How do Body Practices Affect the Psychological Aspects of Survivors Women Undergoing Treatment for Breast Cancer? Systematic Literature Review

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Como as Práticas Corporais Afetam os Aspectos Psicológicos de Mulheres Sobreviventes e em Tratamento para o Câncer de Mama? Revisão Sistemática da Literatura

¿Cómo Inciden las Prácticas Corporales en los Aspectos Psicológicos de las Mujeres Sobrevivientes y en Tratamiento por Cáncer de Mama? Revisión Sistemática de la Literatura

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ABSTRACT

Introduction: Body practices can bring physical, psychological benefits and social rehabilitation and may be an alternative treatment for breast cancer. **Objective:** To analyze the evidence of the results of body practices over the psychological aspects of survivors women undergoing treatment for breast cancer. **Method:** Systematic blind and independent review from September to December 2021 following the PRISMA guidelines, carried out in the databases: Embase Elsevier; PubMed Central; ScienceDirect; Scopus Elsevier and Web of Science – Core Collection. **Results:** Of 1,372 studies identified, 22 were included in this systematic review. Among the practices that stood out are meditation and Yoga, with anxiety being the most investigated variable by the studies. It is clear that body practices are options for non-pharmacological clinical treatments utilized in clinical practice by different health professionals in women who have survived breast cancer. **Conclusion:** Body practices proved to be beneficial in the treatment and psychological health of women who survived breast cancer. This evidence may help to implement body practices as a therapeutic resource to be used in the clinical practice of health professionals. However, more randomized clinical trials that follow study protocols more rigorously are suggested, so that the effectiveness of this approach can be evaluated in different clinical outcomes.

Key words: breast neoplasms/psychology; complementary therapies; adaptation, psychological; musculoskeletal manipulations; women's health.

RESUMO

Introdução: As práticas corporais podem trazer benefícios na área de reabilitação física, psicológica e social e ser uma alternativa de tratamento para o câncer de mama. **Objetivo**: Analisar as evidências dos resultados das práticas corporais nos aspectos psicológicos de mulheres que sobreviveram e estavam em tratamento para câncer de mama. **Método**: Revisão sistemática desenvolvida de forma cega e independente, de setembro a dezembro de 2021, seguindo as diretrizes PRISMA, realizada nas bases de dados: *Embase Elsevier; PubMed Central; ScienceDirect; Scopus Elsevier e Web of Science – Core Collection*. **Resultados**: Dos 1.372 estudos identificados, 22 foram incluídos nesta revisão sistemática. Entre as práticas que mais se destacaram, estão a meditação e a Yoga, sendo a ansiedade a variável mais investigada pelos estudos. Fica claro que as práticas corporais são opções de tratamentos clínicos não farmacológicos utilizados na prática clínica por diferentes profissionais de saúde em mulheres que sobreviveram ao câncer de mama. **Conclusão**: As práticas corporais mostraram-se benéficas no tratamento e na saúde psicológica de mulheres que sobreviveram ao câncer de mama. Essas evidências podem auxiliar na implementação das práticas corporais como recurso terapêutico a ser utilizado na prática clínica dos profissionais de saúde. No entanto, são sugeridos mais ensaios clínicos randomizados que sigam os protocolos de estudo com mais rigor, para que a eficácia dessa abordagem possa ser avaliada em diferentes desfechos clínicos.

Palavras-chave: neoplasias da mama/psicologia; terapias complementares; adaptação psicológica; manipulações musculoesqueléticas; saúde da mulher.

RESUMEN

Introducción: Las prácticas corporales pueden traer beneficios en el área de rehabilitación física, psicológica y social y ser una alternativa de tratamiento para el cáncer de mama. **Objetivo:** Analizar las evidencias de los resultados de prácticas corporales en los aspectos psicológicos de mujeres sobrevivientes y en tratamiento por cáncer de mama. **Método:** Revisión sistemática desarrollada de forma ciega e independiente, de septiembre a diciembre de 2021 siguiendo los lineamientos PRISMA, realizada en las bases de datos: *Embase Elsevier; PubMed Central; ScienceDirect; Scopus Elsevier e Web of Science – Core Collection*. **Resultados:** De 1.372 estudios identificados, 22 se incluyeron en esta revisión sistemática. Entre las prácticas que más se destacaron están la meditación y el Yoga, siendo la ansiedad la variable más investigada entre los estudios. Es claro que las prácticas corporales son opciones de tratamientos clínicos no farmacológicos, utilizados en la práctica clínica por diferentes profesionales de la salud en mujeres que han sobrevivido al cáncer de mama. **Conclusión:** Las prácticas corporales demostraron ser beneficiosas en el tratamiento y la salud psicológica de las mujeres que sobrevivieron al cáncer de mama. Esta evidencia puede ayudar en la implementación de las prácticas corporales como recurso terapéutico para ser utilizado en la práctica clínica de los profesionales de la salud. Sin embargo, se sugieren más ensayos clínicos aleatorizados que sigan los protocolos de estudio de manera más rigurosa, de modo que la efectividad de este enfoque pueda evaluarse en diferentes resultados clínicos.

Palabras clave: neoplasias de la mama/psicología; terapias complementarias; adaptación psicológica; manipulaciones musculoesqueléticas; salud de la mujer.

