

# Study: More than half of college football athletes have inadequate levels of vitamin D

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More than half of college football athletes participating in the NFL Combine had inadequate levels of vitamin D, and this left them more susceptible to muscle injuries, according to a study at Hospital for Special Surgery (HSS).

"Vitamin D has been shown to play a role in muscle function and strength," said Scott Rodeo, MD, senior investigator and co-chief emeritus of the Sports Medicine and Shoulder Service at HSS. "While most prior studies have focused on the aging population as the group most likely to experience the harmful effects of inadequate vitamin D, few reports have looked at the impact on [muscle injury](#) and function in the high performance athlete."

Dr. Rodeo and colleagues set out to determine if there was a relationship between serum vitamin D levels and lower extremity muscle strains and core muscle injury, or "sports hernia," in college football players. The study included athletes participating in the National Football League Scouting Combine, where coaches, general managers and scouts evaluate top [college football players](#) hoping to make it into the big leagues.

The study, presented at the American Academy of Orthopaedic Surgeons Annual Meeting on March 16, included 214 college athletes who took part in the 2015 combine. Baseline data was collected, including age, body mass index (BMI), injury history, and whether they had missed any games due to a lower extremity muscle strain or core muscle injury.

The average age of the athletes was 22. Their vitamin D levels were determined with a blood test. Levels were defined as normal (> 32 ng/mL), insufficient (20 - 31 ng/mL), and deficient (

A total of 126 players (59%) were found to have an abnormal serum vitamin D level, including 22 athletes (10%) with a severe deficiency. Researchers found a significantly higher prevalence of lower extremity muscle strain and core muscle injury in those who had low vitamin D levels. Fourteen study participants reported missing at least one game due to a strain injury, and 86% of those players were found to have inadequate vitamin D levels.

"Our primary finding is that NFL combine athletes at greatest risk for lower extremity muscle strain or core muscle injury had lower levels of vitamin D. This could be related to physiologic changes that occur to muscle composition in deficient states," Dr. Rodeo explained.

"Awareness of the potential for vitamin D inadequacy could lead to early recognition of the problem in certain athletes. This could allow for supplementation to bring levels up to normal and potentially prevent future injury," Dr. Rodeo notes.

While the findings are significant for high performing athletes, there may be a message for the general population as well, according to Dr. Rodeo. Adequate vitamin D is essential for musculoskeletal structure, function and strength. But by some estimates, more than 40 percent of the U.S. population is deficient in vitamin D.

Sometimes called the "sunshine vitamin," it is produced by the skin when exposed to sunlight. Sun avoidance and the use of sunscreen may in part account for low vitamin D levels in the population. Milk and fortified foods, including orange juice and some cereals, can also provide vitamin D, but one would need to consume a large amount of these foods. When individuals are found to have a deficiency, vitamin D

supplements are usually prescribed.

"Although our study looked at high performance [athletes](#), it's probably a good idea for anyone engaging in athletic activities to give some thought to vitamin D," Dr. Rodeo says. "Indeed, adequate levels of [vitamin D](#) are important to maintain good [muscle](#) and bone health in people of all ages."

Provided by Hospital for Special Surgery

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