

# How is qigong conducive to women's health?

## Abstract

The present literature review provides an overview of the benefits to women's health gained from practising Qigong (including Tai Chi and Baduanjin), including those who suffer from breast cancer, menopausal-related problems, menstrual disorders, and a variety of physical and psychological illnesses. It analyses 48 studies (n=38 in English, n=10 in Chinese) published before 2015, involving participants aged 17-86 in Asia, Europe, and North America via quantitative, qualitative, mix-method, and trans-country projects. The analysis reveals research gaps and practical implication, in particular, diminishing health disparities and accelerating health equity due to cost effectiveness when using Qigong among less advantaged groups for preventive, remedial, and rehabilitative interventions, justifying it as a powerful method of complementary and alternative medicine.

**Keywords:** baduanjin, complementary and alternative medicine, health equity, literature review, martial arts, tai chi

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## Introduction

The lifetime health care expense of women averages a third higher than that of men,<sup>1</sup> and 33% of women's medical costs are incurred in their middle-aged years and 50% in their senior years. Meanwhile, one-third of women, especially among the elderly, die of chronic sicknesses, including cardiovascular disease, stroke, and cancer,<sup>2</sup> which heavily impact personal medical costs and public health expenditures.<sup>3</sup> In addition to traditional medical measures, recently prevalent complementary and alternative medicines,<sup>4-6</sup> apply to various illnesses such as diabetes mellitus,<sup>7</sup> orthopedics,<sup>8</sup> and mental distress.<sup>9</sup> Qigong, a conventional Chinese aerobic exercise and mode of martial arts, has been considered as a popular complementary and alternative medicine approach.<sup>10</sup>

Qigong has been evolving in China since the second century before Christ. Its theories are grounded in traditional Chinese medicine principles,<sup>11</sup> documented in the *Emperor's Inner Canon* (or *Huangdineijing*), the first Chinese medical text. Its primary aim is to achieve a balance between *yin* and *yang* and within the five elements (metal, wood, water, fire and earth). Qigong was thus developed by Taoist masters for the sake of strengthening health through systematic abdominal breathing, resulting in stronger regulation of overall body functioning. This bioenergy therapy became prevalent in the Qin and Han dynasties (221 B.C. - 220 A.D.), as embarked upon by Taoists, in order to cure and prevent illnesses, and continues in contemporary China for health promotion pertaining to both physiological and psychological benefits.<sup>12</sup>

Qigong consists of various presentations; that is, hard forms (or active forms) and soft forms (or still forms), among which the former involves martial arts, physical exercises, and walking; while the latter pertains to meditation, concentration,<sup>13</sup> sitting, standing, and lying. Regardless of form, it relies on breathing and the flow of *qi*,<sup>14</sup> constituting two inseparable domains, where *qi* refers to an alive and infinitesimal energy circulating within and throughout the body,<sup>13</sup> and *gong* to perpetual work or practices. In practising this exercise, the bodily organs function more smoothly, such as the lungs, heart, liver, stomach, spleen, and kidneys,<sup>15</sup> benefiting self care.<sup>16</sup> and self healing functionality.<sup>17</sup> In addition to improvements in physiological fitness

and longevity, Qigong also enhances inner peace.<sup>18</sup> due to better body-mind integration.<sup>19,20</sup>

Furthermore, Qigong includes internal and external Qigong, through a wide range of physical exercises; for example, Tai Chi (or Taiji) (herein spelled *Tai Chi*, referring to a form of exercise or martial art), Baduanjin, Tuna, and Xianggong,<sup>21</sup> among which the first two categories have received evidence-based research data associated with health.

Springing from Chinese philosophy, particularly Taoism, Tai Chi was structurally formulated as a martial art tradition in the 17th century,<sup>22</sup> despite a refutation on the part of its founder. Recent studies support the effects of Tai Chi on the prevention of bone density loss,<sup>23</sup> improvements in upper limb functional mobility,<sup>24</sup> and prevention of osteoporotic fractures.<sup>25</sup> Therefore, learning these exercises is recommended for the elderly, especially for women,<sup>26</sup> who are at risk of osteoporosis during the post-menopausal stage,<sup>27,28</sup> as well as breast cancer survivors.<sup>29</sup> Lan C et al.<sup>30</sup> summarised the benefits of practising Tai Chi regularly for health promotion: cardio respiratory function, muscular strength, flexibility, balance and motor control, endothelial function and peripheral circulation, blood lipid profile, thyroid and immune function, coronary artery disease, hypertension, arthropathy, neurological diseases, psychological qualities, and fall prevention.

