

Validation of Near Infrared Reactance and Bioelectrical Impedance Techniques for Body Composition Measurement in Adolescents:

1876: Board #27 8:30 AM - 9:30 AM

[Thursday Morning Poster Presentations: Posters displayed from 7:30 a.m. -12:30 p.m.: One-hour author presentation times are staggered from 8:30 -9:30 a.m. and 9:30-10:30 a.m.: C-27 Free Communication/Poster - Body Composition: THURSDAY,

JUNE 1, 2006 8:30 AM - 10:30 AM: ROOM: Hall B]

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PURPOSE: To examine the relationship between body fat % derived from dual-photon x-ray absorptiometry (DXA) and that measured using near infrared reactance (NIR) and bioelectrical impedance (BIA) in a convenience sample of adolescents, aged 12-16 yrs (n = 47, 22 girls and 25 boys, age: 13.9±1.2 yrs, BMI: 21.6 ± 3.7 kg/m²).

METHODS: Subjects were asked to refrain from heavy exercise 12 hrs prior to the testing, and to avoid ingesting food or beverages for 2 hrs preceding the trial. Body composition was measured by DXA (Hologic Discovery), BIA (RJL Quantum II) and NIR (Futrex 6100A/ZL), and all conditions prior to measurements were standardized.

RESULTS: The correlation between % fat derived from DXA vs. BIA was $r = 0.84$, ($P < 0.001$). However, the mean difference was 5.7%, with BIA generally under-predicting body fat compared to DXA, and the limits of agreement were between -3.6-15.1%. NIR more closely approximated % fat measures by DXA in this sample, with a correlation of $r = 0.90$ ($P < 0.001$) and a mean difference of only 0.6%. The limits of agreement for these two techniques were between -7.6% -8.8%. NIR did not systematically over or under-predict % fat in comparison to DXA. We performed a multiple linear regression, including age, gender, and height, to attempt to further improve the prediction of % fat using NIR. However, these variables did not contribute significantly to the model.

CONCLUSION: In this preliminary study, NIR was found to closely approximate % fat derived from DXA in these adolescents. Furthermore, there was less bias in this technique than that found using BIA. No further improvement in the prediction of % fat from NIR was gained by adjusting for height, age and gender in this sample. Sponsored by BODY IQ.

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