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### Validity of Bio-electrical Impedance Body Composition Measurement Device Used in Public Schools

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#### ABSTRACT

The prevalence of childhood and adolescent obesity is increasing. One setting in which regular physical activity will help curb the obesity epidemic is in Physical Education programs of public schools. Body composition is one component of a complete fitness assessment of school-aged children.

Historically, skin-fold measurements have been used to predict percent body fat in school-aged children. Recently, bioelectrical impedance devices installed in kiosks have been deployed in hundreds of schools across the United States as part of the National School Fitness Foundation LIFT America program. The purpose of this study was to determine the validity of bioelectrical impedance devices installed in kiosks for junior high and high school-aged children and adolescents.

Body composition was assessed in 240 children and adolescents between the ages of 12-17 years using the sum of two (tricep and calf) skin-folds and a bioelectrical impedance device installed in a kiosk. Percent body fat values obtained from skin-folds and the kiosk were compared to results from DEXA scans. The assessments were repeated on a subset of the participants to determine the reliability of each method. At the time of this writing, data has been collected on a sample of 50 participants. Height and weight ranged from 146 to 183 cm and 36.4 to 80 kg, respectively. Body mass index ranged from 14.4 to 28.32 kg/m<sup>2</sup>. This initial sample of participants represents a broad range of body sizes. The group percent body fat ( $M \pm SD$ ) determined by the DEXA was  $19.68 \pm 8.04$ . The percent body fat from the sum of two skin-folds was not significantly different from the results obtained with the DEXA. The percent body fat determined from the kiosk was significantly less than the results obtained from DEXA scans.

All three methods of assessing body composition were highly reliable. Based on this initial sample of participants, the kiosk, which is installed in hundreds of public schools across the United States, underestimates body composition of school-aged children and adolescents and needs further validation. Skin-fold measurements remain a valid alternative to assessing body composition.

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