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INTRODUCTION

Body practices can be seen as an important element in some health sectors[1], bringing physical, psychological benefits and social rehabilitation, because they affect mood, feelings of ability, autonomy and self-confidence[2]. Thus, body practices interventions are adopted as non-pharmacological therapy options since they can be alternative treatments[3] for menopausal women[4,5], Parkinson's disease[6,7] and in all stages of breast cancer treatment[8,9].

The study by Targ and Levine[10] was the first randomized clinical trial addressing body practices in women with breast cancer published in 2002, it concluded that the practice of meditation contributed to reduce depression and anxiety. In 2004 and 2005, studies by Mustian et al.[11] and Sandel et al.[12] concluded that body practices improved the self-esteem and perceptions of body image. Currently, other studies indicate that body practice interventions for breast cancer survivors helped substantially to reduce depressive symptoms[3,13,14], fear of disease recurrence[13] and anxiety[14,15].

Therefore, body practices are cost-effective, low-cost options with important psychosocial effects[16], and treatments with these therapies have been increasingly adopted by health professionals as a complement to standard treatment[16,17]. Thus, it is important to develop strategies to reduce clinical and psychological symptoms in breast cancer survivors[18] and in that line, non-pharmacological interventions are able to improve psychological aspects for different types of cancer[17].

In this context, a systematic review addressing the benefits of various body practices in psychological aspects (depression, anxiety, stress, body image, self-esteem, mood, quality of life, sleep disorders, fatigue and pain) will meet the methodological trend widely used in different areas of health[1], and can identify directions for clinical practice and future research. The objective of this review is to analyze the evidence of the results of body practices in the psychological aspects of survivors women in treatment of breast cancer.

METHOD

This systematic review of randomized clinical trials follows the guidelines of the Preferred reporting items for Systematic Reviews and Meta-analysis (PRISMA)[19] and was registered in International Prospective Register of Systematic Reviews (PROSPERO)[20], CRD: 42022302090, exempted from Institutional Review Board (IRB) approval because there is no involvement of human beings. The research question followed the acronym PICOS: What is the evidence of interventions of body practices on the psychological aspects of survivors women undergoing treatment for breast cancer?

The search was carried out electronically using the descriptors selected in five databases, namely: Embase Elsevier; PubMed Central; ScienceDirect; Scopus Elsevier e Web of Science – Core Collection. All titles and abstracts found in the electronic search were analyzed using the Rayyan application developed by the Qatar Computing Research Institute[21], by three investigators, blindly and independently, from 09/03/2021 to 10/20/2021. Reference lists of all significant articles were analyzed to identify other eligible studies.

Three investigators, members of the Laboratory for Research in Leisure and Physical Activity (LAPLAF)/CNPq, carried out the searches during the period from 09/03/2021 to 20/10/2021 according to the eligibility criteria. Disagreements were resolved by a fourth author.

The eligibility criteria were defined according to the PICOS criterion. Eligible studies for this review were: a) randomized clinical trials; b) adult women (≥18 years); c) in treatment or after treatment of breast cancer; d) published in English; e) published from 2011 to 2021; f) investigating results of body practices in psychological outcomes, specifically, depression, anxiety, stress, body image, self-esteem, mood, quality of life, sleep disorders, fatigue and pain; g) open access studies, with abstract and full text. When it was not possible to access the full article and duplicate articles in the databases were excluded.

Figure 1 shows the flowchart of the selection process carried out by the investigators and reasons of non-eligibility. After searching the databases, the titles and abstracts were read (excluding the articles that did not meet the inclusion criteria) followed by full reading of the articles to complete the selection process.

Studies that addressed the effects of interventions through body practices (stretching, flexibility, dance, Yoga, Tai Chi, Lian Gong, Qigong, meditation and acupuncture) on psychological aspects (depression, anxiety, stress, body image, self-esteem, mood, quality of life, sleep disorders, fatigue and pain) in survivors women undergoing treatment for breast cancer were included, given that the diagnosis of breast cancer can arouse different emotional reactions[22], due to the acceptance of the diagnosis, treatment, possible mutilation of the breast and fear of death[23]. Feelings as anguish, sadness, nervousness, lack of interest in things are considered common in women diagnosed with breast cancer[24], directly interfering in their social life[25].

Body practices that can be used as a natural mechanism of health recovery when related to the diagnosis of breast

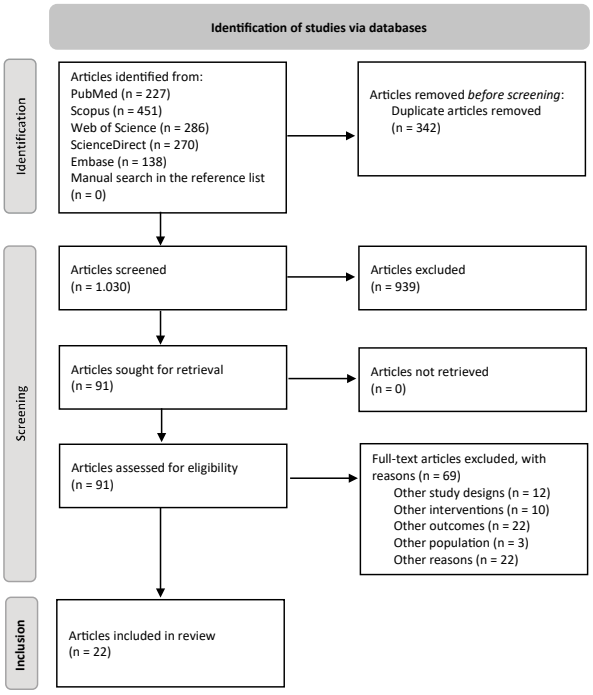

Figure 1. Flowchart of the study selection strategy, according to the PRISMA 2020 model

cancer were considered as an intervention[13] and alleviating the symptoms caused by the treatment[15].

