GLOBAL HEALTH Wellness IMPACT Lab

Qi Gong Literature Review Annotated Bibliography

Bibliography By: Shreya Pandrala (Research Assistant)
Wellness Impact Lab
October 15th, 2024
Publications Spanning 2010 - 2024

DAHDALEH INSTITUTE FOR GLOBAL HEALTH RESEARCH

Qi Gong Literature Review Annotated Bibliography

1. Abbott, R., & Lavretsky, H. (2013). Tai Chi and Qigong for the treatment and prevention of mental disorders. The Psychiatric clinics of North America, 36(1), 109–119. https://doi.org/10.1016/j.psc.2013.01.011

According to this source, evidence from randomised controlled trials suggests that Tai Chi and Qigong may be effective in reducing depressive symptoms, stress, anxiety, and mood disturbances. The article also goes onto explain the clinical applications of Tai Chi and Qi Gong, the health-related quality of life, their influence on psychosocial wellbeing, stress management, mood, anxiety, depression, sleep disturbance, substance abuse, cognitive functioning, and overall, its relevance as a complementary approach to Western medicine. Though there are sections of the article in which medical treatments are discussed, such as Tai Chi/Qi Gong's impact on symptom alleviation in Parkinson's disease, traumatic brain injuries (TBI), etc., I will be excluding those from the literature review and will simply focus on the sections related to Tai Chi/Qi Gong as mental health interventions only.

2. Carcelén-Fraile, M. D. C., Aibar-Almazán, A., Martínez-Amat, A., Jiménez-García, J. D., Brandão-Loureiro, V., García-Garro, P. A., Fábrega-Cuadros, R., Rivas-Campo, Y., & Hita-Contreras, F. (2022). Qigong for mental health and sleep quality in postmenopausal women: A randomised controlled trial. *Medicine*, *101*(39), e30897. https://doi.org/10.1097/MD.0000000000030897

As menopause is known to cause sleep issues or insomnia in older women, this study aim was to investigate how effective Qi Gong is in increasing sleep quality, anxiety and depression in Spanish postmenopausal women. A total of 125 subjects were randomly assigned to an experimental group (n = 63) that partook in a Qigong exercise program for 12 weeks, or a control group (n = 62), which did not receive any type of intervention. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) and anxiety and depression using the Hospital Anxiety and Depression Scale (HADS). The women who underwent the intervention program experienced great improvement in all the measures; sleep quality, anxiety and depression, which shows that women in particular can benefit greatly from Qi Gong, especially with the hormone fluctuations that can come from menstruation as well as an absence of menstruation. The study is a bit clinical in nature so it may not be completely viable but it would be useful for a gender-based focus and would complement other articles about the relationship between Qi Gong and women's emotionality well.

3. Chang, C., Tsai, G., & Hsieh, C. J. (2013). Psychological, immunological and physiological effects of a Laughing Qigong Program (LQP) on adolescents. Complementary therapies in medicine, 21(6), 660–668. https://doi.org/10.1016/j.ctim.2013.09.004

The objective of this study was to assess the effects of Laughing Qi Gong (LQG) on the psychological, immunological and physiological systems of the body (I will primarily write about its psychological effects). The study was a randomised, prospective, experimental study of the Laughing Qi Gong Program (LQPP) was conducted with a group of Taiwanese adolescents (n=67). During study-hall sessions (as they were high-school aged and had study breaks in between classes), the experimental subjects (n=34) attended the LQP for eight-weeks. Meanwhile, the control subjects (n=33) did their homework or caught up on their readings. All subjects were tested before and after the intervention using the Rosenberg Self-Esteem scale (RSE), Chinese Humor Scale (CHS) and Face Scale (FS) as psychological markers; saliva cortisol (CS) as an immunological marker; blood pressure (BP), heart rate (HR), and heart rate variability (HRV) as physiological markers of the body's response to stress. Mood states were also measured before/after each LQP session. As per the results, mood states (p=.00) and humour (p=.004; p=.003) improved in the experimental group and no significant changes were found in the controls (p=69; p=60). The immunological marker of stress, cortisol levels also decreased significantly for those who participated in the LQP (p=.001), which suggests that the students in the control group had lower levels of stress after completing the Laughing Qi Gong program. Thus, this study can be used to make the assertion that Qi Gong, and laughing Qi Gong in particular, can contribute to stress reduction in adolescents.

4. Cheng M, Wang Y, Wang S, Cao W, Wang X. Network meta-analysis of the efficacy of four traditional Chinese physical exercise therapies on the prevention of falls in the elderly. Front Public Health. 2023 Jan 4;10:1096599. doi: 10.3389/fpubh.2022.1096599. PMID: 36684937; PMCID: PMC9846771.

In this study, four Chinese traditional exercises commonly used in clinical practice were selected to systematically evaluate the effectiveness of Traditional Chinese Medicine (TCM). These four traditional exercises were Tai Chi, Ba Duan Jin, Yi Jin Jing and Wu Qin Xi (forms of Qi Gong) and the researchers analysed how these exercises intervene in the treatment of fall behaviour in the elderly. A total of 45 studies with 4 traditional interventions were included. They concluded that all four traditional Chinese body-building exercise therapies have a preventive effect on fall behaviour in older adults. In fact, two exercises, BaDuan Jin and Yi Jin Jing, may be the most effective and preferable in reducing the risk of falls in elderly. This article can be used to demonstrate how certain forms of Qi Gong/body movements may be more (physiologically) beneficial than others, especially for elderly.