Baduanjin, also known as Eight Section Brocades or Eight-Brocade Exercise, aligns with the philosophy of *I-Ching* (the *Book of Changes*).<sup>31</sup> with the goal of attaining a balance of *yin* and *yang*. It was developed in the second century and was adopted for military training in the 12th century.<sup>32</sup> Research evidence reports its effectiveness on physical health,<sup>33,34</sup> including strokes,<sup>35</sup> osteoarthritis,<sup>36,37</sup> coronary artery diseases,<sup>38</sup> hypertension,<sup>39</sup> and sleep problems.<sup>40</sup> It also adds that Baduanjin can aid psychological health such as anxiety and depression,<sup>41</sup> schizophrenia,<sup>42</sup> suboptimal health.<sup>43,44</sup> and emotional regulation.<sup>45</sup> These benefits contribute to various age groups, including adolescent,<sup>46,47</sup> and the elderly.<sup>48,49</sup>

A substantial volume of research indicates positive signs in respect to health improvements gained through practising Qigong. However, little attention has been paid to reviewing how it is conducive to

women's health in particular. The current literature review analyses recent research on the association between women's health and practising Qigong (as an umbrella exercise which includes Tai Chi and Baduanjin), focusing on the active forms, in order to identify research gaps and practical implications. Furthermore, the outcomes have the potential to empower patients' treatment choices and health decision making,<sup>50</sup> by supplying more non-conventional medical options.

## Research method

English publications were sourced from 52 major databases in ProQuest, including the British Nursing Index, MEDLINE, PILOTS, PsycARTICLES, PsycINFO; and those in Chinese were sourced from the China National Knowledge Infrastructure (CNKI). Boolean operations (using "and", "or") and a truncation method were adopted. By inputting "Qigong or Tai Chi or Taiji or Baduanjin" ("氣功" or "太極" or "八段錦" in Chinese databases), "women", and "health" ("女" and "健康" in Chinese databases), 149 potential works were listed (n=89 in English and n=60 in Chinese) and 48 publications (n=38 in English, n=10 in Chinese) were selected for in-depth review in light of the eligibility criteria.

## Findings and analyses

The reviewed 48 research projects (refer to Table 1) cover a broad age spectrum from 17 to 86 years old (plus unspecified age ranges in 21 works), totalling 4,217 participants. The profile has been analysed in Table 2.

### Breast cancer survivors

More than 500,000 women die of breast cancer annually worldwide.<sup>51</sup> Despite increasingly high medical investments,<sup>52</sup> the rates of incidence and mortality fail to lessen,<sup>53</sup> which dismays patients, their family members, and health practitioners.

A joint project between Chinese and American institutes attempted to test whether Qigong could reduce cancer tumours, in which research nine breast cancer patients (n=5 in USA, n=4 in China) practised Qigong for two to five minutes daily for five consecutive days.<sup>54</sup> Results reported no changes in tumour size, however, such a short treatment period could support a similar conclusion.

In contrast, Loh SY et al.<sup>55</sup> presented encouraging data through a randomised controlled trial which examined the effects of Qigong on the quality of life for breast cancer survivors. Ninety-five patients were randomly assigned to intervention (n=32), line-dancing (n=31), and normal care (n=32) groups. The Qigong group received 70-minute weekly training for eight weeks and practised their exercises at home twice a week for 30 minutes each. The line-dancing group joined a 60-minute weekly dancing session, together with 30-minute of home practice twice a week. The resulting outcomes presented a significant enhancement in quality of life in the Qigong group. In spite of results stating that there were no variations in stress and fatigue levels between these groups in Loh's project, Chen Z et al.<sup>56</sup> argued that 49 patients in their research experienced a reduction in fatigue and depression after five weeks of Qigong training.

