Table S1. Baseline characteristics of the study population (Intention to treat population)

	Sham (n=28)	CPAP (n=28)	p-value
Age, years	49.1 ± 10.4	49.4 ± 11.0	0.901
Male gender, n (%)	26 (93)	26 (93)	1.000.
Height, cm	169.4 ± 7.2	170.5 ± 6.6	0.671
Weight, kg	75.6 ± 12.5	81.2 ±11.5	0.038
Body mass index, kg/m^2	26.2 ± 3.1	27.8 ± 2.7	0.036
Body surface area, m^2	1.88 ± 0.18	1.94 ± 0.17	0.234
Hypertension, n (%)	15 (54)	18 (64)	0.587
Diabetes mellitus, n (%)	2 (7)	4 (14)	0.669
Dyslipidemia, n (%)	2 (7)	10 (36)	0.020
No. of current smokers, n (%)	6 (21)	10 (36)	0.248
Medications			
Calcium channel blockers, n (%)	8 (29)	11 (39)	0.573
RAAS blockers, n (%)	8 (29)	10 (36)	0.775
Beta-blockers, n (%)	4 (14)	4 (14)	1.000
Diuretics, n (%)	0 (0)	0 (0)	1.000
Statin, n (%)	2 (7)	10 (36)	0.020
Apnea-hypopnea index, events/hour	52.3 ± 20.2	63.0 ± 20.2	0.052
Mean oxygen saturation (%)	94.4± 1.5	93.7± 1.8	0.154
Percentage of sleep time with SpO$_2$ saturation < 90 % (%)	7.1 ± 7.3	10.2± 11.3	0.225

Oxygen desaturation index	30.1 ± 22.7	27.5 ± 21.6	0.677
Average heart rate during sleep	63.1± 6.9	63.6± 6.7	0.776
Adherence to CPAP treatment (hr/day)	4.6 ± 1.2	5.1 ± 1.7	0.157
CPAP device use >4hr/day	23 (82)	23 (82)	1.000

RAAS, renin-angiotensin-aldosterone system

Table S2. Echocardiographic variables at baseline and 3 months after treatment   (Intention to treat population)

	Sham (n=28)		CPAP (n=28)	
	Baseline	Follow-up	Baseline	Follow-up
LVEDD, mm	49 ± 3	48 ± 3	50 ± 3	49 ± 2
LVESD, mm	32 ± 3	31 ± 2	32 ± 3	32 ± 2
LVEF, %	66 ± 5	67 ± 5	69 ± 5	67 ± 6
Relative wall thickness	0.38 ± 0.05	0.40 ± 0.04	0.40 ± 0.04	0.40 ± 0.04
LV mass index, g/m^2	85.0 ± 12.8	83.9 ± 14.1	92.0 ± 15.4	91.2 ± 11.9
LA volume index, ml/m^2	25.4 ± 5.5	23.8 ± 5.3	26.1 ± 5.8	26.6 ± 5.2
e′ velocity, cm/sec				
At rest	9.3 ± 2.6	8.7 ± 2.9	7.6 ± 2.2[†]	8.3 ± 2.3
At 25 watts	11.2 ± 2.1	10.6 ± 2.1	9.5 ± 1.8[†]	9.9 ± 2.1
At 50 watts	12.0 ± 2.4	11.7 ± 3.0	10.4 ± 2.2[†]	10.5 ± 2.6
E/e′				
At rest	7.5 ± 1.6	7.9 ± 1.8	8.9 ± 2.3[†]	8.9 ± 2.4
At 25 watts	8.3 ± 2.0	8.3 ± 1.8	9.3 ± 2.3	9.3 ± 2.7
At 50 watts	8.6 ± 2.2	8.8 ± 1.9	9.8 ± 2.5	10.1 ± 3.4
S′ velocity, cm/sec				
At rest	8.4 ± 1.6	9.1 ± 2.0	8.7 ± 1.4	8.9 ± 1.6