Body practices of dance, stretching, flexibility, Yoga, Tai Chi, Lian Gong, Qigong, meditation and acupuncture will be analyzed.

Data were independently extracted by two investigators in a structured and predefined model, constructed with the following information: (a) details of the journal (author(s), year and type of study, impact factor and country) where the study was carried out, number of citations according to Web of Science as of November 10, 2021; (b) study title and objectives; (c) sample size, intervention group, duration, frequency, time, intensity of body practices; (d) comparison group; (e) outcomes and instruments used; (e) level of evidence and (f) in the search period (09/03/2021 to 09/27/2021), following the 27-itens PRISMA checklist (yes or no).

Three investigators evaluated independently the methodological quality of the studies following the Cochrane Collaboration Scale[26], and by a fourth author who was called in to resolve any discrepancy in accordance with the criteria: (1) random sequence generation, (2) concealment of the allocation sequence, (3) masking of participants and researchers, (4) masking of the outcome assessment, (5) incomplete results and (6) selective reports. The PEDro scale was also used to assist in the evaluation of the eligibility criteria of the studies[27].

RESULTS

1,372 articles were found in the first database search, 138 in Embase (Elsevier), 286 in Web of Science – Core Collection, 451 in Scopus, 270 in ScienceDirect and 227 in PubMed. 342 articles were excluded because they were cross-references. After reading titles and abstracts, 939 articles were excluded for not meeting the inclusion criteria. Upon full reading, 22 articles were eligible for this review[28-49] (Figure 1).

Charts 1 and 2 present the characteristics of the studies.

A total of 3,135 women were included, 1,148 in the intervention groups and 1,717 in the control groups. Women considered survivors were included because they had already completed the prescribed cancer treatment and were disease-free[29,33,40,44-46,48], after diagnosis of breast cancer[42], before radiotherapy cycle[43], during radiotherapy[38,47], undergoing chemotherapy[32,35,39,41,49], in hormone therapy[30], undergoing surgery and scheduled to receive radiotherapy[31], during radiotherapy, chemotherapy, or mastectomy treatment[36], before mastectomy[37], and two studies did not present the duration of the treatment during the interventions[28,34].

The participants were in stages 0 to III[31,38,40,43,46,48], from I to III[28,32-34,39,41,44-46], I to IV[35], I and II[36], and four studies did not provide this information[29,30,37,42].

The age of the participants varied according to the inclusion criteria: over 18 years old[31,32,41-43,47], over 20 years old[38], over 21 years old[40], 18 to 65 years[35,46], 18 to 75 years[33], 19 to 65 years[39], 20 to 60 years[37], 20 to 65 years[34], 25 to 80 years[44], 40 to 75 years[48], 41 to 76 years[49], 42 to 83 years[29], 52 to 77 years[30]; three studies presented only the average age of the participants that ranged from 53 to 59 years old[28,36,45].

The oldest studies included are those by Molassiotis et al.[44], Monti et al.[30] e Henderson et al.[34] and the most recent is Araújo et al.[35].

The impact factor of journals ranged from 0.020[32] and 44.544[29,44], two articles were published in journals without impact factor[36,37]. Of the twenty-two articles found, nineteen were cited in the Web of Science, with 5 citations[39,42] to 141[44] checked out on November 10, 2021.

The studies were carried out in North America[28,29,30,32,34,40-43,48,49], in South America[35], in Europe[33,36,44,45] and in Asia[31,37-39,46,47].

Eight studies were registered in the clinical trials databases: Clinical Trials[33,40,44,45,49], University of Hong Kong Clinical Trials Center[47], Brazilian Registry of Clinical Trials[35] and Iranian Clinical Trials Registry[37]. The other studies did not provide information on the registration[28,29,30-32,34,36,38,39,41-43,46,48].

