

Vitamin D3, Vitamin K1, and Vitamin K2 to support overall health for athletes*

This information is provided for the use of physicians and other licensed health-care practitioners only. This information is intended for physicians and other licensed health-care providers to use as a basis for determining whether to recommend this product to their patients. This medical and scientific information is not for use by consumers. The dietary supplement products offered by Designs for Sport are not intended for use by consumers as a means to diagnose, treat, cure, prevent, or mitigate any disease or other medical condition.

WHAT IS VITAMIN D3 PRO?

Vitamin D3 Pro provides clinically useful servings of vitamin D3 and vitamin K (as both K1 and K2) to promote cardiovascular, bone, and immune health, all of which support an athlete's performance.* Vitamin D is a fat-soluble vitamin that is primarily obtained through sunlight exposure to the skin, as it can be difficult to consume adequate quantities through food. However, it may be hard to obtain adequate levels through sun exposure due to geographic location and lack of time spent in direct sunlight. Vitamin D3 Pro may be ideal for athletes looking to maintain optimal vitamin D status in the body.*

The vitamin D in this product is featured as vitamin D3. Clinical evidence indicates that vitamin D3 is far more effective at raising and maintaining serum 25(OH)D concentrations compared to vitamin D2, which should not be considered an equivalent.¹ Vitamin D and K work synergistically; thus, increasing vitamin D increases the body's need for vitamin K.* Vitamin K is also a fat-soluble vitamin, with vitamin K1 found naturally in green leafy vegetables and vitamin K2 found in fermented foods and egg yolks. Their synergistic combination has been seen in studies that have found the combined supplements of vitamins D and K to be more effective than that of either vitamin alone.²⁻⁴

FORMULA HIGHLIGHTS

- Vitamin D3 is offered as 2,000 IU (50 mcg) of vitamin D3 to help reach or maintain optimal vitamin D status*
- Contains 1,000 mcg of vitamin K1 (as phytonadione)
- Contains 1,000 mcg of vitamin K2 (as MK 4)
- Gluten-free, dairy-free, soy-free; non-GMO
- NSF Certified for Sport®

MAY SUPPORT ATHLETIC PERFORMANCE*

Maintaining a healthy serum level of vitamin D may be essential for athletes, as it plays a key role in bone health, supporting respiratory function, and muscle performance.⁵⁻⁷ Research from human clinical studies suggests a positive correlation between vitamin D status and athletic performance, particularly in relation to VO2 max.^{5,6} In one randomized controlled trial (RCT), 40 healthy adult men were given either a placebo or 2,000 IU of vitamin D3 daily for 12 weeks. By the end of the study, those who had been supplementing with vitamin D3 showed greater improvements in VO2 max, anaerobic and aerobic performance, and experienced a significant reduction in fatigue index compared to the placebo group.⁵ A systematic review of 14

studies, including 482 athletes (350 males, 72 females), indicated that vitamin D supplementation (ranging from 2,000 to 7,000 IU/day) may support aerobic endurance, anaerobic power output, and strength in elite athletes.⁸



MAY SUPPORT CARDIOVASCULAR HEALTH*

Vitamin D and vitamin K play important roles in the cardiovascular system as they support arterial health and vascular function.* Epidemiological findings indicate that almost 30% of the U.S. adult population is deficient in this vitamin with another 40% being insufficient.⁹ Even among young athletes, a cross-sectional study of 39 young, physically active men and women revealed that vitamin D status was low in their population.⁶ Moreover, they showed that vitamin D status was positively associated with cardiovascular fitness, with men who had normal vitamin D status (above 35 ng/mL) demonstrating a 20% higher VO2 max compared to those with a vitamin D status below 35 ng/mL.⁶

Vitamin K2 also appears to help support athletic performance and cardiovascular health.* In a randomized, double-blind study, 26 athletes supplemented with either a high amount (300 mg/day) of vitamin K2 or a placebo for eight weeks. The vitamin K2 group showed a 12% increase in maximum cardiac output, with a trend toward an increase in heart rate, compared to the placebo group.¹⁰ Additionally, vitamin K1 intake has been observed to be associated with a lower risk of cardiovascular mortality in healthy older women.¹¹

MAY SUPPORT BONE HEALTH*

Vitamin D and vitamin K2 work synergistically to help regulate calcium status in the body, supporting bone strength and flexibility.¹² A double-blind, placebo-controlled study examined the effects of vitamin D supplementation in 24 female basketball players with insufficient vitamin D levels. They used a slightly

higher amount (4,000 IU/day) and found that those who supplemented with vitamin D experienced a small significant reduction in bone resorption and exercise-induced muscle damage.⁷ Additionally, a double-blind RCT of 244 healthy post-menopausal women found that those who supplemented with 180 mcg of vitamin K2 over three years experienced greater mitigation of age-related decline in bone mineral density than those taking a placebo.¹³

PROMOTES IMMUNE HEALTH*

Vitamin D is essential for immune health as it modulates the response of the innate and adaptive immune system and promotes healthy inflammatory responses.^{14,15} This may be especially important for athletes, as exercise can potentially worsen human immune surveillance.¹⁴ It is suggested that adequate vitamin D status helps to promote proper immune defenses, including immune responses in the skeletal muscle.^{14,15}

BENEFITS*

- May support athletic performance including aerobic and anaerobic^{5,6,8}
- May support cardiovascular health, including VO2 max and cardiac output during exercise^{5-7,10,11}
- May support healthy bone metabolism^{7,12,13}
- May support immune health^{14,15}

HOW TO TAKE

Take 1 softgel per day with a meal.

