

*Review Article*

# The Effectiveness of Tai Chi in Patients With Breast Cancer: An Overview of Systematic Reviews and Meta-Analyses

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## Abstract

**Background.** As a mind-body exercise, Tai Chi (TC) may have a positive impact on physical function and psychological well-being in patients with breast cancer (BC). The aim of this current overview of systematic reviews (SRs) and meta-analyses (MAs) was to identify and summarize the existing evidence regarding the effectiveness of TC in patients with BC.

**Methods.** A computerized search of electronic databases was performed to identify relevant SRs/MAs of TC related to BC from inception to June 2020. The Assessing the Methodological Quality of Systematic Reviews 2 (AMSTAR-2) and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklists were used to assess the methodological quality and reporting quality of SRs and MAs, respectively. The Grades of Recommendations, Assessment, Development and Evaluation (GRADE) approach was used to assess the evidence quality of outcome measures.

**Results.** Six SRs/MAs in which quantitative synthesis was used to assess various outcomes of TC related to BC were included in this overview. The quality of the SRs/MAs and the evidence quality of the outcome measures were generally unsatisfactory. The limitations of the past SRs/MAs were the lack of a protocol and registration, a list of excluded studies, or inadequately reported computational details of meta-analyses. The critical problems were that the qualitative data synthesis relied on the trials with small sample sizes and of critical low quality.

**Conclusions.** TC is possibly beneficial to BC treatment. However, further rigorous and comprehensive studies are required to provide robust evidence for definitive conclusions. *J Pain Symptom Manage* 2020;■:■-■. © 2020 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights reserved.

## Key Words

*Tai chi, breast cancer, overview, AMSTAR-2, PRISMA, GRADE*

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## Introduction

Breast cancer (BC) is the most frequent malignant tumor in women.<sup>1</sup> With the advancements in early detection, treatment, and care of BC, the long-term survival rates after a diagnosis of BC are steadily rising in recent years.<sup>2,3</sup> Although this is encouraging, BC survivors are facing a variety of side effects after diagnosis and treatment, such as fatigue, sleep problems, depression, pain, cardiac toxicity, and cognitive limitations<sup>4</sup>; therefore, patients with BC may have physical, psychological, social, and existential rehabilitation needs.<sup>5</sup> To address the persistent symptoms,

complementary and integrative therapies are recommended as supportive care strategies during and after treatment.<sup>6,7</sup>

Tai Chi (TC) is a traditional Chinese movement practice infused with ancient Chinese philosophy and Chinese medicine, such as Confucian and Taoist culture.<sup>8</sup> Unlike other aerobic exercises, TC is a mind-body exercise that combines a series of sequential motions and coordinated postures, breathing exercises, and meditation.<sup>8</sup> As a balance-based exercise, TC is often used to improve strength, balance, and physical function and to prevent falls in older adults.<sup>9</sup> Furthermore, TC also plays a good role in improving

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the quality of life (QoL) of patients with cancer<sup>10</sup> and is recommended for patients with chronic conditions for its multiple effects, good safety, and low cost.<sup>11</sup> A literature search yielded several published systematic reviews (SRs)/meta-analyses (MAs) that reviewed primary research of TC for patients with BC. However, their quality is uneven, and the conclusions are not consistent. An overview of SRs/MAs is a relatively new method for synthesizing the outcomes of multiple SRs/MAs, appraising their quality, and attempting to resolve discordant outcomes.<sup>12</sup> The aim of the present study was to identify and summarize the existing evidence of the effectiveness of TC in patients with BC using a systematic overview.

## Methods

The present study was conducted and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.<sup>13</sup> The literature search, literature selection, data extraction, and critical appraisal were performed by both reviewers (H. L., J. C.) independently, and any inconsistencies were resolved through consensus or by consulting an experienced third reviewer (Y. H.).