Campo RA et al.<sup>57</sup> investigated to what extent Tai Chi could benefit the physical and psychological health of breast cancer survivors through a randomised controlled trial in which a treatment group (n=29) and a control group (n=25) were arranged. Participants practised Tai Chi 30 for minutes per session and thrice a week over

12weeks, indicating positive signs of physical functioning, mental component and quality of life. Additional gathered evidence discerned a maintenance of insulin levels, an increase in cytokine levels, and decreases in body mass index, fat mass and fat-free mass,<sup>58</sup> implying lower risks of cancer relapse and better health-related quality of life through Tai Chi exercise.

Mustian KM et al.<sup>59</sup> began their pilot study to compare the effectiveness of Tai Chi and psychosocial support therapy on the health-related quality of life of 21 breast cancer survivors. The participants were randomly assigned to intervention (n=11) and psychosocial support therapy (n=10) groups. The former received 60-minute Tai Chi sessions three times a week, which reportedly improved their self-esteem and health-related quality of life. The training continued for 12 weeks and showed significant enhancements in functional capacity regarding aerobic capacity, muscle strength, and flexibility.<sup>60</sup>

### Menopause-related problems

Menopause is an integral life process which is manifested through a gradual degenerative phase, and is always connected with obesity, accumulation of bodily fat, and a reduction in bone mineral density, skeleton muscle mass and energy expenditure,<sup>61,62</sup> all of which lower energy levels<sup>63</sup> and decrease the quality of health and life,<sup>64</sup> as caused by menopausal symptoms.

**Climacteric symptoms:** Two-third of women experience menopausal symptoms.<sup>65</sup> that encompass hot flashes, night sweats, headaches, insomnia, irritability, and loss of sexual interest,<sup>66</sup> is resulting in aversive impact on their quality of life.<sup>67</sup> In one prospective observational study, seventy Taiwanese women who suffered from perimenopausal symptoms were assigned either to the intervention group (n=35), which practised 30minutes of Qigong everyday for 12 weeks, or to a control group (n=35).<sup>68</sup> The treatment group displayed evident improvements in climacteric symptoms pertaining to both somatic and psychological dimensions, as well as quality of sleep. Findings also reflected a positive relationship between the practice duration and effectiveness.

**Osteoporosis:** Osteoporosis, a bone disease, produces a decrease in bone mass and bone mineral density, and a higher risk of bone fracture, which is usually tied to age.<sup>69</sup> Tai Chi is effective in retarding bone loss due to higher bone mineral density,<sup>70</sup> particularly, in weight-bearing bones, as reported by sixty-seven postmenopausal women who practised Tai Chi for one year.<sup>71</sup>

Led by Qian G et al.<sup>72</sup> one randomised placebo-controlled clinical trial investigated the effects of Tai Chi and green tea polyphenols (GTP) on mitigating oxidative damage for postmenopausal women with osteopenia. A total of 150 participants were assigned in a double-blinded randomisation to either the Tai Chi group (n=37) who participated in three 60-minute sessions a week for 24weeks, the GTP group (n=39) who took daily 500mg doses, the combined group (n=37) who underwent both Tai Chi exercises and GTP, or the placebo group (n=37). Significant alleviation of oxidative damage was displayed, except in the placebo group. The study results reported not only a reduction in oxidative stress but also an improvement in bone health. A similar research design completed by Shen CL et al.<sup>73</sup> compared Tai Chi to GTP, regarding bone loss prevention. One hundred and fifty postmenopausal women with osteopenia were randomly assigned to the Tai Chi group (n=37) who practised 45 minutes thrice a week for 24 weeks, the GTP group (n=39) who received a daily dose of 500mg, the Tai Chi and placebo group (n=37), or to the placebo group (n=37).

The Tai Chi group saw an increase in serum parathyroid hormone. Enhancements in bone turnover rate and muscle strength were exhibited in the Tai Chi and GTP groups. Also, one pilot study looked into physical and psychological health as affected by Tai Chi and GTP.<sup>74</sup> The results supported the above effects, together with minimal improved liver and kidney functions. In addition, participants in the Tai Chi group presented positive changes in role-emotion, mental health, and quality of life.

