Table S2. Cut off values for Sarcopenic Obesity diagnosis

Parameter	Cut-off	Method	Sample characteristics	Sample size	References
Skeletal muscle function					
HGS	< 27 Kg for M < 16 Kg for F	HGS ≤ 2.5 SD below the gender-specific peak mean	Caucasian, M and F ≥ 5y	49964 (data from 12 studies)	[38]
	< 35,5 Kg for M < 20,0 Kg for F	CART and ROC/AUC models to identify cut points associated with adverse clinical outcomes such as mortality, falls, self-reported mobility limitation, and hip fracture	Mixed ethnicity, M and F ≥ 65y	12984	[39, 40]
	<30 Kg for M <20 Kg for F	2 SD below the mean of the healthy young-adults group functional outcomes (walking speed ≤ 0.8 m/s; self-reported inability to walk for 1 km)	Caucasian , M and F, 20-102y (RG 20-29y)	1030 (RG 47)	[41]
	<26 Kg for M < 16 Kg for F	Consensus statement identifying cut-off corresponding to a mobility impairment expressed by physical performance tests such as slow walking (gait speed ≤ 0.8 m/s)	Mixed ethnicity, M and F, ≥65y	26625 (data from 9 studies)	[42]
	<28 Kg for M <18 Kg for F	Lowest quintile of the general Asian older population	Asian, M and F, ≥65y	26344 (data from 8 cohorts)	[43, 44]
	Normative values based on gender, age, height, right/left side	<5th percentile of the general population aged between 39 and 73 years in 2006 to 2010 from across the United Kingdom	Caucasian, M and F, 39-73y	224830 (r) 224852 (l)	[45]
Knee extension strength test	<18 Kg for M <16 Kg for F	Predictive value (sensitivity and specificity) and ROC analysis to identify cut points based on percentage of normalized gain of mobility index (MI) derived from a questionnaire about activity of daily living	Asian, M and F ≥60y	950	[46]
	Strength/W (Kg/Kg) <0.40 for M <0.31 for F	Predictive value (sensitivity and specificity) and ROC analysis to identify cut points relative to the presence of functional limitation	Caucasian, M and F, ≥60y	947	[47]
	< 390.9 N/dm for M <266.4 N/dm for F	2 SD below the mean for the sex-specific RG (healthy young adults)	Caucasian, M and F, 20-102y (RG 20-29y)	1030 (RG 27)	[41]
5 times Sit-to-Stand	≥17 s	< 21.3 percentile of well-functioning older persons population	Mixed ethnicity, M and F, 70-79y	3024	[48]

Chair test					
30 s Chair Stand Test	60-64y: 15 for F, 17 for M; 65-69y: 15 for F, 16 for M; 70-74y: 14 for F, 15 for M; 75-79y: 13 for F, 14 for M; 80-84y: 12 for F, 13 for M; 85-89y: 11 for F and M; 90-94y: 9 for F and M	normative values across 5 years age ranges (outcomes: moderate functional ability as defined by CPF scale questionnaire and % of decline in physical performance)	Caucasian, M and F, ≥60y	2140	[49]
Body composition					
FM%	20-39y: >39% for F, >26% for M (Caucasians); >40% for F, >28% for M (Asians); >38% for F, >26% for M (African-Americans) 40-59 y: >41% for F, >29% for M (Caucasians); >41% for F, >29% for M (Asians); >39% for F, >27% for M (African-Americans); 60-79y: >43% for F, >31% for M (Caucasians); >41% for F, >29% for M (Asians); >41% for F, >29% for M (African-Americans);	Multiple regression model considering FM as outcome variable and BMI, sex, age and ethnicity as predictor variables	Asian, African-American, Caucasian, M and F, Adults	1626	[50]
	>38% for F >27% for M	Percentage of body fat greater than the sex-specific median	Hispanic and non-Hispanic white, M and F, elderly	808	[51]
	>37.2%for F	Highest sex-specific quintile	Asian, M and F, ≥65y	1731	[52]

