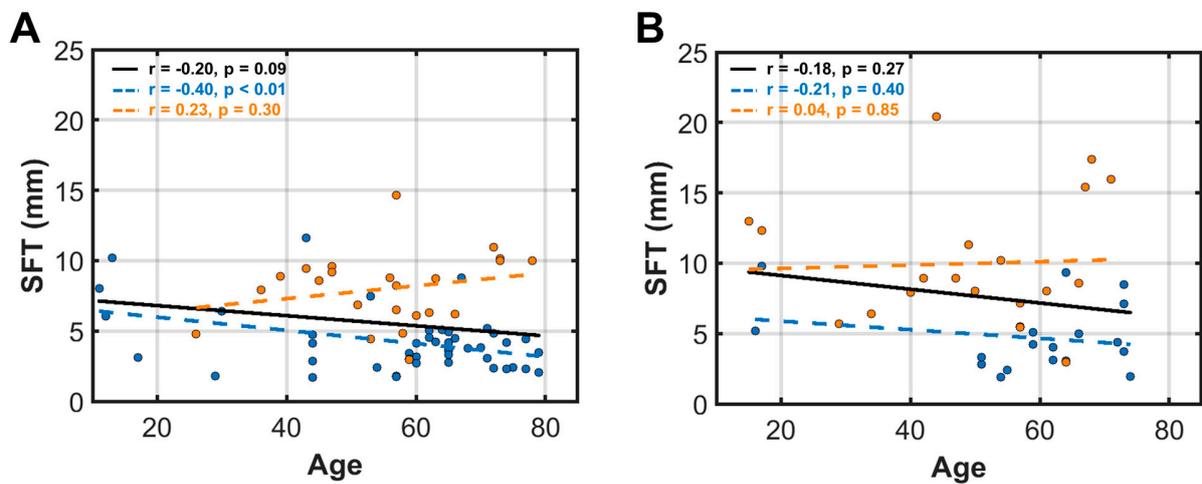
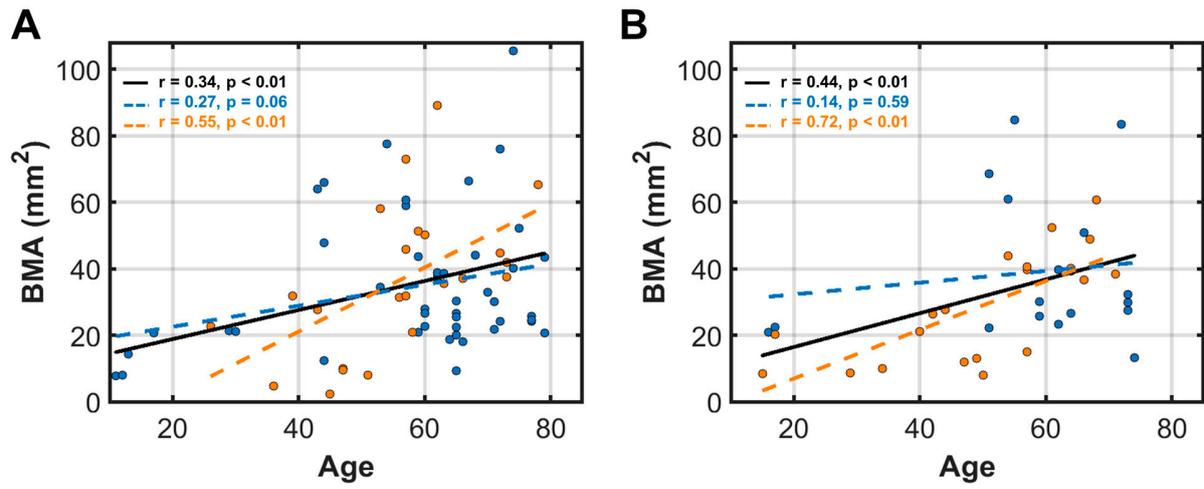


