

Quellen

1. Holick MF. Vitamin D Deficiency. *New England Journal of Medicine*. 2007;357(3):266-281. doi:10.1056/NEJMra070553
2. Kramer J, Diehl A, Lehnert H. Epidemiologische Untersuchung zur Häufigkeit eines Vitamin-D-Mangels in Norddeutschland. *DMW - Deutsche Medizinische Wochenschrift*. 2014;139(10):470-475. doi:10.1055/s-0033-1360073
3. Cashman KD, Dowling KG, Skrabakova Z, et al. Vitamin D deficiency in Europe: pandemic? *American Journal of Clinical Nutrition*. 2016;103(4):1033-1044. doi:10.3945/ajcn.115.120873
4. Ringe JD, Kipshoven C. Vitamin-D-Unterversorgung in Deutschland: Gefahr für erhöhte Morbidität und Mortalität? *MMW - Fortschritte der Medizin*. 2011;153(S4):115-118. doi:10.1007/BF03367708
5. DeLuca HF. Overview of general physiologic features and functions of vitamin D. *Am J Clin Nutr*. 2004;80(6 Suppl):1689S-96S. doi:10.1093/ajcn/80.6.1689S
6. Bikle D. Nonclassic Actions of Vitamin D. *The Journal of Clinical Endocrinology & Metabolism*. 2009;94(1):26-34. doi:10.1210/jc.2008-1454
7. Hii C, Ferrante A. The Non-Genomic Actions of Vitamin D. *Nutrients*. 2016;8(3):135. doi:10.3390/nu8030135
8. Zittermann A, Gummert JF. Nonclassical Vitamin D Actions. *Nutrients*. 2010;2(4):408-425. doi:10.3390/nu2040408
9. Holick MF. Sunlight and vitamin D for bone health and prevention of autoimmune diseases, cancers, and cardiovascular disease. *Am J Clin Nutr*. 2004;80(6 Suppl):1678S-88S. doi:10.1093/ajcn/80.6.1678S
10. de Freitas RP, Nunes FP, dos Santos LM, et al. Influence of vitamin D in bone healing. *Journal of Oral Diagnosis*. 2017;2(1):1-8.
11. Calleja-Agius J. Vitamin D and bone health. *Maturitas*. 2017;100:100-101. doi:10.1016/j.maturitas.2017.03.030
12. Bikle DD. Vitamin D and Bone. *Curr Osteoporos Rep*. 2012;10(2):151-159. doi:10.1007/s11914-012-0098-z
13. Anderson PH, Turner AG, Morris HA. Vitamin D actions to regulate calcium and skeletal homeostasis. *Clin Biochem*. 2012;45(12):880-886. doi:10.1016/j.clinbiochem.2012.02.020
14. Anderson PH, Atkins GJ, Turner AG, Kogawa M, Findlay DM, Morris HA. Vitamin D metabolism within bone cells: effects on bone structure and strength. *Mol Cell Endocrinol*. 2011;347(1-2):42-47. doi:10.1016/j.mce.2011.05.024
15. Christakos S, Dhawan P, Porta A, Mady LJ, Seth T. Vitamin D and Intestinal Calcium Absorption. *Mol Cell Endocrinol*. 2011;347(1-2):25-29. doi:10.1016/j.mce.2011.05.038

16. Bronner F. Mechanisms of intestinal calcium absorption. *J Cell Biochem.* 2003;88(2):387-393. doi:10.1002/jcb.10330
17. Need AG, O'Loughlin PD, Morris HA, Coates PS, Horowitz M, Nordin BC. Vitamin D Metabolites and Calcium Absorption in Severe Vitamin D Deficiency. *J Bone Miner Res.* 2008;23(11):1859-1863. doi:10.1359/jbmr.080607
18. van Driel M, van Leeuwen JPTM. Vitamin D endocrine system and osteoblasts. *BoneKey Reports.* 2014;3. doi:10.1038/bonekey.2013.227
19. Chun RF, Liu PT, Modlin RL, Adams JS, Hewison M. Impact of vitamin D on immune function: lessons learned from genome-wide analysis. *Front Physiol.* 2014;5. doi:10.3389/fphys.2014.00151
20. Prietl B, Treiber G, Pieber T, Amrein K. Vitamin D and Immune Function. *Nutrients.* 2013;5(7):2502-2521. doi:10.3390/nu5072502
21. Shuler FD, Hendrix J, Hodroge S, Short A. Antibiotic-like actions of vitamin D. *W V Med J.* 2013;109(1):22-25.
22. Korf H, Decallonne B, Mathieu C. Vitamin D for infections: Current Opinion in *Endocrinology & Diabetes and Obesity.* 2014;21(6):431-436. doi:10.1097/MED.000000000000108
23. Gunville CF, Mourani PM, Ginde AA. The role of vitamin D in prevention and treatment of infection. *Inflamm Allergy Drug Targets.* 2013;12(4):239-245.
