

Not being able to see the muscle for the fat

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At its simplest, we can express body weight or body composition as comprising of adipose tissue, muscle tissue and skeletal tissue. Body weight and body mass index (BMI) of populations of all ages have been increasing for close to half a century, leading to the present obesity epidemic. The causal pathways linking excessive body fat to serious chronic diseases, including diabetes and heart diseases is now well established.

A recent editorial citing body composition data from Li et al. [1] asked the question “Are Normal-Weight Americans Over-Fat?” [2]. This interpretation of the data from Li et al. reinforces an *adipocentric* view giving adipose tissue primacy; perhaps there is a different view, a *sarcocentric* view that proposes that people are perhaps becoming under-muscled rather than just over-fat. Data from Canada [3] and Germany [4] indicate that children and adults are getting fatter at the same body weight or BMI. If we are fatter at the same body weight and BMI then the other two tissues, muscle and or bone must be diminishing. Given that this increased body fatness at the same weight is most likely a proxy for decreased physical activity, it is a good bet that muscle is the tissue that has diminished most. The loss of muscle is of great physiological importance as proper-functioning muscle is responsible for most glucose disposal and required to stave off insulin resistance [5, 6]. Proper functioning muscle has been highlighted as important for longevity even after accounting for respiratory fitness and BMI [7].

Therefore it is important to remind those with an adipocentric perspective that a low body fat in itself is not neces-

sarily healthy if it coexists with poor-quality muscle and bone. This is important given various body composition states such as metabolically normal obese individuals [8] and thin persons with significant ectopic fat [9]. We may have better health outcomes if we focus more on the causes and sequelae of body *dyscomposition*, especially the diminution of muscle mass and function even in the young, rather than assuming the problems of body composition in the general population largely lie in terms of adiposity.

The retention and maintenance of muscle and muscle function is coming under increasing scrutiny in our ageing society because of the looming epidemic of sarcopenia and the financial and social impact that this will have. However, the discussion around the diagnosis and prevalence on sarcopenia is centred on the target clinical population, i.e., the elderly [10]. Nevertheless, the data cited above from the USA, Canada and Germany studies highlight that on current form, a number of our children may not meet their genetic potential of muscle mass and by inference muscle function. The medium-term consequences of this muscle shortfall as a risk factor for type 2 diabetes alone is of concern; the longer-term consequences of any muscle shortfall to sarcopenia prevalence and its possible inception at a younger age should be of even greater concern. Those concerned with sarcopenia, including this journal, perhaps need also to focus more on prevention even starting with childhood.

The author of this manuscript certifies that he complied with the Ethical guidelines for authorship and publishing in the *Journal of Cachexia, Sarcopenia and Muscle* [11].

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Conflict of interest Chris Oliver is Research Director for Blackmores Ltd, a nutraceutical company that has among its range, products for weight loss and a whey product for persons aged 50 years plus. The opinions expressed in this paper are the author's personal views.

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