

Template

 All staff

Review template (4)

[Back](#)

Bone Support

 Template by Fullscript

Updated Nov 18th, 2024

Preview Evidence

Evidence rating

The following protocols were developed using only **a,b,c,d,f**-quality evidence

[Learn more about our rating scale](#) 

Overview

Fragility fractures, a marker of weakened bone structure, result in an increased risk of future fractures (14) and are a risk factor for disability, morbidity, and mortality. (4)(31) The risk of fracture increases with age, with an approximate rate of bone loss of 0.5 to 1% yearly, after reaching peak bone mass. (30) These effects are seen particularly after the age of 50 and in postmenopausal women. (28)(31) Further evidence shows that elderly individuals are especially vulnerable to hip fractures, which affect approximately 30% of women and 15% of men by the age of 90. (4)

Fracture rates increase when there is a disparity between bone formation by osteoblasts and bone resorption by osteoclasts, leading to decreases in bone mineral density (BMD) and increased bone fragility. (9)(30) Therefore, improvements in bone mineral density bone turnover may reduce the risk of frailty and fracture. The protocol presented belc

includes ingredients and supportive evidence focused on improving bone integrity and decreasing fracture risk.

Vitamin D

Vitamin D

400-2,000 IU, total per day, minimum 1 year (2)(3)(4)(5)(6)(18)

Note: Combination therapy with Calcium may improve efficacy. (2)(6)(10)(22)(28)(29)

- Associated with 70% better probability than placebo for the prevention of non-vertebral fractures, hip fractures, and non-vertebral, non-hip fractures in postmenopausal women (2)
- Systematic review of 19 RCT's, 9 cohort studies, 19 case-controlled studies, 19 cross-sectional studies, and one meta-analysis found lower range doses (400-700 IU/day) may be more effective for reducing bone loss than higher range doses, though higher range doses (700-800 IU/day) may be more effective in preventing osteoporotic fracture (22)
- Combination therapy with calcium shown to reduce the incidence of any fracture by 5-19%, non-vertebral fractures by 32%, non-vertebral-non-hip fractures by 36%, and hip fractures by 16-33%, compared with calcium mono-therapy or placebo (2)(6)(10)(22)(29)
- Meta-analysis of 11 RDBPC found high dose supplementation (≥ 800 IU per day) resulted in a 30% reduction in risk of hip fracture and 14% reduction in risk of non-vertebral fracture in people 65 or older (3)
- Meta-analysis of 12 randomized double-blind controlled trials and 8 randomized controlled trials found high dose vitamin D supplementation (400 IU/day or more) decreased fracture risk in community-dwelling individuals by 29% and institutionalized older individuals by 15% (5)

Vitamin K

Vitamin K

Vitamin K2: 45-90 mg per day as menatetrenone (MK-4), or 100-300 µg per day as MK-7 for 6-48 months (15)(17)(26)

- Meta-analysis of randomized controlled trials found supplementation with vitamin K to be effective in increasing bone mineral density in the lumbar spine (15)
- Meta-analysis of 19 randomized controlled trials found postmenopausal women with osteoporosis supplemented with vitamin K2 had improved and maintained bone

mineral density as well as prevented fractures ([17](#))

- Systematic review and meta-analysis of 18 randomized controlled trials found improvements in lumbar bone mineral density, and decreases in undercarboxylated osteocalcin and osteocalcin ([26](#))
- Serum undercarboxylated osteocalcin decreased and pentosidine as well as maintained bone mineral density when compared to decreased bone mineral density in control group indicating improved bone quality in postmenopausal women ([20](#))

Potassium

Potassium

90 mmol (3,500 mg), total per day, for six months ([21](#))

50-60 mEq, total per day, for one year ([16](#))([19](#))

- High-dose supplementation of 90 mmol/day decreased intact parathyroid hormone, urine calcium, and net excretion as well as improved net calcium balance ([21](#))
- Areal bone mineral density increased and fraction prediction score decreased in healthy elderly people without osteoporosis ([19](#))
- Reduces urinary N-telopeptide and serum amino terminal propeptide of type I procollagen (P1NP), indicating bone turnover and calcium excretion improvements when given weight-adjusted low dose (1 mmol/kg, median dose of 81 mmol/day) ([12](#))
- Reduces urinary N-telopeptide of collagen type 1 (u-NTX) and serum amino-terminal propeptide of type 1 procollagen (P1NP), indicating improved bone turnover ([16](#))

