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CORRELATIONS BETWEEN HIP ABDUCTOR’S PERFORMANCE WITH HIP BONE MINERAL DENSITY IN ELDERLY WOMEN

Abstract

The purpose of this study was to find correlation between hip abductor’s performance (muscle strength and endurance) with hip bone mineral density (BMD) on menopausal osteoporotic women in Surabaya. This cross-sectional study was done on 39 menopausal osteoporotic women 50-80 years old, which met the inclusion criteria (perform daily living independently, agreed to join this research with signed the informed consent and cooperative) and exclusive criteria (have neuromusculoskeletal problems on both lower extremities and cardiopulmonary problems). Every woman underwent assessment for non-dominant hip abductor performance with EN Tree machine and non-dominant total hip bone density with bone densitometer Hologic QDR 4500. Pearson and Spearman Correlation was used to measure the correlation between hip abductor performance and total hip bone density. This study showed that age has weak negative correlation with average power concentric (r=-0.360), average power eccentric (r=-0.344), average peak power concentric (r=-0.328), peak power concentric (r=-0.319) and total hip bone density (r=-0.353). Total hip bone density has moderate positive correlation with concentric contraction on peak power (r=0.509), average power (r=0.485), peak force (r=0.476), average power eccentric (r=0.460), average peak power (r=0.452) and average peak force (r=0.450), with eccentric contraction on average power (r=0.416) and peak power (r=0.412). This study showed that total hip bone density (reflect the static bone strength) had no correlation to 1 RM (reflect the muscle strength). Total hip bone density has stronger correlation with concentric than eccentric contraction activity. Endurance exercise for maintain bone density must give rhythmic eccentric and concentric contraction As long as there are enough force and power performed by exercise (within the intensity range 40-60% of 1 RM), endurance exercise will help (included non trained person) to maintain bone density. In conclusion, the older, the weaker hip abductor and hip bone.

Keyword : elderly, women, total, hip, bone, density, hip, abductor,

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