5. Chen, W., Li, M., Li, H., Lin, Y., & Feng, Z. (2023). Tai Chi for fall prevention and balance improvement in older adults: a systematic review and meta-analysis of randomised controlled trials. Frontiers in public health, 11, 1236050. https://doi.org/10.3389/fpubh.2023.1236050

This study, similar to the one listed before it, aims to investigate the beneficial effects of Tai Chi (only) on fall prevention and balance improvement in older adults. They conducted a systematic review and meta-analysis of 24 randomised controlled trials related to Tai Chi, falls, and balance ability, searching for articles up until December 31, 2022. The results showed that Tai Chi can effectively reduce the risk of falls in older adults, decrease the

number of falls altogether, and improve balancing abilities. In addition, the effect of Yang-style Tai Chi was found to be better/more effective than that of Sun-style Tai Chi. This systematic review provides valuable insight into how Tai Chi can be used as a fall prevention intervention in older adults.

6. Cheung, D. S. T., Chau, P. H., Yeung, W. F., Deng, W., Hong, A. W. L., & Tiwari, A. F. Y. (2021). Assessing the effect of a mind-body exercise, qigong Baduanjin, on sleep disturbance among women experiencing intimate partner violence and possible mediating factors: a randomised-controlled trial. Journal of clinical sleep medicine : JCSM : official publication of the American Academy of Sleep Medicine, 17(5), 993–1003. https://doi.org/10.5664/jcsm.9102

This article was published by The University of Hong Kong and evaluates the effect of Baduanjin, specifically, on sleep disturbances in women experiencing intimate partner violence or domestic violence. It also explores how Qi Gong can reduce depressive symptoms or perceived stress. A subgroup of a parent randomised controlled trial was randomised for a 22-week Baduanjin intervention (n = 94) or wait-list control (n = 92). The questionnaires included the General Sleep Disturbance Scale, Perceived Stress Scale, and Beck Depression Inventory version II, which were administered at baseline, posttraining (6 weeks), and post intervention (22 weeks). Of the 186 participants, 170 completed the study. Results show that the total sleep disturbance scores for the intervention group were significantly lower than those for the wait-list control group at week 6 (difference = -7.96; 95% confidence interval [CI], -13.63 to -2.30; P = .006) and week 22 (difference = -7.17; 95% CI, -12.58 to -1.76; P = .01). Analysis of the collected data showed a statistically significant indirect effect of the intervention on sleep improvement through reducing depressive symptoms (β = 2.58, 95% CI, 0.69 to 5.09), while the mediating effects of perceived stress were not significant. The study can be used for the literature review to identify some of the ways in which women experiencing intimate partner violence can be helped and the various forms of therapy, whether they're based on Western psychology or Eastern medicine, that can be used to ease their mental health symptoms. Can also do wider research on if Qi Gong and Tai Chi have similar effects on men who have experienced intimate partner violence as well.

7. Chow, Y.W.Y., Dorcas, A. & Siu, A.M.H. The Effects of Qigong on Reducing Stress and Anxiety and Enhancing Body–Mind Well-being. Mindfulness 3, 51–59 (2012). https://doi.org/10.1007/s12671-011-0080-3

The intent of this study was to investigate whether practising qigong helps to reduce stress and anxiety, thus enhancing body–mind well-being. A randomised controlled clinical trial was conducted. 34 healthy middle-aged adults participated in an 8-week qigong program. Their outcomes were compared with 31 matched subjects in the wait list control group. The outcome measures included measures of mood states (Depression Anxiety Stress Scales–21 (DASS-21)), quality of life (ChQOL), and physiological measures of stress (salivary cortisol level and blood pressure). The data of the two groups was collected in the 1st, 4th, 8th, and 12th weeks. In week 8, the treatment group had significant reduction in cortisol level and blood pressure when compared with the control group. By week 12, it

became apparent that the qigong group enjoyed better quality of life, had more positive affect, lower cortisol levels and blood pressure than the control group. Although traditional Qi Gong exercises were slightly altered or re-structured in the study in order to be morphed into a systematic workout structure, the findings still support the notion that qigong has a positive effect on reducing stress and anxiety and enhances mind-body well-being.

8. Claudia (Chunyun) Wang, Kaigang Li, Susan Gaylord A. Trends and characteristics of Tai Chi and Qi Gong use among U.S. adults: Results from the 2007–2017 National Health Interview Survey. Complementary Therapies in Medicine. Volume 71 (2022). 102890, ISSN 0965-2299. https://doi.org/10.1016/j.ctim.2022.102890.

The aim of this article was to provide updated information about the prevalence, patterns, and predicting factors of Tai Chi and Qigong (TCQ) use among U.S. adults to better inform the future directions of TCQ application and research. Using 2007, 2012, and 2017 National Health Interview Surveys, they examined the trends and characteristics of TCQ use by United States citizens. The prevalence of TCQ among U.S. adults was 1.70% in 2017 (most recent), which presents a 64% increase from 2007 to 2017 ($p < 0.0001$). Correlates of TCQ use are older adults (≥ 65 years old), Asians, those with higher education levels, lower income, and low physical activity ($p < 0.001$). Given that key demographic information, I could explain how TCQ may help ameliorate health disparities for people of various ages, women, low-income individuals, and people who have a tendency to be less physically active.

