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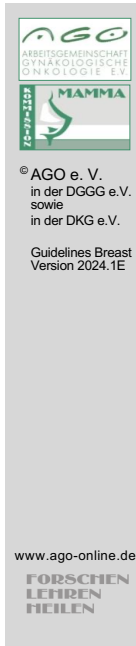
Guidelines Breast
Version 2024.1E

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FORSCHEN
LEHREN
HEILEN

Diagnosis and Treatment of Patients with early and advanced Breast Cancer

Complementary Therapy Survivorship



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

- **Versions 2002–2023:**
Albert / Bauerfeind / Blohmer / Dall/ Fersis / Friedrich / Gerber / Göhring / Hanf / Heil / Janni / Kümmel / Lück / von Minckwitz / Nitz / Oberhoff / Rhiem / Scharl / Schmidt / Schütz / Solomayer / Thomssen
- **Version 2024:**
Kümmel / Thomssen

Screened Data Sources:

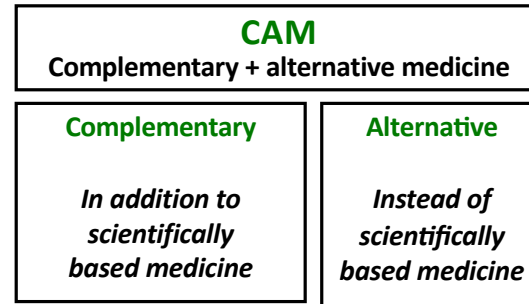
Pubmed	2015 - 01/2024
ASCO	2015 – 2023
SABCS	2015 – 2023
EBCC	2015 – 2023
ESMO	2023
Cochrane library:	summary Jan. 2024

-RCT, systematic review, meta-analysis

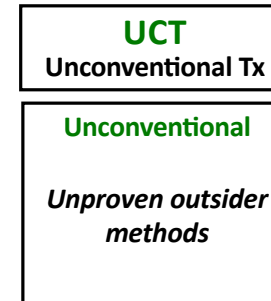
1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Komplementärmedizin in der Behandlung von onkologischen PatientInnen, Langversion 1.1, 2021, AWMF Registernummer: 032/055OL, <https://www.leitlinienprogramm-onkologie.de/leitlinien/komplementaermedizin/>

CAM

„Integrative Oncology“



„Unconventional methods“



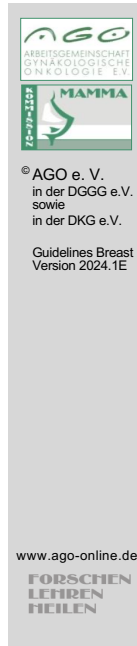
Komplementäre Verfahren werden parallel zur konventionellen Therapie angewendet und unterscheiden sich von alternativen Verfahren dadurch, dass sie den Wert der konventionellen Verfahren nicht in Frage stellen, sondern sich als Ergänzung verstehen

Onkoleitlinienprogramm

1. Witt CM et al.. A Comprehensive Definition for Integrative Oncology. J Natl Cancer Inst Monogr 2017;(52): lgx012
2. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Komplementärmedizin in der Behandlung von onkologischen PatientInnen, Langversion 1.1, 2021, AWMF Registernummer: 032/055OL, <https://www.leitlinienprogramm-onkologie.de/leitlinien/komplementaermedizin/>

“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.”

Good Clinical Practice



All patients should be consulted as early as possible and in the course of the process repeatedly on the interest in information complementary medical measures and, if interested, reliable sources of information should be referred.

S3 LL "Komplementärmedizin in der Behandlung von onkologischen PatientInnen"

1. Leitlinienprogramm Onkologie (Deutsche Krebsgesellschaft, Deutsche Krebshilfe, AWMF): Komplementärmedizin in der Behandlung von onkologischen PatientInnen, Langversion 1.1, 2021, AWMF Registernummer: 032/055OL, <https://www.leitlinienprogramm-onkologie.de/leitlinien/komplementaermedizin/>

General Considerations

	Oxford		
	LoE	GR	AGO
▪ CAM instead of loco-regional interventions	2b	B	--
▪ CAM instead of systemic treatment	2b	B	--
▪ 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. 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.
2. 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
3. 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
4. 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.
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6. Keene MR, Heslop IM, Sabesan SS, Glass BD. Complementary and alternative medicine use in cancer: A systematic review. Complement Ther Clin Pract. 2019 May;35:33-47. doi: 10.1016/j.ctcp.2019.01.004.
7. Hack CC, Wasner S, Meyer J et al. Analysis of Oncological second opinions in a certified university breast and gynecological cancer center in relation to complementary and alternative medicine . Complement Med Res 2020;27(6):431-439
8. Grimm D, Mathes S, Woelber L, et al. Demand for integrative medicine among women with breast and gynecological cancer: a

multicenter cross-sectional study in Southern and Northern Germany. *Arch Gynecol Obstet*. 2021 May;303(5):1315-1330. doi: 10.1007/s00404-020-05880-0.

