Body Composition Analysis Comparison between Air Displacement Plethysmography and Direct Segmental Bioelectrical Impedance in a University Student Population

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Various body composition analysis techniques are commonly available for use in most Exercise Physiology Laboratories. Our lab uses an Air Displacement Plethysmography (Bod Pod) device and we recently purchased a Direct Segmental Multi-frequency Bioelectrical Impedance (BSM-BIA). The BSM-BIA appears to be a more efficient method for estimating body composition, especially when testing large numbers of students in a class setting or athletic teams on our campus. Since we have been using the Bod Pod for a number of years, we wanted to assess the accuracy of the BSM-BIA as a potential replacement for the Bod Pod.

PURPOSE: To determine the accuracy of the BSM-BIA compared against the Bod Pod in our laboratory.

METHODOLOGY: Sixty-six university students volunteered for the study (age=23.23±5.17yrs; WT=69.51±12.82kg; HT=172.13±9.50cm). Volunteers reported to the lab and were randomly assigned to test first in either the BSM-BIA or Bod Pod. Once the initial test was completed, subjects were then tested in the other device. Subjects were asked to refrain from exercise, eating/drinking two hours prior to testing. Each subject complied with the manufacturer’s recommendation for attire prior to each test.

RESULTS: Results indicate that the BSM-BIA is an accurate estimation of body composition when compared with the Bod Pod in this group. BSM-BIA percent fat was 19.58±9.03 compared to Bod Pod percent fat at 19.73±9.41 (r=.91). BSM-BIA fat mass was 13.53±6.82kg compared with Bod Pod fat mass at 13.67±7.08kg (r=.93). BSM-BIA lean mass was 56.14±13.02kg compared with Bod Pod lean mass at 55.84±12.76kg (r=.94).

CONCLUSION: These results demonstrate that the BSM-BIA is an accurate method to assess body composition in our laboratory when compared with the Bod Pod.