24. Barlow PG, Svoboda P, Mackellar A, et al. Antiviral activity and increased host defense against influenza infection elicited by the human cathelicidin LL-37. *PLoS ONE.* 2011;6(10):e25333. doi:10.1371/journal.pone.0025333
25. Cantorna MT, Zhao J, Yang L. Vitamin D, invariant natural killer T-cells and experimental autoimmune disease. *Proc Nutr Soc.* 2012;71(1):62-66. doi:10.1017/S0029665111003193
26. Bergman P, Lindh AU, Björkhem-Bergman L, Lindh JD. Vitamin D and Respiratory Tract Infections: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *PLoS ONE.* 2013;8(6):e65835. doi:10.1371/journal.pone.0065835
27. Urashima M, Segawa T, Okazaki M, Kurihara M, Wada Y, Ida H. Randomized trial of vitamin D supplementation to prevent seasonal influenza A in schoolchildren. *Am J Clin Nutr.* 2010;91(5):1255-1260. doi:10.3945/ajcn.2009.29094
28. Schwalfenberg G. Vitamin D for influenza. *Can Fam Physician.* 2015;61(6):507.
29. Adorini L, Penna G. Control of autoimmune diseases by the vitamin D endocrine system. *Nat Clin Pract Rheumatol.* 2008;4(8):404-412. doi:10.1038/ncprheum0855
30. Wagatsuma A. Role of Vitamin D in Myogenesis. In: Gowder S, ed. *A Critical Evaluation of Vitamin D - Basic Overview.* InTech; 2017. doi:10.5772/64514

31. Abrams GD, Feldman D, Safran MR. Effects of Vitamin D on Skeletal Muscle and Athletic Performance. *JAAOS - Journal of the American Academy of Orthopaedic Surgeons*. 2018;26(8):278. doi:10.5435/JAAOS-D-16-00464
32. Bass JJ, Szewczyk NJ, Wilkinson DJ, et al. The Vitamin D receptor regulates skeletal muscle mass in vivo. In: *Proceedings of The Physiological Society. The Physiological Society*; 2016.
33. von Hurst PR, Beck KL. Vitamin D and skeletal muscle function in athletes. *Curr Opin Clin Nutr Metab Care*. 2014;17(6):539-545. doi:10.1097/MCO.000000000000105
34. Banerjee P, Chatterjee M. Antiproliferative role of vitamin D and its analogs--a brief overview. *Mol Cell Biochem*. 2003;253(1-2):247-254.
35. Kipshoven C. Querschnittsstudie zur Abschätzung des Vitamin-D-Status in der Bevölkerung in Deutschland (DEVID-Studie). 2010.
36. Hintzpeter B, Mensink GBM, Thierfelder W, Müller MJ, Scheidt-Nave C. Vitamin D status and health correlates among German adults. *Eur J Clin Nutr*. 2008;62(9):1079-1089. doi:10.1038/sj.ejcn.1602825
37. Di Somma C, Scarano E, Barrea L, et al. Vitamin D and Neurological Diseases: An Endocrine View. *Int J Mol Sci*. 2017;18(11). doi:10.3390/ijms18112482
38. Koduah P, Paul F, Dörr J-M. Vitamin D in the prevention, prediction and treatment of neurodegenerative and neuroinflammatory diseases. *EPMA J*. 2017;8(4):313-325. doi:10.1007/s13167-017-0120-8
39. Almokhtar M, Wikvall K, Norlin M. Vitamin D metabolism in the nervous system: potential effects of glucocorticoids. 2017.
