

# V. Bone Analysis

## 1) Bone mineral weight and density

### [1. Dual energy X-ray absorptiometry \(DXA\)](#)

Whole body bone mineral weight  
Whole body bone mineral density  
Head bone mineral weight  
Head bone mineral density  
Left arm bone mineral weight  
Left arm bone mineral density  
Right arm bone mineral weight  
Right arm bone mineral density  
Left rib cage bone mineral weight  
Left rib cage bone mineral density  
Right rib cage bone mineral weight  
Right rib cage bone mineral density  
Thoracic spine bone mineral weight  
Thoracic spine bone mineral density  
Lumbar spine bone mineral weight  
Lumbar bone mineral density  
Pelvic bone mineral weight  
Pelvic bone mineral density  
Left leg bone mineral weight  
Left leg bone mineral density  
Right leg bone mineral weight  
Right leg bone mineral density  
Lumbar spine 2-4 bone mineral density  
Right and left femoral neck bone mineral density  
Right and left trochanter region bone mineral density  
Right and left Ward's triangle bone mineral density

### [2. Peripheral quantitative computed tomography \(pQCT\) \(Fig.1\)](#)

D100: Cortical and trabecular bone density of ultradistal radius.  
D50: Trabecular bone density over the core volume of ultradistal radius.  
P100: Cortical bone density of proxima

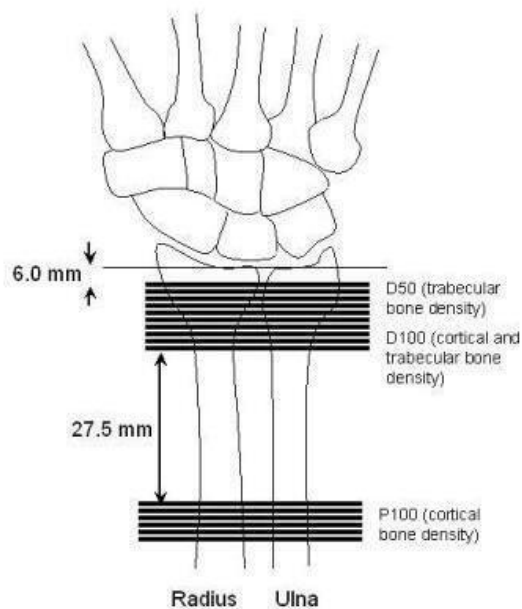


Fig. 1 Measurements of bone mineral density with pQCT (DENSISCAN 1000)

## Bone mineral density

### 1. Dual energy X-ray absorptiometry (DXA) (Hologic QDR-4500)

#### Whole body bone mineral weight (g)

|        | 40-49yr |       |     | 50-59yr |       |     | 60-69yr |       |     | 70-79yr |       |     | Total  |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|--------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean   | SD    | N    |
| Male   | 2331.5  | 341.1 | 277 | 2290.5  | 300.1 | 265 | 2087.8  | 490.1 | 265 | 2038.4  | 339.3 | 275 | 2187.3 | 394.4 | 1082 |
| Female | 1958.8  | 312.2 | 266 | 1755.4  | 276.8 | 265 | 1491.9  | 249.6 | 274 | 1338.1  | 232.0 | 264 | 1635.4 | 359.2 | 1069 |
| Total  | 2148.9  | 376.4 | 543 | 2023.0  | 393.5 | 530 | 1784.9  | 488.2 | 539 | 1695.4  | 455.8 | 539 | 1913.0 | 467.4 | 2151 |

#### Whole body bone mineral density (g/cm<sup>2</sup>)

|        | 40-49yr |       |     | 50-59yr |       |     | 60-69yr |       |     | 70-79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 4.834   | 44.40 | 277 | 1.106   | 0.092 | 265 | 21.825  | 101.3 | 265 | 2.852   | 29.90 | 275 | 7.578 | 57.47 | 1082 |
| Female | 6.977   | 55.35 | 266 | 2.447   | 23.39 | 265 | 3.415   | 29.36 | 274 | 0.854   | 0.081 | 264 | 3.429 | 33.48 | 1069 |
| Total  | 5.884   | 50.03 | 543 | 1.777   | 16.54 | 530 | 12.466  | 74.54 | 539 | 1.873   | 21.36 | 539 | 5.516 | 47.14 | 2151 |

