ANTROPOLOGIA PORTUGUESA

CENTRO DE INVESTIGAÇÃO EM ANTROPOLOGIA E SAÚDE UNIVERSIDADE DE COIMBRA

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Abstract The association of osteoporosis and nutrition has long been documented, and nutrition is acknowledged as a major risk factor for bone loss, affecting bone health in distinct ways. Both biomedicine and anthropology (or, more precisely, paleopathology) have strived to fully understand the contribution of diet to bone health, especially the relationship between the physiological economy of calcium and bone maintenance. Taking this into consideration, the present article is intended to summarize and comment the main empirical contributions of paleopathology to the body of knowledge.

Sumário A associação entre a osteoporose e a nutrição tem sido bastante documentada, e a nutrição é reconhecida como um dos principais fatores de risco para a perda óssea, afetando a saúde esquelética de diferentes formas. Tanto a biomedicina como a antropologia (ou, mais precisamente, a paleopatologia) têm procurado compreender de um modo global a contribuição da dieta para a saúde óssea, particularmente a relação entre a economia fisiológica do cálcio e a manutenção óssea. Tendo em consideração estas preocupações disciplinares, o presente artigo tem o objetivo de resumir e comentar as principais con-
on bone health, specifically the relation between bone loss and nutrition.

**Keywords:** Diet; bone loss; bone health; dietary calcium; paleopathology.

**Introduction**

Osteoporosis (OP) is a metabolic pathological condition characterized by the decline in bone mass, compromised bone quality and ensuing increase in the risk of fracture (Consensus Development Conference, 1993; NIH Consensus Development Panel, 2001). OP is an asymptomatic disease prior to bone fracture (Wylie, 2010), being typically associated with fractures in the hip, the vertebral body and the distal radius (Johnell and Kanis, 2006).

This metabolic disorder has long been associated with estrogen withdrawal after menopause (Albright et al., 1941); and, like other chronic diseases, its incidence follows a Gompertzian pattern, increasing with age (Melton III, 1990). Although sex steroids and aging are of utmost relevance to OP etiopathogeny, the disease stems from a complex landscape of risk factors, including genetics, physical activity, reproductive history, and nutritional status (Burnham and Leonard, 2008; Curate et al., 2012; Heaney, 2008; Livshits et al., 2004; Møller et al., 2012; Recker et al., 2004; Zhang et al., 2009). It is thus appropriate to consider OP the consequence of a stochastic process, i.e., while risk factors for osteoporosis occur at different levels, they are not mutually exclusive, affecting bone health within a reticulate network of reciprocal influence (Heaney, 2008; Nordin, 2008).

Nutrition, as a risk factor, is unsurprisingly a major facet of OP heterogeneity and complexity, affecting bone health by itself or interacting with other etiological factors (Heaney, 2008). The hypothesis that OP is caused primarily by calcium (Ca) deficiency, particularly in aged individuals, was originally proposed in opposition to Fuller Albright’s estrogen deficiency theory (Raisz, 2005). Indeed, decreased calcium intake, decreased intestinal absorption of calcium due to disease or senescence, and/or vitamin D deficiency may elicit secondary hyperparathyroidism, and all the harmful consequences associated with it: high bone turnover, bone loss, mineralization defects, and fractures (Lips, 2001). Type