Sarcopenic obesity and history of falls in older Italian adults: associations according to different diagnostic combinations.

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Background: sarcopenic obesity (SO) is characterized by the coexistence of sarcopenia and excess adipose tissue, increasing the risk of falls and related adverse outcomes in older adults. However, diagnostic criteria for SO remain inconsistent, warranting further investigation. This study aimed to examine the association between SO, defined according to the criteria proposed by the 2022 European Society for Clinical Nutrition and Metabolism (ESPEN) and the European Association for the Study of Obesity (EASO), and the history of falls among hospitalized older Italian adults.

Methods: this cross-sectional study included 90 older Italian adults (≥ 60 years) with severe obesity (body mass index ≥ 35 kg/m2). The exposure variable, SO, was defined by the concomitant presence of reduced muscle function, high fat mass, and low muscle mass adjusted for body weight. Muscle function was assessed using the Five-Times Sit-to-Stand (5×STS) test and handgrip strength (HGS). Fat mass percentage (FM%) was measured using dual-energy X-ray absorptiometry (DXA) and bioelectrical impedance analysis (BIA). Appendicular muscle mass (AMM/W) and skeletal muscle mass (SMM/W), both adjusted for body weight, were assessed using DXA and BIA, respectively. Four diagnostic definitions of SO were analyzed according to the following combinations of tests and instruments:

1) 5×STS + FM% DXA + AMM/W, 2) 5×STS + FM% BIA + SMM/W, 3) HGS + FM% DXA + AMM/W, and 4) HGS + FM% BIA + SMM/W. The outcome was selfreported falls in the past year. Multivariable logistic regression models were adjusted for sex, age, education, marital status, fall-related multimorbidity, alcohol consumption, and regular physical activity.

Results: significant associations between SO and falls were found only when muscle function was assessed using HGS, regardless of the method used to estimate FM% and muscle mass. In adjusted analyses, participants classified as having SO according to combinations HGS + FM% BIA + SMM/W and HGS + FM% DXA + AMM/W had approximately almost fourfold (OR=3.61; 95% CI: 1.28-10.19) and sixfold (OR=6.03; 95% CI: 1.80–20.23) higher odds of reporting falls in the previous year, respectively, when compared to those without SO considering the same diagnostic tests.

Conclusion: SO defined by low HGS combined with high FM% and low muscle mass adjusted for body weight-whether measured using DXA or BIA-was associated with greater odds of falls in older Italian adults. These findings support the use of muscle strength-based definitions of SO when evaluating fall risk in this population.