#### Head bone mineral weight (g)

|        | 40-49yr |       |     | 50-59yr |      |     | 60-69yr |      |     | 70-79yr |      |     | Total |       |      |
|--------|---------|-------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD    | N    |
| Male   | 508.7   | 80.2  | 277 | 499.9   | 79.9 | 265 | 467.0   | 98.3 | 265 | 458.4   | 88.5 | 275 | 483.5 | 89.5  | 1082 |
| Female | 543.6   | 101.0 | 266 | 482.7   | 98.3 | 265 | 396.3   | 78.3 | 274 | 364.4   | 75.2 | 264 | 446.5 | 113.4 | 1069 |
| Total  | 525.8   | 92.6  | 543 | 491.3   | 89.9 | 530 | 431.1   | 95.4 | 539 | 412.3   | 94.7 | 539 | 465.1 | 103.7 | 2151 |

Head bone mineral density (g/cm<sup>2</sup>)

|        | 40-49yr |       |     | 50-59yr |       |     | 60-69yr |       |     | 70-79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 3.292   | 14.67 | 277 | 2.041   | 0.279 | 265 | 8.598   | 32.15 | 265 | 2.520   | 9.509 | 275 | 4.089 | 18.36 | 1082 |
| Female | 3.587   | 11.77 | 266 | 2.517   | 6.640 | 265 | 2.387   | 7.134 | 274 | 1.681   | 0.291 | 264 | 2.543 | 7.666 | 1069 |
| Total  | 3.437   | 13.32 | 543 | 2.279   | 4.701 | 530 | 5.441   | 23.30 | 539 | 2.109   | 6.802 | 539 | 3.321 | 14.12 | 2151 |

Left arm bone mineral weight (g)

|        | 40-49yr |      |     | 50-59yr |      |     | 60-69yr |      |     | 70-79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Male   | 172.3   | 22.5 | 277 | 171.1   | 25.1 | 265 | 164.6   | 26.3 | 265 | 154.9   | 26.2 | 275 | 165.7 | 26.0 | 1082 |
| Female | 124.0   | 17.1 | 266 | 111.3   | 17.9 | 265 | 96.3    | 16.6 | 274 | 84.6    | 17.2 | 264 | 104.0 | 22.7 | 1069 |
| Total  | 148.6   | 31.4 | 543 | 141.2   | 37.0 | 530 | 129.8   | 40.6 | 539 | 120.5   | 41.6 | 539 | 135.0 | 39.3 | 2151 |

Left arm bone mineral density (g/cm<sup>2</sup>)

|        | 40-49yr |       |     | 50-59yr |       |     | 60-69yr |       |     | 70-79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 2.103   | 15.76 | 277 | 0.777   | 0.059 | 265 | 7.813   | 34.26 | 265 | 1.361   | 10.30 | 275 | 2.988 | 19.62 | 1082 |
| Female | 1.997   | 12.53 | 266 | 1.067   | 7.010 | 265 | 1.226   | 7.517 | 274 | 0.559   | 0.049 | 264 | 1.214 | 8.114 | 1069 |
| Total  | 2.051   | 14.26 | 543 | 0.922   | 4.954 | 530 | 4.465   | 24.81 | 539 | 0.968   | 7.359 | 539 | 2.106 | 15.06 | 2151 |

Right arm bone mineral weight (g)

|        | 40-49yr |      |     | 50-59yr |      |     | 60-69yr |      |     | 70-79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Male   | 181.3   | 23.8 | 277 | 178.6   | 26.3 | 265 | 167.4   | 25.2 | 265 | 159.4   | 26.9 | 275 | 171.7 | 27.0 | 1082 |
| Female | 130.1   | 16.3 | 266 | 116.5   | 18.0 | 265 | 100.8   | 16.2 | 274 | 88.7    | 17.5 | 264 | 109.0 | 23.1 | 1069 |
| Total  | 156.2   | 32.8 | 543 | 147.5   | 38.4 | 530 | 133.5   | 39.5 | 539 | 124.8   | 42.1 | 539 | 140.5 | 40.2 | 2151 |