Chart 1. Characteristics of the studies included in the systematic review

	Author/ year	Title	Study location	Magazine and impact factor	PEDro Scale Score	Objective
1	Schellekens et al., 2017	Mindfulness-Based Cancer Recovery (MBCR) versus Supportive Expressive Group Therapy (SET) for distressed breast cancer survivors: evaluating mindfulness and social support as mediators	Canada	Journal of Behavioral Medicine (2.960)	7 points	To examine the potential mediators underlying the effect of a mindfulness-based cancer recovery program and expressive group therapy support on the psychological outcomes of breast cancer survivors
2	Irwin et al., 2017	Tai Chi Chih compared with cognitive behavioral therapy for the treatment of insomnia in survivors of breast cancer: a randomized, partially blinded, noninferiority trial	United States	Journal Clinical Oncology (44.544)	9 points	To establish whether Tai Chi Chih produces similar effects as Cognitive Behavioral Therapy for Insomnia in reducing insomnia symptoms in breast cancer survivors
3	Reich et al., 2017	Mindfulness-based stress reduction in post-treatment breast cancer patients: immediate and sustained effects across multiple symptom clusters	United States	Journal of Pain Symptom Management (3.612)	5 points	Identify symptom clusters among breast cancer survivors and determine symptom cluster improvement following the mindfulness-based stress reduction program for breast cancer
4	Chaoul et al., 2018	Randomized trial of Tibetan Yoga in patients with breast cancer undergoing chemotherapy	United States	Cancer (5.238)	4 points	To examine the effects of a Tibetan Yoga program versus a stretching and usual care program on sleep and fatigue in women with breast cancer undergoing chemotherapy
5	Ratcliff et al., 2019	A randomized controlled trial of brief mindfulness meditation for women undergoing stereotactic breast biopsy	United States	Journal of the American College of Radiology (5.532)	6 points	Check for a non-pharmacological method to treat severe cases of anxiety
6	Ratcliff et al., 2016	Examining mediators and moderators of Yoga for women with breast cancer undergoing radiotherapy	United States	Integrative Cancer Therapies (3.279)	6 points	To verify the hypothesis that participating in Yoga classes during radiotherapy is beneficial for women with depressive symptoms and sleep disorders in the quality of life after treatment
7	Larkey et al., 2015	Randomized controlled trial of Qigong/Tai Chi Easy on cancer-related fatigue in breast cancer survivors	United States	Annals of Behavioral Medicine (4.908)	10 points	Compare a Qigong/Tai Chi meditative movement with Qigong Sham, testing the meditation/breathing aspects of Qigong/Tai Chi on fatigue and other symptoms
8	Molassiotis et al., 2012	Acupuncture for cancer-related fatigue in patients with breast cancer: a pragmatic randomized controlled trial	United Kingdom	Journal of Clinical Oncology (44.544)	8 points	To assess the effectiveness of acupuncture for cancer-related fatigue in breast cancer patients
9	Molassiotis et al., 2013	A randomized, controlled trial of acupuncture self-needling as maintenance therapy for cancer-related fatigue after therapist-delivered acupuncture	United Kingdom	Annals of Oncology (32.976)	6 points	To evaluate the effectiveness of maintenance acupuncture in the treatment of cancer-related fatigue
10	Loh et al., 2014	The Kuala Lumpur Qigong trial for women in the cancer survivorship phase-efficacy of a three-arm RCT to improve QOL	Malaysia	Asian Pacific Journal of Cancer Prevention (2.514)	9 points	To evaluate the effectiveness of Qigong on the quality of life of breast cancer survivors
11	Mao et al., 2014	Electroacupuncture for fatigue, sleep, and psychological distress in breast cancer patients with aromatase inhibitor-related arthralgia: a randomized trial	United States	Cancer (2.486)	7 points	To evaluate the effect of electroacupuncture on fatigue, sleep, and psychological distress in breast cancer survivors
12	Ho et al., 2016	Effects of a short-term dance movement therapy program on symptoms and stress in patients with breast cancer undergoing radiotherapy: a randomized, controlled, single-blind trial	China	Journal of Pain and Symptom Management (3.612)	9 points	Explore changes in treatment-related symptoms (fatigue, anxiety, depression, pain, stress, and sleep disturbances) and quality of life during radiotherapy treatment

to be continued

Chart 1. continuation

	Author/ year	Title	Study location	Magazine and impact factor	PEDro Scale Score	Objective
13	Monti et al., 2012	Changes in cerebral blood flow and anxiety associated with an 8-week mindfulness programme in women with breast cancer	United States	Stress and Health (3.519)	5 points	To assess changes in cerebral blood flow associated with a mindfulness-based arts therapy program and to correlate such changes with stress and anxiety in women with breast cancer
14	Chen et al., 2013	Qigong improves quality of life in women undergoing radiotherapy for breast cancer: results of a randomized controlled trial	China	Cancer (5.238)	5 points	To evaluate the effectiveness of Qigong on the quality of life (depressive symptoms, fatigue, sleep disturbances) of women undergoing and post-treatment for breast cancer
15	Lanctôt et al., 2016	The effects of the Bali Yoga program (BYP-BC) on reducing psychological symptoms in breast cancer patients receiving chemotherapy: results of a randomized, partially blinded, controlled trial	Canada	Journal Complementary Integrative Medicine (0.020)	7 points	To assess the effects of a Yoga intervention in reducing symptoms of depression and anxiety in breast cancer patients
16	Würtzen et al., 2013	Mindfulness significantly reduces self-reported levels of anxiety and depression: results of a randomised controlled trial among 336 Danish women treated for stage I-III breast cancer	Denmark	European Journal of Cancer (9.162)	8 points	To test the effect of a mindfulness-based program on depression and anxiety among women with breast cancer
17	Henderson et al., 2012	The effects of mindfulness-based stress reduction on psychosocial outcomes and quality of life in early-stage breast cancer patients: a randomized trial	United States	Breast Cancer Research and Treatment (4.872)	5 points	To determine the effect of mindfulness meditation on stress reduction, quality of life and psychosocial in women with breast cancer
18	Araújo et al., 2021	Effect of raja Yoga meditation on the distress and anxiety levels of women with breast cancer	Brazil	Religions (1.65)	8 points	To assess the effect of Raja Yoga meditation on the level of distress and anxiety in women with breast cancer
19	Odynets et al., 2019	Impact of different exercise interventions on anxiety and depression in breast cancer patients	Ukraine	Physiotherapy Quarterly (no impact factor)	5 points	To examine the impact of different exercise interventions on anxiety and depression in breast cancer patients
20	Yekta et al., 2017	The comparison of two types of relaxation techniques on postoperative state anxiety in candidates for the mastectomy surgery: a randomized controlled clinical trial	Iran	International Journal of Community based Nursing and Midwifery (no impact factor)	6 points	To investigate and compare the effects of Benson relaxation and rhythmic breathing techniques on postoperative anxiety
21	Kim et al., 2013	Effects of meditation on anxiety, depression, fatigue, and quality of life of women undergoing radiation therapy for breast cancer	South Korea	Complementary Therapies in Medicine (2.446)	7 points	To investigate the effects of meditation on anxiety, depression, fatigue and quality of life who are receiving radiation therapy for breast cancer
22	Yoon and Park, 2019	The effect of auricular acupressure on sleep in breast cancer patients undergoing chemotherapy: A single-blind, randomized controlled trial	South Korea	Applied Nursing Research (2.257)	8 points	To investigate the effects of auricular therapy on sleep quality in breast cancer patients