9. Paepke D, Wiedeck C, Hapfelmeier A, et al. Prevalence and Predictors for Nonuse of Complementary Medicine among Breast and Gynecological Cancer Patients. *Breast Care (Basel)*. 2020 Aug;15(4):380-385. doi: 10.1159/000502942.
10. Bao T, Greenlee H, Lopez AM, Kadro ZO, et al. How to Make Evidence-Based Integrative Medicine a Part of Everyday Oncology Practice. *Am Soc Clin Oncol Educ Book*. 2023 May;43:e389830. doi: 10.1200/EDBK_389830.

Complementary Therapy Pre- and Postoperative

	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	1a	A	+
▪ as a prophylaxis of lymphedema	1b	B	+/-
▪ Prophylactic lymphatic drainage	1b	B	--
▪ Yoga (arm and shoulder pain)	2b	C	+
▪ Music therapy (reduces pain after mastectomy)	2b	C	+/-

General:

1. Abushukur Y, Cascardo C, Ibrahim Y, et al. Improving Breast Surgery Outcomes Through Alternative Therapy: A Systematic Review. *Cureus*. 2022 Mar 24;14(3):e23443. doi: 10.7759/cureus.23443.
2. Morrison-Jones V, West M. Post-Operative Care of the Cancer Patient: Emphasis on Functional Recovery, Rapid Rescue, and Survivorship. *Curr Oncol*. 2023 Sep 19;30(9):8575-8585. doi: 10.3390/curreoncol30090622.

Pre-Peri-operative:

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. Amraoui J, Pouliquen C, Fraisse J et al. 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 2018 Netw Open*.;1(4):e181164. doi: 10.1001/jamanetworkopen.2018.1164.
3. Lacroix C, Duhoux FP, Bettendorff J, Watremez C, Roelants F, Docquier MA, Potié A, Coyette M, Gerday A, Samartzi V, Piette P, Piette N, Berliere M. Impact of Perioperative Hypnosedation on Postmastectomy Chronic Pain: Preliminary Results. *Integr Cancer Ther*. 2019 Jan-Dec;18:1534735419869494. doi: 10.1177/1534735419869494.

4. Zeng J, Wang L, Cai Q, Wu J, Zhou C. Effect of hypnosis before general anesthesia on postoperative outcomes in patients undergoing minor surgery for breast cancer: a systematic review and meta-analysis. *Gland Surg.* 2022 Mar;11(3):588-598. doi: 10.21037/gS-22-114.
5. Carlson LE, Ismaila N, Addington EL, et al. Integrative Oncology Care of Symptoms of Anxiety and Depression in Adults With Cancer: Society for Integrative Oncology-ASCO Guideline. *J Clin Oncol.* 2023 Oct 1;41(28):4562-4591. doi: 10.1200/JCO.23.00857.

Peri-Postoperative:

Acupuncture

1. 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.
2. 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.
3. 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
4. Lu Z, Wang Q, Sun X, et al. Transcutaneous electrical acupoint stimulation before surgery reduces chronic pain after mastectomy: A randomized clinical trial. *J Clin Anesth.* 2021 Nov;74:110453. doi: 10.1016/j.jclinane.2021.110453.
5. Ben-Arye E, Segev Y, Galil G, et al. Acupuncture during gynecological oncology surgery: A randomized controlled trial assessing the impact of integrative therapies on perioperative pain and anxiety. *Cancer.* 2023 Mar 15;129(6):908-919. doi: 10.1002/cncr.34542.
6. Tong QY, Liu R, Gao Y, et al. Effect of Electroacupuncture Based on ERAS for Preoperative Anxiety in Breast Cancer Surgery: A Single-Center, Randomized, Controlled Trial. *Clin Breast Cancer.* 2022 Oct;22(7):724-736. doi: 10.1016/j.clbc.2022.04.010.
7. Huang WH, Zhang J, Ding SS, Xue JJ. Efficacy of acupuncture for nausea and vomiting after laparoscopic surgery: A systematic review and meta-analysis. *Asian Journal of Surgery.* 2023 Oct;46(10):4462-4464. DOI: 10.1016/j.asjsur.2023.04.107.

