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Diagnosis and Treatment of Patients with early and advanced Breast Cancer

Complementary Therapy Survivorship

Screened Data Sources:

Pubmed	2012 - 01/2020
ASCO	2015 – 2019
SABCS	2015 – 2019
EBCC	2015 – 2019
Cochrane library:	summary Jan. 2020:



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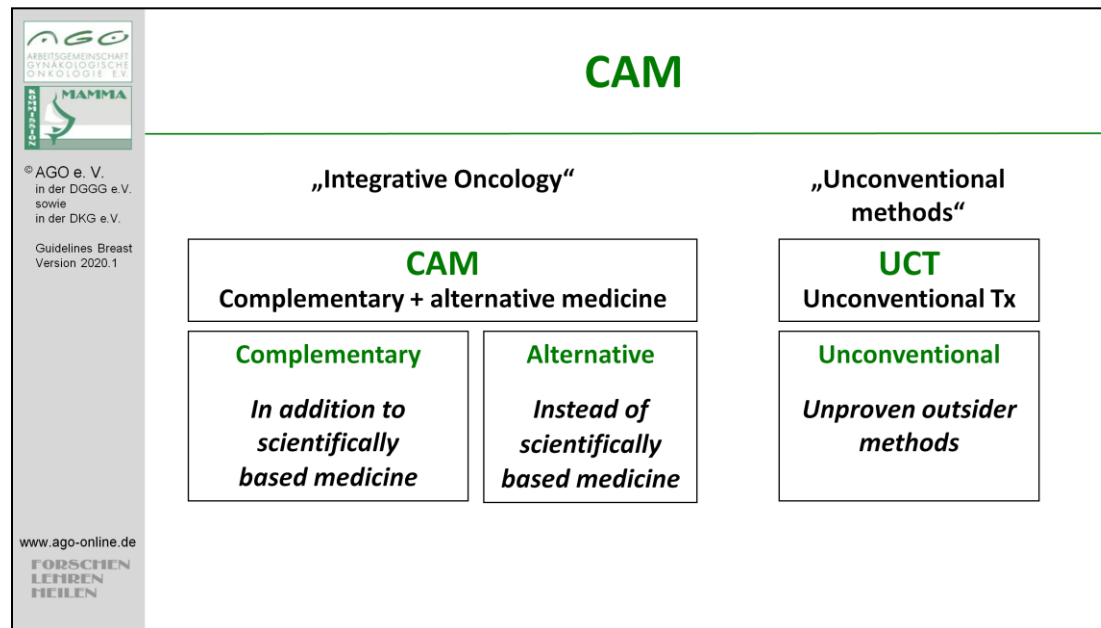
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Complementary Therapy – Hormonal Treatment and Alternatives in Breast Cancer Survivors – Survivorship

- **Versions 2002–2019:**
Albert / Bauerfeind / Blohmer / Fersis / Friedrich / Gerber / Göhring / Hanf / Janni / Kümmel / Lück / von Minckwitz / Nitz / Oberhoff / Rhiem / Scharl / Schmidt / Schütz / Thomssen
- **Version 2020:**
Kümmel / Schütz

Screened Data Sources:

Pubmed	2012 - 01/2020
ASCO	2015 – 2019
SABCS	2015 – 2019
EBCC	2015 – 2019
Cochrane library:	summary Jan. 2020:




Komplementäre Verfahren werden parallel zur konventionellen Therapie angewendet und unterscheiden sich von alternativen Verfahren dadurch, dass sie den Wert der konventionellen Verfahren nicht in Frage stellen, sondern sich als Ergänzung verstehen

Onkolleitlinienprogramm

1. Witt CM et al.. A Comprehensive Definition for Integrative Oncology. J Natl Cancer Inst Monogr (2017) 2017(52): lgx012

“Integrative oncology is a patient-centered, evidence-informed field of cancer care that utilizes mind and body practices, natural products, and/or lifestyle modifications from different traditions alongside conventional cancer treatments. Integrative oncology aims to optimize health, quality of life, and clinical outcomes across the cancer care continuum and to empower people to prevent cancer and become active participants before, during, and beyond cancer treatment.”



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General Considerations

	Oxford		
	LoE	GR	AGO
■ CAM instead of loco-regional interventions	2b	B	--
■ CAM instead of systemic treatment	2b	B	--

- Patients should be asked and advised about their use of CAM modalities
- Diagnostic procedures in connection with complementary and alternative therapy concepts without evidence (e.g. iris diagnostics, bioresonance) should not be recommended.
- *During anti-cancer treatment:* Beware of drug interactions

1. Saquib J, Parker BA, Natarajan L, et al. Prognosis following the use of complementary and alternative medicine in women diagnosed with breast cancer. Complement Ther Med. 2012 Oct;20(5):283-90. doi: 10.1016/j.ctim.2012.04.002. Epub 2012 Apr 27.
2. Guha N, Kwan ML, Quesenberry CP, et al: Soy isoflavones and risk of cancer recurrence in a cohort of breast cancer survivors: the Life After Cancer Epidemiology study. Breast Cancer Res Treat. 2009;118(2):395–405, pmid:19221874.
3. Johnson SB et al.. Use of Alternative Medicine for Cancer and Its Impact on Survival. JNCI J Natl Cancer Inst (2018) 110(1): djx145.
4. Fremd C et al.. Use of complementary and integrative medicine among German breast cancer patients: predictors and implications for patient care within the PRAEGNANT study network. Arch Gynecol Obstet. 2017 May;295(5):1239-1245. doi: 10.1007/s00404-017-4348-2. Epub 2017 Mar 22.
5. Samuels N et al.. Unmonitored use of herbal medicine by patients with breast cancer: reframing expectations. J Cancer Res Clin Oncol (2017) 143:2267–2273
6. Smith PJ et al.. Complementary and alternative medicine use by patients receiving curative-intent chemotherapy. Asia-Pacific Journal of Clinical Oncology 2016; 12: 265–274
7. Greenlee H et al.. Association Between Complementary and Alternative Medicine Use and Breast Cancer Chemotherapy Initiation: The Breast Cancer Quality of Care (BQUAL) Study. JAMA Oncol. 2016 Sep 1;2(9):1170-6. doi: 10.1001/jamaoncol.2016.0685
8. Johnson SB et al. Complementary Medicine, Refusal of Conventional Cancer Therapy, and Survival Among Patients With Curable Cancers. JAMA Oncol. doi:10.1001/jamaoncol.2018.2487 published online July 19, 2018.

9. Johnson SB, Park HS, Gross CP et al. Use of Alternative Medicine for Cancer and Its Impact on Survival. J Natl Cancer Inst. 2018 Jan 1;110(1). doi: 10.1093/jnci/djx145.

Statement zu diagnostischen Verfahren: analog S3-Leitlinie, Konsensbasierte Empfehlung 6.53, S. 302

	Oxford		
	LoE	GR	AGO
Preoperative:			
▪ Hypnosis (reduces anxiety, pain, nausea)	1b	B	+
Postoperative:			
▪ Acupuncture (pain relief, anxiety)	1b	B	+/-
▪ Acupuncture (nausea, vomiting)	2b	B	+
▪ Massage therapy (pain relief)	2b	C	+/-
▪ Early postoperative exercise reduces upper-limb dysfunction (beware: increased wound drainage)	1a	A	+
▪ Physical exercise to reduce breast cancer related secondary lymphedema as a prophylaxis of lymph edema	1a	A	+
	1b	B	+/-
▪ Prophylactic lymphatic drainage	1b	B	-
▪ Yoga (arm and shoulder pain)	2b	C	+
▪ Music therapy (reduces pain after mastectomy)	2b	C	+/-



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Hypnosis

1. Amraoui J, Pouliquen C, Fraisse J et al. (2018) Effects of a Hypnosis Session Before General Anesthesia on Postoperative Outcomes in Patients Who Underwent Minor Breast Cancer Surgery: The HYPNOSEIN Randomized Clinical Trial. JAMA Netw Open.;1(4):e181164. doi: 10.1001/jamanetworkopen.2018.1164.
2. Cramer H, Lauche R, Paul A, et al: Hypnosis in Breast Cancer Care: A Systematic Review of Randomized Controlled Trials. Integr Cancer Ther. 2015 Jan;14(1):5-15. Epub 2014 Sep 18.
3. Montgomery GH, David D, Kangas M, et al. (2014) Randomized Controlled Trial of a Cognitive-Behavioral Therapy Plus Hypnosis Intervention to Control Fatigue in Patients Undergoing Radiotherapy for Breast Cancer. JCO DOI 10.1200/JCO.2013.49.3437
4. Montgomery GH, Bovbjerg DH, Schnur JB et al. (2007): A randomized clinical trial of a brief hypnosis intervention to control side effects in breast surgery patients. J Nat Cancer Inst; 99:1304–1312.
5. Schnur JB, Bovbjerg DH, David D et al. (2008): Hypnosis decreases presurgical distress in excisional breast biopsy patients. Anesth Analg , 106(2):440-4
6. Montgomery GH, Schnur JB, Kravits K. Hypnosis for cancer care: Over 200 years young. CA Cancer J Clin. 2012 Nov 20. doi: 10.3322/caac.21165.

Acupuncture and Postoperative Nausea and Vomiting / Pain

1. Mallory MJ et al.: Acupuncture in the postoperative setting for breast cancer patients: a feasibility study. *Am J Chin Med*. 2015;43(1):45-56.
2. Chao LF et al.: The efficacy of acupoint stimulation for the management of therapy-related adverse events in patients with breast cancer: a systematic review. *Breast Cancer Res Treat* (2009) 118:255–267.
3. Quinlan-Woodward J, Gode A, Dusek JA: Assessing the Impact of Acupuncture on Pain, Nausea, Anxiety, and Coping in Women Undergoing a Mastectomy. *Oncol Nurs Forum*. 2016 Nov 1;43(6):725-732.
4. Giron PS, Haddad CA, Lopes de Almeida: Effectiveness of acupuncture in rehabilitation of physical and functional disorders of women undergoing breast cancer surgery. *Support Care Cancer*. 2016 Jun;24(6):2491-6.
5. Chiu HY, Hsieh YJ, Tsai PS. Systematic review and meta-analysis of acupuncture to reduce cancer-related pain. *Eur J Cancer Care (Engl)*. 2017 Mar;26(2). doi: 10.1111/ecc.12457. Epub 2016 Feb 7

Massage Therapy

1. Lee SH, Kim JY, Yeo S et al: Meta-Analysis of Massage Therapy on Cancer Pain. *Integr Cancer Ther*. 2015 Jul;14(4):297-304.
2. Pan YQ, Yang KH, Wang YL, et al: Massage interventions and treatment-related side effects of breast cancer: a systematic review and meta-analysis. *Int J Clin Oncol*. 2014 Oct;19(5):829-41.

Postoperative exercise

1. De Groef A, Van Kampen M, Dieltjens E, et al. Effectiveness of postoperative physical therapy for upper-limb impairments after breast cancer treatment: a systematic review. *Arch Phys Med Rehabil*. 2015 Jun;96(6):1140-53. doi: 10.1016/j.apmr.2015.01.006. Epub 2015 Jan 13. Review.
2. McNeely ML, Campbell K, Ospina M et al.: Exercise interventions for upper-limb dysfunction due to breast cancer treatment. *Cochrane Database of Systematic Reviews* 2010, Issue 6. Art. No.: CD005211. DOI: 10.1002/14651858.CD005211.pub2.
3. Cavanaugh KM.: Effects of Early Exercise on the Development of Lymphedema in Patients With Breast Cancer Treated With Axillary Lymph Node Dissection. *J Oncol Pract*. 2011 March; 7(2): 89–93.
4. Anderson RT, Kimmick GG, McCoy TP, et al. A randomized trial of exercise on well-being and function following breast cancer surgery: the RESTORE trial. *J Cancer Surv* 2012;6(2):172-81
5. Eyigor S, Uslu R, Apaydin S, et al. Can Yoga have any effect on shoulder and arm pain and quality of life in patients with breast cancer? A randomized, controlled, single-blind trial. *Complementary Therapies in Clinical Practice* 2018;32:40-45.

Reduction secondary lymphedema

1. Baumann FT, Reike A, Reimer V et al: Effects of physical exercise on breast cancer –related secondary lymphedema : a systematic review Br Ca res Treatment 2018; 170: 1-13

Prevention lymphedema

1. Ammitzbøll G, Johansen C, Lanng C, Andersen EW et al.. Progressive resistance training to prevent arm lymphedema in the first year after breast cancer surgery: Results of a randomized controlled trial. Cancer. 2019 May 15;125(10):1683-1692. doi: 10.1002/cncr.31962. Epub 2019 Jan 11.
2. Baumann FT, Reike A, Hallek M, et al. (2018) Does Exercise have a preventive effect on secondary lymphedema in breast cancer patients following local treatment – a systemic review. Breast Care 13(5): 380–385. DOI. 10.1159/000487428

Prophylactic lymph drainage


1. Devoogdt N, Geraerts I, Van Kampen M, et al. Manual lymph drainage may not have a preventive effect on the development of breast cancer-related lymphoedema in the long term: a randomised trial. J Physiother. 2018 Oct;64(4):245-254. doi: 10.1016/j.jphys.2018.08.007. Epub 2018 Sep 18.
2. Devoogdt N, Christiaens MR, Geraerts I, et al: Effect of manual lymph drainage in addition to guidelines and exercise therapy on arm lymphoedema related to breast cancer: randomised controlled trial. BMJ 2011;343:d5326 doi: 10.1136/bmj.d5326
3. Li L, Yuan L, Chen X: Current Treatments for Breast Cancer-Related Lymphoedema: A Systematic Review. Asian Pac J Cancer Prev. 2016 Nov 1;17(11):4875-4883.

