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Anthrpometric changes of a female bodybuilder on a high-protein, hypocaloric diet

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Background

Four different body fat (BF) measurement techniques, including DEXA, handheld BIA (HHBIA), multi-frequency BIA (MFBIA) and the Jackson Polluck 7 (JP7) caliper formula, were performed on a natural lightweight female bodybuilder as she prepared for national competition.

Methods

One 25 year old female participant utilized a hypocaloric diet and an exercise program for 15 weeks to lose body fat in preparation for the NPC Jr. Nationals bodybuilding competition. Furthermore, the participant underwent testing every three weeks to determine changes in body fat as measured by DEXA, HHBIA, MFBIA, and JP7.

Results

Analysis of four day food records following each testing session revealed average values of 1588 ± 116.7 kcal/day, 43.6 ± 7.3% protein, 35 ± 5.4% carbohydrates, 17.8 ± 7.98% fat throughout the testing period. Additionally, the participant lost 6.09 kg (13.4lb) and 2.5 BMI units. Furthermore both HHBIA (.935; p = .006) and JP7 (.954; p = 0.003) were significantly and positively correlated to DEXA (CI = 99%). Finally, only HHBIA BF% values were statistically different from DEXA BF% values (p = .001).

Conclusion

These data suggest that a high-protein, low-fat hypocaloric diet induces weight and BF loss over several weeks. Furthermore, JP7 may be best approximation of DXA BF% for this participant, since it is both significantly correlated to DEXA BF% and individual BF% values are not different than DEXA values.