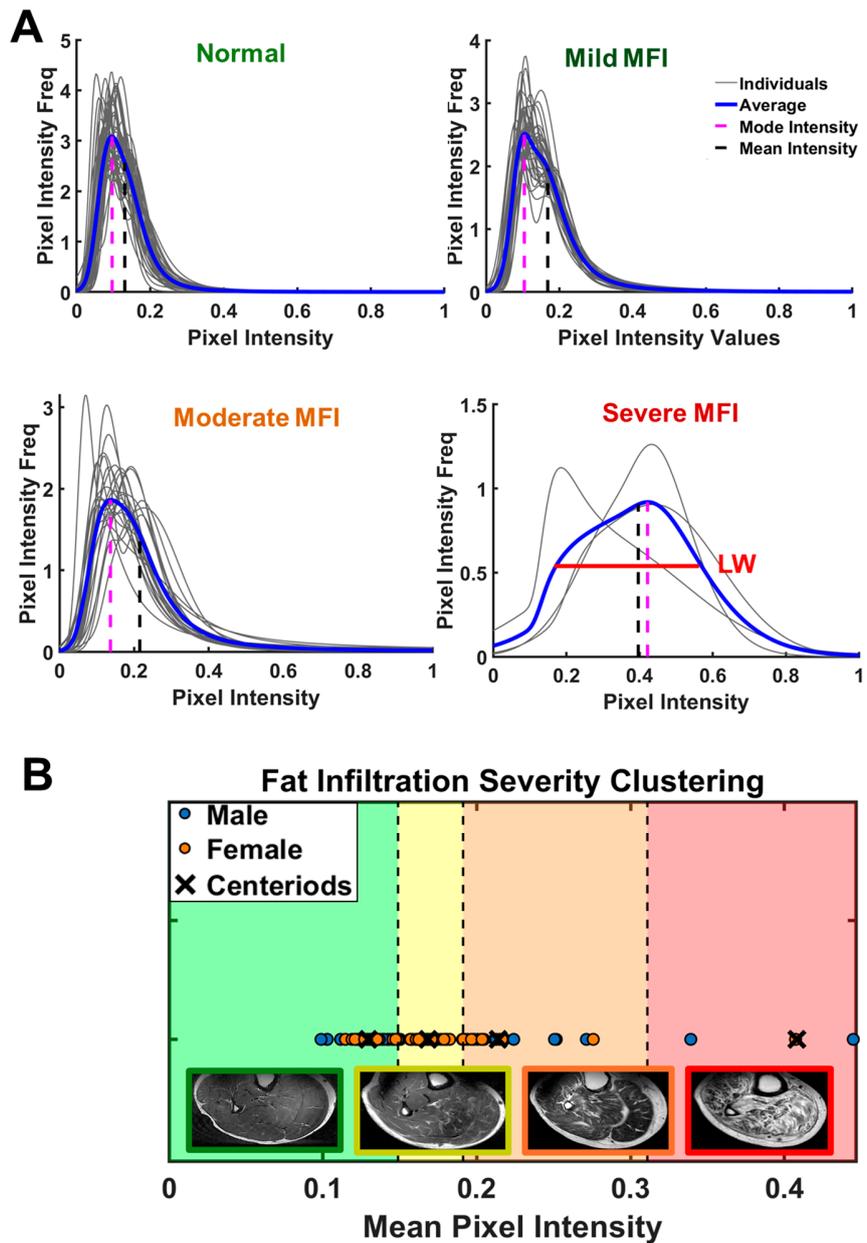
**Figure S1.** Axial (left panel) and sagittal (right panel) T2w MR images showing consistency in cross-sectional area and magne homogeneity along FH direction in fibula bone marrow, in contrast to tibia bone marrow with large variations.



