

TABLE E-1 Flexion in Patients with a Varus Tibiofemoral Alignment Preoperatively\*

Variable	Difference†	P value	n
Reference flexion	120.6		
Preoperative flexion (F <sub>0</sub> )			
F <sub>0</sub> ≤ 80°	-18.1	< 0.0001	103
81° ≤ F <sub>0</sub> ≤ 92°	-9.9	< 0.0001	234
93° ≤ F <sub>0</sub> ≤ 102°	-7.0	< 0.0001	662
103° ≤ F <sub>0</sub> ≤ 115°	-3.9	< 0.0001	1331
116° ≤ F <sub>0</sub> ≤ 122°	‡	‡	851
F <sub>0</sub> ≥ 123°	2.1	0.0021	471
Intraoperative flexion (F <sub>1</sub> )			
F <sub>1</sub> ≤ 84°	N/S	N/S	43
85° ≤ F <sub>1</sub> ≤ 99°	-4.9	0.0001	106
100° ≤ F <sub>1</sub> ≤ 109°	-3.1	< 0.0001	349
110° ≤ F <sub>1</sub> ≤ 116°	‡	‡	1219
117° ≤ F <sub>1</sub> ≤ 125°	-2.5	< 0.0001	1688
F <sub>1</sub> ≥ 126	N/S	N/S	247
Posterior release			
Posterior aspect of capsule and removal of osteophytes	N/S	N/S	237
Posterior aspect of capsule	-9.4	< 0.0001	24
Removal of osteophytes	‡	‡	2064
No posterior release	-3.4	< 0.0001	1327
Gender			
Female	-2.4	< 0.0001	1954
Male	‡	‡	1698
Anatomical tibiofemoral alignment (A)§			
A ≤ -18°	N/S	N/S	50
-17° ≤ A ≤ -8°	-1.1	0.0393	585
-7° ≤ A ≤ 11°	‡	‡	3017
Diagnosis			
Osteoarthritis	‡	‡	3516
Rheumatoid arthritis	N/S	N/S	78
Osteonecrosis	N/S	N/S	35
Other	-6.5	0.0089	23
Medial Release			
None	N/S	N/S	1104
Deep medial	‡	‡	2188
Superficial	-3.3	< 0.0001	252
Pes anserinus	N/S	N/S	39
Semimembranosus	N/S	N/S	69
Age			
≤ 32 years	N/S	N/S	4
33 years ≤ age ≤ 43 years	N/S	N/S	17
44 years ≤ age ≤ 53 years	-3.0	0.0106	101
54 years ≤ age ≤ 77 years	‡	‡	2897
Age ≥ 78 years	N/S	N/S	633

\*N/S means no significant difference was found. †The values refer to the difference between the reference flexion and the postoperative flexion predicted by log-linear regression in relation to the indicated specific conditions of each variable. ‡Reference category. The flexion measurements of patients from these categories were used to calculate the reference flexion. §Knees with negative values for preoperative tibiofemoral alignment (and positive values of ≤4°) were classified as knees in varus. Positive values of preoperative tibiofemoral alignment of ≥5° were classified as knees in valgus.

TABLE E-2 Flexion in Patients with a Valgus Tibiofemoral Alignment Preoperatively\*

Variable	Difference†	P value	n
Reference flexion	119.7°		
Preoperative flexion ( $F_0$ )			
$F_0 \leq 80^\circ$	-16.6°	<0.0001	35
$81^\circ \leq F_0 \leq 92^\circ$	-9.2°	<0.0001	66
$93^\circ \leq F_0 \leq 102^\circ$	-7.7°	<0.0001	187
$103^\circ \leq F_0 \leq 115^\circ$	-3.9°	<0.0001	380
$116^\circ \leq F_0 \leq 122^\circ$	‡	‡	241
$F_0 \geq 123^\circ$	N/S	N/S	166
Intraoperative flexion ( $F_1$ )			
$F_1 \leq 84^\circ$	-8.5°	0.0146	19
$85^\circ \leq F_1 \leq 99^\circ$	-8.3°	<0.0001	52
$100^\circ \leq F_1 \leq 109^\circ$	-3.0°	0.0134	126
$110^\circ \leq F_1 \leq 116^\circ$	‡	‡	381
$117^\circ \leq F_1 \leq 125^\circ$	-3.0°	0.0002	441
$F_1 \geq 126^\circ$	N/S	N/S	56
Lateral release			
None	‡	‡	737
Iliotibial band	N/S	N/S	161
Lateral capsule	N/S	N/S	98
Arcuate tendon	N/S	N/S	30
Popliteus tendon and lateral collateral ligament	N/S	N/S	49
Age			
$\leq 32$ years	-51.0°	<0.0001	5
$33 \text{ years} \leq \text{age} \leq 43 \text{ years}$	N/S	N/S	17
$44 \text{ years} \leq \text{age} \leq 53 \text{ years}$	N/S	N/S	36
$54 \text{ years} \leq \text{age} \leq 77 \text{ years}$	‡	‡	796
$\geq 78$ years	N/S	N/S	221

\*N/S means no significant difference was found. †The values indicate the difference between the reference flexion and the postoperative flexion predicted by log-linear regression in relation to the indicated specific condition of each variable. ‡Reference category. The flexion measurements of patients from these categories were used to calculate the reference flexion.

