Table 1: Means, standard deviations (SD) and ranges for subchondral bone mineral densities (SCB vBMD, units of mgHA/cm^3)

	CF cohort		RC cohort		UC cohort	
SITE	**SCB vBMD**	**SD**	**SCB vBMD**	**SD**	**SCB vBMD**	**SD**
1	732	114.5	695	31.3	738	47.1
2	734	121.4	696	29.9	731	62.2
3	727	115.0	711	46.6	685	31.1
4	748	105.6	709	41.7	759	52.9
5	694	149.6	684	48.8	715	49.9
6	581	112.3	622	45.1	661	23.7
7	654	153.8	670	34.8	651	42.1
8	807	111.9	780	31.5	708	35.5
9	663	97.1	697	52.3	636	26.1
10	681	93.6	696	39.4	692	34.3
11	649	150.4	704	38.8	700	57.2
12	642	166.8	714	46.8	716	64.0
13	735	104.8	717	44.6	652	62.2
14	711	97.6	750	43.6	759	45.1
15	723	77.9	734	45.9	744	38.9
Range	581-807	77.9-166.8	622-780	29.9-52.3	636-759	26.1-64.0

Table 2. Means, standard deviations (SD) and ranges for subchondral bone thickness (mm)

	CF cohort		RC cohort		UC cohort	
SITE	**Thickness**	**SD**	**Thickness**	**SD**	**Thickness**	**SD**
1	2.5	0.4	2.4	0.3	2.7	0.5
2	2.4	0.7	1.6	0.7	1.5	0.4
3	3.8	0.8	3.0	0.4	3.6	0.4
4	2.3	1.0	2.7	1.2	3.7	1.6
5	2.3	0.5	2.5	0.7	3.4	1.0
6	2.3	0.3	2.5	0.4	3.3	0.8
7	2.7	0.6	3.4	0.5	2.7	0.7
8	3.5	0.6	3.8	0.4	3.4	0.4
9	3.1	0.9	4.3	0.5	3.7	0.8
10	2.9	0.2	3.3	0.4	4.2	0.6
11	1.8	1.0	2.7	1.0	3.6	1.2
12	1.6	0.9	1.9	0.9	1.4	0.2
13	2.8	0.9	2.4	1.1	2.6	0.7
14	1.3	0.4	1.8	0.8	1.4	0.3
15	2.8	1.2	3.9	1.0	6.1	0.7
Range	1.3 – 3.8	0.2 – 1.2	1.6 – 3.9	0.3 – 1.2	1.4 – 6.1	0.2 – 1.6

Table S1. Comparison of density between cohorts at all sites (top 3 rows) and at individual sites. First column outlines the site and cohorts. Second column gives the p-value for non-parametric two-tailed (Wilcoxon) Mann-Whitney U tests for equal medians. Third and fourth columns give the CV1 and CV2, the respective coefficients of variation. The last column is the p-value for the Fligner-Kileen tests. RC, raced control; UC, unraced; CF, raced and experienced contralateral P1 fracture.

Site – cohort comparison	**P-value** Mann-Whitney U for equal medians	**CV1** Coefficient of variation 1 First site/cohort listed	**CV2** Coefficient of variation 2 Second site/cohort listed	**P-value** Fligner-Kileen (CV comparison)
All sites combined by cohort				
All sites RC vs UC	0.586	7.63	8.65	0.074
All sites RC vs CF	0.309	7.63	18.98	**<0.0001**
All sites UC vs CF	0.341	8.65	18.98	**<0.0001**
Individual test sites between cohorts				
1 RC vs UC	0.070	4.75	7.01	0.213
1 RC vs CF	0.212	4.75	17.13	**0.016**
1 UC vs CF	0.930	7.01	17.13	0.061
2 RC vs UC	0.157	4.51	9.33	0.054
2 RC vs CF	0.142	4.51	18.11	**0.026**
2 UC vs CF	0.990	9.33	18.11	0.162
3 RC vs UC	0.143	6.92	4.94	0.356
3 RC vs CF	0.416	6.92	17.35	**0.029**
3 UC vs CF	0.378	4.94	17.35	0.063
4 RC vs UC	0.103	6.20	7.63	0.399
4 RC vs CF	0.142	6.19	15.46	0.058
4 UC vs CF	0.930	7.62	15.46	0.179
5 RC vs UC	0.540	7.11	7.67	0.497
5 RC vs CF	0.625	7.12	23.62	**0.029**
5 UC vs CF	0.936	7.67	23.62	0.082
6 RC vs UC	**0.044**	7.63	3.90	0.061
6 RC vs CF	0.700	7.63	21.17	0.064

