

19. SWACSM Abstract

Validity of B-Mode Ultrasound for Body Composition Assessment in the Field

NATE JENSEN, CONNER DEARDEN, BRETT HOLMES, SHANE DRAPER, ANDREW CREER

Applied Human Performance Laboratory; Department of Exercise Science & Outdoor Recreation; Utah Valley University; Orem, UT

Category: Undergraduate

Advisor / Mentor: Creer, Andrew (andrew.creer@uvu.edu)

ABSTRACT

Air displacement plethysmography (ADP) is a common way to assess athlete body composition in many laboratories. While this method provides accurate values for body composition it is not a feasible option for field work. Identifying an accurate, user friendly alternative to skinfold calipers may allow for accurate assessment of body composition in more applied settings, such as various training and competition venues. **PURPOSE:** To determine the validity of B-mode ultrasound for body composition assessment by comparing this method to values obtained using ADP. **Methods:** To date, 14 actively training runners (≥ 4 hours/week for the last year) have participated in this study. Participants (43.5 ± 7.1 yrs; 173.2 ± 9.0 cm; 69.4 ± 14.1 kg) include males ($n=8$) and females ($n=6$) that have undergone two forms of body composition assessment during a single lab visit; ADP and B-mode ultrasound (BMUS). ADP body density was estimated using a Bod Pod air displacement chamber (Bod Pod GS, Cosmed) in combination with measured lung volume. BMUS body density was estimated from measuring Jackson-Pollock 7 site skinfolds with a portable, app-based ultrasound device (Lumify, Philips) to determine subcutaneous fat thickness. Images were then analyzed using proprietary software (MuscleSound, Glendale, CO). Body density values for both methods were converted to body fat percentage using the Siri equation. **RESULTS:** A paired t-test was used to compare values obtained from each method ($P < 0.05$). There was no difference between ADP ($21.7 \pm 6.4\%$) and BMUS ($20.4 \pm 6.3\%$) for percent body fat. In addition, data analysis revealed a strong positive correlation ($R=0.8$) for percent body fat obtained from ADP and BMUS methods. **CONCLUSION:** These data suggest BMUS is a valid method for assessing body composition when compared to ADP and therefore may provide a portable, accurate method for assessing body composition in applied settings.