40. Wrzosek M, Łukaszewicz J, Wrzosek M, et al. Vitamin D and the central nervous system. *Pharmacological Reports*. 2013;65(2):271-278. doi:10.1016/S1734-1140(13)71003-X
41. Chen TC, Lu Z, Holick MF. Photobiology of Vitamin D. In: Holick MF, ed. *Vitamin D: Physiology, Molecular Biology, and Clinical Applications*. Totowa, NJ: Humana Press; 2010:35-60. doi:10.1007/978-1-60327-303-9_2
42. Holick MF. Environmental factors that influence the cutaneous production of vitamin D. *Am J Clin Nutr*. 1995;61(3 Suppl):638S-645S. doi:10.1093/ajcn/61.3.638S
43. Webb AR, Kline L, Holick MF. Influence of season and latitude on the cutaneous synthesis of vitamin D₃: exposure to winter sunlight in Boston and Edmonton will not promote vitamin D₃ synthesis in human skin. *J Clin Endocrinol Metab*. 1988;67(2):373-378. doi:10.1210/jcem-67-2-373
44. Faurschou A, Beyer DM, Schmedes A, Bogh MK, Philipsen PA, Wulf HC. The relation between sunscreen layer thickness and vitamin D production after ultraviolet B exposure: a randomized clinical trial: Sunscreen use and vitamin D production: a randomized clinical trial. *British Journal of Dermatology*. 2012;167(2):391-395. doi:10.1111/j.1365-2133.2012.11004.x

45. Holick MF, Matsuoka LY, Wortsman J. Regular use of sunscreen on vitamin D levels. *Arch Dermatol.* 1995;131(11):1337-1339.
46. Matsuoka LY, Wortsman J, Hollis BW. Use of topical sunscreen for the evaluation of regional synthesis of vitamin D3. *J Am Acad Dermatol.* 1990;22(5 Pt 1):772-775.
47. Matsuoka LY, Wortsman J, Hanifan N, Holick MF. Chronic sunscreen use decreases circulating concentrations of 25-hydroxyvitamin D. A preliminary study. *Arch Dermatol.* 1988;124(12):1802-1804.
48. MacLaughlin J, Holick MF. Aging decreases the capacity of human skin to produce vitamin D3. *J Clin Invest.* 1985;76(4):1536-1538.
49. Davie MW, Lawson DE, Emberson C, Barnes JL, Roberts GE, Barnes ND. Vitamin D from skin: contribution to vitamin D status compared with oral vitamin D in normal and anticonvulsant-treated subjects. *Clin Sci.* 1982;63(5):461-472.
50. Matsuoka LY, Wortsman J, Haddad JG, Hollis BW. In vivo threshold for cutaneous synthesis of vitamin D3. *J Lab Clin Med.* 1989;114(3):301-305.
51. Krzyściński JW, Guzikowski J, Rajewska-Więch B. Optimal vitamin D3 daily intake of 2000IU inferred from modeled solar exposure of ancestral humans in Northern Tanzania. *J Photochem Photobiol B, Biol.* 2016;159:101-105. doi:10.1016/j.jphotobiol.2016.03.029
52. Drincic AT, Armas LAG, Van Diest EE, Heaney RP. Volumetric Dilution, Rather Than Sequestration Best Explains the Low Vitamin D Status of Obesity. *Obesity.* 2012;20(7):1444-1448. doi:10.1038/oby.2011.404
53. Hawk J, McGregor J, British Medical Association. *Understanding Skin & Sunlight.* Banbury [England: Family Doctor Publications in association with the British Medical Association; 2000.
54. Levine JA, Sorace M, Spencer J, Siegel DM. The indoor UV tanning industry: a review of skin cancer risk, health benefit claims, and regulation. *J Am Acad Dermatol.* 2005;53(6):1038-1044. doi:10.1016/j.jaad.2005.07.066
55. Woo DK, Eide MJ. Tanning beds, skin cancer, and vitamin D: An examination of the scientific evidence and public health implications. *Dermatol Ther.* 2010;23(1):61-71. doi:10.1111/j.1529-8019.2009.01291.x
56. LeBlanc ES, Perrin N, Johnson JD, Ballatore A, Hillier T. Over-the-Counter and Compounded Vitamin D: Is Potency What We Expect? *JAMA Internal Medicine.* 2013;173(7):585. doi:10.1001/jamainternmed.2013.3812
57. Khadgawat R, Ramot R, Chacko KM, Marwaha RK. Disparity in cholecalciferol content of commercial preparations available in India. *Indian J Endocrinol Metab.* 2013;17(6):1100-1103. doi:10.4103/2230-8210.122638
58. Garg S, Sabri D, Kanji J, et al. Evaluation of vitamin D medicines and dietary supplements and the physicochemical analysis of selected formulations. *J Nutr Health Aging.* 2013;17(2):158-161. doi:10.1007/s12603-012-0090-4

59. Andrews KW, Pehrsson PR, Betz JM. Variability in Vitamin D Content Among Products for Multivitamin and Mineral Supplements. *JAMA Internal Medicine*. 2013;173(18):1752. doi:10.1001/jamainternmed.2013.8759
60. Hemery YM, Fontan L, Moench-Pfanner R, et al. Influence of light exposure and oxidative status on the stability of vitamins A and D₃ during the storage of fortified soybean oil. *Food Chem*. 2015;184:90-98. doi:10.1016/j.foodchem.2015.03.096
61. Lowenthal J, Vergel Rivera GM. Comparison of the activity of the cis and trans isomer of vitamin K1 in vitamin K-deficient and coumarin anticoagulant-pretreated rats. *J Pharmacol Exp Ther*. 1979;209(3):330-333.
