TABLE E-1 Effect of Tibial Baseplate Angular Tilt on Accuracy of Medial Compartment Polyethylene Thickness Measurements per Analysis of the Six-Week Postoperative Single-Leg Standing Anteroposterior Radiograph of Each Study Knee

Baseplate Radiographic Tilt†	Error in Radiographic Measurement of Polyethylene Thickness*				
	Mean ± Standard Deviation	95% Confidence Interval	Percentage within ±0.2 mm of 0.0 mm	Percentage within ±0.5 mm of 0.0 mm	Percentage within ±1.0 mm of 0.0 mm
Any ° (n = 416)	0.0 ± 0.5 mm	–1.1 to 1.0 mm	46	74	92
<8° (n = 396)	0.0 ± 0.5 mm	–1.0 to 1.0 mm	47	77	94
<7° (n = 380)	0.0 ± 0.5 mm	–0.9 to 0.9 mm	49	78	96
<6° (n = 364)	0.0 ± 0.4 mm	–0.8 to 0.9 mm	50	81	97
<5° (n = 341)	0.0 ± 0.4 mm	–0.7 to 0.8 mm	52	83	97
<4° (n = 297)	0.1 ± 0.4 mm	–0.6 to 0.8 mm	56	86	98
<3° (n = 256)	0.1 ± 0.3 mm	–0.6 to 0.7 mm	57	88	98
<2° (n = 181)	0.1 ± 0.3 mm	–0.5 to 0.7 mm	62	92	99
<1° (n = 79)	0.0 ± 0.3 mm	–0.6 to 0.6 mm	61	94	99

*A positive error denotes an overestimate of polyethylene thickness, as the error was calculated by subtracting the assumed initial thickness of each insert from the mean result of the two observers. †0° of baseplate radiographic tilt would indicate that the top surface of the baseplate projected as a flat line; n is both the number of knees and number of radiographs examined.

TABLE E-2 Results of Multiple Linear Regression Analyses That Were Performed to Identify Which Factors Were Significantly Associated ($p < 0.05$) with Medial Compartment Radiographic Polyethylene Thickness Loss of Inserts Sterilized via Gamma Irradiation in Air

Independent Variables	Dependent Variable*	
	Time-Averaged Radiographic Polyethylene Thickness Loss (k and r = 249)	Time-Regressed Radiographic Polyethylene Thickness Loss (k = 243, r = 1401)
Patient age at surgery	$p < 0.01$, b = –0.005 (–0.007, –0.003)†	$p < 0.01$, b= –0.006 (–0.008, –0.003)‡
Patient weight	$p = 0.72$	$p = 0.12$
Male sex	$p = 0.06$	$p = 0.34$
Polyethylene insert shelf age	$p < 0.01$, b = 0.072 (0.059, 0.085)†	$p < 0.01$, b = 0.070 (0.055, 0.084)‡
Polyethylene insert resin (3 options)	$p > 0.41$	$p > 0.10$
Polyethylene insert initial thickness	$p = 0.74$	$p = 0.88$
Tibial baseplate top surface polished	$p = 0.30$	$p = 0.54$
Postoperative mechanical axis	$p < 0.01$, b = 0.004 (0.003, 0.006)†	$p < 0.01$, b = 0.003 (0.002, 0.005)‡

*k and r denote the number of knees and radiographs examined, respectively. p is the probability value obtained when all variables were entered into the regression. b is the unstandardized regression coefficient obtained when only the significant variables were included in the equation, with 95% confidence interval limits in parentheses. †The linear regression equation featuring only significant variables was: time-averaged radiographic polyethylene thickness loss (mm/year) = 0.398 – 0.005 × patient age years + 0.072 × insert shelf age years + 0.004 × mm by which hip-to-ankle axis was medial to knee center; the p value and R^2-value of the equation were <0.01 and 0.40, respectively. ‡The linear regression equation featuring only significant variables was: time-regressed radiographic polyethylene thickness loss in mm/year = 0.473 – 0.006 × patient age years + 0.070 × insert shelf age years + 0.003 × by which hip-to-ankle axis was medial to knee center; the equation's p value and R^2-value were <0.01 and 0.36, respectively.

TABLE E-3 Results of Multiple Linear Regression Analyses That Were Done to Identify Which Factors Were Significantly Associated ($p < 0.05$) with Medial Compartment Radiographic Polyethylene Thickness Loss of Inserts Sterilized with Gamma Radiation in an Inert Gas or Without Radiation (Gas Plasma)

Independent Variables	Dependent Variable*	
	Time-Averaged Radiographic Polyethylene Thickness Loss (k and r = 101)	Time-Regressed Radiographic Polyethylene Thickness Loss (k = 87, r = 374)
Patient age at surgery	p < 0.01, b = –0.003 (–0.005, –0.002)†	p < 0.01, b = –0.003 (–0.005, –0.001)‡
Patient weight	p = 0.02, b = 0.001 (0.000, 0.002)†	p = 0.22
Male sex	p = 0.01, b = 0.036 (0.014, 0.058)†	p < 0.01, b = 0.038 (0.014, 0.063‡
Polyethylene insert sterilized without radiation	p = 0.13	p = 0.59
Polyethylene insert shelf age	p = 0.19	p = 0.84
Polyethylene insert forming resin	p = 0.08	p = 0.27
Polyethylene insert initial thickness	p = 0.64	p = 0.69
Postoperative mechanical axis	p = 0.02, b = 0.001 (0.000, 0.003)†	p = 0.06

*k and r denote the number of knees and radiographs examined, respectively. p is the probability value obtained when all variables were entered into the regression. b is the unstandardized regression coefficient obtained when only the significant variables were included in the equation, with 95% confidence interval limits in parentheses. †The linear regression equation featuring only significant variables was: time-averaged radiographic polyethylene thickness loss in mm/year = 0.154 – 0.003 × patient age years + 0.001 × patient kg + 0.036 × sex (0, if female; 1, if male) + 0.001 × mm by which hip-to-ankle axis was medial to knee center; the equation's p value and R^2-value were <0.01 and 0.46, respectively. ‡The linear regression equation featuring only significant variables was: time-regressed radiographic polyethylene thickness loss in mm/year = 0.213 – 0.003 × patient age years + 0.038 × sex (0, if female; 1, if male); the equation's p value and R^2-value were <0.01 and 0.21, respectively.