

Literaturstellen – Longevity – die Anti-Bullshit Formel

Vorwort

Frankfurt, Harry G. (1986). On Bullshit. In: The Importance of What We Care About: Philosophical Essays, Cambridge University Press. Der Text ist auch online verfügbar: <https://archive.org/details/on-bullshit-by-harry-frankfurt> (Zugriff 13. Mai 2025)

Prolog

Zurbuchen et al.. Methods for the assessment of biological age - A systematic review. Maturitas. 2025 Apr;195:108215.

Kapitel 1

GERonTologischer Simulator GERT:

https://www.produktundprojekt.de/alterssimulationsanzug/?gad_source=1&gad_campaignid=56575591&gbraid=0AAAAAD5Zg3Vf77mFsLhIJcQd0FT0kHM08&gclid=CjwKCAjwwNbEBhBpEiwAFYLtGAMKqRKbdd6xvn9KzLWGfX_MlipUZdKn86blqn1Om2Nm3_1oJHzKpxoCU24QAvD_BwE (Zugriff 8. August 2025)

In Japan werden mehr Windeln für Erwachsene als für Kinder produziert:
<https://www.bbc.com/news/business-68672186> (Zugriff 8. August 2025)

Statista-Report „Bevölkerung Deutschlands nach relevanten Altersgruppen 2024 (<https://de-statista-com.uni-wh.idm.oclc.org/statistik/daten/studie/1365/umfrage/bevoelkerung-deutschlands-nach-altersgruppen/>). (Zugriff am 8.8.2025)

Dieleman JL, et al.. Tracking US Health Care Spending by Health Condition and County. JAMA. 2025 Mar 25;333(12):1051-1061.

Liu L, et al.. Quantity, Duration, Adherence, and Reasons for Dietary Supplement Use among Adults: Results from NHANES 2011-2018. Nutrients. 2024 Jun 11;16(12):1830.

Allen LH. Micronutrients - Assessment, Requirements, Deficiencies, and Interventions. N Engl J Med. 2025 Mar 6;392(10):1006-1016.

Wang Y, Neilson LC, Ji S. Why and how do consumers use dietary supplements? A systematic review and thematic analysis. Health Promot Int. 2023 Feb 1;38(1):daac197. doi: 10.1093/heapro/daac197.

Knopf H. Selbstmedikation mit Vitaminen, Mineralstoffen und Nahrungsergänzungsmitteln in Deutschland : Ergebnisse bundesweiter Gesundheitssurveys. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. 2017 Mar;60(3):268-276. German.

Bears of benefit: <https://www.bears-with-benefits.com/collections/all> (Zugriff am 8.8.2025)

https://www.welt.de/wirtschaft/article242567609/Die-Netz-Checkerin-Schoen-dank-Gummibaerchen-Konsum-Das-ist-dran-an-den-Influencer-Versprechen.html?utm_source=chatgpt.com (Zugriff am 8.8.2025)

[www.bfr.bund.de](https://www.bfr.bund.de/mittelung/biotin-in-nahrungsergaenzungsmitteln-kann-labortestergebnisse-beeinflussen/) – z.B. <https://www.bfr.bund.de/mittelung/biotin-in-nahrungsergaenzungsmitteln-kann-labortestergebnisse-beeinflussen/> (Zugriff am 8.8.2025)

White CM. Dietary Supplements Pose Real Dangers to Patients. Ann Pharmacother. 2020 Aug;54(8):815-819. doi: 10.1177/1060028019900504. Epub 2020 Jan 24. PMID: 31973570.

Tucker J, et al.. Unapproved Pharmaceutical Ingredients Included in Dietary Supplements Associated With US Food and Drug Administration Warnings. JAMA Netw Open. 2018 Oct 5;1(6):e183337. doi: 10.1001/jamanetworkopen.2018.3337.

<https://www.bfr.bund.de/lebensmittel-und-futtermittelsicherheit/gesundheitliche-risikobewertung-spezialer-lebensmittelgruppen/gesundheitliche-bewertung-von-nahrungsergaenzungsmitteln/> (Zugriff am 8.8.2025)

Verbraucherzentrale: <https://www.klarertext-nahrungsergaenzung.de/lebensmittel/informationen-zum-download-54599> (Zugriff am 8.8.2025)

Deutsche Gesellschaft für Ernährung:
<https://www.dge.de/wissenschaft/referenzwerte/> (Zugriff am 8.8.2025)

Max Rubner Institut: <https://www.mri.bund.de/de/themen/reduktion-von-zucker-fett-und-salz/> (Zugriff am 8.8.2025)

European Food and Safety Authority:
<https://www.efsa.europa.eu/en/topics/topic/food-supplements> (Zugriff am 8.8.2025)

Österreichische Agentur für Gesundheit und Ernährungssicherheit GmbH:
<https://www.ages.at/themen/ernaehrung/nahrungsergaenzungsmittel> (Zugriff am 8.8.2025)

Schweizerische Gesellschaft für Ernährung: <https://www.sge-ssn.ch/de/> (Zugriff am 8.8.2025)

Noble P. Nahrungsergänzungsmittel: Rechtliche Grundlagen, Abgrenzung zu Arzneimitteln, sonstige Fragestellungen. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. 2017 Mar;60(3):260-267. German. doi: 10.1007/s00103-016-2499-0. PMID: 28070624.

Breitweg-Lehmann E. Kriterien zur Beurteilung von Nahrungsergänzungsmitteln. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. 2017 Mar;60(3):277-285. German. doi: 10.1007/s00103-016-2504-7.

Wan M, et al.. Hypervitaminosis D and nephrocalcinosis: too much of a good thing? Pediatr Nephrol. 2022 Oct;37(10):2225-2229.

Rathmann AM, Seifert R. Vitamin A-containing dietary supplements from German and US online pharmacies: market and risk assessment. *Naunyn Schmiedebergs Arch Pharmacol.* 2024 Sep;397(9):6803-6820.

Wang ME, et al.. Ten-year trajectories of ultra-processed food intake and prospective associations with cardiovascular diseases and all-cause mortality: findings from the Whitehall II cohort study. *Nutr J.* 2025 May 11;24(1):79.

NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. *Lancet.* 2024 Mar 16;403(10431):1027-1050. doi: 10.1016/S0140-6736(23)02750-2. Epub 2024 Feb 29.

Strain T, et al.. Country Data Author Group. National, regional, and global trends in insufficient physical activity among adults from 2000 to 2022: a pooled analysis of 507 population-based surveys with 5·7 million participants. *Lancet Glob Health.* 2024 Aug;12(8):e1232-e1243.

GBD 2021 Diseases and Injuries Collaborators. Global incidence, prevalence, years lived with disability (YLDs), disability-adjusted life-years (DALYs), and healthy life expectancy (HALE) for 371 diseases and injuries in 204 countries and territories and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet.* 2024 May 18;403(10440):2133-2161.

O'Mathúna D, Larimore WL. Dietary Supplements - The Wild West of Good, Bad, and a Whole Lotta Ugly. *Med Clin North Am.* 2022 Sep;106(5):881-898.

Zoom-Call mit Dr. Larimore am 12.8.2025 (persönliche Kommunikation)

Wick G. 'Anti-aging' medicine: does it exist? A critical discussion of 'anti-aging health products'. *Exp Gerontol.* 2002 Aug-Sep;37(8-9):1137-40.

Mehlman MJ, et al.. Anti-aging medicine: can consumers be better protected? *Gerontologist.* 2004 Jun;44(3):304-10.

Starr RR. Too little, too late: ineffective regulation of dietary supplements in the United States. *Am J Public Health.* 2015 Mar;105(3):478-85.

Yu D, et al.. Bridging expectations and science: a roadmap for the future of longevity interventions. *Biogerontology.* 2025 Jul 1;26(4):138.

Gianos E, et al.. American Heart Association Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Cardiovascular and Stroke Nursing; Council on Clinical Cardiology; Council on Lifelong Congenital Heart Disease and Heart Health in the Young; and Council on Peripheral Vascular Disease. Lipoprotein Apheresis: Utility, Outcomes, and Implementation in Clinical Practice: A Scientific Statement From the American Heart Association. *Arterioscler Thromb Vasc Biol.* 2024 Dec;44(12):e304-e321.

Park JW, et al.. Effect of HELP-LDL-apheresis on outcomes in patients with advanced coronary atherosclerosis and severe hypercholesterolemia. *Atherosclerosis.* 1998 Aug;139(2):401-9.

Liu S, et al.. Research progress on blood therapy for anti-aging. *J Adv Res.* 2025 Jul 28:S2090-1232(25)00568-5.

David Robson, *The Expectation Effect – How your mindset can transform your life.* (2022) Canongate books, Edinburgh/UK

Ober KP. The pre-Flexnerian reports: Mark Twain's criticism of medicine in the United States. *Ann Intern Med.* 1997 Jan 15;126(2):157-63.

Pray WS. Ethical, scientific, and educational concerns with unproven medications. *Am J Pharm Educ.* 2006 Dec 15;70(6):141.

Heath G, Colburn WA. An evolution of drug development and clinical pharmacology during the 20th century. *J Clin Pharmacol.* 2000 Sep;40(9):918-29.

