Weight Loss is a Major Cause of Frailty

B. FOUGERE[1,2,3], J.E. MORLEY[3]

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1. Gérontopôle, Centre Hospitalier Universitaire de Toulouse, Toulouse, France;
2. Inserm UMR 1027, Université de Toulouse III Paul Sabatier, Toulouse, France;
3. Division of Geriatric Medicine, Saint Louis University School of Medicine, St. Louis, Missouri, USA.

Corresponding to: John E. Morley, MB, BCh, Division of Geriatric Medicine, Saint Louis University School of Medicine, 1402 S. Grand Blvd., M238, St. Louis, MO 63104, Email: john.morley@health.slu.edu

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The concept of frailty as a centrally important geriatric syndrome is now well established (1-4). Frailty is defined as a syndrome where an older person is vulnerable to becoming functionally impaired or dying when exposed to a stressor (5). A popular approach to identifying frailty is the physical frailty phenotype as first described by Fried et al. (6). This was developed out of data from the Cardiovascular Health Study and defined frailty as having 3 or more of: (i) unintentional weight loss (10 lbs or 4.5 kg in past year); (ii) self-reported exhaustion, (iii) weakness (grip strength); (iv) slow walking speed and (v) low physical activity. To accommodate the busy schedule of clinical practitioners two rapid assessments for physical frailty have been developed, namely the Gérontopôle Frailty Screening Tool (GFST) (7, 8) and the FRAIL (9-11).

While malnutrition (weight loss) is only one component of the physical phenotype scale, it is also a cause of the other 4 components (12-16).

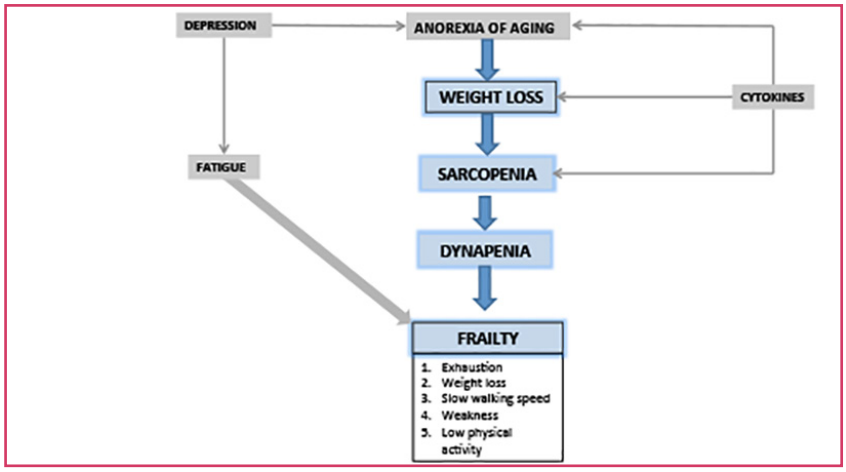

Figure 1: **The Interrelationship Between Weight Loss and Frailty**

Depression is a common cause of anorexia/weight loss and fatigue in older persons, providing an important connection between these symptoms (17-20). Depression is a major cause of frailty in older persons (21). Loss of muscle mass is associated with fatigue (22).

Weight loss leads not only to loss of fat but also loss of muscle lean mass and bone (23). Obviously, muscle lean mass loss is a major cause of sarcopenia which includes loss of walking speed and/or grip strength (24-28). There is a major overlap between sarcopenia and frailty (29-34). Nutritional supplementation can enhance muscle mass and function in persons with sarcopenia (35, 36) and in frail persons (37-39).

A systematic review has shown that malnutrition as measured by the Mini Nutritional Assessment (MNA) is strongly associated with frailty (40). However, it should be recognized that all frail persons are not malnourished (41-44). When frailty and malnutrition co-exist they are highly predictive of mortality in functionally impaired persons (45). The FRAIL-NH which was developed for functionally impaired persons in the nursing home has been shown to be highly predictive of further functional impairment and mortality (46-48). Like the FRAIL phenotype, it is strongly dependent on weight loss and problems with eating.

There is evidence that diet quality in later life may influence the development of frailty (49-52). Adherence to the Mediterranean diet appears to be particularly protective against developing frailty (53-56). This effect appears to be related predominantly to a higher intake in polyphenols (57).

Overall it would appear that the anorexia of aging (58-60) and associated weight loss represents an important role in the pathophysiology of frailty (Figure 1). For this reason, we recommend early screening for anorexia utilizing the Simplified Nutrition Assessment Questionnaire (SNAQ) and/or the Mini Nutritional Assessment (MNA) (61-65). Simple approaches such as the St. Louis University Rapid Geriatric Assessment or the Gérontopôle Frailty Screening Tool (GFST) need to be incorporated into all primary care practices (66-70).

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