

BONE HEALTH IN CHILDREN & ADOLESCENTS

Bone health starts early in life – in fact it begins at the fetal stage, when good maternal nutrition helps optimize the development of the baby's skeleton.

Childhood and adolescence is a critical time for bone building.

- During this period, both the size and strength of our bones increases significantly.
- Approximately half of our bone mass is accumulated during adolescence.
- One-fourth of this bone mass develops during the two-year period of "fastest growth."
- Bone mass continues to develop until our mid-20s.

Nutritional intake and **physical activity** will help a child achieve optimal bone strength. This is important, as we need to have "reserves" in our bone strength for the period of late adulthood, when we are not able to replace bone tissue as quickly. Genetics will also determine up to 80% of the variation in individual peak bone mass.

- A 10% increase in peak bone mineral density (BMD) – one measure of bone strength – could delay the development of osteoporosis by 13 years.



Normal bone



Osteoporotic bone



Broken bone

Calcium and protein-rich nutrition boosts bone development

Young people ages 9–18 years have higher calcium and protein requirements, with the peak age for bone building being 14 years in boys and 12.5 years in girls.

Milk and other dairy products provide up to 80% of dietary calcium intake for children from the second year of life onwards.

- Calcium is a vital nutrient for bone development during this stage of life. **Children are consuming less milk than they did 10 years ago** and are drinking sweetened beverages instead. **It is important to reverse this trend and encourage children to drink more milk.**
- Young people also need enough protein to achieve their genetic potential for peak bone mass. **Children who drink extra servings of milk in their diets – which is high in protein – have increases in a growth factor that enhances bone formation.**

Getting enough of the sunshine vitamin

Young people often do not get enough vitamin D. This is partly due to their increasingly indoor lifestyles. By ensuring that children spend more time participating in sports and outdoor physical activity – and less time indoors in front of their computers or televisions – parents can help them maintain a healthy level of this key vitamin.



Recommended daily intake of key nutrients

Age	Calcium RDA	Vitamin D RDA	Protein RDA
1-3 years	700 mg	600 IU	13 g
4-8 years	1200 mg	600 IU	46 g
9-13 years	1200 mg	600 IU	46 g
14-18 years	1300 mg	600 IU	girls 46 g boys 52 g

Based on the Institute of Medicine (IOM) USA recommendations, RDA: Recommended Dietary Allowances

Exercise and lifestyle matter

Nutrition and physical activity work hand in hand to enhance bone development in people of all ages. **It is more important than at any other stage in life, that children and adolescents have good nutrition and physical activity.** Young people who exercise regularly show a significant increase in bone mass.

A healthy body weight during childhood and adolescence – being neither too thin nor overweight – contributes to optimal bone health.

- Anorexia has a serious and negative impact on BMD and skeletal strength in adolescents
- Obese children are more likely to sustain fractures at the wrist.



Bone building tips for kids

Snack on cheese, yoghurt, nuts and dried fruit

Drink milk-based beverages, fruit smoothies and mineral waters

Eat balanced meals that contain calcium and protein, as well as fruits and vegetables

Move spend time outdoors on physical activities that involve running and jumping