At 25 watts	8. 9 ± 1.3	9.2 ± 1.8	8.8 ± 1.6	8.7 ± 1.7
At 50 watts	10.2 ± 1.7	10.2 ± 1.9	9.9 ± 1.8	9.8 ± 1.3

[*]Paired *t*-test, p < 0.05, compared with the value at baseline within the group

[†]Student's *t*-test, p < 0.05, compared with corresponding sham group

LVEDD, left ventricular end-diastolic dimension; LVESD, left ventricular end-systolic dimension; e′, early diastolic mitral annular tissue; LVEF, left ventricular ejection fraction; LV, left ventricle; LA, left atrium; S′, systolic mitral annular tissue.

Table S3. Peripheral, central, and 24-hour ambulatory BP variables at baseline and 3 months after treatment (Intention to treat population).

	Sham (n=28)		CPAP (n=28)	
	Baseline	Follow-up	Baseline	Follow-up
Peripheral				
Systolic BP, mmHg	136.7 ± 21.8	131.6 ± 14.4	133.4 ± 22.0	131.0 ± 11.7
Diastolic BP, mmHg	78.4 ± 12.4	78.7 ± 10.5	78.1 ± 13.8	78.1 ± 9.8
PP, mmHg	58.3 ± 23.4	52.9 ± 8.1	55.2 ± 18.4	52.9 ± 8.6
Central				
Systolic BP, mmHg	114.8 ± 15.+	115.5 ± 11.6	114.4 ± 17.8	115.9 ± 9.8
Diastolic BP, mmHg	77.8 ± 10.7	80.4 ± 10.8	77.1 ± 14.3	79.5 ± 10.0
PP, mmHg	37.1 ± 8.3	35.2 ± 4.4	37.4 ± 7.3	36.4 ± 8.2
AP, mmHg	7.3 ± 5.8	5.1 ± 5.9	5.6 ± 5.5	5.8 ± 5.4

AIx@75, %	19.4 ± 23.2	13.8 ± 13.8	16.4 ± 18.4	14.0 ± 10.1
PWV, m/sec	8.1 ± 1.1	8.1 ± 1.0	8.1 ± 1.4	7.2 ± 1.0 *†
PP amplification	1.62 ± 0.73	1.51 ± 0.23	1.51 ± 0.57	1.48 ± 0.20
Heart rate, beats/min	69.6 ± 12.1	72.6 ± 11.1	68.7 ± 8.7	72.7 ± 10.4
24 hour ambulatory				
Mean systolic BP, mmHg	126.3 ± 24.1	123.4 ± 10.9	130.6 ± 17.8	125.4 ± 12.3
Mean diastolic BP, mmHg	82.7 ± 14.3	78.6 ± 7.4	84.1 ± 14.2	78.8 ± 8.5 *
Daytime systolic BP, mmHg	136.4 ± 19.5	130.2 ± 11.7	135.4 ± 18.3	131.8 ± 13.0
Daytime diastolic BP, mmHg	87.0 ± 14.1	82.2 ± 6.9	87.6 ± 13.9	83.1 ± 9.1
Night-time systolic BP, mmHg	117.6 ± 20.2	112.6 ± 13.1	121.9 ± 17.7	114.9 ± 12.7
Night-time diastolic BP, mmHg	74.9 ± 14.7	71.9 ± 8.7	77.9 ± 14.4	71.5 ± 8.5 *
Non-dipper, n (%)	6 (21)	9 (32)	7 (25)	8 (29)

*Paired *t*-test, $p < 0.05$, compared with the value at baseline within the group

†Student's *t*-test, $p < 0.05$, compared with corresponding sham group

BP, blood pressure; PP, pulse pressure; AP, augmentation pressure; AIx@75, augmentation index adjusted at heart rate of 75 bpm; PWV, pulse wave velocity; bpm, beats per minute.