Xu J, Shuman AG. Soothing and balmy, cure without disfigurement: Benjamin Bye, false promises, and head and neck cancer. *Otolaryngol Head Neck Surg.* 2015 Apr;152(4):594-7.

Nasr A, et al.. Unapproved drugs in the United States and the Food and Drug Administration. *Adv Ther.* 2011 Oct;28(10):842-56.

Kapitel 2

[1] <https://www.theguardian.com/film/2025/jan/02/bryan-johnson-documentary-dont-die-netflix?> (Zugriff 17.07.2025)

[2] „Don't die – Der Mann der unsterblich sein will“ (2025)
<https://www.netflix.com/de/title/81757532> (Zugriff 12.04.2025)

[3] Samira El Quassil und Friedmann Karig. *Erzählende Affen – Mythen, Lügen, Utopien* (2021) Ullstein

[3] Manfred Lütz. *Lebenslust - Wider die Diät-Sadisten, den Gesundheitswahn und den Fitnesskult* (2013) Knaur

[4] Manfred Lütz. *Wie Sie unvermeidlich glücklich werden* (2017) Random House

Kapitel 3

Joachim Fuchsberger. *Altwerden ist nichts für Feiglinge.* (2010), Penguin Random House

Liu, C., et al.. (2024). Optimal lifestyle patterns for delaying ageing and reducing all-cause mortality: insights from the UK Biobank. *European review of aging and physical activity : official journal of the European Group for Research into Elderly and Physical Activity,* 21(1), 27.

Viktor E. Frankl. *Dem Leben Antwort geben.* (2017), Beltz-Verlag

Whelton, P. K., et al.. (2018). 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults.... *Hypertension* 71(6), 1269–1324.

Thomas, S. J., et al.. (2018). Cumulative Incidence of Hypertension by 55 Years of Age in Blacks and Whites: The CARDIA Study. *Journal of the American Heart Association*, 7(14), e007988.

Chen, V., et al.. (2019). Lifetime Risks for Hypertension by Contemporary Guidelines in African American and White Men and Women. *JAMA cardiology*, 4(5), 455–459.

Christoffersen, M., et al.. (2014). Visible age-related signs and risk of ischemic heart disease in the general population: a prospective cohort study. *Circulation*, 129(9), 990–998.

<https://www.fouetteacademy.com/when-do-dancers-retire-understanding-the-career-timeline-in-dance/?> (Zugriff 18.07.2025)

Fu, Y., et al.. (2024). Objective assessment of the association between telomere length, a biomarker of aging, and health screening indicators: A cross-sectional study. *Medicine*, 103(24), e38533.

Alcazar, J., et al.. (2021). Threshold of Relative Muscle Power Required to Rise from a Chair and Mobility Limitations and Disability in Older Adults. *Medicine and science in sports and exercise*, 53(11), 2217–2224.

Hetherington-Rauth, et al.. (2025). Associations of CT Muscle Area and Density With Functional Outcomes and Mortality Across Anatomical Regions in Older Men. *Journal of the American Geriatrics Society*, 10.1111/jgs.19583.

Kapitel 4

<https://longevityacademy.sg/education/intensive-course-2> (Zugriff 09.06.2025)

<https://www-statista-com.uni-wh.idm.oclc.org/study/116546/global-demographics/> (Zugriff 09.06.2025)

Kroemer, G., ... López-Otín, C. (2025). From geroscience to precision geromedicine: Understanding and managing aging. *Cell*, 188(8), 2043–2062.

Montégut, L., López-Otín, C., & Kroemer, G. (2024). Aging and cancer. *Molecular cancer*, 23(1), 106.

López-Otín, C., et al.. (2022). *Cell metabolism*, 35(1), 12–35.

López-Otín, C., & Kroemer, G. (2024). The missing hallmark of health: psychosocial adaptation. *Cell stress*, 8, 21–50.

López-Otín, C., ... Kroemer, G. (2023). Hallmarks of aging: An expanding universe. *Cell*, 186(2), 243–278.

Qiu, Y., et al.. (2023). Exercise sustains the hallmarks of health. *Journal of sport and health science*, 12(1), 8–35.

- López-Otín, C., & Kroemer, G. (2021). Hallmarks of Health. *Cell*, 184(1), 33–63.
- López-Otín, C., et al.. (2016). Metabolic Control of Longevity. *Cell*, 166(4), 802–821.
- Hamczyk, M. R., et al.. (2020). Biological Versus Chronological Aging: JACC Focus Seminar. *Journal of the American College of Cardiology*, 75(8), 919–930.
- Liu, W. S., et al.. (2023). Association of biological age with health outcomes and its modifiable factors. *Aging cell*, 22(12), e13995.
- Garmany, A., Yamada, S., & Terzic, A. (2021). Longevity leap: mind the healthspan gap. *NPJ Regenerative medicine*, 6(1), 57.
- Garmany, A., & Terzic, A. (2024). Global Healthspan-Lifespan Gaps Among 183 World Health Organization Member States. *JAMA network open*, 7(12), e2450241.
- Masfiah, S., et al.. (2025). Definitions of healthspan: A systematic review. *Ageing research reviews*, 111, 102806.
- Ferrucci, L., et al.. (2020). Measuring biological aging in humans: A quest. *Aging cell*, 19(2), e13080. <https://doi.org/10.1111/acel.13080>
- Tzemah-Shahar, et al.. (2022). What can we learn from physical capacity about biological age? A systematic review. *Ageing research reviews*, 77, 101609.
- Prattichizzo, F., et al.. (2024). Organ-specific biological clocks: Ageotyping for personalized anti-aging medicine. *Ageing research reviews*, 96, 102253.
- Simpson, D. J., & Chandra, T. (2021). Epigenetic age prediction. *Aging cell*, 20(9), e13452.
- Warner, B., et al.. (2024). A systematic review of phenotypic and epigenetic clocks used for aging and mortality quantification in humans. *Aging*, 16(17), 12414–12427.
- Harris, K. M., et al.. (2024). Sociodemographic and Lifestyle Factors and Epigenetic Aging in US Young Adults: NIMHD Social Epigenomics Program. *JAMA network open*, 7(7), e2427889. <https://doi.org/10.1001/jamanetworkopen.2024.27889>
- Cramer, H., et al.. (2022). Effects of Fasting and Lifestyle Modification in Patients with Metabolic Syndrome: A Randomized Controlled Trial. *Journal of clinical medicine*, 11(16), 4751.
- Drewelies, J., et al.. (2025). There Are Multiple Clocks That Time Us: Cross-Sectional and Longitudinal Associations Among 14 Alternative Indicators of Age and Aging. *The journals of gerontology. Series A, Biological sciences and medical sciences*, 80(6), glae244.
- Duran, I., & Tsurumi, A. (2025). Evaluating transcriptional alterations associated with ageing and developing age prediction models based on the human blood transcriptome. *Biogerontology*, 26(2), 86.
- Kuo, C. L., et al.. (2024). Proteomic aging clock (PAC) predicts age-related outcomes in middle-aged and older adults. *Aging cell*, 23(8), e14195.

Rutledge, J., Oh, H., & Wyss-Coray, T. (2022). Measuring biological age using omics data. *Nature reviews. Genetics*, 23(12), 715–727.

Shireby, G. L., et al.. (2020). Recalibrating the epigenetic clock: implications for assessing biological age in the human cortex. *Brain : a journal of neurology*, 143(12), 3763–3775.

Valenzuela, et al.. (2017). Health and disease phenotyping in old age using a cluster network analysis. *Scientific reports*, 7(1), 15608.

Salvioli, S., et al.. (2023). Biomarkers of aging in frailty and age-associated disorders: State of the art and future perspective. *Ageing research reviews*, 91, 102044.

Franceschi, C., et al.. (2018). The Continuum of Aging and Age-Related Diseases: Common Mechanisms but Different Rates. *Frontiers in medicine*, 5, 61.

Drewelies, J., et al.. (2025). There Are Multiple Clocks That Time Us: Cross-Sectional and Longitudinal Associations Among 14 Alternative Indicators of Age and Aging. *The journals of gerontology. Series A, Biological sciences and medical sciences*, 80(6), glae244.

Peter Attia et al., Outlive: Wie wir länger und besser leben können, als wir denken. (2024), Ullstein-Verlag

Hinweis zur Erstellung der „Heatmap“, Abbildung 2 in Kapitel 4: Über eine Anwendung der amerikanischen „National Library of Medicine“, die unter <https://pubmed.ncbi.nlm.nih.gov/> erreichbar ist, kann man nach wissenschaftlichen Quellen in der Form von publizierten Artikeln suchen. Ich habe jeweils aus den Schlagwortkombinationen der beiden Kategorien A und B die Anzahl der wissenschaftlichen Publikationen innerhalb der letzten 5 Jahre bestimmt und diese dann in Relation zur Gesamtanzahl der Publikationen in einem Feld gesetzt. Daraus kann man eine relative Häufigkeit von 25% errechnen. Wenn man dies für alle Kombinationen in gleicher Weise durchführt, erhält man eine Häufigkeitsverteilung.

Skou, S. T., et al.. (2022). Multimorbidity. *Nature reviews. Disease primers*, 8(1), 48.

Thoma, M. V., et al.. (2018). Evaluation of the revised sense of coherence scale in a representative German sample. *PLoS one*, 13(12), e0209550.

