Comparison of BMD & BMC in dominant and non-dominant arm between volleyball players and non-athlete

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ABSTRACT: Objective: Most volleyball players have to hit a top. It is believed that these advantages lead to differences in bone mineral density in the wrist lead. The purpose of this study is comparison content and bone mineral density at the top and the top volleyball players and non-athletes.

Methodology: The research sample of 12 female professional volleyball players (mean ± SD age: 17 / 1 ± 23/22 years, weight: 67 / 5 ± 40/61 kg, and height 56 / 4 ± 70/167 cm) and 12 of the Non-athletes (mean ± SD age: 74 / 0 ± 40/22 years, weight: 90 / 3 ± 47/58 kg, and height 77/ 2 ± 13/164 cm) were. Of bone mineral density (DEXA), Scales, height gauge and a sports medical history questionnaire was used for data collection. Data from independent t-test and independent t were analyzed.

Results: The study showed that bone mineral density at the top volleyball players to lose significantly more than their best. (P ≤ 0 / 05). While the top levels of the mineral content and their best was not significantly different (P ≥ 0 / 05). The density and mineral content of the top volleyball players and non-significantly higher than the top and was the top non-athlete.

Conclusion: The study showed that volleyball was effective in increasing bone mineral density. Involve hand movements such as the top volleyball players in Aspk hammer and defense services to the high concentration of minerals than other premium leads.

Key words: Osteoporosis, Dominant, bone density, volleyball

INTRODUCTION

Bone, a skeleton and a framework for supporting body (16). The most important functions of the skeletal bone structure creates flexible and strong to withstand the force of gravity and other forces create the proper structure of the motor causes (6). Osteoporosis is the most common metabolic bone disease characterized by reduced bone mineral and matrix, the most important outcome of bone fractures due to minimal trauma or stress (2). Hands, wrists, feet, spine and pelvis are the most common body parts that are exposed to the disease. Women are more susceptible to this disease because of the important role that estrogen plays in the health and strength of bones (3). Generally, two approaches have been proposed for the resistance against osteoporosis and fractures that involve maximizing the gain in bone density (BMD) in the first three decades of life and minimize bone loss in middle age and aging (2). As the density increases after a difficult youth therefore, to maximize peak bone density during adolescence is very important and has a key role in preventing osteoporosis (6). The best type of exercise to stimulate bone activity that affects all the bones, and it is nothing but weight bearing exercise (4). Mechanical forces resulting from high-intensity exercise will lead to increased bone mineral density. A period of intense exercise on immature boys and girls at the end of a year, an increase of 18 percent mineral content in the lumbar region was activated (12). Kanvs et al (1995) Effects of mechanical load on top and top tennis players measured and concluded that BMD of the top tennis players more than the non-dominant hand (9). The study of bone mineral content in women’s squash radial arm and hand preference was almost 15 percent higher than the non-dominant hand (13). Hapasalv et al (2000) also mineral content and bone area in professional tennis players compared with those athletes. Mineral content and bone level athletes in the non-dominant hand were more superior. This study showed a higher mineral content than the size of the larger mode of bone mineral density of bones in the hand has
not been. Mineral content than the control group both athletes was significantly lower (13). Marcus the top athletes in 1996 showed 34% more minerals than their non-dominant hand if the workout is a difference of 5% (15).

Bryan (1996) also concluded that the localized increase in bone maturation period of heavy exercise (15). Kalbt in 1999, bone density than non-volleyball, men's volleyball at the lumbar spine and 14% in the femoral neck than 20% of reported (5). Lfrdsvn (1997) bone density in women's volleyball in the sixth% total body, lumbar spine, 213%, femoral neck, 8/15% and humeral 5/9 percent compared with athletes who reported (1). Farideh Shojaei (1385) concluded that the research on national teams and athletes in the spinal area, respectively, in the two fields, volleyball, basketball, tennis, fitness, swimming and badminton and thigh Two, volleyball, basketball, tennis, fitness, swimming and badminton maximum bone density is observed (17). In view of the existing conflicts, as well as the lack of sufficient information on the impact of sports on the content and bone density, In this research effort, the effect of the sport of volleyball on bone mineral density in athletes with athletic people compare the content is.

**METHODOLOGY**

This study is a comparative investigation of after the event. Also according to the length and cross-sectional terms of practical results. 12 Volleyball Professional League (mean ± SD age: 17/1 ± 23/22 years, Weight: 67/5 ± 40/61 kg, height 56/4 ± 70/167 cm) and 12 healthy athletes (mean ± standard deviation standard, age: 74/0 ± 40/22 years, weight: 90/3 ± 47/58 kg, height 77/2 ± 13/164 cm) in Hamadan samples were combined and made accessible and meaningful in this research were any records of fracture, family history of osteoporosis and a history of diabetes, hyperthyroidism, respiratory disease and a history of alcohol consumption, smoking, anticonvulsants and corticosteroids were excluded. Volleyball regular exercise at least 5 years experience as a professional and had 6 sessions per week. Student-athletes are also members of PNU (except physical education) who had a history of regular participation in sports. For data collection devices, bone mineral densitometry (DEXA), scales, height gauges and athletic medical history questionnaire was used. After describing the object of research for athletes and non-athletes and asked some questions for an interview was completed. The specimens weighing scales seca scorpions manufacturing company in Germany (with an accuracy of 5/0 kg) and their height using the height gauge construction company (accuracy of a millimeter) were measured. Mineral density samples Clinic Center Alvand Hamedan using DEXA is the most reliable method for measuring bone mineral density were measured. That is, the respondents were asked to remove metal objects and additional accessories sitting o In order to analyze the data into SPSS (version 18), and then were analyzed using descriptive and inferential statistics. Descriptive statistics of parameters such as mean, standard deviation, frequency distribution tables related to the characteristics of age, height and weight were used. In inferential statistics, t-test and t-test was used. Statistically significant level of 0/05 was considered a chair close to the device if the right hands turn into a completely flat position to be placed on the boards. Bone density is completed within a few minutes (about 10 to 15 minutes). In this study, two wrist right and left, each was evaluated separately in terms of density and content and after completion of all required tests and is ready to be printed with color pictures and the analysis was carried out by an expert center.