Massage

1. Dilaveri CA, Croghan I, Mallory MJ, et al, Massage compared with massage plus acupuncture for breast cancer patients undergoing reconstructive surgery. *J Altern Complement Med* 2020 26(7):602-609
2. Liu C, Chen X, Wu S. The effect of massage therapy on pain after surgery: A comprehensive meta-analysis. *Complement Ther Med.* 2022 Dec;71:102892. doi: 10.1016/j.ctim.2022.102892. Epub 2022 Oct 26. PMID: 36309174.

Postoperative exercise

General

1. Bruce J, Mazuquin B, Canaway A et al. Exercise versus usual care after non-reconstructive breast surgery (UK PROSPER) multicenter randomised controlled trial and economic evaluation. *BMJ* 2021;375:e066542
2. Heimann J, Onerup A, Wessman C, et al. Recovery after breast cancer surgery following recommended pre and postoperative physical activity: (PhysSURG-B) randomized clinical trial. *Br J Surg* 2021 Jan 27;108(1):32-39
3. Klein i, Kalichman L, Chen N et al. Effect of physical activity levels on oncological breast surgery recovery: a prospective cohort study. *Scientific reports* 2021;11:10432 doi:10.1038/s41598-021-89908-8
4. Knoerl R, Giobbie-Hurder A, Sannes TS, et al. Exploring the impact of exercise and mind-body prehabilitation interventions on physical and psychological outcomes in women undergoing breast cancer surgery. *Support Care Cancer*. 2022 Mar;30(3):2027-2036. doi: 10.1007/s00520-021-06617-8.
5. Heiman J, Onerup A, Bock D, et al. The effect of nonsupervised physical activity before and after breast cancer surgery on quality of life: Results from a randomized controlled trial (PhysSURG-B). *Scand J Surg*. 2022 Dec;111(4):75-82. doi: 10.1177/14574969221123389.

Upper extremities

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.
2. Bruce J, Mazuquin B, Canaway A, Hossain A, Williamson E, Mistry P, Lall R, Petrou S, Lamb SE, Rees S, Padfield E, Vidya R, Thompson AM; Prevention of Shoulder Problems Trial (PROSPER) Study Group. Exercise versus usual care after non-reconstructive breast cancer surgery (UK PROSPER): multicentre randomised controlled trial and economic evaluation. *BMJ*. 2021 Nov 10;375:e066542. doi: 10.1136/bmj-2021-066542.
3. Byun H, Jang Y, Kim JY, et al. Effects of preoperative personal education on shoulder function and lymphedema in patients with breast cancer: A consort. *Medicine (Baltimore)*. 2022 Sep 23;101(38):e30810. doi: 10.1097/MD.00000000000030810.
4. Lin Y, Chen Y, Liu R, Cao B. Effect of exercise on rehabilitation of breast cancer surgery patients: A systematic review and meta-analysis of randomized controlled trials. *Nurs Open*. 2023 Apr;10(4):2030-2043. doi: 10.1002/nop2.1518.

Reduction secondary lymphedema

1. 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.
2. Baumann FT, Reike A, Reimer V, et al. Effects of physical exercise on breast cancer-related secondary lymphedema: a systematic review. *Breast Cancer Res Treat.* 2018 Jul;170(1):1-13. doi: 10.1007/s10549-018-4725-y. Epub 2018 Feb 22. PMID: 29470804.
3. 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 Systematic Review. *Breast Care (Basel).* 2018 Oct;13(5):380-385. doi: 10.1159/000487428.
4. Tsai CL, Hsu CY, Chang WW, Lin YN. Effects of weight reduction on the breast cancer-related lymphedema: A systematic review and meta-analysis. *Breast.* 2020 Aug;52:116-121. doi: 10.1016/j.breast.2020.05.007. Epub 2020 May 28. PMID: 32505860; PMCID: PMC7375642.
5. Basha MA, Aboelnour NH, Alsharidah AS, Kamel FH. Effect of exercise mode on physical function and quality of life in breast cancer-related lymphedema: a randomized trial. *Support Care Cancer.* 2022 Mar;30(3):2101-2110. doi: 10.1007/s00520-021-06559-1.
6. Hayes SC, Singh B, Reul-Hirche H, et al. The Effect of Exercise for the Prevention and Treatment of Cancer-Related Lymphedema: A Systematic Review with Meta-analysis. *Med Sci Sports Exerc.* 2022 Aug 1;54(8):1389-1399. doi: 10.1249/MSS.0000000000002918.