Billot, M., et al.. (2020). Preserving Mobility in Older Adults with Physical Frailty and Sarcopenia: Opportunities, Challenges, and Recommendations for Physical Activity Interventions. *Clinical interventions in aging*, 15, 1675–1690.

von Haehling, S., et al.. (2012). From muscle wasting to sarcopenia and myopenia: update 2012. *Journal of cachexia, sarcopenia and muscle*, 3(4), 213–217.

Kapitel 5

<https://www.oe24.at/oesterreich/chronik/schwerer-zwischenfall-in-verjuengungsklinik-in-wien-patient-erlitt-hirnoedem/642049152> (zugegriffen am 25.07.2025)

Alex Edmans. May contain lies – how stories, statistics and studies exploit our biases – and what we can do about it. (2024) Penguin Random House

Tröhler U. Lind and scurvy: 1747 to 1795. *J R Soc Med.* 2005 Nov;98(11):519-22.

Govindarajan, R., & Narayanaswami, P. (2018). Evidence-based medicine for every day, everyone, and every therapeutic study. *Muscle & nerve*, 58(4), 486–496.

Guyatt, G., et al.. (2025). Core GRADE 1: overview of the Core GRADE approach. *BMJ (Clinical research ed.)*, 389, e081903.

Hooijmans, C. R., et al. & GRADE Working Group (2018). Facilitating healthcare decisions by assessing the certainty in the evidence from preclinical animal studies. *PLoS one*, 13(1), e0187271.

Espinoza, S. E., et al.. (2023). Drugs Targeting Mechanisms of Aging to Delay Age-Related Disease and Promote Healthspan: Proceedings of a National Institute on Aging Workshop. *The journals of gerontology. Series A, Biological sciences and medical sciences*, 78(Suppl 1), 53–60.

Gao, L., et al.. (2023). Antiaging effects of dietary supplements and natural products. *Frontiers in pharmacology*, 14, 1192714.

Qamar I und Maurya PK. Cellular Scenescence, age related disorders and Emerging Treatments. (2025) Springer-Verlag.

Allen LH. Micronutrients - Assessment, Requirements, Deficiencies, and Interventions. *N Engl J Med.* 2025 Mar 6;392(10):1006-1016.

Ristori S, et al.. The Role of Nutraceuticals and Functional Foods in Mitigating Cellular Senescence and Its Related Aspects: A Key Strategy for Delaying or Preventing Aging and Neurodegenerative Disorders. *Nutrients.* 2025 May 28;17(11):1837.

An P, et al.. Micronutrient Supplementation to Reduce Cardiovascular Risk. *J Am Coll Cardiol.* 2022 Dec 13;80(24):2269-2285.

Kawamura T, et al.. Exercise as a geroprotector: focusing on epigenetic aging. *Aging (Albany NY)*. 2025 Jul 8;17.

García-Hermoso A, et al.. Safety and Effectiveness of Long-Term **Exercise** Interventions in Older Adults: A Systematic Review and Meta-analysis of Randomized Controlled Trials. *Sports Med.* 2020 Jun;50(6):1095-1106.

Norling AM, Lipsitz LA. Exercise to Mitigate Cerebrovascular Aging: A Geroscience Perspective. *J Gerontol A Biol Sci Med Sci.* 2024 Jul 1;79(7):glae083.

Yuan Y, et al.. Effects of exercise interventions on cognition, physical function and quality of life among older adults with cognitive frailty: A systematic review and meta-analysis. *Geriatr Nurs.* 2025 Mar-Apr;62(Pt A):96-107.

Tessier AJ, et al.. Optimal dietary patterns for healthy aging. *Nat Med.* 2025 May;31(5):1644-1652.

Wang J, et al.. Healthful plant-based diets are negatively associated with the rate of biological aging: A national study based on US adults. Nutr Res. 2024 Dec;132:112-124.

Ribeiro RV, et al.. Rapid benefits in older age from transition to **whole food diet** regardless of protein source or fat to carbohydrate ratio: A randomised control trial. Aging Cell. 2024 Nov;23(11):e14276.

Zhao W, et al.. Sleep traits causally affect epigenetic age acceleration: a Mendelian randomization study. Sci Rep. 2025 Mar 3;15(1):7439.

Pourmotabbed A, et al.. Sleep and frailty risk: a systematic review and meta-analysis. Sleep Breath. 2020 Sep;24(3):1187-1197.

Liu HM, et al.. Association between **sleep duration** and frailty in older adults: Systematic review and meta-analysis of observational studies. Arch Gerontol Geriatr. 2025 Oct;137:105949.

Sivaramakrishnan D, et al.. The effects of **yoga** compared to active and inactive controls on physical function and health related quality of life in older adults- systematic review and meta-analysis of randomised controlled trials. Int J Behav Nutr Phys Act. 2019 Apr 5;16(1):33.

Loewenthal J, et al.. Effect of Yoga on Frailty in Older Adults : A Systematic Review. Ann Intern Med. 2023 Apr;176(4):524-535.

Verhaeghen P, et al.. Mindfulness Interventions in Older Adults for Mental Health and Well-Being: A Meta-Analysis. J Gerontol B Psychol Sci Soc Sci. 2025 Mar 12;80(4):gbae205.

Kishita N, et al.. A meta-analysis of third wave mindfulness-based cognitive behavioral therapies for older people. Int J Geriatr Psychiatry. 2017 Dec;32(12):1352-1361.

Weber M, et al.. Effects of Mind-Body Interventions Involving Meditative Movements on Quality of Life, Depressive Symptoms, Fear of Falling and Sleep Quality in Older Adults: A Systematic Review with Meta-Analysis. Int J Environ Res Public Health. 2020 Sep 9;17(18):6556.

Laird KT, et al.. Mind-Body Therapies for Late-Life Mental and Cognitive Health. Curr Psychiatry Rep. 2018 Jan 25;20(1):2.

Toussaint L, et al.. Effectiveness of Progressive Muscle Relaxation, Deep Breathing, and Guided Imagery in Promoting Psychological and Physiological States of Relaxation. Evid Based Complement Alternat Med. 2021 Jul 2;2021:5924040.

O'Sullivan DJ, et al.. The effectiveness of social prescribing in the management of long-term conditions in community-based adults: A systematic review and meta-analysis. Clin Rehabil. 2024 Oct;38(10):1306-1320.

Kiely B, et al.. Effect of social prescribing link workers on health outcomes and costs for adults in primary care and community settings: a systematic review. BMJ Open. 2022 Oct 17;12(10):e062951.

Koh WQ, et al.. Non-Exercise-Based Interventions to Support Healthy Aging in Older Adults: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Gerontologist*. 2024 Dec 17;65(2):gnae156.

Fernández-Ballesteros R, Sánchez-Izquierdo M. Are Psycho-Behavioral Factors Accounting for Longevity? *Front Psychol*. 2019 Nov 14;10:2516.

Liang J, et al.. *Lycium ruthenicum* Murray Anthocyanins Alleviate Aging Through SIRT1/P53 Signaling Pathway. *Int J Mol Sci*. 2025 May 9;26(10):4510.

Hu X, et al.. Anti-Aging Effects of Anthocyanin Extracts of *Sambucus canadensis* Caused by Targeting Mitochondrial-Induced Oxidative Stress. *Int J Mol Sci*. 2023 Jan 12;24(2):1528.

Dai S, et al.. Effects of Coenzyme Q10 Supplementation on Biomarkers of Oxidative Stress in Adults: A GRADE-Assessed Systematic Review and Updated Meta-Analysis of Randomized Controlled Trials. *Antioxidants (Basel)*. 2022 Jul 13;11(7):1360.

Akbari A, et al.. Coenzyme Q10 supplementation and oxidative stress parameters: a systematic review and meta-analysis of clinical trials. *Eur J Clin Pharmacol*. 2020 Nov;76(11):1483-1499.

Žmitek K, et al.. The effect of dietary intake of coenzyme Q10 on skin parameters and condition: Results of a randomised, placebo-controlled, double-blind study. *Biofactors*. 2017 Jan 2;43(1):132-140.

Jafari A, et al.. Curcumin on Human Health: A Comprehensive Systematic Review and Meta-Analysis of 103 Randomized Controlled Trials. *Phytother Res*. 2024 Dec;38(12):6048-6061.

Izadi M, et al.. Longevity and anti-aging effects of curcumin supplementation. *Geroscience*. 2024 Jun;46(3):2933-2950.

Murray KO, et al.. Intermittent Supplementation With Fisetin Improves Physical Function and Decreases Cellular Senescence in Skeletal Muscle With Aging: A Comparison to Genetic Clearance of Senescent Cells and Synthetic Senolytic Approaches. *Aging Cell*. 2025 May 28:e70114.

Xing W, et al.. Dietary flavonoids intake contributes to delay biological aging process: analysis from NHANES dataset. *J Transl Med*. 2023 Jul 21;21(1):492.

Munguia L, et al.. High Flavonoid Cocoa Supplement Ameliorates Plasma Oxidative Stress and Inflammation Levels While Improving Mobility and Quality of Life in Older Subjects: A Double-Blind Randomized Clinical Trial. *J Gerontol A Biol Sci Med Sci*. 2019 Sep 15;74(10):1620-1627.