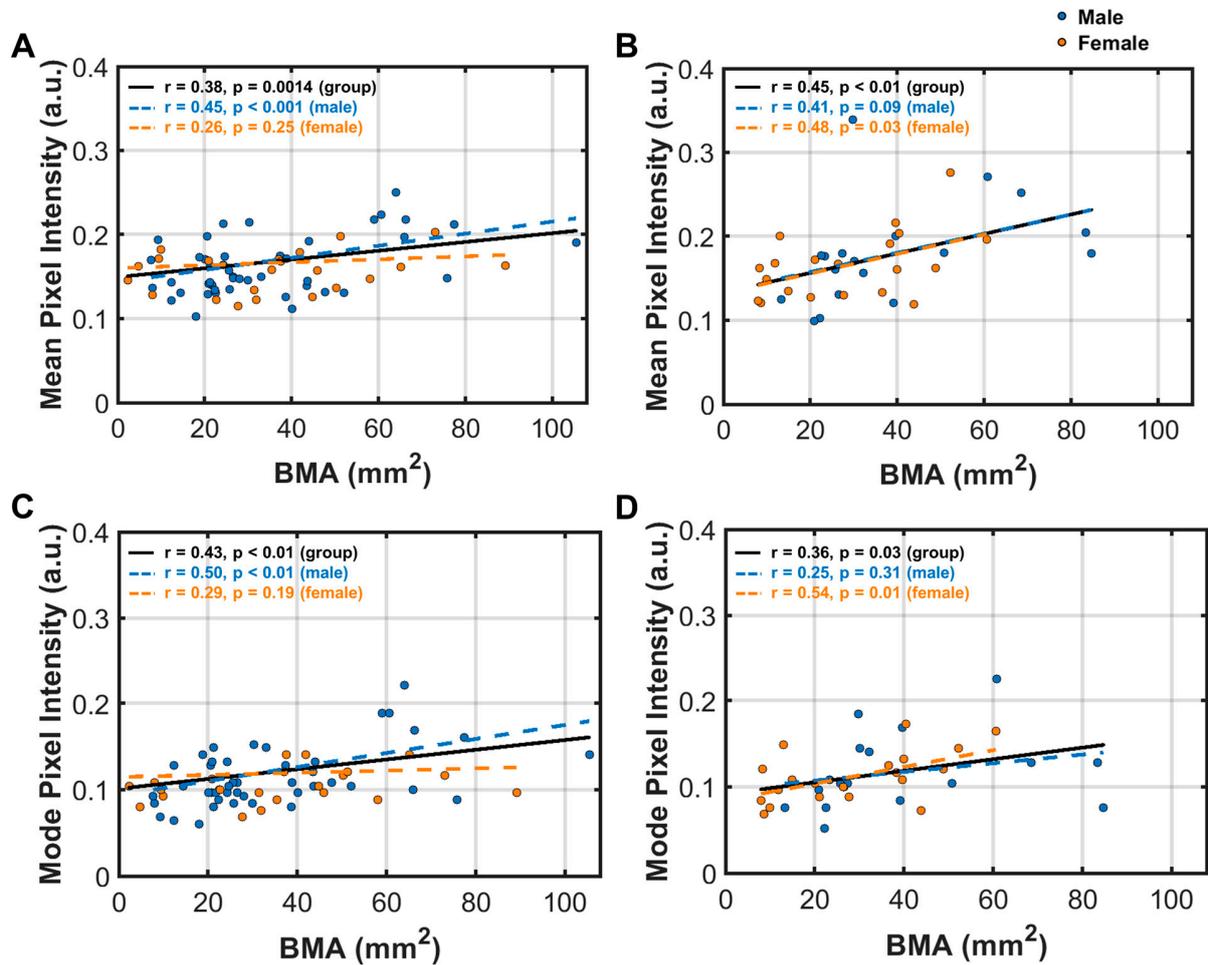
**Figure S2.** Linear correlation of age with SFT for non-obese (**A**,  $n = 69$ ) and obese (**B**,  $n = 38$ ,  $BMI > 30$ ) groups.



