

The effect of Tai Chi on four chronic conditions—cancer, osteoarthritis, heart failure and chronic obstructive pulmonary disease: a systematic review and meta-analyses

Yi-Wen Chen,¹ Michael A Hunt,¹ Kristin L Campbell,¹ Kortni Peill,² W Darlene Reid³

► Additional material is published online only. To view please visit the journal online (<http://dx.doi.org/10.1136/bjsports-2014-094388>).

¹Department of Physical Therapy, University of British Columbia, Vancouver, British Columbia, Canada

²Department of Biology, University of British Columbia, Vancouver, British Columbia, Canada

³Department of Physical Therapy, University of Toronto, Toronto, Ontario, Canada

Correspondence to

Yi-Wen Chen, Department of Physical Therapy, University of British Columbia, 2177 Wesbrook Mall Vancouver, British Columbia, Canada V6T 1Z3; yiwenchen@alumni.ubc.ca

Accepted 12 August 2015

ABSTRACT

Background Many middle-aged and older persons have more than one chronic condition. Thus, it is important to synthesise the effectiveness of interventions across several comorbidities. The aim of this systematic review was to summarise current evidence regarding the effectiveness of Tai Chi in individuals with four common chronic conditions—cancer, osteoarthritis (OA), heart failure (HF) and chronic obstructive pulmonary disease (COPD).

Methods 4 databases (MEDLINE, EMBASE, CINAHL and SPORTDiscus) were searched for original articles. Two reviewers independently screened the titles and abstracts and then conducted full-text reviews, quality assessment and finally data abstraction. 33 studies met the inclusion criteria. Meta-analyses were performed on disease-specific symptoms, physiological outcomes and physical performance of each chronic condition. Subgroup analyses on disease-specific symptoms were conducted by categorising studies into subsets based on the type of comparison groups.

Results Meta-analyses showed that Tai Chi improved or showed a tendency to improve physical performance outcomes, including 6-min walking distance (6MWD) and knee extensor strength, in most or all four chronic conditions. Tai Chi also improved disease-specific symptoms of pain and stiffness in OA.

Conclusions The results demonstrated a favourable effect or tendency of Tai Chi to improve physical performance and showed that this type of exercise could be performed by individuals with different chronic conditions, including COPD, HF and OA.

INTRODUCTION

Tai Chi, a physical activity which originated in ancient China, involves the interconnected concepts of Yin and Yang.¹ The theory and principle of Tai Chi have been addressed in the literature,^{2–4} which emphasises the fusion of Yin and Yang into a single, ultimate and harmonious manner. Tai Chi is a popular exercise in Chinese society and has drawn increased attention in Western society, especially for older adults. All styles of Tai Chi consist of slow, gentle and flowing movements that involve strengthening, balance, postural alignment, mind concentration, relaxation and breath control.⁵ On the basis of these movement traits, Tai Chi is often classified as a low-to-moderate intensity physical activity and is a potentially suitable exercise for individuals in the general population, especially those who are middle-aged or older.^{6,7} Tai Chi has

shown multifaceted benefits in improving health-related fitness,⁸ lower extremity muscle strength,^{9,10} balance,¹¹ fall prevention,¹² cardio-respiratory function,^{13,14} mental control¹⁵ and flexibility.¹⁶

Tai Chi has been used as a complementary therapy in addition to more traditional Western healthcare approaches¹⁷ in several chronic conditions including cancer,^{18,19} cardiovascular diseases^{20–22} and arthritis.^{23,24} It has been shown that Tai Chi improves physiological and psychosocial outcomes in patients with chronic conditions.²⁵ Given the fact that many middle-aged and older persons have more than one chronic condition,^{26,27} it is important to synthesise the effectiveness of interventions across several comorbidities rather than reporting its effects solely within a single condition. The high prevalence of multimorbidity is demonstrated by a study of 980 Canadians reported that 9 of the 10 individuals had more than one chronic condition; 70% of younger adults (aged 18–44 years) had more than one chronic condition and this prevalence rose to 98% in adults who were 65 years of age and older.²⁸ Further, loss of function and physical limitations have been identified by patients as problem areas. Since Tai Chi can improve several attributes of fitness, it has potential as an exercise regimen for older individuals with multimorbidity.

We aimed to summarise current evidence regarding the effectiveness of Tai Chi in individuals with four common chronic conditions—cancer, osteoarthritis (OA), heart failure (HF) and chronic obstructive pulmonary disease (COPD)—some of these four chronic conditions may coexist. We included articles on conditions that had Tai Chi applied as an exercise intervention and met the inclusion criteria. Several conditions preliminarily searched for, that is, lung cancer, ischaemic heart disease, did not reveal any reports and thus were not considered in this systematic review. The evidence from this review will inform healthcare practitioners of important considerations when prescribing Tai Chi to people with multimorbidity, especially in older adults. This systematic review addressed the following questions: (1) Is Tai Chi an effective physical activity that improves symptoms, physical function, quality of life and depression in cancer, OA, HF and COPD? (2) Does Tai Chi have similar effects for the same outcome measures across different chronic conditions?

To cite: Chen Y-W, Hunt MA, Campbell KL, et al. *Br J Sports Med* Published Online First: [please include Day Month Year] doi:10.1136/bjsports-2014-094388