Prevention lymphedema

1. 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
2. Paskett ED, Le-Rademacher J, Olivieri JM et al. A randomized study to prevent lymphedema in women treated for breast cancer: CALGB 70305 (Alliance). *Cancer* 2021 Jan 15;127(2):291-299
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4. Lin Y, Wu C, He C, et al. Effectiveness of three exercise programs and intensive follow-up in improving quality of life, pain, and lymphedema among breast cancer survivors: a randomized, controlled 6-month trial. *Support Care Cancer.* 2022 Dec 13;31(1):9. doi: 10.1007/s00520-022-07494-5.
5. Shi B, Lin Z, Shi X, et al. Effects of a lymphedema prevention program based on the theory of knowledge-attitude-practice on postoperative breast cancer patients: A randomized clinical trial. *Cancer Med.* 2023 Jul;12(14):15468-15481. doi: 10.1002/cam4.6171.

Prophylactic lymph drainage

1. 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.
2. 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.
3. Wanchai A, Armer JM. Manual lymphedema drainage for reducing risk for and managing breast cancer-related lymphedema after breast surgery:A systematic review. *Nurs Womens Health* 2021 oct;25(5):377-383.Doi 10.1016/j.nwh.2021.07.005
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Yoga

1. Loudon A, Barnett T, Piller N,et al. The effects of yoga on shoulder and spinal actions for women with breast cancer-related lymphoedema of the arm: A randomised controlled pilot study. *BMC Complement Altern Med*. 2016 Sep 2;16(1):343. doi: 10.1186/s12906-016-1330-7. PMID: 27590865; PMCID: PMC5010718.
2. Eyigor S, Uslu R, Apaydin S, et al. Can Yoga have any effect on shoulder and arm pain an quality of life in patients with breast cancer. A randomized, controlled, single-blind trial . *Complementary Therapies in Clinical Practice* 2018;32:40-45.
3. Saraswathi V, Latha S, Niraimathi K, Vidhubala E. Managing Lymphedema, Increasing Range of Motion, and Quality of Life through Yoga Therapy among Breast Cancer Survivors: A Systematic Review. *Int J Yoga*. 2021 Jan-Apr;14(1):3-17. doi: 10.4103/ijoy.IJOY_73_19.

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.
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10389. doi: 10.1007/s00520-022-07414-7.

Complementary Treatment While on Cancer Treatment – Impact on Toxicity I

	Oxford		
	LoE	GR	AGO
During anti-cancer treatment: Beware of drug interactions			
▪ Mistletoe (<i>Viscum album</i>) in order to reduce side effects	1a	B	+/-
▪ Thymic peptides lower risk of severe infections	1a	B	+/-
▪ Ginseng reduces fatigue; note: interacts with cytochrome P enzymes e.g. CYP 3A4	2b	B	-
▪ Ganoderma Lucidum reduces fatigue, note: inhibits cytochrome P enzymes (e.g. CYP 3A4)	1a	B	-
▪ L-Carnitine			
▪ peripheral neuropathy	1b	B	--
▪ treatment of fatigue	1b	B	-
▪ Melatonin (reduces fatigue, improve sleep, depressive symptoms, cognition)	2a	B	+/-
▪ Curcumin adjunct to reduce radiation-induced dermatitis	1b	B	+/-
▪ Ginger adjunct to guideline-oriented medication to treat chemotherapy induced nausea & vomiting – beware of drug interactions	1b	C	+/-

General

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2. 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.
3. Ben-Arye E, Elly D, Samuels N, Gressel O, Shulman K, Schiff E, Lavie O, Minerbi A. Effects of a patient-tailored integrative oncology intervention in the relief of pain in palliative and supportive cancer care. *J Cancer Res Clin Oncol.* 2021 Aug;147(8):2361-2372. doi: 10.1007/s00432-020-03506-1.
4. Jakobušić Brala C, Karković Marković A, Kugić A, Torić J, Barbarić M. Combination Chemotherapy with Selected Polyphenols in Preclinical and Clinical Studies-An Update Overview. *Molecules.* 2023 Apr 26;28(9):3746. doi: 10.3390/molecules28093746.