9. Duarte L, Gonçalves M, Mendes P, Matos LC, Greten HJ, Machado J. Can Qigong improve attention in adolescents? A prospective randomised controlled trial. J Bodyw Mov Ther. 2020 Jan;24(1):175-181. doi: 10.1016/j.jbmt.2019.05.005. Epub 2019 May 14. PMID: 31987540.

The article is centred on how Qi Gong can improve memory and attention, particularly in adolescents. The main goal of this study was to examine whether Qigong would improve the attention levels of adolescents (12-14 years of age) when practised as part of their physical education course. Three groups of 22 individuals were studied: the ‘verum’ group, which performed true Qigong; the control group, which performed placebo Qi Gong and the waiting list group. In order to evaluate Qigong effects, attention tests were applied to all groups before the intervention period (t1) and after two and four weeks of practice (t2 and t3, respectively). 'White Ball' Qigong (specific form) was able to improve attention in adolescents after 4 weeks of practice, which shows that when integrated into physical education classes, it can be beneficial to the lives of adolescents.

10. Gonçalves M, Matos LC, Duarte L, Machado J, Greten HJ, Franconi G. Problems of scientific methodology related to placebo control in Qigong studies: A systematic review. J Bodyw Mov Ther. 2020 Oct;24(4):261-270. doi: 10.1016/j.jbmt.2020.06.035. Epub 2020 Jul 11. PMID: 33218521.

The article here is useful for critiquing problems within psychological research, especially in relation to Qi Gong; as there seems to be a lack of adequate controls for Qigong research, compromising the reliability of evidence. Three databases were assessed in January 2018 to retrieve articles on this topic and the literature found was examined for the effects of Qigong as compared to a control intervention. A total of 20 studies were included in this systematic review and the authors concluded that no criteria for placebo controls had been published in any peer-reviewed journal articles on Qi Gong so far. Then, they suggested that placebo controls should be developed using assessments such as heart rate variability, thermography, and electrophysiological measurements, psychometric tests and other quantitative evaluations to rule out logistical and statistical errors, ineffectual study designs, and inconclusive results in studies published on Qi Gong.

11. González López-Arza, M. V., Varela-Donoso, E., Montanero-Fernández, J., Rodríguez-Mansilla, J., González-Sánchez, B., & González López-Arza, L. (2013). Qigong improves balance in young women: a pilot study. Journal of integrative medicine, 11(4), 241–245. https://doi.org/10.3736/jintegrmed2013038

While there are numerous studies on how Qi Gong prevents falls in elderly, or reduces their risk of falls, there have not been many studies on how Qi Gong can also prevent falls in young women. The study design was a controlled, randomised longitudinal trial and included 30 women between the ages of 18-25 years. None of the participants had any experience doing Qi Gong or Tai Chi exercises before and they were not made aware of the study objective (to reduce the risk of the placebo effect). The 30 women were randomly assigned to a Qigong intervention group or a control group and those in the Qigong group performed Wang Ziping (a type of exercise) for 1 hour, twice a week, for 4 weeks. The control group did not undergo any intervention at all. The results revealed that those in the Qi Gong intervention group showed a significant improvement in their stabilometry results (40.1% pre-intervention and 56.4% post-intervention) ($P< 0.045$), while no improvement was seen in the control group (51.2% pre-intervention and 53.5% post-intervention). As such, the study can be used to explain how Qi Gong is beneficial for young people as well and not just elderly.

12. Guo, Y., Xu, M. M., Huang, Y., Ji, M., Wei, Z., Zhang, J., Hu, Q., Yan, J., Chen, Y., Lyu, J., Shao, X., Wang, Y., Guo, J., & Wei, Y. (2018). Safety of Qigong: Protocol for an overview of systematic reviews. Medicine, 97(44), e13042. https://doi.org/10.1097/MD.0000000000013042

The researchers conducted this overview to create a comprehensive knowledge synthesis of existing systematic reviews on adverse events associated with Qigong (and related therapies such as Tai Chi). The article is useful for discussing the real-world implications of Qi Gong exercises gaining popularity, and how certain risks can manifest alongside it. The findings could also be used to inform clinicians, Qi Gong teachers, Qigong practitioners, and patients (in clinical settings) on applying such treatments or interventions- both clinically and in daily life. It not only provides a guideline for researchers in the future but also ensures that

the pros and cons of Qi Gong are well understood so one can make better judgements on the safety and feasibility of it on an individual basis.

13. Hung, S.-H.; Chou, W.-Y.; Chang, C.-Y. A Study on Practising Qigong and Getting Better Health Benefits in Biophilic Urban Green Spaces. Sustainability 2021, 13, 1692. https://doi.org/10.3390/su13041692

This study is one of the few articles I've found showcasing the relationship between nature and Qi Gong. First, they begin by defining "qi" as in "flow" and suggest the existence of Traditional Environmental Qi (TEQ). The assertion is that by being in the environment, people find it easier to connect with themselves and have a better, more restorative experience with Qi Gong. A total of 654 valid data points were collected. The results indicated that subjects who practised "breathing" among trees, meadows, and waterscapes perceived higher TEQ, Qi experience, flow experience, and restorative experience, preferring it to doing Qi Gong in buildings. It can be used to make a connection between climate and Qi Gong.

