Evaluation of the Bone Status in High-Level Cyclists

The purpose of this study was to evaluate the bone status in highly trained professional cyclists subjected to regular training and tough competitions. Bone mineral density (BMD) was measured at different regions of interest by dual-energy X-ray absorptiometry, and main biological parameters related to bone metabolism were obtained in 29 cyclists. Lumbar BMD was 0.94 ± 0.01 g/cm² (Z-score = −1.28 ± 0.07), and 1 cyclist out of 4 had an abnormally low value (Z-score < −2). The mean Z-score at the total femoral site was −1.22 ± 0.21, and 45% of athletes had a Z-score of < −2. All femoral neck BMD values were within normal boundaries. The lowest BMD Z-score was measured at the midradius or 1/3 proximal site with a mean Z-score of −1.77 ± 0.78, but only 3 cyclists (15%) had Z-scores < −2. Biochemical parameters of bone formation (serum osteocalcin and alkaline phosphatase) were normal. Three cyclists had low 25-hydroxyvitamin D levels. Blood testosterone and thyroid stimulating hormone were in the normal range. Insulin-like growth factor 1 levels were in the normal range; however, a significant inverse correlation was found with lumbar BMD (r = 0.495; p = 0.003). We confirm that cycling has no positive effect on BMD, BMD being often lower than in normal controls at the lumbar site; femoral BMD is less concerned. The absence of beneficial changes at the spine can be explained by biomechanical conditions related to the cyclists’ position, reducing loading strains. It is necessary to pay greater attention to the bone status of high-level athletes to prevent an increased risk of fractures.
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