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Abstract

Longitudinal bone growth, which is represented by bone length, chondrocyte height and its numbers is influenced by several factors and one of them is exercise. This study was conducted to evaluate the effects of low and high intensity swimming exercise on skeletal length, cell height, and cell numbers of tibial epiphyseal plate chondrocytes. This study used separate sample pretest-posttest control group design, consisting of 28 males white rats, 3 weeks old. They were randomly divided into 4 groups which is 2 groups of treatment, 1 control pretest group and 1 control posttest group. The 1st treatment was low intensity group, loaded with weight 3% of body weight, and the 2nd treatment was high intensity group, loaded with weight 9% of body weight. Treatments were given three times a week for 6 weeks. Histomorphometric study was taken on tibial bone after dissected and stained with Haematoxylin-Eosin. Bone length was measured using a caliper while cell numbers and cell height were measured through photomicrographs sections using digital camera-light microscope, taken at 400 x magnification, and analyzed with software Adobe photoshop 7.0. The results showed that low and high swimming intensity increased bone length, cell numbers, and cell height of tibial epiphyseal plate chondrocytes in treatment group, compared to posttest control group. Further analysis using Manova showed that there was a significant difference among independent variables between low and high swimming intensity groups. This study proved that swimming in appropriate intensity might increase bone length, chondrocyte numbers, and chondrocyte height of tibial epiphyseal plate

Keyword : Swimming, intensity, bone, length, epiphyseal, plate, chondrocytes,

Daftar Pustaka :


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