

Supplementary files

Table S1. M and B-mode echocardiogram parameters for the experimental groups at weeks 0, 4, and 8.

Variables	CT group			END group			RES group			CONC group			OT group		
	W0	W4	W8	W0	W4	W8	W0	W4	W8	W0	W4	W8	W0	W4	W8
IVS;d (mm)	0.7±0.1	0.8±0.1	0.9±0.1	0.8±0.1	0.7±0.1	0.8±0.1	0.7±0.1	0.8±0.1	0.8±0.1	0.8±0.1	0.9±0.1	0.8±0.0	0.8±0.0	0.8±0.0	0.8±0.1
IVS;s (mm)	1.1±0.2	1.1±0.1	1.2±0.1	1.1±0.2	1.0±0.1	1.2±0.1	1.0±0.1	1.2±0.1	1.1±0.2	1.1±0.2	1.2±0.1	1.1±0.1	1.2±0.1	1.1±0.1	1.2±0.1
LVID;d (mm)	3.9±0.3	4.1±0.2	3.8±0.3	4.0±0.3	4.1±0.2	4.2±0.2	3.7±0.2	3.9±0.1	4.0±0.2	3.9±0.2	3.9±0.3	4.1±0.2	4.0±0.2	4.2±0.2	4.2±0.1
LVID; s (mm)	2.9±0.4	3.3±0.3	3.0±0.4	3.1±0.3	3.3±0.2	3.2±0.2	2.9±0.2	2.9±0.2	3.1±0.3	3.1±0.1	3.0±0.4	3.3±0.3	3.1±0.2	3.5±0.3	3.2±0.2
LVPW; d (mm)	0.6±0.1	0.7±0.1	0.8±0.1	0.7±0.1	0.7±0.1	0.7±0.1	0.6±0.1	0.7±0.1	0.7±0.1	0.6±0.1	0.7±0.0	0.6±0.1	0.7±0.1	0.8±0.1	0.6±0.1
LVPW; s (mm)	0.9±0.1	0.9±0.2	1.0±0.2	0.9±0.2	0.9±0.1	1.0±0.2	0.7±0.1	0.9±0.2	0.9±0.2	0.8±0.2	0.8±0.1	0.7±0.2	0.9±0.2	0.9±0.2	0.8±0.1
EF (%)	50.0±7.4	39.0±9.6	45.9±9.1	45.0±5.9	40.5±9.4	48.3±6.3	46.4±7.6	50.9±7.6	44.3±8.1	44.2±4.8	46.6±10.9	40.7±6.3	45.9±9.0	37.7±7.4	47.3±2.6
FS (%)	25.1±4.4	18.8±5.4	22.6±5.4	22.1±3.4	19.7±5.2	24.2±3.8	22.8±4.4	25.7±4.9	21.7±4.6	21.5±2.8	23.2±6.7	19.7±3.5	22.8±5.3	18.1±4.1	23.5±1.5
LV mass (mg)	73.5±14.4	113.3±12.7	94.9±4.2	85.4±13.3	86.4±9.8	99.2±22.1	61.5±11.2	85.4±13.9*	85.3±13.3*	76.3±18.2	86.7±13.0	76.4±6.9	86.6±15.8	100.1±11.6	87.8±12.2
LV vol; d (uL)	67.5±13.4	74.4±6.6	64.3±11.7	71.5±13.7	75.5±10.7	79.8±9.3	59.1±7.6	67.9±4.0	68.5±6.8	66.6±7.1	67.6±12.2	74.8±8.1	71.5±7.2	80.7±10.6	79.1±5.8
LV vol; s (uL)	34.6±12.2	45.7±10.0	35.5±10.3	39.5±9.8	44.7±7.6	41.0±4.7	31.6±5.9	33.2±4.4	38.3±8.4	37.1±3.5	36.8±12.0	44.6±8.3	38.6±7.0	50.5±10.3	41.8±4.8
HR (bpm)	446.8±18.4	407.2±41.5	398.4±65.4	388.0±50.1	382.4±33.0	443.7±51.1	402.9±50.9	330.9±20.3	376.7±33.0	401.6±42.8	371.8±36.7	395.2±35.7	420.2±32.2	421.9±39.1	412.3±66.0
CO (mL/min)	14.2±0.5	13.4±1.2	11.1±1.8	10.9±2.3	11.8±2.9	16.3±5.9	11.9±1.7	11.1±1.3	10.7±1.7	12.0±2.7	12.8±2.1	11.4±1.5	15.1±3.0	15.2±3.3	15.9±2.7
B-Mode	W0	W4	W8	W0	W4	W8	W0	W4	W8	W0	W4	W8	W0	W4	W8
Area; d (mm ²)	22.5±1.8	24.7±1.0	23.0±2.2	22.4±2.4	23.8±0.7	24.8±2.7	21.1±1.1	23.0±1.9	22.9±1.8	21.6±2.2	24.1±1.2	24.2±1.9	23.6±1.9	26.0±1.2	25.2±1.9
Area; s (mm ²)	13.9±2.6	16.3±1.4	15.5±2.5	14.4±2.0	16.4±1.6	16.0±2.3	13.0±0.7	14.1±1.0	15.7±1.1*#	13.5±1.2	15.1±1.5	17.0±1.7	14.0±1.9	17.4±1.3	15.6±1.7
CO (mL/min)	14.3±0.5	13.9±0.7	11.5±2.0	15.8±13.1	11.4±2.6	16.1±5.9	12.1±1.6	11.6±1.2	10.8±1.7	12.3±3.0	13.3±2.3	11.6±1.7	14.7±2.6	15.1±3.9	15.5±3.1
EF (%)	55.0±6.5	49.5±4.8	48.5±9.1	48.6±8.1	46.3±8.6	51.1±9.4	56.3±0.8	55.8±2.3	47.8±5.4	54.9±3.8	54.0±6.2	45.1±3.3*#	57.7±6.1	47.9±6.8	54.7±3.6
FS (%)	13.2±5.6	13.6±2.2	11.0±3.1	17.4±11.7	11.2±4.8	14.8±6.2	13.7±1.9	15.8±3.4	10.1±1.8*	15.3±1.7	14.2±4.5	11.2±1.5	16.2±4.9	13.6±4.9	15.7±3.3
SV (uL)	31.9±1.0	33.0±3.0	28.3±5.5	28.5±7.5	30.6±5.5	35.9±9.5	29.5±2.6	33.7±3.8	28.7±6.3	29.9±4.9	34.4±3.7	28.8±2.8	35.9±5.9	35.8±6.2	38.7±4.6
V;d (uL)	58.8±7.6	66.8±5.4	59.1±10.0	58.4±8.4	66.3±2.4	70.1±11.4	52.4±4.4	60.4±7.2	59.5±8.1	54.4±7.7	63.8±4.7	64.2±7.8	62.3±8.9	74.6±4.5	70.8±8.1
V;s (uL)	26.9±7.3	33.9±5.2	30.8±8.4	29.8±5.6	35.7±6.2	34.2±7.4	22.9±1.9	26.7±3.9	30.8±3.4*#	24.5±3.8	29.5±5.1	35.4±5.8	26.4±5.4	38.7±4.7	32.1±5.1

