



## Study: Testosterone Pellet Therapy Significantly Improves Bone Density in Male Patient Case Report

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*Study reports the patient also experienced “increased energy, recovery, and benefits to his sleep apnea” as well as being able to “remove supportive fracture hardware in one year”*

IRVING, Texas--(BUSINESS WIRE)--Mar. 27, 2023-- In a case study, a 54-year-old male patient with a spontaneous fracture and osteoporosis achieved an “almost complete recovery of osteoporosis” after one year of pelleted testosterone therapy and experienced improvements in quality of life and sleep apnea. The results of “Subcutaneous Testosterone Pellet Therapy for Reversal of Male Osteoporosis: A Review and Case Report” were published in the peer-reviewed medical journal “The Aging Male,” the official journal of the International Society for the Study of the Aging Male.

As described in the study, the patient, also a triathlete, had a non-fall-related tibial plateau fracture while stepping out of his ski boot after a normal day of snow skiing. Following this fracture, the patient was treated by an orthopedic surgeon and had casting and bracing for his left tibia for 3 months. A subsequent DEXA scan showed osteoporosis in his spine and femoral neck, at which point the patient sought to address his osteoporosis with hormonal treatment.

Lead author Dr. Bruce Dorr, an educational consultant for Biote, provided counseling to the patient and then initiated testosterone pellet therapy together with 10,000 IU/day of a vitamin d3k2 nutraceutical formulation and DIM (diindoyl methane) 300 mg, “a nutraceutical grade formula known to prevent aromatization,” a process that turns testosterone into estrogen. After three months the patient’s testosterone level was up to 943 ng/dL, and after one year of continued testosterone therapy the patient’s repeated DEXA scan showed an improvement to his composite bone density, substantially normalizing his total hip bone density. The patient also returned to performing triathlons one year after the beginning of testosterone pellet therapy.

Testosterone is a steroid hormone that is produced in both men and women and as people age, their testosterone level tends to decline. In addition to age, there are many factors that can cause low testosterone such as stress, poor lifestyle choices, poor diet and bad habits such as lots of alcohol or smoking, not sleeping well and not drinking enough water. All of these factors can lead to metabolic problems that impede the body’s ability to produce testosterone, resulting in low levels. Low testosterone in men is associated with a clear decrease in bone mineral density, which in turn is associated with a significant increase in bone fractures.

“The remarkable improvements that this patient experienced after only one year highlight the urgent need for more data about the potential benefits of a higher, sustained consistent testosterone level when treating low bone density,” explained Dr. Dorr. “Currently there is a lack of standardization in the diagnosis of testosterone deficiency and no clear guidance for providers to follow, resulting in countless patients being denied a potentially effective treatment path. In this specific patient’s case we not only observed a dramatic response to elevated testosterone levels but believe his fracture would likely have been prevented with appropriate therapy,” continued Dr. Dorr.

An estimated 10 million people age 50 years and older have osteoporosis in the United States, with just over 43 million more with low bone mass, putting them at increased risk for the disease. The Office of Disease Prevention and Health Promotion (ODPH) recently created a Workgroup to address emerging issues such as decreasing drug use in the treatment of osteoporosis and the high rate of hip fractures, hypothesizing that unanswered questions have made providers less likely to prescribe these drugs to people who need them.

“These results demonstrate that in an ideal setting, testosterone replacement therapy should be based on the patient’s symptoms and not solely on lab values,” stated Dr. Mickey Karram, a research consultant for Biote and a co-author of the study, who noted that guidelines recommend a testosterone level of 300 ng/dL as a diagnostic threshold for treatment. “The specific delivery mode of treatment is another crucial element,” continued Dr. Karram, “with the patient finding it easier to maintain his therapy with subcutaneous pellet administration.”

“We have barely scratched the surface in discovering the potential benefits of hormone optimization, and this case study exemplifies the extreme impact successful therapy can have on an individual’s quality of life,” said Terry Weber, CEO of Biote. “As we continue to add to the body of clinical research about hormone therapy, real life successes continue to inspire us. Generating and sharing scientific evidence, whether a single case or large scale study, brings us closer to establishing mainstream treatments that will impact the health of people around the globe.”

### About Biote

Biote is a hormone optimization company that has translated over 80 years of scientific insight into a rigorous curriculum and clinical training program that teaches providers how to identify and treat imbalances in the production of hormones. By partnering with over 5,300 medical providers across the United States, Biote is educating practitioners on the scientific evidence of the roles of hormones and supplements to support improved health, and on responsible treatment of patients. We are dedicated to changing the way healthcare is practiced on a global level.

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[Press@biote.com](mailto:Press@biote.com)

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