [of tai chi]. You can just stick to one and get better and better. And maybe, in the end, actually knowing more then you would if you were to do more classes…Because you may have developed a bad habit the way you do something but now you have to change it. And that way may be a better movement." (P13)<br><br>"[W]hen I started, I told people who were more skilled to tell me if I'm doing something wrong. I'm not gonna be offended! I'm here to do it right and learn it right!" (P14) |
| Being Kind to an Aging Body and Mind | "You have to learn to be kind to yourself when you're learning because you can't remember what move is next. And realize that the more you do [tai chi], the easier it will get and the better you will get!" (P6)<br><br>"With an aging body some of the joints are not too happy with some of the foot pounding and that sort of thing…I have uh joints that are wearing out and so if I'm not careful, there's certain element of pain involved. So, it's a matter of being careful [and] modify[ing] a little bit at times. For example, I maybe won't stomp as hard to save my knee joints." (P7)<br><br>"I can't do what I used to do [Laughs], you know? The brain says go there… I think with what I'm working with it's coming back." (P14) |
| Having a Routine | "I think it [tai chi] is my life! [Laughs] It's a huge part of my retirement." (P6)<br><br>"[I]t's a habit [tai chi] that I feel comfortable participating in and perpetuating because it's a feel good kinda activity." (P7)<br><br>"Well it [tai chi] keeps me active. The fact that there's a regular schedule of classes to go, I get out to them." (P8) |

> "[L]ike what I do is I'll tell people: 'Ok, Monday night from 7-9pm, I'm not available. Tuesday and Thursday mornings, not available.' It's just, that's my time. You know, you have to do that! You have to make time for yourself. And tai chi does that… it's a very important part of my life." (P10)

**Challenges to practicing tai chi.** Directly associated with Participant Attitudes Related to Tai Chi are the *challenges* related to practice. Challenges to practicing tai chi refer to things that may make tai chi harder to practice and complete, and may prevent individuals from improving their practice of tai chi. However, it is important to note that when asked about barriers to involvement, all of the participants stated that there were minimal negatives associated, and that the challenges identified did not affect their participation to a significant degree. Three subthemes emerged in relation to this theme: personal barriers, large class size, and difficulty of movements for an aging population. Illustrative quotes can be found in Table 4.

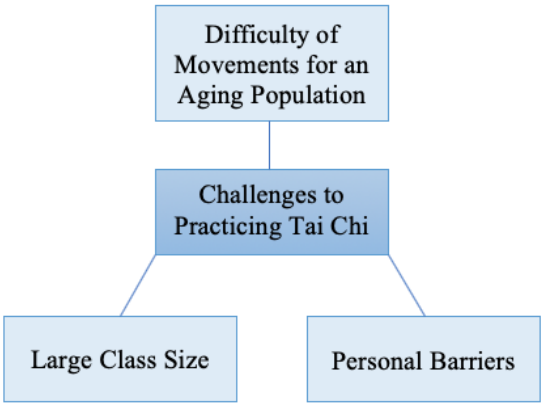


*Figure 4.* Challenges to tai chi subthemes

***Personal barriers.*** When participants were asked what prevents them from participating in tai chi, all of the participants shared that the only thing that would inhibit them from practicing would be *personal factors* (i.e., personal sickness or illness in the family that required them to act

as a caregiver). Some participants identified that a busy daily schedule would also prevent them from going to tai chi, which was a noteworthy comment because, despite declaring tai chi as a priority in their lives, some participants still had trouble fitting tai chi into their daily schedules due to personal reasons.

***Large class size.*** Participants were asked if there were any negatives associated with the community-based tai chi program. Overall, the size of the class was noted as an important issue for participants. Generally, they indicated that if a *class was too large*, there was less individual attention provided which they felt is needed in order to improve and progress their practice. Since most participants valued "doing it right," a large class was identified as an inhibitor to participation and promoted excuses to miss that particular class.

***Difficulty of movements for an aging population.*** The general consensus among participants was that there are some difficult movements, but also some that are easy and gentle associated with tai chi. Many of the participants explained that it may be challenging for an older population to perform some of the twisting, kicking, and stomping movements. However, one participant identified that in order to save his joints from deteriorating he would not stomp as hard. One topic which came up throughout the interviews was that common daily movements (e.g., lifting leg up) are easy for participants, but *atypical movements are challenging* (e.g., high kicks and spins), especially for an older population.

Table 4

*Challenges to Practicing Tai Chi*

| Subthemes | Quotes |
|---|---|
| Personal Barriers | " I would have to be sick..…Like an infectious, runny nose, cough, you know?! That would probably be the only [reason] … and of course, when my kids come home, and in the summer, I do miss some classes." (P6)<br><br>"There would be nothing that would stop [me] because of anything that was going on here [at the Academy]. It would be something else in my life." (P7)<br><br>"If there is something really personal happening [won't go to tai chi]." (P10) |
| Large Class Size | "[I]t was a huge big room, and there would be 30, 40 people with him [instructor]. And so, it was very hard to get any sort of individual kind of attention. It was sort of a follow me, and uhm, and I did it once a week, and I didn't learn a lot. And I was fairly frustrated, so that maybe after a couple of sessions I gave up on it and I would leave it. Especially, in the winter time… I found all sorts of excuses." (P6)<br><br>"I think sometimes if the group is too big. Uh, you're not getting that individual, uh, direction." (P10) |
| Difficulty of Movements for an Aging Population | "There are easy ones and difficult ones. Um, and it's different for different people. So, movements that are common with the ways [people] move in their ordinary activities tend to come easier. And movements that are very different, a lot of especially older people, the rotations may be difficult. Standing on one leg is difficult, because often people aren't confident with their balance so that makes them uncomfortable. But tai chi can all help that get better." (P13)<br><br>"They're pretty challenging, I think that's why a lot of people don't do it cause you have to have the physical ability to do a lot of the moves because of the various kicks and punches and where they come from. So, uh, that's the biggest challenge. But everyone I know in the Chen classes are physically capable of doing it. But that's why there's not as many people in it. And as you've see it can be quite aggressive." (P14) |

**Facilitators for practicing tai chi.** For the purpose of this study, facilitators for practicing tai chi are defined as something that aids with engagement or adherence to tai chi practice. As illustrated in Figure 1, facilitators are associated with reasons for joining tai chi, participant attitudes, and group dynamics. These associations exist because some sub-themes within reasons for joining tai chi, participant attitudes, and group dynamics also appeared to be linked to facilitating tai chi practice among older adults. Based on the interviews, four themes were identified: commitment to lifelong learning; environmental harmony; energy from softness; heightened self-awareness; and health benefits. Quotes representing the theme of facilitators for practicing tai chi can be found in Table 5.

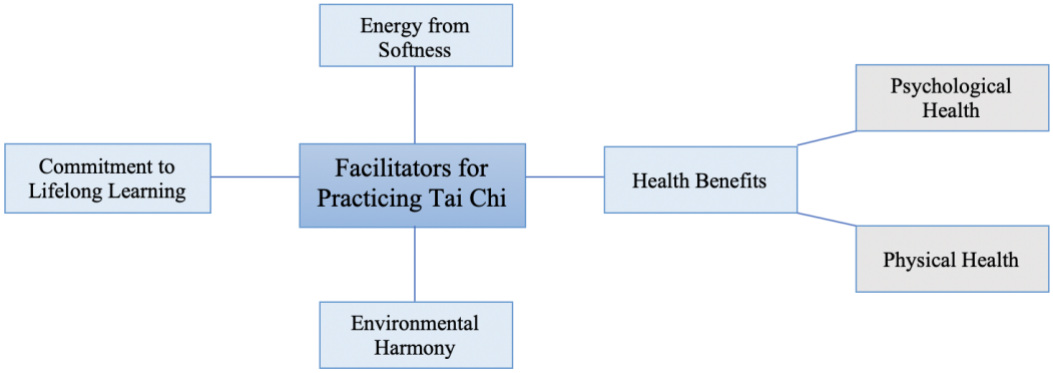


*Figure 5.* Facilitators for practicing tai chi subthemes

***Commitment to lifelong learning.*** Many participants indicated that learning tai chi takes a significant *time commitment*. Some participants associated learning tai chi with analogies like peeling an onion or layers of a cake, stating that when a layer is peeled there is even more to learn; participants were committed to and interested in discovering more. Participants emphasized that tai chi is easy to follow but hard to do properly by oneself. One participant suggested that it may take up to six years of commitment to become proficient at tai chi. Participants also discussed the breadth and depth of learning associated with tai chi. One participant explained that

watching the more experienced participants in the class made him realize there will always be a great distance to go with the practice.