Bondonno NP, et al.. Associations between flavonoid-rich food and flavonoid intakes and incident unhealthy aging outcomes in older United States males and females. *Am J Clin Nutr*. 2025 May;121(5):972-985.

Araújo JR, et al.. Folates and aging: Role in mild cognitive impairment, dementia and depression. *Ageing Res Rev*. 2015 Jul;22:9-19.

Costa G, et al.. Oral L-Arginine (5 g/day) for 14 Days Improves Microcirculatory Function in Healthy Young Women and Healthy and Type 2 Diabetes Mellitus Elderly Women. *J Vasc Res.* 2022;59(1):24-33.

Verschiedene Studien testen z.Z. L-Arginine Substitution: z.B.

<https://www.clinicaltrials.gov/study/NCT05000515> und

<https://www.clinicaltrials.gov/study/NCT06865261> (Zugriff am 31.7.2025)

Tsuboi T, et al.. Administration of L-arginine plus L-citrulline or L-citrulline alone successfully retarded endothelial senescence. *PLoS One.* 2018 Feb 7;13(2):e0192252.

Caballero-García A, et al.. L-Citrulline Supplementation and Exercise in the Management of Sarcopenia. *Nutrients.* 2021 Sep 8;13(9):3133.

Borah L, et al.. Therapeutic Potential of Genistein: Insights into Multifaceted Mechanisms and Perspectives for Human Wellness. *Curr Top Med Chem.* 2025 Jun 2.

Na Takuathung M, et al.. Efficacy and Safety of the Genistein Nutraceutical Product Containing Vitamin E, Vitamin B3, and Ceramide on Skin Health in Postmenopausal Women: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial. *J Clin Med.* 2023 Feb 7;12(4):1326.

Veronese N, et al.. Magnesium and health outcomes: an umbrella review of systematic reviews and meta-analyses of observational and intervention studies. *Eur J Nutr.* 2020 Feb;59(1):263-272.

Dominguez LJ, et al.. Magnesium and the Hallmarks of Aging. *Nutrients.* 2024 Feb 9;16(4):496.

US Preventive Services Task Force; Mangione CM, et al.. Vitamin, Mineral, and Multivitamin Supplementation to Prevent Cardiovascular Disease and Cancer: US Preventive Services Task Force Recommendation Statement. *JAMA.* 2022 Jun 21;327(23):2326-2333.

Loftfield E, et al.. Multivitamin Use and Mortality Risk in 3 Prospective US Cohorts. *JAMA Netw Open.* 2024 Jun 3;7(6):e2418729.

Bhasin S, et al.. Nicotinamide Adenine Dinucleotide in Aging Biology: Potential Applications and Many Unknowns. *Endocr Rev.* 2023 Nov 9;44(6):1047-1073.

Song Q, et al.. The Safety and Antiaging Effects of Nicotinamide Mononucleotide in Human Clinical Trials: an Update. *Adv Nutr.* 2023 Nov;14(6):1416-1435.

Ali Z, et al.. Unraveling the Omega-3 Puzzle: Navigating Challenges and Innovations for Bone Health and Healthy Aging. *Mar Drugs.* 2024 Sep 28;22(10):446.

Bhatt DL, et al.. and REDUCE-IT Investigators. Cardiovascular Risk Reduction with Icosapent Ethyl for Hypertriglyceridemia. *N Engl J Med.* 2019 Jan 3;380(1):11-22.

Mason RP, et al.. Omega-3-fatty acids: Do they prevent cardiovascular disease? *Best Pract Res Clin Endocrinol Metab.* 2023 May;37(3):101681.

Abdelhamid, A. S., et al.. (2020). **Omega-3** fatty acids for the primary and secondary prevention of cardiovascular disease. *The Cochrane database of systematic reviews*, 3(3), CD003177.

Sherratt, S. C. R., et al.. (2024). Do patients benefit from omega-3 fatty acids?. *Cardiovascular research*, 119(18), 2884–2901.

Madeo F, et al.. Spermidine in health and disease. *Science*. 2018 Jan 26;359(6374):eaan2788.

Hofer SJ, et al.. Spermidine is essential for fasting-mediated autophagy and longevity. *Nat Cell Biol*. 2024 Sep;26(9):1571-1584.

Zou M, Li D, Yang Y. The memory- and cognition-facilitating effects of spermidine in aging and aging-related disorders. *Ageing Res Rev*. 2025 Jul;109:102787.

In verschiedenen Studien wird z.Z. untersucht, ob Spermidine einen Gesundheitsförderlichen Effekt hat: Z.B. <https://www.clinicaltrials.gov/study/NCT06186102> (Zugriff am 1.8.2025)

Kazeminejad S, et al.. The Effect of Algae Supplementation on Anthropometric Indices in Adults: A GRADE-Assessed Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Nutr Rev*. 2025 Mar 1;83(3):405-421.

Park HJ, et al.. A randomized double-blind, placebo-controlled study to establish the effects of spirulina in elderly Koreans. *Ann Nutr Metab*. 2008;52(4):322-8.

Nova M, et al.. Unraveling the Anti-Aging Properties of Phycocyanin from the Cyanobacterium Spirulina (*Arthrospira platensis*). *Int J Mol Sci*. 2024 Apr 11;25(8):4215.

Naeini F, et al.. Spirulina supplementation as an adjuvant therapy in enhancement of antioxidant capacity: A systematic review and meta-analysis of controlled clinical trials. *Int J Clin Pract*. 2021 Oct;75(10):e14618.

Alves I, et al.. Protective Effects of Sulforaphane Preventing Inflammation and Oxidative Stress to Enhance Metabolic Health: A Narrative Review. *Nutrients*. 2025 Jan 24;17(3):428.

Santín-Márquez R, et al.. Sulforaphane - role in aging and neurodegeneration. *Geroscience*. 2019 Oct;41(5):655-670.

Z.Z. laufende klinische Studie, die untersucht ob Sulforaphane Effekte bei älteren Menschen auf biochemische Blutparameter aufweisen:
<https://www.clinicaltrials.gov/study/NCT04848792>

Storz MA, et al.. A cross-sectional study of nutritional status in healthy, young, physically-active German omnivores, vegetarians and vegans reveals adequate vitamin B₁₂ status in supplemented vegans. *Ann Med*. 2023;55(2):2269969.

Hoey L, et al.. Studies of biomarker responses to intervention with vitamin B-12: a systematic review of randomized controlled trials. *Am J Clin Nutr*. 2009 Jun;89(6):1981S-1996S.

Evatt ML, et al.. Association between vitamin B12-containing supplement consumption and prevalence of biochemically defined B12 deficiency in adults in NHANES III (third national health and nutrition examination survey). *Public Health Nutr.* 2010 Jan;13(1):25-31.

Lykkesfeldt J, Poulsen HE. Is vitamin C supplementation beneficial? Lessons learned from randomised controlled trials. *Br J Nutr.* 2010 May;103(9):1251-9.

Lykkesfeldt J. On the effect of vitamin C intake on human health: How to (mis)interpret the clinical evidence. *Redox Biol.* 2020 Jul;34:101532.

Virtanen JK, et al.. Vitamin D supplementation and prevention of cardiovascular disease and cancer in the Finnish Vitamin D Trial: a randomized controlled trial. *Am J Clin Nutr.* 2022 May 1;115(5):1300-1310.

LeBoff MS, et al.. The Effects of Vitamin D Supplementation on Musculoskeletal Health: The VITAL and DO-Health Trials. *J Gerontol A Biol Sci Med Sci.* 2023 Jun 16;78(Suppl 1):73-78.

Zhou Y, et al.. Bidirectional associations of zinc supplement intake with biological ageing interacted by metabolic equivalent of task: A large-scale population-based Biobank study. *Clin Nutr.* 2025 Jul;50:1-9.

Vega-Cabello V, et al.. Association of Zinc Intake With Risk of Impaired Physical Function and Frailty Among Older Adults. *J Gerontol A Biol Sci Med Sci.* 2022 Oct 6;77(10):2015-2022.

Smith BJ, et al.. Changes in the gut microbiome and fermentation products concurrent with enhanced longevity in acarbose-treated mice. *BMC Microbiol.* 2019 Jun 13;19(1):130.

<https://clinicaltrials.gov/search?term=aging&intr=Acarbose> – Die Ergebnisse zweier Klinischer Studien (NCT02865499 und NCT02953093), die testen sollten, ob **Acarbose** einen Anti-Aging-Effekt hat, wurden nicht veröffentlicht (zugegriffen am 30.07.2025)

Li S, et al.. Potential harms of supplementation with high doses of antioxidants in athletes. *J Exerc Sci Fit.* 2022 Oct;20(4):269-275.

Stookey JD. Analysis of 2009–2012 Nutrition Health and Examination Survey (NHANES) Data to Estimate the Median Water Intake Associated with Meeting Hydration Criteria for Individuals Aged 12–80 in the US Population. *Nutrients.* 2019 Mar 18;11(3):657.

Majdi M, et al.. Total and drinking water intake and risk of all-cause and cardiovascular mortality: A systematic review and dose-response meta-analysis of prospective cohort studies. *Int J Clin Pract.* 2021 Dec;75(12):e14878.

