

Table i. Donor demographics.

Sex	Age, yrs	Weight, kg	BMI, kg/m²
M	84	90.7	27.1
M	55	119.7	34.8
M	80	75.7	24
M	68	97.1	29.8
F	73	53.5	20.3
M	76	78	22.8
F	50	52.2	18.6
F	24	42.6	17.8
M	63	89.4	27.5
M	62	61.2	19.4
F	69	70.3	23.6
F	54	57.2	21
M	63	71.7	22
F	69	63.5	21.9
M	84	69.4	23.3
Mean	64.9	72.8	23.6
Standard deviation	15.4	20	4.6
Min: max	24: 84	42.6: 119.7	17.8: 34.8

Table ii: The values of all 15 knee joints broken down individually.

K01						K02						K03									
	CR	Sig	MC	Sig	UC	Sig	K02	CR	Sig	MC	Sig	UC	Sig	K03	CR	Sig	MC	Sig	UC	Sig	
Varus/valgus, °																					
Mean; range (SD)	-0.37; -1.2 to 3.67 (4.87)	*	0.57; -1.41 to 3.51 (4.92)N/S	N/S	0.47; -1.41 to 3.51 (4.98)	‡	Mean; range (SD)	2.45; 1.42 to 3.07 (1.64)	*	2.04; 1.42 to 3.07 (2.39)N/S	N/S	2.06; 0.69 to 3.11	‡	Mean; range (SD)	6.96; 1.6 to 11.57 (9.67)	N/S	7.41; 2.00 to 12.51 (10.51)	N/S	7.40; 2.24 to 12.05 (9.81)	N/S	
Femorotibial roll back, mm																					
Medial mean; range (SD)	-12.29; -27.65 to -2.77 (24.87)	*	-12.76; -28.18 to -5.83 (22.35)	†	-14.8; -28.45 to -5.87 (22.58)	‡	Medial mean; range (SD)	-29.93; -37.51 to -21.09 (16.42)	*	-28.61; -25.78 to -14.68 (21.1)	†	-24.23; -34.28 to -11.97 (22.31)	‡	Medial mean; range (SD)	-20.99; -33.66 to -5.34 (28.32)	*	-25.2; -34.92 to -16.02 (18.01)	†	-23.54; -34.11 to -12.80 (21.32)	‡	
Lateral mean; range (SD)	-15.37; -23.44 to -9.06 (14.38)	*	-14.91; -21.89 to -6.26 (15.63)	†	-14.69; -22.13 to -7.95 (14.18)	‡	Lateral mean; range (SD)	-10.15; -20.85 to -2.01 (22.86)	*	-10.6; -21.69 to -2.69 (19.0)	†	-6.81; -18.78 to 6.21 (24.99)	‡	Lateral mean; range (SD)	-4.00; -15.51 to 3.77 (19.27)	*	-6.41; -18.13 to 1.53 (19.66)	†	-5.25; -20.17 to 3.47 (23.64)	‡	
Femorotibial rotation, °																					
Mean; range (SD)	0.74; -1.9 to 3.21 (5.11)	*	-3.31; -4.19 to -0.77 (3.42)	†	-2.16; -4.56 to 0.62 (3.42)	‡	Mean; range (SD)	2.54; -2.97 to 7.54 (10.51)	*	0.73; -2.65 to 3.70 (6.35)	†	1.62; -2.94 to 5.92 (8.86)	‡	Mean; range (SD)	9.96; 1.5 to 20.83 (19.32)	*	6.22; 0.07 to 17.01 (16.94)	†	7.05; 0.83 to 14.57 (13.74)	‡	
Femur rotation, °																					
Mean (SD)	5.43 (11.04)	*	5.65 (11.24)	†	4.57 (9.88)	‡	Mean (SD)	12.39 (23.53)	*	13.41 (23.65)	†	12.11 (21.32)	N/S	Mean (SD)	16.94 (36.65)	N/S	17.25 (35.13)	†	18.12 (34.70)	‡	