62. Knauer TE, Siegfried C, Willingham AK, Matschiner JT. Metabolism and biological activity of cis- and trans-phyloquinone in the rat. *J Nutr*. 1975;105(12):1519-1524. doi:10.1093/jn/105.12.1519
63. Matschiner JT, Bell RG. Metabolism and Vitamin K Activity of cis Phylloquinone in Rats. *The Journal of Nutrition*. 1972;102(5):625-629. doi:10.1093/jn/102.5.625
64. Szterk A, Zmysłowski A, Bus K. Identification of cis / trans isomers of menaquinone-7 in food as exemplified by dietary supplements. *Food Chemistry*. 2018;243:403-409. doi:10.1016/j.foodchem.2017.10.001
65. Richtlinie 2008/100/EG der Kommission vom 28. Oktober 2008 zur Änderung der Richtlinie 90/496/EWG des Rates über die Nährwertkennzeichnung von Lebensmitteln hinsichtlich der empfohlenen Tagesdosen, der Umrechnungsfaktoren für den Energiewert und der Definitionen (Text von Bedeutung für den EWR). Vol OJ L.; 2008. <http://data.europa.eu/eli/dir/2008/100/oj/deu>. Accessed August 10, 2018.
66. German Nutrition Society, Bonn, Germany. New Reference Values for Vitamin D. *Annals of Nutrition and Metabolism*. 2012;60(4):241-246. doi:10.1159/000337547
67. Holick MF, Binkley NC, Bischoff-Ferrari HA, et al. Evaluation, Treatment, and Prevention of Vitamin D Deficiency: an Endocrine Society Clinical Practice Guideline. *The Journal of Clinical Endocrinology & Metabolism*. 2011;96(7):1911-1930. doi:10.1210/jc.2011-0385
68. Why does the Vitamin D Council recommend 5,000 IU/day? Vitamin D Council. December 2013. <https://www.vitamindcouncil.org/why-does-the-vitamin-d-council-recommend-5000-iuday/>. Accessed August 10, 2018.
69. GrassrootsHealth. GrassrootsHealth. <https://grassrootshealth.net/>. Accessed August 10, 2018.
70. Hathcock JN, Shao A, Vieth R, Heaney R. Risk assessment for vitamin D. *Am J Clin Nutr*. 2007;85(1):6-18.
71. Vieth R. Vitamin D supplementation, 25-hydroxyvitamin D concentrations, and safety. *Am J Clin Nutr*. 1999;69(5):842-856.

72. Vermeer C. Vitamin K: the effect on health beyond coagulation – an overview. *Food Nutr Res.* 2012;56. doi:10.3402/fnr.v56i0.5329
73. El Asmar MS, Naoum JJ, Arbid EJ. Vitamin K Dependent Proteins and the Role of Vitamin K2 in the Modulation of Vascular Calcification: A Review. *Oman Med J.* 2014;29(3):172-177. doi:10.5001/omj.2014.44
74. Theuwissen E, Smit E, Vermeer C. The role of vitamin K in soft-tissue calcification. *Adv Nutr.* 2012;3(2):166-173. doi:10.3945/an.111.001628
75. Conly JM, Stein K, Worobetz L, Rutledge-Harding S. The contribution of vitamin K2 (menaquinones) produced by the intestinal microflora to human nutritional requirements for vitamin K. *Am J Gastroenterol.* 1994;89(6):915-923.