***Environmental harmony.*** The most ideal tai chi practice environment identified by participants was outdoors. Unanimously, participants described practicing at the Marina Park, a specialized area for tai chi located on the shores of Lake Superior. Many stated that they enjoy experiencing the natural beauty of the Sleeping Giant (a natural escarpment on Lake Superior in Thunder Bay), and feeling a connection with weather elements which cumulatively contributed to creating *harmony with the environment* and amongst each other when practicing in a group. Although practicing tai chi outdoors was ideal for most participants, other participants mentioned that when practicing outdoors there are weather elements (i.e., wind, sand, rocks) that may disturb them.

***Energy from softness.*** When participants were asked what they enjoyed about tai chi and how they felt when they were practicing, all participants articulated sentiments involving a "relaxed energy" feeling. Participants found it interesting that they were able to acquire a lot of *energy from an activity that is so soft* and calming at the same time. In fact, one participant revealed that this energy can last for a few hours after practicing tai chi. Another participant was very aware of the energy in his body, commenting that when he does not practice tai chi, he notices that his energy is unbalanced. Some participants related energy to health, indicating that doing tai chi more regularly provides energy which makes them feel healthier.

***Health benefits.*** Throughout the interviews, participants described a number of physical and psychological health benefits associated with practicing tai chi.

*Physical health benefits.* All participants noted one major physical benefit associated with practicing tai chi: improvements in balance. A few participants discussed that fall prevention is

particularly important for an older population. One participant mentioned that since participating in tai chi, he had experienced significantly fewer falls in the winter as he is more aware of his balance. Some participants commented on the fact that tai chi aids with coordination which is connected to balance and fall prevention, while many also discussed improvements in flexibility observed since participating in tai chi. Another important physical benefit mentioned by participants was pain relief. One participant explained that he used to be an avid runner, but since having surgery on his knee, running could lead to pain in that area. Since participating in tai chi instead of running, the participant stated that he had no knee pain. Many participants interviewed also discussed an increase in lower limb strength and one participant identified some weight loss as a health benefit related to practicing tai chi.

*Psychological health benefits.* All participants noted that tai chi incorporates mindfulness and a connection between the mind and body. This was described as important for participants because the majority were retired, and tai chi was something for them to focus their brains on. One participant in particular discussed how she hoped that tai chi may help her with strengthening and protecting her brain from neurodegenerative diseases like dementia and Alzheimer's. Participants also indicated that tai chi aids with memory function as learning the routines requires a lot of remembering. Participants shared that they are very aware of the physical self when they practice tai chi. The notion of losing the outside world when practicing was discussed frequently; a number of participants stated that they were able to "zone out" and focus completely on the movements. Many participants also mentioned that tai chi takes a lot of concentration because of coordinating breathing, weight shifts, and movements. This focus requires participants to be aware of what their body can (and cannot) do, thereby making them more in tune with their

physical self. Some participants also recognized that tai chi allows them to enjoy the moment and forget about things that may have been bothering them prior to attending class.

Table 5.

*Facilitators for Practicing Tai Chi*

| Subthemes | Quotes |
|---|---|
| Commitment to Lifelong Learning | "[I]t's easy to do tai chi if you're just following along. But it's very hard to do it just on your own. That takes a lot of practice, just getting the sequence down because some of the forms are very long." (P1) |
| | "[S]ome [people] are more advanced that are practicing, and it's things we can watch, and perhaps realize that there will always be a great distance to go with the practice." (P7) |
| | "It's easy to do it [tai chi] incorrectly… it's very hard to do correctly. And the better you get ,the more you realize …how much more work you need to do to get better. The better you are the harder it gets." (P9) |
| | "…[I]f you read about tai chi, there's a lot of things they talk about that you may never even achieve because you're still trying to get the basics down. There's just so much depth to it." (P11) |
| | "[A]fter 6 years you're just knocking on the door, you know? You're finally … ready to begin to study tai chi, 'cause you're just you just beginning to get it." (P14) |
| Environmental Harmony | "Ya, the [Marina] park is really nice in the summer but not in the winter [laughs]. The atmosphere here [Academy] is really nice and calming. Ya, if we could practice outside that would be great. But then sometimes when you're outside you have the elements." (P1) |
| | "I like outdoors when the weather is good and having harmony with people and the environment. And Marina Park is the best spot in the world. It's on the shores of Lake Superior, and it's beautiful there." (P3) |
| | "Oh, well, down at the Marina! It's so special... But that is an ideal setting, any place outside!" (P6) |
| | " [A]ctually you know the most ideal location is the down at the tai chi pad…. Which I think is the nicest place. In front of the Sleeping Giant, quite often with a light breeze, with geese and ducks around." (P7) |
| | "[B]y the water, a nice warm day when the sun is shining, and the wind is blowing a little. And it's just so relaxing." (P10) |
| Energy from Softness | "That relaxation thing, and the calmness. But also, it energizes you. It's funny. It calms but energizes you at the same time!" (P1) |

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|---|---|
| | "After, I feel relaxed and that I should do it [more] regularly, and it boosts my energy. Sometimes I'm very tired and this makes me not tired."(P3)<br><br>"It's like a whole positive feedback thing because when I don't do tai chi, I get unbalanced. Like, my energy doesn't flow, and I can feel like my energy isn't balanced and it's not flowing. And then I come and my energy is more balanced and then I feel better and healthier." (P9)<br><br>"After [tai chi], I get this, uh, feeling of lightness. Like being light and clear thinking. It lasts for a couple hours." (P10)<br><br>"Well, always better [after tai chi]. You feel the energy. The 'chi' they call it, the energy, that going through you. After a number of years, you begin to feel those things. And I mean, I get glimpses of it and I mean wow! When it shows up, wow! It just feels, just so right. And 'cause you're creating a tonne of energy from something so soft." (P14) |
| Health Benefits | <u>Physical health benefits</u><br><br>"[B]alance and flexibility are two things that keep coming back to me. Uhh, I'm 75, so those are issues which are becoming more and more important as my joints are wearing out! [laughs]." (P7)<br><br>"So, I told you a lot of benefits, but it [is] also… the physical exercise! I didn't talk about the physical exercise! It gets you in shape! It gets your legs strong! You know you do two or three forms in a row and you're breathing pretty hard. So, you know, physically, a little bit of aerobics … you get healthier, and it balances you [and] the energies in your body. Like, so many things! I've read a lot of studies that tai chi fixes asthma, fixes pain, just so many things…So a lot, a lot of benefits. It's good for your heart and heartrate. I mean, flexibility! So many benefits!" (P9)<br><br>"I've had problems, and I still have problems with [foot]. But I noticed that, since I've been doing tai chi, the strength is coming back." (P10)<br><br>"Well, there's a lot of ways it impacts my life. I'm more flexible than I was before…It helps with coordination and it helps you be more aware when you're walking around and you're more aware of your surroundings making it less likely to fall." (P11)<br><br><u>Psychological health benefits</u> |

| |
|---|
| "Definitely not just physical, 'cause I think it mentally, and spiritually as well, you know the mindfulness the calming … I think it overall has a positive impact on every mental aspect actually." (P1) |
| "You're thinking about your breathing and when you should be breathing and you're shifting your weight at the right time. So, you're really focused inward on what your body is doing the whole time. So you kinda get rid of all that other stuff you might be worrying about [outside of tai chi]." (P5) |
| "It's important for my brain. My mom had Alzheimer's… and my dad developed dementia… And anything that we can add to make our brains work. I'm hoping it may give me some protection against dementia and Alzheimer's." (P6) |
| "Well, I guess you really have to be in tune with what your body is and does… And you discover something about your body which is really good… [and] most of the time you don't realize other people are there. You're just so into what you are doing and uh, if you do see anyone, it's usually just one person setting a pace and tempo, that's all. So, I try to stay in my space." (P14) |

