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Introduction: Air plethysmography analysis is a method to measure the human body density (D) and ables to evaluate the body composition. This tool is emerging as a convenient alternative to the hydrostatic weighing. D allows estimation of the Human Fat Mass percentage using typical regression relations (see Siri, 1956). The objectives of the study is to define the relationship between Bioelectrical parameters obtained by Multifrequency Biolectrical Analysis (MF-BIA) and D.
Methods: 25 healthy subjects (35 ± 8.2 anni; 1.72 ± 0.08 m; 78.6 ± 15.3 kg) both genders have been enrolled and D measurements have been collected with an Air plethysmography (BODPOD, Cosmed, Italia). Moreover, MF-BIA parameters as Z, PA, Rx and Xc at 5, 10, 50, 100, 250 kHz have been measured (Human in Touch, DSmedica, Italia). Multiply regression analysis has been performed between D and MF-BIA parameters and backward identification method has been used as selection criterion ($p < 0.05$; software SPSS, IBM, USA).
Results: Statistical analysis reports as PA at 50 and 100 kHz are the MF-BIA parameters with best prediction value of D as measured by BOD-POD ($p < 0.005$). The main results (expressed as mean ± SD) are: D: 1.038 ± 0.029; D(PA50): 1.041 ± 0.019; D(PA100): 1.036 ± 0.019. Data with an R2adj of 0.394 and 0.442 and a SE of 0.022 and 0.021 for PA50 and PA100, respectively.
Conclusions: Phase Angle at 50 kHz and 100 kHz are accurate D predictors. It would seem that the D estimation are slightly higher and lower with PA50 and PA100 respectively. Future investigations on a greater subject number are required to confirm present results and to increase the estimation precision. Moreover, similar studies are necessary to recognise MF-BIA and D relation also in particular categories as well as Obese and diabetic patients.

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BIOELECTRICAL IMPEDANCE ANALYSIS (BIA) AND PHYSICAL FITNESS IN NEPHROPATHIC PATIENTS ON PERITONEAL DIALYSIS

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Introduction: Body composition and physical fitness are both components of nutritional status and are closely related to each other. In clinical practice, they can be assessed using bioelectrical impedance analysis (BIA) and performing physical fitness tests (PF), respectively. The main objective of the study was to evaluate in patients in peritoneal dialysis (PD) the relationships of PF tests with those BIA variables that are considered as markers of skeletal muscle quality (qualitative BIA).
Methods: Patients in DP were studied in clinically stable conditions: 31 men (age 60.6 ± 15.5 years; BMI (27.8 ± 4.1 kg/m^2) and 23 women (age 51. 8 ± 13.1 years, BMI 28.5 ± 5.8 kg/m^2). The PF tests performed were GS = gait speed, STS test = sit to stand and TUG = timed up and go. BIA (HUMAN IM-TOUCH, DS Medica-Milan) was carried out for assessing body composition. In particular, multifrequency (IR) ratio between Z at 250 kHz and Z at 5 kHz, and phase angle (PhA, measured at 50 kHz) were considered as indices of body cell mass and extracellular water.
Results: On average, PF tests did not differ significantly between gender and the same was true for IR (M: 0.876 ± 0.022 vs. F: 0.878 ± 0.012) and PhA (5.5 ± 1.4 vs. 5.2 ± 0.8 degrees). After adjusting for gender, GS and TUG were weakly correlated with BMI (but not with the other anthropometric variables) and much more closely with PhA and IR. STS was not associated with BMI and only weakly correlated with IR and PhA. Multiple linear regression model indicated that BMI+IR or BMI+-PhA were predictors of STS and TUG, whereas IR (or PhA) was the only significant predictor of STS.
Conclusions: The preliminary results of this study show that in PD patients qualitative BIA variables such as IR or PhA have significant and interesting associations with some of the major PF tests.