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An examination of the determinants of low muscle mass and low muscle strength in older adults in Ireland

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The age-related loss of muscle mass and strength is associated with frailty and loss of independence⁽¹⁾. The prevalence and determinants of loss of muscle mass and muscle strength have yet to be fully characterised in the context of an Irish population. Previous studies have implicated total energy, protein, vitamin D and omega 3 fatty acid intakes in the attenuation of these losses⁽²⁾. The objectives of this study were to examine the determinants of handgrip strength and skeletal muscle mass index (SMI) in a cohort of community-dwelling older adults living in Ireland.

In a cross-sectional analysis, muscle mass, strength and dietary intake was assessed 280 free-living adults aged 65 years and over (76±8y). Muscle mass was measured using bio-electrical impedance analysis (BIA) and muscle strength using a handgrip dynamometer. Dietary intake was assessed by 24-h recall. The prevalence of low muscle mass and low muscle strength was determined according to the EWGSOP criteria (1). Multiple linear regression was conducted to examine predictors of handgrip strength (kg) and skeletal muscle mass index (SMI; kg/m²).

The prevalence of low muscle strength was 16 % in men and 32 % in women. The prevalence of low muscle mass was 23 % in men and 21 % in women. Multiple regression models demonstrated that age, height, SMI, vitamin D intake and gender were significant predictors of handgrip strength. The model explained 57 % of the variance in handgrip from the predictors ($p < 0.01$; $R^2 = 0.57$). Body mass, age, gender and average energy intake were predictors of SMI ($p < 0.01$; $R^2 = 0.53$).

Our data support previous work demonstrating that age and gender are important predictors of muscle mass and strength in older adults. Further work is required to elucidate the role of nutrient intakes in the development and progression of age-related muscle mass and strength loss.

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