The primary purpose of this study was to investigate the accuracy of the DF50 BIA device using DXA as the criterion in two groups: endurance athletes and power athletes. The secondary purpose was to develop accurate %BF prediction equations for each group based on BIA data and/or the combination of BIA and anthropometric data.

80 male athletes (40 elite endurance athletes and 40 were power athletes), age 19-48 with BMIs ranging from 18.9 to 37.4were recruited. Anthropometric measurements were taken. Body composition was assessed by DXA and BIA. An athlete-specific BIA prediction equation was developed by stepwise regression analysis using DXA as the criterion and BIA data and anthropometric measurements as predictor variables.

The DF50 BIA significantly overestimated %BF by 6.4 Â± 0.5 in the entire group (p < 0.001) and in both the endurance group (6.1 Â± 0.6, p < 0.001) and the power group (6.7 Â± 0.7, p < 0.001).   The endurance and power group showed no significant difference in the error of estimation by BIA (p = 0.554), indicating that BIA has the same error in both groups.

The final prediction equation incorporated both anthropometric variables as well as BIA variables. The prediction equation produced an adjusted r2 of 0.982 and SEE of 1.98 for the entire group. This equation used BIA measurements and anthropometric measurements, specifically trunk measurements to account for trunk size, a common source of error in BIA equations. Follow-up validation studies are necessary to further validate the equations produced.