Edmonds CJ, et al.. Dose-response effects of water supplementation on cognitive performance and mood in children and adults. *Appetite.* 2017 Jan 1;108:464-470.

Rangan GK, et al.. Clinical characteristics and outcomes of hyponatraemia associated with oral water intake in adults: a systematic review. *BMJ Open.* 2021 Dec 9;11(12):e046539.

- Sawka MN, et al.. Human water needs. Nutr Rev. 2005 Jun;63(6 Pt 2):S30-9.
- Grandjean P. Paracelsus Revisited: The Dose Concept in a Complex World. Basic Clin Pharmacol Toxicol. 2016 Aug;119(2):126-32.
- Kahraman C, et al.. Toxicology of pharmaceutical and nutritional longevity compounds. Expert Rev Mol Med. 2023 Jun 22;25:e28.
- Guarente, L., et al.. (2024). Human trials exploring anti-aging medicines. *Cell metabolism*, 36(2), 354–376.
- Barinda AJ, et al.. Repurposing effect of cardiovascular-metabolic drug to increase lifespan: a systematic review of animal studies and current clinical trial progress. Front Pharmacol. 2024 Jun 20;15:1373458.
- Drucker DJ. GLP-1-based therapies for diabetes, obesity and beyond. Nat Rev Drug Discov. 2025 Apr 25.
- Kulkarni, A. S., Gubbi, S., & Barzilai, N. (2020). Benefits of Metformin in Attenuating the Hallmarks of Aging. *Cell metabolism*, 32(1), 15–30.
- Keys MT, et al.. Emerging uncertainty on the anti-aging potential of metformin. Ageing Res Rev. 2025 Jun 27;111:102817.
- <https://clinicaltrials.gov/study/NCT02432287> - Die Ergebnisse der MILES-Studien (NCT02865499 und NCT02953093), die testen sollten, ob Metformin einen Anti-Aging-Effekt hat, wurden nicht veröffentlicht (zugegriffen am 30.07.2025)
- <https://www.afar.org/tame-trial> und
<https://clinicaltrials.gov/study/NCT06459310?cond=aging&term=metformin&rank=1> berichten jeweils von z.Z. noch laufenden Studien, die „anti-aging“ Effekte von Metformin untersuchen (zugegriffen am 28.07.2025)
- <https://clinicaltrials.gov/study/NCT05786521> ist eine kleine Studie, die den Effekt von GLP-1-Rezeptor Agonisten auf Alterungsmarker bei älteren Patienten mit Diabetes oder Prä-Diabetes untersucht. Ergebnisse zum Zeitpunkt der Entstehung des Buches ausstehend (zugegriffen am 30.07.2025)
- Nespoli T, et al.. Lithium can mildly increase health during ageing but not lifespan in mice. Aging Cell. 2021 Oct;20(10):e13479.
- Moel M, et al.. Influence of rapamycin on safety and healthspan metrics after one year: PEARL trial results. Aging (Albany NY). 2025 Apr 4;17(4):908-936.
- Lee DJW, et al.. Targeting ageing with rapamycin and its derivatives in humans: a systematic review. Lancet Healthy Longev. 2024 Feb;5(2):e152-e162.
- <https://clinicaltrials.gov/study/NCT04488601?cond=aging&term=Rapamycin&rank=5> untersuchte die Wirkung von Rapamycin auf viszerales (Bauch-) Fett. Die Studie war bzgl. des primären Endpunktes negativ (zugegriffen 30.07.2025).
- <https://clinicaltrials.gov/study/NCT04742777?cond=aging&term=Rapamycin&rank=6> und <https://clinicaltrials.gov/study/NCT05237687> sind Beispiele für Studien, die z.Z.

noch durchgeführt werden und versch. „anti-aging“ Effekte von mTOR-Signalweg-Inhibitoren wie Rapamycin und Sirolimus untersuchen (zugegriffen 30.07.2025).

Zeraattalab-Motlagh S, et al.. The effects of resveratrol supplementation in patients with type 2 diabetes, metabolic syndrome, and nonalcoholic fatty liver disease: an umbrella review of meta-analyses of randomized controlled trials. Am J Clin Nutr. 2021 Nov 8;114(5):1675-1685.

Yadegar S, et al.. Effects and safety of resveratrol supplementation in older adults: A comprehensive systematic review. Phytother Res. 2024 May;38(5):2448-2461.

Brown K, et al.. Resveratrol for the Management of Human Health: How Far Have We Come? A Systematic Review of Resveratrol Clinical Trials to Highlight Gaps and Opportunities. Int J Mol Sci. 2024 Jan 6;25(2):747.

Ota H, Kodama A. Dasatinib plus quercetin attenuates some frailty characteristics in SAMP10 mice. Sci Rep. 2022 Feb 14;12(1):2425.

Unter <https://clinicaltrials.gov/study/NCT05838560> findet sich ein Hinweis auf eine kleine Studie, die untersucht, ob die Gabe von Dasatinib und Quercetin einen sog. „senescence-associated secretory phenotype (SASP)“ reduzieren kann. SASP steht für Entzündungsförderliche Immunmodulatoren, die von alternden Zellen abgegeben werden. (Zugriff auf die Webseite am 29.7.2025)

Shalaby YM, et al.. Impact of sodium-glucose cotransporter-2 inhibitors on aging biomarkers and plasma ceramide levels in type 2 diabetes: beyond glycemic control. Ann Med. 2025 Dec;57(1):2496795.

La Grotta R, et al.. Repurposing SGLT-2 Inhibitors to Target Aging: Available Evidence and Molecular Mechanisms. Int J Mol Sci. 2022 Oct 14;23(20):12325.

Kleinere Studien (z.B. <https://clinicaltrials.gov/study/NCT04401904>) untersuchen auch die Effekte von SGLT2-Inhibitoren auf Alterungsvorgänge. (Zugriff auf die Webseite am 29.7.2025)

Yu, P., et al.. (2025). Induced Pluripotent Stem Cells-Based Regenerative Therapies in Treating Human Aging-Related Functional Decline and Diseases. *Cells*, 14(8), 619.

Jaijyan, D. K., et al.. (2022). New intranasal and injectable gene therapy for healthy life extension. *Proceedings of the National Academy of Sciences of the United States of America*, 119(20), e2121499119.

Yu, J., Li, T., & Zhu, J. (2023). Gene Therapy Strategies Targeting Aging-Related Diseases. *Aging and disease*, 14(2), 398–417.

Pereira, B., et al.. (2024). Epigenetic reprogramming as a key to reverse ageing and increase longevity. *Ageing research reviews*, 95, 102204.

Calabró, A., et al.. (2024). Senotherapeutics to Counteract Senescent Cells Are Prominent Topics in the Context of Anti-Ageing Strategies. *International journal of molecular sciences*, 25(3), 1792.

Ji, S., et al.. (2023). Cellular rejuvenation: molecular mechanisms and potential therapeutic interventions for diseases. *Signal transduction and targeted therapy*, 8(1), 116.

Kapitel 6

Taksler GB, et al.. Effect of Individualized Preventive Care Recommendations vs Usual Care on Patient Interest and Use of Recommendations: A Pilot Randomized Clinical Trial. *JAMA Netw Open*. 2021 Nov 1;4(11):e2131455.

Hoffmann G.F. et al.. Pädiatrie (2020) Springer Verlag

Siehe Quellenverzeichnis in Tabelle 6.1 und 6.2

Bauer GF, et al.. Future directions for the concept of salutogenesis: a position article. *Health Promot Int*. 2020 Apr 1;35(2):187-195.

Tetzlaff F, et al.. Age-specific and cause-specific mortality contributions to the socioeconomic gap in life expectancy in Germany, 2003-21: an ecological study. *Lancet Public Health*. 2024 May;9(5):e295-e305.

Statista-Report, Todesursachen in Deutschland (2025)

<https://gesund.bund.de/themen/vorsorge-und-frueherkennung> (Zugriff 21.09.2025)

<https://ada.com/de/> (Zugriff 21.09.2025)

Brito-Rocha T, et al., Shifting the Cancer Screening Paradigm: The Rising Potential of Blood-Based Multi-Cancer Early Detection Tests. *Cells*. 2023 Mar 18;12(6):935.

Hackshaw A, et al.. New genomic technologies for multi-cancer early detection: Rethinking the scope of cancer screening. *Cancer Cell*. 2022 Feb 14;40(2):109-113.

Singh B, et al.. Real-World Accuracy of Wearable Activity Trackers for Detecting Medical Conditions: Systematic Review and Meta-Analysis. *JMIR Mhealth Uhealth*. 2024 Aug 30;12:e56972.

Hull LE, et al.. AHA Data Science and Precision Medicine Committee of the Council on Genomic and Precision Medicine ... Direct-to-Consumer Genetic Testing for Cardiovascular Disease: A Scientific Statement From the American Heart Association. *Circulation*. 2025 Apr 8;151(14):e905-e917.

Xiang R, et al.. Recent advances in polygenic scores: translation, equitability, methods and FAIR tools. *Genome Med*. 2024 Feb 19;16(1):33.

Trevethan R. Sensitivity, Specificity, and Predictive Values: Foundations, Pliabilities, and Pitfalls in Research and Practice. *Front Public Health*. 2017 Nov 20;5:307.

