Supplementary Table 1. EL and GLS according to AF type

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| 　 | PaAF (n=34) | PerAF (n=19) | *P*-value |
| ELsys (mW/m) | 4.15±2.31 | 3.65±2.27 | 0.451  |
| ELed (mW/m) | 8.05±3.64 | 11.31±6.41 | 0.052  |
| ELac (mW/m) | 4.70±2.66 | 3.67±2.70 | 0.182  |
| GLS (%) | 16.86±3.13 | 16.29±4.15 | 0.568  |
| Data are expressed as mean ± standard deviation |
| EL-energy loss; ELsys-EL during systole; ELed-EL during early diastole; ELac-EL during atrial contraction; GLS-global longitudinal strain; PaAF-paroxysmal AF; PerAF-persistent AF. |

Supplementary Table 2. Univariate linear analysis of EL-associated factors

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| Variables | Univariate analysis |
| ELsys | ELed | ELac |
| CE | 95%CI | *P*-value | CE | 95%CI | *P*-value | CE | 95%CI | *P*-value |
| Age | 0.054 | -0.009 to 0.118 | **0.093** | 0.012 | -0.132 to 0.156 | 0.866 | 0.096 | 0.024 to 0.19 | **0.010** |
| HR | 0.003 | -0.053 to 0.058 | 0.925 | 0.046 | -0.075 to 0.167 | 0.451 | 0.018 | -0.047 to 0.083 | 0.574 |
| BSA | -2.978 | -7.270 to 1.315 | 0.170 | 2.998 | -6.548 to 12.543 | 0.531 | -4.502 | -9.495 to 0.491 | **0.076** |
| AF duration | -0.020 | -0.144 to 0.104 | 0.753 | 0.254 | -0.008 to 0.517 | **0.057** | -0.017 | -0.164 to 0.129 | 0.812 |
| CHA2DS2-VASc score | 0.561 | 0.135 to 0.988 | **0.011** | 0.588 | -0.395 to 1.570 | 0.236 | 0.688 | 0.189 to 1.188 | **0.008** |
| LAVI | 0.018 | -0.043 to 0.079 | 0.562 | 0.116 | -0.015 to 0.247 | **0.081** | -0.012 | -0.084 to 0.060 | 0.742 |
| GLS | -0.038 | -0.221 to 0.146 | 0.680 | 0.244 | -0.153 to 0.641 | 0.223 | 0.104 | -0.110 to 0.319 | 0.333 |
| LVEDV | -0.045 | -0.077 to -0.013 | **0.007** | 0.022 | -0.053 to 0.097 | 0.557 | -0.046 | -0.084 to -0.007 | **0.020** |
| LVESV | -0.096 | -0.153 to -0.038 | **0.002** | 0.088 | -0.049 to 0.225 | 0.204 | -0.077 | -0.149 to -0.006 | **0.035** |
| LVEF | 9.811 | -0.673 to 20.295 | **0.066** | -20.991 | -43.998 to 2.017 | **0.073** | 4.099 | -8.617 to 16.815 | 0.520 |
| E | -0.020 | -0.042 to 0.003 | **0.083** | 0.092 | 0.048 to 0.136 | **<0.001** | -0.018 | -0.045 to 0.009 | 0.181 |
| A | 0.026 | 0.001 to 0.051 | **0.043** | -0.067 | -0.121 to -0.012 | **0.018** | 0.044 | 0.015 to 0.072 | **0.015** |
| E/A | -0.452 | -0.961 to 0.056 | **0.080** | 2.432 | 1.509 to 3.354 | **<0.001** | -0.651 | -1.241 to -0.062 | **0.031** |
| e' | -0.038 | -0.333 to 0.256 | 0.795 | 0.473 | -0.160 to 1.105 | 0.140 | -0.105 | -0.451 to 0.241 | 0.545 |
| E/e' | -0.128 | -0.306 to 0.050 | 0.155 | 0.363 | -0.022 to 0.748 | **0.064** | -0.067 | -0.281 to 0.146 | 0.529 |
| DT | 0.009 | -0.008 to 0.026 | 0.284 | -0.019 | -0.056 to 0.017 | 0.290 | 0.009 | -0.010 to 0.029 | 0.344 |
| BSA-body surface area; DT-deceleration time; EL-energy loss; ELsys-EL during systole; ELed-EL during early diastole; ELac-EL during atrial contraction; HR-heart rhythm; GLS-global longitudinal strain; LAVI-LA volume index; LVEDV-LV end-diastolic volume; LVESV-LV end-systolic volume; LVEF-LV ejection fraction.  |