Sixteen studies declared that there were no conflict of interest[28,31-33,35-45,48], five studies did not provide this information[29,30,34,46,47], and a study claimed potential conflict of interest due to support from pharmaceutical companies[49].

Sixteen studies included control group, ten receiving usual and standard clinical care[31,32,33,40,42-49], in one study, there was no formal intervention, and the participants were able to participate in other than meditation activities[34], a study with educational activities on breast cancer[35], one study received placebo ear pressure[39] and three studies did not provide information about control group[30,38,49].

Interventions in the control group were therapy to increase emotional expressiveness[28], cognitive therapy with stimulus control and relaxation[29], stretching

Chart 2. Details of the studies selected

	Author/year	Intervention Group (number of participants)	Control group (number of participants)	Total duration of the intervention (number of weeks/number of sessions)	Frequency	Duration of the session	Intensity	Psychological variables	Instruments
1	Schellekens et al., 2017	Meditation (69)	Therapy to increase emotional expressiveness (70)	8 weekly sessions + 6 hours of silent retreat	-	90 minutes	-	Sleep disturbance; Stress and Quality of Life	POMS; C-SOSI; FACT-B
2	Irwin et al., 2017	Tai Chi Chih (control over physical function and arousal, meditation in motion) (45)	Cognitive behavioral therapy (cognitive therapy, stimulus control, and relaxation) (45)	3 months	-	120 minutes	-	Sleep quality; Fatigue, Depressive symptoms	PSQI; DSM-IV-TR; AIS; MFI; ESS; Inventory of depressive symptoms; YALE
3	Reich et al., 2017	Meditation (161)	Usual care: continued with standard clinic visits (161)	6 weeks	-	120 minutes	-	Depression; Anxiety; Stress; Sleep; Fatigue; Pain; Quality of life	Depression scale; STAI; PSS; MDASI; PSQI; MFI; BPI; ECog; SF-36
4	Chaoul et al., 2018	Tibetan Yoga (74)	Stretching program (68); Usual care (85)	12 weeks	4 dates	75 to 90 minutes	-	Sleep disorders; Fatigue	PSQI; BFI
5	Ratcliff et al., 2019	Mindfulness meditation (30)	Diaphragmatic breathing (30); Usual care (16)	Single session (during biopsy)	Single session	4 minutes	-	Anxiety; Pain	VAS; STAI; BPI
6	Ratcliff et al., 2016	Yoga (53)	Stretching (56); Usual care (54)	6 weeks	3 times a week	60 minutes	-	Quality of life; Depression; sleep disorders; Post-traumatic responses; Ability to accept	SF-36; CES-D; PSQI; IES; BFQ
7	Larkey et al., 2015	Qigong/Tai Chi meditative movement (42)	Qigong Sham (45)	12 weeks	2 times a week	60 minutes	Low	Fatigue, Sleep Disorders; Depression	FSI; PSQI; BDI
8	Molassiotis et al., 2012	Acupuncture (227)	Usual care more information on dealing with fatigue (75)	18 weeks	6 sessions per week	20 minutes	-	Fatigue; Anxiety; Depression; Quality of life	MFI; HADS; FACT-B
9	Molassiotis et al., 2013	Acupuncture (65)	Self-acupuncture (67); Usual care (65)	6 weeks	1 time a week	20 minutes	-	Fatigue; Anxiety; Depression; Quality of life	MFI; HADS; FACT-G
10	Loh et al., 2014	Qigong (66)	Aerobic exercises (placebo) (65); Standard medical care (66)	8 weeks	1 time a week	90 minutes	Low to moderate	Quality of life; Fatigue; Depression; Anxiety	FACT-B; FACT-F; DASS-21
11	Mao et al., 2014	Electroacupuncture (22)	Sham acupuncture (22); Waiting list (23)	8 weeks	2 times a week (2 weeks), 1 time a week (6 weeks)	-	-	Pain; Fatigue; Sleep quality; psychological suffering	BPI; BFI; PSQI; HADS
12	Ho et al., 2016	Dance Movement Therapy (72)	Standard care (75)	6 weeks	2 times a week	90 minutes	-	Stress; Anxiety; Fatigue; Pain; Sleep quality; Quality of life	PSS; HADS; BFI; BPI; PSQI; FACT-B