Table S4. Ventricular-vascular coupling at baseline and 12 weeks after randomization

(Intention to treat population)

	Sham (n=28)		CPAP (n=28)	
	Baseline	Follow-up	Baseline	Follow-up
End-systolic volume index, ml/m^2				
At rest	17.8 ± 4.2	16.3 ± 4.2	16.3 ± 4.3	16.0 ± 3.2
At 25 watts	18.3 ± 3.9	17.7 ± 3.6	17.0 ± 4.1	16.9 ± 3.5
At 50 watts	18.3 ± 4.2	16.9 ± 3.4	16.3 ± 4.1	15.9 ± 3.4
Stroke volume index, ml/m^2				
At rest	35.9 ± 7.6	35.7 ± 5.7	37.1 ± 8.9	40.1 ± 7.7†
At 25 watts	40.0 ± 5.1	39.7 ± 5.7	40.4 ± 8.5	41.2 ± 7.6
At 50 watts	41.9 ± 5.2	41.7 ± 6.1	42.7 ± 8.2	43.5 ± 7.1
End-systolic pressure, mmHg				
At rest	114.8 ± 10.2	108.9 ± 12.3	115.2 ± 15.7	108.5 ± 10.5
At 25 watts	132.0 ± 19.3	118.7 ± 12.8*	131.7 ± 16.2	118.8 ± 12.3*
At 50 watts	135.1 ± 17.1	128.8 ± 14.8*	137.1 ± 21.1	130.4 ± 17.4
EaI, mmHg/ml/m^2				
At rest	0.90 ± 0.21	0.89 ± 0.24	0.88 ± 0.32	0.75 ± 0.22*†
At 25 watts	0.93 ± 0.21	0.85 ± 0.19*	0.91 ± 0.25	0.80 ± 0.25*
At 50 watts	0.94 ± 0.22	0.88 ± 0.20	0.93 ± 0.33	0.84 ± 0.30*

EesI, mmHg/ml/m^2

At rest	1.95 ± 0.58	2.08 ± 0.69	1.97 ± 0.71	1.85 ± 0.61
At 25 watts	2.13 ± 0.70	2.07 ± 0.74	2.18 ± 0.83	1.93 ± 0.71*
At 50 watts	2.31 ± 0.67	2.36 ± 0.82	2.43 ± 1.04	2.38 ± 1.29

EaI/EesI

At rest	0.51 ± 0.12	0.47 ± 0.13	0.45 ± 0.13	0.42 ± 0.11*
At 25 watts	0.45 ± 0.11	0.44 ± 0.10	0.44 ± 0.11	0.43 ± 0.11
At 50 watts	0.43 ± 0.13	0.41 ± 0.09	0.41 ± 0.11	0.37 ± 0.09

*Paired *t*-test, $p < 0.05$, compared with the value at baseline within the group
†Student's *t*-test, $p < 0.05$, compared with the corresponding sham group
EaI, arterial elastance index; EesI, ventricular elastance index; EaI/EesI, ventricular-vascular coupling index.

Table S5. Change of E' velocity and PWV after adjustment of baseline characteristics

	Sham (n=26)	CPAP (n=26)	p-value
Change of E' velocity (cm/s)	-0.61 ± 1.85	0.65 ± 1.69	0.020^{a} 0.021^{b}

[a] p value is calculated from ANCOVA with adjustment of BMI

[b] p value is calculated from ANCOVA with adjustment of age, BMI, and left atrial volume index

Change of E' velocity	beta	p value	95% CI
Active CPAP vs. sham	0.366	0.018	0.243, 2.463
BMI	0.009	0.951	-0.172, 0.183
dyslipidemia	-0.081	0.577	-1.821, 1.026
Change of PWV	Beta	p value	95% CI
Active CPAP vs. sham	-0.339	0.024	-23.512, -1.732
BMI	0.287	0.043	0.065, 3.742
dyslipidemia	-0.222	0.123	-24.396, 3.013

BMI, body mass index; PWV, pulse wave velocity; CPAP, continuous positive airway pressure