ABSTRACT

Determination of body composition or amount and decomposition of body fat belongs to the basic clinical examination of an obese patient. But methods used to determine the amount of fat in obese population are often inaccurate. And it’s adipose tissue and its measurable parameters which can provide us range of information for the further process of the reductive treatment.

The main goal of this work is to evaluate the physiological aspects of body composition measurement in several areas: (I) To determine whether the values of body fat measured by most commonly used methods are comparable to those measured by method DEXA. (II) To determine whether the values of the amount of body fat measured by different methods vary depending on the amount of BMI and adipose tissue in the body and assess whether the available bioimpedance methods can measure the functional state of body fat. (III) To assess the resting energy expenditure in relation to body composition and physical activity. (IV) To determine whether the body composition will affect the resulting reduction after exercise program for women with overweight and obesity. (V) To verify whether changes in the values of BOHB (Beta Hydroxybutyrate) after physical activity could be the predictor of weight losses and changes of body composition.

Based on our measurements we have found out that measured values of body fat differ significantly from each other, firstly, depending on the methodology used and also depending on the amount of BMI and adipose tissue of measured subjects. The amount of adipose tissue distinctly affects a variety of pathophysiological processes in the human body and these processes can interfere and influence the accuracy of measurement of body composition using modern bioimpedance methods. Body composition also has a significant impact on the variability of energy expenditure and resting energy expenditure (REE).

In view of all these identified conditions it is necessary to examine reliability and further use of these measuring methods for specific groups of the population, for instance, depending on sex, age, body composition or occurrence of certain diseases.

Key words: body composition, adipose tissue, DEXA, bioimpedance, obesity