

Discovering the Accuracy of Popular Mobile Applications in Predicting Resting Energy Expenditure in Humans

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ABSTRACT

Calorie tracking applications are commonly used by athletes and the general population to monitor their nutritional intake. Users depend on the accuracy of these applications in order to achieve goals relating to performance or body composition. Resting energy expenditure (REE) is the minimum number of calories the body would need to maintain its function for a 24-hour period of non-activity and the largest component of total daily energy expenditure (TDEE). Although these applications are trusted and used on a daily basis, there is little data to support or disprove their accuracy. **PURPOSE:** The purpose of this study was to compare resting metabolic rate (RMR) values between popular, mobile calorie counting applications and a valid REE test via an indirect calorimetry protocol. **METHODS:** 61 participants (mean \pm SD; age: 22.3 ± 3.0 y; height: 171.9 ± 12.8 cm; body mass [BM]: 76.2 ± 17.0 kg) had their REE measured (measured REE: 1905.85 ± 374.53 calories/day) using a metabolic cart (Parvo Medics, Inc.). The measured REE test was then compared to the Harris-Benedict (HB) estimated REE and six calorie counting applications: MyFitnessPal (MFP), Monitor Your Weight (MYW), Easyfit, BMR WhichMan (BMRWM), BMI and BMR Calculator from Chowdhury eLab (BMRCeLab), and BMR from Wade labs, Inc. (BMRWL) to determine the accuracy of the mobile applications. Pearson Correlation was used to determine correlation between the predicted REE from the apps and HB equation and measured REE, while paired t-tests were used to determine the difference between the apps and measured REE; significance defined as $p < 0.05$. **RESULTS:** Results of the paired t-tests all revealed a significant difference ($p < 0.001$) between the predicted REEs (HB equation and mobile applications) and the measured REE. Specifically, two significantly overpredicted REE (MFP and MYW; $p < 0.001$) while the remaining five underpredicted REE (HB, Easyfit, BMRWM, BMRCeLab, and BMRWL.; $p < 0.001$). **CONCLUSION:** These findings suggest that mobile application's predicted REE varies significantly from a measured laboratory REE and that sole reliance on an application's suggested caloric needs may be unreliable.