Warning: Consult your health-care practitioner before using this product if you are taking Coumadin, warfarin, or other anticoagulant medications.



Supplement Facts

Serving Size 1 softgel

Amount Per Serving		% Daily Value
Vitamin D (as Cholecalciferol)	50 mcg (2000 IU)	250%
Vitamin K (as Vitamin K1 Phytonadione 1000 mcg; Vitamin K2 MK-4 1000 mcg)	2000 mcg	1667%

Other Ingredients: Medium chain triglycerides, softgel ingredients [bovine gelatin, glycerine, purified water, annatto (color)], DeltaGold® tocotrienols, beeswax, quillaja extract.

MAY SUPPORT OPTIMAL BONE AND ARTERIAL HEALTH*

250% DAILY RECOMMENDED VALUE OF VITAMIN D3

PROPRIETARY BLEND OF THREE BIOACTIVE AND EXTENSIVELY RESEARCHED CURCUMINOID COMPOUNDS*





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

References

1. 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
2. Miyake N, Hoshi K, Sano Y, Kikuchi K, Tadano K, Koshihara Y. 1,25-Dihydroxyvitamin D3 promotes vitamin K2 metabolism in human osteoblasts. *Osteoporos Int.* 2001;12(8):680-687. doi:10.1007/s001980170068
3. Fusaro M, Giannini S, Gallieni M, et al. Calcimimetic and vitamin D analog use in hemodialyzed patients is associated with increased levels of vitamin K dependent proteins. *Endocrine.* 2016;51(2):333-341. doi:10.1007/s12020-015-0673-z
4. Torbergsen AC, Watne LO, Wyller TB, et al. Vitamin K1 and 25(OH)D are independently and synergistically associated with a risk for hip fracture in an elderly population: a case control study. *Clin Nutr.* 2015;34(1):101-106. doi:10.1016/j.clnu.2014.01.016
5. Ramezani Ahmadi A, Mohammadshahi M, Alizadeh A, Ahmadi Angali K, Jahanshahi A. Effects of vitamin D3 supplementation for 12 weeks on serum levels of anabolic hormones, anaerobic power, and aerobic performance in active male subjects: a randomized, double-blind, placebo-controlled trial. *Eur J Sport Sci.* 2020;20(10):1355-1367. doi:10.1080/17461391.2020.1713218
6. Forney LA, Earnest CP, Henagan TM, Johnson LE, Castleberry TJ, Stewart LK. Vitamin D status, body composition, and fitness measures in college-aged students. *J Strength Cond Res.* 2014;28(3):814-824. doi:10.1519/JSC.0b013e3182a35ed0
7. Stojanović E, Jakovljević V, Scanlan AT, Dalbo VJ, Radovanović D. Vitamin D3 supplementation reduces serum markers of bone resorption and muscle damage in female basketball players with vitamin D inadequacy. *Eur J Sport Sci.* 2022;22(10):1532-1542. doi:10.1080/17461391.2021.1953153
8. Wyatt PB, Reiter CR, Satalich JR, et al. Effects of Vitamin D supplementation in elite athletes: a systematic review. *Orthop J Sports Med.* 2024;12(1):23259671231220371. doi:10.1177/23259671231220371
9. Liu X, Baylin A, Levy PD. Vitamin D deficiency and insufficiency among US adults: prevalence, predictors and clinical implications. *Br J Nutr.* 2018;119(8):928-936. doi:10.1017/S0007114518000491
10. McFarlin BK, Henning AL, Venable AS. Oral consumption of vitamin K2 for 8 weeks associated with increased maximal cardiac output during exercise. *Altern Ther Health Med.* 2017;23(4):26-32
11. Dupuy M, Radavelli-Bagatini S, Zhong L, et al. Vitamin K1 intake is associated with lower risk for all-cause and cardiovascular disease mortality in community-dwelling older Australian women. *Nutr Metab Cardiovasc Dis.* 2024;34(5):1189-1197. doi:10.1016/j.numecd.2023.12.007
12. Kuang X, Liu C, Guo X, Li K, Deng Q, Li D. The combination effect of vitamin K and vitamin D on human bone quality: a meta-analysis of randomized controlled trials. *Food Funct.* 2020;11(4):3280-3297. doi:10.1039/c9fo03063h
13. Knapen MHJ, Drummen NE, Smit E, Vermeer C, Theuvsen E. Three-year low-dose menaquinone-7 supplementation helps decrease bone loss in healthy postmenopausal women. *Osteoporos Int.* 2013;24(9):2499-2507. doi:10.1007/s00198-013-2325-6
14. Crescioli C. Vitamin D, exercise, and immune health in athletes: a narrative review. *Front Immunol.* 2022;13:954994. doi:10.3389/fimmu.2022.954994
15. de la Puente Yagüe M, Collado Yurrita L, Ciudad Cabañas MJ, Cuadrado Cenxual MA. Role of vitamin D in athletes and their performance: current concepts and new trends. *Nutrients.* 2020;12(2):579. doi:10.3390/nu12020579