

Brief Report

# Effect of physical activity, weight loss experience, and history of exercise habits on bone mineral density among female college students

Aya ITOI <sup>\*1</sup>, Miki OHTSUKI <sup>\*1</sup>, Yosuke YAMADA <sup>\*2</sup>

<sup>\*1</sup> Department of Health, Sports and Nutrition, Faculty of Health and Welfare, Kobe Women's University

<sup>\*2</sup> Department of Nutrition and Metabolism, National Institute of Biomedical Innovation, Health and Nutrition

---

## ABSTRACT

### **【Aim】**

The purpose of this study was to examine the effect of physical activity, weight loss experience, and history of exercise habits on bone mineral density among female college students.

### **【Methods】**

A total of 62 female college students participated in the study in May 2015. The calcaneus bone density measured using an ultrasound bone densitometer and the bone area ratio (BAR%) were used as markers of bone mineral density. Information on weight loss experience and history of exercise habits was collected using a questionnaire. Accelerometer-based physical activity was measured for seven days. We analyzed 59 female college students who did not have any missing data.

### **【Results】**

The BAR did not differ significantly among three groups (low, middle, and high) divided according to the daily step count, but the BAR was significantly correlated with exercise time recorded by a 24-h physical activity record ( $r = 0.602$ ,  $P = 0.008$ ). The BAR was significantly lower in the group who were attempting to lose weight through dieting at present, compared with the group without any weight loss experience ( $P = 0.009$ ). The BAR was not significantly different between groups with and without a current exercise habit. The BAR was significantly higher in a group with exercise habits during junior high school and high school than in a group with exercise habits only during junior high school and a group with no history of exercise habits in the past ( $P = 0.029$ ).

### **【Conclusion】**

Bone density was significantly correlated with a history of exercise habit and present weight loss experience among female college students.

**Keywords:** bone area ratio, physical activity, weight loss activity, fitness habit, female college students