to be continued

Chart 2. continuation

	Author/year	Intervention Group (number of participants)	Control group (number of participants)	Total duration of the intervention (number of weeks/number of sessions)	Frequency	Duration of the session	Intensity	Psychological variables	Instruments
13	Monti et al., 2012	Meditation (8)	No further information (10)	8 weeks	-	-	-	Anxiety	SCL-90-R
14	Chen et al., 2013	Qigong (49)	Usual care (47)	5 to 6 weeks	-	40 minutes	-	Depression; Fatigue; sleep disorders; Quality of life	CES-D; BFI; PSQI; FACT-G
15	Lanctôt et al., 2016	Yoga (58)	Usual care (43)	8 weeks	-	90 minutes	-	Depression; Anxiety; Stress	BDI-II; STAI-Y; EVE; MOS
16	Würtzen et al., 2013	Meditation (168)	Standard clinical care (168)	8 sessions and a religious retreat	-	120 minutes	-	Anxiety; Depression; Anguish	SCL-90-R; CES-D
17	Henderson et al., 2012	Meditation (53)	Nutrition education intervention (52) Did not receive any formal intervention, but could do any activity, as long as it was not meditation (58)	8 weeks	3 times a week	120 minutes	-	Depression; Anxiety; Self esteem	BDI; BAI; RSS
18	Araújo et al., 2021	Meditation Practices (25)	Educational activities offered by the National Health System (SUS) (25)	4 dates	1 time a week	40 to 50 minutes	-	Anxiety; Depression	HADS
19	Odynets et al., 2019	Yoga (30)	Comparison group (1): swimming (50); Comparison group (2): Pilates (44)	12 months	3 times a week	60 minutes	Low to moderate	Anxiety; Depression	HADS
20	Yekta et al., 2017	Benson's Relaxation (30)	Comparison group: rhythmic breathing (30); Control group: did not receive any type of intervention (30)	-	-	20 minutes	-	Anxiety	CSAQ
21	Kim et al., 2013	Meditation (51)	Control group: there was no intervention (51)	6 weeks	2 times per week	60 minutes	-	Anxiety; Depression; Fatigue; Quality of life	HADS; PFS; EORTC-QLQ-C30
22	Yoon and Park, 2019	Auriculotherapy (20)	Control group: placebo auricular pressure (21)	6 weeks	6 times a week	-	-	Sleep quality	PSQI

Captions: POMS = Profile Of Moods State; C-SOSI = Calgary Symptoms of Stress Inventory; FACT-B = The Functional Assessment of Cancer Therapy – Breast; PSQI = Pittsburgh Sleep Quality Index; DSM-IV-TR = DSM-IV-TR Evaluation; AIS = Athens Insomnia Severity Scale; MFI = The Multidimensional Fatigue Inventory; ESS = Epworth Sleepiness Scale; YALE = Physical Activity Survey; STAI = The State-Trait Anxiety Inventory; PSS = Perceived Stress Scale; MDASI = The MD Anderson Symptom Inventory; BPI = Brief Pain Inventory; BFI = Brief Fatigue Inventory; BDI = Beck Depression Inventory; BDI-II= Beck Depression Inventory II; ECog = Everyday Cognition; SF-36 = Medical Outcomes Short-form Health Survey; VAS = Visual Analogue Scale; CES-D = Center for Epidemiologic Studies-Depression Scale; IES = Impact of Scale; BFQ = The Benefit Finding Questionnaire; FSI = Symptom Inventory; HADS = Hospital Anxiety and Depression Scale; FACT-G = The Functional Assessment of Cancer Therapy – General; FACT-F = The Functional Assessment of Cancer Therapy – Fatigue; DASS-21 = Depression Anxiety and Stress Scale; SCL-90-R = Symptom Checklist -90-revised; EVE = Stressful Life Events; MOS = Medical Outcomes Study; BAI = Beck Anxiety Inventory; RSS = Rosenberg Self-Esteem Scale; CSAQ = Cognitive-Somatic Anxiety Questionnaire; PFS = Piper Fatigue Scale; EORTC-QLQ-C30 = European Organization for Research and Treatment of Cancer Quality of Life Questionnaire – Breast Cancer; STAI-Y= State-Trait Anxiety Inventory.

program[41,43], diaphragmatic breathing program[42], Qigong Sham[48], self-acupuncture[45], aerobic exercises[46], simulated acupuncture[49], nutrition education[34], swimming and Pilates[36] and rhythmic breathing[37].

The interventions were namely, Mindfulness (meditation techniques)[28,30,33,34,38,40], Tai Chi (control over physical function and arousal, with meditative movements)[29], Tibetan Yoga program[41], meditation with a focus on breathing[42], Yoga[32,36,43], Qigong e Tai Chi[48], acupuncture[44,45], Qigong[31,46], electroacupuncture[49], dance movement therapy program[47], Raja Yoga[35], Benson relaxation[37] and auriculotherapy[39].

The period of interventions ranged from a single session[42] up to 12 months[28,36], one study reported 8 intervention sessions and a religious retreat[33]. A single study did not present the duration of the intervention[37].

The frequency of the interventions varied from single session[42], 4 sessions[41], 6 weekly sessions[44], 8 weekly sessions[28], once a week[35,45,46], twice a week[38,47,48], 3 times a week[34,36,43], 6 times a week[39], twice a week and once a week[49] and eight studies did not present the frequency of the interventions[28-33,37,40].

The duration of each session in most studies was up to 60 minutes[31,35-38,42-45,48] and in three studies this information was missing[30,39,49].

Only three studies reported the intensity of interventions, which were low[48] and low to moderate[36,46].

Therapists[28,29,44], meditation instructors[28,35], psychologist trained in meditation[33,40], Tibetan Yoga instructor[41], Yoga instructor[32,43], physical therapist[36,41,43], exercise physiologist[41,48], body-mind specialist[42], nurse[48], trained acupuncture therapists[45,49], dance instructor[46], dance therapist movement therapy[47], oriental medicine instructor and Qigong master[31], clinical mental health instructors and registered meditation practitioners and nutritionists[34], ear therapist[39] and in three studies this information was missing[30,37,38].