Right arm bone mineral density (g/cm<sup>2</sup>)

|        | 40-49yr |       |     | 50-59yr |       |     | 60-69yr |       |     | 70-79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 1.526   | 8.477 | 277 | 0.801   | 0.061 | 265 | 4.062   | 15.94 | 265 | 1.114   | 5.913 | 275 | 1.865 | 9.534 | 1082 |
| Female | 1.449   | 7.042 | 266 | 0.880   | 3.633 | 265 | 0.960   | 4.273 | 274 | 0.571   | 0.050 | 264 | 0.966 | 4.509 | 1069 |
| Total  | 1.488   | 7.800 | 543 | 0.840   | 2.567 | 530 | 2.485   | 11.68 | 539 | 0.848   | 4.229 | 539 | 1.418 | 7.484 | 2151 |

Left rib cage bone mineral weight (g)

|        | 40-49yr |      |     | 50-59yr |      |     | 60-69yr |      |     | 70-79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Male   | 91.7    | 16.6 | 277 | 90.8    | 15.6 | 265 | 86.3    | 19.8 | 265 | 79.3    | 16.4 | 275 | 87.0  | 17.8 | 1082 |
| Female | 77.1    | 14.5 | 266 | 69.4    | 14.9 | 265 | 62.0    | 13.2 | 274 | 57.4    | 12.5 | 264 | 66.5  | 15.7 | 1069 |
| Total  | 84.6    | 17.3 | 543 | 80.1    | 18.6 | 530 | 73.9    | 20.7 | 539 | 68.6    | 18.3 | 539 | 76.8  | 19.7 | 2151 |

Left rib cage bone mineral density (g/cm<sup>2</sup>)

|        | 40-49yr |       |     | 50-59yr |       |     | 60-69yr |       |     | 70-79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 1.393   | 9.100 | 277 | 0.630   | 0.063 | 265 | 4.224   | 17.77 | 265 | 0.897   | 4.955 | 275 | 1.774 | 10.32 | 1082 |
| Female | 1.346   | 7.090 | 266 | 0.881   | 5.438 | 265 | 1.004   | 6.478 | 274 | 0.486   | 0.050 | 264 | 0.931 | 5.532 | 1069 |
| Total  | 1.370   | 8.170 | 543 | 0.755   | 3.844 | 530 | 2.587   | 13.37 | 539 | 0.696   | 3.542 | 539 | 1.355 | 8.301 | 2151 |

Right rib cage bone mineral weight (g)

|        | 40-49yr |      |     | 50-59yr |      |     | 60-69yr |      |     | 70-79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Male   | 93.3    | 17.8 | 277 | 93.2    | 18.3 | 265 | 87.8    | 17.8 | 265 | 82.8    | 18.5 | 275 | 89.3  | 18.6 | 1082 |
| Female | 80.1    | 15.6 | 266 | 73.9    | 14.3 | 265 | 68.4    | 13.4 | 274 | 64.3    | 14.7 | 264 | 71.7  | 15.7 | 1069 |
| Total  | 86.8    | 18.0 | 543 | 83.6    | 19.0 | 530 | 77.9    | 18.5 | 539 | 73.7    | 19.1 | 539 | 80.5  | 19.3 | 2151 |

Right rib cage bone mineral density (g/cm<sup>2</sup>)

|        | 40-49yr |       |     | 50-59yr |       |     | 60-69yr |       |     | 70-79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 1.486   | 10.02 | 277 | 0.639   | 0.065 | 265 | 4.991   | 22.07 | 265 | 1.004   | 6.481 | 275 | 2.015 | 12.58 | 1082 |
| Female | 1.496   | 8.400 | 266 | 0.818   | 4.223 | 265 | 0.905   | 4.724 | 274 | 0.499   | 0.047 | 264 | 0.930 | 5.268 | 1069 |
| Total  | 1.491   | 9.253 | 543 | 0.729   | 2.985 | 530 | 2.914   | 15.95 | 539 | 0.757   | 4.632 | 539 | 1.476 | 9.675 | 2151 |