Music therapy

1. Li, X.M., Yan H, Zhou KN, et al. Effects of music therapy on pain among female breast cancer patients after radical mastectomy: results from a randomized controlled trial. Breast Cancer Res Treat, 2011. 128(2): p. 411-9.
2. Binns-Turner, P.G., Wilson LL, et al. Perioperative music and its effects on anxiety, hemodynamics, and pain in women undergoing mastectomy. Aana j, 2011. 79(4 Suppl): p. S21-7.

3. Bradt, J., et al., Music interventions for improving psychological and physical outcomes in cancer patients. Cochrane Database Syst Rev, 2016(8): p. Cd006911.

	Complementary Treatment While on Cancer Treatment – Impact on Toxicity I		
	LoE	GR	AGO
During anti-cancer treatment: Beware of drug interactions			
<ul style="list-style-type: none"> Mistletoe (<i>Viscum album</i>) in order to reduce side effects Thymic peptides lower risk of severe infections Ginseng in order to reduce cancer related fatigue; note: interacts with cytochrome P enzymes e.g. CYP 3A4 Ganoderma Lucidum may improve fatigue, note: inhibits cytochrome P enzymes (e.g. CYP 3A4) L-Carnitine <ul style="list-style-type: none"> given for prevention of toxicity; however, increased chemotherapy-induced peripheral neuropathy Improvement of cancer related fatigue Curcumin adjunct to reduce radiation-induced dermatitis Ginger adjunct to guideline-oriented medication to treat chemotherapy induced nausea & vomiting – beware of drug interactions 	1a 2a 2b 2b 1b 1b 1b 1b	B B C C B B B C	+/- +/- - - -- - +/- +/-



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- Li Y, Wang J, Lin F: A Methodology for Cancer Therapeutics by Systems Pharmacology-Based Analysis: A Case Study on Breast Cancer-Related Traditional Chinese Medicines. PLoS One. 2017 Jan 9;12(1):e0169363.
- Farahmand L, Darvishi B, Majidzadeh-A K: Naturally occurring compounds acting as potent anti-metastatic agents and their suppressing effects on Hedgehog and WNT/ β -catenin signalling pathways. Cell Prolif. 2017 Feb;50(1). doi: 10.1111/cpr.12299.
- Cramer H, Lauche R, Klose P: Yoga for improving health-related quality of life, mental health and cancer-related symptoms in women diagnosed with breast cancer. Cochrane Database Syst Rev. 2017 Jan 3;1:CD010802.
- Neuhouser ML, Smith AW, George SM: Use of complementary and alternative medicine and breast cancer survival in the Health, Eating, Activity, and Lifestyle Study. Breast Cancer Res Treat. 2016 Dec;160(3):539-546.

Mistletoe

- Ostermann T, Appelbaum S, Poier D, et al.: A Systematic Review and Meta-Analysis on the Survival of Cancer Patients Treated with a Fermented *Viscum album* L. Extract (Iscador) – an Update of Findings. Compl Med Res. 2019. In press.
- Freuding M, Keinki C, Micke O, et al.: Mistletoe in oncological treatment: a systematic review : Part 1: survival and safety. J Cancer Res Clin Oncol. 2019 Mar;145(3):695-707

3. Freuding M, Keinki C, Kutschan S, et al.: Mistletoe in oncological treatment: a systematic review : Part 2: quality of life and toxicity of cancer treatment. *J Cancer Res Clin Oncol*. 2019;145(4):927-939.
4. Loef M, Walach H. Quality of life in cancer patients treated with mistletoe: a systematic review and meta-analysis. *Compl Med Res*. 2019. In press.
5. Weissenstein U, Kunz M, Oufir M, et al.: Absence of herb-drug interactions of mistletoe with the tamoxifen metabolite (E/Z)-endoxifen and cytochrome P450 3A4/5 and 2D6 in vitro. *BMC Complement Altern Med*. 2019;19:23.
6. Thronicke A, Steele ML, Grah C, et al.: Clinical safety of combined therapy of immune checkpoint inhibitors and *Viscum album* L. therapy in patients with advanced or metastatic cancer. *BMC CAM*. 2017;17:534.
7. Marvibaigi M, Supriyanto E, Amini N, et al: Preclinical and clinical effects of mistletoe against breast cancer. *BioMed research international* 2014;2014:785479.
8. Shneerson C, Taskila T, Gale N, et al: The effect of complementary and alternative medicine on the quality of life of cancer survivors: A systematic review and meta-analyses. *Complementary therapies in medicine* 2013;21:417-429.
9. Troger W, Zdrade Z, Stankovic N, et al: Five-year follow-up of patients with early stage breast cancer after a randomized study comparing additional treatment with *viscum album* (L.) extract to chemotherapy alone. *Breast cancer : basic and clinical research* 2012;6:173-180.
10. Troger W, Zdrade Z, Tisma N, et al: Additional therapy with a mistletoe product during adjuvant chemotherapy of breast cancer patients improves quality of life: An open randomized clinical pilot trial. *Evidence-based complementary and alternative medicine : eCAM* 2014;2014:430518.
11. Weissenstein U, Kunz M, Urech K, et al: Interaction of standardized mistletoe (*viscum album*) extracts with chemotherapeutic drugs regarding cytostatic and cytotoxic effects in vitro. *BMC complementary and alternative medicine* 2014;14:6.
12. Pelzer F, Tröger W. Complementary Treatment with Mistletoe Extracts During Chemotherapy: Safety, Neutropenia, Fever, and Quality of Life assessed in a randomized study. *JAC* 2018;24:954-961.

Thymus

1. Wolf E, Milazzo S, Boehm K, et al. Thymic peptides for treatment of cancer patients. *Cochrane Database of Systematic Reviews* 2012, Issue 2. Art. No.: CD003993. DOI: 10.1002/14651858.CD003993.pub3.

Ginseng, Ganoderma lucidum

1. Leggett S1, Koczwara B, Miller M. The impact of complementary and alternative medicines on cancer symptoms, treatment side effects, quality of life, and survival in women with breast cancer--a systematic review. *Nutr Cancer*. 2015;67(3):373-91.
2. Bao, P. P., W. Lu, Y. Cui, Y et al(2012). "Ginseng and Ganoderma lucidum use after breast cancer diagnosis and quality of life: a report from the Shanghai Breast Cancer Survival Study." *PLoS One* 7(6): e39343.
3. Jin X, Ruiz Beguerie J, Sze Daniel M-y et al: Ganoderma lucidum (reishi mushroom) for cancer treatment. *Cochrane Database of Systematic Reviews* 2012
4. JL Ryan et al.: Ginger (Zingiberofficinale) reduces acute chemotherapy-induced nausea: a URCC CCOP study of 576 patients. *Support Care Cancer* 2012;20(7):1479-89
5. Karimi N, Roshan VD: Change in adiponectin and oxidative stress after modifiable lifestyle interventions in breast cancer cases. *Asian Pacific journal of cancer prevention : APJCP* 2013;14:2845-2850.

L-Carnitine

1. Hershman DL, Unger JM, Crew K et al.: Randomized double-blind placebo-controlled trial of acetyl-L-carnitine for the prevention of taxane-induced neuropathy in women undergoing adjuvant breast cancer therapy. *J Clin Oncol*. 2013 Jul 10;31(20):2627-33
2. Cruciani RA, Zhang JJ, Manola J et al. L-carnitine supplementation for the management of fatigue in patients with cancer: an eastern cooperative oncology group phase III, randomized, double-blind, placebo-controlled trial. *J Clin Oncol*. 2012 Nov 1;30(31):3864-9

Curcumin

1. Ryan, J. L., C. E. Heckler, M. Ling, et al (2013). "Curcumin for radiation dermatitis: a randomized, double-blind, placebo-controlled clinical trial of thirty breast cancer patients." *Radiat Res* 180(1): 34-43.
2. Kumar P, Kadakol A, Shasthrula P, et al: Curcumin as an adjuvant to breast cancer treatment. *Anti-cancer agents in medicinal chemistry* 2015
3. Bandyopadhyay D: Farmer to pharmacist: Curcumin as an anti-invasive and antimetastatic agent for the treatment of cancer. *Frontiers in chemistry* 2014;2:113.

Ingwer

1. Thamlikitkul L, Srimuninnimit V, Akewanlop C, et al. Efficacy of ginger for prophylaxis of chemotherapy-induced nausea and vomiting in breast cancer patients receiving adriamycin-cyclophosphamide regimen: a randomized, double-blind, placebo-controlled,

- crossover study. Support Care Cancer. 2017 Feb;25(2):459-464. doi: 10.1007/s00520-016-3423-8. Epub 2016 Oct 6.
2. Sanaati F, Najafi S, Kashaninia Z, et al. Effect of Ginger and Chamomile on Nausea and Vomiting Caused by Chemotherapy in Iranian Women with Breast Cancer. Asian Pac J Cancer Prev. 2016;17(8):4125-9.

Complementary Treatment While on Cancer Treatment – Impact on Toxicity II			
	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> Antioxidant supplements <ul style="list-style-type: none"> → various antioxidative extracts to reduce anthracyclin-induced cardiotoxicity High dose vitamin C Vitamine E Selenium for alleviating therapy side effects Co-Enzyme Q 10 (fatigue, QoL) Proteolytic enzymes for reduction of chemotherapy-induced toxicity Chinese herbal medicine improves wound healing Oxygen and ozone therapy Short-term fasting (QoL, Fatigue) 	1b 2b 1b 2b 1b 1b 3b 1b 5 3b	B B C D B B B B D C	- +/- - - - - - -*inf -- +/-*
inf: i.v.-infusion (in Germany not approved) * treatment in clinical trials recommended			

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General

1. Zhu L, Li L, Li Y: Chinese Herbal Medicine as an Adjunctive Therapy for Breast Cancer: A Systematic Review and Meta-Analysis. Evid Based Complement Alternat Med. 2016;2016:9469276. doi: 10.1155/2016/9469276.
2. McPherson L, Cochrane S, Zhu X: Current Usage of Traditional Chinese Medicine in the Management of Breast Cancer: A Practitioner's Perspective. Integr Cancer Ther. 2016 Sep;15(3):335-42. doi: 10.1177/1534735415607656.

Antioxidant supplements

1. Jung AY, Cai X, Thoene K, Obi N et al. Antioxidant supplementation and breast cancer prognosis in postmenopausal women undergoing chemotherapy and radiation therapy. Am J Clin Nutr. 2019 Jan 1;109(1):69-78. doi: 10.1093/ajcn/nqy223.
2. Greenlee H, Hershman DL, Jacobson JS: Use of antioxidant supplements during breast cancer treatment: a comprehensive review. Breast Cancer Res Treat. 2009 Jun;115(3):437-52.
3. S.-K. Myung, Y. Kim, W. Ju et al.: Effects of antioxidant supplements on cancer prevention: meta-analysis of randomized controlled trials. Annals of Oncology 21: 166–179, 2010.
4. Harvie M: Nutritional supplements and cancer: Potential benefits and proven harms. American Society of Clinical Oncology educational book / ASCO American Society of Clinical Oncology Meeting 2014:e478-486.
5. van Dalen EC, Caron HN, Dickinson HO, et al: Cardioprotective interventions for cancer patients receiving anthracyclines. Cochrane

Database Syst Rev 2011;Cd003917.

6. The Protective Role of Phenolic Compounds Against Doxorubicin-induced Cardiotoxicity: A Comprehensive Review. Razavi-Azarkhiavi K, Iranshahy M, Sahebkar A, et al. Nutr Cancer. 2016 Aug-Sep;68(6):892-917. doi: 10.1080/01635581.2016.1187280. Epub 2016 Jun 24. Review
7. Drugs R D. 2012 Jun 1;12(2):101-6. doi: 10.2165/11632530-000000000-00000. Protective effects of salidroside on epirubicin-induced early left ventricular regional systolic dysfunction in patients with breast cancer.
8. Zhang H1, Shen WS, Gao CH, et al.

Vitamin C

1. Ohno S, Ohno Y, Suzuki N et al.: High-dose Vitamin C (Ascorbic Acid) Therapy in the Treatment of Patients with Advanced Cancer. Anticancer Res. 2009 Mar; 29(3):809-15. Review.
2. Heaney M, Gardner J, Karasavvas N et al.: Vitamin C antagonizes the cytotoxic effects of antineoplastic drugs. Cancer Res. 2008 Oct 1;68(19):8031-8.
3. PLoS One. 2015 Apr 7;10(4):e0120228. doi: 10.1371/journal.pone.0120228. eCollection 2015. High-dose intravenous vitamin C combined with cytotoxic chemotherapy in patients with advanced cancer: a phase I-II clinical trial. Hoffer LJ1, Robitaille L2, Zakarian R3, et al..
4. Sci Transl Med. 2014 Feb 5;6(222):222ra18. doi: 10.1126/scitranslmed.3007154. High-dose parenteral ascorbate enhanced chemosensitivity of ovarian cancer and reduced toxicity of chemotherapy. Ma Y1, Chapman J, Levine M, et al.

