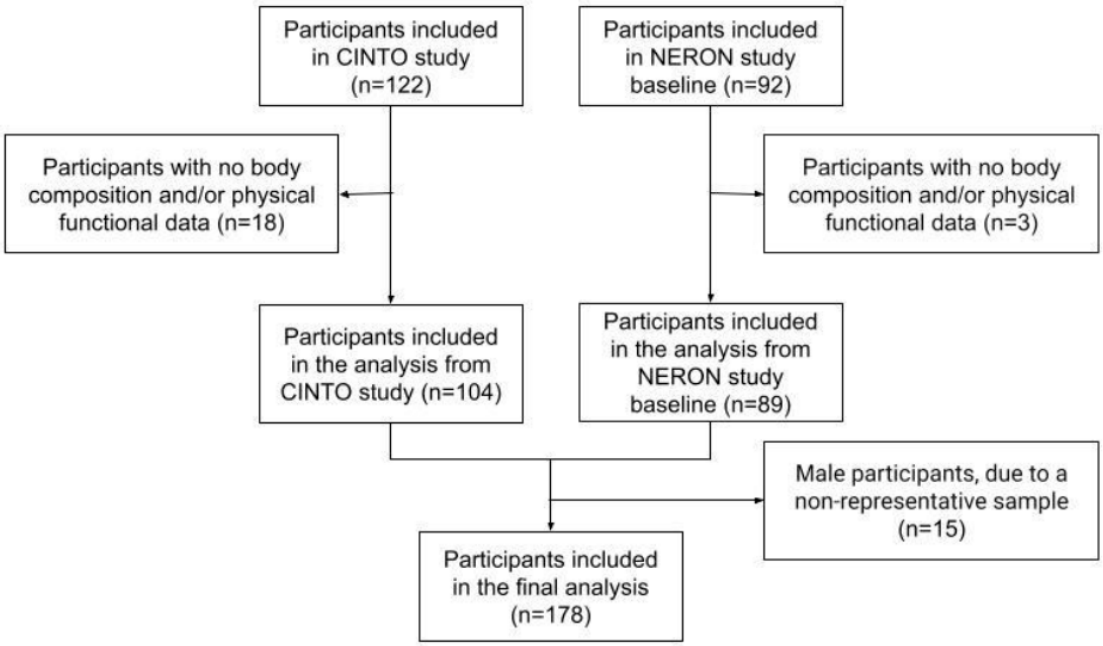
Supplementary Material

Supplementary Figure S1. Flowchart diagram of included participants.



Supplementary Table S1. Osteosarcopenic adiposity (OSAd) classification and cut-off.

OSAd Criteria	Sarcopenia	Obesity/Adiposity	Osteopenia/Osteoporosis
Kelly *et al*., 2019 [1]	SMI index (ALM/height²) [2]: ≤ 7.26 kg/m² ♀.	%Fat mass [3]: ≥ 32% ♀; **OR** Fat mass index [4] ≥ 13 kg/m² ♀; **AND** *Central adiposity* A/G ratio > 1.0 [5].	*Pós-menopausal:* t-score for BMD at the femoral neck or lumbar spine ≤ -1.0 [6]. **OR** *Pré and peri-menopausal:* z-score for BMD at the femoral neck or lumbar spine ≤ -2.0 [6].
SO ESPEN/EASO, consensus [8] + osteopenia/osteoporosis by WHO, 1994 criteria [6]	ALM/weight x 100, 18-65y [8]: < 23.47% ♀; **AND** *Low muscle strength* handgrip strength Brazilian [9]: < 16 kg ♀;	%Fat mas [12]: 18-39 y: ≥ 39% ♀; 40-59 y: ≥ 41% ♀.	*Pós-menopausal:* t-score for BMD at the femoral neck or lumbar spine ≤ -1.0 [6]. **OR** *Pré and peri-menopausal:*

	OR 5STS, Brazilian [10] > 11.64s **OR** 30-CST, Brazilian [11] 20-29y: <15rep ♀; 30-39y: <13rep ♀; 40-49y: <13rep ♀; 50-59y: <11rep ♀; 60-69y: <11rep ♀.		z-score for BMD at the femoral neck or lumbar spine ≤ -2.0 [6].
SDOC consensus [13] + osteopenia/osteoporosis by WHO, 1994 criteria [6]	*Low muscle strength* handgrip strength/BMI [13]: <0.79 kg/m² ♀; **OR** handgrip strength/Fat mass [13]: <0.65 kg/kg ♀; **OR** handgrip strength/weight [13]: <0.34 kg/kg ♀.	%Fat mass [12]: 18-39 y: ≥ 39% ♀; 40-59 y: ≥ 41% ♀.	*Pós-menopausal:* t-score for BMD at the femoral neck or lumbar spine ≤ -1.0 [6]. **OR** *Pré and peri-menopausal:* z-score for BMD at the femoral neck or lumbar spine ≤ -2.0 [6].

Abbreviations: ALM: Appendicular Lean Mass; A/G ratio: Android Gynoide ratio; BMD: Bone Mineral Density; SMI: Skeletal Muss Index; s: seconds; a: years; rep: repetitions; EASO: European Association for the Study of Obesity; ESPEN: European Society for Clinical Nutrition and Metabolism; SMI: Skeletal muscle mass index; WHO: World Health Organization. 5STS: Five times sit and stand test; 30-CST: 30 seconds chair stand test; SDOC: Sarcopenia Definitions and Outcomes Consortium.

Supplementary Table S2. Comparison of weight regain (%) between the groups with and without OSAd presence.

Diagnostic criteria	**Weight Regain (%)**		
	OSAd -	**OSAd +**	**p-value**
Kelly et al (2019)	26.9 (14.6,38.5)	44.1 (34.7,58.4)	**0.033**
ESPEN/EASON (2022) + WHO (1994)	27.3 (14.8, 39.0)	32.6 (16.8,54,6)	0.112
SDOC (2020) + WHO (1994)	27.3 (14.2,39.1)	28.2 (19.9,42.2)	0.417

Mann-Whitney test. Data presented as median (percentile 25th - percentile 75th).

Abbreviations: EASO: European Association for the Study of Obesity; ESPEN: European Society for Clinical Nutritional and Metabolism; OSAd: Osteosarcopenic Adiposity; SDOC: Sarcopenia Definitions and Outcomes Consortium; WHO: World Health Organization.

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