

TABLE E-1 Anteroposterior and Mediolateral Dimensions of the Femoral Component of the Total Knee Replacement Utilized in the Study, by Component Size

Femoral Component Size*	Anteroposterior Outside Dimension† ( <i>mm</i> )	Anteroposterior Inside Dimension‡ ( <i>mm</i> )	Mediolateral Distal Dimension§ ( <i>mm</i> )
5	56	39	62
6	58	42	65
7	61	44	67
8	63	46	70
9	65	49	72
11	70	53	77
13	75	58	82

\*The device is the Scorpio NRG PS (Stryker Orthopaedics, Mahwah, NJ). †The anteroposterior distance between most anterior and most posterior points (outside-to-outside anteroposterior dimension). ‡The anteroposterior distance between the anterior and posterior facets at the junctions of the anterior and posterior chamfers (inside-to-inside dimension). §The mediolateral width at the anteroposterior center of the distal facet.

TABLE E-2A Regression Models for the Prediction of Femoral Component Overhang in 391 Patients (437 Knees) After Total Knee Arthroplasty

Outcome Variable (Continuous)* with Predictor Variables†	Estimated Coefficient	Standard Error	P Value	Partial R <sup>2</sup> ‡		Model Fit§
Sum of overhang over all zones (mm)						
Female	6.474	0.961	<0.001	0.095		p < 0.001
Height (cm)	-0.278	0.096	<0.001	0.080		R <sup>2</sup> = 0.271
Femoral component size	2.529	0.248	<0.001	0.195		
Overhang in lateral zone 2 (mm)						
Female	1.511	0.690	<0.001	0.063		p < 0.001
Height (cm)	-0.068	0.013	<0.001	0.058		R <sup>2</sup> = 0.200
Femoral component size	0.573	0.072	<0.001	0.127		

\*Multiple linear regression models. †Interaction terms for sex-femoral component size and sex-height were eliminated for nonsignificance ( $p > 0.10$ ). ‡Partial  $r^2$  (type II) indicates the proportion of variance in overhang explained by this variable, controlling for the other variables in the model. §The F test (p value) is for overall model significance, and model  $R^2$  indicates the proportion of variance in overhang explained overall by this linear model (e.g., 27% and 20%).

TABLE E-2B Regression Models for the Prediction of Femoral Component Overhang in 391 Patients (437 Knees) After Total Knee Arthroplasty

Outcome Variable (Binary)* with Predictor Variables†	Estimated Coefficient	Standard Error	P Value	Adjusted Odds Ratio (95% Confidence Interval)‡		Model Fit
Is there overhang $\geq 3$ mm in any zone? (yes/no)						
Female	6.474	0.961	<0.001	5.6 (2.9-11.0)		p < 0.001§
Height (cm)	-0.278	0.096	<0.001	0.8 (0.7-0.9)		p = 0.601#
Femoral component size	2.529	0.248	<0.001	2.1 (1.7-2.5)		
Is there overhang of $\geq 5$ mm in any zone? (yes/no)						
Female	1.633	0.472	0.005	5.1 (2.0-12.9)		p < 0.001§
Height (cm)	-0.087	0.020	<0.001	0.8 (0.7-0.9)		p = 0.229#
Femoral component size	0.632	0.122	<0.001	1.9 (1.5-2.4)		
Do three or more zones have overhang of $\geq 3$ mm? (yes/no)						
Female	1.467	0.428	0.001	4.3 (1.9-10.0)		p < 0.001§
Height (cm)	-0.105	0.020	<0.001	0.8 (0.7-0.8)		p = 0.336#
Femoral component size	0.773	0.118	<0.001	2.2 (1.7-2.7)		

\*Multivariate logistic regression models. †Interaction terms for sex-femoral component size and sex-height were eliminated for nonsignificance ( $p > 0.10$ ). ‡Estimated odds ratio for one unit increase of the variable, controlling for all other variables in the model. For sex, odds ratio compares female to male. §Likelihood ratio test for overall significance of the model. #Hosmer-Lemeshow goodness-of-fit test (a p value of  $>0.05$  is consistent with a good fit).

TABLE E-3 Regression Models for the Effect of Femoral Component Overhang on the Presence of Clinically Important Knee Pain at Two Years After Total Knee Arthroplasty\*

