Journal of Osteoporosis & Physical Activity

Diaz-Curiel, J Osteopor Phys Act 2013, 1:1
DOI: 10.4172/2329-9509.1000e104

Editorial Open Access

Effects of Exercise on Osteoporosis

Manuel Diaz-Curiel*

Internal/Diseases Metabolic Hosea Medicine Service, Foundation Jimenes Diaz, Autonomous University, Madrid, Spain

Physical exercise is an accessible form of prevention and treatment of the loss of bone mass, has no side effects, its cost is low, and also provides additional benefits in this field on postural stability and the prevention of falls.

Numerous Randomized Clinical Trials (RCTs) carried out in humans suggest that the exercise of force may improve Bone Mineral Density (BMD) in the critical sites of occurrence of fractures related to the OP [1]. A study with athletes from 70 to 81 years showed that exercise with load, regardless of the type (power, endurance or speed), led to a higher bone mineral density (BMD) than observed in controls. Furthermore exercises that produce dynamic muscular forces of short duration and high frequency over the bone originate greater density [1,2]. This fact and the factor site also show to see how tennis players from 70 to 84 years have between 4 and 33 percent more than in the dominant arm bone mass compared to the contralateral.

Another study [3], a year-long, has found that women aged 66 to 87 who participated in a RCT with a combined 50 ' program, two days in week, no breaks but with loads, aerobics and balance and coordination exercises can reduce risk factors and improve BMD in the triangle of Wards (8.4%), along with the running speed and the isometric grip force compared with controls. Therefore exercise programs can be appropriate for elderly and assume important implications in the prevention of fractures.

The run generates reaction forces from the soil of 1.5 to 2 times the weight of the body and jump 3 to 4 times, which is already above the level of response from the mecanostato. However, the osteogenic response to exercise may increase combined with periods of rest between cycles of vigorous effort in charge. However, in the absence of sufficient mechanical stresses, such as happens in periods of immobilization, as prolonged bed rest, bone turnover is undocked in favour of resorption, resulting in significant and rapid loss of MO.

Studies in postmenopausal women have the limitations of the capacity of the skeleton to adapt to the mechanical stress of the exercise, due to the altered hormonal status and sometimes inadequate nutrient intake.

In effect the exercise osteogenic may be implicated local mechanisms such as the release of prostaglandin E2, changes in cell membranes and reparative processes that compensate and exceed the microdanos produced by the exercise in skeletal tissue. In addition, physical activity can add General hormonal effects. An endocrine response to the effort is the increase in secretion of the growth hormone (GH), influenced by the intensity, duration, the work produced and the amount of muscle mass involved. However, this beneficial effect occurs you should work above the anaerobic threshold.

The BMD of the spine and the radio was found in a study in postmenopausal women, who had raced an average of 20 miles per week from menopause, most high, comparing with the sedentary, after adjustments [4].

Progressive strength training has proven to maintain or increase BMD in postmenopausal women in studies of at least one year's duration, which is the minimum time to produce significant bone changes [5-7].

In conclusion, most of the cross-sectional studies have found MO higher in athletes or active individuals, compared to inactive controls, even though the results of clinical trials are less clear.

Meta-analysis

A meta-analysis [8] showed that physical exercise in postmenopausal women increased lumbar BMD in a meaningful way, with both exercise aerobic as the force [9], similar to other recent revisioness RCTs showing average of 1.79% changes in column [10].

In another meta-analysis [1], which reviewed both ECA and other kind of studies in older adults, they found that the overall effect of exercise was stop or prevent bone loss by 0.9% per year, which is to be the average loss rate.

A review of studies of training resistance in women pre and postmenopausal women, it included 29 clinical trials randomized and non-randomized [11], found that the effect size was relatively small.

References

1. Wolff I, Van Croonenborg JJ, Kemper HC, Kostense PJ, Twisk JW (1999) The effect of exercise training programs on bone mass: a meta-analysis of published controlled trials in pre-and postmenopausal women. Osteoporos Int 9: 1-12.
2. Turner CH, Robbling AG (2003) Designing exercise regimens to increase bone strength . Exerc Sport Sci Rev 31: 45-50.
3. Englund U, Littbrand H, Sondell A, Petersson U, Bucht G. (2005) A 1-year combined weight-bearing training program is beneficial for bone mineral density and neuromuscular function in older women. Osteoporosis Int 16: 1117-1123.
4. Nelson ME, Meredith CN, Dawson-Hughes B, Evans WJ (1988) Hormone and bone mineral status in endurance-trained and sedentary postmenopausal women. J Clin End Metab 66: 927-933.
5. Nelson ME, Fiatarone MA, Morganti CM, Trice I, Greenberg RA (1994) Effects of high intensity strength training on multiple risk factors for osteoporotic fractures. JAMA 272: 1909-1914.
6. Kerr D, Morton A, Dick I, Prince R (1996) Exercise effects on bone mass in postmenopausal women are site-specific and load-dependent. J Bone Miner Res 11: 218-225.
7. Going S, Lohman T, Houtkooper L, Metcalfe L, Flint-Wagner H, et al. (2003) Effects of exercise on bone mineral density in calcium-replete postmenopausal women with and without hormone replacement therapy. Osteoporosis Int 14: 637-643.
8. Kelley GA (1998) Aerobic exercise and bone density at the hip in postmenopausal women: a meta-analysis. Prev Med 27: 798-807.

***Corresponding author:** Manuel Diaz-Curiel, Internal/Diseases Metabolic Hosea Medicine Service, Foundation Jimenes Diaz, Autonomous University, Madrid, Spain, E-mail: mdcuriel@fjd.es

Received January 14, 2013; **Accepted** January 15, 2013; **Published** January 21, 2013

Citation: Diaz-Curiel M (2013) Effects of Exercise on Osteoporosis. J Osteopor Phys Act 1: e104. doi:10.4172/2329-9509.1000e104

9. Kelley GA (1998) Exercise and regional bone mineral density in postmenopausal women: A meta-analytic review of randomised trials. Am J Phys Med Rehabil 77: 76-87.

10. Bonainti D, Shea B, Iovine R, Negrini S, Robinson V, , et al. (2002) Exercise for preventing and treating osteoporosis in postmenopausal women Cochrane Database Sys Rev 3: CD 000333.

11. Kelley GA, Kelley KS, Tran ZV (2001) Resistance training and bone mineral density in women: a meta-analysis of controlled trials. Am J Phys Med Rehabil 80; 65-77.

12. Kelley GA, Kelley KS, Tran ZV (2002) Exercise and lumbar spine bone mineral density in postmenopausal women: a meta-analysis of individual patient data. J Gerontol A Biol Sci Med Sci 57: M599-M604.

13. Kelley GA, Kelley KS, Tran ZV (2000) Exercise and bone mineral density in men: a meta-analysis. J Appl Physiol 88: 1730-1736.