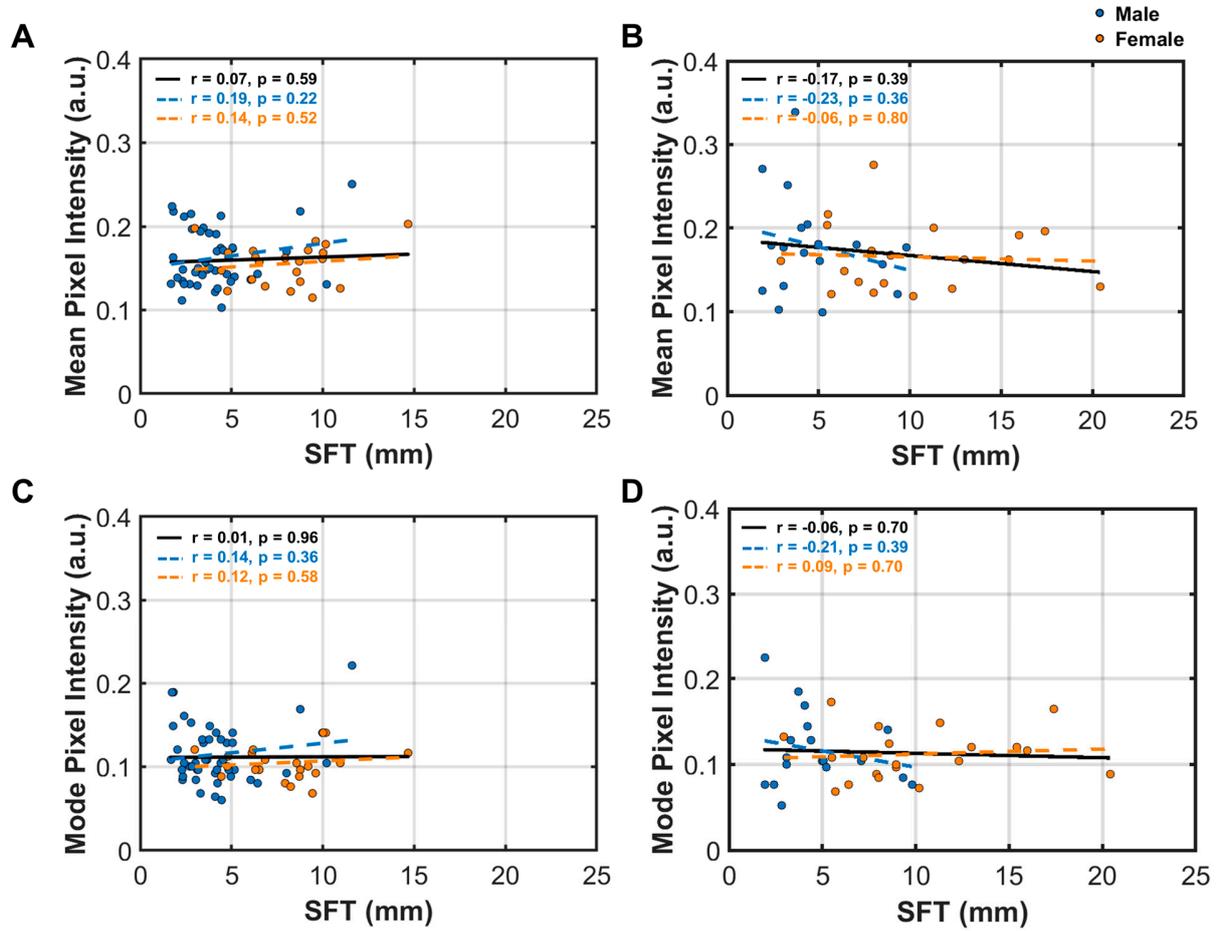
**Figure S3.** Linear correlation of age with BMA for non-obese (**A**,  $n = 69$ ) and obese (**B**,  $n = 38$ , BMI > 30) groups.