TABLE E-3 Extension in the Entire Patient Cohort\*

Variable	Difference†	P value	n
Reference extension	-0.5°		
Preoperative extension			
$E_0 \leq -24^\circ$	-2.3°	<0.0001	146
$-23^\circ \leq E_0 \leq -18^\circ$	-1.6°	<0.0001	268
$-17^\circ \leq E_0 \leq -13^\circ$	-1.1°	<0.0002	377
$-12^\circ \leq E_0 \leq -8^\circ$	-0.3°	0.0155	896
$-7^\circ \leq E_0 \leq 12^\circ$	‡	‡	2997
$E_0 \geq 13^\circ$	-1.9°	<0.0001	43
Preoperative flexion ( $F_0$ )			
$F_0 \leq 80^\circ$	N/S	N/S	138
$81^\circ \leq F_0 \leq 92^\circ$	N/S	N/S	300
$93^\circ \leq F_0 \leq 102^\circ$	N/S	N/S	849
$103^\circ \leq F_0 \leq 115^\circ$	N/S	N/S	1711
$116^\circ \leq F_0 \leq 122^\circ$	‡	‡	1092
$F_0 \geq 123^\circ$	+0.4°	0.0239	637
Posterior release			
None	N/S	N/S	1829
Removal of osteophytes	‡	‡	2587
Posterior part of capsule	-1.4°	0.0095	32
Posterior part of capsule and removal of osteophytes	N/S	N/S	279
Gender			
Female	+ 0.4°	<0.0001	2798
Male	‡	‡	1929
Anatomical tibiofemoral alignment (A)§			
$A \leq -18^\circ$	N/S	N/S	50
$-17^\circ \leq A \leq -8^\circ$	N/S	N/S	585
$-7^\circ \leq A \leq 11^\circ$	‡	‡	3677
$12^\circ \leq A \leq 22^\circ$	0.5°	0.0036	352
$A \geq 23^\circ$	N/S	N/S	63
Age			
$\leq 32$ years	-4.7°	<0.0001	9
$33 \text{ years} \leq \text{age} \leq 43 \text{ years}$	N/S	N/S	34
$44 \text{ years} \leq \text{age} \leq 53 \text{ years}$	0.87°	0.0010	137
$54 \text{ years} \leq \text{age} \leq 77 \text{ years}$	‡	‡	3693
$\geq 78$ years	-0.51°	<0.0001	854

\*N/S means no significant difference was found. †The difference between the reference extension and the postoperative extension predicted by log-linear regression in relation to the indicated specific conditions of each variable. ‡Reference category. The extension measurements of patients from these categories were used to calculate the reference flexion. §Knees with negative values of preoperative tibiofemoral alignment (and positive values of  $\leq 4^\circ$ ) were classified as knees in varus. Knees with positive values of preoperative tibiofemoral alignment of  $\geq 5^\circ$  were classified as knees in valgus.

TABLE E-4 Selection of the Primary Split in the Entire Patient Cohort

Potential Split	Improve*
Preoperative flexion $<104.5^{\circ}$	10.5%
Intraoperative flexion $<102.5^{\circ}$	6.5%
Preoperative extension $<-10.5^{\circ}$	2.9%
Intraoperative extension $<-12.5^{\circ}$	2.4%
Gender	1.4%

\*Indicates the percent of the results predicted by the regression tree when this variable is selected for a split.

TABLE E-5 Selection of the Final Tree for the Entire Patient Cohort

No. of Splits	Risk	Standard Error
6	0.8611	0.0280
7	0.8518	0.0272
8	0.8399	0.0270
<b>10*</b>	<b>0.8257*</b>	<b>0.0265*</b>
11	0.8364	0.0268
12	0.8275	0.0268
15	0.8144	0.0268
16	0.8125	0.0266
<b>18†</b>	<b>0.8096†</b>	<b>0.0267†</b>
19	0.8100	0.0267
20	0.8144	0.0268

\*One-standard-error-rule final tree. †Minimum risk tree.