Tibia rotation, °																					
Mean (SD)	2.78 ((66.00)N/S)	N/S	(4.74) (2.84)	†	2.27 (5.56)	‡	Mean (SD)	5.63 (11.46)	*	3.13 (6.49)	†	4.74 (9.58)	‡	Mean (SD)	9.80 (21.97)	*	7.57 (19.33)	†	7.57 (16.50)	‡	
Patella rotation, °																					
Mean (SD)	5.99 (9.52)	*	8.12 (11.31)	†	5.58 (9.04)	‡	Mean (SD)	6.87 (13.94)	*	5.28 (10.95)	†	5.72 (9.85)	‡	Mean (SD)	14.47 (28.94)	*	15.2 (31.35)	N/S	15.07 (30.41)	‡	
Patellafemoral distance, mm																					
Medial mean; range (SD)	55.06; 41.71 to 68.10 (26.39)	*	51.93; 41.87 to 60.97 (19.1)	†	57.35; 44.70 to 66.81 (22.11)	‡	Medial mean; range (SD)	54.12; 40.30 to 67.63 (27.33)	N/S	53.92; 40.64 to 67.54 (26.90)	†	49.8; 36.37 to 64.59 (28.22)	‡	Medial mean; range (SD)	44.33; 32.81 to 53.04 (20.23)	*	41.57; 31.97 to 53.80 (21.83)	†	40.48; 30.86 to 52.18 (21.32)	‡	
Lateral mean; range (SD)	53.74; 45.71 to 60.90 (15.19)	*	51.36; 4.69 to 59.22 (14.53)	†	52.9; 45.2 to 60.2 (15.02)	‡	Mean (SD)	53.77; (40.97 to 64.30 (23.34)	*	51.99; 39.96 to 60.98 (21.02)	†	53.79; 40.82 to 64.70 (23.88)	‡	Mean (SD)	39.94; 30.58 to 50.62 (20.04)	*	40.74; 34.75 to 48.81 (14.06)	†	42.24; 35.66 to 49.87 (14.22)	‡	
K04						K05						K06									
	CCR	Sig	MC	Sig	UC	Sig		CR	Sig	MC	Sig	UC	Sig		CR	Sig	MC	Sig	UC	Sig	
Varus/valgus, °																					
Mean; range (SD)	8.83; 3.53 to 12.66 (9.14)	*	8.21; 3.39 to 12.08 (8.70)	†	8.75; 3.72 to 12.76 (9.04)	N/S	Mean; range (SD)	0.42; -21.2 to 2.14 (4.27)	N/S	0.61; -1.93 to 0.28 (4.21)	N/S	0.45; -2.18 to 2.20 (43.7)	N/S	Mean; range (SD)	0.48; -0.99 to 0.96 (1.95)	*	-0.26; -0.99 to 0.96 (1.95)	*	†0.49; -1.25 to 1.81 (2.05)	N/S	
Femorotibial roll back, mm																					
Medial mean; range (SD)	-28.97; -43.47 to -15.76 (27.71)	*	-15.13; -25.22 to -4.83 (20.39)	†	-16.58; -27.35 to -5.85 (21.5)	‡	Medial mean; range (SD)	-22.6; -33.65 to -9.92 (23.73)	*	-26.14; -36.71 to -11.81 (24.89)	†	-28.87; -40.9 to -15.27 (24.81)	‡	Medial mean; range (SD)	-23.58; -37.26 to -12.48 (24.78)	*	-27.24; -39.71 to -16.14 (23.58)	†	-27.78; -26.98 to -16.22 (20.76)	‡	
Lateral mean; range (SD)	-26.32; -29.08 to -21.63 (7.45)	*	-23.82; -28.21 to -19.41 (8.80)	†	-22.56; -26.05 to 17.89 (8.16)	‡	Lateral mean; range (SD)	-20.92; -2.43 to 17.23 (8.21)	*	-25.77; -28.68 to 23.12 (5.57)	†	-25.94; -29.89 to -22.72 (7.17)	‡	Lateral mean; range (SD)	-17.06; -24.31 to 12.11 (12.20)	*	-19.02; -25.82 to 16.01 (11.28)	†	-20.98; -27.09 to 16.01 (11.08)	‡	
