A large muscle mass to total body mass ratio benefits power athletes such as gymnasts. While collegiate gymnastics athletes train strength and power in the pre-season but reduce training during the competitive season, the degree to which body composition changes during the competitive season is not known.

**PURPOSE:** This study examined changes in body composition in a team of female Division I collegiate gymnastics athletes before and after their competition season. It was hypothesized that percent body fat (%BF), total fat mass (TFM), and bone mineral content (BMC) would remain unchanged from pre- to post-season.

**METHODS:** Fifteen female collegiate gymnasts (age = 19.1 ± 1 year, ht = 1.62 ± 0.05 m, wt = 62.7 ± 7.2 kg) volunteered to undergo measures of body composition assessment before and after their spring competitive season. During pre-season (PRE), participants were instructed to arrive to the laboratory in a euhydration state. Following written informed consent, participants provided a mid-stream urine sample which was used to screen for pregnancy and to determine urine specific gravity (USG) using a handheld digital refractometer. Participants then performed a dual-energy x-ray absorptiometry (DEXA) scan to determine TFM, %BF, and BMC. Immediately after the competitive season, participants returned to the laboratory and repeated all procedures (POST). Data were analyzed using paired-samples t-tests with significance set at p < 0.05.

**RESULTS:** BMC significantly increased across the season (6.42 ± 0.206 g PRE vs. 6.485 ± 0.203 g POST; p < 0.05). While there was a downward trend in both TFM (34.158 ± 2.211 kg PRE vs. 32.905 ± 2.335 kg POST; p = 0.1) and %BF (25.68 ± 1.16 % PRE vs. 24.99 ± 1.23 % POST; p < 0.1), these were not significantly different at the a priori p < 0.05 level. There was no change in body weight.

**CONCLUSION:** The significant increase in BMC, combined with the downward trend in TFM and %BF, with no change in body weight, suggests athletes maintained body composition in a favorable manner during the competitive season. The increase in BMC further suggests that stimuli during the competitive season were strong enough to elicit favorable changes in bone remodeling during in-season competition.

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**Measurement of abdominal adiposity/visceral adipose tissue is clinically relevant in determining individuals’ risks of developing cardiometabolic conditions. Bioelectrical impedance (BIA) can be utilized to estimate visceral adipose tissue as an indicator for cardiometabolic dysregulation.**

**PURPOSE:** To determine the correlation between multi-frequency BIA derived areal visceral fat (cm²) and dual energy x-ray absorptiometry (DEXA)-derived volumetric visceral fat (cm³) in normal weight college-aged males.

**METHODS:** Visceral fat was measured three times in the following order: 1) BIA, 2) DXA and 3) BIA in college aged males during the early morning. The mean of the two BIA measurements was used for statistical analyses. All three measures were completed in the same session lasting no longer than 30 minutes. To ensure participants were normally hydrated [urine specific gravity (USG) range: 1.022-1.028], USG was determined immediately prior to the testing session. Correlations between BIA areal visceral fat and DXA volumetric visceral fat and a correlation between BIA visceral fat level and DXA android/gynoid (A/G) percent fat ratio Pearson r correlation coefficients were calculated.

**RESULTS:** Assessments were done on 102 males (mean age = 20.35 ± 1.38 years; mean body mass index = 25.40 ± 3.36 kg/m²). Correlation analysis indicated a moderately high direct correlation between BIA areal visceral fat (47.54 ± 32.78 cm²) and DXA volumetric visceral fat (172.20 ± 274.36 cm³), r = .678, p < .001. There was a moderately direct correlation between BIA visceral fat levels (r = 0.46 ± 0.32) and DXA A/G percent fat ratio (0.83 ± 0.20), r = .570, p < .001.

**CONCLUSIONS:** In normal weight adults, visceral adiposity and A/G percent fat ratio have much stronger associations with cardiometabolic dysregulation than android and gynoid percent fat. The results of this investigation indicate areal visceral fat and visceral fat level derived from BIA may be a set of useful and meaningful indicators of cardiometabolic disease risk when access to DXA is not available. Future research should explore the predictability of BIA-derived areal visceral fat and visceral fat levels, while controlling for factors such as sex, age, and BMI, on cardiometabolic risk.

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**Body composition measured by air displacement plethysmography (ADP) accounts for the effects of trapped isothermal air in hair by having the subject wear a swim cap to compress the hair on the head. It is recommended that even subjects with very little hair wear a swim cap. Currently, there are no recommendations that account for the effects of trapped isothermal air in body hair.**

**PURPOSE:** The purpose of this study was to investigate the impact of exposed body hair and the effect of wearing limb length single layer compression apparel on body composition measurements using ADP in college males.

**METHODS:** Forty male college students (age 20.0±1.2 yrs; BMI 24.1±3.1 kg/m²) voluntarily participated in the study. Percentage of body fat was evaluated by ADP. To assess the impact of body hair on body composition measurements, ADP measures were performed in two conditions: wearing single layer compression shorts (CS) apparel with a swim cap (as recommended) and wearing limb length single layer compression (LC) apparel with the same swim cap. The order of apparel was conducted in random order to avoid any potential order effects.

**RESULTS:** Wearing limb length single layer compression apparel to compress body hair increased body mass by an average of 0.3 kg (±0.02); however, there was no significant difference in body density between the CS condition (1.050±0.018 g/cm³) and the LC condition (1.0629±0.015 g/cm³; p < 0.001). The mean percentage of body fat in the LC condition (15.9±6.5%) was significantly lower than the mean percentage of body fat in the CS condition (18.0±6.2%; p < 0.001).

**CONCLUSIONS:** The effect of trapped isothermal air in body hair impacts body composition measurements by ADP. Covering exposed body hair in males when assessing body composition via ADP results in a significantly lower percentage of body fat compared to the minimal clothing recommendation. Attention should be paid to minimizing exposed body hair on males when assessing body composition by air displacement plethysmography. The present results suggest that this minimization may be achieved with males by wearing limb length single layer compression apparel.