Thoracic spine bone mineral weight (g)

|        | 40-49yr |      |     | 50-59yr |      |     | 60-69yr |      |     | 70-79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Male   | 111.0   | 22.1 | 277 | 111.6   | 20.4 | 265 | 107.3   | 27.9 | 265 | 101.6   | 26.8 | 275 | 107.8 | 24.8 | 1082 |
| Female | 94.1    | 17.8 | 266 | 82.5    | 16.0 | 265 | 72.5    | 15.4 | 274 | 66.1    | 14.3 | 264 | 78.8  | 19.1 | 1069 |
| Total  | 102.7   | 21.8 | 543 | 97.1    | 23.4 | 530 | 89.6    | 28.4 | 539 | 84.2    | 28.0 | 539 | 93.4  | 26.5 | 2151 |

Thoracic spine bone mineral density (g/cm<sup>2</sup>)

|  | 40-49yr |    |   | 50-59yr |    |   | 60-69yr |    |   | 70-79yr |    |   | Total |    |   |
|--|---------|----|---|---------|----|---|---------|----|---|---------|----|---|-------|----|---|
|  | Mean    | SD | N | Mean    | SD | N | Mean    | SD | N | Mean    | SD | N | Mean  | SD | N |

|        |       |       |     |       |       |     |       |       |     |       |       |     |       |       |      |
|--------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|------|
| Male   | 1.262 | 4.673 | 277 | 0.883 | 0.117 | 265 | 2.962 | 10.50 | 265 | 1.045 | 2.905 | 275 | 1.531 | 5.944 | 1082 |
| Female | 1.381 | 4.701 | 266 | 0.892 | 1.630 | 265 | 0.896 | 2.325 | 274 | 0.654 | 0.099 | 264 | 0.956 | 2.756 | 1069 |
| Total  | 1.320 | 4.683 | 543 | 0.888 | 1.154 | 530 | 1.912 | 7.611 | 539 | 0.853 | 2.083 | 539 | 1.245 | 4.650 | 2151 |

Lumbar spine bone mineral weight (g)

|        | 40–49yr |      |     | 50–59yr |      |     | 60–69yr |      |     | 70–79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Male   | 58.9    | 16.6 | 277 | 56.3    | 12.4 | 265 | 60.5    | 31.8 | 265 | 52.4    | 17.5 | 275 | 57.0  | 21.0 | 1082 |
| Female | 53.4    | 15.7 | 266 | 43.8    | 11.6 | 265 | 35.4    | 12.8 | 274 | 31.0    | 9.9  | 264 | 40.9  | 15.3 | 1069 |
| Total  | 56.2    | 16.4 | 543 | 50.1    | 13.5 | 530 | 47.7    | 27.1 | 539 | 41.9    | 17.9 | 539 | 49.0  | 20.1 | 2151 |

Lumbar bone mineral density (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 2.873   | 22.37 | 277 | 1.005   | 0.156 | 265 | 9.789   | 43.70 | 265 | 1.724   | 12.18 | 275 | 3.817 | 25.37 | 1082 |
| Female | 2.943   | 17.69 | 266 | 1.389   | 7.478 | 265 | 1.676   | 10.14 | 274 | 0.786   | 0.143 | 264 | 1.700 | 10.88 | 1069 |
| Total  | 2.907   | 20.20 | 543 | 1.197   | 5.287 | 530 | 5.665   | 31.71 | 539 | 1.265   | 8.706 | 539 | 2.765 | 19.59 | 2151 |

