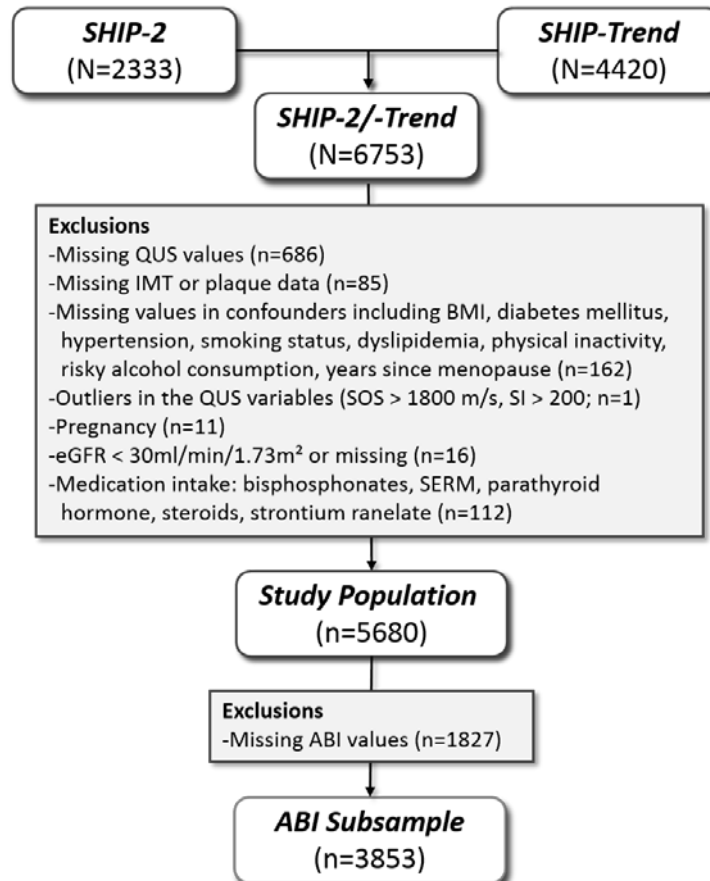


## Supplemental Material

### Supplemental Fig 1. Selection of the study populations.

ABI, ankle-brachial-index; BMI, body mass index; eGFR, estimated glomerular filtration rate; IMT, intima media thickness; QUS, quantitative ultrasound; SERM, selective estrogen receptor modulators; SHIP, Study of Health in Pomerania; SI, stiffness index; SOS, speed of sound



**Supplemental Tab 1.** Characteristics of the ABI study population

| Characteristics              | Risk for osteoporotic fractures - Men |                  |                  | Risk for osteoporotic fractures - Women |                  |                  |
|------------------------------|---------------------------------------|------------------|------------------|---|------------------|------------------|
|                              | Low (n=2068)                          | Medium (n=780)   | High (n=131)     | Low (n=1991)                            | Medium (n=1029)  | High (n=191)     |
| Age, years                   | 52 (41-64)                            | 57 (45-68)       | 61 (50-70)       | 48 (39-58)                              | 59 (49-68)       | 65 (59-73)       |
| BMI, kg/m <sup>2</sup>       | 28.2 (25.8-31.1)                      | 28.1 (25.6-30.5) | 27.8 (25.1-30.7) | 26.6 (23.4-30.8)                        | 26.6 (23.7-30.3) | 26.6 (23.6-29.3) |
| Current Smoker, %            | 25.3                                  | 29.3             | 42.6             | 26.3                                    | 21.3             | 17.0             |
| Physically inactive, %       | 47.1                                  | 55.3             | 67.4             | 48.4                                    | 46.0             | 43.8             |
| Risky alcohol consumption, % | 13.2                                  | 13.7             | 21.8             | 3.2                                     | 2.4              | 1.0              |
| Diabetes mellitus, %         | 12.7                                  | 16.9             | 13.4             | 10.1                                    | 13.5             | 13.6             |
| Dyslipidemia, %              | 67.4                                  | 71.2             | 70.2             | 49.2                                    | 60.3             | 66.5             |
| Hypertension, %              | 72.2                                  | 74.8             | 78.8             | 45.0                                    | 60.4             | 68.6             |
| BUA, dB/MHz                  | 123 (116-131)                         | 105 (101-109)    | 94 (90-97)       | 116 (109-125)                           | 99 (94-103)      | 86 (83-91)       |
| SOS, m/s                     | 1576 (1560-1598)                      | 1532 (1521-1543) | 1500 (1489-1509) | 1576 (1561-1596)                        | 1538 (1528-1548) | 1509 (1502-1518) |
| Stiffness Index              | 103 (95-114)                          | 80 (75-84)       | 63 (60-66)       | 98 (91-110)                             | 77 (73-82)       | 62 (58-64)       |
| Osteoporosis, %*             | 1.4                                   | 2.3              | 11.4             | 2.3                                     | 8.7              | 22.5             |
| ABI                          | 1.12 (1.07-1.19)                      | 1.13 (1.07-1.19) | 1.12 (1.04-1.21) | 1.11 (1.07-1.18)                        | 1.13 (1.08-1.19) | 1.13 (1.08-1.18) |
| ABI ≤0.9, %                  | 2.62                                  | 3.35             | 2.91             | 0.55                                    | 0.37             | 2.76             |

