|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Whole cohort**  **(n=138)** | | | | | **U35 (≤34 years)**  **(n=71)** | | | | | **O35 (≥35 years)**  **(n=68)** | | | | | **p condition** | | **p**  **age** | **p interaction** | |
| BSA (m2) | Baseline | 1.9 | ± | 0.2 | 1.9 | | ± | 0.2 |  | 1.9 | | ± | 0.2 |  | n.s. | | n.s. | | | n.s. | |
|  | Follow-up | 1.9 | ± | 0.2 | 1.9 | | ± | 0.2 |  | 1.9 | | ± | 0.2 |  |  | |  | | |  | |
| **CMR** |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  | | |  | |
|  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  | | |  | |
| LV EDV (ml) | Baseline | 162 | ± | 35 | 169 | | ± | 38 |  | 154 | | ± | 32 | *§* | 0.159 | | 0.001 | | | 0.008 | |
|  | Follow-up | 164 | ± | 36 | 174 | | ± | 39 | *\*\** | 152 | | ± | 31 | *§§* |  | |  | | |  | |
| LV ESV (ml) | Baseline | 57 | ± | 17 | 61 | | ± | 18 |  | 52 | | ± | 15 |  | 0.068 | | 0.001 | | | 0.009 | |
|  | Follow-up | 58 | ± | 16 | 65 | | ± | 18 | *\*\** | 52 | | ± | 14 | *§§* |  | |  | | |  | |
| LV SV (ml) | Baseline | 105 | ± | 24 | 108 | | ± | 25 |  | 101 | | ± | 21 |  | 0.83 | | 0.047 | | | 0.341 | |
|  | Follow-up | 105 | ± | 23 | 110 | | ± | 25 |  | 101 | | ± | 20 | *§* |  | |  | | |  | |
| RV EDV (ml) | Baseline | 164 | ± | 41 | 173 | | ± | 42 |  | 155 | | ± | 39 |  | 0.017 | | 0.001 | | | 0.316 | |
|  | Follow-up | 168 | ± | 40 | 179 | | ± | 42 | *\** | 157 | | ± | 33 |  |  | |  | | |  | |
| RV ESV (ml) | Baseline | 65 | ± | 18 | 74 | | ± | 20 |  | 55 | | ± | 17 |  |  | |  | | |  | |
|  | Follow-up | 67 | ± | 20 | 77 | | ± | 22 |  | 57 | | ± | 18 |  |  | |  | | |  | |
| RV SV (ml) | Baseline | 99 | ± | 21 | 99 | | ± | 23 |  | 100 | | ± | 20 |  |  | |  | | |  | |
|  | Follow-up | 101 | ± | 22 | 101 | | ± | 24 |  | 100 | | ± | 21 |  |  | |  | | |  | |
| LV mass (g) | Baseline | 117 | ± | 32 | 121 | | ± | 32 |  | 112 | | ± | 31 |  | <.0001 | | 0.061 | | | 0.471 | |
|  | Follow-up | 121 | ± | 32 | 127 | | ± | 32 | *\*\*\** | 116 | | ± | 32 | *\*\** |  | |  | | |  | |
| Septal wall thickness (mm) | Baseline | 6.8 | ± | 1.6 | 6.8 | | ± | 1.7 |  | 6.8 | | ± | 1.8 |  | 0.61 | | 0.688 | | | 0.975 | |
|  | Follow-up | 6.9 | ± | 1.7 | 6.9 | | ± | 1.7 |  | 6.9 | | ± | 1.6 |  |  | |  | | |  | |
| Lateral wall thickness (mm) | Baseline | 6.4 | ± | 2 | 6.7 | | ± | 2 |  | 6.2 | | ± | 1.8 |  | 0.678 | | 0.258 | | | 0.514 | |
|  | Follow-up | 6.3 | ± | 1.6 | 6.4 | | ± | 1.8 |  | 6.2 | | ± | 1.6 |  |  | |  | | |  | |
| Native blood T1 (msec) | Baseline | 1606 | ± | 69 | 1601 | | ± | 67 |  | 1611 | | ± | 72 |  | 0.176 | | 0.543 | | | 0.212 | |
|  | Follow-up | 1600 | ± | 68 | 1602 | | ± | 68 |  | 1598 | | ± | 68 |  |  | |  | | |  | |
| Myocardial T1 post-Gd (msec) | Baseline | 620 | ± | 46 | 632 | | ± | 37 |  | 607 | | ± | 51 |  | 0.8334 | | <.0001 | | | 0.47 | |
|  | Follow-up | 621 | ± | 41 | 635 | | ± | 35 |  | 606 | | ± | 42 |  |  | |  | | |  | |
| Blood T1 post-Gd (msec) | Baseline | 503 | ± | 61 | 514 | | ± | 51 |  | 491 | | ± | 68 |  | 0.431 | | 0.001 | | | 0.291 | |