### Inclusion and Exclusion Criteria

The inclusion criteria were as follows: 1) study design, SRs/MAs based on randomized controlled trials (RCTs); 2) participants, adult patients diagnosed with BC who received active BC treatment (e.g., surgery, radiation therapy, chemotherapy, or antihormonal therapy); 3) intervention, TC vs. placebo, TC vs. conventional supportive care interventions, and TC plus conventional supportive interventions vs. conventional supportive interventions alone; and 4) outcomes, the primary outcome was QoL, the measurement was not limited, and secondary outcomes were pain, shoulder function, muscle strength, fatigue, sleeping quality, depression, body mass index, and other clinical outcomes. Non-RCT SRs/MAs, repeated publications, review commentaries, and other types of studies were excluded.

### Search Strategy

A systematic literature search was undertaken by searching electronic databases, including PubMed/MEDLINE, Embase, the Cochrane Database of Systematic Reviews, ISI Web of Knowledge via Web of Science, China National Knowledge Infrastructure, Sino-Med, Chongqing VIP, and Wanfang Data databases, from their inception to June 2020. The search terms included “Tai Chi,” “breast cancer,” and “systematic

*Table 1*  
Search Strategy Used in the PubMed Database

Query	Search Term
# 1	Breast neoplasms [Mesh]
# 2	Breast neoplasm [Title/Abstract] OR breast cancer [Title/Abstract] OR breast tumor [Title/Abstract] OR breast carcinoma [Title/Abstract]
# 3	#1 OR #2
# 4	Tai ji [Mesh]
# 5	Tai ji [Title/Abstract] OR Tai-ji [Title/Abstract] OR Tai Chi [Title/Abstract] OR Tai Ji Quan [Title/Abstract] OR Taiji [Title/Abstract] OR Taijiquan [Title/Abstract] OR Tai Chi Chuan [Title/Abstract]
# 6	#4 OR #5
# 7	Meta-Analysis as Topic [Mesh]
# 8	Systematic review [Title/Abstract] OR Meta-Analysis [Title/Abstract] OR meta-analyses [Title/Abstract]
# 9	#7 OR #8
# 10	#3 AND #6 AND #9

review.” The complete PubMed search strategy is summarized in [Table 1](#).

### Eligibility Assessment and Data Extraction

The titles and abstracts of all literature were screened first, and potentially eligible articles were retrieved for perusal in full-text format. The following data were extracted from each article: first author, publication year, country, number of trials enrolled, quality assessment tool for RCTs enrolled, interventions in the treatment and control groups, outcome measures, data synthesis methods, and results summary.

### Review Quality Assessment

The Assessing the Methodological Quality of Systematic Reviews 2 (AMSTAR-2)<sup>14</sup> system was used to assess the methodological quality of the included SRs/MAs. This checklist has 16 items, including 7 critical items (items 2, 4, 7, 9, 11, 13, and 15), which are used to critically assess the validity of an SR. Each item was evaluated as “yes”, “partial yes”, or “no” according to adherence to the standard.

The PRISMA checklist<sup>13</sup> was applied to assess the reporting quality of each SR/MA. It consists of a 27-item checklist and a 4-phase flow diagram, aiming to help authors improve the reporting quality of SRs. Response options for each item are “yes,” “partial yes”, or “no”. The completion of each item was presented as a ratio.

The Grades of Recommendations, Assessment, Development and Evaluation (GRADE)<sup>15</sup> system was used to assess the evidence quality of each outcome measure used in these SRs/MAs. The assessment of the evidence quality was based on five aspects: limitations, inconsistencies, indirectness, inaccuracy, and publication bias.

## Results

### Literature Search and Selection

The database search yielded 121 potentially relevant records, with 91 records remaining after the removal of duplicates. In total, 81 records were removed after reviewing article titles and abstracts. Of the 10 potentially eligible records, 4 were excluded, leaving 6 SRs/MAs<sup>16–21</sup> for inclusion in the overview. For details of the identification and inclusion/exclusion of SRs, see the PRISMA flow chart in [Figure 1](#).