**Group dynamics.** For the purposes of this study, group dynamics was defined as the social structure or group processes that are connected with the tai chi class or group (Burke, Carron, & Shapcott, 2008). Based on participant accounts, group dynamics appear to link directly to facilitators for practicing tai chi and are also associated with reasons for joining tai chi. Three subthemes emerged in relation to this theme: energy from synchronized group movement; social benefits of involvement in tai chi; and group delivery format. Representative quotes in relation to the theme of group dynamics can be found in Table 6.

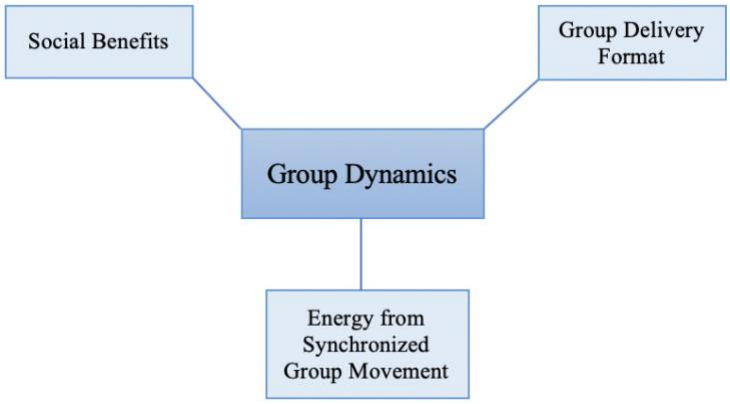


*Figure 6.* Group dynamics subthemes

***Energy from synchronized group movement.*** In addition to receiving energy from the soft movements of tai chi, participants revealed that they also received energy from *flowing group movement*. All participants expressed that they felt energy when everyone in the class was moving together in unison and in a *synchronized* way. One participant described the difference between the energy received alone versus with a group as a "mass energy effect." A few participants described that the "mass energy" is powerful since participants are able to have a connection with one another without communicating. When practicing tai chi in a group, all participants just needed to focus on flowing in sync with one another.

***Social benefits of involvement in tai chi.*** All participants highlighted the positive *social benefits* of involvement in tai chi. Some participants expressed that they felt a connection with other like-minded individuals (i.e., fellow practitioners). Some participants shared that participating in tai chi gave them the opportunity to expand their social network; this social aspect was also identified as a motivator to continue practice, hence, the bi-directional arrow between *Group Dynamics* and *Facilitators for Participating in Tai Chi*. Several participants recognized that tai chi would be especially beneficial for older individuals with small or dwindling social

lives. One participant described that tai chi allowed him to belong and feel needed in a group. A fundamental belief expressed by all participants was that the individuals participating in tai chi were very supportive of one another inside and outside of the tai chi class environment. All participants identified that everyone was eager to help those who needed it both within and outside of the tai chi setting. Several participants emphasized repeatedly that they take care of each other. For example, if an individual missed a tai chi class, someone from the class would get in contact with that person to see if everything was okay. One participant mentioned that the tai chi program was very communal, and had a wide social impact as they did many activities and fundraisers in the community (e.g., fundraise for a tai chi park in Thunder Bay). Some participants commented that the tai chi group was more like a family than an exercise group.

***Group delivery format.*** Based on the observations, the *group delivery format* of tai chi differs from other exercise delivery formats. All participants described the group setting as an easy way to follow along and ask questions. They discussed how the group model expedited learning and aided beginners by way of modelling the moves. In participant interviews and as noted in the observational notes, the group model places less experienced individuals in the middle, and more advanced practitioners on the outside so that when participants cannot see the instructor, they are still able to follow along. Participants also expressed the importance of *instructor feedback*. Many participants discussed that the instructor was strictly positive, never criticized anyone, and accepted anyone who participated in tai chi. All participants highly valued the expertise of the instructor and described how much they enjoyed his/her teaching style. Some participants mentioned that the instructor was able to have a connection with all individuals and this made participants want to continue to participate in tai chi.

Table 6.

*Group Dynamics*

| Subthemes | Quotes |
|---|---|
| Energy from Synchronized Group Movement | "It doesn't matter what age you are, you feel connected when you practice tai chi. You feel the energy flow, especially with a large group, and even more when everyone wears the same shirts… I enjoy that we can all be connected. For example, we all push in the same direction and you can feel the energy in the room. You can feel very powerful. In a group, it's joy. Especially for seniors. And you don't have to communicate, you just flow." (P3)<br><br>"[T]here is an "energy" in the room. Especially when we line up and follow." (P6)<br><br>"There is a particular type of group energy you get from synchronicity, and there is a feeling in the room like cooperation and being sensitive to other people's positions and movements, and it builds an energy that is really special." (P8)<br><br>"When you're doing it in a group, it's very different energy than when you are doing it alone…But there's that mass energy effect of a group so that's really, really good…I like doing it in a group. I like the group dynamic and that mass energy effect." (P9) |
| Social Benefits | "Well it's just a good atmosphere. I mean, the people around are friendly and nice you know? And so, there's a social aspect to it."(P1)<br><br>"I feel so enjoyable and happy. Especially when we all come together and we all have our problems. But then, when you let go and just do tai chi, there's a certain release. But that can be hard sometimes because there is always something stuck in our heads. I found that also you're with people, but you didn't touch, but you are connected to each other. It's call like, a 'chi flow and harmony.' I found that is very important for everyone." (P3)<br><br>"Well, I moved back to Thunder Bay after living in (smaller city) for 29 years and I didn't know a soul when I moved back. Then I started studying tai chi and all of a sudden, I discovered this nice group of people. And people look after each other, you know? If someone is away sick, they will get a phone call or a card. Ya, so people look after each other here it's very good." (P8)<br><br>"But [instructor]'s tai chi group is like a family here. There's a really big social aspect to it, and everybody supports one another. And it's a |

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|---|---|
| | friendship network. Like, I socialize with people outside here now. And if something goes wrong in your life, you can lean on these people…Also the social dynamics, like I said it very supportive, everybody is friends, everyone's there for you, everybody helps you, everybody has something good to say, and supportive, emotionally, celebrating birthdays, asking you how you are. And if you don't come for a while, people will ask you 'Are you okay? Is something wrong?' We take care of people. If someone is missing a while, we ask each other if they've heard from them. And you often ask if you can help or how could we make them better? So the group is really strong. We all take care of each other." (P9)<br><br>"[T]he classes are great. The people are lots of fun. It's always a good vibe when you come and [instructor] is of course, is amazing [laughs]. An amazing fellow… Yeah, and we're very close. It's very communal, you know? … But when you go to the Christmas party and stuff and 300 people show up, you can see the wider extent of tai chi." (P14) |
| Group Delivery Format | "It's a safe place for people to enjoy; they like the place. Instructor is the key. Instructor teach it right or instructor needs to attract them to stay longer." (P3)<br><br>"You know, I did practice with videos on my own in order to get the moves down, but I would much rather learn in a setting with other people and not just on my own…Because you can see it. You can stop. You can ask questions…It's especially helpful when you have to turn around, you know? You have to try to look back and that's difficult! But when you're in a group you can look at someone who is more experienced and follow them when you can't always turn around and look at the instructor." (P6)<br><br>"Well, less experienced people, especially for beginners are placed in the middle. That way, they can follow along without having to look at the instructor the whole time. So I like that form of the structure. Sometimes, more experienced individuals will help those who are beginners so that is beneficial for everybody…It's characterized as global learning. And you just follow and nobody cares whether you miss a move or you can't do it. [Instructor] motivates, gives a lot of positive feedback, a lot of encouragement, never negative." (P8)<br><br>"[The instructor's] style is also very positive. There's no criticism, very accepting. Like, if you screw up, 'So what?' He says it doesn't matter. He's also always making jokes and being light. That just makes you feel good and accepted. He's unconditionally accepting. Yeah, like, whoever you are, whatever level you are, he accepts you." (P9) |

| | |
|---|---|
| | "Oh, it's all [instructor]…It's much more relaxed than environment that any other traditional martial arts school… Uh, you know [instructor]! He has an affinity and connection with people. And it shows." (P14) |