W0–Week 0; W4–Week 4; W8–Week 8; IVS; d–Interventricular septum thickness at end-diastole; IVS; s–Interventricular septum thickness at end-systole; LVID; d–Left ventricular internal dimension at end-diastole; LVID; s–Left ventricular internal dimension at end-systole; LVPW; d–Left ventricular posterior wall thickness at end-diastole; LVPW; s–Left ventricular posterior wall thickness at end-systole; EF–Ejection fraction; FS–Fractional shortening; LV–Left ventricle; LV vol; d–Left ventricle volume at end-diastole; LV vol; s–Left ventricle volume at end-systole; HR–Heart rate; CO–Cardiac output; SV–Stroke volume; V; d–Volume at end-diastole; V; s–Volume at end-systole. Data correspond to mean ± SEM of 5 mice/group. * $p < 0.05$ vs. week 0; # $p < 0.05$ vs. week 4. CT (Sedentary; control group); END (Endurance; submitted to the chronic endurance exercise protocol); RES (Resistance; submitted to the chronic resistance exercise protocol); CONC (Concurrent; submitted to the chronic concurrent exercise protocol); OT (Overtraining; submitted to the chronic exhaustive exercise protocol).

Table S2. Primers used to RT-qPCR.

Gene	Forward (5'-3')	Reverse (5'-3')
<i>Prkaa1</i>	CCAGGTCATCAGTACACCATCT	TTTCCTTTTCGTCCAACCTTCC
<i>Mtor</i>	CCACGTGGTTAGCCAGACT	TAGCGGATATCAGGGTCAGGA
<i>Ulk1</i>	AACATCCGAGTCAAGATTGCTG	ATAATGACCTCAGGAGCCATGT
<i>Atg5</i>	GCTTTTGCCAAGAGTCAGCTAT	AACCAATTGGATAATGCCATTTTCAG
<i>Becn1</i>	AGGAACTCACAGCTCCATTACT	CTCTCCTGAGTTAGCCTCTTCC
<i>Bnip3</i>	CAGCATGAGAAACACAAGCG	TCCAATGTACCCCAAGCC
<i>Map1lc3b</i>	AGATAATCAGACGGCGCTTG	TCGTACACTTCGGAGATGGG
<i>Sqstm1</i>	ACAGCCAGAGGAACAGATGG	GTAGAGACTGGAGTTCACCTGTA
<i>Gapdh</i>	AAGAGGGATGCTGCCCTTAC	CGGGACGAGGAAACACTCTC

Prkaa1: Protein kinase, AMP-activated, alpha 1 catalytic subunit; *Mtor*: Mechanistic target of rapamycin kinase; *Ulk1*: Unc-51 like kinase 1; *Atg5*: Autophagy-related 5; *Becn1*: Beclin1; *Bnip3*: BCL2 interacting protein 3; *Map1lc3b*: Microtubule-associated protein 1 light chain 3 beta; *Sqstm1*: Sequestosome 1/p62; *Gapdh*: Glyceraldehyde-3-phosphate dehydrogenase.