### Description of the Included Reviews

The characteristics of the included reviews are presented in [Table 2](#). All the included SRs were published between 2010 and 2020; 5 of which were published in English, and the remaining 1 was published in Chinese. The number of trials in reviews ranged from 5 to 16. All the included reviews performed MA. The intervention was mainly TC, while the comparators were mainly conventional supportive care interventions (routine rehabilitation training, psychosocial support therapy, standard support therapy, cognitive

behavioral therapy, usual care). For the assessment of methodological quality, 4 reviews<sup>16,18,20,21</sup> used the Cochrane risk of bias tool, 1 review<sup>18</sup> used the Jadad scale, and the remaining 1<sup>17</sup> used the physiotherapy evidence database scale. The detailed study characteristics are presented in [Table 2](#).

### Results of Review Quality Assessment

**Methodological Quality.** The results of the AMSTAR-2 assessment are presented in [Table 3](#). As all reviews had more than one critical weakness, all of them were rated as of critically low quality. The key factors affecting the methodological quality of the SRs/MAs were item 2 (Only 1 review<sup>16</sup> established a prior study protocol.) and item 7 (None of the reviews explained the reasons for selection of the study type or provided a complete list of excluded studies with reasons.).

**Reporting Quality.** The results of the PRISMA checklist assessment are presented in [Table 4](#). The results showed that the reporting checklists were relatively complete, and the sections such as title, abstract,