Selen

1. Dennert G, Horneber M. Selenium for alleviating the side effects of chemotherapy, radiotherapy and surgery in cancer patients. Cochrane Database of Systematic Reviews 2010, Issue 11. Art. No.: CD005037. DOI: 10.1002/14651858.CD005037.pub2.
2. Greenlee H, Hershman DL, Jacobson JS: Use of antioxidant supplements during breast cancer treatment: a comprehensive review. Breast Cancer Res Treat. 2009 Jun;115(3):437-52.

Coenzym Q10

1. Lesser GJ, Case D, Stark N, et al. A randomized, double-blind, placebo-controlled study of oral coenzyme Q10 to relieve self-reported treatment-related fatigue in newly diagnosed patients with breast cancer. J Support Oncol 2013;11(1):31-42

2. Lockwood K et al.: Partial and complete regression of breast cancer in patients in relation to dosage of coenzyme Q10. *Biochem Biophys Res Comm* 1994;199:1504-8.
3. Lockwood K et al.: Progress on therapy of breast cancer with vitamin Q10 and the regression of metastasis. *Biochem Biophys Res Comm* 1995;212:172-7.
4. Lund EL, Quistorff B, Spang-Thomsen M et al.: Effect of radiation therapy on small-cell lung cancer is reduced by ubiquinone intake. *Folia Microbiol* 1998;4:505-6.
5. *Ann Oncol.* 2017 Mar 1;28(3):628-633. doi: 10.1093/annonc/mdw671. Interventions for preventing cardiomyopathy due to anthracyclines: a Bayesian network meta-analysis. Abdel-Qadir H1,2,3,4, Ong G4, Fazelzad R5, Amir E1,5,6, Lee DS1,2,6,7, Thavendiranathan P6,7, Tomlinson G1,6.

Proteolytic enzymes and toxicity of chemotherapy

1. Petru U, Stranz B, Petru C: Effects of proteolytic enzyme therapy with Wobe Mugos against chemotherapy-induced toxicity in breast cancer patients - results of a pilot study *Wien Med Wochenschr.* 2010 Nov;160(19-20):513-6.

Bromelain


1. Hidaka M, Nagata M, Kawano Y, et al.: Inhibitory effects of fruit juices on cytochrome P450 2C9 activity in vitro. *Biosci Biotechnol Biochem.* Feb 2008;72(2):406-411.

Chinese herbal medicine and wound healing

1. Chen J, Lv Q, Yu M et al.: Randomized clinical trial of Chinese herbal medications to reduce wound complications after mastectomy for breast carcinoma. *Br J Surg.* 2010 Dec;97(12):1798-804

Kurzzeit-Fasten

1. Bauersfeld SP, Kessler CS, Wischnewsky M et al. The effects of short-term fasting on quality of life and tolerance to chemotherapy in patients with breast and ovarian cancer: a randomized cross-over pilot study. *B MC Cancer* (2018) 18:476
2. Groot de S, Vreeswijk MPG, et al. the effects of short-term fasting on tolerance to (neo) adjuvant chemotherapy in Her2-negative breast cancer patients: a randomized pilot study. *BMC Cancer* 2015;15:652

	Oxford		
	LoE	GR	AGO
 <p>© AGO e. V. in der DGGG e.V. sowie in der DKG e.V.</p> <p>Guidelines Breast Version 2020.1</p> <p>www.ago-online.de FORSCHEN LEHREN HEILEN</p>	Additional Complementary Therapy of Side Effects Related to Cancer Treatments		
<ul style="list-style-type: none"> Chinese medicinal herbs to treat the side effects of chemotherapy in breast cancer patients 	1b	B	-
<ul style="list-style-type: none"> Homoeopathic medicine against therapy side effects <ul style="list-style-type: none"> Topical calendula (>= 20% Calendula amount) for prophylaxis of acute dermatitis during radiotherapy Traumeel S® mouthwash to treat chemotherapy-induced stomatitis 	1b	B	+/-
<ul style="list-style-type: none"> Topical Silymarin for prophylaxis of acute dermatitis during radiotherapy 	3a	B	+/-
<ul style="list-style-type: none"> Massage to improve on fatigue, pain, anxiety, nausea 	1b	C	+/-
<ul style="list-style-type: none"> Transcutaneous Electrical Nerve stimulation (TENS) against cancer pain 	2b	D	+/-
<ul style="list-style-type: none"> Hydrotherapy 	3b	C	+/-

Chinese medicinal herbs

1. Zhu L, Li L, Li Y: Chinese Herbal Medicine as an Adjunctive Therapy for Breast Cancer: A Systematic Review and Meta-Analysis. Evid Based Complement Alternat Med. 2016;2016:9469276. doi: 10.1155/2016/9469276.
2. Zhang M, Liu X, Li J, et al. Chinese medicinal herbs to treat the side-effects of chemotherapy in breast cancer patients. Cochrane Database of Systematic Reviews 2007, Issue 2. Art. No.: CD004921. DOI: 10.1002/14651858.CD004921.pub2

Homeopathic medicines for adverse effects of cancer treatments

1. Kassab S, Cummings M, Berkovitz S, et al. Homeopathic medicines for adverse effects of cancer treatments. Cochrane Database of Systematic Reviews 2012, Issue 8. Art. No.: CD004845. DOI: 10.1002/14651858.CD004845.pub2.

Topical use of Silymarin

1. M. Becker-Schiebe et al.: Topical Use of a Silymarin-Based Preparation to Prevent Radiodermatitis. Strahlenther Onkol 2011;187:485–91.
2. Lazzeroni M, Guerrieri-Gonzaga A, Gandini S: A Presurgical Study of Oral Silybin-Phosphatidylcholine in Patients with Early Breast Cancer. Cancer Prev Res (Phila). 2016 Jan;9(1):89-95. doi: 10.1158/1940-6207.

Massage

1. Izgu N, Metin ZG, Karadas C et al.. Prevention of chemotherapy-induced peripheral neuropathy with classical massage in breast cancer patients receiving paclitaxel: An assessor-blinded randomized controlled trial. Eur J Oncol Nurs. 2019 Jun;40:36-43. doi: 10.1016/j.ejon.2019.03.002. Epub 2019 Mar 22.
2. Shin ES, Seo KH, Lee SH, et al. Massage with or without aromatherapy for symptom relief in people with cancer. Cochrane Database of Systematic Reviews 2016, Issue 6. Art. No.: CD009873. DOI: 10.1002/14651858.CD009873.pub3.
3. Robison JG, Smith CL. Therapeutic Massage During Chemotherapy and/or Biotherapy Infusions: Patient Perceptions of Pain, Fatigue, Nausea, Anxiety, and Satisfaction. Clin J Oncol Nurs. 2016 Apr;20(2):E34-40. doi: 10.1188/16.CJON.E34-E40.
4. Donoyama N, Satoh T, Hamano T et al., Effects of Anma therapy (Japanese massage) on health-related quality of life in gynecologic cancer survivors: a randomized controlled trial. PLoS one 2018;13:e0196638.

Transcutaneous electric nerve stimulation (TENS) for cancer pain in adults: (von Slide 16 übertragen)

1. Hurlow A, Bennett MI, Robb KA, et al. Transcutaneous electric nerve stimulation (TENS) for cancer pain in adults. Cochrane Database of Systematic Reviews 2012, Issue 3. Art. No.: CD006276. DOI: 10.1002/14651858.CD006276.pub3.
2. Paley CA, Johnson MI, Tashani O et al. Acupuncture for cancer pain in adults. Cochrane Database of Systematic Reviews 2011, Issue 1. Art. No.: CD007753. DOI: 10.1002/14651858.CD007753.pub2.
3. Hurlow A, Bennett MI, Robb KA, et al. Transcutaneous electric nerve stimulation (TENS) for cancer pain in adults. Cochrane Database of Systematic Reviews 2012, Issue 3. Art. No.: CD006276. DOI: 10.1002/14651858.CD006276.pub3.

Hydrotherapie

1. Dalenc F, Ribet V, Rossi AB, et al. Efficacy of a global supportive skin care programme with hydrotherapy after non-metastatic breast cancer treatment: a randomized, controlled study. Eur J Cancer Care 2018;27:doi:10.1111/eec

Additional Complementary Therapy of Side Effects Related to Cancer Treatments			
	Oxford		
	LoE	GR	AGO
Acupuncture in order to improve on			
▪ Chemotherapy-induced nausea and vomiting			
▪ (Electro)-Acupuncture as adjunct to antiemetic treatment	1b	B	+
▪ Acupressure as adjunct to antiemetic treatment	1b	B	+
▪ Pain			
▪ Cancer pain	1b	B	+
▪ Aromatase-inhibitor – induced arthralgia	1a	B	+
▪ TENS – Transcutaneous Electrical Nerve Stimulations to relieve cancer pain	2b	D	+/-
▪ Fatigue	1a	B	+
▪ Acupressure	1b	B	+
▪ Anxiety and depression	2b	B	+
▪ Cognitive dysfunction	5	D	+/-
▪ Menopause syndrome in Breast Cancer Patients	1b	B	+
▪ to improve on frequency and severity of hot flashes	1b	B	+/-
▪ Electro-Acupuncture to improve on sleep and hot flashes	2a	B	+
▪ Leucopenia (Moxibustion)	2b	B	+/-
▪ Treatment of chemotherapy induced polyneuropathy			
▪ prophylactically	1b	B	-
▪ therapeutically	2b	B	+/-
▪ Chronic lymph edema after Breast Cancer Treatment	2b	B	+/-

Acupuncture

1. Brinkhaus B, Kirschbaum B, Stockigt B, et al.: Prophylactic acupuncture treatment during chemotherapy with breast cancer: a randomized pragmatic trial with a retrospective nested qualitative study. Breast cancer research and treatment 2019, 178(3):617-628.
2. Wu X, Chung VCh, Hui EP, et al: Effectiveness of acupuncture and related therapies for palliative care of cancer: overview of systematic reviews. Sci Rep. 2015 Nov 26;5:16776.
3. Tao WW, Jiang H, Tao XM, et al. Effects of Acupuncture, Tuina, Tai Chi, Qigong, and Traditional Chinese Medicine Five-Element Music Therapy on Symptom Management and Quality of Life for Cancer Patients: A Meta-Analysis. J Pain Symptom Manage. 2016 Apr;51(4):728-47. doi: 10.1016/j.jpainsymman.2015.11.027. Epub 2016 Feb 12. Review.
4. Lau CH, Wu X, Chung VC, et al. Acupuncture and Related Therapies for Symptom Management in Palliative Cancer Care: Systematic Review and Meta-Analysis. Medicine (Baltimore). 2016 Mar;95(9):e2901. doi: 10.1097/MD.0000000000002901.

Menopausensyndrom

1. Salehi A, Marzban M, Zadeh AR: Acupuncture for treating hot flashes in breast cancer patients: an updated meta-analysis. Support Care Cancer. 2016 Dec;24(12):4895-4899.
2. Lesi G, Razzini G, Musti MA: Acupuncture As an Integrative Approach for the Treatment of Hot Flashes in Women With Breast

Cancer: A Prospective Multicenter Randomized Controlled Trial (AcCliMaT). *J Clin Oncol*. 2016 May 20;34(15):1795-802. doi: 10.1200/JCO.2015.63.2893.

3. Chiu HY, Shyu YK, Chang PC: Effects of Acupuncture on Menopause-Related Symptoms in Breast Cancer Survivors: A Meta-analysis of Randomized Controlled Trials. *Cancer Nurs*. 2016 May-Jun;39(3):228-37. doi: 10.1097/NCC.0000000000000278.
4. Tao WW, Jiang H, Tao XM: Effects of Acupuncture, Tuina, Tai Chi, Qigong, and Traditional Chinese Medicine Five-Element Music Therapy on Symptom Management and Quality of Life for Cancer Patients: A Meta-Analysis. *J Pain Symptom Manage*. 2016 Apr;51(4):728-47. doi: 10.1016/j.jpainsymman.2015.11.027.
5. Chien TJ, Hsu CH, Liu CY, et al. Effect of acupuncture on hot flush and menopause symptoms in breast cancer- A systematic review and meta-analysis. *PLoS One*. 2017 Aug 22;12(8):e0180918. doi: 10.1371/journal.pone.0180918. eCollection 2017. Review.
6. Tao WW, Tao XM, Song CL. Effects of non-pharmacological supportive care for hot flushes in breast cancer: a meta-analysis. *Support Care Cancer*. 2017 Jul;25(7):2335-2347. doi: 10.1007/s00520-017-3691-y. Epub 2017 Apr 11.

Chemotherapy-induced Nausea and Vomiting

1. Ezzo J, Richardson MA, Vickers A et al.: Acupuncture-point stimulation for chemotherapy-induced nausea or vomiting (Review). *The Cochrane Library* 2010, Issue 1.
2. Fonnebo V et al.: Acupuncture and acupressure in the treatment of chemotherapy-associated nausea and vomiting. www.cam-cancer.org, Updated May 21, 2009.
3. Streitberger K, Ezzo J, Schneider A: Acupuncture for nausea and vomiting: an update of clinical and experimental studies. *Autonomic Neuroscience: Basic and clinical* 129 (2006) 107-117.
4. Beith JM, Oh B, Chat eld MD, et al. Electroacupuncture for nausea, vomiting, and myelosuppression in women receiving adjuvant chemo- therapy for early breast cancer: a randomized controlled pilot trial. *Medical Acupuncture*. 2012;24:241–248.
5. Shen J, Wenger N, Glaspy J, et al. Electroacupuncture for control of mye- loablative chemotherapy-induced emesis: a randomized controlled trial. *JAMA*. 2000;284(21):2755–2761.
6. Dibble SL, Luce J, Cooper BA, et al. Acupressure for chemotherapy- induced nausea and vomiting: a randomized clinical trial. *Oncol Nurs Forum*. 2007;34(4):813–820.
7. Eghbali M et al.. The effect of auricular acupressure on nausea and vomiting caused by chemotherapy among breast cancer patients. *Complement Ther Clin Pract*. 2016 Aug;24:189-94. doi: 10.1016/j.ctcp.2016.06.006. Epub 2016 Jul 5.