14. Hung S-H, Hwang C-Y, Chang C-Y (2021). Is the Qi experience related to the flow experience? Practising qigong in urban green spaces. PLOS ONE 16(1): e0240180. https://doi.org/10.1371/journal.pone.0240180

This is a similar article written by the same authors on annotation #9, but with slightly different objectives. Using quantitative and qualitative methods, the relationship between the Qi experience and the flow experience was further analysed. After collecting data using open-ended questions, the researchers organised aspects of the Qi experience into five orientations: (1) the feeling of Qi; (2) the mind; (3) Qi and consciousness; (4) physical, mental, and spiritual benefits; and (5) the feeling of Tao. The results revealed a high level of consistency between the flow experience and the Qi experience ($r = 0.90$, $p<0.00$), which supports the notion that concepts of meditative flow in Western countries are similar to the concept of Qi flow (energy/meridians/gates) in East Asian philosophies.

15. Hwang, H. F., Tseng, K. C., Chen, S. J., Yu, W. Y., Chen, C. Y., & Lin, M. R. (2023). Effects of home-based computerised cognitive training and tai chi exercise on cognitive functions in older adults with mild cognitive impairment. *Aging & mental health*, *27*(11), 2170–2178. https://doi.org/10.1080/13607863.2023.2225430

This randomised trial was conducted to unearth the effects of computerised cognitive training (CCT) and tai chi exercise (TCE) vs. health education (HE) on cognitive functions in 189 senior-aged adults with mild cognitive impairment (MCI). Several different types of tests were administered, including the five-domain Mattis Dementia Rating Scale (MDRS), the modified Telephone Interview of Cognitive Status (TICS-M) and the timed up and go (TUG) test, with Tinetti's balance, activities of daily living (ADLs), and Activities-specific Balance Confidence (ABC) also being evaluated. The Computerised Cognitive Training (CCT) intervention, as well as the Tai Chi Exercise (TCE), was delivered once a week for 6 months, then they conducted follow ups at 6 and 12 months of the study. The results showed that

Compared to Health Education (HE), CCT and TCE increased scores on most of the subjects tests for cognitive domains related to initiation/perseveration, construction, conceptualization, attention, and memory. Moreover, at the 6 and 12-month follow-ups, it seemed that TCE still improved the TUG, Tinetti's balance, ABC and ADLs scores. As such, it seems that CCT and Tai Chi exercise have the ability to improve cognition in older adults, at least in some domains such as initiation, perseveration, construction, conceptualization, attention and memory. This study will allow the literature review to expand on the neurological and cognitive benefits of Tai Chi exercise, and not just its mental and emotional effects, which validates the practice of Qi Gong even more.

16. Jahnke, R., Larkey, L., Rogers, C., Etnier, J., Lin, F. A Comprehensive Review of Health Benefits of Qigong and Tai Chi. American Journal of Health Promotion. 2010;24(6):e1-e25. doi:10.4278/ajhp.081013-LIT-248

This article is a review that examines randomised controlled trials (RCTs) on Qi Gong and Tai Chi's psychological and physiological benefits. There are components of the article that assess falls, balance and related risk factors (n = 23), quality of life (n = 17), self-efficacy (n = 8) and psychological symptoms (n = 27), all of which I thought would be useful for the literature review. I'd like to survey the source to gauge how Qi Gong and Tai Chi can help reduce fall risk (particularly in elderly), improve quality of life, self-efficacy (people's confidence in performing certain behaviours and how they perceive their ability to overcome obstacles associated with those behaviours), and psychological factors such as stress, depression, mood, anxiety, fear of falling and self-esteem.

17. Junsheng L. Teo, Stephen R. Bird, Xiaoqiu Wang, Zhen Zheng. Using telehealth to deliver Qi Gong and Tai Chi programs: A mixed-methods systematic review on feasibility, acceptability and participant engagement factors. Archives of Gerontology and Geriatrics. Volume 117 (2024). 105203. ISSN 0167-4943. https://doi.org/10.1016/j.archger.2023.105203.

One of the most unique articles I've found so far addresses the feasibility, acceptability, and participant engagement variables of delivering Qi Gong and Tai Chi through telehealth (zoom/phone/skype, etc.). One of the main problems in ensuring all participants had an enjoyable time partaking in the exercises was poor digital/computer literacy (even in providers). However, there were no notable issues pertaining to access to an internet connection, participant safety, program costs, or connectivity. As the Wellness Impact Lab's Interbeing Wellness Series is conducted over Zoom, and many senior-aged participants join, I thought this article would be insightful in helping us comprehend the benefits and challenges of performing telehealth. The participants in the study reportedly were satisfied with their online programs, but the concerns on how to ensure all participants have proper digital literacy, are able to form acceptance (i.e they might feel embarrassed to be on camera), actively engage, and how telehealth compares to in-person Tai Chi/Qi Gong sessions are all problems that are worth addressing in the literature review using this article.

