

## THE EFFECTS OF A 24-WEEK DEEP WATER AEROBIC TRAINING PROGRAM ON BONE DENSITY

**E.Piotrowska-Calka<sup>1</sup>, B.Wajszczyk<sup>2</sup>J.Charzewska<sup>3</sup>**

<sup>1</sup>*Dept. of Swimming and Life Saving, Academy of Physical Education, Marymoncka 34, 01-813 Warszawa, Poland*

<sup>2</sup>*National Food and Nutrition Institute, Epidemiology and Norms Department, Powsińska 61/63, 02-903 Warsaw, Poland*

<sup>3</sup>*Dept. of Anthropology, Academy of Physical Education, National Food and Nutrition Institute, Epidemiology and Norms Department*

### **Abstract.**

**Objective:** The purpose of this study was to determine the influence of prolonged deep water aerobic training on bone mineral density (BMD). The following questions were formulated: 1. To what extent will deep water aerobics have influence on bone mineral density. 2. Do any changes occur at the women exercising aqua aerobic in comparison to the women not involved in any physical exercises ?

**Participants:** Two groups of women, between the ages of 30-62 participated in this research. Additionally the groups were divided for: before menopause (A2=6; 41,3±8,1yr; B2=10: 42,2±4,5yr) and postmenopausal (A1=10; 54,6±4,5 yr; B1=9; 55,1±4,9yr).

**Methods:** Group "A" participated in a 24-week deep water training program, exercising twice a week for 45 minutes. Control group B was asked to provide normal daily activity and not engaged in any physical exercises. Subjects in group A were tested before and after 24 week program and compared with group B.

The forearm bone mineral density in the non-dominating arm has been examined using OSTEOPLAN+ p-DXA in the mid distal and ultra distal section. Information on dietary intake was obtained by three-day food records (two workdays and one weekend day).

**Results:** The mean values of BMD in both groups of postmenopausal women (exercisers and control group) contained in the range of changes recognized as the progressive physiological process. The study showed in both groups many risk factors for osteoporosis. The most important of them was small in the relation to norms consumption of the calcium, magnesium, zinc, copper and vitamin D (except exercising postmenopausal women - A1 group) and excessive consumption of the protein, phosphorus and sodium.

The main irregularity are: insufficient intake of calcium, magnesium, zinc, copper and vitamin D (except group A1) and over in relation to RDA in save level intake of protein, phosphorus and sodium.

***Key words:*** Deep water aerobic training – bone mineral density- nutritional intake- women.