Magnesium

Magnesium

300-365 mg elemental magnesium total per day as magnesium oxide, magnesium citrate, or magnesium carbonate; minimum 1-12 months ([1](#))([8](#))([13](#))

- Increases the accumulation of hip bone mineral content in healthy adolescent girls ([8](#))
- Reduces serum ionized Mg⁺, intact parathyroid hormone, as well as improved indicators of bone formation (C-terminus of type I procollagen peptide and osteocalcin) and resorption (type I collagen telopeptide) in young, healthy males, providing an indication of bone turnover attenuation ([13](#))
- Reduces serum intact parathyroid hormone and urinary deoxypyridinoline, and increases osteocalcin levels in postmenopausal women providing an indication of bone turnover attenuation ([1](#))

Calcium

Calcium

500-1,200 mg, as calcium carbonate, calcium citrate, or calcium microcrystalline hydroxyapatite, total per day, minimum 1 year (7)(10)(11)(23)(25)(24)(27)(28)

Note: Combination therapy with Vitamin D may improve efficacy. (2)(6)(10)(22)(28)(29).

- Fracture incidence was lower in supplement group (10.2%) than control (15.4%) (23)
- Reduces bone resorption (serum C-telopeptide) and bone turnover (procollagen type-I N-terminal propeptide) in postmenopausal women (7)
- Combination therapy with vitamin D shown to reduce the incidence of any fracture by 5-19%, non-vertebral fractures by 32%, non-vertebral-non-hip fractures by 36%, or hip fractures by 16-33%, compared with calcium mono-therapy or placebo (2)(6)(10)(22)(28)(29)
- Improved bone density and decreased height, serum alkaline phosphatase and procollagen type I N-terminal propeptide in healthy older women when supplemented long term (five years) with calcium citrate (1 g per day) (25)
- High dose (1200 mg/d) was found to be effective in improving bone mineral density via a decrease in serum parathyroid hormone (-25%), total alkaline phosphatase activity (-8%), and procollagen type 1 N-terminal propeptide (-20%) in healthy men over the age of 40 (24)

References

1. Aydin, H., Deyneli, O., Yavuz, D., Gözü, H., Mutlu, N., Kaygusuz, I., & Akalin, S. (2010). Short-term oral magnesium supplementation suppresses bone turnover in postmenopausal osteoporotic women. *Biological Trace Element Research*, 133(2), 136–143. <https://pubmed.ncbi.nlm.nih.gov/19488681/> (C)
2. Bergman, G. J. D., Fan, T., McFetridge, J. T., & Sen, S. S. (2010). Efficacy of vitamin D3 supplementation in preventing fractures in elderly women: a meta-analysis. *Current Medical Research and Opinion*, 26(5), 1193–1201. <https://pubmed.ncbi.nlm.nih.gov/20302551/> (A)
3. Bischoff-Ferrari, H. A., Willett, W. C., Orav, E. J., Lips, P., Meunier, P. J., Lyons, R. A., Flicker, L., Wark, J., Jackson, R. D., Cauley, J. A., Meyer, H. E., Pfeifer, M., Sanders, K. M., Stähelin, H. B., Theiler, R., & Dawson-Hughes, B. (2012). A pooled analysis of vitamin D dose requirements for fracture prevention. *The New England Journal of Medicine*, 367(1), 40–49. <https://pubmed.ncbi.nlm.nih.gov/22762317/> (D)