18. Klarod, K., Singsanan, S., Thamwiriyasati, N., Ladawan, S., & Burtscher, M. (2023). Effects of Qigong Exercise on Physical and Cognitive Performance in Young Sedentary Females: A Quasi-Experimental Design, Placebo-Controlled Study. Alternative therapies in health and medicine, 29(2), 112–119.

This study's purpose was to identify the physical, cognitive, and biochemical effect of Qi Gong on young, sedentary females (those who do not exercise much). It was a quasi-experimental design with placebo controls and consisted of 41 females, 20 of whom were allocated to the experimental group and 21 of whom were allocated to the control group. The study also assessed things such as changes in neutrophils and other biological or haematological factors, but I will focus on the cognitive aspect of it and how working memory increased in the intervention group without delving too deeply into the physical mechanisms of it. The article allows us to concentrate solely on women and how their responses to Qi Gong may differ from men's, which would be an interesting lens to study.

19. Ko LH, Hsieh YJ, Wang MY, Hou WH, Tsai PS. Effects of health qigong on sleep quality: A systematic review and meta-analysis of randomised controlled trials. Complement Ther Med. 2022 Dec;71:102876. doi: 10.1016/j.ctim.2022.102876. Epub 2022 Aug 23. PMID: 35998756.

This systematic review and meta-analysis assessed the effects of 'Health Qigong' on sleep quality in adults. Randomised controlled trials (RCTs) that evaluated the effects of Health Qigong on sleep quality in participants aged ≥18 years old (with or without diseases) were included. 13 studies involving 1147 participants were chosen for the systematic review and meta-analysis. The study revealed a small but significant effect size, through which the researchers drew conclusions that, at least to some level, Health Qigong is beneficial for improving sleep quality in adults (with and without disease).

20. Kraft, J., Waibl, P.J. & Meissner, K. Stress reduction through taiji: a systematic review and meta-analysis. BMC Complement Med Ther 24, 210 (2024). https://doi.org/10.1186/s12906-024-04493-3

This review investigates the potential of taiji (Tai Chi) as a viable strategy for alleviating stress. Factors considered were perceived stress, biological stress markers, anxiety, depression, and quality of life (QoL). Eleven trials with a total of 1323 patients comparing taiji to no intervention met the inclusion criteria. Secondary outcomes/assessments post-Tai Chi highlighted improvements in anxiety and physical quality of life, while depression, mental quality of life, and biological stress markers remained unchanged. Still, the results underscore taiji's potential in mitigating perceived stress, as evidenced by lessening depressive symptoms, lowered anxiety levels, and increased physical quality of life.

21. Lavretsky, H., Milillo, M. M., Kilpatrick, L., Grzenda, A., Wu, P., Nguyen, S. A., Ercoli, L. M., & Siddarth, P. (2022). A Randomised Controlled Trial of Tai Chi Chih or Health Education for Geriatric Depression. The American journal of geriatric psychiatry:

official journal of the American Association for Geriatric Psychiatry, 30(3), 392–403. https://doi.org/10.1016/j.jagp.2021.07.008

Geriatric depression can sometimes occur in older adults for various reasons, most predominantly social isolation and loneliness, which is why these researchers are investigating the types of mind-body exercises that can treat and improve the depression rates amongst senior citizens. Over the course of 3 months, a randomised controlled trial was conducted to examine the efficacy of a combined Tai Chi Chih (TCC), Health Education and Wellness Training (HEW) program, paired with standard antidepressant treatment to alleviate mood and uplift cognition in 178 depressed older adults. Using the Hamilton Rating Scale for Depression (HAM-D) post-treatment, they discovered that the most consistent result was a reduction in depressive thoughts and low mood. They defined remission as HAM-D ≤ 6 and performed follow-ups after 6 months, where the remission rate for the Tai Chi intervention was 35.5% and 33.3% (at 3 and then 6 months), compared to 27.0% and 45.8% in Health Education and Wellness Training (also at 3 and 6 months). So, while both experimental groups showed that either program can cause significant improvements in depression on the HAM-D, Tai Chi notably has a stronger tendency to benefit the general health of older adults compared to Health Education and Wellness Training, for several factors including psychological resilience, health-related quality of life and cognition. This study's results can be used for policy-making and program implementation in nursing or residential homes, hospice, palliative care centres and long-term care facilities for the elderly, as it supports the idea that Tai Chi can reduce depressive symptoms in older adults.

22. Liu X, Li R, Cui J, Liu F, Smith L, Chen X and Zhang D (2021) The Effects of Tai Chi and Qigong Exercise on Psychological Status in Adolescents: A Systematic Review and Meta-Analysis. Front. Psychol. 12:746975. doi: 10.3389/fpsyg.2021.746975

The purpose of this study was to systematically review the effectiveness of Tai Chi and Qigong exercise on adolescents' symptoms of depression, anxiety, and psychological status based on clinical evidence presented. Four RCTs and six non-randomized comparison studies (NRS) were identified, including 1,244 adolescents. The results suggested a potential beneficial effect of Tai chi and Qigong exercise on reducing anxiety, depression symptoms, and cortisol level in adolescents. But, non-significant effects were found for stress, mood, and self-esteem. Overall, the findings of this review still suggest that Qigong appears to be an effective therapeutic modality to improve psychological well-being in adolescents.

