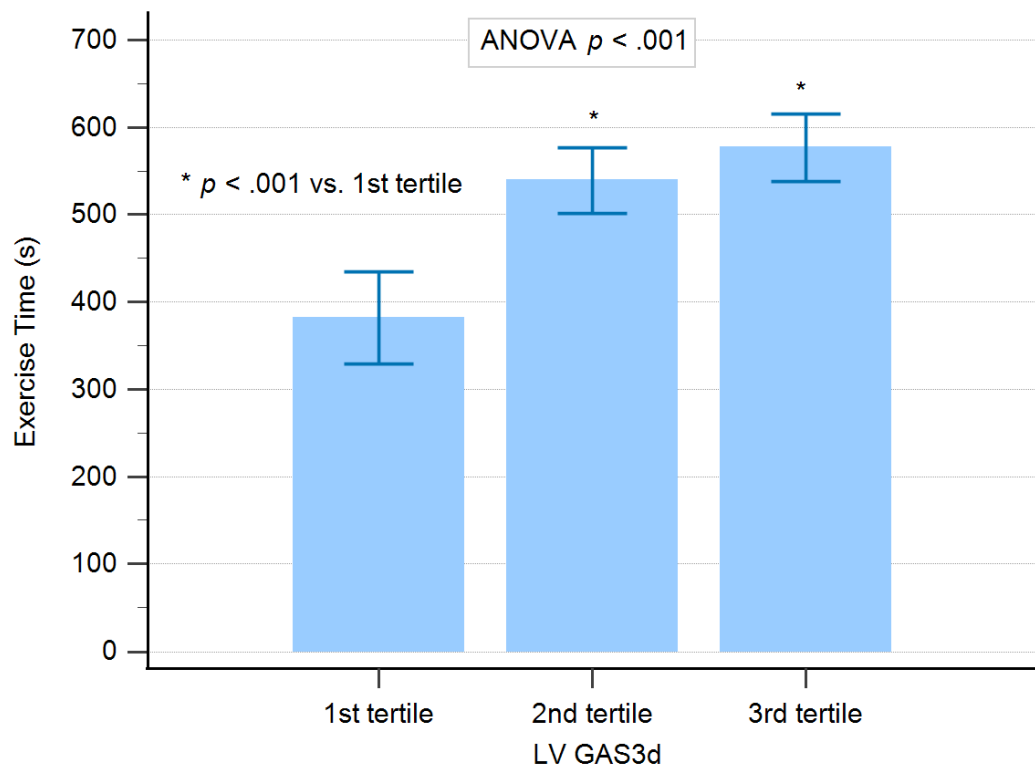


Supplementary Figure 1 Graph showing there is a significant linear trend for exercise time among tertiles of left ventricular global area strain derived from 3D speckle-tracking echocardiography (LV GAS3d)



Supplementary Figure 1

Supplementary Table 1 Baseline characteristics by tertile of LV GAS3d

| Variable | 1st tertile | 2nd tertile | 3rd tertile | <i>P</i> |
|--------------------------|---------------|----------------|---------------|----------|
| | > -22.31% | -29.0%~-22.31% | < -29.0% | |
| Exercise time (s) | 395.8 ± 146.8 | 432.0 ± 158.8 | 545.2 ± 119.3 | <.001* |
| Age (y) | 59.0 ± 10.4 | 49.4 ± 10.6 | 48.3 ± 11.3 | <.001* |
| SBP (mmHg) | 141.7 ± 21.0 | 133.4 ± 18.2 | 125.6 ± 17.7 | .005* |
| DBP (mmHg) | 85.8 ± 11.4 | 85.0 ± 12.6 | 78.1 ± 12.0 | .023* |
| BMI (kg/m ²) | 23.1 ± 3.2 | 24.6 ± 2.8 | 26.0 ± 3.3 | .002* |
| LVMl (g/m ²) | 108.9 ± 44.1 | 85.9 ± 23.5 | 85.5 ± 27.1 | .006* |
| E/e' | 8.8 ± 3.3 | 7.86 ± 2.3 | 7.38 ± 2.9 | .129 |
| LVEF, M-mode (%) | 69.6 ± 8.0 | 72.5 ± 7.5 | 70.5 ± 6.0 | .276 |
| LVEF, 2D (%) | 63.1 ± 8.1 | 67.7 ± 9.5 | 67.6 ± 9.7 | .317 |
| LVEF, 3D (%) | 60.3 ± 6.9 | 60.0 ± 5.8 | 62.2 ± 5.7 | .311 |

