

Comments: “Influence of physical training on bone mineral density in healthy young adults: a systematic review”

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Aspects of human lifestyle such as diet, physical activity, and daytime life have positive effects on bone health, especially on bone loss or osteoporosis among older people.¹⁻⁴

Many parameters such as genetic factors, peak bone mass (PBM), balanced nutrition, physical activity, and lifestyle risk factors, including the intake of caffeine, tea, and carbonated beverage, smoking, and alcohol consumption were collectively influencing changes in bone contents and mass among younger and older individuals.¹⁻⁶ These parameters represent the main factors that affect the accumulation and maintenance of bone mass.^{5,6} Moreover, anthropometric data (body weight and body mass index [BMI]) are also considered as related factors that contribute to changes in total bone mass.⁵⁻⁷ Two studies have reported that high BMD is closely associated with elevated BMI in women,⁷ and that obesity significantly decreases the risk for osteoporosis, but does not decrease the risk for osteopenia.^{5,6}

The strength of healthy bones can be assessed by continuous measurements of bone quality, bone mineral density (BMD), and bone structure.^{8,9} Currently, these parameters are considered the ideal controlled measures for bone strength in cases of healthy and diseased bones and are particularly affected by the scores of physical activity.¹⁰⁻¹²

As explained from the physiology of bone, its formation is predominant during the first ten years of

human growth. A homeostatic balance between the naturally occurring processes of bone formation and resorption among was observed among healthy humans aged 20–45 yrs. In older ages, a disorder in the balance state occurs via a slight increase in the resorption process, which in turn results in bone loss and a lower bone density.¹³ It has been reported that individuals with low physical activity were susceptible to bone disorders, including bone loss or osteoporotic fracture.¹⁴ Conversely, physically active people, even those who are older, resist the decrease in BMD, which reduces their risk of fracture. Furthermore, increased physical activity results in an increase in BMD and a concomitant decrease in BMI.^{15,16}

Finally, supporting comments on the influence of physical training on bone mineral density among young adults, many research works have reported that physical activity provides positive effects on BMD via mechanical loading mechanisms.¹⁷⁻¹⁹ Also, in previous studies, body mass index, physical activity, low calcium consumption, and abnormal lifestyle have a role in bone mineral density and prognosis of osteoporosis in young adults.²⁰ In addition, in younger ages (children and adolescents), low back pain (LBP) was shown to be linked with limited sun exposure, inadequate vitamin D diets, adiposity, lower PA, sedentary lifestyles, vitamin 25 (OH) D deficiency, and lower levels of Ca, CK, and LDH.²¹ In the same way, training programs of different intensities,

particularly aerobic exercises of moderate intensity, were found to protect bone and cartilage by regulating body trace elements that are involved in the bio-

synthesis of bone matrix structures and inhibition of bone resorption process via a proposed anti-free radical mechanism.^{22,23}

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