Supplemental table 1. Baseline characteristics and cardiovascular disease events [a] of the participants with baPWV valuess >= 1800 cm/sec at baseline survey in 2011, 2012 (N = 374).

Baseline characteristics (n = 374)	
Age (years)	75.9 ± 8.4
Height (cm)	147.4 ± 6.4
Weight (kg)	49.6 ± 8.5
BMI (kg/m^2)	22.8 ± 3.6
aBMD at the spine (g/cm^2)	0.821 ± 0.160
aBMD at the femoral neck (g/cm^2)	0.582 ± 0.111
aBMD at the total hip (g/cm^2)	0.698 ± 0.138
BMC at whole body (g)	1278.4 ± 288.7
Osteoporosis, n (%)	171 (45.7%)
Systolic blood pressure (mmHg)	144.3 ± 19.8
Diastolic blood pressure (mmHg)	77.1 ± 10.4
Total cholesterol (mg/dL)	209.6 ± 34.5
Triglyceride (mg/dL)	110.6 ± 61.2
HDL-cholesterol (mg/dL)	60.2 ± 15.3
LDL-cholesterol (mg/dL)	122.4 ± 30.3
Fasting blood glucose (mg/dL)	96.0 ± 17.8
HbA1c (%)	5.3 ± 0.6
Hypertension, n (%)	317 (84.8%)
Hyperlipidemia, n (%)	236 (63.1%)
Diabetes mellitus n (%)	46 (12.3%)
Medication for hypertension, n (%)	224 (59.9%)
Medication for hyperlipidaemia, n (%)	126 (33.7%)
Medication for diabetes mellitus, n (%)	36 (9.6%)
Current smokers, n (%)	4 (1.1%)
Habitual drinkers, n (%)	19 (5.1%)
History of fragility fractures, n (%)	28 (7.5%)
Histoy of cardiovascular diseases [a], n (%)	35 (9.4%)
eGFR (ml/min/1.73m^2)	70.6 ± 16.9
Osteocalcin [b] (nmol/L)	7.51
ucOC [b] (nmol/L)	4.81
BAP [b] (ng/mL)	15.38
Sclerostin [b] (pmol/L)	36.18
baPWV (cm/sec) [c]	2105 (1954, 2369)
During follow-up period (n=242)	
CVD events [a], n (%)	10 (4.1%)
MI events [a], n (%)	3 (1.2%)
stroke events [a], n (%)	5 (2.1%)
angina events [a], n (%)	6 (2.5%)

baPWV: brachial-ankle pulse wave velocity n: number of participants BMI: body mass index   aBMD: areal bone mineral density   eGFR: estimated glemerular filtration rate ucOC: undercarboxylated osteocalcin   BAP: bone-specific alkaline phosphatase baPWV: brachial-ankle pulse wave velocity

The values denote mean ± SD or prevalence rate (%).

[a] The informations of cardiovascular events were obtained by ansers to a quetionnaire.

[b] The values indicate the geometric means.

[c] The values indicate the median and interquartile ranges in parentheses.

Supplemental table 2 . Baseline characteristics of the participants with no history of cardiovascular disease, categorized according to serum sclerostin level, of the Japanese Population-based Osteoporosis Cohort Study (N = 538)