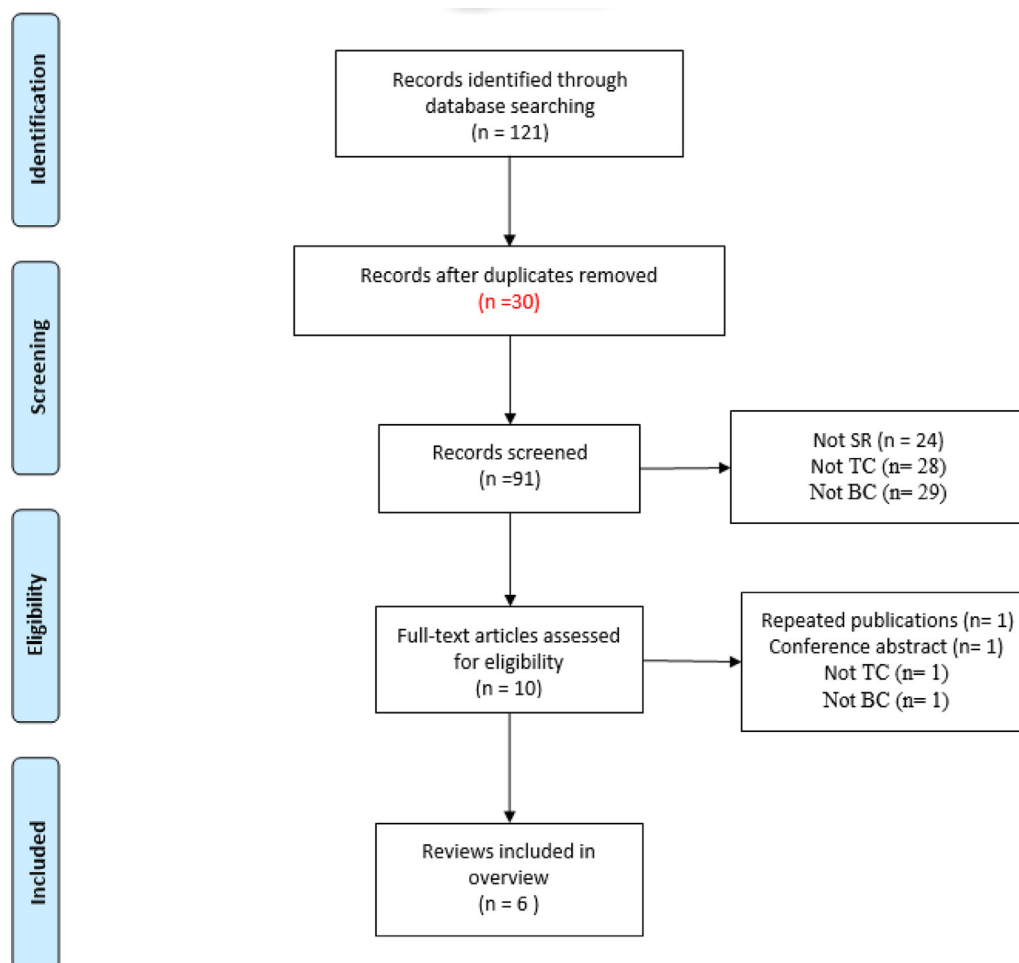


Fig. 1. Literature selection procedure. BC = breast cancer; SR = systematic review; TC = Tai Chi.

Table 2  
 Characteristics of the Included Reviews

Author, Year (Country)	Country	Treatment Intervention	Control Intervention	Quality Assessment	Results Summary
Luo, <sup>16</sup> 2020	China	TC, TC + RRT, TC + UC, TC + SST	RRT, UC, SST, PST, CBT	Cochrane criteria	TC appears to be effective for some physical and psychological symptoms and improves the QoL of patients with BC. Additional RCTs with rigorous methodology and a low risk of bias are needed to provide more reliable evidence.
Liu, <sup>17</sup> 2020	China	TC, TC + RRT, TC + UC,	RRT, UC, PST, CBT, placebo, walking	Physiotherapy evidence databases scale	TC led to no improvement in fatigue compared with conventional supportive interventions, but it significantly relieved fatigue symptom for patients with BC when used with conventional supportive care interventions. TC vs. conventional supportive care interventions and as an adjunct to conventional therapy is effective in improving QoL for patients with BC.
Pan, <sup>18</sup> 2015	China	TC	PST, SST, UC	Cochrane criteria	The short-term effects of TC may have potential benefits in upper limb functional mobility in patients with BC. Additional RCTs with longer follow-up are needed to provide more reliable evidence.
Yan, <sup>19</sup> 2014	China	TC	PST, RRT	Jadad scale	The current limited evidence suggests that there is a lack of sufficient evidence to support TC benefiting the management of BC survivors in improving QoL and other important clinical outcomes
Yan, <sup>20</sup> 2013	China	TC	PST, SST, walking, RRT	Cochrane criteria	TC is effective for shoulder functional capacity of patients with BC but not significantly effective for QoL. Additional RCTs with longer follow-up are needed to provide more reliable evidence.
Lee, <sup>21</sup> 2010	Korea	TC,	PST, SST, walking, no treatment	Cochrane criteria	Collectively, the existing trial evidence does not show convincingly that TC is effective for supportive BC care. Future studies should be of high methodological quality, with a particular emphasis on including an adequate control intervention.

RRT = routine rehabilitation training; PST = psychosocial support therapy; SST = standard support therapy; CBT = cognitive behavioral therapy; UC = usual care; BC = breast cancer; TC = Tai Chi; QoL = quality of life; RCT = randomized controlled trial.

Table 3  
Result of the AMSTAR-2 Assessments

Studies	AMSTAR-2																Overall Quality
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	
Luo <sup>16</sup> 2020	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	L
Liu <sup>17</sup> 2020	Y	PY	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	CL
Pan <sup>18</sup> 2015	Y	PY	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	CL
Yan <sup>19</sup> 2014	Y	PY	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	CL
Yan <sup>20</sup> 2013	Y	PY	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	CL
Lee <sup>21</sup> 2010	Y	PY	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	CL

CL = critically low; L = low; AMSTAR-2 = Assessing the Methodological Quality of Systematic Reviews 2; Y = yes; PY = partial yes; N = no.

introduction, and discussion were well reported (100%), but other sections still had some reporting defects. In the methods section, Q5, Q15, and Q15 were reported inadequately (<35%); in the results section, Q22 and Q23 were reported more than 50% of the time; and in the funding section, only one review reported a funding source. More details are presented in Table 4.

