Hannah Brooke Fliss, Trevor J. Wilkinson, Saira Talwar, Ben M. Krings. *University of Wisconsin - Platteville, PLATTEVILLE, WI.*

Body composition is an important measurement of performance in cross-country (XC) runners. Over the course of a competitive season, maintaining body composition, such as bone mineral density (BMD), and nutritional habits to support training could be the difference between being competitive and becoming injured.
PURPOSE: The purpose of this study was to examine body composition and nutritional habits of Division III female XC runners during a competitive fall season.
METHODS: 10 female varsity XC runners (age- 19.6 ± 1.6 years, mass- 57.4 ± 6.2 kg, height- 1.67 ± 0.05 m) completed a dual energy X-ray absorptiometry (DEXA) scan on three separate occasions during the season: preseason (T1), midseason (T2), and end of season (T3). DEXA results analyzed included: total and regional bone mineral densities (BMD), percentage body fat, lean mass, and fat mass. Three-day dietary food logs and training volumes were also recorded on each occasion. Food logs were averaged across the three days, from which total kilocalorie and macronutrient intakes were analyzed. Each dependent variable was analyzed using a repeated measures ANOVA.
RESULTS: Training volume significantly decreased from T1 to T2 to T3 ($p < 0.001$). There were no significant changes in fat mass, lean mass, or percentage body fat ($p > 0.05$). There was a significant main effect for lumbar spine BMD, with T3 (1.121 ± 0.069 g/cm^2) being significantly greater then T1 (1.065 ± 0.079 g/cm^2) and T2 (1.085 ± 0.049 g/cm^2) ($p < 0.05$). No other differences were observed for total or regional BMD. There were significant main effects for kilocalorie, carbohydrate, protein, and fat intakes ($p < 0.05$) with each intake being significantly greater at T1 and T2 compared to T3 ($p < 0.05$).
CONCLUSION: In-season training loads and the effect of shock absorption in the lumbar spine through high-impact running may support the increase in BMD noted. The decrease in nutritional intake at the end of season may be explained by the programmed taper and transition to higher intensity, lower volume, race-specific training. Overall, the results from this study suggest Division III female XC runners can maintain a favorable body composition over the course of a competitive season.

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Anthropometric Differences Between Male Division-1 Collegiate Athletes And CrossFit Exercisers

Bryan S. Bannister, Marie R. Jensen, Addisen S. Azevedo, Alex Roque, Alexis Molgaard, Nathaniel J. Holmgren, J. Mark VanNess, Courtney D. Jensen. *University of the Pacific, Stockton, CA.*

Collegiate athletes and CrossFit participants both follow structured exercise programs that incorporate strength, endurance, and cardiovascular components. However, each environment has a unique profile of physiological stressors, which may lead to characteristic differences in skeletal muscle development.
PURPOSE: To examine muscular differences in body composition between male Division-1 collegiate athletes and consistent CrossFit participants.
METHODS: We performed body composition testing on 82 Division-1 athletes and 206 CrossFit exercisers with the InBody 770 Bioelectrical Impedance Analyzer. All subjects in both groups were male. We matched samples for age using coarsened exact matching. This resulted in a new sample of 27 athletes and 27 CrossFit participants. Anthropometric variables exported were height, bodyweight, lean body mass, dry lean mass, skeletal muscle mass, single leg lean mass (mean value of both legs), single arm lean mass (mean value of both arms), lean trunk mass, and skeletal muscle index. We compared samples in all dependent variables using two-tailed independent-samples t-tests; 95% confidence intervals of all differences are reported.
RESULTS: Among collegiate athletes, height was 72.9 ± 3.1 in, bodyweight was 185.1 ± 18.3 lb, lean body mass was 164.7 ± 16.7 lb, dry lean mass was 44.7 ± 4.7 lb, skeletal muscle mass was 94.9 ± 9.9 lb, lean leg mass was 24.9 ± 2.8 lb, lean arm mass was 9.6 ± 1.8 lb, lean trunk mass was 71.6 ± 6.8 lb, and skeletal muscle index was 9.1 ± 0.6. Athlete values were significantly higher than CrossFit exercisers in height (p<0.001; 95% CI: 4.1, 7.3), dry lean mass (p<0.001; 95% CI: 4.3, 9.3), lean body mass (p<0.001; 95% CI: 14.6, 32.6), skeletal muscle mass (p<0.001; 95% CI: 8.4, 19.2), lean leg mass (p<0.001; 95% CI: 3.3, 6.2), lean arm mass (p=0.001; 95% CI: 0.5, 1.8), and lean trunk mass (p<0.001; 95% CI: 3.2, 10.9). Significance was not found in bodyweight (p=0.342; 95% CI: -6.3, 17.7) or skeletal muscle index (p=0.298; 95% CI: -0.2, 0.6). All comparisons met the assumption of equality of variances (p>0.120).
CONCLUSION: Collegiate athletes had more lean body mass than age-matched CrossFit exercisers. This finding was significant in whole-body comparisons as well as individual assessments of the upper limbs, lower limbs, and trunk.

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Correlations Between Functional Tests And Implications For Return-to-sport Testing

Kristen Renner, Surajinder Bharaj, Alexis Henderson. *University of Arizona, Tucson, AZ.*

After an injury, clinical rehabilitation focuses on returning athletes to sports safely as well as attempting to lower future injury risk. There are several functional tests used clinically to assess injury risk and injury rehabilitation progress and which tests are utilized varies between clinics.
PURPOSE: The purpose of this study is to explore the relationships between common functional tests.
METHODS: 20 healthy recreationally active young adults (10M/10F) completed 5-7 trials of a triple hop (TH), single hop (SH), 6m hop (6m), eyes closed balance test (ECB), peak knee flexion during single limb squat (SLS), and the Y-balance anterior (Y-Ant), posteromedial (Y-PM), posterolateral (Y-PL) and composite (Y-Comp) scores (Table 1). The Y-Ant, Y-PM and Y-PL were normalized to leg length. Spearman's correlation tests were completed for each task and for each limb. The following scale was used: 0.9-1.0 very high, 0.7-0.9 high, 0.5-0.7 moderate, 0.3-0.5 low and 0.0-0.3 negligible for both positive and negative correlations.
RESULTS: The correlation coefficients for the non-dominant leg are displayed in Table 2, the dominant limb displayed similar results.
CONCLUSION: The results indicate that unique information is provided by each test with ECB having the most unique information. The Y-balance anterior reach provides unique information when compared to the PM, PL and composite scores. Therefore, we recommend the addition of individual Y-Balance scores, ECB and SLS to the hop series.

Table 1: Mean and standard deviation for the nondominant (ND) and dominant (D) limbs.

	6m	TH	SH	SLS	ECB	Y-Ant	Y-PM	Y-PL	Y-Comp
ND	2.38±0.75	0.34±0.05	0.14±0.03	87.1±13.0	12.2±9.2	0.69±0.08	1.04±0.14	0.7±0.08	1.08±0.16
D	2.27±0.66	0.35±0.04	0.15±0.03	89.4±12.9	16.0±9.3	1.06±0.13	93.13±9.73	1.08±0.13	95.65±10.03