Journal of Bone Research
ISSN: 2572-4916
OPEN ACCESS Freely available online
Editorial

Bone Density

Rachel Jhonson*

Editorial office, Bone Research, Spain

EDITORIAL NOTE

The amount of bone mineral in bone tissue is measured by bone density, often known as Bone Mineral Density (BMD). Although clinically assessed by proxy according to optical density per square centimetre of bone surface upon imaging, the concept is of mineral mass per volume of bone (related to density in the physics sense). Due to a loss in bone strength and an increase in bone fragility, osteoporosis and increased fracture risk are two of the most frequent illnesses linked with low BMD. BMD is affected by medical disorders such as diabetes and hyperthyroidism, as well as other factors such as peak bone mass and postmenopausal oestrogen insufficiency. Depending on the purpose of the analysis, the specific characteristics of the individual, the bone site under examination, and the equipment, single- and dual-energy photon absorptiometry, quantitative computed tomography, and magnetic resonance imaging are some of the technological modalities for BMD quantification.

Bone's unique mechanical qualities are due to its composite nature. Bone is made up primarily of organic matrix (primarily type I collagen) and mineral matrix. In terms of material qualities, it has been established that the mineral component contributes significantly to bone strength, but the organic matrix is principally responsible for bone toughness and plastic deformation. Material characteristics are affected by changes in matrix composition. As a result, it has been demonstrated that differences in elastic characteristics are caused by physiological or pathologically induced increases in mineral content and collagen, while collagen maturity is closely connected with plastic behaviour.

The increased risk of fracture cannot be attributed solely to tissue-material qualities, as structural properties play a key role in bone's mechanical integrity. Other elements that determine resistance to applied force include architectural organisation and bone mass. Bone mass and strength are balanced by the interaction of cortical and trabecular bone amount. External stress is one of the primary elements that regulates not only the activation and deactivation of remodelling, but also the balance between bone loss and deposition during skeletal maturity. This effect, when combined with hormone stimulation, can result in a change in bone mass and architecture, which is more noticeable in trabecular than cortical bone. As a result, the volumetric Bone-Mineral Density (vBMD) assessment has become the primary clinical and preoperative screening method for low bone mass and increased fracture risk. The ratio of BM content to bone size, expressed in grammes per cubic centimetre, is known as vBMD.

The largest amount of whole-body BM content obtained over a person's lifetime is referred to as peak bone mass. About a quarter of an individual's peak bone mass is gained in the two years preceding the individual's maximum height, with 90% of peak bone mass achieved by the age of 18. Many factors, including sexual maturation, age, heredity, physical activity, lifestyle, dietary calcium, and hormone status/menopause, might alter BMD. Changes in bone remodelling rates occur when osteoporosis develops as a result of the natural ageing process or metabolic diseases. Although taphonomic factors were acknowledged to complicate BMD results, BMD has been employed in paleoanthropological investigations to assess osteoporosis in archaeological populations.

Correspondence to: Rachel Jhonson, Editorial office, Bone Research, Spain, E-mail: orthopedicsurgery@journalsoa.org

Received: April 8, 2021; **Accepted:** April 12, 2021; **Published:** April 18, 2021

Citation: Jhonson R (2021) Bone Density. J Bone Res. 9:111.