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**Sport Specificity and Training Influence Bone and Body Composition in Women Collegiate Athletes**

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*Int J Exerc Sci* 2(1): S22, 2009. This is a novel descriptive study to characterize off-season, pre-season, and post-season bone and body composition measures in women collegiate athletes. **PURPOSE:** To quantify changes in women collegiate athletes' bone mineral content, bone mineral density (BMD), arm BMD, leg BMD, pelvis BMD, spine BMD, and body composition (i.e., total body mass, lean mass, fat mass, and percent body fat) within each sport through the seasonal periods, and among the sports at each seasonal period. **METHODS:** 67 women collegiate athletes from softball (n = 17), basketball (n = 10), volleyball (n = 7), swimming (n = 16), and track jumpers and sprinters (n = 17) were scanned using dual energy x-ray absorptiometry (DXA) at three seasonal periods: 1) before pre-season training defined as off-season (OFF), 2) at end of preseason training (PRE), and 3) after the competitive season (POST). Summary of **RESULTS:** Repeated measures ANOVA within-sport seasonal changes in table; PRE/POST = highest value measured at PRE or POST.  $\alpha < 0.05$  for all tests of significance. Seasonal Period %Body fat BMD (g/cm<sup>2</sup>) Pelvis BMD (g/cm<sup>2</sup>) Spine BMD (g/cm<sup>2</sup>) Softball OFF 27.1±5.0\* 1.254±0.081\* 1.385±0.127 1.216±0.149 PRE/POST 25.7±5.0 1.261±0.082 1.405±0.141 1.268±0.154 Basketball OFF 25.5±5.5\* 1.333±0.064\* 1.469±0.123\* 1.356±0.178 PRE/POST 22.7±5.6 1.349±0.055 1.494±0.119 1.391±0.146 Volleyball OFF 27.7±4.1 1.284±0.065\* 1.366±0.139 1.254±0.102\* PRE/POST 27.1±5.1 1.310±0.071 1.371±0.149 1.360±0.121 Swimming OFF 22.0±4.3 1.112±0.067 1.110±0.104\* 1.063±0.127\* PRE/POST 21.9±4.1 1.121±0.067 1.124±0.105 1.105±0.126 Track Jumpers and Sprinters OFF 15.4±4.6\* 1.292±0.075\* 1.432±0.124\* 1.280±0.135\* PRE/POST 14.3±3.9 1.307±0.080 1.470±0.128 1.337±0.140 Values are means ± standard deviations. \*Significant difference between off-season and pre or post-season. ANOVA for differences by sports at the PRE/POST period showed results for both pelvis BMD and spine BMD as follows: softball = basketball = volleyball = track > swimmers. **CONCLUSION:** These data serve as sport-specific benchmarks for comparisons at in-season and off-season training periods among women collegiate athletes in various sports. They also serve to document changes in body composition and bone density with training, and may serve to guide coaches in the development of sport specific nutritional and strength and conditioning programs to optimize athletic performance. Research supported in part by the Sydney & J.L. Huffines Institute for Sports Medicine and Human Performance