	Total (N = 538)	Low tertile	Middle tertile	High tertile	*P* -value [b] (Unadjusted)	*P* -value (Adjusted for age)	*P* -value (Adjusted for age and BMI)
Range of sclerostin values (pmol/L)		8.12-32.49	32.50-44.78	44.79-109.22			
Age (years)	62.2 ± 8.0	64.1 ± 7.4	62.1 ± 8.0	60.3 ± 8.1	<0.001	-	-
Height (cm)	153.5 ± 5.6	152.6 ± 5.6	153.9 ± 5.7	154.0 ± 5.4	0.015	0.716	-
Weight (kg)	53.5 ± 8.6	52.2 ± 8.3	54.0 ± 8.5	54.4 ± 8.8	0.015	0.036	-
BMI (kg/m^2)	22.7 ± 3.5	22.4 ± 3.2	22.8 ± 3.3	23.0 ± 3.9	0.110	0.021	-
aBMD at the spine (g/cm^2)	0.896 ± 0.154	0.832 ± 0.150	0.891 ± 0.135	0.964 ± 0.148	<0.001	<0.001	<0.001
aBMD at the femoral neck (g/cm^2)	0.663 ± 0.106	0.626 ± 0.100	0.664 ± 0.098	0.698 ± 0.109	<0.001	<0.001	<0.001
aBMD at the total hip (g/cm^2)	0.785 ± 0.116	0.738 ± 0.107	0.787 ± 0.106	0.830 ± 0.116	<0.001	<0.001	<0.001
BMC at whole body (g)	1550.2 ± 282.5	1421.4 ± 254.9	1559.3 ± 262.5	1670.0 ± 274.2	<0.001	<0.001	<0.001
Osteoporosis, n (%)	127 (23.6%)	74 (41.3%)	34 (18.9%)	19 (10.6%)	<0.001	<0.001	<0.001
Systolic blood pressure (mmHg)	126.3 ± 16.0	126.7 ± 14.5	125.0 ± 15.9	127.1 ± 17.4	0.813	-	-
Diastolic blood pressure (mmHg)	72.6 ± 9.4	72.3 ± 9.0	72.4 ± 9.4	73.1 ± 9.9	0.409	-	-
Total cholesterol (mg/dL)	214.5 ± 31.4	213.7 ± 30.3	216.8 ± 32.2	212.8 ± 31.8	0.787	-	-
Triglyceride (mg/dL)	103.5 ± 78.5	92.3 ± 49.3	112.4 ± 97.7	105.7 ± 79.8	0.105	-	-
HDL-cholesterol (mg/dL)	64.4 ± 15.7	65.7 ± 15.1	64.4 ± 16.3	63.0 ± 15.8	0.104	-	-
LDL-cholesterol (mg/dL)	125.4 ± 28.3	125.1 ± 27.4	126.0 ± 29.0	125.3 ± 28.6	0.944	-	-
Fasting blood glucose (mg/dL)	90.7 ± 17.9	91.3 ± 14.0	88.9 ± 9.8	91.9 ± 25.9	0.746	-	-
HbA1c (%)	5.6 ± 0.6	5.5 ± 0.4	5.6 ± 0.5	5.6 ± 0.7	0.274	-	-
Hypertension, n (%)	192 (35.7%)	70 (39.1%)	56 (31.1%)	66 (36.9%)	0.659	-	-
Hyperlipidemia, n (%)	272 (50.6%)	89 (49.7%)	98 (54.4%)	85 (47.5%)	0.673	-	-
Diabetes mellitus n (%)	31 (5.8%)	9 (5.0%)	7 (3.9%)	15 (8.4%)	0.174	-	-
Medication for hypertension, n (%)	123 (22.9%)	47 (26.3%)	33 (18.3%)	43 (24.0%)	0.615	-	-
Medication for hyperlipidaemia, n (%)	110 (20.4%)	39 (21.8%)	43 (23.9%)	28 (15.6%)	0.150	-	-
Medication for diabetes mellitus, n (%)	21 (3.9%)	4 (2.2%)	7 (3.9%)	10 (5.6%)	0.102	-	-
Current smokers, n (%)	20 (3.7%)	7 (3.9%)	6 (3.3%)	7 (3.9%)	0.999	-	-
Habitual drinkers (≥6 times/week), n (%)	48 (8.9%)	17 (9.5%)	13 (7.2%)	18 (10.1%)	0.853	-	-
History of fragility fractures, n (%)	42 (7.8%)	15 (8.4%)	16 (8.9%)	11 (6.1%)	0.432	-	-
eGFR (ml/min/1.73m^2)	78.6 ± 13.7	80.0 ± 13.2	78.1 ± 12.6	77.6 ± 15.2	0.091	-	-
Osteocalcin [a] (nmol/L)	7.54	7.77	7.60	7.24	0.032	0.022	-
ucOC [a] (nmol/L)	5.10	5.36	5.34	4.62	0.015	0.002	-
BAP [a] (ng/mL)	14.85	15.55	14.67	14.37	0.025	0.052	-
baPWV (cm/sec) [c]	1451 (1306, 1623)	1481 (1347, 1622)	1447 (1301, 1602)	1422 (1279, 1637)	0.016	0.813	-

n: number of participants   BMI: body mass index   aBMD: areal bone mineral density eGFR: estimated glemerular filtration rate   ucOC: undercarboxylated osteocalcin   BAP: bone-specific alkaline phosphatase baPWV: brachial-ankle pulse wave velocity

 The values denote the mean ± SD or prevalence rate (%).

