DNSG Diabetes and Nutrition Study Group

Abstract Submission Form DNSG 2026

TITLE OF THE ABSTRACT (up to 30 words):
Sarcopenic Obesity in Type 2 Diabetes: Prevalence and Clinical Phenotype Across Handgrip Strength Classification Approaches

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ABSTRACT (up to 300 words)

Background: Sarcopenic obesity (SO) is an increasingly recognized phenotype in type 2 diabetes (T2D), diagnosed by elevated adiposity together with low muscle mass and strength. Absolute hand grip strength (HGS) is an accessible test for low strength, but in obesity, HGS can be inflated by greater muscle mass, potentially underestimating SO. Body-size-adjusted HGS could better discern relative low strength, but the optimal criterion in T2D is unclear.

Aims: To compare SO prevalence and clinical phenotype across four SO definitions with different HGS criteria in adults with T2D.

Methods: In a cross-sectional analysis of 118 adults with T2D living in Norway, 91 with elevated body fat percentage [≥25/28/30% (men) or ≥39/40/42% (women) for ages <40/40–59/≥60 years] and low muscle mass (SMM/weight; men <37%, women <28%) were classified with SO under four HGS criteria: absolute HGS (<35.5/<20 kg), HGS/BMI (<1.05/<0.79 kg/kg/m^2), HGS/weight (<0.45/<0.33 kg/kg), and HGS below the age- and sex-specific 10th percentile of a Norwegian reference. SO and non-SO were compared by Mann-Whitney U tests and age- and sex-adjusted linear regression.

Results: SO prevalence varied from 4.2% (absolute HGS), 10.2% (HGS <10th percentile), 16.1% (HGS/BMI), to 41.5% (HGS/weight). Of 49 SO cases, 51% were identified exclusively by HGS/weight. After age- and sex-adjustment, insulin resistance was the strongest metabolic feature distinguishing SO under each body-size-adjusted HGS criterion (HGS/BMI β = +1.25, p<0.001; HGS/weight β = +0.83, p<0.001). SO was also accompanied by higher visceral adipose tissue, CRP, and lower phase angle under both criteria; HGS/BMI additionally identified lower albumin and ALT.

Conclusions: The choice of HGS criterion substantially influences SO prevalence and the clinical phenotype in adults with T2D. HGS/weight was the broadest criterion, identifying an SO phenotype with elevated insulin resistance, visceral adiposity, and inflammation. HGS/weight is a promising criterion for SO diagnosis in T2D, pending validation in larger cohorts.

Keywords: Type 2 diabetes; sarcopenic obesity; handgrip strength

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