Mistletoe

1. 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.
2. 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.

3. 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.
4. 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.
5. Pelzer F, Loef M, Martin DD, Baumgartner S. Cancer-related fatigue in patients treated with mistletoe extracts: a systematic review and meta-analysis. *Support Care Cancer*. 2022 Aug;30(8):6405-6418. doi: 10.1007/s00520-022-06921-x.
6. Loef M, Paepke D, Walach H. Quality of Life in Breast Cancer Patients Treated With Mistletoe Extracts: A Systematic Review and Meta-Analysis. *Integr Cancer Ther*. 2023 Jan-Dec;22:15347354231198074. doi: 10.1177/15347354231198074.

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

1. He M, Huang X, Liu S, et al. The Difference between White and Red Ginseng: Variations in Ginsenosides and Immunomodulation. *Planta Med*. 2018 Aug;84(12-13):845-854. doi: 10.1055/a-0641-6240.
2. Arring NM, Millstine D, Marks LA, Nail LM. Ginseng as a Treatment for Fatigue: A Systematic Review. *J Altern Complement Med*. 2018 Jul;24(7):624-633. doi: 10.1089/acm.2017.0361.
3. Sadeghian M, Rahmani S, Zendehtel M, et al. Ginseng and Cancer-Related Fatigue: A Systematic Review of Clinical Trials. *Nutr Cancer*. 2021;73(8):1270-1281. doi: 10.1080/01635581.2020.1795691.

Ganoderma Lucidum

1. Jin X, Ruiz Beguerie J, SzeDMY, Chan GCF. *Ganoderma lucidum* (Reishi mushroom) for cancer treatment. *Cochrane Database of Systematic Reviews* 2016, Issue 4. Art. No.: CD007731. DOI: 10.1002/14651858.CD007731.pub3.
2. Zhong L, Yan P, Lam WC, et al. *Coriolus Versicolor* and *Ganoderma Lucidum* Related Natural Products as an Adjunct Therapy for Cancers: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Front Pharmacol*. 2019 Jul 3;10:703. doi: 10.3389/fphar.2019.00703.

L-Carnitine

1. 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
2. Hershman DL, Unger JM, Crew K et al.: Two-Year trends of Taxane-induced neuropathy in women enrolled in a randomized trial of Acetyl-L-carnitine (SWOG S0715). *J Natl Cancer Inst* 2018 Jun 1;110(6) 669-676.
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Melatonin

1. Li W, Chi-Hei Kwok C, Chun-Wan Chan D et al. Disruption of sleep, sleep-wake activity rhythm, and nocturnal melatonin production in breast cancer patients undergoing adjuvant chemotherapy: prospective cohort study. *Sleep Med* 2019;55:14-21 DOI 10.1016/j.sleep.2018.11.022
2. Zaki NFW, Sabri YM, Farouk O et al. Depressive symptoms, sleep profile and serum melatonin levels in a sample of breast cancer patients. *Nature and Science of Sleep* 2020;12:135-149.
3. Sedighi Pashaki A, Sheida F, Moaddab Shoar L, et al. A Randomized, Controlled, Parallel-Group, Trial on the Long-term Effects of Melatonin on Fatigue Associated With Breast Cancer and Its Adjuvant Treatments. *Integr Cancer Ther*. 2023 Jan-Dec;22:15347354231168624. doi: 10.1177/15347354231168624.
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Curcumin

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Ingwer

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2. Kim SD, Kwag EB, Yang MX, Yoo HS. Efficacy and Safety of Ginger on the Side Effects of Chemotherapy in Breast Cancer Patients: Systematic Review and Meta-Analysis. *Int J Mol Sci.* 2022 Sep 24;23(19):11267. doi: 10.3390/ijms231911267.