Pelvic bone mineral weight (g)

|        | 40–49yr |      |     | 50–59yr |      |     | 60–69yr |      |     | 70–79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Male   | 234.8   | 49.2 | 277 | 224.9   | 48.2 | 265 | 212.4   | 55.0 | 265 | 191.4   | 49.2 | 275 | 215.8 | 53.0 | 1082 |
| Female | 202.4   | 42.2 | 266 | 169.6   | 35.6 | 265 | 137.2   | 33.2 | 274 | 114.4   | 27.8 | 264 | 155.8 | 48.2 | 1069 |
| Total  | 218.9   | 48.6 | 543 | 197.2   | 50.5 | 530 | 174.2   | 58.8 | 539 | 153.7   | 55.6 | 539 | 186.0 | 58.9 | 2151 |

Pelvic bone mineral density (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 4.458   | 39.79 | 277 | 1.119   | 0.133 | 265 | 17.814  | 81.33 | 265 | 2.455   | 23.67 | 275 | 6.402 | 46.96 | 1082 |
| Female | 4.550   | 32.18 | 266 | 2.091   | 16.55 | 265 | 2.648   | 19.93 | 274 | 0.885   | 0.127 | 264 | 2.548 | 20.69 | 1069 |
| Total  | 4.503   | 36.23 | 543 | 1.605   | 11.70 | 530 | 10.104  | 59.20 | 539 | 1.686   | 16.91 | 539 | 4.487 | 36.40 | 2151 |

Left leg bone mineral weight (g)

|        | 40–49yr |      |     | 50–59yr |      |     | 60–69yr |      |     | 70–79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Male   | 448.5   | 64.6 | 277 | 433.1   | 62.8 | 265 | 407.4   | 63.5 | 265 | 382.0   | 68.0 | 275 | 417.8 | 69.5 | 1082 |
| Female | 335.7   | 46.1 | 266 | 306.4   | 49.5 | 265 | 267.2   | 43.2 | 274 | 233.9   | 51.3 | 264 | 285.7 | 61.1 | 1069 |
| Total  | 393.2   | 79.7 | 543 | 369.7   | 84.9 | 530 | 336.1   | 88.6 | 539 | 309.5   | 95.5 | 539 | 352.1 | 93.0 | 2151 |

Left leg bone mineral density (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 4.570   | 39.67 | 277 | 1.223   | 0.121 | 265 | 17.898  | 81.21 | 265 | 2.491   | 22.53 | 275 | 6.486 | 46.74 | 1082 |
| Female | 4.475   | 32.21 | 266 | 2.057   | 16.74 | 265 | 2.525   | 19.01 | 274 | 0.879   | 0.087 | 264 | 2.488 | 20.51 | 1069 |
| Total  | 4.524   | 36.17 | 543 | 1.640   | 11.83 | 530 | 10.083  | 58.98 | 539 | 1.701   | 16.10 | 539 | 4.499 | 36.21 | 2151 |

Right leg bone mineral weight (g)

|        | 40–49yr |      |     | 50–59yr |      |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|------|-----|---------|------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Male   | 449.2   | 74.9 | 277 | 431.1   | 61.6 | 265 | 428.1   | 119.4 | 265 | 385.4   | 76.4  | 275 | 423.4 | 88.8  | 1082 |
| Female | 341.3   | 67.7 | 266 | 306.9   | 55.6 | 265 | 269.8   | 67.6  | 274 | 233.3   | 51.7  | 264 | 287.8 | 73.1  | 1069 |
| Total  | 396.4   | 89.5 | 543 | 369.0   | 85.4 | 530 | 347.6   | 124.8 | 539 | 310.9   | 100.3 | 539 | 356.0 | 105.9 | 2151 |

Right leg bone mineral density (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total  |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|--------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean   | SD    | N    |
| Male   | 28.080  | 315.9 | 277 | 1.213   | 0.112 | 265 | 153.73  | 737.0 | 265 | 15.887  | 244.6 | 275 | 49.174 | 420.6 | 1082 |
| Female | 38.240  | 348.6 | 266 | 12.600  | 188.4 | 265 | 25.035  | 281.9 | 274 | 0.887   | 0.102 | 264 | 19.274 | 243.8 | 1069 |
| Total  | 33.057  | 332.1 | 543 | 6.906   | 133.2 | 530 | 88.307  | 557.7 | 539 | 8.540   | 174.8 | 539 | 34.314 | 344.5 | 2151 |