# Chapter 5 - Discussion

Regular physical activity can promote older adults' physical and psychological health, well-being, and quality of life, as well as reduce their risk of developing chronic conditions (Acree et al., 2006, Warburton et al., 2011). However, many older adults do not participate in physical activity due to the perceived barriers they may experience (e.g., pain, lack of guidance, intimidation; Bethancourt et al., 2014). Tai chi has been promoted as a form of physical activity that can help address some of these barriers. Drawing from existing literature, tai chi has the ability to enhance physical function, health outcomes, well-being, and quality of life among older adults who have chronic conditions (Chen et al., 2015; Frye et al., 2007; Sun et al., 2014; Zheng et al., 2015). To date, no studies have investigated the perspectives of older adults who are healthy and practiced in tai chi. Given the low number of older adults meeting recommended physical activity guidelines (Statistics Canada, 2015), and in an effort to understand adherence experiences, researching those who have participated in an exercise program over the long-term may provide valuable information for healthcare professionals and future developers of community-based exercise programs. Thus, a descriptive qualitative study was used to explore the perspectives of experienced healthy older adults who have adhered to a community-based tai chi program. Overall, this study is unique in that the participants adhered to tai chi for approximately 14 years and participated, on average, 8.4 times per week for 60 to 120 minutes per session. Previously, no study has acquired similar findings from a quantitative or qualitative perspective.

Although the majority of older adults who start an exercise program will drop out within the first six months (Dishman, 1988; White, Ransdell, Vener, & Flohr, 2005), those enrolled in this study reported that they had adhered to tai chi for approximately 13.6 years. Furthermore,

the participants exceeded the CSEP (2018) recommendations for physical activity by participating in tai chi for 60 to 120 minutes each session, 8.4 times per week. When comparing these adherence and frequency rates to other physical activity-based research involving older adults, it is evident that these findings are unique which may speak the value of tai chi as a health promoting activity in this population. For example, in a longitudinal study with previously sedentary older adult women participating in a community-based walking group, it was found that two years post-intervention, 66% of the participants walked for 150 minutes per week. Five years post-intervention only 17% of the women walked for 150 minutes per week (Findorff, Wyman, & Gross, 2009). Participants in the present study were able to accumulate well over 150 minutes of physical activity per week, thereby emphasizing that participants may have experienced more facilitators than challenges when it came to participation. Moreover, the positive group dynamics experienced may have also contributed to long-term adherence in this community-based tai chi program.

**Facilitators for Tai Chi Adherence Among Healthy Older Adults**

Overwhelmingly, participants in this study spoke most often about facilitators for participating in tai chi. As observed in Figure 1 and illustrated via bi-directional arrows, facilitators for participating were closely associated with participant attitudes related to practice, group dynamics, and reasons for joining. These bi-directional associations exist because these themes could also be linked to facilitating engagement in the tai chi program and vice versa. For instance, some participants' attitudes related to tai chi involved allowing themselves to be kind to their aging bodies', and recognizing related limitations and abilities. In this case, tai chi enabled these older individuals to participate in physical activity without compromising their aging

bodies for fear of injury or overexertion (Bethancourt et al., 2014). In turn, this may have facilitated engagement and adherence to practice.

**Enhanced Physical Health.** Among older adults, research has shown that health status is a significant facilitator to physical activity participation (Boehm et al., 2013). This is because older populations often understand the need to exercise to improve health (Boehm et al., 2013). In the present study, participants noted that advances in physical health were related to improved balance and coordination: valuable physical benefits of tai chi that can aid in fall prevention. This finding coincides with some quantitative studies which have measured the relationship between fall prevention and tai chi (Frye et al., 2007; Guo et al., 2014). Tai chi has been shown to have a positive effect on balance, or on delaying the decline of balance capacity in middle-aged and older adults with chronic conditions (Leung, Chan, Tsang, Tsang, & Jones, 2011). Studies have also shown that tai chi helps improve vestibular function, static balance, proprioception, and coordination skills, consequently reducing the frequency of falls in community-dwelling older adults (Fong & Ng, 2006; Li, Xu, & Hong, 2008; Liu et al., 2012; Tsang & Hui-Chan, 2006).

Reductions in the fear of falling due to improvements in balance and coordination from participating in tai chi have been attributed to increased self-efficacy in older adults (Kutner et al., 1997). Self-efficacy concerns beliefs about an individual's capabilities to perform necessary actions to satisfy situational demands (Bandura, 1997). Studies have shown that self-efficacy is an essential mediator between older individuals and their behaviours (e.g., participation in physical activity; Li et al., 2001; McAuley et al., 1993). Self-efficacy has also been shown to influence perceptions of well-being and improvements in physical and psychological health (Mazzeo et al., 1998; McAuley et al., 1993), all of which are essential to older adults' quality of

life. In addition to improving well-being, physical and psychological health, and quality of life, evidence shows that high levels of self-efficacy can lead to exercise adherence in older adults (Dechamps et al., 2007). Participants in the present study identified facilitators for practicing tai chi including their own abilities to improve balance, strength, and mental acuity. Thus, it is possible that the participants may have had high levels of self-efficacy due to the outcomes experienced, thereby contributing to their long-term adherence (Dechamps et al., 2007). It is therefore essential that older adults enroll in exercise programs, like tai chi, that can lead to increased self-efficacy as this may lead fewer adverse health events, improved quality of life, and heightened adherence.

In relation to balance and coordination, several participants in this study noted increased lower limb strength as a benefit of practicing tai chi. This finding coincides with research by Li et al. (2009) which showed that when performing tai chi, the muscles continually change between concentric and eccentric contractions, thus improving lower limb muscle strength. Improving muscle strength in any part of the body is important for older adults (CSEP, 2018); however, increased lower limb strength, in particular, can also help enhance balance and attenuate fall risk (Chodzko-Zaijko et al., 2009; Nelson et al., 2007). Older adults are also at heightened risk of developing conditions associated with aging (Nelson et al., 2007) such as sarcopenia, which involves age-related declines in lean body mass (Iannuzzi-Sucich, Prestwood, & Kenny, 2002). The health improvements associated with practicing tai chi noted by participants were not merely focused on physical health, but also on psychological health.

**Enhanced Psychological Health.** Many studies have discussed the psychological benefits of tai chi (Chen et al., 2015; Dechamps et al., 2007; Frye et al., 2007; Yeh et al., 2016). All of the present study's participants enjoyed participating in tai chi, but some particularly

appreciated how tai chi incorporates mindfulness and the mind-body connection. A few participants discussed that tai chi allowed them to ‘enjoy the moment' and ‘zone out,' focusing only on the movements of tai chi and the self. There is robust literature describing the effects of mindfulness and its association with physical activity (Manson et al., 2013; Yeh et al., 2016). A fundamental concept of mindfulness is interoception, which refers to receiving and appraising signals in the body (Tabor, Vollard, Keogh, & Eccleston, 2019; Yeh et al., 2016). In terms of physical activity participation, interoception is closely associated with behaviour change as the connection to the moment (i.e., mindfulness) can affect one's ability to engage in and adhere to physical activity (Farb et al., 2015; Schmalzl, Crane-Godreau, & Payne, 2014). Older adults may benefit from interoception specifically via participating in tai chi as the mindfulness component may lead to behaviour change and continued participation (Kerr et al., 2008; Zhang, Sun, Yu, Song, & Mao, 2015).