	>29.7% for M				
	>40.7% for F >27.3% for M	> 60th percentile of body fat of the study population	Caucasian, M and F, ≥60y	992	[53]
	>42.9% for F	2 highest quintiles of the study population	Caucasian, F, 67-78y	167	[54]
	>40.9% for F >30.33% for M	2 highest quintiles of the study population	Caucasian, M and F, 65-92y	2747	[55]
	>20.21% for M >31.71% for F	2 highest quintiles of the young RG	Asian, M and F, 20-88y (RG 20-40)	591 (145 RG)	[56]
	>25.8% for M >36.5% for F	2 highest quintiles of the study population	Asian, M and F, ≥40y	309	[57]
	>25% for M >32% for F	Expert opinion of the American Society of Bariatric Surgery	/	/	[58]
	RFM (derived from the ratio of h to WC) ≥40% for F ≥30% for M	Multiple regression model considering FM as outcome variable and BMI, education level, smoking status, sex and ethnicity as predictor variables	Mixed ethnicity, M and F, ≥20y	31008	[59]
	Highest two quintiles: 36.2 ± 3.8% for F 20.5 ± 3.3% for M	Highest two quintiles of FM% estimated using predictive equation including WC, hip circumference, triceps skinfold and gender [51]	Mixed ethnicity (non-Hispanic whites, non-Hispanic blacks, Mexican Americans), M and F, ≥70y	2917	[60]
SMM/W (BIA or DXA)	CLASS I of Sarcopenia (1-2 SD): 31.5-37% for M 22.1-27.6% for F; CLASS II of Sarcopenia (< 2 SD): <31.5% for M <22.1% for F	Class I: SMM/W within -1 to -2 SD of young adult values Class II: SMM/W -2 SD of young adult values	Mixed ethnicity, M and F, 18-39y	6414	[61]
	CLASS I of Sarcopenia (1-2 SD): 42.9-38.2% for M 35.6-32.2% for F; CLASS II of Sarcopenia (< 2	Class I: SMM/W within -1 to -2 SD of young adult values Class II: SMM/W -2 SD of young adult values.	Asian, M and F, ≥40y (RG 18-40y)	309 (273 RG)	[57]

	SD): <38.2% for M <32.2% for F				
	CLASS I of Sarcopenia (1-2 SD): 27-23% for F CLASS II of Sarcopenia (< 2 SD): <23% for F	Class I: SMM/W within -1 to -2 SD of young adult values Class II: SMM/W -2 SD of young adult values	Caucasian, F, 20-50y (RG)	120 (RG)	[54]
ALM/W (DXA)	<29.9% for M <25.1% for F	1 SD below the sex specific mean for young adults	Asian, M and F, mean age 28.4 ± 3.1 and 26.3 ± 2.6	70 (RG)	[62]
	<30.1% M <21.2% F	1 SD below the mean of a young population RG	Asian, M and F, ≥ 40y (RG 20-39y)	10118 (5944 RG)	[63]
	<30.65% for M <23.9% for F	1 SD below the mean of a healthy young RG	Asian, M and F, ≥ 65y (RG 20-39y)	3483 (4192 RG)	[64]
	< 25.7% for M < 19.4% for F	2 SD below the mean of a healthy young RG	Mixed ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, "other"), M and F, ≥ 60y (RG 18-59y)	4984 (10877 RG)	[65]
	<30.3% for M <23.8% for F	1 SD below the mean of a healthy young RG	Asian, M and F, ≥ 20y (RG 20-39y)	11521 (4987 RG)	[66]
	< 32.5% for M < 25.7% for F	1 SD below the mean of a healthy young RG	Asian, M and F, ≥ 60y (RG 20-39y)	2943 (2781 RG)	[67]
	< 29.53% for M < 23.2% for F	2 SD below the mean of a healthy young RG	Asian, M and F, ≥60y (RG 20-39y)	2221 (2269 RG)	[68]
	<31.3% for M <24.76% for F	1 SD below the mean of a healthy young RG	Asian, M and F, ≥40y (RG 20-39y)	3320	[69]
	<32.2% for M <25.6% for F	Class I: within -1 to -2 SD of the healthy young adult values Class II: 2 SD below the mean of the healthy young adult values	Asian, M and F, ≥20y (RG 20-39y)	10485 (2513 RG)	[70]
	<29.5% for M < 23.2% for F	2 SD below the mean of a healthy young RG	Asian, M and F, ≥50y (RG 20-40y)	3169 (2392 RG)	[71]
	< 26.8% for M < 21% for F	2 SD below the mean of the young RG	Asian, M and F, ≥50y (20-40y RG)	2893 (2113 RG)	[72]
	< 32.2 for M	2 SD below the mean of the young RG	Asian, M and F, ≥20y	15132	[73]

	< 25.5% for F		(RG 20-30y)	(2200 RG)	
	< 44% for M <52 % for F	2 SD below the mean of the young RG	Asian, M and F, ≥60y (RG 20-39y)	1433 (1746 RG)	[74]
	< 28.27% for M < 23.47% for F	2 SD below the mean of the young RG	Caucasian, M and F, 18-65y (RG 20-39y)	727 (222 RG)	[75]

Legend: 6MWT 6 minutes walking test, **ALM** appendicular lean mass**, AUC** area under the curve, **BIA**, bioelectrical impedance analyses, **BMI** body mass index, **CART** Classification and Regression Tree model, **CPF** Composite Physical Function, **DXA,** dual-energy X-ray absorptiometry, **FM** fat mass, **HGS** hand grip strength, **mPPT** modified physical performance test, **RFM** relative fat mass, **RG** reference group, **ROC** Receiver operating characteristic, **SD** standard deviation, **SMM** skeletal muscle mass, **TMSE** Thai mental state examination, **W** weight, **WC** waist circumference,