ABI, ankle-brachial-index; BMI, body mass index; BUA, broadband-ultrasound-attenuation; SOS, speed of sound

Data are median (1<sup>st</sup>-3<sup>rd</sup> quartile) or proportions.

The data were weighted for non-participation in the ABI examination.

\*self-reported osteoporosis: men – 60 missings, women 72 missings

**Supplemental Tab 2.** Associations between a decrease in QUS-based parameters and ABI

| Exposure             | Adjustment     | Men                  |        |      | Women                |        |       |
|----------------------|----------------|----------------------|--------|------|----------------------|--------|-------|
|                      |                | $\beta$ -coefficient | SE     | p    | $\beta$ -coefficient | SE     | p     |
| BUA                  | Unadjusted     | -0.0015              | 0.0027 | 0.58 | 0.0066               | 0.0022 | <0.01 |
| SOS                  |                | -0.0003              | 0.0027 | 0.91 | 0.0068               | 0.0022 | <0.01 |
| Stiffness Index      |                | -0.0009              | 0.0027 | 0.73 | 0.0073               | 0.0022 | <0.01 |
| Risk: Medium vs. Low |                | 0.0020               | 0.0062 | 0.75 | 0.0166               | 0.0048 | <0.01 |
| Risk: High vs. Low   |                | -0.0061              | 0.0133 | 0.65 | 0.0019               | 0.0095 | 0.84  |
| BUA                  | Fully adjusted | 0.0015               | 0.0027 | 0.57 | 0.0026               | 0.0024 | 0.28  |
| SOS                  |                | 0.0015               | 0.0027 | 0.59 | 0.0040               | 0.0024 | 0.10  |
| Stiffness Index      |                | 0.0017               | 0.0028 | 0.54 | 0.0038               | 0.0025 | 0.13  |
| Risk: Medium vs. Low |                | 0.0050               | 0.0062 | 0.42 | 0.0099               | 0.0051 | 0.05  |
| Risk: High vs. Low   |                | 0.0021               | 0.0133 | 0.87 | -0.0097              | 0.0100 | 0.33  |

ABI; ankle-brachial-index; BUA, broadband-ultrasound-attenuation; QUS, quantitative ultrasound; SE, standard error; SOS, speed of sound

$\beta$ -coefficients, standard errors (SE) and p-values from linear regression models. For BUA, SOS and Stiffness Index a one standard deviation decrease was modelled. One standard deviation of BUA for men and women: 13.6 and 14.7 dB/MHz; SOS: 37.4 and 33.5 m/S; stiffness index: 18.0 and 17.6

Full adjustment for age, body mass index, smoking status, physical inactivity, risky alcohol consumption, diabetes mellitus, dyslipidemia, hypertension and in women additionally for intake of estrogens (oral contraceptives or hormone replacement therapy) and years since menopause.

The data were weighted for nonparticipation in the ABI examination.