76. Inaba N, Sato T, Yamashita T. Low-Dose Daily Intake of Vitamin K(2) (Menaquinone-7) Improves Osteocalcin γ -Carboxylation: A Double-Blind, Randomized Controlled Trials. *J Nutr Sci Vitaminol.* 2015;61(6):471-480. doi:10.3177/jnsv.61.471
77. Caluwe R, Vandecasteele S, Van Vlem B, Vermeer C, De Vriese AS. Vitamin K2 supplementation in haemodialysis patients: a randomized dose-finding study. *Nephrology Dialysis Transplantation.* 2014;29(7):1385-1390. doi:10.1093/ndt/gft464
78. Dalmeijer GW, van der Schouw YT, Magdeleyns E, Ahmed N, Vermeer C, Beulens JWJ. The effect of menaquinone-7 supplementation on circulating species of matrix Gla protein. *Atherosclerosis.* 2012;225(2):397-402. doi:10.1016/j.atherosclerosis.2012.09.019
79. Uwitonze AM, Razzaque MS. Role of Magnesium in Vitamin D Activation and Function. *J Am Osteopath Assoc.* 2018;118(3):181-189. doi:10.7556/jaoa.2018.037
80. Rosanoff A, Dai Q, Shapses SA. Essential Nutrient Interactions: Does Low or Suboptimal Magnesium Status Interact with Vitamin D and/or Calcium Status? *Adv Nutr.* 2016;7(1):25-43. doi:10.3945/an.115.008631
81. Zittermann A. Magnesium deficit ? overlooked cause of low vitamin D status? *BMC Med.* 2013;11:229. doi:10.1186/1741-7015-11-229
82. Zofková I, Kancheva RL. The relationship between magnesium and calciotropic hormones. *Magnes Res.* 1995;8(1):77-84.
83. Medalle R, Waterhouse C, Hahn TJ. Vitamin D resistance in magnesium deficiency. *Am J Clin Nutr.* 1976;29(8):854-858.
84. Shieh A, Chun RF, Ma C, et al. Effects of High-Dose Vitamin D2 Versus D3 on Total and Free 25-Hydroxyvitamin D and Markers of Calcium Balance. *The Journal of Clinical Endocrinology & Metabolism.* 2016;101(8):3070-3078. doi:10.1210/jc.2016-1871
85. Logan VF, Gray AR, Peddie MC, Harper MJ, Houghton LA. Long-term vitamin D3 supplementation is more effective than vitamin D2 in maintaining serum 25-hydroxyvitamin D status over the winter months. *Br J Nutr.* 2013;109(6):1082-1088. doi:10.1017/S0007114512002851

86. Heaney RP, Recker RR, Grote J, Horst RL, Armas LAG. Vitamin D3 Is More Potent Than Vitamin D2 in Humans. *The Journal of Clinical Endocrinology & Metabolism*. 2011;96(3):E447-E452. doi:10.1210/jc.2010-2230
87. Houghton LA, Vieth R. The case against ergocalciferol (vitamin D2) as a vitamin supplement. *Am J Clin Nutr*. 2006;84(4):694-697.
88. Armas LAG, Hollis BW, Heaney RP. Vitamin D2 Is Much Less Effective than Vitamin D3 in Humans. *The Journal of Clinical Endocrinology & Metabolism*. 2004;89(11):5387-5391. doi:10.1210/jc.2004-0360
89. Trang HM, Cole DE, Rubin LA, Pierratos A, Siu S, Vieth R. Evidence that vitamin D3 increases serum 25-hydroxyvitamin D more efficiently than does vitamin D2. *Am J Clin Nutr*. 1998;68(4):854-858.
90. Tripkovic L, Wilson LR, Hart K, et al. Daily supplementation with 15 µg vitamin D2 compared with vitamin D3 to increase wintertime 25-hydroxyvitamin D status in healthy South Asian and white European women: a 12-wk randomized, placebo-controlled food-fortification trial. *Am J Clin Nutr*. 2017;106(2):481-490. doi:10.3945/ajcn.116.138693
91. Wilson LR, Tripkovic L, Hart K, et al. Mechanisms for differences in the efficacy of vitamin D2 and vitamin D3: assessment of post-supplementation decline in vitamin D status in the D2-D3 Study. *Proceedings of the Nutrition Society*. 2016;75(OCE3). doi:10.1017/S0029665116001312