Assessment of Dietary Vitamin D Intake and Compliance With Recommended Vitamin D Supplementation in Division I Collegiate Athletes

Brooks MA1,2, Parks RB1,2, Sanfilippo J2,3, Binkley NC2,4, Stiffler MR1,2.

1Department of Orthopedics and Rehabilitation, University of Wisconsin-Madison, Madison, Wisconsin
2Badger Athletic Performance, University of Wisconsin-Madison, Madison, Wisconsin
3Division of Intercollegiate Athletics, University of Wisconsin-Madison, Madison, Wisconsin
4University of Wisconsin-Madison Osteoporosis Clinical Research Program

Abstract
The primary aim of this study was to assess dietary vitamin D intake and compliance with a recommended vitamin D supplementation program in a collegiate athlete population. Subsequently, associations between dietary intake, compliance with supplementation, and 25-hydroxyvitamin D [25(OH)D] levels were investigated. This study retrospectively reviewed vitamin D data for 256 athletes across 13 sports at one NCAA Division I University. Independent variables were gender, skin tone, sport, season of year, dietary intake of vitamin D, and supplementation compliance. The main outcome measure was serum 25(OH)D. Low vitamin D status was defined as 25(OH)D level less than 30 ng/mL. Supplementation was recommended for athletes with low status. In fall, 35.5% of athletes had levels less than 30 ng/mL. Mean 25(OH)D level declined (P < .001) between fall (40.7 ± 7.5 ng/mL) and winter (32.5 ± 7.3 ng/mL) in non-supplemented athletes. Supplementation increased 25(OH)D levels by 8.5 ± 9.5 ng/mL (95% confidence interval: 6.6 to 10.4) in 12 weeks. On average athletes reported moderate compliance, taking approximately half of their prescribed supplements. There was a weak correlation between percent supplement compliance and 25(OH) D levels (r = 0.257, P = .011). Athletes with better vitamin D status had higher intake of milk (among freshmen only, P = .042) and yogurt (among all athletes, P = .025). Increasing dietary intake of vitamin D-rich foods and moderate to good compliance with recommended supplementation may help collegiate athletes improve or maximize their vitamin D status.