The Effects of Tai Chi Exercise on Cardiovascular Functions: A Meta-Analysis

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INTRODUCTION

According to the World Health Organization (WHO), the prevalence of cardiovascular diseases (CVDs) continues to rise, and will be accounted for 23.6 million global deaths by 2030. Physical activity plays an important role on cardiac rehabilitation. Prior studies had suggested that exercise-based cardiac rehabilitation had contributed to a reduction of 20% mortality in patients with coronary artery disease. Tai Chi, a traditional Chinese conditioning exercise, is well recognized by its effect on relaxation. Many studies had investigated its effect on cardiovascular functions, however, there was a lack of direct measure on heart functions and the study results were inconsistent across studies.

METHODS

We searched two Chinese databases (CEPS, and the Chinese Thesis/Dissertation database) and four English databases (CINAHL, Medline, PubMed, and the Cochrane Central Register of Controlled Trials). The search was up to August, 2016. Only studies that investigated the effect of Tai Chi on stroke volume and cardiac output were included. Evaluations of study quality were conducted by the 2011 Oxford Centre for Evidence Based Medicine Levels of Evidence, and the Cochrane Collaboration’s tool for assessing risk of bias. Meta-analyses were performed by the random effect model.

RESULTS

719 citations were reviewed. Most related studies only measured heart rate and blood pressure, only 4 studies measured stroke volume and cardiac output. These studies all encountered high risk of bias in allocation concealment, blinding of participants and personnel, and blinding of outcome assessment. The results of meta-analyses showed Tai Chi did not bring positive effect to systolic and diastolic blood pressure, heart rate, stroke Volume, and cardiac output.

CONCLUSION

Unlike other reviews, this study evaluate cardiac output and stroke volume to measure cardiac function more accurately. Findings of this study did not support Tai Chi as an effective method for improving cardiac functions. This result might indicate higher quality study to be conducted in the future.