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<th>Control</th>
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<tbody>
<tr>
<td>Bone mineral content (mg)</td>
<td>P=0/000</td>
<td>-6/28</td>
<td>11/13±0/56</td>
<td>13/92±1/62</td>
</tr>
<tr>
<td>Dominant hand</td>
<td>P=0/000</td>
<td>-6/80</td>
<td>11/03±0/48</td>
<td>13/44±1/28</td>
</tr>
<tr>
<td>Bone mineral density (milligrams per cubic centimeter)</td>
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<td>-1/83</td>
<td>0/47±0/02</td>
<td>0/57±0/07</td>
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<tr>
<td>Dominant hand</td>
<td>P=0/000</td>
<td>-6/26</td>
<td>0/46±0/01</td>
<td>0/55±0/05</td>
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<tr>
<td>Non-dominant hand</td>
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Table 1. compared to the density and mineral content of women's volleyball Premier League and other professional and non-athletes
RESULTS

Bone mineral density of the non-dominant hand preference was more professional volleyball (Figure 1). The paired t-test between the dominant and non-dominant mineral density was significantly different volleyball. (P = 0.01, t = -2.85). Results of this study showed a higher rate of loss of bone mineral content Pro volleyball players and non-athletes were significantly more likely than women (000/0 = P). The amount of the premium and non-premium mineral density was significantly higher than the best volleyball players and non-athletic people was higher (000/0 = P) (Table 1).

![Graph showing bone mineral density](image)

**Figure 1.** the mean bone mineral density Dominant and non-dominant wrist Athletes

DISCUSSION

The purpose of this study is to compare the density and bone mineral content at the top and the top volleyball players and athletic people. Bone mineral density at the top and the top professional volleyball players, The results of this study showed a significantly higher rate than the non-dominant hand was superior. These results with the results Myvnn et al (1995), Kahn and colleagues (2001), Young et al (2005) Vincent - Rodriguez et al (2004) is consistent (11,18,19). It seems that the mechanical load on bone mineral density in certain parts of the bone is more effective so that Kanvs and colleagues of the mechanical load on the top and the top tennis players measured and concluded that top tennis players bone mineral density than the non-dominant hand holds (9). They stated that they regularly do strenuous exercise can lead to an increase in bone mineral density. Positive changes in bone mineral density function of a load on it and the number of courses that will put pressure on the bone. Muscle forces acting on specific bones, apparently changes in metabolism in the pressure-point triggers. For example, the tennis players and baseball with the bowlers hand fling bone thickness is less than the hand that has the most. Data analysis showed that volleyball players bone content ((BMC and bone mineral density (BMD) more than other groups in the wrist. Effects of exercise training on bone augmentation are directly proportional to the duration and continuity of practice. Sports that are associated with sudden movements of the body and limbs and organs in different directions, their weight, the more they stimulate bone formation. Kelly et al, in a study conducted on prepubertal Stated that training at high pressure leads to high tension of the muscle attached to the bone, and the bone was put under tension and pressure and this stimulates bone formation and subsequent bone density increases. (10). Amount of bone formation as well as the amount of force applied depends on the frequency. It looks more natural that non-athletes who do repetitive activities such activity has the same effect on bone cells, top and best, Thus, the amount of bone mineral density at both of them are the same. The rate of bone mineral content and non-dominant hand superior results showed that the mineral content of the top athletes and top athletes were higher than non-athletes who concluded the research universe and colleagues (2005), Hapasalv et al (2005 ) corresponds to (7,8). Participate in intense exercise increases bone mineral content and the size of the surface. Hapasalv et al (2005) Evaluation of bone loss at the top and the top women’s squash strands found in bone mineral density and content of the top athletes was significantly more than athletes. The impact of stress and
tensile forces from muscle to bone directly enters with increased bone mineral density; mineral content is also high cylindrical (8). Therefore we can conclude that the higher mineral content and bone mineral density in volleyball due to the increase in this group. Individuals who pursue an active lifestyle than their sedentary people of the same age are significantly more bone mass Seventh and eighth decades of life, even decades, and this benefit is maintained in the lower right exercises combined with the non-active life exactly parallel to the age-related bone mass loss. The results of this study it can be concluded that volleyball is a sport full of strong, positive effect on bone mineral density in the upper non-athlete female athletes than women has.

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