

Table S1 Initial multiple linear regression analysis: determinants of LA strain parameters

Variables	ε_s		ε_e		ε_a	
	β	R^2	β	R^2	β	R^2
Overall		0.503		0.466		0.428
Age	−0.019		−0.097		0.105	
BMI	−0.104		−0.096		−0.056	
LAEF _{passive}	0.464**		0.618**		−0.027	
LAEF _{active}	0.457**		0.159**		0.610**	
Normal weight		0.602		0.533		0.558
Age	0.178		0.110		0.213	
BMI	−0.234		−0.171		−0.242	
LAEF _{passive}	0.588**		0.696**		0.226	
LAEF _{active}	0.458**		0.247		0.602**	
Overweight		0.565		0.493		0.506
Age	−0.189		−0.258		0.062	
BMI	−0.012		−0.011		−0.004	
LAEF _{passive}	0.471**		0.613**		−0.108	
LAEF _{active}	0.500**		0.121		0.704**	
Obese		0.504		0.609		0.287
Age	0.095		0.029		0.124	
BMI	0.160		0.121		0.116	
LAEF _{passive}	0.520**		0.743**		−0.072	
LAEF _{active}	0.411**		0.141		0.519**	

*, $P < 0.05$; **, $P < 0.01$. Normal weight group: BMI 18.5–24.9 kg/m²; overweight group: BMI 25.0–29.9 kg/m²; and obese group: BMI ≥ 30 kg/m². ε_a , active strain; ε_e , passive strain; ε_s , total strain.

Table S2 Initial multiple linear regression analysis: determinants of LA strain rate parameters

Variables	SRs		SRe		SRa	
	β	R ²	β	R ²	β	R ²
Overall		0.365		0.434		0.530
Age	−0.004		0.235**		−0.060	
BMI	−0.194*		0.213**		0.123	
LAEF _{passive}	0.366**		−0.503**		−0.056	
LAEF _{active}	0.373**		−0.221**		−0.681**	
Normal weight		0.390		0.484		0.600
Age	0.174		0.156		−0.152	
BMI	−0.170		0.097		0.075	
LAEF _{passive}	0.452**		−0.505**		−0.213	
LAEF _{active}	0.395*		−0.354*		−0.705**	
Overweight		0.383		0.482		0.581
Age	−0.127		0.315**		−0.014	
BMI	−0.019		0.037		−0.016	
LAEF _{passive}	0.313*		−0.541**		−0.025	
LAEF _{active}	0.484**		−0.234*		−0.756**	
Obese		0.396		0.458		0.387
Age	−0.045		0.230		−0.034	
BMI	0.082		−0.115		0.028	
LAEF _{passive}	0.549**		−0.585**		−0.041	
LAEF _{active}	0.226		−0.069		−0.618**	

*, P<0.05; **, P<0.01. Normal weight group: BMI 18.5–24.9 kg/m²; overweight group: BMI 25.0–29.9 kg/m²; and obese group: BMI ≥30 kg/m². SRa, peak late negative strain rate; SRe, peak early negative strain rate; SRs, peak positive strain rate

Table S3 The VIF values for all predictors in the initial models

Model	Predictor	VIF	Tolerance
Overall	Age	1.169	0.855
	BMI	1.117	0.895
	LAEF _{passive}	1.057	0.946
	LAEF _{active}	1.055	0.948
Normal weight	Age	1.334	0.749
	BMI	1.055	0.948
	LAEF _{passive}	1.295	0.772
	LAEF _{active}	1.082	0.925
Overweight	Age	1.138	0.878
	BMI	1.084	0.923
	LAEF _{passive}	1.055	0.948
	LAEF _{active}	1.119	0.894
Obese	Age	1.020	0.981
	BMI	1.007	0.993
	LAEF _{passive}	1.018	0.982
	LAEF _{active}	1.014	0.986

Normal weight group: BMI 18.5–24.9 kg/m²; overweight group: BMI 25.0–29.9 kg/m²; and obese group: BMI ≥30 kg/m². VIF, variance inflation factor.

Table S4 The VIF values for all predictors in the final models

Model	Predictor	VIF	Tolerance
Overall	Age	1.217	0.822
	EAT	1.261	0.793
	BMI	1.182	0.846
	LAEF _{passive}	1.077	0.928
Normal weight	LAEF _{active}	1.075	0.931
	Age	1.548	0.646
	EAT	1.266	0.790
	BMI	1.440	0.694
Overweight	LAEF _{passive}	1.320	0.758
	LAEF _{active}	1.099	0.910
	Age	1.237	0.809
	EAT	1.095	0.914
Obese	BMI	1.165	0.859
	LAEF _{passive}	1.100	0.909
	LAEF _{active}	1.133	0.883
	Age	1.029	0.972
	EAT	1.029	0.972
	BMI	1.148	0.871
	LAEF _{passive}	1.097	0.911
	LAEF _{active}	1.055	0.947

Normal weight group: BMI 18.5–24.9 kg/m²; overweight group: BMI 25.0–29.9 kg/m²; and obese group: BMI ≥30 kg/m². VIF, variance inflation factor.