

## Assessment of Obesity Parameters in Terms of Metabolic Age above and below Chronological Age in Adults

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**Abstract :** Chronologic age (CA) of individuals is closely related to obesity and generally affects the magnitude of obesity parameters. On the other hand, close association between basal metabolic rate (BMR) and metabolic age (MA) is also a matter of concern. It is suggested that MA higher than CA is the indicator of the need to improve the metabolic rate. In this study, the aim was to assess some commonly used obesity parameters, such as obesity degree, visceral adiposity, BMR, BMR-to-weight ratio, in several groups with varying differences between MA and CA values. The study comprises adults, whose ages vary between 18 and 79 years. Four groups were constituted. Group 1, 2, 3 and 4 were composed of 55, 33, 76 and 47 adults, respectively. The individuals exhibiting -1, 0 and +1 for their MA-CA values were involved in Group 1, which was considered as the control group. Those, whose MA-CA values varying between -5 and -10 participated in Group 2. Those, whose MAs above their real ages were divided into two groups [Group 3 (MA-CA; from +5 to + 10) and Group 4 (MA-CA; from +11 to + 12)]. Body mass index (BMI) values were calculated. TANITA body composition monitor using bioelectrical impedance analysis technology was used to obtain values for obesity degree, visceral adiposity, BMR and BMR-to-weight ratio. The compiled data were evaluated statistically using a statistical package program; SPSS. Mean  $\pm$  SD values were determined. Correlation analyses were performed. The statistical significance degree was accepted as  $p < 0.05$ . The increase in BMR was positively correlated with obesity degree. MAs and CAs of the groups were 39.9  $\pm$  16.8 vs 39.9  $\pm$  16.7 years for Group 1, 45.0  $\pm$  15.3 vs 51.4  $\pm$  15.7 years for Group 2, 47.2  $\pm$  12.7 vs 40.0  $\pm$  12.7 years for Group 3, and 53.6  $\pm$  14.8 vs 42  $\pm$  14.8 years for Group 4. BMI values of the groups were 24.3  $\pm$  3.6 kg/m<sup>2</sup>, 23.2  $\pm$  1.7 kg/m<sup>2</sup>, 30.3  $\pm$  3.8 kg/m<sup>2</sup>, and 40.1  $\pm$  5.1 kg/m<sup>2</sup> for Group 1, 2, 3 and 4, respectively. Values obtained for BMR were 1599  $\pm$  328 kcal in Group 1, 1463  $\pm$  198 kcal in Group 2, 1652  $\pm$  350 kcal in Group 3, and 1890  $\pm$  360 kcal in Group 4. A correlation was observed between BMR and MA-CA values in Group 1. No correlation was detected in other groups. On the other hand, statistically significant correlations between MA-CA values and obesity degree, BMI as well as BMR/weight were found in Group 3 and in Group 4. It was concluded that upon consideration of these findings in terms of MA-CA values, BMR-to-weight ratio was found to be much more useful indicator of the severe increase in obesity development than BMR. Also, the lack of associations between MA and BMR as well as BMR-to-weight ratio emphasize the importance of consideration of MA-CA values rather than MA.

**Keywords :** basal metabolic rate, basal metabolic rate-to-weight-ratio, chronologic age, metabolic age, obesity degree

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