Insomnia

1. Garland SN, Xie SX, DuHamel K, et al.: Acupuncture Versus Cognitive Behavioral Therapy for Insomnia in Cancer Survivors: A Randomized Clinical Trial. *Journal of the National Cancer Institute* 2019.
2. Choi TY, Kim JI, Lim HJ, Lee MS: Acupuncture for Managing Cancer-Related Insomnia: A Systematic Review of Randomized Clinical Trials. *Integrative cancer therapies* 2017, 16(2):135-146.
3. Garland SN, Xie SX, Li Q, et al.:Comparative effectiveness of electro-acupuncture versus gabapentin for sleep disturbances in breast cancer survivors with hot flashes: a randomized trial. *Menopause (New York, NY)* 2017, 24(5):517-523.

Cognitive dysfunction

1. Tong T, Pei C, Chen J et al. Efficacy of Acupuncture Therapy for Chemotherapy-Related Cognitive Impairment in Breast Cancer Patients. *Med Sci Monit.* 2018 May 8 [revised 2018 Jan 1];24:2919-2927. doi: 10.12659/MSM.909712.
2. Johnston MF, Yang C, Hui KK et al.: Acupuncture for Chemotherapy-Associated Cognitive Dysfunction: A Hypothesis-Generating Literature Review to Inform Clinical Advice. *Integr Cancer Ther* 2007; 6; 36.

Fatigue

1. Ling WM, Lui LY, So WK, et al: Effects of acupuncture and acupressure on cancer-related fatigue: a systematic review. *Oncol Nurs Forum.* 2014 Nov 1;41(6):581-92.
2. Mao JJ, Farrar JT, Bruner D et al. Electroacupuncture for fatigue, sleep, and psychological distress in breast cancer patients with aromatase inhibitor-related arthralgia: a randomized trial. *Cancer.* 2014;120(23):3744-51.
3. Smith C, Carmady B, Thornton C et al. The effect of acupuncture on post-cancer fatigue and well-being for women recovering from breast cancer: a pilot randomised controlled trial. *Complement Ther Clin Pract.* 2013;19(1):32-5.
4. Molassiotis et al (2012): Acupuncture for Cancer-Related Fatigue in Patients With Breast Cancer: A pragmatic Randomized Controlled Trial. *J Clin Oncol* published Ahead of Print on October 29.
5. Zhang Y, Lin L, Li H, et al. Effects of acupuncture on cancer-related fatigue: a meta-analysis. *Support Care Cancer.* 2017 Nov 11. doi: 10.1007/s00520-017-3955-6.
6. Zick SM, Sen A, Wyatt GK, et al. Investigation of 2 Types of Self-administered Acupressure for Persistent Cancer-Related Fatigue in Breast Cancer Survivors: A Randomized Clinical Trial. *JAMA Oncol.* 2016 Nov 1;2(11):1470-1476. doi: 10.1001/jamaoncol.2016.1867.

7. Zhang B, Dong JN, Sun P, et al. Effect of therapeutic care for treating fatigue in patients with breast cancer receiving chemotherapy. *Medicine (Baltimore)*. 2017 Aug;96(33):e7750. doi: 10.1097/MD.00000000000007750.
8. Deng, G., et al., Acupuncture for the treatment of post-chemotherapy chronic fatigue: a randomized, blinded, sham-controlled trial. *Support Care Cancer*, 2013. 21(6): p. 1735-41.

Pain

1. He Y, Guo X, May BH et al. Clinical Evidence for Association of Acupuncture and Acupressure With Improved Cancer Pain: A Systematic Review and Meta-Analysis. *JAMA Oncol*. 2019 Dec 19. doi: 10.1001/jamaoncol.2019.5233.
2. Pan Y, Yang K, Shi X, Liang H et al.: Clinical Benefits of Acupuncture for the Reduction of Hormone Therapy–Related Side Effects in Breast Cancer Patients: A Systematic Review. *Integrative cancer therapies* 2018, 17(3):602-618.
3. Hershman DL, Unger JM, Greenlee H, et al.: Effect of Acupuncture vs Sham Acupuncture or Waitlist Control on Joint Pain Related to Aromatase Inhibitors Among Women With Early-Stage Breast Cancer: A Randomized Clinical Trial. *Jama* 2018, 320(2):167-176.
4. Alimi D et al.: Analgesic effect of auricular acupuncture for cancer pain: A randomized, blinded, controlled trial. *J Clin Oncol* 2003;21(22):4120-26.
5. Garcia MK, McQuade J, Haddad R, et al. Systematic review of acupuncture in cancer care: a synthesis of the evidence. *J Clin Oncol*. 2013 Mar 1;31(7):952-60. doi: 10.1200/JCO.2012.43.5818. Epub 2013 Jan 22. (von Slide 16 übertragen)
6. Bae K, Yoo HS, Lamoury G, et al. Acupuncture for Aromatase Inhibitor-Induced Arthralgia: A Systematic Review. *Integr Cancer Ther*. 2015 Nov;14(6):496-502. doi: 10.1177/1534735415596573. Epub 2015 Jul 28. (von Slide 16 übertragen)
7. Paley CA1, Johnson MI, Tashani OA, et al. Acupuncture for cancer pain in adults. *Cochrane Database Syst Rev*. 2015 Oct 15;10:CD007753. doi: 10.1002/14651858.CD007753.pub3. (von Slide 16 übertragen)
8. TY Choi et al (2012): Acupuncture for the treatment of cancer pain: a systematic review of randomized clinical trials. *Support Care Cancer* 20:1147-1158. (von Slide 16 übertragen)
9. Chen L1, Lin CC1, Huang TW2, et al. Effect of acupuncture on aromatase inhibitor-induced arthralgia in patients with breast cancer: A meta-analysis of randomized controlled trials. *Breast*. 2017 Jun;33:132-138. doi: 10.1016/j.breast.2017.03.015. Epub 2017 Apr 4.
10. Chien TJ1, Liu CY, Chang YF, et al. Acupuncture for treating aromatase inhibitor-related arthralgia in breast cancer: a systematic review and meta-analysis. *J Altern Complement Med*. 2015 May;21(5):251-60. doi: 10.1089/acm.2014.0083. Epub 2015 Apr 27.
11. Yang GS1, Kim HJ, Griffith K et al. Interventions for the Treatment of Aromatase Inhibitor-Associated Arthralgia in Breast Cancer Survivors: A Systematic Review and Meta-analysis. *Cancer Nurs*. 2017 Jul/Aug;40(4):E26-E41. doi: 10.1097/NCC.0000000000000409

12. Chiu HY, Hsieh YJ, Tsai PS. Systematic review and meta-analysis of acupuncture to reduce cancer-related pain. Eur J Cancer Care (Engl). 2017 Mar;26(2). doi: 10.1111/ecc.12457. Epub 2016 Feb 7.

Leucopenia

1. Choi TY, Lee MS, Ernst E: Moxibustion for the treatment of chemotherapy-induced leukopenia: a systematic review of randomized clinical trials. Support Care Cancer. 2015 Jun;23(6):1819-26.
2. Lu W et al.: Acupuncture for chemotherapy-induced neutropenia in patients with gynecologic malignancies: a pilot randomized, sham-controlled clinical trial. J Altern Complement Med. 2009 Jul;15(7):745-53.

Chemotherapy induced peripheral neuropathy

1. Molassiotis A, Suen LKP, Cheng HL et al. A Randomized Assessor-Blinded Wait-List-Controlled Trial to Assess the Effectiveness of Acupuncture in the Management of Chemotherapy-Induced Peripheral Neuropathy. Integr Cancer Ther. 2019 Jan-Dec;18:1534735419836501. doi: 10.1177/1534735419836501.
2. Lu W, Giobbie-Hurder A, Freedman RA et al. Acupuncture for Chemotherapy-Induced Peripheral Neuropathy in Breast Cancer Survivors: A Randomized Controlled Pilot Trial. Oncologist. 2019 Oct 14. pii: theoncologist.2019-0489. doi: 10.1634/theoncologist.2019-0489.
3. Greenlee H, Crew KD, Capodice J et al. Randomized sham-controlled pilot trial of weekly electro-acupuncture for the prevention of taxane-induced peripheral neuropathy in women with early stage breast cancer. Breast Cancer Res Treat. 2016 Apr;156(3):453-464. doi: 10.1007/s10549-016-3759-2. Epub 2016 Mar 25.
4. Ben-Horin I, Kahan P, Ryvo L et al. Acupuncture and Reflexology for Chemotherapy-Induced Peripheral Neuropathy in Breast Cancer. Integr Cancer Ther. 2017 Sep;16(3):258-262. doi: 10.1177/1534735417690254. Epub 2017 Feb 2. (Haben wir die?)
5. Brami C, Bao T, Deng G Natural products and complementary therapies for chemotherapy-induced peripheral neuropathy: A systematic review. Crit Rev Oncol Hematol. 2016 Feb;98:325-34. doi: 10.1016/j.critrevonc.2015.11.014. Epub 2015 Nov 23.


Chronisches Lymphödem

1. Chien TJ, Liu CY, Fang CJ: The Effect of Acupuncture in Breast Cancer-Related Lymphoedema (BCRL): A Systematic Review and Meta-Analysis. Integrative Cancer Therapies 2019, 18:1534735419866910.
2. Yao C1, Xu Y1, Chen L1, Jiang H1, Ki CS2, Byun JS3, Bian W1. Curr Oncol. 2016 Feb;23(1):e27-34. doi: 10.3747/co.23.2788. Epub 2016

Feb 18. Effects of warm acupuncture on breast cancer-related chronic lymphedema: a randomized controlled trial.

Angst und Depression

1. Molassiotis, A., et al., *Acupuncture for cancer-related fatigue in patients with breast cancer: a pragmatic randomized controlled trial.* J Clin Oncol, 2012. 30(36): p. 4470-6.

	Oxford		
	LoE	GR	AGO
 <p>© AGO e. V. in der DGGG e.V. sowie in der DKG e.V.</p> <p>Guidelines Breast Version 2020.1</p> <p>www.ago-online.de</p> <p>FORSCHEN LEHREN HEILEN</p>	<h2>Complementary Treatment</h2> <h3>Mind-Body Medicine I</h3>		
<p>MBSR (Mindfulness-Based Stress Reduction)</p> <p>Program improves quality of life, coping strategies, attentiveness, and lowers stress, anxiety, depression, fatigue, and sleep disturbances</p>	1a	A	+
<p>Physical exercise / sport</p> <p>min. 3x/week moderate endurance training in combination with workout exercises (2x per week)</p> <p>improve quality of life, cardio-respiratory fitness, physical performance, sleep, pain, depression, lymphedema, and fatigue</p>	1a	A	++

Mind-Body Medicine (MBM)

1. A general overview of mind/body therapies in cancer survivorship Elkins G1, Fisher W, Johnson A. Mind-body therapies in integrative oncology. Curr Treat Options Oncol. 2010 Dec;11(3-4):128-40.
2. Monti D, Sufian M, Peterson C (2008): Potential Role of Mind-Body Therapies in Cancer Survivorship. Cancer (supplement),112,11:2607-2616. DOI 10.1002/CNCR.23443.
3. Charalambous A, Giannakopoulou M, Bozas E, et al: Guided Imagery And Progressive Muscle Relaxation as a Cluster of Symptoms Management Intervention in Patients Receiving Chemotherapy: A Randomized Control Trial. PLoS One. 2016 Jun 24;11(6):e0156911. doi: 10.1371/journal.pone.0156911. eCollection 2016.

MBSR

1. Schell LK, Monsef I, Wöckel A, Skoetz N. Mindfulness-based stress reduction for women diagnosed with breast cancer. Cochrane Database Syst Rev. 2019 Mar 27;3:CD011518.
2. Zhang Q, Zhao H, Zheng Y. (2019) Effectiveness of mindfulness-based stress reduction (MBSR) on symptom variables and health-related quality of life in breast cancer patients-a systematic review and meta-analysis. Support Care Cancer;27(3):771-781. doi: 10.1007/s00520-018-4570-x. Epub 2018 Nov 28.

