

Opinion Article

Bone Health and its Correlation with a Longer Lifespan

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INTRODUCTION

Throughout the previous century, public health achievements have resulted in a continuous increase in the typical American's life expectancy. Each year, the chance of dying between the ages of 60 and 80 years has decreased by 1.7 percent for women and 1.5% for men, respectively.

Exercise is one of the most important modifiable variables related to better bone health outcomes including high Bone Mineral Density (BMD) and strength. Regular exercisers are also more likely to avoid age-related bone loss and have fewer falls and fractures as a result of having stronger muscles and bones, which enhance balance.

Over the previous century, advancements in technology, safety measures, education, and healthcare access have resulted in an approximately 30-year rise in life expectancy.

Life expectancy is expected to grow by 4.4 years for both men and women between 2016 and 2040. The average life expectancy in the United States in 2018 was 78.6 years. As Americans' life expectancy has grown, the top causes of death have shifted in response to changes in healthcare and socioeconomic situations. Non-communicable illnesses, such as cardiovascular disease and cancer, are now the major causes of mortality in the United States. 4 Furthermore, a subgroup of the world's population has developed, avoiding or postponing the onset of many age-related illnesses and differentiating themselves by surviving past the age of 100.

The musculoskeletal system's two biggest tissues, bone, and muscle are mechanically, biochemically, and molecularly linked, with muscular contraction considered to be the primary source of mechanical strain leading to bone adaptation. The research found that under disuse conditions, muscle mass drops first, followed by bone mass loss, but after recovery, muscle mass increases first, followed by bone accretion.

According to research, a well-balanced diet is essential for bone health throughout life. It may help build or maintain bone mass depending on age. So far, much of the study has been on calcium and vitamin D. Calcium and vitamin D are vital for bone health, but other nutrients are also important.

AGING AND BONE LOSS

and cellular damage that accumulates over time World Health Organization (WHO). It is affected by the human Deoxyribonucleic Acid (DNA) as well as epigenetic modifications brought about by environmental and lifestyle variables. Bone accretion begins at birth and continues throughout infancy and adolescence, with roughly 90% of bone mass acquired by the age of 20. The acquisition of bone mass follows gender and age-related trends. Bone accretion begins at birth and continues throughout infancy and adolescence, with roughly 90% of bone mass acquired by the age of 20.

BONE ADAPTATION TO EXERCISE

Bone is a heterogeneous tissue composed of two parts: an organic part made up of collagenous and non-collagenous proteins and cells, and a mineral component made up of hydroxyapatite. Osteocytes, dendritic cells terminally developed from osteoblasts implanted in the bone matrix, account for more than 90% of bone cells; and osteoclasts, huge multinucleated cells derived from hematopoietic progenitor cells that drive bone resorption. Exercise causes bone adaptation, which is mediated by cellular mechanotransduction. Simply put, when you exercise, bone tissue deforms and mechanosensory, such as stretch-activated ion channels and integrins, modify their original conformation. Simply put, when you exercise, bone tissue deforms and mechanosensory, such as stretch-activated ion channels and integrins, modify their original conformation. Exercise may be used to maintain or improve a certain health result, such as increasing bone accretion and/or bone strength.

CONCLUSION

Osteoporosis is a bone metabolic disease that most commonly affects postmenopausal women. The first line of treatment is antiosteoporotic medicines, mainly bisphosphonates, however, this form of medication is only available for a limited time and the advantages are temporary. Exercise has the potential to provide a non-pharmacological intervention with long-lasting benefits that can postpone the onset of osteoporosis, especially if practiced during the peripubertal period when exercise-induced osteogenesis and bone anabolism are more pronounced. To optimize osteogenic responses, any exercise would most likely need to be high-intensity, high-impact, multidirectional, and perhaps unfamiliar, although this strategy may not be suited for everyone.

Aging is a physiological process that occurs as a result of molecular

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