

**Online supplementary table S1** Univariable associations of GLS and scMWS among RA patients in linear regression analyses

	<b>GLS Beta</b>	<b>p-value</b>	<b>scMWS Beta</b>	<b>p-value</b>
<b><i>Clinical characteristics</i></b>				
Age (years)	0.01	0.88	-0.18	0.06
Female gender	-0.20	0.03	0.17	0.07
Body mass index (kg/m <sup>2</sup> )	0.22	0.02	-0.05	0.61
Total cholesterol (mmol/l)	-0.16	0.09	0.03	0.74
Use of statins	0.10	0.28	-0.16	0.08
Systolic blood pressure (mmHg)	0.26	0.004	-0.20	0.03
Diastolic blood pressure (mmHg)	0.29	0.001	-0.09	0.37
Use of antihypertensive medication	0.25	0.006	-0.30	0.001
Hypertension	0.27	0.003	-0.20	0.04
Diabetes	0.06	0.54	-0.10	0.28
Current smoking	0.07	0.44	-0.20	0.03
lnESR (mm/hr)	0.10	0.26	-0.11	0.22
lnCRP (mg/l)	0.05	0.61	-0.08	0.37
<b><i>Echocardiographic characteristics</i></b>				
Concentric LV geometry	0.17	0.06	-0.62	<0.001
Hypertrophy	0.08	0.38	-0.29	0.001
E/A ratio	-0.15	0.12	-0.01	0.94
E/E'	-0.01	0.91	-0.15	0.11
Ejection fraction (%)	-0.22	0.02	0.21	0.02
scMWS (%)	-0.30	0.001	na	na
GLS (%)	na	na	-0.30	0.001
<b><i>RA specific characteristics</i></b>				
Disease duration (years)	-0.07	0.46	0.18	0.05
TNFi	-0.01	0.88	-0.10	0.31
DMARDs	-0.01	0.89	-0.13	0.15
Active RA (SDAI>3.3)	0.25	0.006	-0.26	0.005
lnSDAI score	0.23	0.01	-0.22	0.02
lnCDAI score	0.25	0.007	-0.21	0.02
DAS28 score	0.23	0.01	-0.17	0.06
RF positive	0.08	0.40	-0.23	0.01
anti-CCP positive	0.13	0.17	-0.11	0.27
MHAQ score	0.12	0.20	-0.32	<0.001

Anti-CCP, anti-cyclic citrullinated peptide; DAS28, Disease Activity Score in 28 Joints;

DMARDs, disease-modifying antirheumatic drugs; E/A, early/atrial transmitral peak

velocities; E/E', early peak blood velocity/early diastolic tissue velocity at septal border of

mitral annulus; GLS, global longitudinal strain; lnCDAI, natural logarithm of Clinical Disease Activity Index; lnCRP, natural logarithm of C-reactive protein; lnESR, natural logarithm of erythrocyte sedimentation rate; lnSDAI, natural logarithm of Simplified Disease Activity Index; LV, left ventricular; MHAQ, Modified Health Assessment Questionnaire; RA, rheumatoid arthritis; RF, rheumatoid factor; scMWS, stress-corrected midwall shortening; TNFi, tumour necrosis factor inhibitor.

**Online supplementary table S2** Covariables of scMWS in multivariable linear regression analyses in RA patients

Independent variable	Dependent variable									
	scMWS									
	<u>Model 1</u> Multiple R <sup>2</sup> =0.22, p<0.001		<u>Model 2</u> Multiple R <sup>2</sup> =0.20, p<0.001		<u>Model 3</u> Multiple R <sup>2</sup> =0.20, p<0.001		<u>Model 4</u> Multiple R <sup>2</sup> =0.18, p<0.001		<u>Model 5</u> Multiple R <sup>2</sup> =0.23, p<0.001	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p
Age (years)	-0.24	0.006	-0.24	0.007	-0.24	0.007	-0.24	0.009	-0.21	0.02
Sex	0.10	0.25	0.12	0.19	0.13	0.15	0.11	0.23	0.10	0.25
Smoking	-0.23	0.009	-0.24	0.008	-0.23	0.009	-0.25	0.004	-0.23	0.007
EF (%)	0.23	0.01	0.23	0.01	0.23	0.01	0.24	0.01	0.23	0.01
Active RA	-0.22	0.01								
lnSDAI score			-0.18	0.04						
lnCDAI score					-0.18	0.05				
DAS28 score							-0.13	0.15		
MHAQ score									-0.25	0.004

Active RA is defined as SDAI>3.3.

DAS28, Disease Activity Score in 28 Joints; EF, ejection fraction; lnCDAI, natural logarithm of Clinical Disease Activity Index; lnSDAI, natural logarithm of Simplified Disease Activity Index; MHAQ, Modified Health Assessment Questionnaire; RA, rheumatoid arthritis; scMWS, stress-corrected midwall shortening.

**Online supplementary table S3** Covariables of GLS in multivariable linear regression analyses in RA patients

Independent variable	Dependent variable									
	GLS									
	<u>Model 1</u> Multiple R <sup>2</sup> =0.20, p<0.001		<u>Model 2</u> Multiple R <sup>2</sup> =0.19, p=0.001		<u>Model 3</u> Multiple R <sup>2</sup> =0.20, p<0.001		<u>Model 4</u> Multiple R <sup>2</sup> =0.20, p<0.001		<u>Model 5</u> Multiple R <sup>2</sup> =0.17, p=0.002	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p
Age (years)	-0.10	0.31	-0.10	0.32	-0.10	0.33	-0.10	0.30	-0.13	0.20
Sex	-0.08	0.40	-0.10	0.29	-0.13	0.20	-0.09	0.35	-0.07	0.45
Systolic BP (mmHg)	0.25	0.02	0.25	0.02	0.24	0.02	0.24	0.02	0.28	0.007
EF (%)	-0.16	0.07	-0.16	0.07	-0.16	0.08	-0.16	0.07	-0.18	0.06
BMI (kg/m <sup>2</sup> )	0.15	0.09	0.14	0.14	0.13	0.16	0.17	0.06	0.15	0.12
Active RA	0.21	0.02								
lnSDAI score			0.18	0.04						
lnCDAI score					0.22	0.02				
DAS28 score							0.21	0.02		
MHAQ score									0.08	0.35

Active RA is defined as SDAI>3.3.

BMI, body mass index; BP, blood pressure; DAS28, Disease Activity Score in 28 Joints; EF, ejection fraction; GLS, global longitudinal strain; lnCDAI, natural logarithm of Clinical Disease Activity Index; lnSDAI, natural logarithm of Simplified Disease Activity Index; MHAQ, Modified Health Assessment Questionnaire; RA, rheumatoid arthritis.