3. Haller H, Winkler MM, Klose P et al: Mindfulness-based interventions for women with breast cancer: an updated systematic review and meta-analysis. *Acta oncologica* (Stockholm, Sweden). 2017 Jul 07;1-12. PubMed PMID: 28686520. Epub 2017/07/08. eng.
4. Lengacher CA, Reich RR, Paterson CL, et al: Examination of Broad Symptom Improvement Resulting From Mindfulness-Based Stress Reduction in Breast Cancer Survivors: A Randomized Controlled Trial. *J Clin Oncol*. 2016 Aug 20;34(24):2827-34. doi: 10.1200/JCO.2015.65.7874. Epub 2016 May 31.
5. Huang HP, He M, Wang HY, et al. A meta-analysis of the benefits of mindfulness-based stress reduction (MBSR) on psychological function among breast cancer (BC) survivors. *Breast Cancer*. 2015 Mar 28. [Epub ahead of print]
6. Lengacher CA, Reich RR, Paterson CL: Examination of Broad Symptom Improvement Resulting From Mindfulness-Based Stress Reduction in Breast Cancer Survivors: A Randomized Controlled Trial. *J Clin Oncol*. 2016 Aug 20;34(24):2827-34. doi: 10.1200/JCO.2015.65.7874.
7. Huang HP, He M, Wang HY: A meta-analysis of the benefits of mindfulness-based stress reduction (MBSR) on psychological function among breast cancer (BC) survivors. *Breast Cancer*. 2016 Jul;23(4):568-76. doi: 10.1007/s12282-015-0604-0.
8. Reich RR, Lengacher CA, Alinat CB: Mindfulness-Based Stress Reduction in Post-treatment Breast Cancer Patients: Immediate and Sustained Effects Across Multiple Symptom Clusters. *J Pain Symptom Manage*. 2017 Jan;53(1):85-95. doi: 10.1016/j.jpainsymman.2016.08.005.
9. Schmidt ME, Wiskemann J, Ulrich CM: Self-reported physical activity behavior of breast cancer survivors during and after adjuvant therapy: 12 months follow-up of two randomized exercise intervention trials. *Acta Oncol*. 2017 Jan 13:1-10. doi: 10.1080/0284186X.2016.1275776.
10. Castanhel F, Liberali R. Mindfulness-Based Stress Reduction on breast cancer symptoms: systematic review and meta-analysis. *Einstein* 2018;16:1-10
11. Hall DL, Luberto CM, Philpotts et al., Mind-body interventions for fear of cancer recurrence: A systematic review and meta-analysis. *Psycho-Oncology* 2018;1-13.

Physical exercise

1. Campbell, KL, et al. (2019): Consensus Statement from International Multidisciplinary Roundtable [Exercise Guidelines for Cancer Survivors](#). *Medicine & Science in Sports & Exercise*. 51(11):2375–2390

2. Kreutz C, Schmidt ME, Steindorf K (2019) Effects of physical and mind-body exercise on sleep problems during and after breast cancer treatment: a systematic review and meta-analysis. *Breast Cancer Res Treat.*;176(1):1-15. doi: 10.1007/s10549-019-05217-9. Epub 2019 Apr 6.
3. Furmaniak AC, Menig M, Markes MH. Exercise for women receiving adjuvant therapy for breast cancer. *Cochrane Database Syst Rev.* 2016 Sep 21;9:CD005001. [Epub ahead of print]
4. Mercier J, Savard J, Bernard P: Exercise interventions to improve sleep in cancer patients: A systematic review and meta-analysis. *Sleep Med Rev.* 2017 Dec;36:43-56. doi: 10.1016/j.smrv.2016.11.001. Epub 2016 Nov 10.
5. Steindorf K; Wiskemann J; Ulrich CM; et al: Effects of exercise on sleep problems in breast cancer patients receiving radiotherapy: a randomized clinical trial. *Breast Cancer Res Treat.* 2017; 162(3):489-499 (ISSN: 1573-7217)
6. Schmitz KH, Courneya KS, Matthews C et al (2010) American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. *Med Sci Sports Exerc* 42(7):1409–1426
7. Loprinzi PD, Cardinal BJ (2012): Effects of physical activity on common side effects of breast cancer treatment. *Breast Cancer.* 2012 Jan;19(1):4-10. doi: 10.1007/s12282-011-0292-3. Epub 2011 Jul 2. Review.
8. Paramanandam VS, Roberts D. Weight training is not harmful for women with breast cancer-related lymphoedema: a systematic review. *J Physiother.* 2014 Sep;60(3):136-43.
9. Cormie P, Pumpa K, Galvao DA et al. Is it safe and efficacious for women with lymphedema secondary to breast cancer to lift heavy weights during exercise: a randomised controlled trial. *J Cancer Surviv.* 2013 Sep;7(3):413-24.
10. Kwan ML, Cohn JC, Armer JM,: Exercise in patients with lymphedema: a systematic review of the contemporary literature. *J Cancer Surviv.* 2011 Dec;5(4):320-36.
11. Friedenreich, C.M., et al., *Prospective cohort study of lifetime physical activity and breast cancer survival.* *Int J Cancer*, 2009. 124(8): p. 1954-62.
12. Forbes, C.C., et al., *Prevalence and correlates of strength exercise among breast, prostate, and colorectal cancer survivors.* *Oncol Nurs Forum*, 2015. 42(2): p. 118-27.
13. Ballard-Barbash, R., et al., *Physical activity, biomarkers, and disease outcomes in cancer survivors: a systematic review.* *J Natl Cancer Inst*, 2012. 104(11): p. 815-40.
14. Rock, C.L., et al., *Nutrition and physical activity guidelines for cancer survivors.* *CA Cancer J Clin*, 2012. 62(4): p. 243-74.

Statement on quality of life

1. Zhang, X., Li, Y., & Liu, D. (2019). Effects of exercise on the quality of life in breast cancer patients: a systematic review of randomized controlled trials. *Supportive Care in Cancer*, 27(1), 9-21.
2. Steindorf K, Schmidt ME, Klassen O et al. Randomized, controlled trial of resistance training in breast cancer patients receiving adjuvant radiotherapy: results on cancer-related fatigue and quality of life. *Ann Oncol*. 2014 Nov;25(11):2237-43.
3. Schmidt ME, Wiskemann J, Armbrust Pet al. Effects of resistance exercise on fatigue and quality of life in breast cancer patients undergoing adjuvant chemotherapy: A randomized controlled trial. *Int J Cancer*. 2014 Dec 6. doi: 10.1002/ijc.29383. [Epub ahead of print]
4. Zeng Y, Huang M, Cheng AS et al. Meta-analysis of the effects of exercise intervention on quality of life in breast cancer survivors. *Breast Cancer*. 2014 May;21(3):262-74.
5. Pastakia K, Kumar S (2011): Exercise Parameters in the Management of Breast Cancer: A Systematic Review of Randomized Controlled Trials. *Physiother.Research. Res. Int.* 16: 237-244.
6. Duijts SF, Faber MM, Oldenburg HS, van Beurden M, Aaronson NK (2011): Effectiveness of behavioral techniques and physical exercise on psychosocial functioning and health-related quality of life in breast cancer patients and survivors-a meta-analysis. *Psycho-Oncology* 20: 115–126.
7. Mishra SI, Scherer RW, Geigle PM, et al. (2012): Exercise interventions on health-related quality of life for cancer survivors. *Cochrane Database Syst Rev.*, 15;8:CD007566. doi: 10.1002/14651858.CD007566.pub2.
8. Shneersen C, Taskila T, Gale N, et al: The effect of complementary and alternative medicine on the quality of life of cancer survivors: a systematic review and meta-analyses.*Complement Ther Med* 2013 Aug;21(4):417-29

Cardio respiratory Fitness / Physical Functioning

1. Gebruers, N., Camberlin, M., Theunissen, F. et al:. (2019). The effect of training interventions on physical performance, quality of life, and fatigue in patients receiving breast cancer treatment: a systematic review. *Supportive Care in Cancer*, 27(1), 109-122.
2. Jones LW et al. (2016) Exercise and Risk of Cardiovascular Events in Women With Nonmetastatic Breast Cancer. *J Clin Oncol*. 10;34(23):2743-9. doi: 10.1200/JCO.2015.65.6603. Epub 2016 May 23.
3. Casla S, López-Tarruella S, Jerez Y, et al. Supervised physical exercise improves VO2max, quality of life, and health in early stage breast cancer patients: a randomized controlled trial. *Breast Cancer Res Treat*. 2015 Sep;153(2):371-82.
4. Courneya KS, McKenzie DC, Mackey JR et al. Effects of exercise dose and type during breast cancer chemotherapy: multicenter randomized trial. *J Natl Cancer Inst*. 2013 Dec 4;105(23):1821-32.
5. Courneya KS, Segal RJ, Mackey JR et al. Effects of exercise dose and type on sleep quality in breast cancer patients receiving

- chemotherapy: a multicenter randomized trial. *Breast Cancer Res Treat.* 2014 Apr;144(2):361-9.
6. Courneya KS, McKenzie DC, Gelmon K et al. A multicenter randomized trial of the effects of exercise dose and type on psychosocial distress in breast cancer patients undergoing chemotherapy. *Cancer Epidemiol Biomarkers Prev.* 2014 May;23(5):857-64.
 7. Courneya KS, McKenzie DC, Mackey JR et al. Subgroup effects in a randomised trial of different types and doses of exercise during breast cancer chemotherapy. *Br J Cancer.* 2014 Oct 28;111(9):1718-25.

Fatigue

1. Gebruers, N., Camberlin, M., Theunissen, F. et al.:(2019). The effect of training interventions on physical performance, quality of life, and fatigue in patients receiving breast cancer treatment: a systematic review. *Supportive Care in Cancer*, 27(1), 109-122.
2. Mustian KM, Alfano CM, Heckler C, et al. (2017) Comparison of Pharmaceutical, Psychological, and Exercise Treatments for Cancer-Related Fatigue: A Meta-analysis. *JAMA Oncol.* 1;3(7):961-968. doi: 10.1001/jamaoncol.2016.6914.
3. Hilfiker, R., Meichtry, A., Eicher, M et al. (2017). Exercise and other non-pharmaceutical interventions for cancer-related fatigue in patients during or after cancer treatment: a systematic review incorporating an indirect-comparisons meta-analysis. *Br J Sports Med*, bjsports-2016.
4. Lipsett A, Barrett S, Haruna F et al. The impact of exercise during adjuvant radiotherapy for breast cancer on fatigue and quality of life: A systematic review and meta-analysis. *Breast.* 2017 Apr;32:144-155. doi: 10.1016/j.breast.2017.02.002. Epub 2017 Feb 9.
5. Juvet LK, Thune I, Elvsaa IKØ, et al. The effect of exercise on fatigue and physical functioning in breast cancer patients during and after treatment and at 6 months follow-up: A meta-analysis. *Breast.* 2017 Jun;33:166-177. doi: 10.1016/j.breast.2017.04.003. Epub 2017 Apr 14.
6. Meneses-Echávez JF, González-Jiménez E, Ramírez-Vélez R. Effects of supervised exercise on cancer-related fatigue in breast cancer survivors: a systematic review and meta-analysis. *BMC Cancer.* 2015 Feb 21;15:77. doi: 10.1186/s12885-015-1069-4.
7. van Waart H, Stuiver MM, van Harten WH et al. Effect of Low-Intensity Physical Activity and Moderate- to High-Intensity Physical Exercise During Adjuvant Chemotherapy on Physical Fitness, Fatigue, and Chemotherapy Completion Rates: Results of the PACES Randomized Clinical Trial. *J Clin Oncol.* 2015 Jun 10;33(17):1918-27.
8. Cramp F, Byron-Daniel J. Exercise for the management of cancer-related fatigue in adults. *Cochrane Database of Systematic Reviews* 2012 Nov 14;11:CD006145.
9. Zou LY, Yang L, He XL et al. Effects of aerobic exercise on cancer-related fatigue in breast cancer patients receiving chemotherapy: a meta-analysis. *Tumour Biol.* 2014 Jun;35(6):5659-67.
10. Brown JC, Huedo-Medina TB, Pescatello LS et al. Efficacy of exercise interventions in modulating cancer-related fatigue among adult

cancer survivors: a meta-analysis. *Cancer Epidemiol Biomarkers Prev.* 2011 Jan;20(1):123-33.