Lumbar spine 2–4 bone mineral density (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Female | 1.023   | 0.125 | 282 | 0.896   | 0.144 | 278 | 0.794   | 0.129 | 284 | 0.750   | 0.147 | 275 | 0.866 | 0.172 | 1119 |
| Male   | 0.988   | 0.121 | 291 | 0.993   | 0.136 | 282 | 0.977   | 0.169 | 282 | 0.974   | 0.208 | 283 | 0.983 | 0.162 | 1138 |
| Total  | 1.006   | 0.124 | 573 | 0.945   | 0.148 | 560 | 0.885   | 0.176 | 566 | 0.864   | 0.212 | 558 | 0.925 | 0.177 | 2257 |

Right femoral neck bone mineral density (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Female | 0.771   | 0.097 | 282 | 0.717   | 0.104 | 277 | 0.638   | 0.090 | 284 | 0.583   | 0.079 | 274 | 0.678 | 0.118 | 1117 |
| Male   | 0.791   | 0.099 | 291 | 0.785   | 0.108 | 282 | 0.736   | 0.113 | 283 | 0.699   | 0.114 | 283 | 0.753 | 0.115 | 1139 |
| Total  | 0.782   | 0.099 | 573 | 0.751   | 0.111 | 559 | 0.687   | 0.113 | 567 | 0.642   | 0.114 | 557 | 0.716 | 0.122 | 2256 |

Right trochanter region bone mineral density (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Female | 0.658   | 0.093 | 282 | 0.604   | 0.095 | 277 | 0.535   | 0.088 | 284 | 0.484   | 0.088 | 274 | 0.571 | 0.112 | 1117 |
| Male   | 0.680   | 0.098 | 291 | 0.689   | 0.101 | 282 | 0.673   | 0.107 | 283 | 0.632   | 0.114 | 283 | 0.669 | 0.107 | 1139 |
| Total  | 0.669   | 0.096 | 573 | 0.647   | 0.107 | 559 | 0.604   | 0.120 | 567 | 0.559   | 0.126 | 557 | 0.620 | 0.120 | 2256 |

Right Ward's triangle (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Female | 0.663   | 0.128 | 282 | 0.567   | 0.138 | 277 | 0.431   | 0.115 | 284 | 0.365   | 0.105 | 274 | 0.507 | 0.169 | 1117 |
| Male   | 0.627   | 0.122 | 291 | 0.593   | 0.127 | 282 | 0.526   | 0.133 | 283 | 0.462   | 0.126 | 283 | 0.553 | 0.142 | 1139 |
| Total  | 0.644   | 0.126 | 573 | 0.580   | 0.133 | 559 | 0.479   | 0.133 | 567 | 0.414   | 0.126 | 557 | 0.530 | 0.157 | 2256 |

Left femoral neck (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Female | 0.774   | 0.098 | 282 | 0.720   | 0.093 | 277 | 0.647   | 0.088 | 283 | 0.592   | 0.088 | 272 | 0.684 | 0.115 | 1114 |
| Male   | 0.810   | 0.103 | 290 | 0.801   | 0.108 | 282 | 0.750   | 0.111 | 283 | 0.712   | 0.115 | 283 | 0.768 | 0.116 | 1138 |
| Total  | 0.792   | 0.102 | 572 | 0.761   | 0.109 | 559 | 0.699   | 0.112 | 566 | 0.653   | 0.119 | 555 | 0.727 | 0.123 | 2252 |

Left trochanter region (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Female | 0.661   | 0.093 | 282 | 0.607   | 0.097 | 277 | 0.540   | 0.087 | 283 | 0.485   | 0.087 | 272 | 0.574 | 0.113 | 1114 |
| Male   | 0.688   | 0.099 | 290 | 0.697   | 0.104 | 282 | 0.679   | 0.113 | 283 | 0.631   | 0.116 | 283 | 0.674 | 0.111 | 1138 |
| Total  | 0.675   | 0.097 | 572 | 0.652   | 0.111 | 559 | 0.610   | 0.123 | 566 | 0.560   | 0.126 | 555 | 0.624 | 0.123 | 2252 |