**Evidence Quality.** The results of the GRADE assessment are presented in Table 5. The 6 SRs/MAs included 20 outcomes related to the effectiveness of TC for BC.

Among these outcome indicators, the quality of evidence was high in 1, moderate in 2, low in 5, and critically low in 12. Publication bias ( $n = 16$ ) was the most common one among the downgrading factors, followed by the risk of bias ( $n = 14$ ), imprecision ( $n = 14$ ), inconsistency ( $n = 7$ ), and indirectness ( $n = 0$ ).

## Discussion

An SR/MA overview is a systematic research approach for reassessing a comprehensive collection

Table 4  
Results of the PRISMA Assessments

Section/Topic	Items	Luo 2020 <sup>16</sup>	Liu 2020 <sup>17</sup>	Pan 2015 <sup>18</sup>	Yan 2014 <sup>19</sup>	Yan 2013 <sup>20</sup>	Lee 2010 <sup>21</sup>	Compliance (%)
Title	Q1. Title	Y	Y	Y	Y	Y	Y	100
Abstract	Q2. Structured summary	Y	Y	Y	Y	Y	Y	100
Introduction	Q3. Rationale	Y	Y	Y	Y	Y	Y	100
	Q4. Objectives	Y	Y	Y	Y	Y	Y	100
Methods	Q5. Protocol and registration	Y	N	N	N	N	N	16.7
	Q6. Eligibility criteria	Y	Y	Y	Y	Y	Y	100
	Q7. Information sources	Y	Y	Y	Y	Y	Y	100
	Q8. Search	Y	Y	Y	Y	Y	Y	100
	Q9. Study selection	Y	Y	Y	Y	Y	Y	100
	Q10. Data collection process	Y	Y	Y	Y	Y	Y	100
	Q11. Data items	Y	Y	Y	Y	Y	Y	100
	Q12. Risk of bias in individual studies	Y	Y	Y	Y	Y	Y	100
	Q13. Summary measures	Y	Y	Y	Y	Y	Y	100
	Q14. Synthesis of results	Y	Y	Y	Y	Y	Y	100
	Q15. Risk of bias across studies	N	Y	N	Y	N	N	33.3
	Results	Q16. Additional analyses	N	N	Y	Y	N	N
Q17. Study selection		Y	Y	Y	Y	Y	Y	100
Q18. Study characteristics		Y	Y	Y	Y	Y	Y	100
Q19. Risk of bias within studies		Y	Y	Y	Y	Y	Y	100
Q20. Results of individual studies		Y	Y	Y	Y	Y	Y	100
Q21. Synthesis of results		Y	Y	Y	Y	Y	Y	100
Q22. Risk of bias across studies		N	Y	N	Y	N	N	33.3
Discussion	Q23. Additional analysis	N	N	Y	Y	Y	N	50
	Q24. Summary of evidence	Y	Y	Y	Y	Y	Y	100
	Q25. Limitations	Y	Y	Y	Y	Y	Y	100
	Q26. Conclusions	Y	Y	Y	Y	Y	Y	100
	Funding	Q27. Funding	Y	Y	N	Y	Y	Y

PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses; Y = yes; N = no.

