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Dietary Protein Intake and Sarcopenia from the 2003-2004 National Health And Nutrition Examination Survey

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Sarcopenia is characterized by the gradual loss of skeletal muscle size and strength. The prevalence of sarcopenia in the United States is between 9.9% and 40.4% among adults 65 years of age and older. Risk factors for sarcopenia include but are not limited to having a low body mass, living a physically inactive lifestyle and being malnourished. Protein synthesis, a factor germane to skeletal muscle size and strength, is influenced by consumption of essential amino acids and has been previously associated with body mass and bone mineral density. However, examination of the relationship between body mass and physical limitations in population-based cohorts is lacking. **Purpose.** To assess the relationship between dietary protein intake and sarcopenia in a largescale population-based cohort from the (2003-2004) National Health Assessment and Nutrition Examination Survey (NHANES). **Methods.** Our population included 9,643 participants who provided written informed consent for an inhome interview and health examination at a mobile examination center. Twenty-four-hour dietary recalls were used to assess protein intake and Dual X-ray Absorptiometry was used to assess lean body mass. Protein intake was quantified by the total self-reported intake in grams and the percentage of total daily calories consumed. Lean body mass measurements including total lean mass, muscle mass index, appendicular lean mass, and percent lean body mass, were assessed with self-reported responses to a Physical Limitation Score (PLS).

Results. Increased protein intake was significantly correlated with greater lean body mass. Total muscle mass was positively predicted by total and appendicular muscle mass index in males and females between 19 and 50 years ($p<0.05$), 51 and 70 years ($p<0.05$), and 71+ years ($p<0.05$). The PLS also inversely predicted ($p<0.10$) lean muscle mass; however, this finding neglected to reach statistical significance.

Conclusion. Increased protein intake was associated with lower percentages of lean mass and physical function, indicating that adequate protein intake may be used as preventative and mitigative measures of sarcopenia. Our findings may provide insight for future experimental trials assessing the effects of dietary changes on outcomes of body composition and physical function in older adults.