Focusing on the brain was also discussed by participants as a facilitator for practicing tai chi as it could serve as a protective agent against neurodegenerative diseases and aid with memory function. To date, two randomized controlled trials have shown that tai chi can have a positive effect on brain volume and cognition in older adults (Lam et al., 2012; Mortimer et al., 2012). A study by Lam et al. (2012) found that in a sample of 389 older Chinese adults at risk of cognitive decline, one year of tai chi participation reduced the risk of developing dementia, while also improving memory and executive function. In another study by Mortimer et al. (2012), tai chi participation resulted in significant increases in brain volume, improvements in memory, and executive function after 40 weeks in a sample of 120 Chinese elders without dementia. Memory and brain function could have been improved in these older adults because tai chi is based on a series of forms or poses that move from one to another, and practitioners must try to remember

these sequences over time (Liu & Frank, 2010). This body of research, in addition to the present study, identified that routine tai chi participation should be promoted as it may help preserve older adults cognitive abilities as they age.

In summary, older adults in this study who practiced tai chi self-reported increases in strength, coordination, and balance, all which can lead to increased self-efficacy for accomplishing tasks of daily living (Dechamps et al., 2007; Guo et al., 2014; Li et al., 2001; McAuley et al., 1993). Tai chi also impacts the mind and body and may facilitate greater well-being because of heightened awareness and mindfulness (Bonura & Tenebaum, 2014; Kerr et al., 2008; Yeh et al., 2016; Zhang et al., 2015). Future studies should attempt to explore the relationship between self-efficacy and a heightened sense of the mind and body as these may be potential mediators to promoting adherence among older adults. Because tai chi is performed in a group environment, group dynamics may also play a key role in promoting adherence to practice in older adults.

**Group Dynamics and Adherence to Tai Chi Among Healthy Older Adults**

Being part of an exercise group has a powerful influence on an individual's ability to adhere to an exercise program (Spink & Carron, 1994). In the present study, participants described certain aspects of the group environment that directly influenced their engagement in tai chi. For example, participants noted a level of trust due to the support of the instructor and the safe environment provided. Furthermore, the group delivery format made it more accessible for individuals who wanted to start tai chi because beginners were place in the centre of the exercise group. The group delivery format also provided valuable opportunities for social support, belongingness, and engagement in a communal environment, all of which have been proven to

contribute towards facilitating engagement and adherence in exercise for older adults (McAuley & Jacobson, 1991; Spink & Carron, 1994).

**Group Delivery Format.** The group delivery format of tai chi allowed participants to easily follow along. Based on observations and descriptions provided by participants, the group model places less experienced individuals in the middle and more advanced practitioners on the outside. Therefore, when participants cannot see the instructor, they are still able to follow along via observing their peers. One participant made the researcher aware that this is a well-known group model within martial arts (i.e., Kung Fu, tai chi, karate) by stating, "[The group model happens] naturally. It's been completed in martial arts for a long time…" Dechamps et al., (2007) also found positive results surrounding the way in which tai chi is taught in a group. The researchers discussed that when an older adult learns a sequence of movements in tai chi, they can aid other older individuals who may have difficulties learning the same sequence (Dechamps et al., 2007). The group model in tai chi is unique and is not implemented in other group exercise classes for older adults (e.g., aquafit, yoga, walking groups). Generally, when individuals join an exercise program, they are placed at the back or choose to be at the back of the class. Although it may be uncomfortable for individuals at first, integrating new participants to the centre of the exercise group may not only positively facilitate future physical activity engagement, but also make the individuals feel welcome and included in the group. Future studies are needed to assess whether integrating individuals in the centre of an exercise group in other exercise programs provides the same positive results as those experienced via the tai chi group.

**Instructor Expertise.** Many participants discussed the value of having an experienced tai chi instructor lead the classes. According to these older adults, having an appropriate leader was essential because it facilitated a connection between the instructor and with other participants,

thereby impacting participants' tai chi practice positively. Gyurcsik, Estabrooks, and Frahm-Templar (2003) found that effective leadership in physical activity groups for older adults needs to involve instructors who are adequately qualified, create personal bonds with participants, use their knowledge, and demonstrate collective accomplishments of the group. In the present study, the participants described the instructor as being an expert in tai chi and very knowledgeable. For example, one participant stated: "[Instructor]'s a [tai chi] Master. And he's a Master teacher… [Instructor] knows his stuff." In addition to the instructor's expertise and knowledge of tai chi, participants also noted that the instructor was able to provide positive feedback and also create personal connections, thereby making the participants want to continue to practice. This finding underscores the importance of well-trained instructors and tailored leadership in community-based exercise programs in order aid older adults in adherence to the program (Beachamp, 2006; Carroll et al., 2011; Manson et al., 2013). It is also possible that the role of the instructor was essential for facilitating self-efficacy among participants so that they felt positive about the activity and their related skills, and were motivated to return and continue participating in tai chi. The findings associated with the group model and the role of the instructor emphasize the importance of a self-efficacious group environment for older adults in order to sustain participation in physical activity programs (McAuley et al., 2011).

**Social Benefits.** Individuals of all ages and genders can experience the social benefits of exercise. However, older adults may gain more from these benefits as they experience a stronger sense of community and social support due to heightened experiences of loss and dwindling social lives associated with aging (Lox et al., 2010; Yeh et al., 2016). Previous studies indicate that the social element of tai chi groups can significantly benefit tai chi practitioners (Lee, 2017). Moreover, in a broader sense, social support is said to be the most crucial influence with regards

to physical activity intention, participation, and adherence (Chogahara et al., 1998; Lox et al., 2010). Studies have also demonstrated the positive impact of social support on self-efficacy (Resnick et al., 2002), which has a positive influence on exercise adherence (Cooper et al., 2015). For example, in this study, the support of advanced practitioners modelling tai chi for less advanced participants may have increased their confidence as well as self-efficacy. Some participants also shared that expanding their social network and having social support motivated them to continue to practice tai chi, thus, highlighting the importance of social support when promoting physical activity to older adults. In addition to social support, tai chi can also provide older adults with a supportive communal environment.

Group exercise classes like tai chi have been shown to offer social environments for exercisers (Blackstone et al., 2017; Dolan, 2012). Social comradery often develops among the participants and instructors, which helps to maintain the participant's interest and increases exercise adherence (Dolan, 2012). Participants in this study indicated that they felt like they were a part of a socially supportive communal environment, which was more like a family than an exercise group, "[Instructor]'s tai chi group is like a family here. There's a really big social aspect to it, and everybody supports one another. And it's a friendship network." Similar findings were uncovered by Chiang, Seman, Belza, & Tsai, (2008) who examined the levels of social connectedness in a group exercise program for ethnically diverse older adults. In their study, the researchers found that group exercise programs for ethnically diverse older adults provide rich social connections and bring a sense of community often identified by participants as an 'exercise family.' According to findings from the present study, social connections and sense of community are also present in healthy older adults who are not ethnically diverse. Thus, regardless of ethnic origin or makeup, a sense of belonging to a group exercise is important for

all older adults to experience. Moreover, many participants also discussed that being together with individuals who hold similar interests helped forge feelings of belongingness: the perception of belonging to a group of individuals with similar interests (Baumeister & Leary, 1995). Wienke and Jekauc (2016) labelled perceptions of belonging to an exercise group as more important than social interaction and social support. Furthermore, feelings of belonging are central to the likelihood of an older adult adhering to physical activity behaviours (Baumeister et al., 1995; Wienke & Jekauc, 2016). Therefore, older adults in this study who felt like they belonged to the tai chi group were more likely to participate in and adhere to tai chi.