23. NMJ Contributors. (2024). An Evidence-based Review of Qi Gong by the Natural Standard Research Collaboration. *Natural Medicine Journal*. https://www.naturalmedicinejournal.com/journal/evidence-based-review-qi-gong-natural-standard-research-collaboration

Article evaluates all the evidence that there currently is in support of Qi Gong, including the application of Qi Gong in health practices, historical and theoretical uses, strength of expert opinion/folklore, safety, describes various techniques in Qi Gong, types of therapies/styles related to the performance of Qi Gong (i.e internal and external Qi Gong), adverse effects,

precautions, problems in research such as small study sizes, and its impact on stress reduction. Electronic searches were conducted in 10 databases, 20 additional journals (not indexed in common databases), and bibliographies from 50 selected secondary references. The article is particularly favourable for the section of my literature review where I will discuss adverse effects of Qi Gong and limitations in research. Plus, it provides a great deal of historical context and knowledge on the origins of Qi Gong and its various subtypes.

24. Palumbo, M. V., Wu, G., Shaner-McRae, H., Rambur, B., & McIntosh, B. (2012). Tai Chi for older nurses: a workplace wellness pilot study. Applied nursing research : ANR, 25(1), 54–59. https://doi.org/10.1016/j.apnr.2010.01.002

The purpose of this empirical study was to analyse the potential feasibility of a Tai Chi workplace wellness program as a method of increasing physical and mental health, reducing occupational stress, and enhancing workplace productivity among older nurses (n=11 females, mean age= 54.4 years) in hospitals. The randomised control trial consisted of both an experimental group, who would receive Tai Chi sessions, as well as a control group, who did not engage in any activity for the trial. Firstly, the Tai Chi group (n = 6) were made to participate in Tai Chi classes once a week at their designated workplace and were then instructed to practise on their own for 10 minutes a day, for at least 4 days per week in a 15 week period. Their measures included (but are not limited to) the SF-36 Health Survey, Nursing Stress Scale (NSS), Perceived Stress Scale (PSS), Sit-and-Reach test, Functional Reach test, and the Work Limitations Questionnaire. At the end of the trial, the researchers concluded that there was a 3% increase in work productivity and functional reach (p=0.03) for the experimental group compared to the control group. However, other outcomes were not statistically significant, but regardless, the study illustrates how Tai Chi is a feasible and affordable alternative self-care method for older nurses, particularly female nurses. Therefore, it's likely that Tai Chi would be an exemplary wellness option in the workplace, and is pertinent to the literature review's examination of the feasibility of Tai Chi in various settings, including schools, nursing homes, and hospitals.

25. Pedro Jesús Jiménez-Martín, Haoqing Liu. Exploring the health advantages and disadvantages of static and dynamic postures of Qigong and its use as a Traditional and Complementary Medicine. European Journal of Integrative Medicine. Volume 24, (2018). Pages 61-64, ISSN 1876-3820. https://doi.org/10.1016/j.eujim.2018.11.001.

The purpose of this article, according to the researchers, was to outline their opinion on the advantages and disadvantages of the postures (especially static or dynamic dimensions of Qigong) with respect to internal relaxation. It is an opinion piece written by a researcher who is well-versed in the topic, so even though it is not necessarily an empirical study or a systematic review, I found it useful as it's one of the few articles I discovered that compares different postures of Qi Gong. They claimed, with evidence from scholarly sources, that able-bodied people could obtain more health benefits from dynamic practices than from static practices and from standing positions than from sitting or lying positions. In the case of people with physical and/or cognitive limitations, however, it is possible that sitting or lying

down is more convenient, safer, and beneficial. It raises thoughtful questions about how we can compare, select, adapt and modify postures and techniques in Qi Gong to make them accessible to people of any age, with or without physical/mental limitations.

26. Posadzki, Paul. (2010). The Psychology of Qi Gong: A Qualitative Study. Complementary Health Practice Review. 15. 84-97. 10.1177/1533210110387019.

This article presents as a qualitative study, analysing responses to focus-group interviews regarding individuals' self-reported experiences, mindsets and attitudes during Qi Gong practices. Semi-structured interviews were conducted with three Qi Gong groups in order to collect research data. The author's reasons for undertaking the qualitative study were to improve the current understanding of practitioners' psychological perceptions of Qi Gong, contribute to the existing body of knowledge and indicate new pathways for future research in mind-body practices. The article also provides an in-depth overview into the definition of Qi Gong, the cultural significance of East Asian/Chinese complementary therapies, breathing techniques, postures, and mind-body integration, which can serve as a summary/definition section for the literature review.

27. Rodrigues JM, Matos LC, Francisco N, Dias A, Azevedo J, Machado J. Assessment of Qigong Effects on Anxiety of High-school Students: A Randomised Controlled Trial. Adv Mind Body Med. 2021 Summer;35(3):10-19. PMID: 34237025.

