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Positional Differences in Areal Bone Mineral Density and Body Composition in NCAA Division-I Football Athletes

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Different positions in football require different physical demands and training. Sport exposes athletes to forces that exceed those of daily living activities. To meet these demands there is a need for enhanced lean masses to augment force producing capabilities. The effect of which may alter the structural properties of the skeleton, namely areal bone mineral density (aBMD). Because of this, body composition has a pivotal role in performance and injury. Previous studies demonstrated that positions that are mirrored, such as wide receivers/defensive backs, (WR/DB) presented similar body compositions and body ratios. While these studies showed a significant difference in body composition, they had not included L1-L4 and total femoral aBMD comparisons between positions. **PURPOSE:** Compare differences in body composition and aBMD between NCAA Division I OL/DL and WR/DB. **METHODS:** Using DXA, we examined body composition (total regional body fat percentage, and lean mass) and aBMD (L1-L4 aBMD, total femoral aBMD, total body aBMD) in Lineman (OL/DL) (n=28, 191.2cm. \pm 5.2cm., 130.4kg. \pm 13.1kg.) and WR/DB (n=26, 181.5cm. \pm 4.7cm., 82.8kg. \pm 5.0kg.) from a NCAA Division 1 football team. All scans were analyzed using enCORE Software, version 15 (GE Healthcare Lunar) **RESULTS:** OL/DL had significantly greater total body aBMD (1.639 ± 0.096) vs. WR/DB (1.555 ± 0.086 ; $p = 0.001$). OL/DL had significantly greater body fat percentage ($28.1\% \pm 6.1\%$) vs. WR/DB ($12.8\% \pm 3.6\%$; $p < 0.001$). OL/DL had significantly greater lean mass ($88.0 \text{ kg.} \pm 4.8 \text{ kg.}$) vs. WR/DB ($68.7 \text{ kg.} \pm 3.8 \text{ kg.}$; $p < 0.001$). OL/DL did not have a significantly greater L1-L4 aBMD (1.567 ± 0.158) vs. WR/DB (1.551 ± 0.093 ; $p = 0.652$). OL/DL did not have a significantly greater total femoral aBMD (1.535 ± 0.109) vs. WR/DB (1.521 ± 0.122 ; $p = 0.662$). **CONCLUSION:** It is shown that different positions require different physical demands which create differences in composition in fat mass, lean mass, and total body aBMD. However, our findings have found no significant difference between femoral and L1-L4 aBMD between our

position groups. Future studies may study body composition and aBMD differences between specific positions (ex. QB vs LB) rather than groups or, one may consider studying similar positions in a different scheme (ex. DT in 3-4 vs 4-3).

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