The direct correlation between practising Tai Chi and a reduction in bone loss, as illustrated previously, positively impacts fall risks that cause fall-related fractures.<sup>75</sup> The decreasing risk of bone fracture enables postmenopausal women to be more confident in their balance control and dynamic balance,<sup>76</sup> achieving better joint kinetics. Fifty-three postmenopausal women with osteopenia took part in a single-blinded randomised controlled trial,<sup>77</sup> and were allocated to either the intervention group (n=26) or the control group (n=27). Three Tai Chi sessions (45 minutes each) per week were offered for 24 weeks. The intervention group improved their general health, vitality, body pain, and stride width, resulting in better quality of life.

### Menstrual problems

Menstrual disorders are not rare in teenagers,<sup>78</sup> and include such symptoms as dysmenorrhea. Treatments are desirable to lessen symptoms such as pain and menstrual irregularities.

**Premenstrual syndrome:** About 80% of women suffer from premenstrual syndrome,<sup>79</sup> that affects them physically, emotionally, and mentally,<sup>80</sup> and causes them to be irritated by headache, fatigue, insomnia, tension, and dysphoria. One randomised trial involved 36 college students who were assigned to either the intervention group (n=18) or the control group (n=18).<sup>81</sup> The former practised 10-minute daily external Qigong sessions, eight times over the first and the second menstrual cycles. They reported an enhancement in their overall premenstrual symptoms related to negative feelings, pain, and water retention.

**Primary dysmenorrhea:** Dysmenorrhea commonly occurs in the reproductive age range,<sup>82</sup> among those who suffer from painful cramps caused by hormonal effects. Twenty-four university students took part in a project in which they practised 60-minute daily Qigong sessions every morning for 12 weeks.<sup>83</sup> They reported improvements in primary dysmenorrhea symptoms, and reductions in depression and anxiety. Another research project utilised Baduanjin among 116 university students for nine weeks,<sup>84</sup> randomly assigning the participants to Baduanjin (n=29), massage (n=29), combined (n=29), or control (n=29) groups. In comparing the results, the combined group which received Baduanjin training and massage manifested the best effect. However, these two studies lacked both a control group and details of the interventions and assessments.

### Improvements in physical and psychological health

Qigong exercises illustrate an enhancement in body shape, and physical and psychological quality through various forms, such as Tai Chi ball<sup>85</sup> and Tai Chi sword,<sup>86</sup> across a wide range of age groups, including middle-aged,<sup>87</sup> and the elderly.<sup>88,89</sup>

**Physical fitness:** One study compared the effects of Baduanjin and Tai Chi ball on the physical health.<sup>90</sup> of 150 university students whom were randomly assigned to the Baduanjin group (n=50), the Tai Chi ball group (n=50), or the control group (n=50). The experimental

groups practised 50-minute exercises, five times a week for 18 weeks. Participants in the Baduanjin group showed changes in chest size, and lessened their waist, hip line, and belly skin fold thickness, while the Tai Chi ball group revealed reductions in body weight, hip line, skin fold thicknesses of the upper arm, shoulder and belly.

The effectiveness of weight control using Baduanjin was more evident when participants also took calcium pyruvate, because of improvements in serum lipid levels, adiponectin levels and body fat components, as well as reductions in blood serum levels.<sup>91</sup> Similarly, practising Tai Chi ball while taking cassia seed drink is effective in coping with obesity and reducing fat accumulations in the waist and abdomen.<sup>92</sup> It also scores better on blood pressure, heart and lung function, and slower heart rates. These putative results infer physical fitness benefits from Baduanjin and Tai Chi.<sup>93</sup>

**Osteoarthritis:** Osteoarthritis is a common rheumatic disorder due to the degeneration of articular cartilage.<sup>94</sup>