Femorotibial rotation, °																					

	Mean; range (SD)	-3.5; -6.91 to -0.55 (6.36)	*	-4.98; -8.43 to -2.84 (5.59)	†	-2.42; -5.10 to -0.19	‡	Mean; range (SD)	3.41; 0.66 to 4.44 (3.78)	*	1.3; 0.31 to 1.81 (1.51)	†	1.70; -0.31 to 2.31 (2.63)	‡	Mean; range (SD)	3.58; 0.88 to 5.16 (4.28)	*	2.1; 0.26 to 4.30 (4.04)	†	3.51; 1.63 to 5.00 (3.37)	N/S
Femur rotation, °																					
	Mean (SD)	7.18 (14.64)	*	6.56 (14.09)	†	6.97 (15.11) N/S	‡N/S	Mean (SD)	8.96 (17.06)	N/S	8.65 (15.07)	†	9.66 (17.53)	‡	Mean (SD)	5.87 (11.51)	*	4.26 (9.30)	†	6.13 (12.43)	‡
Tibia rotation, °																					
	Mean (SD)	4.85 (7.19)	*	4.69 (8.81)	†	3.81 (7.23)	‡	Mean (SD)	2.63 (4.26)	*	1.67 (3.59)	†	2.5 (4.74)	‡	Mean (SD)	2.36 (4.01)	*	1.48 (3.43)	†	1.70 (2.87)	‡
Patella rotation, °																					
	Mean (SD)	10.06 (15.86)	*	8.82 (14.21)	†	9.18 (14.58)	‡	Mean (SD)	3.3 (5.74)	*	5.01 (6.62)	†	3.58 (5.57)	‡	Mean (SD)	8.04 (13.28)	*	9.24 (15.07)	†	8.58 (13.92)	‡
Patellafemoral distance, mm																					
	Medial mean; range (SD)	42.85; 30.02 to 55.47 (25.45)	*	48.07; 34.79 to 59.79 (25.00)	†	44.83; 31.90 to 56.01 (24.11)	‡	Medial mean; range (SD)	42.45; 27.79 to 56.22 (28.44)	*	43.21; 29.27 to 56.33 (27.06)	†	42.58; 26.60 to 56.58 (29.97) N/S	‡	Medial mean; range (SD)	38.51; 26.67 to 53.08 (27.40)	*	39.33; 26.34 to 51.19 (24.85)	†	44.14; 29.68 to 54.78 (25.10)	‡
	Lateral mean; range (SD)	51.28; 43.03 to 60.70 (17.67)	*	50.69; 43.01 to 60.42 (17.41)	†	49.25; 41.52 to 56.60 (15.07)	‡	Lateral mean; range (SD)	45.35; 33.10 to 55.46 (22.35)	*	46.34; 36.480 to 55.35 (18.87)	†	47.42; 36.93 to 55.38 (20.45)	‡	Lateral mean; range (SD)	43.33; 39.15 to 51.20 (12.05)	*	44.51; 38.38 to 51.46 (12.08)	†	47.32; 42.60 to 52.68 (10.08)	‡
K07						K08						K09									
	CR	Sig	MC	Sig	UC	Sig	CR	Sig	MC	Sig	UC	Sig	CR	Sig	MC	Sig	UC	Sig	UC	Sig	
Varus/valgus, °																					
	Mean; range (SD)	0.59; -1.71 to 1.88 (3.60)	*	1.00; -2.5 to 2.29 (4.81)	†	1.74; -0.96 to 2.92 (3.88)	‡	Mean	2.14; -1.97 to 4.97 (6.95)	*	2.94; -0.18 to 4.45 (4.63)	N/S	2.93; -0.50 to 4.57 (5.07)	‡	Mean	0.18; -0.69 to 1.34 (2.03)	*	0.11; -0.57 to 1.08 (1.65)	†	0.59; -0.08 to 1.44 (1.52)	‡
