

Effects of an Acute Strength and Conditioning Bout on Dual Energy X-ray Absorptiometry Results

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ABSTRACT

Dual Energy X-ray Absorptiometry (DXA) scans to assess body composition have become increasingly popular, especially in athletic populations. Acute factors, such as hydration status and food intake have been shown to alter DXA results (Tinsley, MSSE 2016). It is currently not known if prior strength and conditioning bouts may alter fat mass, lean mass, and bone density results. **PURPOSE:** To determine if a strength and conditioning (S&C) bout, similar to what athletes regularly engage in, will alter the fat mass, lean mass, and bone content results of a DXA scan. **METHODS:** Fourteen strength-trained subjects (10 men, 4 women, age 24 ± 2 yrs, height 176.7 ± 8.1 cm, weight 88.8 ± 14.7 kg) who were enrolled in an athletic strength and conditioning course volunteered to participate in this study. Each subject underwent two DXA scans on the same day. The first scan was performed prior to the S&C bout. The second scan was completed within 45 minutes after completion of the S&C bout. Participants were instructed to consume their normal, free living breakfast prior to scan one. A food and water log was distributed during the informed consent process and was maintained by the participants for 24 hours prior to all DXA scans. Nutritional information was analyzed via a commercial nutrition software for macronutrients, micronutrients, and hydration status. All DXA scans were performed and analyzed by the same trained technician. After the first scan, subjects were instructed to avoid all food intake until completion of the second scan. Subjects were encouraged to drink water ad libitum during the S&C bout from individually assigned 1-liter bottles; the volume consumed during the bout was measured by weight. **RESULTS:** No significant difference was found (correlated t-test $\alpha = 0.05$) on any of the body composition measures between pre and post DXA body composition measurements after a S&C bout (changes pre to post: fat mass 46.5-46.0 kg, lean mass 64.8-64.9 kg, bone content 3.3-3.3 kg). **CONCLUSION:** Based on the results of the present study, S&C bouts do not need to be considered to ensure accuracy when performing DXA scans. The physiological changes that occur in response to a single S&C bout do not affect body composition analysis of DXA scans.