11. Steindorf K, Schmidt ME, Klassen O et al. Randomized, controlled trial of resistance training in breast cancer patients receiving adjuvant radiotherapy: results on cancer-related fatigue and quality of life. *Ann Oncol.* 2014 Nov;25(11):2237-43.
12. Schmidt ME1, Wiskemann J, Armbrust P, et al.: Effects of resistance exercise on fatigue and quality of life in breast cancer patients undergoing adjuvant chemotherapy: A randomized controlled trial. *Int J Cancer.* 2014 Dec 6. doi: 10.1002/ijc.29383. [Epub ahead of print)

PNP

1. Steckmann F, Zopf EM, Lehmann HC, et al. (2014) Exercise Intervention studies in patients with PNP: a systemic review. *SportsMed.* DOI 10.1007/s40279-014-0207-5
2. Streckmann F, Lehmann HC, Balke M, et al., Sensorimotor training and whole-body vibration training have the potential to reduce motor and sensory symptoms of chemotherapy-induced peripheral neuropathy – a randomized controlled pilot trial. *Supp Care in Cancer* doi.org/10.1007/s00520-018-4531-4
3. Zimmer P, Trebin S, Timmers-Trebing et al., Eight-week multimodal exercise counteracts a progress of chemotherapy induced peripheral neuropathy and improves balance and strength in metastasized colorectal cancer patients: a randomized controlled trial

Schmerz

1. Irwin ML, Carmel B, Gross CP, et al. Randomized exercise Trial of AI-Induced Arthralgie in Breast cancer survivors- *JCO* 2015;33:1104-11011


Lymphödem

1. Baumann FG, Reike A, Reimer V et al., Effects of physical exercise on breast cancer-related secondary lymphedema: a systemic review. *Breast Cancer Res Treat* Doi 10.1007/s10549-018-4725
2. Baumann FT, Reike A, Hallek M, et al. Does Exercise have a preventive effect on secondary lymphedema in breast cancer patients following local treatment – a systemic review. *Breast Care* DOI. 10.1159/000487428

Körpergewicht

1. Mutschler NS, Scholz C et al. (2018) Prognostic Impact of Weight Change During Adjuvant Chemotherapy in Patients With High-Risk

Early Breast Cancer: Results From the ADEBAR Study. Clin Breast Cancer. 18(2): 175–183

 <small>© AGO e. V. in der DGGG e.V. sowie in der DKG e.V.</small> <small>Guidelines Breast Version 2020.1</small> <small>www.ago-online.de</small> <small>FORSCHEN LEHREN HEILEN</small>	Complementary Treatment Mind-Body Medicine II		
	Oxford		
	LoE	GR	AGO
Relaxation techniques	2b	C	+/-
Reduction of anxiety and nausea, improvement of quality of life, reduction of psychological stress			
Yoga	1b	A	+
Improves sleep, quality of life, stress, anxiety, depression, fatigue, and sleep			
Qi Gong	2a	B	+/-
May improve quality of life, fatigue, and mood			
Tai Chi	2a	B	+/-
Improves quality of life, muscular strength, sleep			
Hypnosis (in combination with cognitive training)	1b	A	+
Improves fatigue and muscle weakness under radiotherapy; also reduces distress			

General

1. Merckaert I, Lewis F, Delevallez F: Improving anxiety regulation in patients with breast cancer at the beginning of the survivorship period: A randomized clinical trial comparing the benefits of single-component and multi-component group interventions. Psychooncology. 2016 Oct 8. doi: 10.1002/pon.4294.
2. Montgomery GH, David D, Kangas M: Randomized controlled trial of a cognitive-behavioral therapy plus hypnosis intervention to control fatigue in patients undergoing radiotherapy for breast cancer. J Clin Oncol. 2014 Feb 20;32(6):557-63. doi: 10.1200/JCO.2013.49.3437.
3. Pan Y, Yang K, Wang Y, et al.: Could yoga practice improve treatment-related side effects and quality of life for women with breast cancer? A systematic review and meta-analysis. Asia Pac J Clin Oncol. 2015 Jan 6. doi: 10.1111/ajco.12329. [Epub ahead of print]
4. Faller H, Schuler M, Richard M, et al. Effects of psychooncological interventions on emotional distress and quality of life in adult cancer patients: systematic review and meta-analysis. JCO. 2013;31(6):782–93.

Entspannungsverfahren

1. Dikmen, H. A., & Terzioglu, F. (2019). Effects of Reflexology and Progressive muscle relaxation on pain, fatigue, and quality of life during chemotherapy in gynecologic cancer patients. Pain Management Nursing, 20(1), 47-53.
2. Abbasi B, Mirzakhany N, Oshnari A et al. The effect of relaxation techniques on edema, anxiety and depression in post-

- mastectomy lymphedema patients undergoing comprehensive decongestive therapy: A Clinical Trial. PLoS One 2018;13:e0190231
3. Lyman GH, Grennlee H et al. Integrative Therapies during and after Breast Cancer Treatment: ASCO Endorsement of the SIO clinical practice guideline. JCO 2018;36:2647-2655.

Yoga

1. Dong B, Xie C, Jing X, Lin L, Tian L. Yoga has a solid effect on cancer-related fatigue in patients with breast cancer: a meta-analysis. Breast Cancer Res Treat. 2019 Aug;177(1):5-16. doi: 10.1007/s10549-019-05278-w. Epub 2019 May 24. Review.
2. Cramer H, Lauche R, Klose P, et al. Yoga for improving health-related quality of life, mental health and cancer-related symptoms in women diagnosed with breast cancer. The Cochrane database of systematic reviews. 2017 Jan 03;1:CD010802. PubMed PMID: 28045199. Epub 2017/01/04. eng.
3. Chakrabarty J, Vidyasagar MS, Fernandes D, et al: Effectiveness of pranayama on cancer-related fatigue in breast cancer patients undergoing radiation therapy: A randomized controlled trial, Int J Yoga. 2015 Jan-Jun; 8(1): 47–53. doi: 10.4103/0973-6131.146062 PMCID: PMC4278135
4. Derry et.al. Yoga and self-reported cognitive problems in breast cancer survivors: a randomized controlled trial. Psychooncology. 2015 Aug;24(8):958-66.
5. Sprod LK, Fernandez ID, Janelins MC, et al: Effects of yoga on cancer-related fatigue and global side-effect burden in older cancer survivors. J Geriatr Oncol. 2015 Jan;6(1):8-14.
6. Naciye Vardar Yagli, Ozlem Ulger. The effects of yoga on the quality of life and depression in elderly breast cancer patients. Complement Ther Clin Pract. 2015 Feb;21(1):7-10. doi: 10.1016/j.ctcp.2015.01.002. Epub 2015 Jan 29.
7. Vardar Yağlı N, Şener G, Arıkan H et al. Do yoga and aerobic exercise training have impact on functional capacity, fatigue, peripheral muscle strength, and quality of life in breast cancer survivors? Integr Cancer Ther. 2015 Mar;14(2):125-32. doi: 10.1177/1534735414565699. Epub 2015 Jan 6.
8. Rao RM, Raghuram N, Nagendra HR, et al. Effects of an integrated Yoga Program on Self-reported Depression Scores in Breast Cancer Patients Undergoing Conventional Treatment: A Randomized Controlled Trial. Indian J Palliat Care. 2015 May-Aug;21(2):174-81. doi: 10.4103/0973-1075.156486.
9. Sadjia J, Mills PJ. Effects of yoga interventions on fatigue in cancer patients and survivors: a systematic review of randomized controlled trials. Explore (NY). 2013 Jul-Aug;9(4):232-43.
10. Bower, J.E., et al., *Yoga for persistent fatigue in breast cancer survivors: a randomized controlled trial*. Cancer, 2012. 118(15): p. 3766-

75.

Qigong


1. Zeng Y, Xie X, Cheng ASK (2019) Qigong or Tai Chi in Cancer Care: an Updated Systematic Review and Meta-analysis. *Curr Oncol Rep*;21(6):48. doi: 10.1007/s11912-019-0786-2.
2. Fong SS, Choi AW, Luk WS: Bone Mineral Density, Balance Performance, Balance Self-Efficacy, and Falls in Breast Cancer Survivors With and Without Qigong Training. *Integr Cancer Ther*. 2016 Dec 1:1534735416686687. doi: 10.1177/1534735416686687.
3. Larkey LK, Roe DJ, Weihs KL et al. (2015) Randomized controlled trial of Qigong/Tai Chi Easy on cancer-related fatigue in breast cancer survivors. *Annals of behavioral medicine : a publication of the Society of Behavioral Medicine*. 49: 165-176 .
4. Zeng Y, Luo T, Xie H et al. Health benefits of qigong or tai chi for cancer patients: a systematic review and meta-analyses. *Complement Ther Med*. 2014 Feb;22(1):173-86.
5. Chan CL, Wang CW, Ho RT, et al. A systematic review of the effectiveness of qigong exercise in supportive cancer care. *Support Care Cancer*. 2012 Jun;20(6):1121-33. doi: 10.1007/s00520-011-1378-3.

Tai Chi

1. Irwin M R, Olmstead R, Carrillo C et al: Tai Chi Chih Compared With Cognitive Behavioral Therapy for the Treatment of Insomnia in Survivors of Breast Cancer: A Randomized, Partially Blinded, Noninferiority Trial . *J Clin Oncol*. 2017 Aug 10;35(23):2656-2665. doi: 10.1200/JCO.2016.71.0285. Epub 2017 May 10.
2. Larkey LK, Roe DJ, Weihs KL et al. (2015) Randomized controlled trial of Qigong/Tai Chi Easy on cancer-related fatigue in breast cancer survivors. *Annals of behavioral medicine : a publication of the Society of Behavioral Medicine*. 49: 165-176 .
3. Pan Y, Yang K, Shi X, et al: Tai chi chuan exercise for patients with breast cancer: a systematic review and meta-analysis. *Evid Based Complement Alternat Med*. 2015;2015:535237.
4. Zeng Y, Luo T, Xie H et al. Health benefits of qigong or tai chi for cancer patients: a systematic review and meta-analyses. *Complement Ther Med*. 2014 Feb;22(1):173-86.
5. Yan JH, Pan L, Zhang XM et al. Lack of efficacy of Tai Chi in improving quality of life in breast cancer survivors: a systematic review and meta-analysis. *Asian Pac J Cancer Prev*. 2014;15(8):3715-20.
6. Irwin MR, Olmstead R, Breen Ec et al., Tai Chi, Cellular Inflammation, and Transcriptome Dynamics in Breast Cancer Survivors With Insomnia: A Randomized Controlled Trial, *J Natl Cancer Inst Monogr* 2014 2014 (50) 295-301.

Hypnosis

1. Cramer H, Lauche R, Paul A et al. Hypnosis in Breast Cancer Care: A Systematic Review of Randomized Controlled Trials. Integr Cancer Ther. 2015 Jan;14(1):5-15. Epub 2014 Sep 18.
2. Montgomery GH, Schnur JB, Kravits K. Hypnosis for cancer care: Over 200 years young. CA Cancer J Clin. 2012 Nov 20. doi: 10.3322/caac.21165.
3. 5.



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Guidelines Breast
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FORSCHEN
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CAM

Prevention of Recurrence/Improvement of Overall Survival I

Modifiable Lifestyle Factors

- **Physical exercise**
(equivalent to 3–5 hrs moderate walking per week)
improves DFS and OS, cardio-respiratory fitness,
physical functioning
- **Reduce Smoking**
- **Reduce Alcohol consumption (< 6 g/day)**

Oxford		
LoE	GR	AGO
2a	A	++
2b	A	+
2b	A	+

Physical exercise

1. Hong, F., Ye, W., Kuo, C. H., et al.:(2019). Exercise Intervention Improves Clinical Outcomes, but the “Time of Session” is Crucial for Better Quality of Life in Breast Cancer Survivors: A Systematic Review and Meta-Analysis. *Cancers*, 11(5), 706.
2. Nechuta S, Chen WY, Cai H: A pooled analysis of post-diagnosis lifestyle factors in association with late estrogen-receptor-positive breast cancer prognosis. *Int J Cancer*. 2016 May 1;138(9):2088-97. doi: 10.1002/ijc.29940.
3. de Glas NA, Fontein DB, Bastiaannet E, et al: Physical activity and survival of postmenopausal, hormone receptor-positive breast cancer patients: Results of the tamoxifen exemestane adjuvant multicenter lifestyle study. *Cancer* 2014;120:2847-2854.
4. Schmitz KH, Courneya KS, Matthews C et al (2010) American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. *Med Sci Sports Exerc* 42(7):1409–1426
5. Lynch BM, Friedenreich CM, Winkler EA, et al: Associations of objectively assessed physical activity and sedentary time with biomarkers of breast cancer risk in postmenopausal women: findings from NHANES (2003–2006). *Breast Cancer Res Treat*. 2011 Nov;130(1):183-94.
6. Friedenreich CM, Neilson HK, Woolcott CG, et al: Inflammatory Marker Changes in a Yearlong Randomized Exercise Intervention Trial among Postmenopausal Women. *ancer Prev Res (Phila)*. 2012 Jan;5(1):98-108.
7. Zeng H, Irwin ML, Lu L, et al: Physical activity and breast cancer survival: an epigenetic link through reduced methylation of a tumor suppressor gene L3MBTL1. *Breast Cancer Res Treat*. 2012 May;133(1):127-35. doi: 10.1007/s10549-011-1716-7. Epub 2011

Aug 12.

8. Rock CL, Doyle C, Demark-Wahnefried W, et al.: Nutrition and physical activity guidelines for cancer survivors. CA Cancer J Clin. 2012 Jul-Aug;62(4):243-74. doi: 10.3322/caac.21142. Epub 2012 Apr 26.