This article focuses specifically on high school student populations and their struggles with mental health issues such as anxiety. The study aimed to assess the potential effects of specific Qigong exercises on students' anxiety levels and evaluate the feasibility of integration in a daily school context. This study was performed with 104 students in Cedros and Horizonte private schools located in Vila Nova de Gaia in Portugal. The participants were randomly divided into three groups: (1) an intervention group, (n = 34), which performed Qigong exercises; (2) a control group, (n = 34), which watched a TV documentary; and (3) a second control group, (n = 36), which performed regular school duties. The Anxiety levels were assessed through a psychological test, the State-Trait Anxiety Inventory (STAI) and salivary cortisol tests. The results articulated that the students who performed Qi Gong exercises had the lowest anxiety levels amongst all three groups. Also, as there are other articles related to Qi Gong and the elderly, I thought it would be best to examine the effect of Qi Gong on youth/adolescents as well.

28. Siu, P. M., Yu, A. P., Tam, B. T., Chin, E. C., Yu, D. S., Chung, K. F., Hui, S. S., Woo, J., Fong, D. Y., Lee, P. H., Wei, G. X., & Irwin, M. R. (2021). Effects of Tai Chi or Exercise on Sleep in Older Adults With Insomnia: A Randomised Clinical Trial. JAMA network open, 4(2), e2037199. https://doi.org/10.1001/jamanetworkopen.2020.37199

The primary aim of this study was to compare the efficacy of tai chi and its influence on sleep improvement in older, insomniac adults with conventional exercise and a passive control group. The study design, a randomised, 3-arm, parallel group, assessor-masked

clinical trial, was conducted in Hong Kong between the years of August 2014 and August 2018. The inclusion criteria for the participants was limited to those aged 60 years and above with chronic insomnia, who were randomly allocated into either tai chi, conventional exercise, or control group(s). After each group participated in 12-week tai chi training, 12-week conventional exercise, or no intervention whatsoever (for the control group), the outcome was a remission of insomnia, which was indicated through the Pittsburgh Sleep Quality Index score, Insomnia Severity Index score, and self-reported sleep using a 7-day sleep diary (along with other measures). Assessments were performed at the baseline, end of the intervention, and 24 months after the intervention, and the results demonstrated that, in a total of 320 participants, compared to the control group, the exercise and tai chi groups showed greater sleep efficiency and had less sleep interruptions or awakenings. Thus, the fact that conventional exercise and tai chi improved sleep amongst its participants and the beneficial effects persisted up until the 24 month follow-up, suggests that tai chi can be a type of therapeutic approach for managing insomnia. This study is significant and can be a great addition to the literature as previous studies assessing the impact of Qi Gong or Tai Chi on sleep were usually subjective in nature and included more self-reported data (i.e through the form of questionnaires). However, this study is more practical as it uses actigraphy-based objective measurements.

29. Van Dam K. Individual Stress Prevention through Qigong. Int J Environ Res Public Health. 2020 Oct 8;17(19):7342. doi: 10.3390/ijerph17197342. PMID: 33050017; PMCID: PMC7579037.

Throughout the world, but in Western countries especially, society has fallen victim to an overwhelming work/productivity/hustle culture, largely driven by capitalism. But physical labour and large cognitive efforts can lead to exhaustion, stress, and burnout. However, it is possible for those effects to be mitigated by Qi Gong. Since Qi Gong is cited to increase health benefits and provide workers with stress release, the paper provides a comprehensive, narrative review of the positive effects of Qi Gong. Essentially, it assesses the evidentiary value of Qi Gong with a focus on how to reduce job-induced stress.

30. Wang CW, Chan CH, Ho RT, Chan JS, Ng SM, Chan CL. Managing stress and anxiety through qigong exercise in healthy adults: a systematic review and meta-analysis of randomised controlled trials. BMC Complement Altern Med. 2014 Jan 9;14:8. doi: 10.1186/1472-6882-14-8. PMID: 24400778; PMCID: PMC3893407.

This is another useful systematic review evaluating evidence from randomised controlled trials (RCTs) conducted amongst healthy subjects. Two RCTs suggested that qigong exercise immediately relieved anxiety among healthy adults, compared to attending lectures on Qi Gong and structured movements only. Four RCTs suggested qigong exercise relieved anxiety and three RCTs suggested that qigong exercise reduced stress among healthy subjects following one to three months of qigong practice, compared to wait-list controls. This article compliments several other articles related to anxiety reduction in healthy adults that I have found for this annotated bibliography. So, I thought that it might be best to group

all of them together when conducting the literature review and create a sub-topic that discusses the impact of Qi Gong and Tai Chi specifically on mental health.

31. Wang X, Wu J, Ye M, Wang L, Zheng G. Effect of Baduanjin exercise on the cognitive function of middle-aged and older adults: A systematic review and meta-analysis. Complement Ther Med. 2021 Jun;59:102727. doi: 10.1016/j.ctim.2021.102727. Epub 2021 Apr 30. PMID: 33933577.

The purpose of this systematic review was to analyse the impact of Qi Gong on cognitive function (and subsequently, prevention of cognitive decline). The objective was to systematically evaluate the effects of Baduanjin on the global cognitive function and specific cognitive domains of middle-aged and elderly people. The results demonstrated that Baduanjin training showed significant benefit for global cognitive function and parts of specific domains of cognition, including general memory, immediate memory, delayed memory, executive function, and processing speed, but no significant difference was found in attention function, visual-spatial ability or long-term memory (a sub-domain of memory). The findings of the review are potentially evidence that certain forms of Qi Gong such as Baduanjin can improve cognitive abilities in middle aged and senior adults.