[a] The values indicate the geometric means.

[b] The values indicate the median and interquartile ranges in parentheses.

[c] The *P* -value was obtained by test for linearity or Cochoran-Armitage trend test.

Supplemental table 3 . Baseline characteristics of the participants without past history of cardiovascular diseases categoried by developed or not developed increased arterial stiffness [a] during the follow-up period of the Japanese Population-based Osteoporosis Cohort Study (N = 538).

	Increased arterial stiffness [a]		
	Developed (n = 89)	Not developed (n = 449)	P -value
Age (years)	67.6 ± 7.4	61.1 ± 7.6	<0.001
Height (cm)	151.9 ± 6.1	153.8 ± 5.5	0.003
Weight (kg)	52.4 ± 7.7	53.7 ± 8.7	0.196
BMI (kg/m^2)	22.8 ± 3.4	22.7 ± 3.5	0.868
aBMD at the spine (g/cm^2)	0.853 ± 0.148	0.904 ± 0.154	0.004
aBMD at the femoral neck (g/cm^2)	0.625 ± 0.094	0.670 ± 0.107	<0.001
aBMD at the total hip (g/cm^2)	0.746 ± 0.113	0.793 ± 0.115	<0.001
BMC at whole body (g)	1438.9 ± 260.3	1572.3 ± 281.7	<0.001
Osteoporosis, n (%)	33 (37.1%)	94 (20.9%)	0.002
Systolic blood pressure (mmHg)	133.0 ± 15.4	124.9 ± 15.8	<0.001
Diastolic blood pressure (mmHg)	75.3 ± 9.2	72.1 ± 9.4	0.003
Total cholesterol (mg/dL)	214.7 ± 30.2	214.4 ± 31.7	0.947
Triglyceride (mg/dL)	106.3 ± 75.3	102.9 ± 79.2	0.708
HDL-cholesterol (mg/dL)	63.2 ± 15.1	64.6 ± 15.8	0.434
LDL-cholesterol (mg/dL)	124.3 ± 26.9	125.7 ± 28.6	0.678
Fasting blood glucose (mg/dL)	92.7 ± 20.5	90.3 ± 17.4	0.252
HbA1c (%)	5.7 ± 0.8	5.5 ± 0.5	0.071
Hypertension, n (%)	48 (53.9%)	144 (32.1%)	<0.001
Hyperlipidemia, n (%)	51 (57.3%)	221(49.2%)	0.166
Diabetes mellitus n (%)	10 (11.2%)	21 (4.7%)	0.023
Medication for hypertension, n (%)	33 (37.1%)	90 (20.0%)	0.001
Medication for hyperlipidaemia, n (%)	27 (30.3%)	83 (18.5%)	0.014
Medication for diabetes mellitus, n (%)	7 (7.9%)	14 (3.1%)	0.064
Current smokers, n (%)	2 (2.2%)	18 (4.0%)	0.553
Habitual drinkers, n (%)	8 (9.0%)	40 (8.9%)	0.999
History of fragility fractures, n (%)	11 (12.4%)	31 (6.9%)	0.086
eGFR (ml/min/1.73m^2)	75.2 ± 14.2	79.2 ± 13.6	0.012
Osteocalcin [b] (nmol/L)	7.59	7.53	0.816
ucOC [b] (nmol/L)	4.77	5.16	0.247
BAP [b] (ng/mL)	14.84	14.85	0.987
Sclerostin [b] (pmol/L)	34.43	37.63	0.043
baPWV (cm/sec) [c]	1686 (1620, 1759)	1407 (1280, 1551)	<0.001

n: number of participants   BMI: body mass index   aBMD: areal bone mineral density   eGFR: estimated glemerular filtration rate   ucOC: undercarboxylated osteocalcin   BAP: bone-specific alkaline phosphatase   baPWV: brachial-ankle pulse wave velocity

The values denote mean ± SD or prevalence rate (%).

[a] Increased arterial stiffness was defined as baPWV values equal or more than 1800 cm/sec at the follow-up survey.

[b] The values indicate the geometric means.

[c] The values indicate the median and interquartile ranges in parentheses.