Femorotibial roll back, mm																					
	Medial mean; range (SD)	-4.39; -8.61 to -1.26 (7.34)	*	-4.90; -8.72 to -2.14 (6.58)	†	-4.29; -8.55 to -1.82 (6.74)	‡	Medial mean; range (SD)	-24.91; -29.37 to -18.39 (10.98)	*	-24.37; -28.17 to -14.50 (13.67)	†	-22.55; -26.82 to -14.25 (12.57)	‡	Medial mean; range (SD)	-11.09; -18.39 to -6.56 (11.83)	*	-13.06; -19.75 to -6.88 (12.87)	†	-12.23; -17.01 to -6.96 (10.04)	‡
	Lateral mean; range (SD)	-1.55; -10.01 to 7.44 (17.45)	*	-2.80; -9.70 to 2.59 (12.29)	†	-4.97; -13.44 to 1.08 (14.52)	‡	Lateral mean; range (SD)	-19.59; -23.57 to -13.66 (9.90)	*	-19.95; -24.24 to -15.96 (8.28)	†	-18.42; -23.81 to -14.50 (9.30)	‡	Lateral mean; range (SD)	-19.31; -27.08 to -13.98 (13.10)	*	-20.4; -28.65 to -15.69 (12.96)	†	-19.87; -28.40 to -14.43 (13.97)	‡
Femorotibial rotation, °																					
	Mean; range (SD)	7.38; -0.60 to 11.44 (12.04)	*	6.77; 0.33 to 12.95 (12.63)	N/S	6.73; -0.27 to 13.57 (13.84)	‡	Mean; range (SD)	6.9; -1.55 to 14.02 (15.57)	*	5.55; -1.27 to 10.28 (11.55)	†	6.41; -1.40 to 11.17 (12.56)	N/S	Mean; range (SD)	4.14; 0.47 to 8.41 (7.94)	*	2.71; 0.20 to 5.50 (5.29)	†	3.62; 0.38 to 6.27 (5.89)	‡
Femur rotation, °																					
	Mean (SD)	8.39 (17.05)N/S	N/S	8.17 (16.66)	†	9.14 (18.06)	‡	Mean (SD)	10.02 (22.8)	N/S	10.08 (22.78)	†	10.78 (31.12)	‡	Mean (SD)	3.83 (7.58)	*	4.17 (8.03)	†	2.82 (7.45)	‡
Tibia rotation, °																					
	Mean (SD)	5.69 (10.18)	*	5.26 (11.93)	†	5.48 (11.88)	‡	Mean (SD)	6.93 (14.68)	*	5.55 (10.82)	†	6.92 (12.16)	N/S	Mean (SD)	4.73 (8.69)	*	2.69 (5.52)	†	3.10 (6.01)	‡
Patella rotation, °																					
	Mean (SD)	5.74 (7.90)	*	8.07 (14.08) N/S	†	8.25 (17.32)	‡	Mean (SD)	5.24 (11.80)	*	7.35 (15.77)	†	6.10 (12.98)	‡	Mean (SD)	2.81 (4.74)	*	4.65 (7.27)	†	7.45 (13.32)	‡
Patellafemoral distance, mm																					
	Medial mean; range (SD)	50.71; 27.56 to 62.06 (24.49)	*	48.04 (36.32 to 58.82 (22.49)	†	51.05; 26.94 to 62.23 (25.29)	N/S	Medial mean; range (SD)	43.67; 29.90 to 51.89 (21.99)	*	44.25; 29.78 to 52.60 (22.82)	†	43.42; 29.30 to 53.26 (23.97)	N/S	Medial mean; range (SD)	47.00; (37.95 to 58.20 (20.25)	*	48.37; 38.38 to 58.64 (20.26)	N/S	48.25; 38.20 to 56.43 (18.23)	‡