Left Ward's triangle (g/cm<sup>2</sup>)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Female | 0.658   | 0.123 | 282 | 0.559   | 0.129 | 277 | 0.431   | 0.114 | 283 | 0.368   | 0.106 | 272 | 0.505 | 0.163 | 1114 |
| Male   | 0.620   | 0.128 | 290 | 0.589   | 0.124 | 282 | 0.523   | 0.124 | 283 | 0.464   | 0.120 | 283 | 0.549 | 0.138 | 1138 |
| Total  | 0.639   | 0.127 | 572 | 0.574   | 0.128 | 559 | 0.477   | 0.128 | 566 | 0.417   | 0.123 | 555 | 0.527 | 0.153 | 2252 |

2. Peripheral quantitative computed tomography (pQCT) (Densiscan 1000)

D50 (trabecular bone density over the core volume of ultradistal radius) (mg/cm<sup>3</sup>)

|        | 40–49yr |      |     | 50–59yr |      |     | 60–69yr |      |     | 70–79yr |      |     | Total |      |      |
|--------|---------|------|-----|---------|------|-----|---------|------|-----|---------|------|-----|-------|------|------|
|        | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean    | SD   | N   | Mean  | SD   | N    |
| Female | 247.1   | 56.1 | 270 | 200.0   | 69.1 | 266 | 152.9   | 56.3 | 273 | 139.8   | 63.5 | 270 | 184.8 | 74.6 | 1079 |
| Male   | 294.6   | 64.5 | 279 | 278.1   | 63.5 | 275 | 255.7   | 67.1 | 272 | 237.8   | 68.8 | 267 | 266.9 | 69.3 | 1093 |
| Total  | 271.2   | 65.0 | 549 | 239.7   | 76.9 | 541 | 204.2   | 80.5 | 545 | 188.5   | 82.3 | 537 | 226.1 | 82.9 | 2172 |

D100 (cortical and trabecular bone density of ultradistal radius) (mg/cm³)

|        | 40–49yr |      |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total |       |      |
|--------|---------|------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|-------|-------|------|
|        | Mean    | SD   | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean  | SD    | N    |
| Female | 607.7   | 82.5 | 270 | 518.9   | 101.4 | 266 | 427.8   | 86.7  | 273 | 387.7   | 87.2  | 270 | 485.2 | 123.6 | 1079 |
| Male   | 587.3   | 82.6 | 279 | 562.2   | 87.8  | 275 | 525.7   | 98.3  | 272 | 486.8   | 94.2  | 267 | 541.1 | 98.3  | 1093 |
| Total  | 597.3   | 83.1 | 549 | 540.9   | 97.1  | 541 | 476.6   | 104.7 | 545 | 437.0   | 103.3 | 537 | 513.3 | 115.0 | 2172 |

P100 (cortical bone density of proximal radius) (mg/cm³)

|        | 40–49yr |       |     | 50–59yr |       |     | 60–69yr |       |     | 70–79yr |       |     | Total  |       |      |
|--------|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|--------|-------|------|
|        | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean    | SD    | N   | Mean   | SD    | N    |
| Female | 1362.6  | 121.3 | 270 | 1222.7  | 154.1 | 266 | 1068.9  | 152.9 | 273 | 959.1   | 157.1 | 270 | 1152.8 | 212.1 | 1079 |
| Male   | 1265.4  | 118.5 | 279 | 1206.9  | 134.8 | 275 | 1162.3  | 139.9 | 272 | 1103.3  | 161.8 | 267 | 1185.4 | 151.3 | 1093 |
| Total  | 1313.2  | 129.3 | 549 | 1214.7  | 144.7 | 541 | 1115.5  | 153.7 | 545 | 1030.8  | 174.9 | 537 | 1169.2 | 184.7 | 2172 |