Complementary Treatment While on Cancer Treatment – Impact on Toxicity II

	Oxford		
	LoE	GR	AGO
▪ Antioxidant supplements	1b	B	-
• various antioxidative extracts (to reduce anthracyclin-induced cardiotoxicity)	1b	B	-
▪ High dose vitamin C	1b	C	-
▪ Vitamine E	2b	B	-
▪ Selenium (for alleviating therapy side effects)	1b	B	-
▪ Co-Enzyme Q 10 (fatigue, QoL)	1b	B	-
▪ Proteolytic enzymes (for reduction of chemotherapy-induced toxicity)	2b	B	-
▪ Chinese herbal medicine improves wound healing *	1b	B	--
▪ Oxygen and ozone therapy	3	C	--
▪ Short-term fasting (under 3 week chemotherapy cycle - QoL, Fatigue)	2b	B	+/-**

* Application of substances or combinations not tested in Germany

** Treatment in clinical trials recommended

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Vitamine E

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Additional Complementary Therapy of Side Effects Related to Cancer Treatments

	Oxford		
	LoE	GR	AGO
▪ Cannabis-based drugs (against pain, emesis/nausea)	1b	A	+/-
▪ Chinese medicinal herbs (to treat the side effects of chemotherapy and endocrine therapy)	1b	B	-
▪ Homoeopathic medicine (against therapy-related side effects / placebo effect)	1b	B	+/-
▪ Topical Silymarin (to prevent acute dermatitis during radiotherapy)	2b	B	+/-
▪ Massage (to improve on fatigue, pain, anxiety, nausea)	1b	B	+/-
▪ Transcutaneous Electrical Nerve stimulation (TENS) (against cancer pain)	1a	B	+/-
▪ Hydrotherapy (for supportive skin care)	2b	B	+/-

* Cave! Overviews or meta-analyses with purely Chinese-language original works cannot be verified by the Commission Mamma

Cannabis

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Hydrotherapy

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Additional Complementary Therapy of Side Effects Related to Cancer Treatments

	Oxford		
	LoE	GR	AGO
Acupuncture** in order to improve			
▪ Chemotherapy-induced nausea and vomiting			
▪ (Electro/Ear-)Acupuncture as adjunct to antiemetic treatment	1b	B	+
▪ (Ear-)Acupressure as adjunct to antiemetic treatment	1b	B	+
▪ Pain			
▪ Cancer pain	1b	B	+
▪ Aromatase-inhibitor – induced arthralgia	1a	B	+
▪ Fatigue	1a	B	+
▪ Acupressure	1b	B	+
▪ Cognitive Dysfunction	2b	C	+/-
▪ Sleep Problems	2b	C	+/-
▪ Menopause syndrome (under treatment)	1b	B	+*
▪ to improve on frequency and severity of hot flashes	1b	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	+/-

* data only post treatment

** Cave! Overviews or meta-analyses with purely Chinese-language original works cannot be verified by the Mamma Commission

General

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Acupuncture

Nausea, Emesis

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022-03543-y.

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Pain

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Fatigue

1. 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.
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Kognitive 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
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Sleep

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Menopausal Problems

1. Pan YQ, Tang Y, Liang HQ, et al. Acupuncture for Hormone Therapy-Related Side Effects in Breast Cancer Patients: A GRADE-Assessed

Systematic Review and Updated Meta-Analysis. *Integr Cancer Ther.* 2020 Jan-Dec;19:1534735420940394. doi: 10.1177/1534735420940394. Cave: Vertauschung Vor- mit Nachnamen

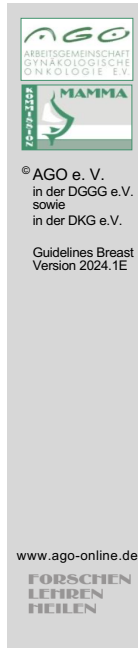
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Chemotherapy induced peripheral neuropathy

1. 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.
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Chronic Lymphedema

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.
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Complementary Treatment Mind-Body Medicine I

MBSR (Mindfulness-Based Stress Reduction)

Program improves quality of life, coping strategies, attentiveness, and lowers stress, anxiety (incl. fear of recurrence), depression, fatigue, and sleep disturbances

Physical exercise / sport

min. 3x/week moderate endurance training in combination with workout exercises (2x per week) improve quality of life, cardio-respiratory fitness, physical performance, sleep, pain, depression, lymphedema, fatigue, cognition, weight-control

Oxford		
LoE	GR	AGO
1a	A	+
1a	A	++

Mind-Body Medicine (MBM)

MBSR

- 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.
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Complementary Treatment Mind-Body Medicine II

