

Throughout the lifespan, bone mineral density (BMD) changes. We accumulate a maximal amount of bone mass known as peak bone mass (PBM) by our mid-twenties, prior to a gradual decline in bone mass as we age. This decline in BMD can result in osteoporosis, which is characterized by the weakening of bones and an increase in fracture risk. Exercise provides a positive stimulus for bone remodeling, where old bone tissue is replaced with stronger tissue that has adapted to the exercise stimulus. Nutrition is another essential factor that can support bone by providing the necessary building blocks required to form new bone tissue. Protein, calcium and vitamin D are some of the key bone-supporting nutrients that can be found in greater quantities (than most other foods) in dairy products such as milk, yogurt and cheese, therefore highlighting their preferential importance in enhancing bone health. Several meta-analyses have demonstrated the utility of dairy consumption and its ability to minimize bone loss, improve BMD and circulating blood bone turnover biomarkers that reflect the remodelling process. Indeed, the combination of both dairy consumption and exercise training generally results in greater effects (than each alone) and was investigated in 18 randomized controlled trials (RCTs) in youth, adults, and older adults. In youth and adult populations, most RCTs observed improved bone outcomes compared to dairy only groups, training only groups, or training and low-dairy groups. For older adults, the results were not as evident, and studies were more varied in methods and habitual diets. Moreover, older adults likely require greater training volumes and dairy dosages as they are losing bone mass at a faster rate in this stage of life. As such, recommendations for future research include accounting for habitual nutrient intakes and assessing how this may alter training/dairy recommendations, and studies investigating dairy dosage, timing and matrix effects should be conducted to provide more robust nutritional guidance to support bone health across the lifespan.