6 UC vs CF	0.472	3.91	21.17	**0.018**
7 RC vs UC	0.550	5.49	7.05	0.087
7 RC vs CF	0.410	5.49	25.75	**0.016**
7 UC vs CF	0.470	7.05	25.75	0.059
8 RC vs UC	**0.011**	4.26	5.48	0.250
8 RC vs CF	0.510	4.26	15.15	**0.032**
8 UC vs CF	0.065	5.48	15.16	0.072
9 RC vs UC	**0.045**	7.87	4.47	0.051
9 RC vs CF	0.704	7.88	16.00	0.490
9 UC vs CF	0.065	4.47	16.00	0.179
10 RC vs UC	0.700	5.94	5.42	0.258
10 RC vs CF	0.870	5.94	15.10	**0.036**
10 UC vs CF	0.930	5.42	15.10	**0.032**
11 RC vs UC	0.870	5.82	8.92	0.238
11 RC vs CF	0.960	5.82	25.41	0.019
11 UC vs CF	0.930	8.92	25.41	0.106
12 RC vs UC	0.780	6.91	9.81	0.142
12 RC vs CF	0.950	6.91	28.44	**0.039**
12 UC vs CF	0.680	9.81	28.44	0.122
13 RC vs UC	0.057	6.57	10.43	0.107
13 RC vs CF	0.510	6.54	15.63	0.204
13 UC vs CF	0.090	10.44	15.63	0.416
14 RC vs UC	0.870	6.12	6.48	0.250
14 RC vs CF	0.510	6.12	15.04	0.210
14 UC vs CF	0.690	6.48	15.04	0.240
15 RC vs UC	0.660	6.59	5.73	0.477
15 RC vs CF	0.950	6.59	11.79	0.382
15 UC vs CF	0.680	5.73	11.79	0.393

Table S2. Mann-Whitney significance p-values for pairwise comparisons among sites of subchondral bone density within each cohort (ns, >0.05; * <0.05; ** <0.01; ***<0.001).

CF															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2		ns	ns	ns	*	ns	ns	ns	ns	ns	ns	ns	ns	ns	
3	ns		ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
4	ns	ns		ns	*	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
5	ns	ns	ns		ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
6	*	ns	*	ns		ns	*	ns	ns	ns	ns	*	*	*	*
7	ns	ns	ns	ns	ns		ns	ns	ns	ns	ns	ns	ns	ns	ns
8	ns	ns	ns	ns	*	ns		*	ns	ns	ns	ns	ns	ns	ns
9	ns	ns	ns	ns	ns	ns	*		ns	ns	ns	ns	ns	ns	ns
10	ns	ns	ns	ns	ns	ns	ns	ns		ns	ns	ns	ns	ns	ns
11	ns	ns	ns	ns	ns	ns	ns	ns	ns		ns	ns	ns	ns	ns
12	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns		ns	ns	ns	ns
13	ns	ns	ns	ns	*	ns	ns	ns	ns	ns	ns		ns	ns	ns
14	ns	ns	ns	ns	*	ns	ns	ns	ns	ns	ns	ns		ns	ns
15	ns	ns	ns	ns	*	ns	ns	ns	ns	ns	ns	ns	ns		ns
RC															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	ns	ns	ns	ns	**	ns	***	ns	ns	ns	ns	ns	**	*	ns
2		ns	ns	ns	**	ns	***	ns	ns	ns	ns	ns	*	*	
3	ns		ns	ns	**	*	**	ns	ns	ns	ns	ns	ns	ns	ns
4	ns	ns		ns	**	*	**	ns	ns	ns	ns	ns	ns	ns	ns
5	ns	ns	ns		**	ns	**	ns	ns	ns	ns	ns	*	ns	ns
6	**	**	**	**		*	***	*	**	**	**	**	***	**	**
7	ns	*	*	ns	*		***	ns	ns	ns	ns	*	**	**	ns