4. Bischoff-Ferrari, H. A., Willett, W. C., Wong, J. B., Giovannucci, E., Dietrich, T., & Dawson-Hughes, B. (2005). Fracture prevention with vitamin D supplementation: a meta-analysis of randomized controlled trials. *JAMA: The Journal of the American Medical Association*, 293(18), 2257–2264. <https://pubmed.ncbi.nlm.nih.gov/15886381/> **(A)**
5. Bischoff-Ferrari, H. A., Willett, W. C., Wong, J. B., Stuck, A. E., Staehelin, H. B., Orav, E. J., Thoma, A., Kiel, D. P., & Henschkowski, J. (2009). Prevention of nonvertebral fractures with oral vitamin D and dose dependency: a meta-analysis of randomized controlled trials. *Archives of Internal Medicine*, 169(6), 551–561. <https://pubmed.ncbi.nlm.nih.gov/19307517/> **(A)**
6. Boonen, S., Lips, P., Bouillon, R., Bischoff-Ferrari, H. A., Vanderschueren, D., & Haentjens, P. (2007). Need for additional calcium to reduce the risk of hip fracture with vitamin d supplementation: evidence from a comparative metaanalysis of randomized controlled trials. *The Journal of Clinical Endocrinology and Metabolism*, 92(4), 1415–1423. <https://pubmed.ncbi.nlm.nih.gov/17264183/> **(A)**
7. Bristow, S. M., Gamble, G. D., Stewart, A., Horne, L., House, M. E., Aati, O., Mihov, B., Horne, A. M., & Reid, I. R. (2014). Acute and 3-month effects of microcrystalline hydroxyapatite, calcium citrate and calcium carbonate on serum calcium and markers of bone turnover: a randomised controlled trial in postmenopausal women. *The British Journal of Nutrition*, 112(10), 1611–1620. <https://pubmed.ncbi.nlm.nih.gov/25274192/> **(C)**
8. Carpenter, T. O., DeLucia, M. C., Zhang, J. H., Bejnerowicz, G., Tartamella, L., Dziura, J., Petersen, K. F., Befroy, D., & Cohen, D. (2006). A randomized controlled study of effects of dietary magnesium oxide supplementation on bone mineral content in healthy girls. *The Journal of Clinical Endocrinology and Metabolism*, 91(12), 4866–4872. <https://pubmed.ncbi.nlm.nih.gov/17018656/> **(B)**
9. Cesareo, R., Iozzino, M., D'onofrio, L., Terrinoni, I., Maddaloni, E., Casini, A., Campagna, G., Santonati, A., & Palermo, A. (2015). Effectiveness and safety of calcium and vitamin D treatment for postmenopausal osteoporosis. *Minerva Endocrinologica*, 40(3), 231–237. <https://pubmed.ncbi.nlm.nih.gov/26205648/> **(F)**
10. Chakhtoura, M., Chamoun, N., Rahme, M., & Fuleihan, G. E.-H. (2020). Impact of vitamin D supplementation on falls and fractures-A critical appraisal of the quality of the evidence and an overview of the available guidelines. *Bone*, 131, 115112. <https://pubmed.ncbi.nlm.nih.gov/31676406/> **(A)**
11. Dawson-Hughes, B., Dallal, G. E., Krall, E. A., Sadowski, L., Sahyoun, N., & Tannenbaum, S. (1990). A controlled trial of the effect of calcium supplementation on bone density in postmenopausal women. *The New England Journal of Medicine*, 323(13), 878–883. <https://pubmed.ncbi.nlm.nih.gov/2203964/> **(B)**

