

JAIMEE MARTIN, Dept. of Exercise Science and Athletic Training, West Virginia Wesleyan College, Buckhannon, WV, 26201, KRISTY HENSON, Dept. of Natural Sciences, Forensic Science Program, Fairmont State University, Fairmont, WV, 26554, GREG POPOVICH, RACHEL FULKS, and JAIDEN HARVEY, Dept. of Exercise Science and Athletic Training, West Virginia Wesleyan College, Buckhannon, WV, 26201. Testing the reliability and validity of 3D scanning devices applied to the two-compartment model of body composition.

Body composition is important when determining health status. Current two-compartment methods used to determine body composition are expensive and inconvenient. The purpose of this study is to test the reliability and validity of an Xbox Kinect V1, Xbox Kinect V2, and the Artec Eva 3D light scanner when applied to the two-compartment model of human body composition. We hypothesize that these 3D scanners can capture an individual's volume and thus calculate percent body fat. 3D scanning and editing took place in the 3D scanner's respective software, then scans were exported to Artec Studios to calculate the volume. Participants were form-fitting clothing and stood in a standard position during scanning. A complete 360-degree 3D model of the subject was captured using each scanning device. The Siri or Schute equations were used to convert body density to body fat percentage. To determine accuracy, skinfold caliper body fat estimates were compared to the 3D scanning results. Preliminary results show that the Xbox Kinect V1 resulted in a higher body fat percentage when compared to the skinfold calipers ($R^2 = 0.004$, $Var = 1$). Similar results were obtained for the Xbox Kinect V2 ($R^2 = 0.151$). The Kinect devices consistently overestimate body fat percentage.