**P* < .05, statistically significant; S, second

Supplementary Table 2 Association of clinical and echocardiographic parameters on exercise time and METs in individuals without positive treadmill exercise test

| Variable | Exercise time | | MET | |
|-------------------|---------------------|-----------------------|---------------------|-----------------------|
| | Univariate analysis | Multivariate analysis | Univariate analysis | Multivariate analysis |
| | <i>P</i> | <i>P</i> | <i>P</i> | <i>P</i> |
| Age | <.001* | .224 | <.001* | .147 |
| SBP | .055 | | .066 | |
| DBP | .075 | | .083 | |
| Heart rate | .969 | | .352 | |
| BMI | .016* | .903 | .017* | .887 |
| E/e' | <.001* | .342 | .002* | .502 |
| LVEF, M-mode | .322 | | .309 | |
| LVEF, 2D | .504 | | .623 | |
| LVEF, 3D | .774 | | .786 | |
| LVMi | .124 | | .158 | |
| GLS2d | .775 | | .823 | |
| GLS3d | .312 | | .468 | |
| GCS3d | .819 | | .886 | |
| GAS3d | <.001* | <.001* | <.001* | .001* |
| GRS3d | .173 | | .177 | |
| Gender | .012* | .078 | .011* | .081 |
| Hypertension | .002* | .423 | .004* | .446 |
| Diabetes mellitus | .456 | | .541 | |
| Hyperlipidemia | .906 | | .824 | |
| Smoking | .005* | .112 | .004* | .080 |

**P* < .05, statistically significant; MET = Metabolic equivalent of task

Supplementary Table 3 Comparison of clinical and echocardiographic characteristics between preserved (MET ≥ 8) and impaired exercise capacity (MET < 8) in individuals without positive treadmill exercise test

| Variable | Univariate analysis | | | Multivariate analysis | | | |
|--------------------------|---------------------|------------------|----------|-----------------------|----------|------------------|----------|
| | METs ≥ 8 | METs < 8 | <i>P</i> | Model 1 | | Model 2 | |
| | | | | OR (95% CI) | <i>P</i> | OR (95% CI) | <i>P</i> |
| Patient number (n) | 60 | 12 | | | | | |
| Age (y) | 49.8 \pm 11.3 | 61.3 \pm 11.0 | .002* | 1.08 (0.99-1.18) | .070 | 1.06 (0.96-1.17) | .281 |
| SBP (mmHg) | 129.0 \pm 20.3 | 139.9 \pm 12.3 | .077 | | | | |
| DBP (mmHg) | 82.0 \pm 13.2 | 87.3 \pm 9.82 | .195 | | | | |
| Heart rate (beats/min) | 81.1 \pm 12.3 | 77.5 \pm 10.1 | .352 | | | | |
| BMI (kg/m ²) | 24.0 \pm 2.6 | 26.4 \pm 4.2 | .012* | 1.24 (0.94-1.63) | .130 | 1.03 (0.71-1.50) | .868 |
| E/e' | 7.4 \pm 2.4 | 10.2 \pm 2.9 | .001* | 1.10 (0.82-1.49) | .529 | 1.05 (0.70-1.59) | .806 |
| LVMI (g/m ²) | 87.6 \pm 30.4 | 101.7 \pm 44.9 | .201 | | | | |
| LVEF (%), M-mode | 71.4 \pm 7.1 | 68.3 \pm 7.9 | .177 | | | | |
| LVEF (%), 2D | 66.3 \pm 9.7 | 67.0 \pm 9.0 | .797 | | | | |
| LVEF (%), 3D | 61.1 \pm 5.9 | 59.5 \pm 5.1 | .380 | | | | |
| GLS2d (%) | -19.4 \pm 2.6 | -18.4 \pm 3.5 | .251 | | | | |
| GLS3d (%) | -16.7 \pm 3.6 | -13.8 \pm 5.0 | .019* | 1.09 (0.89-1.32) | .407 | | |
| GCS3d (%) | -18.3 \pm 4.5 | -16.5 \pm 6.2 | .250 | | | | |
| GAS3d (%) | -27.7 \pm 6.0 | -14.8 \pm 9.9 | <.001* | | | 1.20 (1.03-1.39) | .018* |
| GRS3d (%) | 43.2 \pm 17.0 | 40.1 \pm 14.8 | .561 | | | | |
| Male (n, %) | 39 (65.0%) | 5 (41.7%) | .133 | | | | |

| | | | | | | | |
|--------------------------|------------|-----------|--------|------------------|------|------------------|------|
| Hypertension (n, %) | 7 (11.7%) | 7 (58.3%) | <.001* | 4.14 (0.81-21.2) | .087 | 2.67 (0.37-19.5) | .333 |
| Diabetes mellitus (n, %) | 7 (11.7%) | 2 (16.7%) | .635 | | | | |
| Hyperlipidemia (n, %) | 23 (38.3%) | 3 (25.0%) | .383 | | | | |
| Smoking (n, %) | 10 (16.7%) | 0 (0%) | .130 | | | | |

OR, odds ratio; CI, confidence interval; *P < .05, statistically significant