

OSTEOSCOOP

News on current events in osteoporosis and rheumatology

Bone mineral density in childhood

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The 2000 NIH Consensus Development Conference on Osteoporosis Prevention, Diagnosis, and Therapy identified bone mineral accretion during childhood as a critical determinant of osteoporosis risk later in life. Consequently, there is interest in monitoring the impact of behavioral modifications for maximizing bone mineral content (BMC) and density (BMD) during childhood and adolescence with the aim of preventing osteoporosis later in life. For children with chronic disorders, identifying ways to increase bone mineral accrual is of particular importance because many have been found to have low BMC and BMD. Furthermore, medications such as anticonvulsants and corticosteroids have been found to decrease bone mineral accrual. Dual-energy x-ray absorptiometry (DXA) is the most widely used technique for measuring BMC and BMD in children due to its low cost, accessibility, and ease of use. To identify bone deficits, appropriate reference data are needed that adequately characterize the normal patterns of bone mineral accretion. Although there are numerous publications describing DXA measures of BMC and BMD relative to age in healthy children, none have all of the attributes needed to serve as a reference. The purpose of this paper [1] is to provide reference data for DXA measurements of BMC and BMD at multiple skeletal sites that can be used for the identification of bone deficits in children and adolescents. Participants included 1554 healthy children (761 male, 793 female), ages 6–16 yr, of all ethnicities. Scans of the whole body, lumbar spine, hip, and forearm were obtained using DXA. BMC of the whole body and lumbar spine and BMD of the whole body, lumbar spine, total hip, femoral neck, and forearm are given for specific percentiles by sex, age, and race (Black vs. non- Black). BMC and BMD were higher for Blacks at all skeletal sites. BMC and BMD increased with age, and a plateau was not evident by age 16 (girls) or age 17 (boys). The variation in BMC and BMD also increased with age.

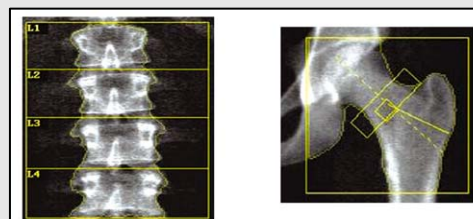
Age-, race-, and sex-specific reference curves can be therefore used to help identify children with bone deficits and for monitoring changes in bone in response to chronic diseases or therapies.

1. Kalkwarf HJ et al. *J Clin Endocrinol Metab.* 2007;92: 2087–2099.

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DXA Results Summary

Region	Area (cm ²)	BMC (g)	BMD (g/cm ²)	T-Score	PR (%)	Z-Score	AM (%)
Neck	5,06	3,01	0,596	-2,3	70	-0,2	96
Troch	10,65	5,51	0,517	-1,8	74	-0,3	94
Inter	15,29	12,72	0,832	-1,7	76	-0,2	96
Total	31,00	21,24	1,945	-2,1	73	-0,4	94
Ward's	1,15	0,40	0,352	-3,3	48	-0,5	86

Total BMD CV 1.0%

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