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## Relationship between anthropometric/metabolic parameters and bone mineral density in younger adults

Roberta Hack-Mendes and Lorraine Brennan

School of Agriculture and Food Science. Institute of Food and Health. University College Dublin., Dublin, Ireland

### Abstract

**Introduction:** Osteoporosis is characterized by low bone mineral density (BMD) and increased susceptibility to low trauma fractures<sup>(1)</sup>. The relationship between osteoporosis risk and general metabolic health parameters is poorly understood. The aim of this study was to investigate the relationship between anthropometric and metabolic parameters with BMD in Adults.

**Materials and Methods:** A total of 214 (100 male and 114 female) healthy adults were recruited. The mean age was  $32 \pm 10$  years for males and  $31 \pm 11$  years for females. BMD was assessed by whole body dual energy X ray- absorptiometry (Dexa scan). Dexa scores were reported as total bone mineral density, T-score and Z-score. Anthropometric measures included body weight, height, waist circumference. Basal metabolic rate (BMR) was assessed by indirect calorimetry. Tertiles of BMD were obtained for males and females. Assessment of parameters across BMD tertiles was performed in males and females separately using ANOVA. Relationships between parameters was assessed using Spearman correlation analysis controlling for gender and age where appropriate.

**Results:** BMI, Weight and BMR increased significantly across the tertiles for both genders. The mean weight, BMI and BMR were significantly increased in the males at the highest tertile of BMD. Positive correlations (adjusted for gender and age) were observed between weight, BMI, BMR and BMD ( $R^2 = 0.404$ ;  $p = 0.001$ ,  $R^2 = 0.348$ ,  $p = 0.001$ ;  $R^2 = 0.363$ ;  $p = 0.001$ , respectively).

**Conclusions:** Overall, the results confirm the relationships between BMD and BMI and weight in a healthy cohort. Furthermore, it highlights a relationship between BMR and BMD. Targeting improvement in body composition and BMR may be a strategy for the age-related decline in BMD.

### Conflict of Interest

There is no conflict of interest.

### Reference

1. Svedbom A, Hernlund E, Ivergard M, Compston J, Cooper C, Stenmark J, McCloskey EV, Jonsson B, & Kanis JA (2013) Osteoporosis in the European Union: a compendium of country-specific reports. *Arch Osteoporos* 8:137.