Summary

The influences of anthropometric parameters with their more or less global effects on bone have been studied in some investigations. The results of these studies most often revealed a positive influence of total body weight, body mass index (BMI), lean body mass (LBM), body fat and height on BMD, with, however, a large variation in correlation coefficients (Christensen et al. 1981; Conroy et al. 1993; Pocock et al. 1989; Wüster et al. 1992). The correlations between anthropometric parameters and BMD might partly be explained by their mechanical effects on bone (Lanyon, 1992). Body weight, for instance, provides resistance that muscles must overcome for work and play (Frost, 1999). It remains unclear, however, whether BMD is determined by body weight per se or by single components of body composition.

Physical activities, particularly weight-bearing exercises are believed to provide the mechanical stimuli or ‘loading’ importance for the maintenance and improvement of bone health, whereas physical inactivity has been implicated in bone loss and its associated health costs (Ginty et al. 2005).

The purpose of the study was to find out the "Anthropometric Variables, Motor Fitness Variables and BMI as Predictors of Bone Mineral Density among Sportsmen". The objectives of the study were; 1. To assess of anthropometric variables, motor fitness variables and BMI among sportsmen, 2. To assess of BMD among sportsmen participating in weight bearing activities and non-weight bearing activities, 3. To predict BMD by anthropometric variables, motor fitness variables and BMI if any,
4. To predict the BMD by anthropometric variables, motor fitness variables and BMI among Sportsmen in weight bearing activities viz volleyball, throwing and bodybuilding and, 5. To predict the BMD by anthropometric variables, motor fitness variables and BMI among Sportsmen in non-weight bearing activities viz swimming.

One hundred Iranian male athlete's age between 18-28-year-olds were divided into 4 groups: volleyball, throwing, swimming and body building (all, n=25) were participated in this study. They were on national and, partly, international performance levels.

The researcher planned to assess 12 anthropometric variables, 6 motor fitness variables and BMI and also BMD was measured at lumbar spines (L2–L4), the neck of femur and wrist. Descriptive statistics and multiple- stepwise- regression tests were used for analysis of date. The Results revealed that only few anthropometric variables, motor fitness variables and BMI predicted the bone mineral density among sportsmen viz; weight bearing sports and non-weight bearing sports.

Conclusions

On the basis of the study the following conclusions were drown:

Out of 19 variables entered into equation, sitting height, forearm length and humerus breadth best predicted the BMD at lumbar bones (L2-L4); standing long jump and forearm length best predicted the BMD at neck of the femur; and forearm length best predicted the BMD at wrist among sportsmen.

Out of 19 variables entered into equation, sitting height and standing long jump best predicted the BMD at lumbar bones (L2-L4); forearm length best predicted the BMD at neck of the femur; and standing long jump best predicted the BMD at wrist among sportsmen.
among sportsmen participating in weight bearing sports, viz volleyball, throwing and bodybuilding.

Out of 19 variables entered into equation, body weight and sitting height best predicted the BMD at lumbar bones (L2-L4); femur breadth best predicted the BMD at neck of the femur; and forearm length best predicted the BMD at wrist among sportsmen participating in non-weight bearing sports, viz swimming.

Out of 19 variables entered into equation, squat and sitting height best predicted the BMD at lumbar bones (L2-L4); thigh length best predicted the BMD at neck of the femur; wrist breadth best predicted the BMD at wrist among sportsmen participating in weight bearing sports, viz volleyball.

Out of 19 variables entered into equation, sitting height best predicted the BMD at lumbar bones (L2-L4); squat best predicted the BMD at neck of the femur; wrist breadth best predicted the BMD at wrist among sportsmen participating in weight bearing sports, viz bodybuilding.

Out of 19 variables entered into equation, squat best predicted the BMD at lumbar bones (L2-L4); thigh length and speed best predicted the BMD at neck of the femur; forearm length best predicted the BMD at wrist among sportsmen participating in weight bearing sports, viz throwing.

**Recommendations for Further Research**

- Further research should be focused on the body composition variables.
- Further research should be focused on the other anthropometric variables.
- Further research should be focused on the other motor fitness variables.
Further research should be focused on the Bone mineral density of other sites and whole body.

Further research also needs to be conducted on different sports viz weight bearing and non weight bearing sports.

Further research should be focused on women and older sportsmen.

Further research should be focused on non-athletes.