**Minimal Challenges to Participating in a Community-Based Tai Chi Program**

Past research has accentuated multiple challenges concerning participation in exercise programs for older adults (e.g., Bethancourt et al., 2014; Manson et al., 2013). However, other research has identified that when exercise programs have fewer perceived challenges and more facilitators, older individuals are more likely to participate in and adhere to physical activity (Bethancourt et al., 2014; McAuley, Lox, & Duncan, 1993). In this study, few challenges were associated with tai chi practice, and although there were challenges, participants emphasized that these challenges would not restrict their participation on a routine basis.

One of the challenges which was identified by participants was large class sizes. When the number of people in an exercise class increases, dissatisfaction with the exercise experience does also (Widmeyer, Brawley, & Carron, 1990). Participants in this study experienced dissatisfaction concerning larger class sizes, stating there was less individual attention from the instructor, thereby inhibiting improvement in their practice. Since tai chi typically involves a single instructor who leads group-based sessions, this ratio may serve as a significant challenge for some older individuals who want to receive individually-tailored guidance (Bethancourt et

al., 2014; Manson et al., 2013). Although large class sizes were emphasized as a challenge, many participants mentioned that they would take on a leadership role and attempt to help those who required it. In large classes, advanced practitioners placed themselves on the outside of the group, thus adopting a social modeling technique to help individuals in the class who may not have been able to see the instructor. Social modeling involves watching similar individuals (i.e., of the same gender, race, age, fitness level) complete a task (McAuley, Szabo, Gothe, & Olson, 2011). In relation to this study, older individuals participating in large tai chi classes would be able to identify other tai chi practitioners of similar characteristics (e.g., gender, experience level) and successfully follow the tai chi form. It is possible that emulating these individuals viewed as similar not only bolstered self-efficacy for the less experienced participant, but also for the advanced practitioner (McAuley et al., 2011).

Although many participants felt that tai chi was accessible and easy to participate in, some indicated that there could be difficult movements for an aging population. Community-based exercise programs are often made up of individuals who have various physical capabilities (Yeh et al., 2016). When looking at programs aimed at increasing physical activity participation in older populations, it is important to have the ability to modify potentially difficult movements (Bethancourt et al., 2014). Tai chi may have some difficult movements for older adults, but participants are generally able to modify these movements into something easier (i.e., lifting the knee in place of a high kick). The ability to modify is important for the development of future community-based exercise programs, especially with respect to the aging body and adherence to physical activity participation throughout the lifespan.

## Strengths and Limitations of the Study

**Strengths.** This study contributes uniquely to the literature by providing detailed accounts of healthy older adults participating in community-based tai chi program. To date, tai chi programs have typically been delivered as part of intervention and clinical research programs. This is the first study of its kind to explore participation in an existing tai chi program delivered in the community thereby strengthening the ecological validity of this research and the findings. To the student researcher's knowledge, this is also the first study to qualitatively explore healthy older individuals who are experienced in the practice of tai chi, thus providing valuable insight into exercise program adherence according to the perspectives of healthy older adults.

Based on initial observations, most of the older individuals who participated in tai chi at the Academy were women; however, in this study, more men were interviewed (male *n*=8). This is a salient finding because most intervention studies among older adults predominantly involve women. Therefore, older adult men's experiences with physical activity are typically underrepresented in the literature (Dunlop & Beauchamp; 2013). This may be because of masculine ideals and expectations. For example, older men tend to choose activities that are seen as more physical, competitive, and masculine in nature, and tend to avoid activities that are seen as feminine (e.g., yoga, aquafit, walking groups; Marhankova, 2014). Although participants described tai chi as 'quiet, gentle, and holistic', it is a martial art that has aspects such as punches, force, and combat that are physical, competitive, and masculine. The masculine nature of tai chi was perhaps why more males were inclined to discuss their experience.

**Limitations.** Although the researcher attempted to promote confirmability and reflexivity, she was a young, educated, and active female; thus, the responses to the questions in

the interviews could have reflected these attributes (i.e., social desirability). In addition, although the findings from participants at Peng You International Tai Chi Academy can aid with the development of future tai chi programs, the findings may not be as transferable as hoped. Throughout the interview process, the researcher learned that the Academy has been well established in Thunder Bay (for approximately 20 years). New community-based tai chi programs may not have the same rapport and community impact as a program such as this. Thus, attention should be paid to the history, delivery format (e.g., experience level of instructor), and group dynamics involved in future community-based tai chi programs.

**Conclusion**

Few older adults participate in sufficient amounts of physical activity to incur associated health benefits (i.e., physical, psychological, social benefits). Many older adults do not participate in physical activities do to the specific barriers they may perceive (e.g., pain and discomfort during aerobic activities). Older adults who have adhered to community-based exercise programs for an extended period of time are poised to provide useful strategies for increasing physical activity rates. In this study, based on the perspectives of healthy older adults, it appears that tai chi has more facilitators than challenges when it comes to participation, as well as positive group dynamics which can influence involvement positively. Based on the known health benefits and the group-based advantages of involvement, tai chi delivered in the community should be promoted for older adults as a means to decrease age-related declines in health and ultimately enhance quality of life.

Since this study was exploratory in nature, and the sample showed strong adherence rates to tai chi, next steps may include developing a longitudinal study designed for healthy older adults who are unfamiliar with tai chi in order to identify if adherence rates are similar to the findings of

this study. A longitudinal study could also potentially illuminate dropout rates and reasons associated with tai chi involvement among older adults. Furthermore, the findings of this study may only be translated to Northern Ontario communities or other rural municipalities located in Canada which inherently have fewer physical activity-related amenities for older adults compared to other more populated cities (e.g., Greater Toronto Hamilton Area, Winnipeg Capital Area, Ottawa – Gatineau Metropolitan Area). Future research is recommended among older adults in such metropolitan cities to determine if tai chi adherence rates coincide with smaller, more remote communities such as Thunder Bay.

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Appendix A: Get Active Questionnaire

CSEP | SCPE
THE GOLD STANDARD IN EXERCISE SCIENCE AND PERSONAL TRAINING

# Get Active Questionnaire

CANADIAN SOCIETY FOR EXERCISE PHYSIOLOGY –
PHYSICAL ACTIVITY TRAINING FOR HEALTH (CSEP-PATH®)

**Physical activity improves your physical and mental health. Even small amounts of physical activity are good, and more is better.**

For almost everyone, the benefits of physical activity far outweigh any risks. For some individuals, specific advice from a Qualified Exercise Professional (QEP – has post-secondary education in exercise sciences and an advanced certification in the area – see csep.ca/certifications) or health care provider is advisable. **This questionnaire is intended for all ages – to help move you along the path to becoming more physically active.**

☐ I am completing this questionnaire for myself.

☐ I am completing this questionnaire for my child/dependent as parent/guardian.