<https://www.assmann-stiftung.de/PROCAM/start.html>

Kapitel 7

Lissek, V. J., Orth, S., & Suchan, B. (2024). go4cognition: Evaluation of a Newly Developed Multicomponent Intervention in Mild Cognitive Impairment. *Journal of Alzheimer's disease : JAD*, 99(1), 377–392.

Michael Easter. *Comfort Crisis* (2021) Rodale Books

Liew, S. J., et al.. (2022). Device-Measured Physical Activity and Sedentary Behavior in Relation to Cardiovascular Diseases and All-Cause Mortality: Systematic Review and Meta-Analysis of Prospective Cohort Studies. *AJPM focus*, 2(1), 100054.

<https://www.transalpine-run.com/> (Zugriff 26.06.2025)

Daniel Lieberman. *Exercised: Why Something We Never Evolved to Do Is Healthy and Rewarding* (2021), Pantheon Verlag

Michele Ufer. *Mentaltraining für Läufer: Weil Laufen auch Kopfsache ist* (2022) Meyer&Meyer-Verlag

Kolasinski, S. L., et al.. (2020). 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee. *Arthritis care & research*, 72(2), 149–162.

Chen Z, et al.. Comparative Effectiveness of Various Exercise Interventions on Cardiorespiratory Fitness in Adults Living With Overweight or Obesity: A Systematic Review and Bayesian Network Meta-Analysis. *Journal of Sports Sciences*. 2025;43(11):1027-1035. doi:10.1080/02640414.2025.2483591.

van Baak MA, et al.. Effect of Different Types of Regular Exercise on Physical Fitness in Adults With Overweight or Obesity: Systematic Review and Meta-Analyses. *Obesity Reviews : An Official Journal of the International Association for the Study of Obesity*. 2021;22 Suppl 4:e13239.

Lahart IM, et al.. Chronic Physiological Effects of Swim Training Interventions in Non-Elite Swimmers: A Systematic Review and Meta-Analysis. *Sports Medicine* (Auckland, N.Z.). 2018;48(2):337-359.

Faíl LB, et al.. Benefits of Aquatic Exercise in Adults With and Without Chronic Disease-a Systematic Review With Meta-Analysis. *Scandinavian Journal of Medicine & Science in Sports*. 2022;32(3):465-486.

Paluch AE, et al.. Resistance Exercise Training in Individuals With and Without Cardiovascular Disease: 2023 Update: A Scientific Statement From the American Heart Association. *Circulation*. 2024;149(3):e217-e231.

Schroeder EC, et al.. Comparative Effectiveness of Aerobic, Resistance, and Combined Training on Cardiovascular Disease Risk Factors: A Randomized Controlled Trial. *PloS One*. 2019;14(1):e0210292.

Mannucci E, et al.. Comparison Between Different Types of Exercise Training in Patients With Type 2 Diabetes Mellitus: A Systematic Review and Network Metanalysis of Randomized Controlled Trials. *Nutrition, Metabolism, and Cardiovascular Diseases : NMCD*. 2021;31(7):1985-1992.

Garber CE, et al.. American College of Sports Medicine Position Stand. Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory, Musculoskeletal, and Neuromotor Fitness in Apparently Healthy Adults: Guidance for Prescribing Exercise. *Medicine and Science in Sports and Exercise*. 2011;43(7):1334-59.

Wenz, B., et al.. (2025). Physical activity and motivational readiness for physical activity behavior change in adults with non-communicable diseases in Germany: a trend analysis of two cross-sectional health surveys from the German GEDA study 2014/2015 and 2019/2020. *BMC public health*, 25(1), 494.

Woodcock, J., et al.. (2011). Non-vigorous physical activity and all-cause mortality: systematic review and meta-analysis of cohort studies. *International journal of epidemiology*, 40(1), 121–138.

Janssen, I., et al.. (2013). Years of life gained due to leisure-time physical activity in the U.S. *American journal of preventive medicine*, 44(1), 23–29.

Kaminsky, et al.. (2014). Physical activity and health: what is the best dose?. *Journal of the American Heart Association*, 3(5), e001430.

Franklin, B. A., et al.. AHA Physical Activity Committee of the Council on Lifestyle and Cardiometabolic Health; Council on Cardiovascular and Stroke Nursing; Council on Clinical Cardiology; and Stroke Council (2020). Exercise-Related Acute Cardiovascular Events and Potential deleterious Adaptations Following Long-Term Exercise Training: Placing the Risks Into Perspective-An Update: A Scientific Statement From the American Heart Association. *Circulation*, 141(13), e705–e736.

Gerardin, B., et al.. Groupe de Réflexions sur la Cardiologie Interventionnelle (2021). Life-threatening and major cardiac events during long-distance races: updates from the prospective RACE PARIS registry with a systematic review and meta-analysis. *European journal of preventive cardiology*, 28(6), 679–686.

Bhuva, A. N., et al.. (2020). Training for a First-Time Marathon Reverses Age-Related Aortic Stiffening. *Journal of the American College of Cardiology*, 75(1), 60–71.

Kapitel 8

Saudek, C. D., Derr, R. L., & Kalyani, R. R. (2006). Assessing glycemia in diabetes using self-monitoring blood glucose and hemoglobin A1c. *JAMA*, 295(14), 1688–1697.

Jessie Inchauspé. Der Glukose-Trick: Schluss mit Heißhunger, schlechter Haut und Stimmungstiefs – Wie man der Achterbahn des Blutzuckerspiegels entkommt (2022) Heyne Verlag

Fothergill, E., et al.. (2016). Persistent metabolic adaptation 6 years after "The Biggest Loser" competition. *Obesity (Silver Spring, Md.)*, 24(8), 1612–1619.

[https://en.wikipedia.org/wiki/The_Biggest_Loser_\(American_TV_series\)](https://en.wikipedia.org/wiki/The_Biggest_Loser_(American_TV_series))

- Wolz, I., et al.. (2020). Laboratory-based interventions targeting food craving: A systematic review and meta-analysis. *Obesity reviews : an official journal of the International Association for the Study of Obesity*, 21(5), e12996.
- Duregon, E., et al.. (2021). Intermittent fasting: from calories to time restriction. *GeroScience*, 43(3), 1083–1092.
- Demos McDermott, K. E. et al.. (2019). Effects of Cognitive Strategies on Neural Food Cue Reactivity in Adults with Overweight/Obesity. *Obesity (Silver Spring, Md.)*, 27(10), 1577–1583.
- Boswell, R. G., et al.. (2018). Training in cognitive strategies reduces eating and improves food choice. *Proceedings of the National Academy of Sciences of the United States of America*, 115(48), E11238–E11247.
- Lane, M. M., et al.. (2024). Ultra-processed food exposure and adverse health outcomes: umbrella review of epidemiological meta-analyses. *BMJ (Clinical research ed.)*, 384, e077310.
- Monteiro, C. A., et al.. (2018). The UN Decade of Nutrition, the NOVA food classification and the trouble with ultra-processing. *Public health nutrition*, 21(1), 5–17.
- Lichtenstein, A. H., et al.. (2021). 2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association. *Circulation*, 144(23), e472–e487.
- Walker, M. S., et al.. (2022). Lifestyle improvement reduces the consumption of ultra-processed foods in adults with metabolic syndrome. *Nutrition, metabolism, and cardiovascular diseases : NMCD*, 32(8), 1990–1997.
- Blumfield, M., et al.. (2022). Should We 'Eat a Rainbow'? An Umbrella Review of the Health Effects of Colorful Bioactive Pigments in Fruits and Vegetables. *Molecules (Basel, Switzerland)*, 27(13), 4061.
- Remde, A., et al.. (2022). Plant-predominant eating patterns - how effective are they for treating obesity and related cardiometabolic health outcomes? - a systematic review. *Nutrition reviews*, 80(5), 1094–1104.
- Tessier, A. J., et al.. (2025). Optimal dietary patterns for healthy aging. *Nature medicine*, 31(5), 1644–1652.
- Davinelli, S., et al.. (2025). Dietary polyphenols as geroprotective compounds: From Blue Zones to hallmarks of ageing. *Ageing research reviews*, 108, 102733.

Kapitel 9

- Kaufmann CC, et al.. Effect of marathon and ultra-marathon on inflammation and iron homeostasis. *Scand J Med Sci Sports*. 2021 Mar;31(3):542-552.

Bernat-Adell MD, et al.. Recovery of Inflammation, Cardiac, and Muscle Damage Biomarkers After Running a Marathon. *J Strength Cond Res.* 2021 Mar 1;35(3):626-632.

Herring SA, et al.. Mass Participation and Tournament Event Management for the Team Physician: A Consensus Statement (2022 Update). *Med Sci Sports Exerc.* 2024 Apr 1;56(4):575-589.

Haddad M, et al.. Session-RPE Method for Training Load Monitoring: Validity, Ecological Usefulness, and Influencing Factors. *Front Neurosci.* 2017 Nov 2;11:612.

Toresdahl BG, et al.. Training patterns associated with injury in New York City Marathon runners. *Br J Sports Med.* 2023 Feb;57(3):146-152.