8	***	**	**	**	***	***		**	***	**	**	**	ns	*	***
9	ns	ns	ns	ns	*	ns	**		ns	ns	ns	ns	*	ns	ns
10	ns	ns	ns	ns	**	ns	***	ns		ns	ns	ns	*	ns	ns
11	ns	ns	ns	ns	**	ns	**	ns	ns		ns	ns	*	ns	ns
12	ns	ns	ns	ns	**	ns	**	ns	ns	ns		ns	ns	ns	ns
13	ns	ns	ns	ns	**	*	**	ns	ns	ns	ns		ns	ns	ns
14	*	ns	ns	*	***	**	ns	*	*	*	ns	ns		ns	*
15	*	ns	ns	ns	**	**	*	ns	ns	ns	ns	ns	ns		*
UC															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	ns	ns	ns	ns	*	*	ns	**	ns	ns	ns	*	ns	ns	ns
2		ns	ns	ns	*	ns	ns	*	ns	ns	ns	ns	ns	ns	
3	ns		*	ns	ns	ns	ns	*	ns	ns	ns	ns	*	*	ns
4	ns	*		ns	*	*	ns	**	*	ns	ns	*	ns	ns	ns
5	ns	ns	ns		ns	ns	ns	*	ns	ns	ns	ns	ns	ns	ns
6	*	ns	*	ns		ns	ns	ns	ns	ns	ns	ns	**	**	*
7	ns	ns	*	ns	ns		ns	ns	ns	ns	ns	ns	*	*	ns
8	ns	ns	ns	ns	ns	ns		*	ns	ns	ns	ns	ns	ns	ns
9	*	*	**	*	ns	ns	*		*	ns	ns	ns	**	**	*
10	ns	ns	*	ns	ns	ns	ns	*		ns	ns	ns	*	ns	ns
11	ns	ns	ns	ns	ns	ns	ns	ns	ns		ns	ns	ns	ns	ns
12	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns		ns	ns	ns	ns
13	ns	ns	*	ns	ns	ns	ns	ns	ns	ns	ns		*	*	ns
14	ns	*	ns	ns	**	*	ns	**	*	ns	ns	*		ns	ns
15	ns	*	ns	ns	**	*	ns	**	ns	ns	ns	*	ns		ns

CF, raced with contralateral fracture; RC, raced; UC, unraced.

Table **S3.** Comparison of thickness between cohorts at all sites (top 3 rows) and at individual sites. First column outlines the site and cohorts. Second column gives the p-value for non-parametric two-tailed (Wilcoxon) Mann-Whitney U tests for equal medians. Third and fourth columns give the CV1 and CV2, the respective coefficients of variation. The last column is the p-value for the Fligner-Kileen tests. RC, raced control; UC, unraced; CF, raced and experienced contralateral P1 fracture.

Site – cohort comparison	**P-value** Mann-Whitney U for equal medians	**CV1** Coefficient of variation 1 First site/cohort listed	**CV2** Coefficient of variation 2 First site/cohort listed	**P-value** Fligner-Kileen
All sites combined by cohort				
All sites RC vs UC	0.120	38.39	44.82	0.135
All sites RC vs CF	0.070	38.39	39.23	0.471
All sites UC vs CF	**0.003**	44.82	39.23	0.101
Individual test sites between cohorts				
1 RC vs UC	0.115	14.29	19.79	**0.030**
1 RC vs CF	0.587	14.29	16.32	0.293
1 UC vs CF	0.521	19.79	16.32	0.145
2 RC vs UC	0.870	47.06	26.37	0.060
2 RC vs CF	0.057	47.10	30.56	0.059
2 UC vs CF	**0.045**	26.37	30.56	0.465
3 RC vs UC	0.015	13.75	13.09	0.339
3 RC vs CF	0.070	13.75	22.38	**0.039**
3 UC vs CF	0.688	13.09	22.38	0.082
4 RC vs UC	0.254	46.02	47.69	0.336
4 RC vs CF	0.625	46.02	47.07	0.130
4 UC vs CF	0.173	47.69	47.07	0.344
5 RC vs UC	0.057	29.88	32.34	0.405
5 RC vs CF	0.481	29.88	26.16	0.375
5 UC vs CF	0.066	32.34	26.16	0.146
6 RC vs UC	0.093	17.52	27.90	0.060
6 RC vs CF	0.440	17.52	15.56	0.236
6 UC vs CF	0.065	27.90	15.56	0.094

7 RC vs UC	0.174	14.49	29.95	**0.028**
7 RC vs CF	0.057	14.83	23.36	0.140
7 UC vs CF	0.740	29.95	23.36	0.172
8 RC vs UC	0.092	12.39	12.49	0.970
8 RC vs CF	0.625	12.39	17.58	0.145
8 UC vs CF	0.630	12.50	17.58	0.132
9 RC vs UC	0.115	13.06	21.92	0.129
9 RC vs CF	**0.034**	13.06	33.33	**0.016**
9 UC vs CF	0.128	21.92	33.33	0.122
10 RC vs UC	**0.011**	12.64	15.08	0.222
10 RC vs CF	0.074	12.64	9.06	0.189
10 UC vs CF	**0.005**	15.08	9.06	0.125
11 RC vs UC	0.212	36.96	36.03	0.362
11 RC vs CF	0.073	36.96	61.18	0.290
11 UC vs CF	**0.031**	36.03	61.18	0.387
12 RC vs UC	0.254	49.67	15.40	0.088
12 RC vs CF	0.302	49.68	59.59	0.230
12 UC vs CF	0.747	15.40	59.60	0.060
13 RC vs UC	0.587	49.54	28.53	0.497
13 RC vs CF	0.551	49.54	36.91	0.110
13 UC vs CF	0.688	28.53	36.91	0.392
14 RC vs UC	0.254	47.83	21.38	0.053
14 RC vs CF	**0.034**	49.54	33.72	0.439
14 UC vs CF	0.936	21.38	33.72	0.145
15 RC vs UC	**0.003**	28.11	12.54	0.060
15 RC vs CF	0.104	28.11	49.15	**0.008**
15 UC vs CF	**0.005**	12.54	49.15	**0.018**

Table S4. Mann-Whitney significance p-values for pairwise comparisons among sites of subchondral bone thickness within each cohort (ns, >0.05; * <0.05; ** <0.01; ***<0.001).