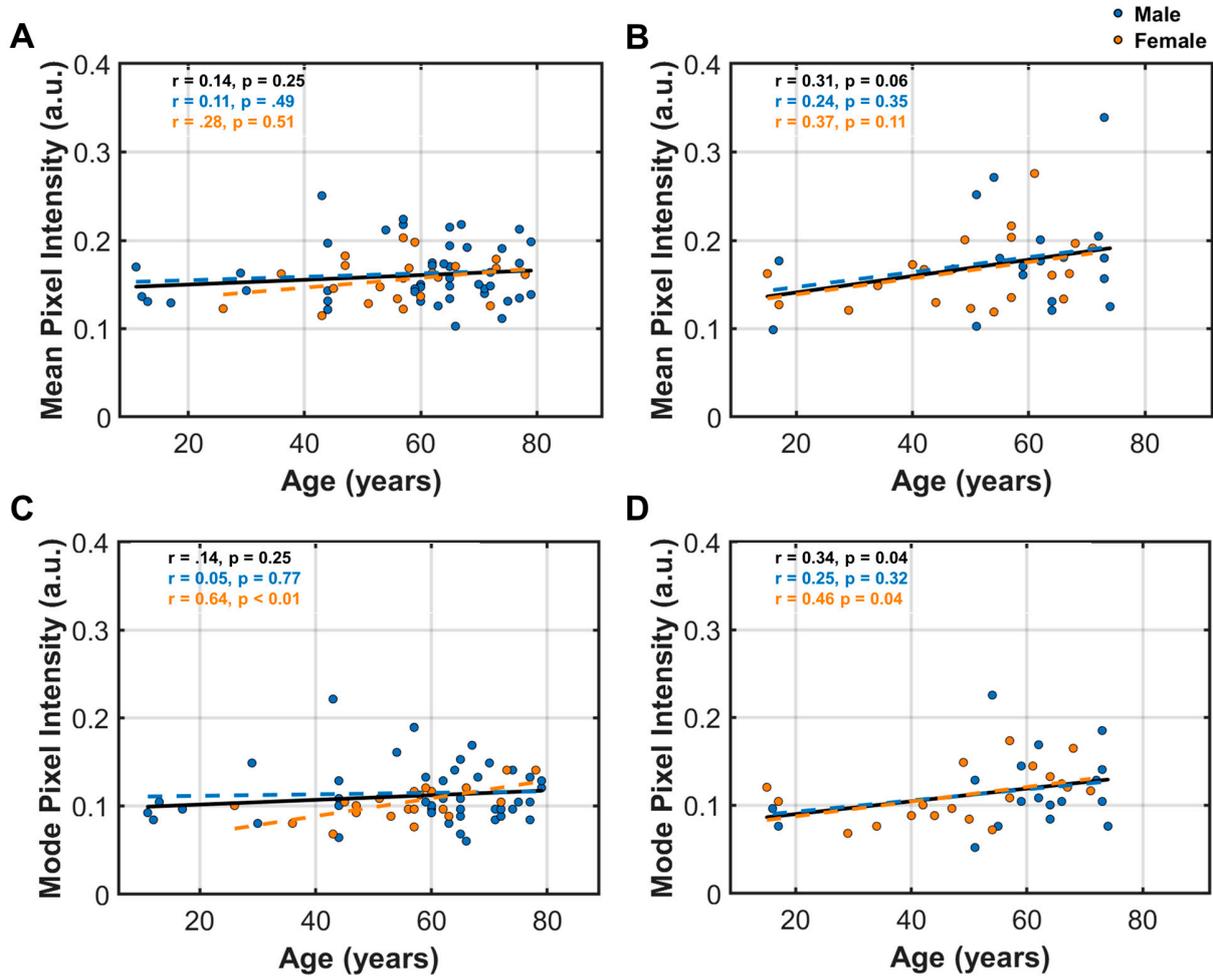
**Figure S4.** Analysis of pixel histogram for characterization of the severity of fat infiltration in calf muscle. (A) Pixel intensity distribution profiles, showing mean pixel intensity (black dash line) and mode pixel intensity (magenta dash line). (B) Subject clustering based on the measurements of pixel mean intensity alone. Muscle fat infiltration (MFI) in 107 subjects clustered into four groups, normal (44/107, 27M/17F), mild MFI 37/107, 20M/17F), moderate MFI (23/107, 15M/7F) and severe MFI (3/107, 2M/1F). Note the trend of MFI reflected by the increased mean intensity, mode intensity and linewidth (profile dispersion).



