Additional file 1. Subgroup analysis of baseline (pre) and post-marathon (post) variables

depending on average training before the marathon

Parameter	Group I ≤ 56 km/wk (n = 102)	Group II 57-72 km/wk (n = 40)	Group III > 72 km/wk (n = 25)	p inter-group	p intragroup Pre vs. Post I	II	III
Age [years]	50.3 ± 10.6	48.6 ± 10.7	52.9 ± 15.3	*0.70*			
Male (%)	40 %	42 %	80 %				
Average training [km/week]	42.5 (35.0-50.0)	65.0 (60.0-70.0)	85.0 (80.0-90.0)	*<0.001*			
Finishing time [min]	273.5 (249.5-302.0)	245.0 (216.0-270.0)	237.0 (214.0-260.0)	*<0.001*			
Heart rate [bpm]							
Pre	62.6 ± 8.7	60.5 ± 9.6	60.4 ± 9.4				
Post	88.0 ± 12.3	89.2 ± 16.5	87.7 ± 17.9	*0.08*	*<0.001*	*<0.001*	*<0.001*
NT-proBNP [pg/ml]							
Pre	70.2 (43.1-131.4)	73.5 (33.9-102.7)	78.6 (38.3-135.9)				
Post	146.7 (98.6-224.9)	107.3 (64.8-208.1)	128.0 (84.0-325.8)	*0.31*	*<0.001*	*<0.001*	*<0.001*

LV SYSTOLIC FUNCTION							
MPI							
Pre	0.47 (0.40-0.54)	0.46 (0.37-0.59)	0.46 (0.37-0.55)				
Post	0.47 (0.41-0.55)	0.50 (0.43-0.62)	0.46 (0.39-0.55)	*0.36*	*0.23*	*0.44*	*0.63*
Longitudinal 2D strain septal basal (%)							
Pre	-18.3 (15.5-20.4)	-17.3 (15.4-20.3)	-17.8 (15.8-19.6)				
Post	-20.2 (16.4-22.7)	-18.9 (16.2-22.9)	-17.4 (15.0-22.9)	*0.57*	*<0.001*	*<0.001*	*0.25*
Peak systolic velocity septal basal S' [m/s]							
Pre	0.07 (0.07-0.08)	0.08 (0.07-0.08)	0.07 (0.07-0.09)				
Post	0.09 (0.08-0.10)	0.10 (0.09-0.10)	0.09 (0.08-0.11)	*0.21*	*<0.001*	*<0.001*	*0.001*

LV DIASTOLIC FUNCTION

E [m/s]

Pre	0.79 (0.67-0.91)	0.84 (0.72-0.94)	0.75 (0.70-0.92)				
Post	0.66 (0.56-0.77)	0.72 (0.58-0.88)	0.61 (0.54-0.75)	0.38	<0.001	0.01	0.011

A [m/s]

Pre	0.61 (0.50-0.60)	0.54 (0.48-0.61)	0.61 (0.51-0.71)				
Post	0.69 (0.61-0.83)	0.70 (0.60-0.77)	0.72 (0.51-0.85)	0.84	<0.001	<0.001	0.13

E/A

Pre	1.40 (1.01-1.57)	1.44 (1.21-1.89)	1.20 (1.00-1.63)				
Post	0.90 (0.74-1.16)	1.10 (0.80-1.24)	0.90 (0.70-1.14)	0.71	<0.001	<0.001	0.022

E/E'

Pre	7.73 (6.62-9.44)	7.83 (6.67-8.97)	7.56 (6.60-10.67)				
Post	9.04 (7.21-10.97)	9.62 (7.83-13.11)	9.00 (5.89-10.86)	0.02*	<0.001	<0.001	0.672

E' septal [m/s]

Pre	0.10 (0.09-0.12)	0.11 (0.09-0.13)	0.09 (0.07-0.11)				
Post	0.09 (0.08-0.11)	0.09 (0.07-0.10)	0.08 (0.07-0.11)	0.78	0.001	0.003	0.34

A' [m/s]

Pre	0.09 (0.08-0.10)	0.08 (0.07-0.10)	0.08 (0.07-0.10)				
Post	0.11 (0.09-0.13)	0.11 (0.09-0.13)	0.11 (0.09-0.14)	0.41	<0.001	<0.001	0.16

DT [ms]

Pre	201.4 (149.8-234.8)	171.5 (143.9-228.0)	155.5 (130.5-193.0)				
Post	126.0 (107.0-172.5)	132.0 (104.5-167.1)	132.0 (97.0-155.0)	0.90	<0.001	0.001	0.006

RIGHT HEART PARAMETERS

RVEDD [mm]

Pre	32.0	33.0	36.0				
	(28.3-37.0)	(30.0-38.0)	(30.3-39.8)				
Post	31.0	32.0	33.5	0.52	**0.025**	0.21	0.47
	(28.0-35.0)	(27.0-35.0)	(28.3-39.0)				

TAPSE [mm]

Pre	28.0	28.0	29.5				
	(26.0-31.0)	(26.0-30.0)	(25.5-31.8)				
Post	28.0	28.0	29.0	0.21	**0.003**	0.63	0.67
	(25.0-29.0)	(27.0-30.0)	(25.0-30.0)				

RV S' [m/s]

Pre	0.11	0.12	0.11				
	(0.10-0.12)	(0.10-0.14)	(0.09-0.12)				
Post	0.11	0.11	0.10	0.26	0.18	0.08	0.84
	(0.10-0.13)	(0.08-0.13)	(0.09-0.13)				

p = 0.53 for group I vs. II, p = 0.02 for group I vs. III, p = 0.02 for group II vs. III

Values are shown as mean ± SD or median (IQR). NT-proBNP, N-terminal prohormone of brain natriuretic peptide; LV, left ventricular; MPI, Myocardial performance index; E, peak transmitral E-wave velocity; A, peak transmitral A-wave velocity; E/A, ratio of transmitral E to transmitral A; E' septal, early diastolic annular velocity measured in the septal annulus; A', late diastolic annular velocity measured in the septal annulus; E/E', ratio of peak early transmitral diastolic velocity to early septal annular velocity; DT, deceleration time of the transmitral E-wave; RV, right ventricular; RVEDD, RV end diastolic diameter; TAPSE, tricuspid annular plane systolic excursion; RV S', peak systolic velocity of the basal RV free wall segment.