A simple explanation for the inverse association between height and waist in men

Dear Sir:

In the study by Wells et al (2), the authors report 2 main conclusions. The first conclusion was that the relations between body mass index and shape differed significantly between the sexes, particularly in association with age. However, their second conclusion was more obscure, reporting that the inverse association between height and waist in men suggested either a genetic contribution or a link between early growth pattern and predisposition to obesity. Their conclusion was based on a multiple log-log regression analysis of height on components of shape that included a negative association with the 'fleshy site of waist but positive associations with the "less fleshy" sites of head, knee, hip, and so forth (reported in their Table 6). Also reported in their Table 6 were inverse relations between height and the more fleshy components of thigh, arm, and waist but positive associations with the less fleshy sites of head, knee, and hip in women.

We welcome the analysis of Wells et al (2), which signified an important step toward using appropriate techniques to address shape variation. However, we believe there is a much simpler explanation than the one reported by Wells et al (2). Nevill et al (1) reported that the sum of 8 skinfold thicknesses (including the abdominal site, 5 cm to the right of the midpoint of the navel) increase at a much greater rate relative to body size than that assumed by geometric similarity. They also reported taller subjects had less rather than more adiposity. Hence, the inverse association reported between height and waist in men by Wells et al (2) is likely to be caused by a smaller skeleton to distribute a given increase in adiposity in shorter men, thus causing the waist to expand disproportionately (to that assumed by geometric similarity). The same mechanism likely operates in women, with the smaller skeleton to distribute adiposity in shorter women causing the thigh, arm, and waist to expand disproportionately in a way similar to that observed for the waist in men.

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Alan M Nevill
Research Institute of Healthcare Studies
University of Wolverhampton
Walsall
United Kingdom
E-mail: a.m.nevill@wlv.ac.uk

Arthur D Stewart
Centre for Obesity Research and Epidemiology
Robert Gordon University
Aberdeen
United Kingdom

Tim Olds
School of Physical Education, Exercise, and Sports Studies
The University of South Australia
Underdale
Australia

REFERENCES