	Lateral mean; range (SD)	52.23; 45.42 to 61.71 (16.29)	N/S	52.27; 44.77 to 61.37 (16.61)	†	51.34; 45.12 to 58.67 (13.55)	‡	Lateral mean; range (SD)	46.22; 40.64 to 52.72 (12.09)	*	45.72; 38.97 to 53.40 (14.43)	N/S	45.66; 39.09 to 54.80 (15.71)	‡	Lateral mean; range (SD)	54.73; 44.56 to 64.88 (20.31)	*	51.80; 43.70 to 61.06 (17.36)	†	50.94; 43.48 to 58.27 (14.79)	‡	
	K10						K11						K12									
		CR	Sig	MC	Sig	UC	Sig		CR	Sig	MC	Sig	UC	Sig		CR	Sig	MC	Sig	UC	Sig	
	Varus/valgus, °																					
	Mean; range (SD)	-0.44; -3.41 to 2.37 (5.78)	*	-2.74; -6.12 to 1.68 (7.80)	†	-3.42; -6.85 to 1.70 (8.54)	‡	Mean; range (SD)	3.63; 0.38 to 4.85 (4.47)	*	4.16; 0.97 to 5.48 (4.51)	†	3.33; 0.07 to 4.94 (4.87)	‡	Mean; range (SD)	-1.30; -7.54 to 3.08 (1.62)	N/S	-0.82; -7.20 to 3.46 (10.66)	N/S	-1.22; -7.60 to 3.16 (10.76)	N/S	
	Femorotibial roll back*, mm																					
	Medial mean; range (SD)	-23.58 (-31.07 to -15.42) (15.65)	*	-24.56; -30.7 to -19.61 (10.46)	†	-22.48; -26.53 to -15.77 (8.87)	‡	Medial mean; range (SD)	-15.47; -23.29 to -9.85 (13.44)	*	-21.97; -28.27 to -14.65 (12.62)	†	-20.08; -29.27 to -14.48 (14.79)	‡	Medial mean; range (SD)	-24.87; -24.10 to -18.97 (15.13)	*	-25.95; -33.76 to -19.97 (12.19)	†	-26.36; -34.86 to -19.97 (14.89)	‡	
	Lateral mean; range (SD)	-15.42; -21.16 to -8.16 (12.99)	*	-16.51; -21.51 to -11.72 (9.79)	†	-16.24; -21.58 to -11.15 (10.43)	‡	Lateral mean; range (SD)	-14.32; -30.44 to -0.51 (29.94)	*	-16.12; -29.33 to -9.38 (19.94)	N/S	-16.45; -31.80 to -6.73 (25.06)	‡	Lateral mean; range (SD)	-12.63; -17.31 to -2.9 (14.41)	*	-17.8; -23.75 to -12.19 (11.56)	†	-16.59; -22.49 to -10.17 (12.32)	‡	
	Femorotibial rotation, °																					
	Mean; range (SD)	0.06; 3.61 to 2.92 (6.54)	*	-1.19; -44.9 to 2.44 (6.93)	†	-2.57; -8.30 to 2.03 (10.33)	‡	Mean; range (SD)	0.72; -8.19 to 812 (16.31)	N/S	0.38; -6.34 to 4.57(10.91)	N/S	0.23; -8.40 to 5.01 (13.41)	N/S	Mean; range (SD)	1.73; -0.10 to 6.667 (6.77)	*	0.10; -0.74 to 1.22 (1.96)	N/S	0.07; -0.72 to 1.35 (2.07)	‡	
	Femur rotation, °																					
	Mean (SD)	6.11 (12.29)/N/S	N/S	6.28 (12.03)/N/S	N/S	6.46		Mean (SD)	7.62 (14.91)	*	9.03 (17.81)	†	9.84 (19.04)	‡	Mean (SD)	6.47 (12.41)	*	2.1 (5.01)	†	4.12 (7.75)	‡	
	Tibia rotation, °																					
	Mean (SD)	3.53 (7.29)	*	4.84 (10.08)	†	5.83 (11.72)	‡	Mean (SD)	3.77 (9.17)	*	2.81 (6.58)	†	3.50 (10.09)	‡	Mean (SD)	3.99 (9.37)	N/S	3.84 (10.06)	N/S	4.01 (10.32)	N/S	
