

University of Texas Rio Grande Valley

ScholarWorks @ UTRGV

MEDI 8127 Scholarly Activities Pre-Clerkship

School of Medicine

Summer 7-21-2022

Implementation of Vitamin D Screening and Planned Intervention of Supplementation for Deficient Collegiate Athletes of the Rio Grande Valley

Amanda J. Wheeler

The University of Texas Rio Grande Valley, amanda.wheeler01@utrgv.edu

Follow this and additional works at: <https://scholarworks.utrgv.edu/som8127>



Part of the [Family Medicine Commons](#), [Musculoskeletal Diseases Commons](#), [Musculoskeletal System Commons](#), [Nutritional and Metabolic Diseases Commons](#), [Orthopedics Commons](#), [Sports Medicine Commons](#), and the [Sports Sciences Commons](#)

Recommended Citation

Wheeler, Amanda J., "Implementation of Vitamin D Screening and Planned Intervention of Supplementation for Deficient Collegiate Athletes of the Rio Grande Valley" (2022). *MEDI 8127 Scholarly Activities Pre-Clerkship*. 31.

<https://scholarworks.utrgv.edu/som8127/31>

This Article is brought to you for free and open access by the School of Medicine at ScholarWorks @ UTRGV. It has been accepted for inclusion in MEDI 8127 Scholarly Activities Pre-Clerkship by an authorized administrator of ScholarWorks @ UTRGV. For more information, please contact justin.white@utrgv.edu, william.flores01@utrgv.edu.

Implementation of Vitamin D Screening and Planned Intervention of Supplementation for Deficient Collegiate Athletes of the Rio Grande Valley

Amanda Wheeler

Abstract:

Introduction:

In the past decade, studies on vitamin D levels and relationships to orthopaedic patients have increased exponentially worldwide. Journals have established risk factors, proper assessment of vitamin D levels, supplementation standards, and dependent variables that effect prevalence.¹

More specifically, many vitamin D studies in the field of orthopaedics and sports medicine have been conducted by analyzing NFL teams and NCAA Division I athletes and dividing the cohorts into player parameters such as age, BMI, race, team position, and supplement type. The results of these studies concluded that there is a large prevalence of vitamin D deficiency amongst athletes and an even higher abnormality of serum vitamin D levels in races with darker skin tones.³ Studies also have been conducted on the benefits of vitamin D and calcium supplementation to prevent over-use injuries like stress fractures.⁴ An example would be a study showing a 20% lower incidence of stress fractures in navy recruits in a 24-month period.⁵

But despite such a high level of interest in analyses of vitamin D in athletes, the prevalence of hypovitaminosis D and its influence in overuse injuries like stress fractures within the population of collegiate athletes in the Rio Grande Valley has not yet been investigated.

Methods:

Firstly, vitamin D levels would need to be assessed in fully informed, consenting UTRGV collegiate athletes. This initial assessment would be conducted during the pre-participation physicals done in late summer. Current guidelines for assessment of vitamin D status of patient state to use 25(OH)-vitamin D (rather than 1,25(OH)-vitamin D) serum levels because it is a marker of supply, not function, and represents sources of vitamin D including dietary and dermal synthesis.¹ Follow up assessments of serum vitamin D levels should be conducted at a 3-month mark, 6-month mark, and 12-month mark.

After a successful assessment of serum vitamin D levels in each participating UTRGV athlete is conducted, supplementation of vitamin D in combination with calcium would be provided to the athletes who proved to be insufficient or deficient in vitamin D. Doses would follow the current guidelines of vitamin D and calcium supplementation for age and body weight from the National Academy of Medicine. Athletes would be fully counseled and informed of the projects aims of supplementation. Athletes would also

know to report any issues with vitamin supplementation or any new pain or injuries for optimal treatment and documentation.

Thirdly, any orthopaedic injuries by fracture, mechanism of injury, and player parameters would be thoroughly documented. Treatment approach and healing time would also be documented. A retrospective study could be done comparing past injuries without supplementation to current number of injuries post-supplementation.

Expected Results:

Multiple studies in the past decade have shown that vitamin D supplementation provides an effective prevention plan to avoid orthopaedic injuries to bones and improve overall bone health. In the case of a young collegiate athlete, most are at risk of overuse injuries, due to the nature of conditioning and training. There was a 24-month longitudinal study done on a large number of female navy recruits, following the same proposed methodology of this project and there was a significant decrease in stress fractures within the first two years of training⁵.

This study is significant because of the nature of conditioning being very similar to base-training and off-season conditioning done with young collegiate athletes. Most overuse fractures such as stress fractures tend to be obtained during this time. Results of this proposed project are expected to mirror the many studies done on vitamin D serum level assessment with planned intervention of supplementation, but moreover, provide new and never-before-seen data on the serum levels of vitamin D levels of collegiate athletes in this specific area of Texas.

Future Endeavors:

After appropriate steps have been taken to approve this study, the data collected will be used to serve as tangible evidence proving the importance of dietary supplementation as a healthy, low risk, preventative measure to improve athlete health in sports medicine. It would also provide a starting point for more extensive pre-participation physicals and screenings for the collegiate athletes of UTRGV. By working with UTRGV labs, tests such as a complete metabolic panel, hematocrit levels, and vitamin D could be added to intake physicals for consenting athletes – allowing the UTRGV Sports Medicine department to take a more active role in preventative care of the athletes of UTRGV and ensure that they stay in the game.

Conclusion:

As studies of the past decade have shown, vitamin D deficiency and correction through supplementation can decrease the risk of orthopaedic pathologies such as stress fractures⁵. Although there is a general understanding of prevalence, there is a lack of information regarding the status of vitamin D levels in collegiate athletes of the Rio Grande Valley. This study would provide helpful data and encourage preventative approaches to bone health for athletes in such a unique demographic and environment.

References

1. Tran EY, Uhl RL, Rosenbaum AJ. Vitamin D in Orthopaedics. *JBJS Rev.* 2017;5(8):e1. doi:10.2106/JBJS.RVW.16.00084
2. Weber AE, Bolia IK, Korber S, et al. Five-Year Surveillance of Vitamin D Levels in NCAA Division I Football Players: Risk Factors for Failed Supplementation. *Orthop J Sports Med.* 2021;9(1):2325967120975100. Published 2021 Jan 22. doi:10.1177/2325967120975100
3. Villacis D, Yi A, Jahn R, et al. Prevalence of Abnormal Vitamin D Levels Among Division I NCAA Athletes. *Sports Health.* 2014;6(4):340-347. doi:10.1177/1941738114524517
4. Williams K, Askew C, Mazoue C, Guy J, Torres-McGehee TM, Jackson Iii JB. Vitamin D3 Supplementation and Stress Fractures in High-Risk Collegiate Athletes - A Pilot Study. *Orthop Res Rev.* 2020;12:9-17. Published 2020 Feb 27. doi:10.2147/ORR.S233387
5. Lappe J, Cullen D, Haynatzki G, Recker R, Ahlf R, Thompson K. Calcium and vitamin d supplementation decreases incidence of stress fractures in female navy recruits. *J Bone Miner Res.* 2008;23(5):741-749. doi:10.1359/jbmr.080102