



2007 ANZBMS ASM

17th Annual Meeting of the Australian & New Zealand Bone & Mineral Society
9-12 September 2007, Queenstown, New Zealand

www.anzbms.org.au/asm/asm2007

2007 Roger Melick Young Investigator Award Recipient

Winner of the Clinical Research category: Ms Stella Foley

Abstract:

Bone mass tracks strongly from childhood to adolescence

Foley, S. and Jones, G.

Menzies Research Institute, Hobart, Australia

It has been hypothesised that bone mass tracks but long term studies in children have not been done. The aim of this eight year longitudinal study was to describe tracking of bone mass from age eight to age 16 years and whether this was independent of change in body size.

183 subjects had anthropometric and DXA measures at age eight and age 16-yrs. Bone mineral content (BMC), areal bone mineral density (aBMD) and bone mineral apparent density (BMAD) was assessed at the spine, hip, and total body by a Hologic QDR2000 densitometer.

Over the eight year period, BMC increased 192-285% in males and 168-189% in females, whereas aBMD increased similarly for both males and females (36-61% versus 35-61% respectively). Spine and hip BMAD increased 17% and 4% for males, and 22% and 21% respectively for females ($p < 0.05$ for sex difference), whereas total body BMAD declined in both sexes (males: -6%, females: -4%). All DXA measures, except total body BMAD, tracked significantly from childhood to adolescence in both sexes after adjustment for change in height and weight (males: R^2 : BMC = 55-72%; aBMD = 37-48%; BMAD = 31-52%, females: R^2 : BMC = 41-71%; aBMD = 21-59%; BMAD = 25-50%) (all $p < 0.01$).

In conclusion, DXA measures tracked moderately to strongly from childhood to adolescence with measures at age eight explaining up to 72% of the variation in adolescent bone mass. This was independent of change in body size. These results suggest a propensity to osteoporosis may be detectable in early childhood.