	Oxford		
	LoE	GR	AGO
Relaxation techniques Reduction of anxiety, depressivity and nausea, improvement of quality of life, sleep, reduction of psychological stress	2b	C	+/-
Yoga Improves quality of life, sleep, anxiety, depression, CIPN, lymphedema and especially fatigue	1b	A	+
Qi Gong May improve quality of life, fatigue, and mood	2a	B	+/-
Tai Chi Improves quality of life, muscular strength, sleep	2a	B	+/-
Hypnosis Improves fatigue and muscle weakness under radiotherapy; also reduces distress	1b	A	+

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Tai-Chi

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CAM

Prevention of Recurrence / Improvement of Overall Survival I

Modifiable Lifestyle Factors

	Oxford		
	LoE	GR	AGO
<ul style="list-style-type: none"> ▪ Physical exercise (equivalent to 3–5 hrs moderate walking per week) improves DFS and OS, cardio-respiratory fitness, physical functioning 	2a	A	++
<ul style="list-style-type: none"> ▪ Reduce smoking 	2b	A	+
<ul style="list-style-type: none"> ▪ Reduce alcohol consumption (< 6 g/day) 	2b	A	+

Physical exercise

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Improvements in DFS and OS, prevention of recurrence

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cancer prognosis: Global Cancer Update Programme (CUP Global) summary of evidence grading. *Int J Cancer*. 2023 Feb 15;152(4):635-644. doi: 10.1002/ijc.34320.

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Smoking

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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.
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Modifiable Lifestyle Factors

Nutrition after Breast Cancer Diagnosis

Prevention of Recurrence / Improvement of Overall Survival II

	Oxford		
	LoE	GR	AGO
▪ Adherence to normal BMI / weight loss if overweight, irrespective of HR-status	1a	A	++
▪ Low fat diet dietary counseling recommended	1a	B	+
▪ Increased fiber intake (e.g. Flaxseed)	2a	B	+
▪ Adherence to general nutrition guidelines (e.g. DGE, WCRF) similar to a Mediterranean Diet	2a	B	++
▪ Nightly Fasting	2b	C	+/-
▪ Dietary extremes	2a	B	--

Adherence to normal body weight/BMI

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Overweight

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Complementary Treatment

Prevention of Recurrence / Improvement of Overall Survival III.1

Dietary Supplements – Herbal Therapies

During anti-cancer treatment: Beware of drug interactions

Post treatment vitamine / antioxidant supplements does not appear to be associated with increased risk of recurrence (beware of drug / treatment interactions)

Smokers on antioxidant supplements are at higher risk for lung cancer

For Prevention of BC Recurrence:

- **Antioxidants**
- **Vitamine supplementation in patients on a balanced diet** (esp. Vitamine C, E)
- **Vitamine D (after Vit D level)**
- **Soy-food** (natural source of phytoestrogens)
 - **food or concentrates containing ≥ 100 mg isoflavones per day**
- **Black Cohosh** (*Cimicifuga racemosa*)
- **Antioxidant supplements** (after completion of radiotherapy)
- **Green tea**
- **Selenium**

Oxford

LoE	GR	AGO
2b	B	
1b	A	
2a	B	+/-
2a	B	+/-
2b	B	+/-
2a	B	+/-
2a	B	-
3b	C	+/-
2b	B	+/-
3a	C	+/-
2b	B	+/-

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Complementary Treatment

Prevention of Recurrence / Improvement of Overall Survival III.2

Dietary Supplements – Herbal Therapies

	Oxford		
	LoE	GR	AGO
During anti-cancer treatment: Beware of drug interactions			
▪ Trace elements and minerals	2b	B	-
▪ Artificial carotenoids	2b	B	-
▪ Proteolytic enzymes (Papain, Trypsin, Chymotrypsin)	3b	B	-
▪ Mistletoe (Viscum album)	1b	C	-
▪ Thymic peptides (impact on OS)	2a	B	-
▪ Oxygen- and ozone therapy	5	D	--
▪ Laetrile (Amygdalin, „Vitamine B17“)	1c	D	--
▪ Methadone	5	D	--
▪ TCM-Herbs *	2b	C	--
▪ Cancer bush (Sutherlandia frutescens), Devil's claw (Harpagophytum procumbens), Rooibos tea (Aspalathus linearis), Bambara groundnut (Vigna subterranean)	4	C	-
▪ Incense	5	D	-
▪ Curcuma, curcumine	2b	C	-

* Cave! Reviews with original Chinese studies and herbal mixtures without knowledge of interactions

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