Table 5  
Certainty of Evidence of the Included SRs/MAs

Reviews	Outcomes	Studies (Participants)	Limitations	Inconsistency	Indirectness	Imprecision	Publication Bias	Quality
Luo <sup>16</sup> 2020	QoL	5 (328)	0	0	0	0	0	H
	Pain	2 (229)	0	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	L
	Shoulder function	3 (323)	0	-1 <sup>ⓑ</sup>	0	0	-1 <sup>ⓐ</sup>	L
	Muscle strength	3 (318)	0	0	0	0	-1 <sup>ⓐ</sup>	M
	Anxiety	2 (236)	0	-1 <sup>ⓑ</sup>	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	Fatigue	3 (160)	0	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	L
Liu <sup>17</sup> 2020	Fatigue	2 (174)	-1 <sup>ⓐ</sup>	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	Sleeping quality	2 (158)	-1 <sup>ⓐ</sup>	-1 <sup>ⓑ</sup>	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	Depression	3 (211)	-1 <sup>ⓐ</sup>	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	BMI	3 (119)	-1 <sup>ⓐ</sup>	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	QoL	4 (2382)	-1 <sup>ⓐ</sup>	0	0	0	0	M
Pan <sup>18</sup> 2015	Pain	3 (114)	-1 <sup>ⓐ</sup>	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	Muscle strength	3 (63)	-1 <sup>ⓐ</sup>	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	QoL	5 (178)	-1 <sup>ⓐ</sup>	-1 <sup>ⓑ</sup>	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
Yan <sup>19</sup> 2014	QoL	6 (339)	-1 <sup>ⓐ</sup>	-1 <sup>ⓑ</sup>	0	0	0	L
	BMI	3 (226)	-1 <sup>ⓐ</sup>	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	BMD	2 (205)	-1 <sup>ⓐ</sup>	-1 <sup>ⓑ</sup>	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
	Muscle strength	2 (205)	-1 <sup>ⓐ</sup>	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL
Yan <sup>20</sup> 2013	QoL	4 (300)	-1 <sup>ⓐ</sup>	-1 <sup>ⓑ</sup>	0	0	0	L
Lee <sup>21</sup> 2010	QoL	3 (180)	-1 <sup>ⓐ</sup>	0	0	-1 <sup>ⓐ</sup>	-1 <sup>ⓐ</sup>	CL

CL = critically low; L = low; M = moderate; H = high; BMD = bone mineral density.

ⓐ: The experimental design had a large bias in random, distributive findings or was blinded; ⓑ: The confidence interval overlapped less, the *P* value of the heterogeneity test was very small, and the *I*<sup>2</sup> was larger; ⓒ: The confidence interval was not narrow enough; ⓓ: Funnel graph asymmetry; ⓔ: Few studies were included, and there may have been increased publication bias.

of SRs/MAs related to the same disease or health problem.<sup>22</sup> This comprehensive review concentrated on the QoL and psychosomatic symptoms in patients with BC comparing TC with no exercise therapy, thus providing a comprehensive overview of the effects of TC that can be used as a foundation for individualized rehabilitation in clinical practice. A literature search revealed that no overview of TC for BC has been published to date.

### Summary of the Main Findings

This overview included 6 SRs/MAs, and half of them were published in the past 5 years, indicating that TC has begun to attract attention as an additional form of mind-body practice for BC. According to the AMSTAR-2 and PRISMA assessments, the quality of the included SRs/MAs was unsatisfactory; thus, risk of bias has resulted in a subsequent decrease in the reference value of the results of these SRs/MAs. Of the included SRs/MAs, almost all reached positive conclusions of TC for BC; however, the authors did not want to draw firm conclusions because of the small sizes of the included trials or their low quality. Furthermore, the GRADE assessment showed that the evidence quality of outcome measures was generally unsatisfactory, indicating that the conclusions of the included SRs/MAs may differ from the true results and thus cannot provide a scientific basis for clinicians. Therefore, based on the included SRs/MAs, TC is possibly beneficial in BC; however, we cannot draw a firm conclusion regarding the effect of TC on BC.