CF															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	ns	*	ns	ns	ns	ns	*	ns	ns	ns	ns	ns	**	ns	ns
2		*	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*	ns	
3	*		*	*	**	*	ns	ns	ns	*	*	ns	**	ns	*
4	ns	*		ns	ns	ns	ns	ns	ns	ns	ns	ns	*	ns	ns
5	ns	*	ns		ns	ns	*	ns	ns	ns	ns	ns	**	ns	ns
6	ns	**	ns	ns		ns	**	ns	*	ns	ns	ns	**	ns	ns
7	ns	*	ns	ns	ns		ns	ns	ns	ns	*	ns	**	ns	ns
8	ns	ns	ns	*	**	ns		ns	ns	*	*	ns	**	ns	ns
9	ns	ns	ns	ns	ns	ns	ns		ns	*	*	ns	**	ns	ns
10	ns	ns	ns	ns	*	ns	ns	ns		ns	ns	ns	**	ns	ns
11	ns	*	ns	ns	ns	ns	*	*	ns		ns	ns	ns	ns	ns
12	ns	*	ns	ns	ns	*	*	*	ns	ns		*	ns	ns	ns
13	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	*		*	ns	ns
14	*	**	*	**	**	**	**	**	**	ns	ns	*		ns	*
15	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns		ns
RC															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	*	**	ns	ns	ns	***	***	***	***	ns	ns	ns	*	**	*
2		***	*	*	**	***	***	***	***	*	ns	ns	ns	***	
3	***		ns	*	*	*	**	***	ns	ns	**	ns	**	*	***
4	*	ns		ns	ns	ns	*	**	ns	ns	ns	ns	ns	*	*
5	*	*	ns		ns	**	**	***	**	ns	ns	ns	*	**	*
6	**	*	ns	ns		**	***	***	**	ns	*	ns	*	**	**
7	***	*	ns	**	**		ns	**	ns	ns	**	ns	**	ns	***

8	***	**	*	**	***	ns		ns	*	*	**	ns	**	ns	***
9	***	***	**	***	***	**	ns		**	**	***	**	***	ns	***
10	***	ns	ns	**	**	ns	*	**		ns	**	ns	**	ns	***
11	*	ns	ns	ns	ns	ns	*	**	ns		ns	ns	*	*	*
12	ns	**	ns	ns	*	**	**	***	**	ns		ns	ns	**	ns
13	ns	ns	ns	ns	ns	ns	ns	**	ns	ns	ns		ns	**	ns
14	ns	**	ns	*	*	**	**	***	**	*	ns	ns		**	ns
15	***	*	*	**	**	ns	ns	ns	ns	*	**	**	**		***
UC															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	**	*	ns	ns	ns	ns	ns	ns	**	ns	**	ns	**	**	**
2		**	*	**	**	*	**	**	**	**	ns	*	ns	**	
3	**		ns	ns	ns	ns	ns	ns	ns	ns	**	*	**	**	**
4	*	ns		ns	ns	ns	ns	ns	ns	ns	**	ns	*	*	*
5	**	ns	ns		ns	ns	ns	ns	ns	ns	**	ns	**	*	**
6	**	ns	ns	ns		ns	ns	ns	ns	ns	**	ns	**	**	**
7	*	ns	ns	ns	ns		ns	ns	*	ns	**	ns	**	**	*
8	**	ns	ns	ns	ns	ns		ns	*	ns	**	ns	**	**	**
9	**	ns	ns	ns	ns	ns	ns		ns	ns	**	*	**	*	**
10	**	ns	ns	ns	ns	*	*	ns		ns	**	**	**	*	**
11	**	ns	ns	ns	ns	ns	ns	ns	ns		**	ns	**	*	**
12	ns	**	**	**	**	**	**	**	**	**		*	ns	**	ns
13	*	*	ns	ns	ns	ns	ns	*	**	ns	*		*	**	*
14	ns	**	*	**	**	**	**	**	**	**	ns	*		**	ns
15	**	**	*	*	**	**	**	*	*	*	**	**	**		**

CF, raced with contralateral fracture; RC, raced; UC, unraced.