

## Performance and Body Composition Changes Following an Offseason Training Period in DIII Collegiate American Football Athletes.

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### ABSTRACT

Current literature shows that body composition and increased muscle mass correlate with improved performance for American football players thus assessment of these variables at appropriate times throughout competitive cycle are important for tracking individual adaptations but also in assessing the effectiveness of the prescribed training program. **PURPOSE:** This study assessed changes in anaerobic performance, total body mass (BM), fat-free mass (FFM), and percent body fat (PBF) in football players following a seven-week offseason mesocycle. **METHODS:** 29 NCAA Division III football players (mean  $\pm$  SD; age:  $19.7 \pm 1.5$  y; height:  $179.8 \pm 6.6$  cm; body mass [BM]:  $96.1 \pm 12.6$  kg; DXA body fat:  $20.9 \pm 4.4\%$ ) participated in assessments of performance and body composition body pre- and post- mesocycle. Performance testing was assessed at pre- and post-training timepoints on a subset of athletes that were not restricted (injury, etc.) from maximal testing at these timepoints. This data was from the initial cycle of their offseason training program which included seven weeks of hypertrophy focused training volumes. Performance tests administered included: bench press 1 RM (BP), bench press reps (BPR), incline bench press, back squat 1RM (BS), front squat 1 RM (FS), hang clean 3 RM, 40-yard dash (YD), broad jump, vertical jump (VJ), and pro agility shuttle. BM, FFM, and PBF were estimated via dual x-ray absorptiometry (DXA). **RESULTS:** Performance improved in all tests except for broad jump and pro agility shuttle. Post-mesocycle performance increases were observed in BP ( $p < 0.001$ ), BPR ( $p < 0.001$ ), BS ( $p < 0.001$ ), FS ( $p < 0.001$ ), YD ( $p < 0.001$ ), and VJ ( $p < 0.001$ ). Significant training induced changes were observed for: BM increased 1.12kg ( $p < 0.01962$ ), PBF decreased by 0.686 kg ( $p < 0.004$ ), and FFM increased by 1.57 kg ( $p < 0.0001$ ). **CONCLUSION:** This study confirms that a well-structured strength and conditioning program for Division III football players will improve performance in a variety of strength and power related assessments. These changes, though observed over a relatively short amount of time, can translate to competitive performance in conjunction with improved body composition and fat-free mass increases.