

TACSM Abstract

Vitamin D Deficiency in TAMU Female Basketball Players and Supplement Effectiveness

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ABSTRACT

Purpose:

Vitamin D deficiency has been defined by the Institute of Medicine (IOM) as a level of serum 25-OH vitamin D less than 20 ng/mL. The Endocrine Society went on to further define vitamin D insufficiency as a level between 21 and 29 ng/mL. Research suggests that vitamin D deficiency could increase fracture risk in athletes, especially females who are naturally prone to deficiency.

Methods: Eight female athletes from the Texas A&M women's basketball team

(21 ± 1 yrs; 88 ± 18 kg; 179 ± 16.5 cm; BMI 26 ± 3 kg/m²; black female) were identified to have low vitamin D blood levels in April of 2012. Each of these women was ordered to supplement with 50,000 IU of vitamin D₂ 1x/week. After 8 weeks, the subjects were again evaluated in July 2012. Body composition information was also attained via DEXA scan. For each subject, the change in blood vitamin D levels (final – initial) and bone mineral density (BMD) difference was calculated. Data were analyzed for frequency and for pre-post significance by dependent t-test, [$\alpha=0.05$].

Results: See table

Position	Serum Vitamin D			Bone Mineral Density		
	Pre	Post	%Improvement	Pre	Post	%Change
Forward	15.1	33.9	124.5%	1.38	1.394	1.0%
Forw/Guar.	16.0	28.1	75.6%	1.556	1.584	1.8%
Guard	13.3	29.1	118.8%	1.499	1.483	-1.1%
Guard	12.9	27.3	111.6%	1.364	1.361	-0.2%
Guard	16.4	27.6	68.3%	1.447	1.431	-1.6%
Center	9.0	25.1	178.9%	1.476	1.505	2.9%
Center	17.9	36.1	101.7%	1.521	1.520	-0.1%
Center	11.5	22.4	94.8%	1.402	1.417	1.1%
Mean	14.01*	28.7*		1.456	1.462	
vit. D measured in ng/mL				BMD measured in g/cm ²		
p-values for pre-post significance *p < 0.05						

Conclusions:

Vitamin D supplementation improved serum vitamin D levels significantly. 100% of the women were initially deficient in vitamin D. After intervention, 100% of the athletes were brought into the acceptable range as defined by the IOM (>20 ng/mL), while 22.22% of the women improved to the standards of The Endocrine Society (> 30ng/mL). The changes in pre-post vitamin D values were statistically significant after 8 weeks, while the BMD changes were not. Improvements in BMD may take longer than 8 weeks to become evident. Vitamin D assessment is critical to ensuring bone health and injury prevention in athletes, especially in black females.