This chronic arthritis is marked by pain, stiffness, and disability in joint movements. Although osteoarthritis is not necessarily connected to age growth, it is such joint degeneration occurs more frequently where the elderly make up the majority of the population. A group of studies with 22 women in each project.<sup>95,96</sup> exhibited a decrease in joint pain and stiffness and in perceived difficulties in physical function, along with enhancements in balance, flexibility, body mass index, cardiovascular function, abdominal muscle strength, and knee muscle strength and endurance gained through Tai Chi practice. This exercise also improved perceived health benefits, health behaviour, diet management, stress management, and quality of life. Another single-blinded randomised attention-controlled clinical trial evaluated how Tai Chi can help the elderly treat osteoarthritis in the knee.<sup>97</sup> It allotted an intervention group (n=14) and a control group (n=15). Participants in the former group received 30-minute Tai Chi sessions two to four times a week for 24 weeks, and those in the latter received training about wellness education and stretching. The total scores exemplified significant improvements in the intervention group, marking a reduction in knee pain and an increase in physical function.

**Bodily functions:** Qigong increases telomerase activity, and decreases the level of pro inflammatory cytokines, which helps alleviate stress.<sup>98</sup> It also increases lean soft tissue mass, decreases body fat,<sup>99</sup> and improves muscle endurance and strength.<sup>100</sup> Similarly, practising Tai Chi will achieve a lower systolic and diastolic blood pressure,<sup>101,102</sup> better anti-oxidant capacity,<sup>103</sup> musculoskeletal fitness,<sup>104</sup> skeletal ability and bone properties.<sup>105</sup> resulting in improved balance to order to decrease the risks of falling.<sup>106</sup> Research data also support that Tai Chi and astragalus soup can strengthen immunity,<sup>107</sup> while Baduanjin promotes anti-aging by increasing antioxidant enzymes,<sup>108</sup> and preventing bone loss.<sup>109</sup>

**A variety of physiological treatments:** Doing Qigong exercises are also good for diverse illnesses; for example, type II diabetes,<sup>110</sup> and chronic neck pain resulting from body awareness, relaxation, calmness, and stronger movement.<sup>111</sup> Likewise, Tai Chi is beneficial for treating fibromyalgia, achieving better symptomatology, aerobic capacity, dynamic balance, body strength, and walking distance.<sup>112</sup>

**Psychological health:** Studies inform the effects of Baduanjin on mental well-being. For instance, in one study, sixty university students were assigned to an intervention group and another sixty to a control group.<sup>113</sup> Undergoing 24 weeks of training within which participants carried out 60-minute Baduanjin sessions at least three times per



week, their measurements marked a decrease in depression, anxiety, anger, tiredness and hostility, together with an increase in energy, self-esteem, and interpersonal sensitivity. Outcomes aligned with another research project that saw additional improvements in paranoia, somatisation, obsessive-compulsive symptoms, and phobia.<sup>114</sup>

## Discussion and future research directions

The 48 reviewed works offer promising signs of how Qigong (including Tai Chi and Baduanjin) can benefit women's health in such areas as breast cancer, menopause-related problems, menstrual disorders, and physical and psychological well-being. However, half of them (n=24) conducted their investigations with less than 50 participants each. Such small sample sizes debilitate potential conclusions, although randomised controlled trial designs (n=13 out of 45 qualitative studies; 28.9%) do support the findings. Future research is proposed, using larger sample sizes in order to enable concrete conclusions through stronger evidence.

Qigong exercises can be practised in either individual or group activities. Few research studies have researched the feasible differences between these modes; however, just as peer support is important for interventions and rehabilitation,<sup>115-117</sup> so it is for Qigong.<sup>110</sup> Therefore, this gap provides scholars with opportunities for health promotion.

The majority of the reviewed projects were quantitative designs, whereas the presence of qualitative research was minimal (n=1). The strengths of qualitative inquiry encompass a deeper understanding of participants' experiences which likely brings in richer discoveries<sup>118</sup> and expands the horizons of knowledge through the use of narratives.<sup>119</sup> Thus, a growing trend in using qualitative methods continues in the field of medical care,<sup>120,121</sup> even though there is still paucity in this arena.<sup>122</sup> The elicitation of personal accounts would look into both their enjoyment and difficulties in practising these exercises, which also hints at an opportunity to greatly promote Qigong to the general public.

