

Oral Abstract

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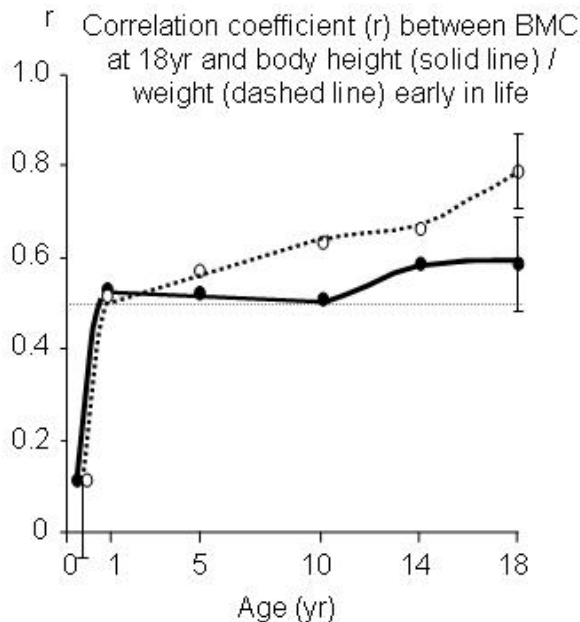
Peak bone mass was determined at 1 year-old: evidence from growth chart

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A low peak bone mass (PBM) is a risk factor for osteoporosis. As the variance in bone mineral content (BMC) is largely genetically determined we tested the hypothesis that physical traits early in life predict PBM. Crown-wheel length (CHL) and body weight at birth, 1-, 5-, 10- and 14-year-old of 150 girls currently aged 17-20 years were documented from growth charts. DXA was used to assess their and their parents' current BMC. CHL and weight at birth did not correlate with BMC at 18 years. However, CHL at 1 year and later predicted current BMC with a predictive value no less than, and independent of, current body height ($r = 0.51 - 0.58$ vs. 0.59 , $p > 0.05$ by Fisher's z transformation, Fig). The growth trajectory of CHL remained in its percentile of origin established at 1-year-old. Body weight at 1 year and later also predict current BMC but the predictive value was higher for weight measured later ($r = 0.50$ for weight at 1yr to 0.79 for current weight, fig). BMC of fathers and mothers predicted their daughter's BMC at maturity ($r = 0.32$ and 0.43 , respectively, $p < 0.01$), but this correlation disappeared after controlling for the daughter's CHL or weight at 1 year. As height and weight are the best predictors of BMC during childhood and adolescence, we infer that the percentile of individuals' PBM in his/her population distribution was established as early as 1 year-old and remained there during the next two decades.



CHL at 1yr

