**Table S1**: Comparison of echocardiographic parameters between young Japanese rugby athletes and a general Japanese population in their twenties

| | Young Japanese rugby athletes (n=114) | Reference data from Japanese participants in their twenties * |
|---|---|---|
| LVEDD (mm) | 53.0±3.3 | 49±4 |
| LVEDD/BSA (mm/m$^2$) | 26.6±2.0 | 27±2 |
| LVESD (mm) | 33.2±3.2 | 31±4 |
| LVESD/BSA (mm/m$^2$) | 16.7±1.8 | 18±2 |
| IVSth (mm) | 10.3±0.8 | 8±1 |
| PWth (mm) | 10.1±0.9 | 8±1 |
| RWT | 0.38±0.04 | NA |
| LVEDV (ml) | 150.2±26.4 | 102±22 |
| LVEDV/BSA (ml/m$^2$) | 75.0±11.4 | 58±11 |
| LVESV (ml) | 53.9±10.8 | 38±11 |
| LVESV/BSA (ml/m$^2$) | 27.0±5.0 | 21±6 |
| LVM (g) | 206.7±34.9 | 130±26 |
| LVM/BSA (g/m$^2$) | 102.4±14.5 | 74±14 |
| LAD (mm) | 36.5±3.9 | 31±4 |
| RAD (mm) | 41.3±4.9 | 37±5 |
| LAV/BSA (ml/m$^2$) | 28.4±6.4 | 24±8 |
| AOD (mm) | 30.9±2.6 | 29±3 |
| AOD/BSA (mm/m$^2$) | 15.5±1.6 | 17±2 |
| LVEF (%) | 64.4±4.3 | NA |
| E/A | 2.3±0.5 | 2.0±0.5 |
| E/e' | 6.3±1.3 | 4.8±1.5 |
| GLS (%) | -17.8±1.4 | NA |

AOD, aortic root dimension; BSA, body surface area; GLS, global longitudinal strain; IVSth,

thickness of interventricular septum; LAD, left atrial dimension; LAV, left atrial volume; LVEDD, left ventricular (LV) end-diastolic dimension; LVEDV, end-diastolic volume; LVEF, LV ejection fraction; LVESD, LV end-systolic dimension; LVESV, end-systolic volume; LVM, LV mass; PWth, posterior wall thickness; RAD, right atrial dimension; RWT, relative wall thickness. *, data were derived from the JAMP study (Ref. 18). NA, data was not available.