A wealth of research has investigated the effects of Tai Chi,<sup>123,124</sup> and Baduanjin,<sup>125</sup> on mental health, psychological wellness, and health-related quality of life. However, limited attention has been paid specifically to women on these issues, in accordance with the reviewed projects. This leaves room for researchers and practitioners using these exercises.

Despite positive results pertaining to benefits of Qigong to women's health physically and emotionally, the physiological mechanism has been examined insufficiently.<sup>123</sup> Hence, an exploration of how Qigong might affect bodily functions with respect to physiology and neurobiology is suggested. This would critically provide further scientific evidence for studying the curative functionalities of Qigong.

## Practical implications

The reviewed research involved a wide scope of research duration, from five days to one year, in which 56.3% were 12-week (n=17; 35.4%), 24-week (n=6; 12.5%), 9-month (n=2; 4.2%), or 1-year (n=2; 4.2%). They presented positive changes in health, with the exception of Cohen's study,<sup>54</sup> which involved only five days. In addition, relevant data suggest a positive correlation between practice duration and frequency and effectiveness,<sup>126,127</sup> which are also reflected in Qigong exercises.<sup>68,107</sup> Therefore, presenting Qigong as a regular home exercise practice is a potential long-term approach for public health promotion that health policy decision makers might consider.

The evidence supports the idea that Qigong exercises suitably supplement treatments for health problems such as breast cancer and menopause which are not restricted to women, since these are also likely to affect men. Interventions for male patients will extend the usefulness of Qigong to a wider medical community. Likewise with reference to the reviewed outcomes, health care professionals may expand Qigong programmes to other patient populations more intensively, including adolescents.<sup>128</sup> Nevertheless, all these must be under guidance from qualified mentors for safety reasons.

Qigong has developed various forms; for example, Tai Chi fan, Tai Chi sword,<sup>86</sup> and Tai Chi ball.<sup>129,130</sup> Therefore, it can potentially be integrated with other therapies such as dance/movement therapy.<sup>131</sup> While the sitting form of qigong is always connected to meditation, it is very feasible to strengthen its therapeutic effects with mindfulness-based training,<sup>132</sup> perhaps together with aromatherapy, and music therapy. Also, the reviewed literature addresses the synergetic effect of wholesome food/herbs along with Qigong-related exercises, which supports the importance of nutrition and dietary management.<sup>133</sup> particularly for postmenopausal women,<sup>134</sup> which requires the awareness of health service providers.

The reviewed Baduanjin projects (n=8) were carried out in Chinese populations, reflecting very minimal attention drawn from Western communities. Baduanjin involves comparatively fewer movements and is more easily learned, which is more attractive to those who are interested in martial art-based exercises for health. Health care practitioners may keep a closer eye on this in order to expand the number of therapeutic instruments available to them.

Cost analysis and comparison reveal the cost effectiveness of Qigong exercises,<sup>110,135-138</sup> in the sense of non-medication and limited resources. This favours undeveloped countries which have a scarcity of finances and professionals in the medical industry. Using qigong in intervention programmes for health promotion, cure, and prevention not only offers more treatment opportunities and improves the recovery rates, but more critically eliminates health disparities.<sup>139</sup> and maintains health equity,<sup>140</sup> ultimately manifesting human rights in health care.<sup>141,142</sup> improving the health of socio-economically disadvantaged, marginalised and under-served groups,<sup>143-146</sup> especially for low income countries, thereby attaining social autonomy.<sup>147</sup> and social justice.<sup>148</sup>

## Conclusion

Qigong, including Tai Chi and Baduanjin, is a convenient, learner-friendly, safe, self-managed, cost effective, powerful, full-body, and health-promoted practice. A vast amount of evidence-based research supports this non-intrusive and non-pharmacologic intervention for physiological and psychological benefits. The current literature review uncovers to what extent Qigong is advantageous to women's health, regarding various conditions including breast cancer, menopause-related problems, menstrual disorders, and a diversified group of physical and emotional illnesses. It proposes that Qigong be used in preventive, rehabilitative, and remedial measures, and that it also be developed into a distinct lifestyle as a long-term strategy. Most significantly, this cost saving exercise is justified as an effective tool in the form of complementary and alternative medicine to alleviate health disparities and escalate health equity.

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## Conflict of interest

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