Measured vs estimated resting energy expenditure in children and adolescents with obesity.

S. Tamini, D. Caroli, A. Bondesan, L. Abbruzzese, A. Sartorio

Scientific Reports 13: 13178, 2023.

Pediatric obesity requires early targeted interventions consisting mainly of a low-calorie diet prescribed based on resting energy expenditure (REE), often estimated through predictive equations. The aim of this study was to define the prevalence of "hypo-", "normo-" and "hypermetabolic" in a large cohort of children and adolescents with obesity by comparing measured and estimated REE and to evaluate the characteristics related to these metabolic statuses in both males and females. The study population was divided into the three subgroups by comparing REE measured using indirect calorimetry and estimated using the Molnar equation, and subsequently analyzed. The majority of the participants (60.6%) were normometabolic, 25.5% hypermetabolic and 13.9% hypometabolic. No significant differences in age, Tanner stage, systolic blood pressure, or the presence of metabolic syndrome were found. However, the hypermetabolic subgroup was significantly lighter, shorter, with lower hip and waist circumferences, had a greater amount of fat-free mass and lower fat mass, significantly lower diastolic blood pressure, and a significantly higher frequency of non-alcoholic liver steatosis. Pediatric obesity is more associated with normal or increased REE than with a hypometabolic condition, suggesting that estimation of energy expenditure with predictive equations is still inadequate for prescribing the appropriate diet plan.