

## DOCTORAL THESIS

### Effects of Tai Chi and walking exercise on selected parameters of middle-aged office workers

Guo, Linxuan

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**Effects of Tai Chi and Walking Exercise on Selected Parameters of  
Middle-Aged Office Workers**

**GUO Linxuan**

**A thesis submitted in partial fulfillment of the requirements**

**for the degree of**

**Doctor of Philosophy**

**Principal Supervisor: Prof. LEUNG Mee Lee**

**Hong Kong Baptist University**

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## **ABSTRACT**

The impact from sedentary behaviors (e.g. in the contexts of workplace sitting, time spent in automobiles, computer use, etc.) have emerged as a new focus for research on physical activity and health (Owen, Healy, Matthews, & Dunstan, 2010). Tai Chi and brisk walking are recommended as effective and efficient exercise modes to increase daily physical activity. Although there is vast majority of research on Tai Chi and walking respectively, a number of issues remain to be addressed yet. One such issue highlighted in past research is a shortfall in scientific evidence addressing the differences between Tai Chi, traditional Chinese exercise with other kinds of exercise (Jahnke et al., 2010). Moreover, to our knowledge few studies have compared Tai Chi and brisk walking, none of these studies focused on sedentary population of office workers. In addition, the present study is the first attempt to have the exploratory study to integrate the two exercises together. Apart from further understanding of their health effects, the compound exercise tries to meet what is advocated by lifestyle intervention strategies that encourage people to develop multiple behavioral skills and incorporate more types of physical activity into their daily lives (Buckworth & Dishman, 2007). Accordingly, the current study posited that the combination of different physical activities may optimize and maximize exercise effects, especially for those who are physically inactive.

The purpose of current study is to examine the effects of selected exercises (i.e. Tai Chi, brisk walking, Tai Chi plus brisk walking) to sedentary population targeting

at Hong Kong office workers who suffer double expose in terms of lowest level of physical activity (Hong Kong Department of Health [HKDH], 2008) and high job strain (e.g. Siu et al., 2005). The exercise effects were observed through the measurement of several selected physical and psychological health parameters.

Totally 125 eligible subjects attended this study program, in which the three interventions were conducted for 12 weeks with three one-hour sessions per week and the control group were required to attend a “checkup of fitness/health status program. There were 82 valid data (Tai Chi:  $n = 20$ ; Brisk Walking:  $n = 19$ ; Tai Chi plus Brisk Walking:  $n = 21$ ; Control:  $n = 22$ ) remained for final statistical analyses.

The results of this study showed that significant interaction effect (time x group) when calculated across all the physical and psychological health parameters, except job satisfaction. The examination of within group effects showed that all the intervention groups had significant improvement in most of the selected health parameters with a few of exceptions (i.e.  $p > .05$ ; Tai Chi: diastolic blood pressure and job satisfaction; Brisk Walking: resting heart rate, job satisfaction and affect; Tai Chi plus Brisk Walking: body fat%, self-esteem, and job satisfaction). In addition, one-way ANOVA analyses showed that significant between-group differences were found between the group of compound exercise (Tai Chi plus Brisk Walking) and control group in more psychological parameters (self-esteem, physical self-worth, and physical satisfaction) compared to single exercise interventions. There were greater changes ( $p < .05$ ) in physical self-worth, self-esteem, job affect, flexibility and

balance for Tai Chi exercise, and in physical self-worth, physical satisfaction and flexibility for brisk walking, respectively, compared to their sedentary counterparts.

These results partially support the previous studies on Tai Chi and brisk walking, extend the observation to younger population and exercise alternation/concurrence, and highlight the promise of its practical implication for sedentary population. The current study found the advantages of compound training on health benefits for these sedentary people and suggested longer intervention to explore possible interaction and/ or accumulative effects among various exercise combined. Another expectation for further research is to incorporate follow-up assessments of maintenance effects to obtain comprehensive evaluation of the intervention effectiveness in health promotion as well as physical active lifestyle.

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