Improvements in DFS and OS, prevention of recurrence

1. Patel AV, Friedenreich CM, Moore SC et al. (2019) American College of Sports Medicine Roundtable Report on Physical Activity, Sedentary Behavior, and Cancer Prevention and Control. Med Sci Sports Exerc;51(11):2391-2402.
2. Jung, A. Y., Behrens, S., Schmidt, M., Thoene, K., Obi, N., Hüsing, A., ... & Chang-Claude, J. (2019). Pre-to postdiagnosis leisure-time physical activity and prognosis in postmenopausal breast cancer survivors. Breast Cancer Research, 21(1), 117.
3. Schmid D, Leitzmann MF. Physical exercise. Association between physical activity and mortality among breast cancer and colorectal cancer survivors: a systematic review and meta-analysis. Ann Oncol. 2014 Jul;25(7):1293-311. doi: 10.1093/annonc/mdu012. Epub 2014 Mar 18. Review.
4. Borch KB, Braaten T, Lund E et al. Physical activity before and after breast cancer diagnosis and survival - the Norwegian women and cancer cohort study. BMC Cancer. 2015 Dec 16;15(1):967. doi: 10.1186/s12885-015-1971-9.
5. Lahart IM, Metsios GS, Nevill AM, et al. Physical activity, risk of death and recurrence in breast cancer survivors: A systematic review and meta-analysis of epidemiological studies. Acta Oncol. 2015 May;54(5):635-54.
6. Zhong S, Jiang T, Ma T et al. Association between physical activity and mortality in breast cancer: a meta-analysis of cohort studies. Eur J Epidemiol. 2014 Jun;29(6):391-404.
7. Ibrahim EM, Al-Homaidh A (2010): Physical activity and survival after breast cancer diagnosis: meta-analysis of published studies. Med Oncol. 2011 Sep;28(3):753-65. doi: 10.1007/s12032-010-9536-x. Epub 2010 Apr 22.
8. Beasley JM, Kwan ML, Chen WY, et al: Meeting the physical activity guidelines and survival after breast cancer: findings from the after breast cancer pooling project. Breast Cancer Res Treat. 2012 Jan;131(2):637-43.
9. Schmidt ME, Chang-Claude J, Vrieling A et al. Association of pre-diagnosis physical activity with recurrence and mortality among women with breast cancer. Int J Cancer. 2013 Sep 15;133(6):1431-40.
10. de Glas NA, Fontein DB, Bastiaannet E et al. Physical activity and survival of postmenopausal, hormone receptor-positive breast cancer patients: results of the Tamoxifen Exemestane Adjuvant Multicenter Lifestyle study. Cancer. 2014 Sep 15;120(18):2847-54.
11. Ballard-Barbash R, Friedenreich CM, Courneya KS, et al: Physical activity, biomarkers, and disease outcomes in cancer survivors: a systematic review. J Natl Cancer Inst. 2012 Jun 6;104(11):815-40. doi: 10.1093/jnci/djs207. Epub 2012 May 8.



Smoking

1. Pierce JP, Patterson RE, Senger C et al: Lifetime cigarette smoking and breast cancer prognosis in the after breast cancer pooling project. *J Natl Cancer Inst* 2014;106:djt359.
2. Wang K, Li F, Zhang X: Smoking increases risks of all-cause and breast cancer specific mortality in breast cancer individuals: a dose-response meta-analysis of prospective cohort studies involving 39725 breast cancer cases. *Oncotarget*. 2016 Dec 13;7(50):83134-83147. doi: 10.18632/oncotarget.13366.
3. Pierce JP, Patterson RE, Senger CM: Lifetime cigarette smoking and breast cancer prognosis in the After Breast Cancer Pooling Project. *J Natl Cancer Inst*. 2014 Jan;106(1):djt359. doi: 10.1093/jnci/djt359.
4. Holmes MD, Murin S, Chen WY: Smoking and survival after breast cancer diagnosis. *Int J Cancer*. 2007 Jun 15;120(12):2672-7.
5. Bérubé S, Lemieux J, Moore L: Smoking at time of diagnosis and breast cancer-specific survival: new findings and systematic review with meta-analysis. *Breast Cancer Res*. 2014 Apr 19;16(2):R42. doi: 10.1186/bcr3646.

Alcohol

1. Larsen SB, Kroman N, Ibfelt EH: Influence of metabolic indicators, smoking, alcohol and socioeconomic position on mortality after breast cancer. *Acta Oncol*. 2015 May;54(5):780-8. doi: 10.3109/0284186X.2014.998774.
2. Bidstrup PE, Dalton SO, Christensen J: Changes in body mass index and alcohol and tobacco consumption among breast cancer survivors and cancer-free women: a prospective study in the Danish Diet, Cancer and Health Cohort. *Acta Oncol*. 2013 Feb;52(2):327-35. doi: 10.3109/0284186X.2012.746466.
3. Simapivapan P, Boltong A, Hodge A.: To what extent is alcohol consumption associated with breast cancer recurrence and second primary breast cancer?: A systematic review. *Cancer Treat Rev*. 2016 Nov;50:155-167. doi: 10.1016/j.ctrv.2016.09.010.
4. Katzke VA, Kaaks R, Kühn T. Lifestyle and cancer risk. *Cancer J*. 2015 Mar-Apr;21(2):104-10.
5. Jayasekara H, MacInnis RJ, Room R, English DR. Long-Term Alcohol Consumption and Breast, Upper Aero-Digestive Tract and Colorectal Cancer Risk: A Systematic Review and Meta-Analysis. *Alcohol Alcohol*. 2015 Sep 22. pii: agv110. [Epub ahead of print]
6. McDonald JA, Goyal A, Terry MB: Alcohol intake and breast cancer risk: Weighing the overall evidence. *Current breast cancer reports* 2013;5
7. Gou YJ, Xie DX, Yang K et al: Alcohol consumption and breast cancer survival: A meta- analysis of cohort studies. *Asian Pacific journal of cancer prevention : APJCP* 2013;14:4785-4790.
8. Kwan ML, Chen WY, Flatt SW et al. Postdiagnosis alcohol consumption and breast cancer prognosis in the after breast cancer pooling

- project. *Cancer Epidemiol Biomarkers Prev.* 2013 Jan;22(1):32-41. doi: 10.1158/1055-9965.EPI-12-1022. Epub 2012 Nov 13
9. Harris HR, Bergkvist L, Wolk A: Alcohol intake and mortality among women with invasive breast cancer. *Br J Cancer.* 2012 Jan 3.
 10. Choi YJ, Jyung SK, Lee JH. Light Alcohol Drinking and Risk of Cancer: A Meta-Analysis of Cohort Studies. *Cancer Res Treat* 2018;50:474-487.

 ARBEITSGEMEINSCHAFT GYNÄKOLOGISCHE ONKOLOGIE e.V.  MAMMA © AGO e. V. in der DGGG e.V. sowie in der DKG e.V. Guidelines Breast Version 2020.1 www.ago-online.de FORSCHEN LEHREN HEILEN	<h2 style="text-align: center;">Modifiable Lifestyle Factors</h2> <h3 style="text-align: center;">Nutrition after Breast Cancer Diagnosis</h3> <h4 style="text-align: center;">Prevention of Recurrence / Improvement of Overall Survival II</h4>		
	<div style="text-align: center;">Oxford</div> <div style="display: flex; justify-content: space-around;"> LoE GR AGO </div>		
<ul style="list-style-type: none"> ■ Adherence to normal BMI / weight loss if overweight, irrespective of HR-status ■ Low fat diet dietary counseling recommended ■ Increased fiber intake (e.g. Flaxseed) ■ Adherence to general nutrition guidelines (e.g. DGE, WCRF) similar to a Mediterranean Diet ■ Dietary extremes 	1a	A	++
	1a	B	+
	2a	B	+
	2a	B	++
	2a	B	--

Adherence to normal body weight/BMI

1. Mei L, He L, Song Y et al. Association between obesity with disease-free survival and overall survival in triple-negative breast cancer. A meta-analysis. *Medicine* 2018;97:19
2. (Brenner DR, Brockton NT, Kotsopoulos J: Breast cancer survival among young women: a review of the role of modifiable lifestyle factors. *Cancer Causes Control*. 2016 Apr;27(4):459-72. doi: 10.1007/s10552-016-0726-5.)
3. (Dieli-Conwright CM, Lee K, Kiwata JL: Reducing the Risk of Breast Cancer Recurrence: an Evaluation of the Effects and Mechanisms of Diet and Exercise. *Curr Breast Cancer Rep*. 2016;8(3):139-150.)
4. (Schwingshackl L, Hoffmann G: Adherence to Mediterranean diet and risk of cancer: an updated systematic review and meta-analysis of observational studies. *Cancer Med*. 2015 Dec;4(12):1933-47. doi: 10.1002/cam4.539.)
5. (Ferrini K, Ghelfi F, Mannucci R: Lifestyle, nutrition and breast cancer: facts and presumptions for consideration. *Ecanermedicalscience*. 2015 Jul 23;9:557. doi: 10.3332/ecancer.2015.557. eCollection 2015.)
6. Rock CL, Flatt SW, Byers TE et al. Results of the Exercise and Nutrition to Enhance Recovery and Good Health for You (ENERGY) Trial: A Behavioral Weight Loss Intervention in Overweight or Obese Breast Cancer Survivors. *J Clin Oncol*. 2015 Oct 1;33(28):3169-76. doi: 10.1200/JCO.2015.61.1095. Epub 2015 Aug 17.
7. Ligibel JA, Cirincione CT, Liu M2 et al. Body Mass Index, PAM50 Subtype, and Outcomes in Node-Positive Breast Cancer: CALGB 9741 (Alliance). *J Natl Cancer Inst*. 2015 Jun 25;107(9). pii: djv179. doi: 10.1093/jnci/djv179. Print 2015 Sep.

8. Azrad M, Demark-Wahnefried W: The association between adiposity and breast cancer recurrence and survival: A review of the recent literature. *Current nutrition reports* 2014;3:9-15.
9. Ligibel JA, Strickler HD: Obesity and its impact on breast cancer: Tumor incidence, recurrence, survival, and possible interventions. *American Society of Clinical Oncology educational book / ASCO American Society of Clinical Oncology Meeting* 2013:52-59.
10. Chlebowski RT: Nutrition and physical activity influence on breast cancer incidence and outcome. *Breast (Edinburgh, Scotland)* 2013;22 Suppl 2:S30-37.
11. Chan DS, Vieira AR, Aune D, et al: Body mass index and survival in women with breast cancer-systematic literature review and meta-analysis of 82 follow-up studies. *Annals of oncology : official journal of the European Society for Medical Oncology / ESMO* 2014;25:1901-1914.
12. Jiralerspong S, Goodwin PJ: Obesity and Breast Cancer Prognosis: Evidence, Challenges, and Opportunities. *J Clin Oncol* , 2016; 34:4203-4216
13. Nechuta S, Chen WY, Cal H et al.: A pooled analysis of post- diagnosis lifestyle factors in association with late estrogen-receptor positive breast cancer prognosis. *Int J Cancer*. 2016 May 1; 138(9): 2088–2097. doi:10.1002/ijc.29940
14. Lauby-Secretan, B., et al.: Body Fatness and Cancer--Viewpoint of the IARC Working Group. *N Engl J Med*, 2016. 375(8): p. 794-8.

Übergewicht

1. Mei L, He L, Song Y et al. Association between obesity with disease-free survival and overall survival in triple-negative breast cancer. A meta-analysis. *Medicine* 2018;97:19

Low-Fat Diet

1. De Cicco P, Catani MV et al. Nutrition and Breast Cancer: A Literature Review on Prevention, Treatment and Recurrence. *Nutrients* 2019 Jul 3;11(7).
2. Chlebowski R, Anderson G et al. Low-Fat Dietary Pattern and Cancer Mortality in the Women's Health Initiative (WHI) Randomized Controlled Trial, *JNCI Cancer Spectrum*, Volume 2, Issue 4, October 2018
3. Dieli-Conwright CM, Lee K, Kiwata JL: Reducing the Risk of Breast Cancer Recurrence: an Evaluation of the Effects and Mechanisms of Diet and Exercise. *Curr Breast Cancer Rep*. 2016;8(3):139-150.
4. Chlebowski RT, Blackburn GL, Thomson CA et al. Dietary fat reduction and breast cancer outcome: interim efficacy results from the

Women`s Intervention Nutrition Study. J Natl Cancer Inst 2006; 98:1767-76.

5. Chlebowski RT, Aragaki AK, Anderson GL: Low-Fat Dietary Pattern and Breast Cancer Mortality in the Women's Health Initiative Randomized Controlled Trial. J Clin Oncol. 2017 Sep 1;35(25):2919-2926. doi: 10.1200/JCO.2016.72.0326. Epub 2017 Jun 27.
6. Makarem N, Chandran U et al. Dietary Fat in Breast Cancer Survival. Annu Rev Nutr. 2013 ; 33
7. Xing MY, Xu SZ, Shen P: Effect of low-fat diet on breast cancer survival: A meta-analysis. Asian Pacific journal of cancer prevention : APJCP 2014;15:1141-1144.

Fiber

1. McQuade JL et al. Modulating the microbiome to improve therapeutic response in cancer Lancet Oncol. 2019; 20: e77-e91
2. De Cicco P, Catani MV et al. Nutrition and Breast Cancer: A Literature Review on Prevention, Treatment and Recurrence. Nutrients 2019 Jul 3;11(7).
3. World Cancer Research Fund International/American Institute for Cancer Research Continuous Update Project Report: Diet, Nutrition, Physical Activity, and Breast Cancer Survivors. 2014. Available at: www.wcrf.org/sites/default/files/Breast-Cancer-Survivors-2014-Report.pdf
4. [McEligot AJ](#), [Largent J](#) et al. Dietary fat, fiber, vegetable, and micronutrients are associated with overall survival in postmenopausal women diagnosed with breast cancer. [Nutr Cancer](#). 2006;55(2):132-40

-

Adherence to general nutrition – guidelines:

1. De Cicco P, Catani MV et al. Nutrition and Breast Cancer: A Literature Review on Prevention, Treatment and Recurrence. Nutrients 2019 Jul 3;11(7).
2. Hou R, Wei J et al. Healthy dietary pattern and risk and survival of breast cancer: a meta-analysis of cohort studies, Cancer causes & control (2019) 30: 835-846
3. World Cancer Research Fund International/American Institute for Cancer Research, Continuous Update Project: Diet, Nutrition, Physical Activity, and Breast Cancer Survivors. 2014. Available at: www.wcrf.org/sites/default/files/Breast-Cancer-Survivors-2014-Report.pdf
4. Oberritter, H., et al., The DGE nutrition circle—Presentation and basis of the food-related recommendations from the German

Nutrition Society (DGE). Ernährungs Umschau International, 2013. 60(2): p. 24-29.