	Patella rotation, °																					
	Mean (SD)	8.58 (14.83)	*	6.99 (10.85)	†	4.74 (6.97)	‡	Mean (SD)	4.75 (8.55)	*	13.33 (20.63)	†	11.68 (17.47)	‡	Mean (SD)	10.72 (18.94)/N/S	N/S	10.74 (20.09)/N/S	N/S	10.69 (18.69) N/S	‡	
	Patellafemoral distance, mm																					
	Medial mean; range (SD)	42.24; 32.35 to 49.72 (17.37)	*	43.79; 32.81 (to0 51.00) (18.19)	†	42.84 (32.61 to 51.10) (18.49)	‡	Medial mean; range (SD)	41.97; 31.70 to 57.25 (25.55)	*	43.89; 31.34 to 54.32 (22.98)	†	43.13; 30.50 to 55.56 (25.06)	‡	Medial mean; range (SD)	38.84; 28.16 to 49.47 (21.32)	*	42.26; 30.93 to 51.64 (20.71)	N/S	42.27; 32.43 to 52.67 (20.24)	‡	
	Lateral mean; range (SD)	37.31; 29.30 to 39.96 (17.66)	*	38.91; 30.27 to 47.09 (16.81)	N/S	39.20; 30.70 to 47.43 (16.73)	‡	Lateral mean; range (SD)	44.52; 38.43 to 55.19 (18.76)	*	43.78; 38.32 to 49.95 (11.63)	†	44.63; 37.82 to 51.47 (13.64)	N/S	Lateral mean; range (SD)	41.88; 30.46 to 52.29 (20.47)	*	40.93; 30.46 to 49.94 (19.49)	†	42.91; 30.33 to 53.14 (22.81)	‡	
	K13						K14						K15									
		CR	Sig	MC	Sig	UC	Sig		CR	Sig	MC	Sig	UC	Sig		CR	Sig	MC	Sig	UC	Sig	
	Varus/valgus, °																					
	Mean; range (SD)	-0.6; -2.10 to -0.11 (1.98)	*	-1.05; -1.44 to 0.11 (1.55)	N/S	-1.12 (-3.04 to 0.06) (3.09)	‡	Mean; range (SD)	-2.22; -4.58 to 1.37 (5.95)	*	-1.03; -2.92 to 0.89 (3.81)	N/S	-1.21; -2.79 to 0.88 (3.67)	‡	Mean; range (SD)	1.12; -1.20 to 3.67 (4.87)	N/S	0.93; -1.41 to 3.51 (4.92)	N/S	0.75; -1.54 to 3.45 (4.98)	‡	
	Femorotibial roll back, mm																					
	Medial mean; range (SD)	-13.23; -21.96 to -5.61 (16.35)	*	-15.45; -23.76 to -7.89 (15.87)	N/S	-15.56; -25.79 to -7.22 (18.58)	‡	Medial mean; range (SD)	-20.6; -33.17 to -12.14 (21.03)	*	-21.59; -32.31 to -13.69 (18.62)	†	-21.29; -30.88 to 16.89 (13.99)	‡	Medial mean; range (SD)	-15.63; -21.20 to 11.04 (10.16)	*	-19.07; -22.67 to 15.60 (7.07)	†	-16.15; -19.60 to 12.68 (6.92)	‡	
	Lateral mean; range (SD)	-4.74; -15.93 to -4.52 (20.44)	*	-7.84; -26.52 to 1.36 (27.88)	†	-5.54; -20.26 to 2.96 (23.22)	‡	Lateral mean; range (SD)	-4.70; -19.32 to 6.37 (25.7)	*	-4.07; -19.32 to 6.37 (25.70)		-4.85; -21.73 to 5.89 (27.62)	N/S	Lateral mean; range (SD)	-18.04; -29.16 to 12.25 (16.90)	*	-20.48; -28.95 to 15.48 (13.13)	†	-19.49; -27.95 to 15.48 (12.47)	‡	