|  | Follow-up | 508 | ± | 58 | 514 | | ± | 49 |  | 490 | | ± | 62 |  |  | |  | | |  | |
| Partition coefficient (Lambda) | Baseline | 46 | ± | 3 | 45 | | ± | 3 |  | 46 | | ± | 4 | *§* | 0.444 | | 0.045 | | | 0.45 | |
|  | Follow-up | 46 | ± | 3 | 45 | | ± | 3 |  | 46 | | ± | 4 |  |  | |  | | |  | |
| ECV | Baseline | 27.1 | ± | 2.5 | 26.9 | | ± | 2.3 |  | 27.4 | | ± | 2.6 |  | 0.006 | | 0.002 | | | 0.1 | |
|  | Follow-up | 26.2 | ± | 2.5 | 25.5 | | ± | 5.7 | *\*\** | 27.3 | | ± | 2.1 |  |  | |  | | |  | |
| LA volume (ml) | Baseline | 69 | ± | 20 | 67 | | ± | 22 |  | 70 | | ± | 18 |  | 0.788 | | 0.615 | | | 0.026 | |
|  | Follow-up | 69 | ± | 20 | 70 | | ± | 21 |  | 68 | | ± | 18 |  |  | |  | | |  | |
|  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  | | |  | |
| **CPET** |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  | | |  | |
| % of predicted VO2 max (%) | Baseline | 108 | ± | 17 | 106 | | ± | 16 |  | 113 | | ± | 18 |  | 0.204 | | 0.146 | | | 0.371 | |
|  | Follow-up | 112 | ± | 19 | 110 | | ± | 17 |  | 116 | | ± | 21 |  |  | |  | | |  | |
| Peak HR (beats/min) | Baseline | 164 | ± | 15 | 168 | | ± | 14 |  | 159 | | ± | 16 | *§§* | 0.354 | | <.0001 | | | 0.072 | |
|  | Follow-up | 165 | ± | 15 | 172 | | ± | 15 |  | 158 | | ± | 15 |  |  | |  | | |  | |
| VE max | Baseline | 95 | ± | 29 | 97 | | ± | 30 |  | 92 | | ± | 28 |  | 0.001 | | 0.21 | | | 0.922 | |
|  | Follow-up | 88 | ± | 25 | 91 | | ± | 26 | *\** | 85 | | ± | 24 | *\** |  | |  | | |  | |
| Peak O2 pulse | Baseline | 15.4 | ± | 4 | 16 | | ± | 4 |  | 14.8 | | ± | 4 |  | 0.167 | | 0.019 | | | 0.629 | |
|  | Follow-up | 15.5 | ± | 4 | 16.4 | | ± | 4 |  | 14.8 | | ± | 4 | *§* |  | |  | | |  | |
|  |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  | | |  | |
| **Biochemistry** |  |  |  |  |  | |  |  |  |  | |  |  |  |  | |  | | |  | |
| Hb (g/dl) | Baseline | 14 | ± | 13 | 14 | | ± | 12 |  | 14 | | ± | 14 |  | 0.004 | | 0.88 | | | 0.148 | |
|  | Follow-up | 14 | ± | 13 | 14 | | ± | 12 |  | 14 | | ± | 16 |  |  | |  | | |  | |
| Hct (%) | Baseline | 42 | ± | 4 | 42 | | ± | 3 |  | 42 | | ± | 4 |  | 0.002 | | 0.174 | | | 0.003 | |
|  | Follow-up | 43 | ± | 4 | 43 | | ± | 3 | *\*\*\** | 42 | | ± | 4 |  |  | |  | | |  | |
| Creatinine (mg/dl) | Baseline | 0.74 | ± | 13 | 0.74 | | ± | 13 |  | 0.75 | | ± | 12 |  | 0.002 | | 0.166 | | | 0.386 | |
|  | Follow-up | 0.7 | ± | 15 | 70 | | ± | 13 |  | 72 | | ± | 17 |  |  | |  | | |  | |

**Table 1S: Baseline and post-marathon tests results for the patients who completed the study, whole sample, U35 and O35.** Data are expressed as mean ±SD.

\* = p pre vs post <0.05; \*\* = p pre vs post <0.01; \*\*\* = p pre vs post <.0001; § = p U35 vs O35 <0.05; §§ = p U35 vs O35 <0.01; §§§ = p U35 vs O35 <.0001.

BSA: body surface area. LV: left ventricle. EDV: end diastolic volume. ESV: end systolic volume. SV: stroke volume. EF: ejection fraction. CO: cardiac output. RV: right ventricle. LA: left atrium. ECV: extra cellular volume; HR: heart rate; VE: ventilatory equivalents; Hb: hemoglobin; Hct: hematocrit.