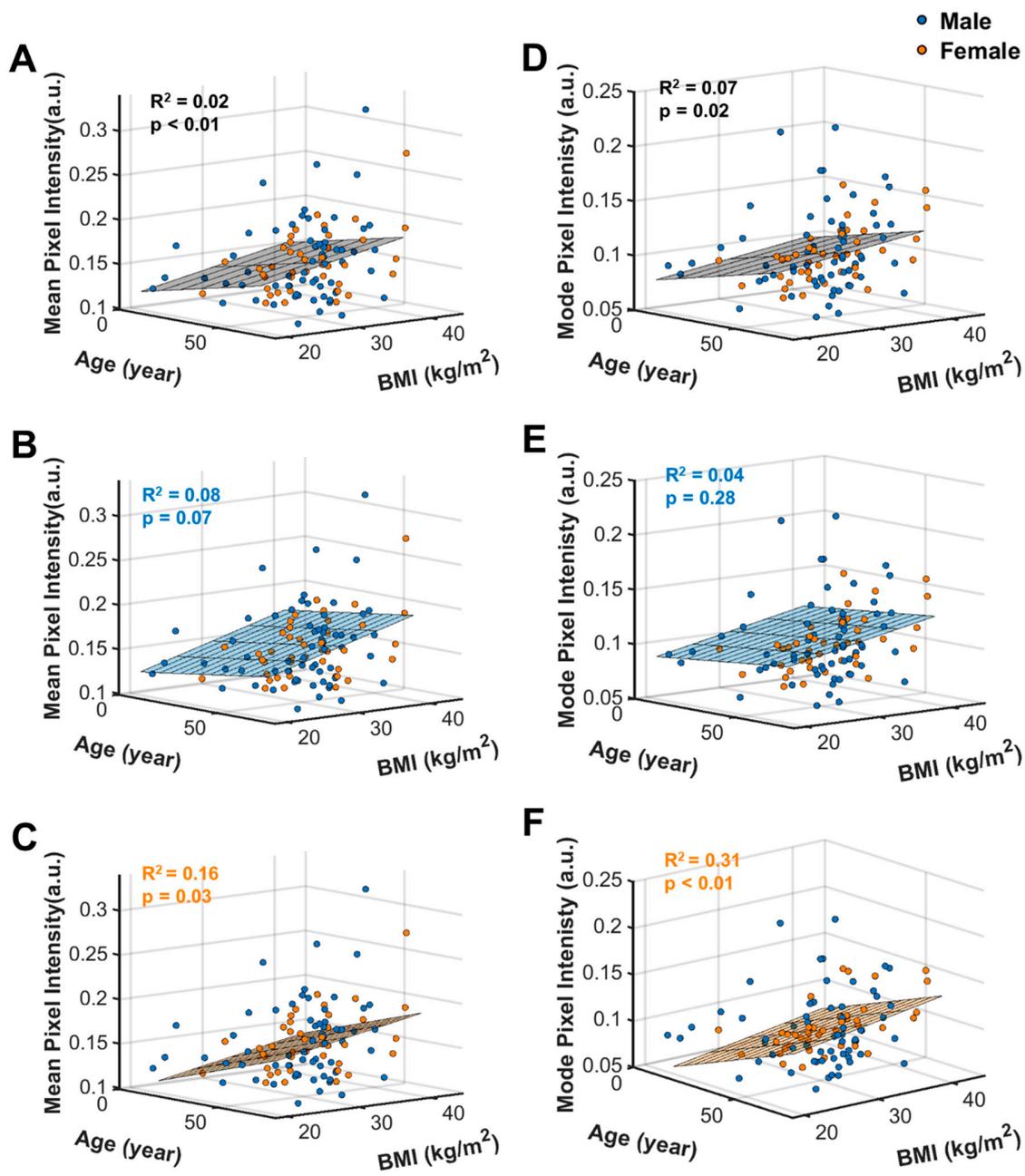
**Figure S5.** Linear correlation of BMA with MFI mean (A and B) and mode (C and D) indexes for non-obese (A and C, n = 67) and obese (B and D, n = 38, BMI > 30) groups.