Femorotibial rotation, °																					
Mean; range (SD)	1.45; -0.84 to 6,17 (7.01)	*	-3.21; -1.59 to 0.46 (11.05)	†	-1.41; -2.58 to 0.34 (2.92)	‡	Mean; range (SD)	3.88; 1.13 to 7.11 (5.98)	*	3.03; 0.53 to 7.60 (7.08)	†	1.68; -0.35 to 5.90 (6.25)	‡	Mean; range (SD)	-5.52; -8.14 to -0.93 (7.21)	*	-3.68; -5.56 to -1.15 (4.41)	N/S	-3.51; -4.50 to -1.07(3.42)	‡	
Femur rotation, °																					
Mean (SD)	9.67 (18.78)	*	8.5 (16.31)	†	8.75 (16.6)	‡	Mean (SD)	4.88 (9.83)	*	5.65 (12.04)	†	6.90 (14.15)	‡	Mean (SD)	6.27 (12.32)	*	5.18 (10.94)	†	6.03 (12.43)	‡	
Tibia rotation, °																					
Mean (SD)	2.01 (7.50)	*	3.00 (10.25)	†	1.53 (3.69)	‡	Mean (SD)	4.78 (9.46)	*	3.02 (8.07)	†	2.82 (7.24)	‡	Mean (SD)	4.49 (8.54)	*	3.05 (6.36)	†	3.64 (6.18)	‡	
Patella rotation, °																					
Mean (SD)	7.11 (11.42)	*	9.06 (14.07)	†	9.51 (16.17)	‡	Mean (SD)	8.14 (15.37)	N/S	8.26 (16.01)	N/S	8.27 (16.20)	N/S	Mean (SD)	2.21 (5.31)	*	2.63 (55.2)	N/S	2.63 (4.62)	‡	
Patellafemoral distance, mm																					
Medial mean; range (SD)	45.37; 31.16 to 59.13 (27.97)	N/S	45.45; 31.94 to 59.51 (27.57)	†	44.32; 32.09 to 58.03 (25.95)	‡	Medial mean; range (SD)	37.32; 30.15 to 45.91 (15.76)	*	38.83; 30.38 to 47.34 (16.96)	†	37.66; 27.53 to 48.80 (21.28)	N/S	Medial mean; range (SD)	42.17; 31.10 to 55.23 (24.13)	*	46.15; 36.8 to 55.46 (18.65)	†	45.38; 34.68 to 54.47 (19.81)	‡	
Lateral mean; range (SD)	45.52; 42.00 to 51.46 (9.46)	*	46.07; 42.87 to 51.16 (8.29)	N/S	46.17; 43.56 to 51.03 (7.46)	‡	Lateral mean; range (SD)	41.16; 36.88 to 47.97 (11.08)	*	41.43; 37.22 to 48.62 (11.40)	†	43.08; 38.69 to 49.91 (11.32)	‡	Lateral mean; range (SD)	45.78; 38.61 to 54.09 (15.48)	*	45.37; 38.47 to 53.10 (14.63)	†	43.42; 37.62 to 51.23 (13.61)	‡	

If a normal distribution of the data was found, the data were assessed using a one-way analysis of variance. The homogeneity of the variance was tested by Levene's test. If homogeneity could not be shown, the Brown-Forsythe test was used. CR, cruciate-retaining; MC, medial congruent; N/S, not significant; Sig, significance; UC, ultra-congruent.

*Statistical significance for CR versus MC.

†Statistical significance for MC versus UC.

‡Statistical significance for CR versus UC.