5. Ferrini K, Ghelfi F, Mannucci R: Lifestyle, nutrition and breast cancer: facts and presumptions for consideration. *Ecantermedicalscience*. 2015 Jul 23;9:557. doi: 10.3332/ecancer.2015.557. eCollection 2015.
6. Gonzales, J. F., N. D. Barnard, D. J. Jenkins, A. J. Lanou, B. Davis, G. Saxe and S. Levin (2014). "Applying the precautionary principle to nutrition and cancer." *J Am Coll Nutr* 33(3): 239-246.
7. Schwingshackl L, Schwedhelm C: Adherence to Mediterranean Diet and Risk of Cancer: An Updated Systematic Review and Meta-Analysis. *Nutrients* 2017 (9) 1063; doi:10.3390/nu9101063
8. Toledo, E., et al., Mediterranean Diet and Invasive Breast Cancer Risk Among Women at High Cardiovascular Risk in the PREDIMED Trial: A Randomized Clinical Trial. *JAMA Intern Med*, 2015. 175(11): p. 1752-60
9. Biasini C, di Nunzio C, Cordani MR, et al.: Mediterranean Diet influences breast cancer relapse: preliminary results of the SETA PROJECT. *Journal of Clinical Oncology*, 2016 ASCO Annual Meeting (June 3-7, 2016).Vol 34, No 15_suppl (May 20 Supplement), 2016: e13039
10. Amireault, S, Fon AJ, Sabiston CM. Promoting Healthy Eating and Physical Activity Behaviors: a systematic review of multiple health behavior change interventions among cancer survivors. *American Journal of lifestyle Medicine* 2016;12:184-199.

Diät Extreme:

1. Mohsen M, Katsiki N et al. Lower carbohydrate diets and all-cause and cause-specific mortality: a population-based cohort study and pooling of prospective studies. *European Heart Journal* 2019, 40, 2870-2879
2. Huebner J., Marienfeld S. et al.: Counseling Patients on Cancer Diets: A Review of the Literature and Recommendations for Clinical Practice. *Anticancer Res*. 2014 Jan; 34(1):39-48.
3. Erickson, N., Boscheri, A., Linke, B. et al.: Systematic review: isocaloric ketogenic dietary regimes for cancer patients. *Med Oncol* (2017) 34: 72. <https://doi.org/10.1007/s12032-017-0930-5>
4. Jochems SHJ, van Osch FH, Bryan RT, et al., Impact of dietary patterns and the main food groups on mortality and recurrence in cancer survivors: a systematic review of current epidemiological literature *BMJ Open* 2017;8:e014530.

Complementary Treatment			
Prevention of Recurrence / Improvement of Overall Survival III			
Dietary Supplements – Herbal Therapies			
	Oxford		
	LoE	GR	AGO
Post treatment vitamin/antioxidant supplements does not appear to be associated with increased risk of recurrence (beware of drug/treatment interactions)	2b	B	
Smokers on antioxidant supplements are at higher risk for lung cancer	1b	A	
For Prevention of BC Recurrence:			
▪ Antioxidants	2a	B	+/-
▪ Orthomolecular substances (Selenium, Zinc...)	5	D	-
▪ Vitamine supplementation in patients on a balanced diet (esp. Vit C, E, D)	2a	B	+/-
▪ Artificial carotenoids appear to be associated with worse outcome	2b	B	-
▪ Proteolytic enzymes (Papain, Trypsin, Chymotrypsin)	3b	B	-
▪ Soy-food (natural source of phytoestrogens)	2a	B	+/-
– food or concentrates containing ≥ 100 mg) isoflavones per day	2a	B	-
▪ Black Cohosh (Cimicifuga racemosa)	3b	C	+/-
▪ Mistletoe (Viscum album)	1b	C	-
▪ Thymic peptides (impact on OS)	2a	B	-
▪ Oxygen- and ozone therapy	5	D	--
▪ Antioxidant supplements (after completion of radiotherapy)	2b	B	+/-
▪ Laetrile	1c	D	--
▪ Green tea	3a	C	+/-
▪ Methadone	5	D	--
▪ Cancer bush (Sutherlandia frutescens), Devil's claw (Harpagophytum procumbens), Rooibos tea (Aspalathus linearis), Bambara groundnut (Vigna subterranean)	5	D	-

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Guidelines Breast
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General

1. Hervik JB, Stub T: Adverse effects of non-hormonal pharmacological interventions in breast cancer survivors, suffering from hot flashes: A systematic review and meta-analysis. Breast Cancer Res Treat. 2016 Nov;160(2):223-236.

Post treatment vitamin and/or antioxidant supplements

1. Drewe J, Bucher KA, Zahner C. A systematic review of non-hormonal treatments of vasomotor symptoms in climacteric and cancer patients. Springerplus. 2015 Feb 10;4:65. doi: 10.1186/s40064-015-0808-y. eCollection 2015.
2. Sodde VK, Lobo R, Kumar N, et al. Cytotoxic activity of Macrosolen parasiticus (L.) Danser on the growth of breast cancer cell line (MCF-7). Pharmacogn Mag. 2015 May;11(Suppl 1):S156-60. doi: 10.4103/0973-1296.157719.
3. Salarabadi A, Bidgoli SA, Madani SH. Roles of Kermanshahi Oil, Animal Fat, Dietary and Non- Dietary Vitamin D and other Nutrients in Increased Risk of Premenopausal Breast Cancer: A Case Control Study in Kermanshah, Iran. Asian Pac J Cancer Prev. 2015;16(17):7473-8.
4. Karimi Z, Bahadoran Z, Abedini S, et al. Dietary total antioxidant capacity and the risk of breast cancer: a case-control study. East Mediterr Health J. 2015 Sep 28;21(8):564-71.
5. Carioca AA, Verde SM, Luzia LA, et al. Association of oxidative stress biomarkers with adiposity and clinical staging in women with breast cancer. Eur J Clin Nutr. 2015 Nov;69(11):1256-61. doi: 10.1038/ejcn.2015.84. Epub 2015 Jun 3.

6. Martin-Herranz A, Salinas-Hernández P. Vitamin D supplementation review and recommendations for women diagnosed with breast or ovary cancer in the context of bone health and cancer prognosis/risk. *Crit Rev Oncol Hematol*. 2015 Oct;96(1):91-9. doi: 10.1016/j.critrevonc.2015.05.006. Epub 2015 May 19.
7. Poole EM, Shu X, Caan BJ, et al: Postdiagnosis supplement use and breast cancer prognosis in the after breast cancer pooling project. *Breast cancer research and treatment* 2013;139:529-537.
8. Harris HR, Orsini N, Wolk A: Vitamin c and survival among women with breast cancer: A meta-analysis. *European journal of cancer* 2014;50:1223-1231.
9. Mohr SB, Gorham ED, Kim J, et al: Meta-analysis of vitamin d sufficiency for improving survival of patients with breast cancer. *Anticancer Res* 2014;34:1163-1166.
10. Greenlee H, Kwan ML, Kushi LH, et al.: Antioxidant supplement use after breast cancer diagnosis and mortality in the life after cancer epidemiology (lace) cohort. *Cancer* 2012;118:2048-2058.

Soy as normal part of the diet/soy concentrates

1. Wu AH, Spicer D, Garcia A, et al. Double-Blind Randomized 12-Month Soy Intervention Had No Effects on Breast MRI Fibroglandular Tissue Density or Mammographic Density. *Cancer Prev Res (Phila)*. 2015 Oct;8(10):942-51. doi: 10.1158/1940-6207.CAPR-15-0125. Epub 2015 Aug 14.
2. Fritz H, Seely D, Flower G, et al.: Soy, red clover, and isoflavones and breast cancer: A systematic review. *PloS one* 2013;8:e81968.
3. Messina M, Caan BJ, Abrams DI, et al: It's time for clinicians to reconsider their proscription against the use of soyfoods by breast cancer patients. *Oncology (Williston Park, NY)* 2013;27

Black cohosh

1. Fritz H, Seely D, McGowan J, et al: Black cohosh and breast cancer: A systematic review. *Integrative cancer therapies* 2014;13:12-29.
2. Rostock M, Fischer J, Mumm A, et al.: Black cohosh (*Cimicifuga racemosa*) in tamoxifen-treated breast cancer patients with climacteric complaints - a prospective observational study. *Gynecol Endocrinol*. 2011 Oct;27(10):844-8.
3. Villaseca P. Non-estrogen conventional and phytochemical treatments for vasomotor symptoms: what needs to be known for practice. *Climacteric*. 2012 Apr;15(2):115-24. doi: 10.3109/13697137.2011.624214. Epub 2011 Dec 8.
4. Geller SE, Shulman LP, van Breemen RB et al.: Safety and efficacy of black cohosh and red clover for the management of vasomotor symptoms: a randomized controlled trial. *Menopause*. 2009;16(6):1156–1166.

Laetrile treatment for cancer

1. Milazzo S, Ernst E, Lejeune S, et al.: Laetrile treatment for cancer. Cochrane Database of Systematic Reviews 2011, Issue 11. Art. No.: CD005476. DOI: 10.1002/14651858.CD005476.pub3.

St John's Wort

1. Caraci F, Crupi R, Drago F, et al. Metabolic drug interactions between antidepressants and anticancer drugs: focus on selective serotonin reuptake inhibitors and hypericum extract. *Curr Drug Metab.* 2011 Jul 1;12(6):570-7.
2. Schellander R, Donnerer J: Antidepressants: clinically relevant drug interactions to be considered. *Pharmacology.* 2010;86(4):203-15. Epub 2010 Sep 8.
3. Nahrstedt A, Butterweck V: Lessons learned from herbal medicinal products: the example of St. John's Wort (perpendicular). *J Nat Prod.* 2010 May 28;73(5):1015-21.

Red clover

1. Fritz H, Seely D, Flower G et al. Soy, red clover, and isoflavones and breast cancer: A systematic review. *PLoS One.* 2013 Nov 28;8(11):e81968.
2. Geller SE, Shulman LP, van Breemen RB et al.: Safety and efficacy of black cohosh and red clover for the management of vasomotor symptoms: a randomized controlled trial. *Menopause.* 2009;16(6):1156–1166.
3. Booth NL et al.: Clinical studies of red clover (*Trifolium pratense*) dietary supplements in menopause: a literature review. *Menopause*, Vol. 13, No. 2, 2006.
4. Kronenberg F, Fugh-Berman A: Complementary and alternative medicine for menopausal symptoms: a review of randomized, controlled trials. *Ann Intern Med.* 2002;137(10):805–813.

Dong Quai

1. Zhuang SR, Chiu HF, Chen SL, Effects of a Chinese medical herbs complex on cellular immunity and toxicity-related conditions of breast cancer patients. *Br J Nutr.* 2011 Aug 25:1-7.
2. Rotem C, Kaplan B: Phyto-Female Complex for the relief of hot flushes, night sweats and quality of sleep: randomized, controlled, double-blind pilot study. *Gynecol Endocrinol.* 2007;23(2):117-122.
3. Lau CB, Ho TC, Chan TW et al.: Use of dong quai (*Angelica sinensis*) to treat peri- or postmenopausal symptoms in women with breast cancer: is it appropriate? *Menopause.* 2005;12(6):734–740.

Ginseng root

1. Yamada N, Araki H, Yoshimura H: Identification of antidepressant-like ingredients in ginseng root (*Panax ginseng* C.A. Meyer) using a menopausal depressive-like state in female mice: participation of 5-HT_{2A} receptors. *Psychopharmacology (Berl)*. 2011 Aug;216(4):589-99.
2. Peralta EA, Murphy LL, Minnis J, et al.: American Ginseng inhibits induced COX-2 and NFκB activation in breast cancer cells. *J Surg Res*. 2009 Dec;157(2):261-7.

Bromelain+Papain+Selen+Lektin bei AI-induced athralgia

1. Uhlenbruck B, Van Leendert R, Schneider B et al.: Reduced side-effects of adjuvant hormone therapy in breast cancer patients by complementary medicine. *In Vivo*. 2010 Sep-Oct;24(5):799-802.

Green Tea

1. Ogunleye, A.A., F. Xue, and K.B. Michels, *Green tea consumption and breast cancer risk or recurrence: a meta-analysis*. Breast cancer research and treatment, 2010. 119(2): p. 477.
2. Sun, C.L., et al., *Green tea, black tea and breast cancer risk: a meta-analysis of epidemiological studies*. Carcinogenesis, 2006. 27(7): p. 1310-5.
3. Yiannakopoulou, E., *Effect of green tea catechins on breast carcinogenesis: a systematic review of in-vitro and in-vivo experimental studies*. Eur J Cancer Prev, 2014. 23(2): p. 84-9.
4. Gianfredi V, Nucci D, Abalsamo A, et al. Green Tea consumption and risk of breast cancer and recurrence – a systematic review and meta-analysis of observational studies. *Nutrients* 2018;10;pii:E1886.
5. Najaf Najafi M, Salehi M. et al. The association between green tea consumption and breast cancer risk. A systematic review and meta-analysis. *Phytother Res* 2018;32:1855-1864.