Supplementary Table 3. Univariate linear analysis of factors associated with the difference in EL between baseline and 6 months

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| Variables | Univariate analysis |
| ELsys | ELed | ELac |
| CE | 95%CI | *P*-value | CE | 95%CI | *P*-value | CE | 95%CI | *P*-value |
| Age | 0.006 | -0.064 to 0.076 | 0.858 | -0.121 | -0.255 to 0.013 | **0.076** | -0.036 | -0.134 to 0.063 | 0.463 |
| HR | 0.058 | -0.005 to 0.121 | **0.069** | 0.153 | 0.031 to 0.274 | **0.016** | 0.076 | -0.014 to 0.166 | **0.096** |
| BSA | 0.592 | -3.617 to 4.802 | 0.777 | 10.077 | 2.344 to 17.811 | **0.012** | 4.248 | -1.557 to 10.054 | 0.146 |
| AF duration | -0.069 | -0.197 to 0.058 | 0.279 | 0.087 | -0.172 to 0.346 | 0.500 | 0.002 | -0.183 to 0.186 | 0.983 |
| CHA2DS2-VASc score | 0.197 | -0.307 to 0.702 | 0.433 | -0.495 | -1.504 to 0.514 | 0.326 | -0.238 | -0.956 to 0.480 | 0.505 |
| ACEI/ARB | 0.331 | -1.053 to 1.715 | 0.630 | -2.561 | -5.210 to 0.088 | **0.058** | -0.120 | -2.092 to 1.852 | 0.902 |
| Statins | 0.873 | -0.483 to 2.228 | 0.200 | -0.234 | -3.024 to 2.556 | 0.866 | -1.241 | -3.167 to 0.684 | 0.199 |
| LAVI | -0.018 | -0.081 to 0.045 | 0.574 | 0.010 | -0.117 to 0.137 | 0.875 | -0.086 | -0.171 to -0.001 | **0.047** |
| GLS | 0.022 | -0.155 to 0.200 | 0.800 | 0.083 | -0.273 to 0.438 | 0.640 | 0.085 | -0.165 to 0.336 | 0.493 |
| LVEDV | -0.032 | -0.066 to 0.003 | **0.071** | 0.045 | -0.026 to 0.116 | 0.204 | 0.000 | -0.052 to 0.051 | 0.993 |
| LVESV | -0.052 | -0.117 to 0.014 | 0.118 | 0.107 | -0.024 to 0.239 | 0.105 | 0.011 | -0.085 to 0.108 | 0.811 |
| LVEF | 1.778 | -11.774 to 15.331 | 0.792 | -16.744 | -43.403 to 9.915 | 0.211 | -5.397 | -24.577 to 13.783 | 0.571 |
| E | -0.023 | -0.047 to 0.001 | **0.061** | 0.049 | 0.001 to 0.097 | **0.046** | 0.009 | -0.027 to 0.044 | 0.631 |
| A | 0.007 | -0.023 to 0.036 | 0.646 | -0.075 | -0.129 to -0.022 | **0.007** | -0.010 | -0.052 to 0.032 | 0.636 |
| E/A | -0.637 | -1.365 to 0.092 | **0.085** | 2.337 | 1.036 to 3.638 | **0.001** | 0.329 | -0.745 to 1.403 | 0.538 |
| e' | 0.100 | -0.190 to 0.389 | 0.488 | 0.653 | 0.111 to 1.194 | **0.020** | 0.512 | 0.138 to 0.887 | **0.009** |
| E/e' | -0.194 | -0.379 to -0.008 | **0.041** | 0.016 | -0.381 to 0.412 | 0.937 | -0.171 | -0.445 to 0.103 | 0.213 |
| DT | 0.006 | -0.014 to 0.025 | 0.566 | -0.020 | -0.059 to 0.019 | 0.301 | 0.000 | -0.028 to 0.027 | 0.977 |
| ACEI-angiotensin converting enzyme inhibitor; ARB-angiotensin II receptor blocker; BSA-body surface area; CE-coefficient; DT-deceleration time; EL-energy loss; ELsys-EL during systole; ELed-EL during early diastole; ELac-EL during atrial contraction; HR-heart rhythm; GLS-global longitudinal strain; LAVI-LA volume index; LVEDV-LV end-diastolic volume; LVESV-LV end-systolic volume; LVEF-LV ejection fraction;  |