The interventions occurred at the University[41,47], biopsy room[42], hospital[32,35,47] and in seventeen studies this information was missing[28-31,33,34,36-39,40,43-46,48,49].

All studies aimed to assess participants at baseline and post-intervention. Some studies have included mid-intervention assessments[30,31,36,39,47,49] and follow-up, ranging from 1 month to 24 months after the intervention[29,31-34,40,41,43,45,46,48,49].

The psychological outcomes found were sleep disturbance in 9 studies[28,29,31,39-41,43,47,48], stress, 4 studies[28,32,40,47], quality of life, 9 studies[28,31,38,40,43-47], fatigue, 10 studies[29,31,38,40,41,44-48], depressive symptoms, 14 studies[29,31-36,38,40,43-46,48], anxiety, 13 studies[30,32-38,40,42,44-47], pain, with 3 studies[40,42,47], anguish, 1 study[33] and self-esteem, 1 study[34].

The assessment of the quality of the studies is shown in Chart 3. It is noted that the studies had a higher risk of bias in relation to "blinding of participants and staff" and "blinding in the outcome assessment", as most of them were classified as high or uncertain because they do not provide enough data for the assessment. Also, that the category that presented low risk of bias was "random sequence generation", considered low in most studies, corresponding to the method utilized to generate the sequence of participants randomly.

16 studies were of moderate to high quality (scores greater than 6 points) on the PEDro scale, which shows that the studies followed the eligibility criteria, such as randomization, blinding and description of losses at follow-up.

DISCUSSION

Meditation[28,30,33-35,37,38,40,42] and Yoga[32,36,41,43] were the most frequent interventions, it is a popular practice with simple methods, with no need of specific materials. This predominance seems to suggest the authors' option for body movement conservative activities in relation to technique, volume and intensity, which may indicate a certain insecurity in prescribing more demanding exercises to the group studied.

Meditation interventions were still characterized by being mostly carried out in groups lasting approximately 20 to 60 minutes, along with psychoeducation activities, in addition to retreats for experiences sharing and religion-centered, but the intensities in these cases were not addressed, as well as the weekly frequency, which probably did not change the results of the studies.

There are scarce data on dose response, such as frequency, intensity of interventions in Yoga activities, and duration, since the level of intensity is not clearly defined in the studies, as well as the sessions frequency. It is pointed out in the studies of El-Hashimi and Gorey[17] and O'Neill et al.[50], that the intensity of Yoga interventions needs to be light, given the high levels of fatigue in breast cancer patients. As it is suggested to carry out the interventions with a frequency of one to three times a week, with sessions of 60 to 90 minutes[17], which was not presented in most of the studies included, there is paucity of details on the dose response, leaving margin for further studies with Yoga in patients with breast cancer.

Among the studies of interventions with acupuncture[44,45,49], the results concur with the study by Zhang et al.[14], where they showed improvement in fatigue, anxiety, quality of life, reduction in pain and sleep disturbances. This can be seen as a safe and effective intervention[51,52], since it is a complementary therapy to

Chart 3. Summary of methodological quality: authors' assessment of the scale items for each study included

COCHRANE RISK OF BIAS TOOL: RANDOMIZED CLINICAL TRIALS							
Author/Year	**Random sequence generation**	**Allocation sequence hiding**	**Masking of participants and staff**	**Masking in outcome assessment**	**Incomplete outcome data**	**Selective outcome reporting**	**Other sources of bias**
Schellekens et al., 2017	UNCERTAIN	UNCERTAIN	HIGH	UNCERTAIN	HIGH	LOW	LOW
Irwin et al., 2017	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Reich et al., 2017	HIGH	HIGH	HIGH	UNCERTAIN	UNCERTAIN	LOW	LOW
Chaoul et al., 2018	HIGH	UNCERTAIN	HIGH	HIGH	HIGH	LOW	UNCERTAIN
Ratcliff et al., 2019	LOW	UNCERTAIN	LOW	HIGH	HIGH	UNCERTAIN	HIGH
Ratcliff et al., 2016	HIGH	UNCERTAIN	HIGH	UNCERTAIN	HIGH	LOW	HIGH
Larkey et al., 2015	LOW	UNCERTAIN	LOW	HIGH	HIGH	LOW	LOW
Molassiotis et al., 2012	LOW	LOW	LOW	HIGH	LOW	LOW	UNCERTAIN
Molassiotis et al., 2013	LOW	HIGH	HIGH	HIGH	HIGH	LOW	UNCERTAIN
Loh et al., 2014	LOW	HIGH	HIGH	UNCERTAIN	HIGH	UNCERTAIN	UNCERTAIN
Mao et al., 2014	LOW	LOW	HIGH	UNCERTAIN	HIGH	LOW	UNCERTAIN
Ho et al., 2016	LOW	LOW	HIGH	HIGH	LOW	LOW	LOW
Monti et al., 2012	HIGH	HIGH	HIGH	HIGH	UNCERTAIN	LOW	UNCERTAIN
Chen et al., 2013	HIGH	HIGH	HIGH	HIGH	LOW	LOW	UNCERTAIN
Lanctôt et al., 2016	LOW	LOW	HIGH	HIGH	LOW	UNCERTAIN	UNCERTAIN
Würtzen et al., 2013	LOW	HIGH	HIGH	HIGH	LOW	UNCERTAIN	UNCERTAIN
Henderson et al., 2012	UNCERTAIN	LOW	HIGH	HIGH	LOW	LOW	UNCERTAIN
Araújo et al., 2021	LOW	LOW	HIGH	LOW	UNCERTAIN	UNCERTAIN	UNCERTAIN
Odynets et al., 2019	HIGH	HIGH	HIGH	HIGH	UNCERTAIN	UNCERTAIN	UNCERTAIN
Yekta et al., 2017	HIGH	HIGH	HIGH	HIGH	UNCERTAIN	UNCERTAIN	UNCERTAIN
Kim et al., 2013	LOW	LOW	HIGH	HIGH	UNCERTAIN	UNCERTAIN	UNCERTAIN
Yoon and Park, 2019	LOW	LOW	HIGH	HIGH	UNCERTAIN	LOW	LOW

