Tai Chi and Stress:
A Randomised Controlled Trial and Chinese Medicine Pattern Diagnostics

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Certificate of Authorship/Originality

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Abstract

Stress is a growing problem in modern society and in severe cases could potentially lead to hospitalisation. The ancient Chinese mind body exercise of *Tai Chi* (TC) is practiced worldwide by millions of people daily and is often accredited with a plethora of health benefits, including reduction of stress. There has been a growing interest in the scientific community to evaluate the efficacy of TC practice for a range of diseases and conditions, in particular the effects of TC in the improvement of psychological and mental health. However the term "stress" itself is a common diagnosis used by both patients and practitioners alike to describe a "condition" generally regarded as subjective in nature and as such each individual will likely present with varying somatic or cognitive signs and symptoms. Currently there are no definitive diagnosis or signs and symptoms for "stress" for both biomedicine and Chinese Medicine (CM). This thesis evaluates the efficacy of TC as an intervention for stress through a randomised controlled trial (RCT) and the use of a questionnaire to identify the CM diagnostic patterns associated with stress

The RCT involved fifty participants who were randomly allocated into one of three groups; TC (n=17), exercise (n=16) or a wait list control group (WL) (n=16). Both TC and exercise groups were required to complete 5 hours per week of either TC or exercise for 12 weeks (total of 3600 minutes), whilst WL maintained their normal lifestyle. State Trait Anxiety Inventory (STAI) which assesses both state anxiety and trait anxiety was used as the primary outcome measure. Secondary outcome measures were the Perceived Stress Scale 14 (PSS14), blood pressure, heart rate variability, visual analogue scale and short form 36. Data were collected at baseline, midway at week 6 and at the completion of the trial at week 12. A two-way ANOVA with repeated measures followed by Bonferroni's post-hoc test was used for statistical analysis. The stress questionnaire was constructed using the signs and symptoms for General Anxiety Disorder and commonly

reported signs and symptoms for stress were cross referenced against TCM textbooks to relate each sign and symptom to possible patterns (*zheng*) and then cross referenced again against the signs and symptoms list to form two gender specific questionnaires. Pattern identification measurement was based on percentage of signs and symptoms present against possible number of signs and symptom per pattern for each gender.

Results for the RCT showed that there were significant improvements from baseline for both TC and exercise groups for the outcomes of STAI, PSS14, VAS as well as mental health and vitality domains of the SF36. Furthermore there were significant differences between groups for TC and the wait list control group for both state and trait anxiety as well as the mental health domain. The stress questionnaire results indicate that the top three pattern for both genders were Heart Qi deficiency, Heart Blood deficiency and Liver Blood deficiency. This result is different to the commonly accepted idea that stress is associated with Liver Qi stasis, however despite the reliability of the instrument a larger cohort size will be needed to ascertain the validity of these findings.

It is hoped that the results from these two studies will be incorporated into future research in both TC and stress diagnosis. The findings from the RCT revealed that TC effectively reduces stress levels in healthy individuals as early as week 6 and may provide a safer and less strenuous therapeutic alternative to exercise. Whilst the results from the stress questionnaire will hopefully help CM clinicians with their understanding of stress related symptoms the choosing the correct treatment principles for their patients.

List of referred papers, conference presentations and posters arising from the research

Publications

ZHENG, S., Lal, S.,Meier, P., Sibbritt, D., Zaslawski, C. 2014. "Protocol: The Effect of 12 Weeks of Tai Chi Practice on Anxiety in Healthy but Stressed People Compared to Exercise and Wait-list Comparison Groups: A Randomized Controlled Trial." *Journal of Acupuncture and Meridian Studies*, 7 (3), 159-165

ZHENG, S., Meier, P., Zaslawski, C. 2014. "Development of a novel questionnaire for the Traditional Chinese Medicine pattern diagnosis of stress", Poster Abstract, *Journal of Integrative Medicine*, 12 (3), 297.

ZHENG, S., Lal, S.,Meier, P., Sibbritt, D., Zaslawski, C. 2014. "The effects of twelve weeks of Tai Chi practice on anxiety in stressed but healthy people compared to exercise and wait-list groups: a randomised controlled trial", Poster Abstract, *Journal of Integrative Medicine*, 12 (3), 297-298.

ZHENG, S., Meier, P., Zaslawski, P. 2013. "WFAS 2013: Selected Conference Abstracts - Development of a novel questionnaire for the Traditional Chinese Medicine pattern diagnosis of stress." *Australian Journal of Acupuncture and Chinese Medicine*, 8 (2), 25-32.

Oral Presentations

Speaker at an international conference

ZHENG, S. 2013. "Development of a novel questionnaire for the Traditional Chinese Medicine pattern diagnosis of stress." *World Conference on Acupuncture World Federation of Acupuncture and Moxibustion Societies*, 2-4th November 2013, Sydney Australia..

Invited speaker at an international conference

ZHENG, S. 2012. "Tai Chi and Stress: A randomised controlled pilot study." *International Scientific Acupuncture and Meridian Symposium 2012*, Sydney, 5-7th October 2012.

Poster Presentations

ZHENG, S., Meier, P., Zaslawski, C. 2014. "Development of a novel questionnaire for the Traditional Chinese Medicine pattern diagnosis of stress". Society for Acupuncture Research and the Chinese Association of Acupuncture and Moxibustion Conference, Beijing, China. 30th May to 1st June 2014.

ZHENG, S., Lal, S.,Meier, P., Sibbritt, D., Zaslawski, C. 2014. "The effects of twelve weeks of Tai Chi practice on anxiety in stressed but healthy people compared to exercise and wait-list groups: a randomised controlled trial". Society for Acupuncture Research and the Chinese Association of Acupuncture and Moxibustion Conference, Beijing, China. 30th May to 1st June 2014.

Zheng, S., Lal, S., Meier, P., Zaslawski, C. 2013. "The effects of six weeks of Tai chi practice on anxiety in healthy but stressed individuals compared to an exercise only comparison a randomised controlled trial : Pilot Study. Society for Acupuncture Research Conference, Ann Arbor, Michigan, USA. 18th to 21st April 2012.

Zheng, S., Meier, P., Zaslawski, C. 2011. "The effects of six weeks of Tai chi practice on anxiety in healthy but stressed individuals compared to an exercise only comparison a randomised controlled trial : Pilot Study. International Forum & Exhibition on Integrative Medicine, Sydney, Australia. 21st to 23rd October 2011.

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