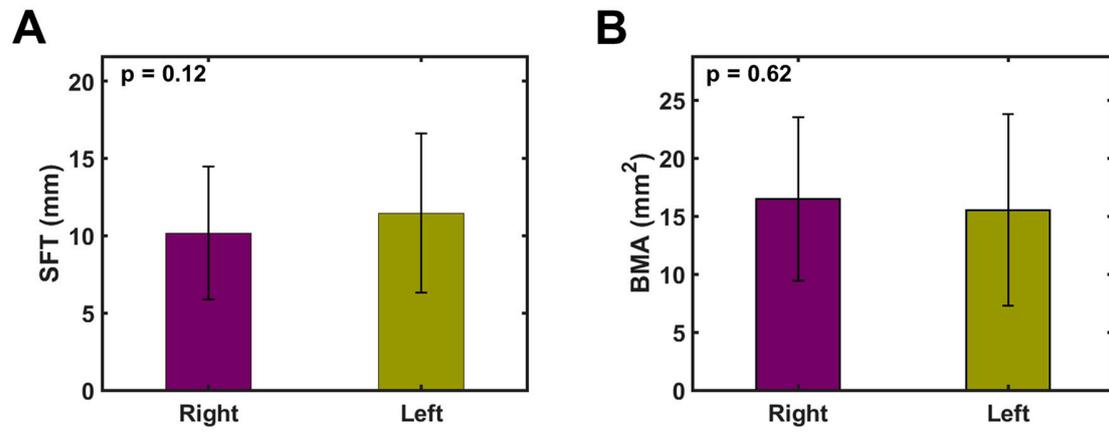
**Figure S6.** Linear correlation of SFT with MFI mean (A and B) and mode (C and D) indexes for non-obese (A and C,  $n = 67$ ) and obese (B and D,  $n = 38$ , BMI > 30) groups.



**Figure S7.** Linear correlation of age with MFI mean (**A** and **B**) and mode (**C** and **D**) indexes for non-obese (**A** and **C**,  $n = 67$ ) and obese (**B** and **D**,  $n = 38$ ,  $BMI > 30$ ) groups.



**Figure S8.** Multivariate regression analysis between muscle fat infiltration (MFI) indexes with age and BMI ( $n = 105$ , no critical fat infiltration cases). All subjects (A) and (D); men subgroup (B) and (E); women subgroup (C) and (F).



**Figure S9.** Multivariate regression analysis between muscle fat infiltration (MFI) indexes with age and BMI (n = 105, no critical fat infiltration cases). All subjects (A) and (D); men subgroup (B) and (E); women subgroup (C) and (F).

**Table S1.** r- and p-values for BMA and SFT correlation with age with and without correction for the BMI effect

Subject Groups	BMA				SFT			
	age (raw)		age (correction)		age (raw)		age (correction)	
	r	p	r	p	r	p	r	p
Male (n = 64)	0.24	0.06	0.23	0.07	-0.34	0.0059	-0.35	0.0047
Female (n = 43)	0.62	<0.0001	0.63	<0.0001	0.04	0.79	0.21	0.17
Group (n = 107)	0.37	<0.0001	0.39	<0.0001	-0.21	0.03	-0.19	0.048

**Table S2.** r- and p-values for BMA and SFT correlation with BMI with and without correction for the age effect

Subject Groups	BMA				SFT			
	BMI (raw)		BMI (correction)		BMI (raw)		BMI (correction)	
	r	p	r	p	r	p	r	p
Male (n = 64)	0.25	0.04	0.24	0.05	0.09	0.47	0.12	0.35
Female (n = 43)	-0.07	0.65	0.08	0.59	0.57	<0.0001	0.60	<0.0001
Group (n = 107)	0.08	0.39	0.12	0.19	0.43	<0.0001	0.42	<0.0001

**Table S3.** r- and p-values for MFI correlation with age with and without correction for the BMI effect (w/o critical fat infiltration cases)

Subject Groups	Mean PI				Mode PI			
	age (raw)		age (correction)		age (raw)		age (correction)	
	r	p	r	p	r	p	r	p
Male (n = 63)	0.15	0.25	0.14	0.29	0.11	0.41	0.10	0.44
Female (n = 42)	0.29	0.06	0.36	0.02	0.47	0.002	0.54	0.0002
Group (n = 105)	0.20	0.04	0.22	0.02	0.21	0.03	0.23	0.02

**Table S4.** r- and p-values for MFI correlation with BMI with and without correction for the age effect (w/o critical fat infiltration cases)

Subject Groups	Mean PI				Mode PI			
	BMI (raw)		BMI (correction)		BMI (raw)		BMI (correction)	
	r	p	r	p	r	p	r	p
Male (n = 63)	0.25	0.04	0.25	0.045	0.18	0.16	0.18	0.17
Female (n = 42)	0.20	0.19	0.30	0.056	0.19	0.23	0.35	0.02
Group (n = 105)	0.20	0.04	0.23	0.02	0.15	0.14	0.17	0.08