Nuuttila OP, et al.. Individualized Endurance Training Based on Recovery and Training Status in Recreational Runners. *Med Sci Sports Exerc.* 2022 Oct 1;54(10):1690-1701.

Selmi O, et al.. Monitoring Psychometric States of Recovery to Improve Performance in Soccer Players: A Brief Review. *Int J Environ Res Public Health.* 2022 Jul 31;19(15):9385.

Garraio C, et al.. Working time arrangements and exhaustion: The role of recovery experiences and satisfaction with the schedule. *Scand J Psychol.* 2023 Oct;64(5):652-662.

Albulescu P, et al.. "Give me a break!" A systematic review and meta-analysis on the efficacy of micro-breaks for increasing well-being and performance. *PLoS One.* 2022 Aug 31;17(8):e0272460.

Kubo T, et al.. Day-to-day variations in daily rest periods between working days and recovery from fatigue among information technology workers: One-month observational study using a fatigue app. *J Occup Health.* 2018 Sep 26;60(5):394-403.

Matthew Walker, "Why We Sleep: Unlocking the Power of Sleep and Dreams". Scribner (2017)

Crowley R, et al.. A systematic and meta-analytic review of the impact of sleep restriction on memory formation. *Neurosci Biobehav Rev.* 2024 Dec;167:105929.

Ballesio A, et al.. Effects of Experimental Sleep Deprivation on Peripheral Inflammation: An Updated Meta-Analysis of Human Studies. *J Sleep Res.* 2025 Jun 5:e70099.

Tao F, et al.. Associations of sleep duration and quality with incident cardiovascular disease, cancer, and mortality: a prospective cohort study of 407,500 UK biobank participants. *Sleep Med.* 2021 May;81:401-409.

Beispiele für Schlaf-Coachings, Selbstanalyse-Tools und Apps: <https://fitforsleep.de/> ; <https://better-sleep.org/>; <https://www.tk.de/techniker/gesundheit-foerdern/digitale-gesundheit/gesundheits-apps/online-training-gegen-schlafstoerungen-2010652>; <https://www.7mind.de/krankenkasse/schlaf>; (Zugriff am 13.08.2025)

Wong VW, et al.. Efficacy of lifestyle medicine on sleep quality: A meta-analysis of randomized controlled trials. J Affect Disord. 2023 Jun 1;330:125-138.

Ruan JY, et al.. Effects of sleep hygiene education for insomnia: A systematic review and meta-analysis. Sleep Med Rev. 2025 Aug;82:102109.

National Chorten in Bhutan: <https://www.youtube.com/watch?v=mBXRhHQhUGU> und <https://www.youtube.com/watch?v=ZhksfH94u8I> (Zugriff am 14.08.2025)

Mindfulness City Project:

https://en.wikipedia.org/wiki/Gelephu_Special_Administrative_Region?utm_source=chatgpt.com und https://www.reuters.com/world/asia-pacific/buddhist-bhutan-build-mindfulness-city-woo-investment-create-jobs-2024-11-11/?utm_source=chatgpt.com und <https://time.com/7204652/gelephu-mindfulness-city-bhutan-economy/> (Zugriff am 14.08.2025)

Emma Slade, „Set Free: A Life-Changing Journey from Banking to Buddhism in Bhutan“, (2017), Summersdale Publishers Ltd.

Emma Slades Stiftung: <https://www.openingyourhearttobhutan.com/> (Zugriff am 14.08.2025)

Gilles A, et al.. Validity of the think-aloud procedure in comparison to other methods for studying the phenomenological features and memory of spontaneous thought. Conscious Cogn. 2025 Aug 1;134:103910.

Montag C, et al.. Social media use and everyday cognitive failure: investigating the fear of missing out and social networks use disorder relationship. BMC Psychiatry. 2023 Nov 24;23(1):872.

Huang X, et al.. Effectiveness of mindfulness-based interventions on inflammaging: a systematic review and meta-analysis. Biogerontology. 2025 Jul 18;26(4):145.

Wang S, et al.. Mindfulness, mortality, disability rates, physical and mental health among the oldest old. Health Psychol. 2023 Oct;42(10):746-755.

Razavi M, et al.. Effects of lifestyle modification programs on cardiac risk factors. PLoS One. 2014 Dec 9;9(12):e114772.

Kapitel 10

<https://de.wikipedia.org/wiki/Lindemannsruehe> (Zugriff am 16.08.2025)

Kauppi M, et al.. Social network ties before and after retirement: a cohort study. Eur J Ageing. 2021 Mar 1;18(4):503-512.

Hagani N, et al.. Effect of retirement on loneliness: a longitudinal comparative analysis across Australia, China and the USA. J Epidemiol Community Health. 2024 Aug 25;78(10):602-608.

Guthmuller S, et al.. The impact of retirement on loneliness in Europe. Sci Rep. 2024 Nov 14;14(1):26971.

Vigezzi GP, et al.. Italian Working Group on Retirement and Health; Amerio A, Ardito C, Bertuccio P, Costa G, d'Errico A, Gentile L, Odone A, Vigezzi GP. Impact of retirement transition on health, well-being and health behaviours: critical insights from an overview of reviews. *Soc Sci Med.* 2025 Jun;375:118049.

Barjaková M, et al.. Risk factors for loneliness: A literature review. *Soc Sci Med.* 2023 Oct;334:116163.

Malhotra R, et al.. Loneliness and health expectancy among older adults: A longitudinal population-based study. *J Am Geriatr Soc.* 2021 Nov;69(11):3092-3102.

Yu X, et al.. Association of cumulative loneliness with all-cause mortality among middle-aged and older adults in the United States, 1996 to 2019. *Proc Natl Acad Sci U S A.* 2023 Dec 19;120(51):e2306819120.

Cai Z, et al.. Associations of social engagement and loneliness with the progression and reversal of frailty: longitudinal investigations of 2 prospective cohorts from the UK and the USA. *Am J Epidemiol.* 2025 Apr 8;194(4):984-993.

<https://de.wikipedia.org/wiki/Grant-Studie> (Zugriff 16.08.2025)

Lam J, et al.. Diversity of strong and weak ties and loneliness in older adults. *J Aging Stud.* 2023 Mar;64:101097.

Scarpitti G, et al.. A comparison of social prescribing approaches across twelve high-income countries. *Health Policy.* 2024 Apr;142:104992.

Liebmann M, et al.. Do people perceive benefits in the use of social prescribing to address loneliness and/or social isolation? A qualitative meta-synthesis of the literature. *BMC Health Serv Res.* 2022 Oct 19;22(1):1264.

<https://www.sinnmacher.eu> (Zugriff 16.08.2022)

Verschiedene Videos zu Sinnmacher (SinnTalks):

<https://www.youtube.com/watch?v=Ok4T4KO8yEw> (Zugriff 16.08.2022)

Martin Schwemmle und Klaudia Thal, „*Sinnovate Your Life*“ (2024) Campus Verlag, Frankfurt.

<https://herminiaibarra.com/working-identity-book> (Zugriff 16.08.2025)

Kapitel 11

Sheikh M, et al.. Postdiagnosis Smoking Cessation and Reduced Risk for Lung Cancer Progression and Mortality : A Prospective Cohort Study. *Ann Intern Med.* 2021 Sep;174(9):1232-1239.

Buck J, et al.. Reasons for discontinuing oral anticoagulation therapy for atrial fibrillation: a systematic review. *Age Ageing.* 2021 Jun 28;50(4):1108-1117.

Ge L, et al.. Comparison of dietary macronutrient patterns of 14 popular named dietary programmes for weight and cardiovascular risk factor reduction in adults:

systematic review and network meta-analysis of randomised trials. BMJ. 2020 Apr 1;369:m696. doi: 10.1136/bmj.m696.

Jonathan Haidt. The Happiness Hypothesis. (2021) Random House Business

Amanda Reill. A Simple Way to Make Better Decisions (2023) Harvard Business Review

Falko Rheinberg und Regina Vollmeyer. Motivation. (2018) W. Kohlhammer GmbH

David Goggins. Can't hurt me. (2023) Riva Verlag

Dan Ariely. Denken hilft zwar, nützt aber nichts. (2015) Droemer Verlag

<https://de-statista-com.uni-wh.idm.oclc.org/statistik/daten/studie/1356789/umfrage/umfrage-in-deutschland-zuvorsaetzen-fuer-das-jahr-2023/> (Zugriff 21.09.2025)

<https://www.ndtv.com/offbeat/what-is-quitters-day-and-how-to-avoid-crushing-new-years-resolution-4847504> (Zugriff 21.09.2025)

Jeff Haden. The Motivation Myth. (2018) Portfolio Penguin

Daniel Kahneman. Thinking, Fast and Slow. (2011) MacMillan US

Michael Easter. Scarcity Brain. (2023) Rodale Books

Hart G, et al.. What Role Does Striatal Dopamine Play in Goal-directed Action? Neuroscience. 2024 May 14;546:20-32.

Kapitel 12

<https://www.ksl.com/article/50873737/the-day-agile-came-to-town-remembering-utahs-agile-manifesto-23-years-later> (Zugriff am 20.08.2025)

<https://revolutionmep.com/plan-like-evander-hollyfield/> (Zugriff am 20.08.2025)

Swann C, et al.. The (over)use of SMART goals for physical activity promotion: A narrative review and critique. Health Psychol Rev. 2023 Jun;17(2):211-226.