32. Xin Liu, Justin Clark, Dan Siskind, Gail M. Williams, Gerard Byrne, Jiao L. Yang, Suhail A. Doi. A systematic review and meta-analysis of the effects of Qigong and Tai Chi for depressive symptoms. Complementary Therapies in Medicine. Volume 23, Issue 4, 2015, Pages 516-534 ISSN 0965-2299, https://doi.org/10.1016/j.ctim.2015.05.001.

Another systematic review and meta-analysis of the effects of Qi Gong and Tai Chi on reducing depressive symptoms. They also compared the efficacy of Qi Gong vs. Tai Chi on depressive symptoms. Thirty studies with a total of 2328 participants (823 males and 1505 females) were included. A significant effect was found for the Qigong interventions. But, there was no statistical significance seen for Tai Chi, so the papers reviewed showed insufficient evidence of Tai Chi's benefits. It would be useful to compare the two forms of intervention and also find any limitations in the literature on Tai Chi.

33. Xu, D. (2013). Wisdom from the East: Holistic Theory and Practice of Health & Wellness. The International Journal of Health, Wellness and Society, 3(2), 13.

This very spiritually-aligned paper conveys the significance of Qi Gong, Tai Chi and other complementary therapies in Eastern cultures, especially forms of traditional medicine that emerged thousands of years ago in ancient China. The purpose of this article is to provide a comprehensive approach to the promotion of health and wellness in Chinese cultures, and understand how to integrate those ideas of wellness into humankind's relationship with the environment. This paper examines the profound philosophical, spiritual, and holistic theories rooted in ancient Chinese belief systems. This paper also mentions actual practices from various ancient and contemporary traditions, which address the balance of physical,

emotional, and mental energy in a holistic manner. By connecting theoretical foundations of Qi Gong and Tai Chi to its modern-day practices and the ways they have been reformed in the West, this paper will be useful in approaching health and wellness with the mindset of holism, interconnectedness, and oneness.

34. Yao, L. Q., Kwok, S. W. H., Tan, J. B., Wang, T., Liu, X. L., Bressington, D., Chen, S. L., & Huang, H. Q. (2022). The effect of an evidence-based Tai chi intervention on the fatigue-sleep disturbance-depression symptom cluster in breast cancer patients: A preliminary randomised controlled trial. European journal of oncology nursing : the official journal of European Oncology Nursing Society, 61, 102202. https://doi.org/10.1016/j.ejon.2022.102202

The purpose of this empirical study was to navigate the prospective benefits of Tai chi on the fatigue-sleep disturbance-depression symptom cluster (FSDSC) among breast cancer (BC) patients. There were 72 BC patients (36 Tai chi and 36 control participants) altogether, and while all the participants were provided with general care from their physicians, subjects involved in the Tai chi group received a Tai chi intervention (for a series of 8 weeks) that the control group did not. The symptoms of fatigue, sleep disturbance and depression, as well as Quality of Life (QoL) were assessed by the Brief Fatigue Inventory (BFI), the Pittsburgh Sleep Quality Index (PSQI), the Hospital Anxiety and Depression Scale-Depression (HADS-D) and Functional Assessment of Cancer Therapy-Breast (FACT-B). From the original 72, 69 participants ended up completing this study, with participants in the Tai chi group showing significant reductions in fatigue ($p < 0.001$), sleep disturbance ($p < 0.001$) and depression ($p = 0.006$), as well as a significant improvement in QoL ($p = 0.032$), immediately after intervention and a four-week follow-up. From the results of this study, it is easy to conclude that Tai chi as an additional healing modality, along with conventional cancer treatments, can relieve the symptom cluster of fatigue, sleep disturbance and depression (while also improving quality of life) among patients with breast cancer. So far, we have only assessed how Qi Gong and Tai Chi may be used for those with mental health issues or minor physiological/cognitive health issues (such as poor balance or mild forgetfulness). As such, this study can help psychologists grasp how complementary therapies can also be a viable form of treatment for those with physiologically debilitating illnesses such as cancer. By including research on the efficacy of Tai Chi on patients with breast cancer in the literature review, we can assess how to better help those with physical disabilities or limitations who suffer from mental health issues (i.e depression and sleep disturbance) as a consequence or symptom of their illness. This will, in turn, allow doctors to create better treatment plans for those with poor mental health caused by illness and allow researchers to apply Qi Gong and Tai Chi to various populations (whether healthy or unhealthy).

35. Zeyneb Kurt, Petia Sice, Krystyna Krajewska, Garry Elvin, Hailun Xie, Suzannah Ogwu, Pingfan Wang, Sultan Sevgi Turgut. A pilot study on the impacts of lung-strengthening Qigong on wellbeing. Complementary Therapies in Medicine. Volume 71. 2022. 102891. ISSN 0965-2299. https://doi.org/10.1016/j.ctim.2022.102891.

The last source specifically focuses on how doing breathwork during Qi Gong exercises can strengthen the lungs and maintain wellbeing. During the study, live-streamed lung-strengthening Qi Gong sessions (LSQ) were provided for an eight week-long pilot study. The majority (84%) of the LSQ practitioners experienced an improvement in wellbeing. Some of the benefits/impacts were comprised of physical, mental, and relational wellbeing improvements. I will use the article to expand on the benefits of breathwork in the literature review.