**Table 1** Acquisition and reconstruction parameters for all CT systems used in this study.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Scanner 1 | Scanner 2 | Scanner 3 | Scanner 4 | Dynamic |
| Manufacturer | Canon | Philips | GE | Siemens | Siemens |
| CT system | Aquilion One Vision | Brilliance iCT | Revolution | SOMATOM Force | SOMATOM Flash |
| Acquisition mode | Axial | Axial | Axial | Axial | Axial |
| Tube voltage [kVp] | 120 | 120 | 120 | 120 | 120 |
| Tube current time product [mAs] | Small: 15  Large: 84 | Small: 50  Large: 50 | Small: 30  Large: 161 | Small: 44  Large: 194 | 80 |
| Automatic exposure correction | SD=55 | Off | Off | Off | Off |
| CTDIvol [mGy] | Small: 2.3  Large: 12.8 | Small: 4.7  Large: 4.4 | Small: 1.49  Large: 7.2 | Small: 1.5  Large: 6.7 | Large: 2.8 |
| Collimation [mm] | 280x0.5 | 128x0.625 | 224x0.625 | 160x0.6 | 128x0.6 |
| Field of View [mm] | 250 | 250 | 250 | 250 | 250 |
| Rotation time [s] (360 °) | 0.35 | 0.27 | 0.28 | 0.25 | 0.28 |
| Slice thickness [mm] | 3.0 | 3.0 | 2.5 | 3.0 | 3.0 |
| Increment [mm] | 3.0 | 3.0 | 2.5 | 3.0 | 3.0 |
| Reconstruction kernel | FC12 | XCA | Standard | Qr36d | B35f\* |
| Matrix size [pixels] | 512 × 512 | 512 × 512 | 512 × 512 | 512 × 512 | 512 × 512 |
| Reconstruction | FBP | FBP | FBP | FBP | FBP |

*Note*. Adapted from "Fully automated quantification method (FQM) of coronary calcium in an anthropomorphic phantom," by G. van Praagh, 2021, *Medical Physics, 48*(7), 3730-3740. Copyright (2021) by Wiley Periodicals LLC. \* Based on vendor-recommended protocol of earlier software version than used for the static phantom.

**Table 2** Average RMSE and RMSD values of reproducibility comparisons for all ten scans.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CT System | Mean RMSE Integrated | Mean RMSE Agatston | Mean RMSD Integrated | Mean RMSD Agatston |
| Scanner 1 | 1.85 | 1.34 | 1.13 | 0.90 |
| Scanner 2 | 1.37 | 2.01 | 0.97 | 1.42 |
| Scanner 3 | 1.30 | 1.54 | 0.91 | 1.09 |
| Scanner 4 | 1.27 | 1.61 | 0.91 | 1.06 |

**Table 3.** Percentage of false-negative (CAC=0) and false-positive (CAC>0) scores for integrated calcium mass at various thresholds.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Integrated | | Agatston | |
| Threshold | False-Negative (%) | False-Positive (%) | False-Negative (%) | False-Positive (%) |
|  | 6.94 | 53.33 | 28.33 | 6.67 |
|  | 8.89 | 18.33 | 28.33 | 6.67 |
|  | 11.67 | 4.17 | 28.33 | 6.67 |
|  | 15.00 | 0.00 | 28.33 | 6.67 |
|  | 16.67 | 0.00 | 28.33 | 6.67 |

Agatston scoring always uses exactly zero as a threshold.

**Table 4**. Parameters (tube current time product, field-of-view, iterative reconstruction (IR) level, convolution matrix (kernel)) that were adjusted.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Technique | RMSE | RMSD | R-Correlation | Slope | Intercept |
| Tube Current Time Product (22 mAs) | Integrated | 1.21 | 0.70 | 1.00 | 1.02 | 0.33 |
| Agatston | 1.96 | 1.30 | 1.00 | 0.95 | 1.30 |
| Tube Current Time Product (34 mAs) | Integrated | 1.65 | 0.46 | 1.00 | 1.05 | -0.05 |
| Agatston | 1.76 | 1.27 | 1.00 | 0.96 | 0.05 |
| Field-of-View (200 mm) | Integrated | 0.96 | 0.53 | 1.00 | 0.98 | -0.13 |
| Agatston | 2.13 | 1.00 | 1.00 | 0.96 | -1.02 |
| Field-of-View (320 mm) | Integrated | 0.39 | 0.30 | 1.00 | 0.99 | -0.10 |
| Agatston | 2.24 | 0.96 | 1.00 | 0.96 | -1.03 |
| IR Level (2) | Integrated | 0.62 | 0.57 | 1.00 | 1.01 | -0.22 |
| Agatston | 2.68 | 1.05 | 1.00 | 0.95 | -1.28 |
| IR Level (4) | Integrated | 0.81 | 0.69 | 1.00 | 1.00 | -0.39 |
| Agatston | 3.28 | 1.13 | 1.00 | 0.93 | -1.42 |
| Kernel  (QR 32) | Integrated | 0.69 | 0.68 | 1.00 | -0.13 | 1.00 |
| Agatston | 1.73 | 0.74 | 1.00 | 0.97 | -0.77 |
| Kernel  (QR 32) | Integrated | 0.50 | 0.19 | 1.00 | 1.01 | -0.25 |
| Agatston | 1.73 | 0.74 | 1.00 | 0.97 | -0.77 |

Both calcium scoring techniques were used to calculate and compare mass against known mass. Accuracy (RMSE) and precision measurements (RMSD) are shown.