12. Dawson-Hughes, B., Harris, S. S., Palermo, N. J., Gilhooly, C. H., Shea, M. K., Fielding, R. A., & Ceglia, L. (2015). Potassium Bicarbonate Supplementation Lowers Bone Turnover and Calcium Excretion in Older Men and Women: A Randomized Dose-Finding Trial. *Journal of Bone and Mineral Research: The Official Journal of the American Society for Bone and Mineral Research*, 30(11), 2103–2111. <https://pubmed.ncbi.nlm.nih.gov/25990255/> (B)
13. Dimai, H. P., Porta, S., Wirnsberger, G., Lindschinger, M., Pamperl, I., Dobnig, H., Wilders-Truschnig, M., & Lau, K. H. (1998). Daily oral magnesium supplementation suppresses bone turnover in young adult males. *The Journal of Clinical Endocrinology and Metabolism*, 83(8), 2742–2748. <https://pubmed.ncbi.nlm.nih.gov/9709941/> (C)
14. Elliot-Gibson, V., Bogoch, E. R., Jamal, S. A., & Beaton, D. E. (2004). Practice patterns in the diagnosis and treatment of osteoporosis after a fragility fracture: a systematic review. *Osteoporosis International: A Journal Established as Result of Cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA*, 15(10), 767–778. <https://pubmed.ncbi.nlm.nih.gov/15258724/> (A)
15. Fang, Y., Hu, C., Tao, X., Wan, Y., & Tao, F. (2012). Effect of vitamin K on bone mineral density: a meta-analysis of randomized controlled trials. *Journal of Bone and Mineral Metabolism*, 30(1), 60–68. <https://pubmed.ncbi.nlm.nih.gov/21674202/> (A)
16. Gregory, N. S., Kumar, R., Stein, E. M., Alexander, E., Christos, P., Bockman, R. S., & Rodman, J. S. (2015). POTASSIUM CITRATE DECREASES BONE RESORPTION IN POSTMENOPAUSAL WOMEN WITH OSTEOPENIA: A RANDOMIZED, DOUBLE-BLIND CLINICAL TRIAL. *Endocrine Practice: Official Journal of the American College of Endocrinology and the American Association of Clinical Endocrinologists*, 21(12), 1380–1386. <https://pubmed.ncbi.nlm.nih.gov/26401577/> (B)
17. Huang, Z.-B., Wan, S.-L., Lu, Y.-J., Ning, L., Liu, C., & Fan, S.-W. (2015). Does vitamin K2 play a role in the prevention and treatment of osteoporosis for postmenopausal women: a meta-analysis of randomized controlled trials. *Osteoporosis International: A Journal Established as Result of Cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA*, 26(3), 1175–1186. <https://pubmed.ncbi.nlm.nih.gov/25516361/> (A)
18. Izaks, G. J. (2007). Fracture prevention with vitamin D supplementation: considering the inconsistent results. *BMC Musculoskeletal Disorders*, 8, 26. <https://pubmed.ncbi.nlm.nih.gov/17349055/> (A)
19. Jehle, S., Hulter, H. N., & Krapf, R. (2013). Effect of potassium citrate on bone density, microarchitecture, and fracture risk in healthy older adults without osteoporosis: a randomized controlled trial. *The Journal of Clinical Endocrinology and Metabolism*, 98(1), 207–217. <https://pubmed.ncbi.nlm.nih.gov/23162100/> (B)

20. Koitaya, N., Sekiguchi, M., Tousen, Y., Nishide, Y., Morita, A., Yamauchi, J., Gando, Y., Miyachi, M., Aoki, M., Komatsu, M., Watanabe, F., Morishita, K., & Ishimi, Y. (2014). Low-dose vitamin K2 (MK-4) supplementation for 12 months improves bone metabolism and prevents forearm bone loss in postmenopausal Japanese women. *Journal of Bone and Mineral Metabolism*, 32(2), 142–150.
<https://pubmed.ncbi.nlm.nih.gov/23702931/> (C)
21. Moseley, K. F., Weaver, C. M., Appel, L., Sebastian, A., & Sellmeyer, D. E. (2013). Potassium citrate supplementation results in sustained improvement in calcium balance in older men and women. *Journal of Bone and Mineral Research: The Official Journal of the American Society for Bone and Mineral Research*, 28(3), 497–504.
<https://pubmed.ncbi.nlm.nih.gov/22991267/> (B)
22. Nakamura, K., & Iki, M. (2006). Efficacy of optimization of vitamin D in preventing osteoporosis and osteoporotic fractures: A systematic review. *Environmental Health and Preventive Medicine*, 11(4), 155–170. <https://pubmed.ncbi.nlm.nih.gov/21432375/> (A)
23. Prince, R. L., Devine, A., Dhaliwal, S. S., & Dick, I. M. (2006). Effects of calcium supplementation on clinical fracture and bone structure: results of a 5-year, double-blind, placebo-controlled trial in elderly women. *Archives of Internal Medicine*, 166(8), 869–875. <https://pubmed.ncbi.nlm.nih.gov/16636212/> (B)
24. Reid, I. R., Ames, R., Mason, B., Reid, H. E., Bacon, C. J., Bolland, M. J., Gamble, G. D., Grey, A., & Horne, A. (2008). Randomized controlled trial of calcium supplementation in healthy, nonosteoporotic, older men. *Archives of Internal Medicine*, 168(20), 2276–2282. <https://pubmed.ncbi.nlm.nih.gov/19001206/> (B)
25. Reid, I. R., Mason, B., Horne, A., Ames, R., Reid, H. E., Bava, U., Bolland, M. J., & Gamble, G. D. (2006). Randomized controlled trial of calcium in healthy older women. *The American Journal of Medicine*, 119(9), 777–785.
<https://pubmed.ncbi.nlm.nih.gov/16945613/> (C)
26. Su, S., He, N., Men, P., Song, C., & Zhai, S. (2019). The efficacy and safety of menatetrenone in the management of osteoporosis: a systematic review and meta-analysis of randomized controlled trials. *Osteoporosis International: A Journal Established as Result of Cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA*, 30(6), 1175–1186. <https://pubmed.ncbi.nlm.nih.gov/30734066/> (A)
27. Tai, V., Leung, W., Grey, A., Reid, I. R., & Bolland, M. J. (2015). Calcium intake and bone mineral density: systematic review and meta-analysis. *BMJ*, 351, h4183.
<https://pubmed.ncbi.nlm.nih.gov/26420598/> (A)
28. Weaver, C. M., Alexander, D. D., Boushey, C. J., Dawson-Hughes, B., Lappe, J. M., LeBoff, M. S., Liu, S., Looker, A. C., Wallace, T. C., & Wang, D. D. (2016). Calcium plus vitamin D supplementation and risk of fractures: an updated meta-analysis from the