## PREPARE TO BECOME MORE ACTIVE

**The following questions will help to ensure that you have a safe physical activity experience. Please answer YES or NO to each question before you become more physically active. If you are unsure about any question, answer YES.**

| | YES | NO |
|---|---|---|
| 1 Have you experienced **ANY** of the following (A to F) **within the past six months**? | | |
| **A** A diagnosis of/treatment for heart disease or stroke, or pain/discomfort/pressure in your chest during activities of daily living or during physical activity? | ○ | ○ |
| **B** A diagnosis of/treatment for high blood pressure (BP), or a resting BP of 160/90 mmHg or higher? | ○ | ○ |
| **C** Dizziness or lightheadedness during physical activity? | ○ | ○ |
| **D** Shortness of breath at rest? | ○ | ○ |
| **E** Loss of consciousness/fainting for any reason? | ○ | ○ |
| **F** Concussion? | ○ | ○ |
| 2 Do you currently have pain or swelling in any part of your body (such as from an injury, acute flare-up of arthritis, or back pain) that affects your ability to be physically active? | ○ | ○ |
| 3 Has a health care provider told you that you should avoid or modify certain types of physical activity? | ○ | ○ |
| 4 Do you have any other medical or physical condition (such as diabetes, cancer, osteoporosis, asthma, spinal cord injury) that may affect your ability to be physically active? | ○ | ○ |

**NO** to all questions: go to Page 2 – ASSESS YOUR CURRENT PHYSICAL ACTIVITY

**YES** to any question: go to Reference Document – ADVICE ON WHAT TO DO IF YOU HAVE A YES RESPONSE

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# Get Active Questionnaire

## ASSESS YOUR CURRENT PHYSICAL ACTIVITY

**Answer the following questions to assess how active you are now.**

1 During a typical week, on how many days do you do moderate- to vigorous-intensity aerobic physical activity (such as brisk walking, cycling or jogging)? ☐ DAYS/ WEEK

2 On days that you do at least moderate-intensity aerobic physical activity (e.g., brisk walking), for how many minutes do you do this activity? ☐ MINUTES/ DAY

**For adults,** please multiply your average number of days/week by the average number of minutes/day: ☐ MINUTES/ WEEK

*Canadian Physical Activity Guidelines* recommend that adults accumulate at least 150 minutes of moderate- to vigorous-intensity physical activity per week. For children and youth, at least 60 minutes daily is recommended. Strengthening muscles and bones at least two times per week for adults, and three times per week for children and youth, is also recommended (see csep.ca/guidelines).

## GENERAL ADVICE FOR BECOMING MORE ACTIVE

Increase your physical activity gradually so that you have a positive experience. Build physical activities that you enjoy into your day (e.g., take a walk with a friend, ride your bike to school or work) and reduce your sedentary behaviour (e.g., prolonged sitting).

If you want to do **vigorous-intensity physical activity** (i.e., physical activity at an intensity that makes it hard to carry on a conversation), and you do not meet minimum physical activity recommendations noted above, consult a Qualified Exercise Professional (QEP) beforehand. This can help ensure that your physical activity is safe and suitable for your circumstances.

Physical activity is also an important part of a healthy pregnancy.

Delay becoming more active if you are not feeling well because of a temporary illness.

## DECLARATION

*To the best of my knowledge, all of the information I have supplied on this questionnaire is correct.*
*If my health changes, I will complete this questionnaire again.*

**I answered NO to all questions on Page 1**

Sign and date the Declaration below

**I answered YES to any question on Page 1**

Check the box below that applies to you:

☐ I have consulted a health care provider or Qualified Exercise Professional (QEP) who has recommended that I become more physically active.

☐ I am comfortable with becoming more physically active on my own without consulting a health care provider or QEP.

Name (+ Name of Parent/Guardian if applicable) [Please print] | Signature (or Signature of Parent/Guardian if applicable) | Date of Birth

Date | Email (optional) | Telephone (optional)

**With planning and support you can enjoy the benefits of becoming more physically active. A QEP can help.**

☐ Check this box if you would like to consult a QEP about becoming more physically active.
(This completed questionnaire will help the QEP get to know you and understand your needs.)

Appendix B: Interview Guide

**Title:** Exploring the Perspectives of Experienced Healthy Older Adults Participating in a Community-Based Tai Chi Program

**Purpose:** to use qualitative inquiry to broadly explore the perspectives of experienced, healthy older adult tai chi practitioners' participating in a community-based program

**Preamble:**
Thank you for agreeing to complete this interview, I really appreciate it taking the time today. For the next 20-30mins I am going to ask you some questions about your experience participating in a tai chi program. Just a reminder that your responses will remain anonymous and confidential, and that you can chose not to answer any of the questions I may ask.

**First part of the interview I'm going to ask you questions on:**
**Physical Activity and Tai Chi Experience**

1. How and when did you discover tai chi?
2. What was your initial reason for starting to practice tai chi?
3. In what ways does tai chi impact your life today?
   Probe: Describe how tai chi can affect your physical health.
   Probe: Describe how tai chi can affect your mental health. Other?
4. What do you enjoy about practicing tai chi?
   a. What are the benefits of practicing tai chi for you?
5. What is challenging for you about practicing tai chi?
   a. What are negatives?
6. How do you feel when you practice tai chi?
   Probe: How do you feel after you practice tai chi?

**Next, I'd like to ask you questions on:**
**Tai Chi Participation**

1. What are some of the reasons you participate in tai chi? / What do you feel helps you to participate in tai chi?
   a. Probes: What motivates you to participate in tai chi?
   b. Probes: physical fitness, psychological health, fill your day, spend time with friends, expand social network.
2. What are some of the reasons, if any, you don't go to a tai chi class?
   a. What prevents you from participating?
3. What is it about tai chi practice that influences your participation?
   Probe: Ying and Yang aspect? Mind and body emphasis? (Why tai chi versus some other type of activity?)

**Next, I'll be asking you questions about:**
**Tai Chi Program**

4. Which tai chi classes to you participate most in here?
   a. Probe: What do you like about them?
5. What do you like most about participating in this particular tai chi class? Least?

   a. Probe: What suggestions or ideas do you have to make it better (if any)?
6. What are some of the key benefits that you see for enrolling in a tai chi program?
   Probe: Why do you continue to practice tai chi?
   Probe: To be physically active? Improve physical fitness? Improve psychological health? To fill you day? To spend time with friends? To expand your social network?
7. How would you classify the difficult of the movements in tai chi (e.g., easy, moderate, difficult to learn)? Why is this the case?
8. How does level of difficulty relate to your participation in tai chi?
9. How would you describe the instructor's teaching style?
   a. Probe: The way instructions are given
10. How does this teaching style influence your participation (if at all)?

**Next, I'll be asking you about:**
**Class structure (the role of the group)**

1. What do you like about the group-based structure of the tai chi classes?
   a. What don't you like?
2. What are some of the benefits associated with practicing tai chi in a group? Individually?
3. What are some of the drawbacks associated with practicing tai chi in a group?
   a. In what ways does the group setting of tai chi influence your participation?
4. To what degree do you have contact with other individuals from tai chi outside of the program (if at all)?
   a. E.g., coffee, trips (e.g. Mexico, China, etc.)
5. How would you describe your ideal tai chi practice environment?
   Probe: Inside? Outside? Clothing? Sound? Lighting?
6. Can you describe how it feel when you are practicing tai chi in a group?
7. Is there anything we haven't talked about today that you would like to share before we close?

Appendix C: Demographic Questionnaire

ID _____ Date:_____

***Please <u>do not</u> write your name on this questionnaire**

1. Gender: _____

2. Age (in years): _____

3. Height (in feet/inches): _____ **OR** Height (in meters/centimeters):_____

4. Weight (in pounds):_____ **OR** Weight (in kilograms): _____

5. Please indicate, in years/months, how long have you participated in Tai Chi?

   _____

6. How long have you practiced Tai Chi at the Academy (years/months)?

   _____

7. During an average week, how often (number of times) do you participate in Tai Chi?

   _____

8. How long (in minutes) is your typical Tai Chi exercise session? _____

Appendix D: Gatekeeper Information Letter

Dear Mr. You,

My name is Nerida Koert van der Linden. I am a student in the Master of Science in Kinesiology program at Lakehead University. I am conducting a research study titled*, "Exploring the Perspectives of Experienced Healthy Older Adults Participating in a Community-Based Tai Chi Program,"* under the co-supervision of Dr. John Gotwals and Dr. Erin Pearson. The purpose of this letter is to describe this study and to ask if you would be willing to collaborate with us in the identification of potential participants.

