成年人體脂肪測量方法的比較及體脂肪與體位相關性的探討

Comparison with the Methods for Measuring Body Fat and Investigation of Interrelationships between Anthropometry and Body Fat in Adults

楊淑惠(Shwu-Huey Sherry Yang);楊蕙(Hui Yang);謝明哲(Ming-Jer Shieh);簡怡雯(Yi-Wen Chien)

Yang SH;Yang H;Shieh MJ;Chien YW

摘要

本研究探討一般成年與肥胖者，以分段多頻率生物電阻法測得體脂率為參考值，比較足到足、手到手生物電阻法及紅外線測量的準確性及體位與體脂率相關性。研究分二部分，研究－以一般成年人為物件男 25 人，女 93 人，結果：四種測量法均有相關性，足到足及手到手電阻法的體脂率無統計差異，紅外線明顯偏低(P<0.05)；體位測量的腰圍、臀圍、腰臀比、BMI 與體脂率均成正相關，男性以腰圍(r=0.72, p<0.0001)女性以 BMI(r=0.79, P<0.0001)呈顯著正相關。研究二以肥胖者 BMI>27kg/平方公尺為物件男 6 人，女 21 人，結果：以足到足及手到手生物電阻法測得體脂率無統計差異，紅外線明顯偏低(P<0.05)，肥胖男性以手到手(r=0.93, p<0.05)，肥胖女性以足到足電阻法測得值(r=0.80, P<0.0001)更接近參考值；體位測量方面肥胖男性只有臀圍與體脂率有正相關(r=0.85, p<0.05)，肥胖女性以腰圍、臀圍、BMI 與體脂率有正相關，以 BMI(r=0.78, p<0.001)最顯著正相關。探討腰臀比值則所有肥胖男女的腰臀比與體脂率並無相關性。

Abstract

In this study, we compared the Segmental Bioelectrical Impedance Analysis (SBIA), Foot-to-Foot Bioelectrical Impedance Analysis (FFA), Hand-to-Hand Bioelectrical Impedance Analysis (HHA), and Near Infra-red Interactance (NIRI) for measuring the accuracy of body fat percentage and determined the correlations of body composition for both normal and obese adults. This study was divided into two phases. In phase 1-normal adults, 25 men and 93 women are studied. The results showed that all four methods were correlated. However, no significant statisticed differences was found between FFA and HHA, and a lower measurement was observed for NIRI (p<0.05). The body fat percentile was correlated with body waist circumference (WC), hip circumference (HC), waist-to-hip ratio (WHR), and body mass index (BMI). The significant correlated value for men was with WC (r=0.72, p<0.0001) and for women was with BMI (r=0.79, p<0.0001). In phase 2, obese adults including 6 men and 21 women with a BMI ov er 27kg/m^2 were investigated. Results showed no statistic difference between FFA and HHA; however, a lower

measurement was found for NIRI ($p<0.05$). Results also showed that the standard values were achieved using HHA for obese men ($r=0.93$, $p<0.05$) and using FFA for obese women ($r=0.80$, $p<0.0001$). Body fat percentage was only correlated with HC for obese men ($r=0.85$, $p<0.05$), while it was correlated with WC, HG and BMI for obese women, and it was significantly correlated with BMI ($r=0.78$, $p<0.001$). It was also showed that the body fat percentage was not correlated with WHR for either men or women. However, no index of weight control result was shown.