National Osteoporosis Foundation. *Osteoporosis International: A Journal Established as Result of Cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA*, 27(1), 367–376.

<https://pubmed.ncbi.nlm.nih.gov/26510847/> (A)

29. Yao, P., Bennett, D., Mafham, M., Lin, X., Chen, Z., Armitage, J., & Clarke, R. (2019). Vitamin D and Calcium for the Prevention of Fracture: A Systematic Review and Meta-analysis. *JAMA Network Open*, 2(12), e1917789.

<https://pubmed.ncbi.nlm.nih.gov/31860103/> (A)

30. Zheng, X., Lee, S.-K., & Chun, O. K. (2016). Soy Isoflavones and Osteoporotic Bone Loss: A Review with an Emphasis on Modulation of Bone Remodeling. *Journal of Medicinal Food*, 19(1), 1–14. <https://pubmed.ncbi.nlm.nih.gov/26670451/> (F)

31. Zhou, Q., Zhu, L., Zhang, D., Li, N., Li, Q., Dai, P., Mao, Y., Li, X., Ma, J., & Huang, S. (2016). Oxidative Stress-Related Biomarkers in Postmenopausal Osteoporosis: A Systematic Review and Meta-Analyses. *Disease Markers*, 2016, 7067984.

<https://pubmed.ncbi.nlm.nih.gov/27594735/> (A)

Disclaimer: Protocols are intended solely as an informational reference tool for practicing health care professionals. The content provided is not intended to be for medical diagnosis or treatment, is not a substitute for your professional judgment, and is not meant to provide you medical or professional advice. You should evaluate and independently confirm the appropriateness of the content provided, including verifying uses, dosages, warnings and contraindications on product labels, and rely on your experience and judgment and other available resources when applying the provided content to an actual client care situation. While content has been obtained from sources believed to be reliable, we cannot and do not guarantee the accuracy, validity, timeliness or completeness of the content. We make no representation or warranty, express or implied, including, without limitation, any warranty of merchantability or of fitness for a particular purpose, and you assume full responsibility for the use of the content and products, and agree that Fullscript and its content providers are not responsible or liable for any claim, loss, injury or damage arising from your use of the information. Statements regarding dietary and other health care supplements have not been evaluated by the FDA, and are not intended to diagnose, treat, cure, or prevent any disease.

Template

Total starts at

\$138.35

Add to template

ⓘ We won't overwrite any existing dosage information.

*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

†Claims based on traditional homeopathic practice, not accepted medical evidence. Not FDA evaluated.



© Fullscript 2025. All rights reserved.

[Terms of Service](#) [Privacy Statement](#) [Privacy Rights Notice](#)

[Help and Support](#)