This project is focused on exploring experienced and healthy older adults' perspectives on participating in a community-based tai chi program. Exploring this is important because many older adults do not participate in physical activity due to several barriers which may restrict their involvement. Tai chi may be an alternative physical activity that addresses these barriers and could increase physical activity rates among older adults. Such research may be of interest to program facilitators, instructors, healthcare professionals, and older adults. For example, this could allow program facilitators to develop tai chi or similar physical activity programs for older adults. Furthermore, this might help older adults choose a physical activity program and increase their physical activity rates.

We are looking to recruit individuals who are healthy older adults over the age of 50 years, currently participating in a tai chi program at Peng You International Tai Chi Academy, and are experienced in the practice of tai chi (practiced tai chi 2x/week for 1 or more years). We would greatly appreciate it if you could help us to recruit individuals that meet these inclusion criteria and are interested in participating. This could involve mentioning the study to such individuals, distributing information letters about the study (which we will provide), and/or fostering our ability to make contact with them. We would then take over the process of officially informing the individuals about the study and formally asking them if they want to take part. Doing so would involve the completion of two short questionnaires and one interview, all which will take approximately 30-70 minutes of their time.

Take note that you will not be allowed to be in the immediate vicinity while older adults are informed about the study and complete the questionnaires and interviews. We will also not be able to tell you if any specific individual decided to participate in the study or provide you with results based on data from any specific individual. However, we will gladly provide you with a summary of the general results should you be interested.

We will be contacting you soon to clarify any questions you may have about our study. Please feel free to contact us as well. The study has been approved by the Lakehead University Research Ethics Board. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team please contact the Research Ethics Board at 807-343-8283 or research@lakeheadu.ca

We hope that you find this study interesting and will help us to recruit potential participants. Please **respond to nkoertv@lakeheadu.ca indicating your willingness to do so.**

Thank you for your consideration,

Sincerely,

Ms. Nerida Koert van der Linden
Graduate Student Researcher
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Dr. Erin Pearson
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Dr. John Gotwals
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Appendix E: Participant Information Letter

Dear Potential Participant,

We invite you to participate in a research project titled*, "Exploring the Perspectives of Experienced Healthy Older Adults Participating in a Community-Based Tai Chi Program.*" This project is being run by a team of researchers. Ms. Nerida Koert van der Linden is carrying out the project; it represents the thesis that she is completing as a student in the Master of Science program offered out of the School of Kinesiology at Lakehead University. Dr. John Gotwals and Dr. Erin Pearson serve as Nerida's primary co-supervisors and are also part of this research team.

Your participation in the project is being requested, as you a healthy individual who has participated a community-based tai chi program for at least one year. The purpose of this letter is to describe the study so you can make an informed decision about whether to participate.

**Your Role in the Project**

Your participation in this project would involve the completion of two questionnaires. Below is a summary of the procedure:

(1) At a meeting time that is convenient for you, you will complete a brief packet of surveys and an interview with the student researcher. The first survey is a basic demographic information questionnaire that asks for general information about yourself (e.g., age, height, weight, history with tai chi). A second survey asks you about your health and physical activity practices. The questionnaire packet will take about 10 minutes for you to complete.

(2) One-on-one interviews, led by the student researcher, will ask questions related to your involvement in a community-based tai chi program. The interview will use an interview guide to help guide discussions. Interviews will be scheduled according to your schedule and conducted in a private office at Peng You International Academy or at a public place mutually agreed upon. The interview will explore insights into the tai chi experience (e.g., entry into tai chi), participation (e.g., barriers and facilitators for participating in tai chi), program (e.g., instructors), and class structure (e.g., environment where tai chi is practiced). The interview will take 30-60 minutes for you to complete.

**Ethical Issues Regarding Your Participation**

(3) Your decision to take part in the study is entirely voluntary. Your decision to take part will have no impact on your involvement in the tai chi program at the Academy.

(4) We are taking steps to support the confidentiality and anonymity of your responses. Individuals associated with your experience (e.g., instructors, other practitioners), or personal life (e.g., friends, significant other) will be not be present during your interview. These individuals also will not have access to any of your personal data. If you decide to participate, a unique ID number will be assigned to you and that ID number (as opposed to your name) will be associated with your responses in all analyses. Finally, if we choose to publish or present the results from this study, your identity and your individual results will be kept anonymous.

(5) This study does not have any immediate benefits; however, it is possible that articulating some of your views aloud with regards to the facilitators associated with participating in tai chi could elicit positive feelings. Findings from the study could benefit society by providing pragmatic evidence supporting community-based tai chi programs (e.g., if the characteristics associated with tai chi (i.e., group environment) foster continued participation). As a result, strategies to assist older adults in physical activity engagement could be uncovered. As such, there are no mental or physical risks or benefits associated with completing the surveys or interview.

(6) You may decline to take part or withdraw from any stage of the study for any reason with no consequences. You may also choose to not answer or skip any question on demographic questionnaire or in the interview. However, you may not skip the *Get Active Questionnaire,* as this an important step for our inclusion criteria.

**Data Access and Presentation**

(1) Hard copies of your completed questionnaires will be stored in a locked office at Lakehead University. Electronic files compiling your responses will be password protected and stored on research team members' computers. Only the research team will have access to these hard copies and electronic files.

(2) All data will be kept in a locked file cabinet in the office of Dr. John Gotwals or Dr. Erin Pearson in the School of Kinesiology for a period of five years after the completion of the study.

(3) A report of the study's findings can be provided to you. This report will be available by August 2019.

(4) We will be happy to discuss any aspect of the study with you at any time.

If you have any questions or concerns at any point during this research study, please do not hesitate to contact either the graduate student researcher or her faculty advisor. The study has been approved by the Lakehead University Research Ethics Board. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team please contact the Research Ethics Board at 807-343-8283 or research@lakeheadu.ca

Thank you for your consideration,

Sincerely,

Ms. Nerida Koert van der Linden
Graduate Student Researcher
nkoertv@lakeheadu.ca

Dr. Erin Pearson
Assistant Professor
erin.pearson@lakeheadu.ca

Dr. John Gotwals
Associate Professor
jgotwals@lakeheadu.ca

# Appendix F: Participant Consent Form

## PARTICIPANT CONSENT FORM

Title of Project: ***Exploring the Perspectives of Experienced Healthy Older Adults Participating in a Community-Based Tai Chi Program***

Principal Investigator: ***Dr. John Gotwals, Lakehead University, (807) 346-7952, john.gotwals@lakeheadu.ca***
***Dr. Erin Pearson, Lakehead University, (807) 343-8481, erin.pearson@lakeheadu.ca***

Student-Investigator: ***Ms. Nerida Koert van der Linden, Lakehead University, (705)220-2964, nkoertv@lakeheadu.ca***

**To be completed by the research participant:**

I have read and understand that:

- I have been asked to take part in the above mentioned research study;
- There are no mental or physical risks associated with participation in this study;
- I may experience benefits associated with discussing my feelings about tai chi participation;
- I may contact the student researcher or her supervisors at any time throughout the study to ask questions regarding my participation;
- My participation is voluntary and I have the right to stop participation at any time, without consequence and that my information will be removed from the study at my request until data have been analyzed and written up in a report; and that I may choose not to answer specific questions or discuss certain subjects during the interview or ask that portions of our discussion or their responses not be recorded.
- The anonymity and confidentiality of my data will be maintained to the highest degree, only members of the research team will have access to my data;
- Any information presented in the academic community will maintain my anonymity and confidentiality;
- Information I provide will be securely stored for a minimum of 5 years in the School of Kinesiology at Lakehead University; and
- If I choose, I may provide my contact information, or I may contact the researcher by phone or e-mail, to obtain a summary of the findings from this study.

I agree to take part in this study:

_____ _____
Signature Date

_____
Printed Name

☐ I would like to receive a summary of the results when completed. *Only provide your email and phone number if you would like to receive a summary of results.
Email: _____