Wing RR, et al.. Study of Novel Approaches to Weight Gain Prevention (SNAP) Research Group. Innovative Self-Regulation Strategies to Reduce Weight Gain in Young Adults: The Study of Novel Approaches to Weight Gain Prevention (SNAP) Randomized Clinical Trial. JAMA Intern Med. 2016 Jun 1;176(6):755-62.

Nadal IP, et al.. Effectiveness of behaviour change techniques in lifestyle interventions for non-communicable diseases: an umbrella review. BMC Public Health. 2024 Nov 7;24(1):3082.

Webseite zu WOOP: <https://woopmylife.org/de/home> (Zugriff 24.08.2025)

Spika D, et al.. Put a bet on it: Can self-funded **commitment contracts** curb fitness procrastination? J Health Econ. 2024 Dec;98:102943.

Online tool für Ihren Selbstverpflichtungs-Vertrag: <https://www.stickk.com/> (Zugriff 24.08.2025)

Autor mit seiner Anti-Lampenfieber-Weste:
https://www.youtube.com/watch?v=ypC_3R9Ncp8&t=148s oder

<https://www.youtube.com/watch?v=uUzHk8vEnWs&t=854s> (Zugriff 23.08.2025)

Erfolgskette bei Stephen King: On Writing: A Memoir of the Craft: Twentieth Anniversary Edition with Contributions from Joe Hill and Owen King (2012) Scribner New York

Erfolgskette bei Haruko Murakami:
<https://www.newyorker.com/magazine/2008/06/09/haruki-murakami-the-running-novelist> (Zugriff 24.08.2025)

Erfolgskette Meditations-App: <https://www.headspace.com/de>

Mullan B, et al.. Mind the gap: Habit and **self-determined motivation** predict health behaviours in middle-aged and older adults. Br J Health Psychol. 2021 Nov;26(4):1095-1113.

Pereira HV, et al.. Self-Determination Theory Mechanisms in Men's Long-Term, Objectively Measured Physical Activity and Sedentary Behavior in the European Fans in Training Program. J Phys Act Health. 2025 Jul 4;22(8):979-988.

Ng JY, et al.. Self-Determination Theory Applied to Health Contexts: A Meta-Analysis. Perspect Psychol Sci. 2012 Jul;7(4):325-40.

Keller J, et al.. Habit formation following routine-based versus time-based cue planning: A randomized controlled trial. Br J Health Psychol. 2021 Sep;26(3):807-824.

Kaushal N, et al.. Exercise habit formation in new gym members: a longitudinal study. J Behav Med. 2015 Aug;38(4):652-63.

Buyalskaya A, et al.. What can machine learning teach us about **habit formation**? Evidence from exercise and hygiene. Proc Natl Acad Sci U S A. 2023 Apr 25;120(17):e2216115120.

James Clear, Die 1%-Methode – Minimale Veränderung, maximale Wirkung: Mit kleinen Gewohnheiten jedes Ziel erreichen (2020) Goldmann

Kapitel 13

<https://www.podcast.de/episode/624531363/33-laenger-leben-ohne-anti-aging>
(Zugriff 26.08.2025)

Velaithan V, et al.. The Association of Self-Perception of Aging and Quality of Life in Older Adults: A Systematic Review. Gerontologist. 2024 Apr 1;64(4):gnad041.

McGarrigle CA, et al.. Negative aging perceptions and cognitive and functional decline: Are you as old as you feel? J Am Geriatr Soc. 2022 Mar;70(3):777-788.

Katy Milkman; <https://oid.wharton.upenn.edu/profile/kmilkman/> (Zugriff 27.08.2025)

Joshanloo M. Identifying the key predictors of positive self-perceptions of aging using machine learning. Soc Sci Med. 2025 Jun;374:118060.

Zhu M, et al.. Effects of Self-Perception of Aging Interventions in Older Adults: A Systematic Review and Meta-Analysis. Gerontologist. 2025 Mar 25;65(4):gnae127.

Kaspar R, et al.. Measuring Awareness of Age-Related Change: Development of a 10-Item Short Form for Use in Large-Scale Surveys. Gerontologist. 2019 May 17;59(3):e130-e140.

Dai H., et al.. The Fresh Start Effect: Temporal Landmarks Motivate Aspirational Behavior. Management Science. 2014

Wang G, et al.. A Meta-Analysis of the Effects of Mental Contrasting With Implementation Intentions on Goal Attainment. Front Psychol. 2021 May 12;12:565202.

Bucknell KJ, et al.. A randomized controlled trial comparing the effects of self-reflective writing focused on successful and unsuccessful coping experiences on resilience. Stress Health. 2024 Apr;40(2):e3311.

Maxwell John. Sometimes You Win, Sometimes You Learn (2013) Verlag Center Street (Hachette Book Group, USA)

Syed Matthew. Das Black-Box-Prinzip: Warum Fehler uns weiterbringen (2016) dtv

Barbieri PN. Healthy by Association: The relationship between social participation and self-rated physical and psychological health. Health Soc Care Community. 2021 Nov;29(6):1925-1935.

Kapitel 14

Tony Robbins. Life Force. (2022) Simon & Schuster

Marlo Morgan. Traumfänger. (2000) Goldmann Verlag

Persönliches Gespräch mit Nadine Esposito (<https://www.linkedin.com/in/nadine-esposito-b1804415/>) am 5.9.2025.

Bill Perkins. Die with zero. So machst Du das Beste aus deinem Geld und deinem Leben. (2024) Finanzbuch Verlag

Parkinson Gesetz: <https://www.economist.com/news/1955/11/19/parkinsons-law> (Zugriff 24.08.2025)

<https://www.investopedia.com/the-die-with-zero-strategy-a-radical-plan-that-might-actually-make-more-sense-than-saving-11804142> (Zugriff 5.9.2025)

Epilog

Singh B, et al.. Time to Form a Habit: A Systematic Review and Meta-Analysis of Health Behaviour Habit Formation and Its Determinants. *Healthcare (Basel)*. 2024 Dec 9;12(23):2488.

Strulik H, et al.. Time-inconsistent health behavior and its impact on aging and longevity. *J Health Econ*. 2021 Mar;76:102440.

Weiterführende Literatur

- Attia, Peter: Outlive. Wie wir länger und besser leben können, als wir denken. Ullstein TB, Berlin, 2025.
- Baumeister, Roy F.; Tierney, John: Willpower. Penguin Books, London, 2011.
- Bingel, Ute: Placebo 2.0. Rowohlt, Hamburg, 2021.
- Blech, Jörg: Masterplan Gesundheit. Rowohlt, Hamburg, 2020.
- Clear, James: Die 1%-Methode. Goldmann Verlag, München, 2019.
- Clayton, Paul: Foundation of Lifestyle Medicine Board Review Manual. American College of Lifestyle Medicine, USA, 2020.
- Easter, Michael: Scarcity Brain. Headline Publishing Group, London, 2023.
- Easter, Michael: The Comfort Crisis. Embrace Discomfort to Reclaim Your Wild, Happy, Healthy Self. Rodale Books, New York, 2021.
- Edman, Adam: May Contain Lies. Crown, New York, 2024.
- Foggs, BJ: Tiny Habits. Bantam, New York, 2019.
- Frankl, Viktor E.: Dem Leben Antwort geben. Kösel, München, 1989.
- Frankl, Viktor E.: The Meaning of Life. Beacon Press, Boston, 2014.
- Haden, Jeff: Motivation Myth. Portfolio, New York, 2018.
- Holiday, Ryan: The Daily Stoic. Portfolio, New York, 2016.
- Housel, Morgan: The Psychology of Money. Harriman House, UK, 2020.
- Inchauspé, Jessie: Der Glucose-Trick. Ullstein, Berlin, 2022.
- Keeney, Ralph: Give Yourself a Nudge. Cambridge University Press, Cambridge, 2020.
- Langer, Ellen: The Mindful Body. Basic Books, New York, 2023.
- Lenarz, Markus: Ein guter Plan. Eigenverlag, Hamburg, 2019.
- Levine, Morgan: True Age. Holt Paperbacks, New York, 2022.
- Lieberman, Daniel: Exercised. Penguin Random House, London, 2021.
- Martin, Schwennle: Sinnovate your life. Eigenverlag, Deutschland, 2021.
- Milkman, Katy: How to Change. Penguin Books, London, 2021.
- Oettingen, Gabriele: Rethinking Positive Thinking. Penguin Books, New York, 2014.
- Pink, Daniel H.: Drive. Riverhead Books, New York, 2009.
- Robson, David: The Expectation Effect. Canongate Books, London, 2022.
- Sinclair, David: Lifespan. How We Age—and Why We Don't Have To. Atria Books, New York, 2019.
- Tracy, Brian: Eat That Frog. Berrett-Koehler Publishers, San Francisco, 2007.
- Ufer, Michele: Mentaltraining für Läufer. Meyer & Meyer Verlag, Aachen, 2014.
- Viallant, George: Triumphs of Experience. Harvard University Press, Cambridge, 2012.

Ware, Bronnie: 5 Dinge, die Sterbende am meisten bereuen. Arkana, München, 2013.