### Implications for Future Practice and Research

Patients with BC frequently experience side effects of cancer treatment, which may lead to sedentary lifestyles and physical deconditioning. The American Society of Clinical Oncology Breast Cancer Survivorship Care Guidelines recommend that primary care clinicians should advise patients with BC to engage in regular physical activity to reduce cancer-related pain, fatigue, obesity, and other musculoskeletal symptoms.<sup>23</sup> Providing a social support environment for patients with BC may not be sufficient to address their multiple complex physical and psychological needs.<sup>17</sup> Therefore, exercise therapy has been suggested as an effective and convenient support care intervention for patients with BC. TC is a novel integrative aerobic capacity that has the potential to meet the unique needs of patients with BC by improving functional health.<sup>18</sup> The mechanism of TC is complex. The functional magnetic resonance imaging studies showed that TC has a number of potential neurobiological effects that may be involved in its effect on pain and cognitive function.<sup>16</sup> Dysregulation of the hypothalamic-pituitary-adrenal axis and the increased levels of proinflammatory cytokines could produce fatigue.<sup>24</sup> It has been reported that TC may mediate the hypothalamic-pituitary-adrenal axis and decrease cortisol, interleukin-6, and tumor necrosis factor in cancer survivors, which might reduce cancer-related fatigue.<sup>16,25</sup> Furthermore, TC may induce local biochemical changes that regulate blood circulation, improve muscle flexibility, exacerbate movement of



the lymphatic system, and loosen adherent connective tissue, which may improve local reuptake of nociceptive and inflammatory mediators.<sup>18</sup> In addition, long-term practice of TC may benefit cardiorespiratory function, joint flexibility, and muscle strength.<sup>26</sup> However, with the limitations mentioned and the unsatisfactory quality evaluation results of the included studies, definitive conclusions were impossible to draw from the published results, and caution is warranted when recommending TC as a complementary and integrative therapy for BC treatment. The efficacy of TC in the treatment of BC requires high-quality studies to provide more convincing evidence.

Assessment of various aspects of the included SRs/MAs using the AMSTAR-2 and PRISMA assessments identified areas for common improvement. For example, they all ignored the need to register the protocol and provide a list of excluded studies. Although the quality was unsatisfactory, there is room to address the quality during the SR/MA process. Regarding evidence quality with the GRADE assessment, we found that the risk of bias within the original RCTs was the most common one among the downgrading factors in the included SRs/MAs, and all the outcome indicators were demoted because of the limitations caused by bias in random, distributive hiding or blinding. Therefore, we recommend that authors, readers, reviewers, and editors to become more acquainted with and to more strictly adhere to the AMSTAR-2, PRISMA, and GRADE criteria in future research.

### *Strength and Limitations*

To the best of our knowledge, this study is the first systematic overview to explore the evidence of TC for BC. Based on the current results, TC is possibly beneficial to BC treatment, which may have certain reference value for the clinical practice and research of TC in the treatment of BC. However, this study has certain limitations. First, because of the generally low quality of SRs/MAs and outcome indicators, firm conclusions were impossible to draw, and caution is warranted when recommending TC as a complementary treatment for BC. Second, the practice of integrative medicine in general and TC in particular in supportive and palliative care is invariably individualized and patient-centered and varies from patient to patient in accordance with their clinical status and therapeutic approach of the practitioner. Therefore, a noncontrolled pragmatic study could also help provide guidance for the safe and effective use of these modalities, but only explanatory RCTs were included in this overview, which might limit the comprehensiveness of the evidence. Furthermore, the evaluation of the quality of SRs/MAs or RCTs is a subjective process, and different researchers make their own

independent judgments of each factor; therefore, the results may vary.

### *Conclusion*

TC is possibly beneficial to BC treatment. However, this conclusion must be interpreted cautiously because the quality of included SRs/MAs was limited. Further rigorous, comprehensive SRs/MAs and RCTs that adhere to the guidelines are required to provide robust evidence for definitive conclusions.

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Data Availability: All analyses were based on previously published studies; thus, no informed consent is required.

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