conventional medical treatments that must be applied by a skilled technical professional in this practice.

Only one study addressed dance interventions[47], as well as auriculotherapy[39]. Dance intervention improved stress and pain, but there are scarce studies specifically involving women with breast cancer; overall, only systematic reviews whose sample consists in individuals with cancer exist, showing that dance can be beneficial over the quality-of-life of patients with cancer[53], which once again offers the possibility of new studies with this theme because it is easy to apply and pleasant for those engaged. The findings of this review about auriculotherapy intervention demonstrated beneficial results in sleep quality in concurrence with the study by Yoon and Park[39] who

investigated women during chemotherapy. New studies are being developed on the effects of auriculotherapy on depression in women with breast cancer, with the recent publication of a systematic review protocol[54].

Three studies with the practice of Qigong[31,46,48] were included, as the findings corroborate the systematic review and meta-analysis by Meng et al.[15], where, in addition to improving quality-of-life and decreasing depression, there was an improvement in anxiety symptoms. Only one study addressing Tai Chi was selected[29], its findings are related to the improvement of sleep quality. There are findings in other systematic reviews and meta-analyses on the improvement in quality-of-life, fatigue, self-esteem and depression of the practice of Tai Chi in women with breast cancer[52,55].

Despite the lack of accurate information on the total duration of the interventions, the duration of the sessions and the missing information on the frequency and intensity of most interventions, an improvement of the psychological aspects was found. However, without essential information as pointed out to determine the effectiveness of an intervention, it is difficult to evaluate the influence these interventions had on psychological variables, as well as on their future replication[56].

There was a variety of instruments used to measure the psychological aspects, and there is no standardization to assess these elements, when it comes to interventions through body practices. The variable sleep quality is the only one following a standard, specifically the Pittsburg Sleep Quality Index (PSQI), a simple, well accepted by the patients and widely applied questionnaire[57].

Most studies brought information about the professionals who applied the interventions, showing the importance of supervising the safe and effective performance of these body practices[56] by the patients. However, the place where these interventions were carried out was missing in most of the studies, which impedes an adequate assessment of the extent of the influence on the results because the place can improve the performance of the activities.

Regarding the methodological quality of the studies, the categories involving masking of participants and professionals and masking the evaluation of the outcome, presented high risk of bias, and uncertain bias, most likely suggesting that the study participants were aware of the type of intervention received, similar to the professionals who were also cognizant of the assignment of the participants to the interventions. However, it is known that a few body practices cannot be blinded, because the participants need to know what activities are being developed.

The age of the participants ranged from 18 to 83 years old. The body practices varied widely because the studies were developed in culturally different continents as North America, South America, Europe and Asia, possibly suggesting that non-pharmacologic interventions can be applied in any country, population and age.

CONCLUSION

The studies are strong in terms of methodology, and most of them were monitored by professionals, with a wide cultural and age range.

The use of different questionnaires and different protocols addressing the duration, time, frequency and intensity of interventions is an important limitation, as it impedes comparisons between studies.

Another limitation of this systematic review was the different understandings of what body practices are in different languages and cultures, as well as the heterogeneity of the evaluated outcomes. Some studies had methodological limitations, which makes comparisons between other studies difficult.

The body practices analyzed are safe options for patients at different stages of breast cancer. Randomized clinical trials with more methodological rigor focused on body practices should be encouraged to find more evidences since safety and effectiveness are already a strong aspect of these practices, being potentially an adjuvant treatment for breast cancer.

More protocols addressing body practices and clear standards of performance are necessary.

This review brings contributions to health investigators, as well as doctors, nurses, physiotherapists and physical education professionals who seek to promote better conditions and alternative treatments for women who survive and are undergoing breast cancer treatment.

CONTRIBUTIONS

Juliana da Silveira contributed to the study conception, methodology, analysis, wording, review and administration of the project; Danielly Yani Fausto contributed to the methodology, analysis, wording, review and editing; Patricia Severo dos Santos Saraiva contributed to the methodology, analysis, wording review and editing; Leonessa Boing contributed to the wording, review and editing; Vanessa Bellani Lyra: Writing contributed to the review and editing; Anke Bergmann contributed to wording, review and editing; Adriana Coutinho de Azevedo Guimarães contributed to the study concept, wording, review and editing, supervision and administration of the project.

DECLARATION OF CONFLICT OF INTERESTS

The author Anke Bergmann declares potential conflict of interests because she is the scientific-editor of INCA's *Revista Brasileira de Cancerologia*. The other authors have no conflict of interests to declare.

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