

Reliability and Validity for Measurement of Body Composition: A Field Method

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Abstract : Measurement of body composition via a field method has the most popular instruments which are used to estimate the percentage of body fat. Among the instruments used are the Body Mass Index, Bio Impedance Analysis and Skinfold Test. All three of these instruments do not involve high costs, do not require high technical skills, are mobile, save time, and are suitable for use in large populations. Because all three instruments can estimate the percentage of body fat, but it is important to identify the most appropriate instruments and have high reliability. Hence, this study was conducted to determine the reliability and convergent validity of the instruments. A total of 40 students, males and females aged between 13 and 14 years participated in this study. The study found that the test retest and Pearson correlation coefficient of reliability for the three instruments is very high, $r = .99$. While the inter class reliability also are at high level with $r = .99$ for Body Mass Index and Bio Impedance Analysis, $r = .96$ for Skin fold test. Intra class reliability coefficient for these three instruments is too high for Body Mass Index $r = .99$, Bio Impedance Analysis $r = .97$, and Skin fold Test $r = .90$. However, Standard Error of Measurement value for all three instruments indicates the Body Mass Index is the most appropriate instrument with a mean value of .000672 compared with other instruments. The findings show that the Body Mass Index is an instrument which is the most accurate and reliable in estimating body fat percentage for the population studied.

Keywords : reliability, validity, body mass index, bio impedance analysis and skinfold test

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