Prediction of resting energy expenditure in Italian older adults with severe obesity.

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Background: In the last decade a large number of studies proposed and/or validated equations to estimate the Resting Energy Expenditure (REE) in adults and/or older adults, however, no equation currently available showed good accuracy for older adults with severe obesity. Thus, this study aimed to develop and validate new predictive equations for REE, based on data from the indirect calorimetry, in Italian older adults with severe obesity.

Methods: A retrospective study was as conducted with 764 Caucasian older adults with severe obesity (age range: 60-74 years and BMI ≥ 35 kg/m/²). Four models were used to test the accuracy of anthropometry and body composition variables in multivariable prediction of REE. All models were derived by stepwise multiple regression analysis using a calibration group of 382 subjects [295 females and 87 males] and the equations were cross-validated in the remaining 382 subjects [295 females and 87 males] as validation group. The new prediction equations and the other published equations were tested using the Bland-Altman method. Prediction accuracy was defined as the percentage of subjects whose REE was predicted within ± 10% of measured REE.

Results: All the equations analyzed predicted higher energy requirements for males than females, and most of them underestimated the energy requirement values of our sample. The highest accuracy values were observed in the new equations, with 62% in the anthropometric model and 63% in the body composition model.

Conclusion: Although the accuracy of our equations was slightly higher in comparison with the other taken into consideration, they cannot be considered completely satisfactory for predicting REE in Italians older adults with severe obesity. When predicting equations cannot guarantee precise or acceptable values of REE, the use of indirect calorimetry (if available) should be always recommended, especially in clinical practice.

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