

<b>Paper Category:</b>	Diagnosis and Aetiology
<b>Paper Title:</b> (Arial Font; 14 Pt Size)	<b>Osteosarcopenic Obesity and Overlap Syndromes: Comparison of body composition, blood biomarkers and 2-year muscle strength in healthy older adults</b>
<b>Abstract Body:</b> (Arial Font; 12Pt Size)	<ul style="list-style-type: none"> <li>• Background</li> <li>• Objectives</li> <li>• Method</li> <li>• Results</li> <li>• Discussions and Conclusions</li> </ul>
<p>(Maximum word limit - 300 words)</p> <p><b>Background:</b> Osteosarcopenic Obesity (OSO) syndrome is characterized by the co-existence of decreased bone density (O)[osteopenia/osteoporosis], muscle mass/strength (S)[sarcopenia] and increased adiposity (O)[obesity]. Although associated with poor physical performance and lower functional ability, controversy exists as to whether OSO constitutes a distinct entity, hampered by a lack of direct comparative studies with overlap syndromes (OO, OS and SO) which examine body composition/blood biomarkers and longitudinal outcomes.</p> <p><b>Objective:</b> To compare body composition, blood biomarkers and predictive ability for 2-year muscle strength between OSO with overlap syndromes amongst healthy community-dwelling older adults.</p> <p><b>Methods:</b> Participants (N=230; mean age:67.2±7.4 years) from the GeriLABS-2 cohort study were assessed for three DXA body composition parameters: 1)Skeletal muscle index using AWGS'2019 cutoffs for sarcopenia; 2)Percentage body fat mass for obesity; and 3)Bone mineral densitometry for osteoporosis. They were classified as reference (0-1 present, 46.1%); overlap syndromes (2 present, 41.7%) or OSO (all 3 present, 12.2%). We measured blood biomarkers for insulin resistance (adiponectin/HOMA-IR), inflammation (CRP/MCP-1/TNF-R1), and metabolism (IGF-1/myostatin), and handgrip and knee-extension strength at 2-years. We performed hierarchical regression to compare the impact of OSO versus overlap syndromes on 2-year muscle strength, adjusting for confounders and blood biomarkers.</p> <p><b>Results:</b> OSO had the lowest bone density and skeletal muscle index(<math>P&lt;.001</math>), whereas overlap syndromes and OSO had higher percentage fat mass(<math>P=.001</math>). There was a significant difference between reference vs overlap vs OSO groups for adiponectin (<math>1.16\pm0.61</math>vs<math>1.29\pm0.65</math>vs<math>0.97\pm0.45</math>,<math>P=.041</math>) and HOMA-IR (<math>1.75\pm1.27</math>vs<math>1.74\pm1.62</math>vs<math>2.69\pm3.57</math>,<math>P=.041</math>), but not for inflammation or metabolism. In regression analysis for 2-year outcomes, both overlap (OR=10.15; 95%CI,1.84-56.00) and OSO (OR=17.67; 95%CI,2.19-142.59) predicted weak</p>	

knee-extension, and only OSO (OR=4.14; 95%CI,1.08-15.89) predicted weak handgrip.

**Discussion and Conclusion:**

Our study provides proof-of-concept evidence that demonstrates distinct differences in body composition, insulin resistance, and risk of weaker muscle strength for OSO vis-à-vis overlap syndromes, highlighting the need to integrate the muscle-fat-bone interface when considering the implications of body composition in clinical practice.

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