Overhang Measure with Predictor Variables	Estimated Coefficient	Standard Error	Wald P Value	Model Fit	Adjusted Odds Ratio for Specified Increases of Overhang (95% Confidence Interval) <sup>†</sup>	
					Specified Units	Odds Ratio
Overhang of $\geq 3$ mm in any zone? (yes or no)						
Intercept	-1.997	0.237	<0.001	$p = 0.020^{\ddagger}$	Yes or no	1.9 (1.1-3.3) $\S$
Overhang	0.635	0.286	0.027			
Age	-0.027	0.015	0.068			
Number of zones with overhang $\geq 3$ mm (count)						
Intercept	-1.863	0.193	<0.001	$p = 0.031^{\ddagger}$	1 zone	1.2 (1.0-1.4) $\S$
Overhang	0.175	0.083	0.035	$p = 0.353^{\#}$	2 zones	1.4 (1.0-2.0) $\S$
Age	-0.028	0.015	0.063		4 zones	2.0 (1.1-3.9) $\S$
Sum overhang over all zones (mm)						
Intercept	-1.874	0.195	<0.001	$p = 0.031^{\ddagger}$	1 mm	1.0 (1.0-1.1) $\S$
Overhang	0.037	0.018	0.033	$p = 0.172^{\#}$	5 mm	1.2 (1.0-1.4) $\S$
Age	-0.027	0.015	0.067		21 mm	2.2 (1.1-4.5) $\S$
Maximum overhang in any single zone (mm)						
Intercept	-1.892	0.229	<0.001	$p = 0.067^{\ddagger}$	1 mm	1.1 (1.0-1.3)
Overhang	0.103	0.061	0.093	$p = 0.882^{\#}$	3 mm	1.4 (0.9-2.0)
Age	-0.027	0.015	0.076		6 mm	1.9 (0.9-3.8)
Overhang in lateral zone 2 (mm)						
Intercept	-1.830	0.207	<0.001	$p = 0.080^{\ddagger}$	1 mm	1.1 (1.0-1.2)
Overhang	0.097	0.062	0.116	$p = 0.517^{\#}$	3 mm	1.2 (1.0-1.5)
Age	-0.027	0.015	0.073		6 mm	1.8 (0.9-3.7)

\*Logistic regression models modeling pain greater than occasional mild pain compared with absent or only occasional mild pain. Sex was eliminated from all models for nonsignificance at  $\alpha > 0.10$ . Six knees that had lateral retinacular release were excluded from these analyses. <sup>†</sup>Odds ratio for the specified number of units of increase of the predictor variable. Values selected represent a single unit, the median, and the 95th percentile. Where  $p < 0.05$  for overhang, odds ratios listed as 1.0 have been decreased by rounding. <sup>‡</sup>Likelihood ratio test for overall significance of the model.  $\S$ Odds ratio was significant ( $p < 0.05$ ). <sup>#</sup>Hosmer-Lemeshow goodness-of-fit test (a  $p$  value of  $>0.05$  is consistent with good fit).

TABLE E-4 Regression Models for the Effect of Femoral Component Overhang on Knee Flexion One Year After Total Knee Arthroplasty\*

Overhang Measure with Predictor Variables	Estimated Coefficient	Standard Error	Wald P Value		Model Fit†
Overhang of $\geq 3$ mm in any zone? (yes or no)					
Overhang	0.647	0.811	0.425		$p < 0.001$
Preop. flexion	0.132	0.034	$<0.001$		$R^2 = 0.141$
Female sex	-3.029	0.827	$<0.001$		
Body mass index	-0.031	0.117	0.793		
Body mass index $\times$ female	-0.395	0.147	0.008		
Number of zones with overhang $\geq 3$ mm (count)					
Overhang	-0.276	0.262	0.293		$p < 0.001$
Preop. flexion	0.135	0.034	$<0.001$		$R^2 = 0.142$
Female sex	-2.637	0.814	0.001		
Body mass index	-0.036	0.117	0.761		
Body mass index $\times$ female	-0.397	0.147	0.007		
Sum overhang over all zones (mm)					
Overhang	-0.067	0.057	0.238		$p < 0.001$
Preop. flexion	0.135	0.034	$<0.001$		$R^2 = 0.143$
Female sex	-2.578	0.821	0.002		
Body mass index	-0.036	0.117	0.760		
Body mass index $\times$ female	-0.398	0.147	0.007		
Maximum overhang in any zone (mm)					
Overhang	-0.085	0.188	0.653		$p < 0.001$
Preop. flexion	0.133	0.034	0.001		$R^2 = 0.140$
Female sex	-2.725	0.832	0.001		
Body mass index	-0.034	0.117	0.774		
Body mass index $\times$ female	-0.396	0.147	0.007		
Overhang in lateral zone 2 (mm)					
Overhang	-0.208	0.189	0.274		$p < 0.001$
Preop. flexion	0.137	0.034	$<0.001$		$R^2 = 0.142$
Female sex	-2.608	0.819	0.002		
Body mass index	-0.038	0.117	0.745		
Body mass index $\times$ female	-0.389	0.147	0.008		

\*Multiple linear regression models controlling for preoperative flexion, sex, body mass index, and sex-body mass index interaction. The outcome variable is postoperative knee flexion (deg). †The F test is for overall model significance, and model  $R^2$  indicates the proportion of variance in overhang explained overall by the linear model.