

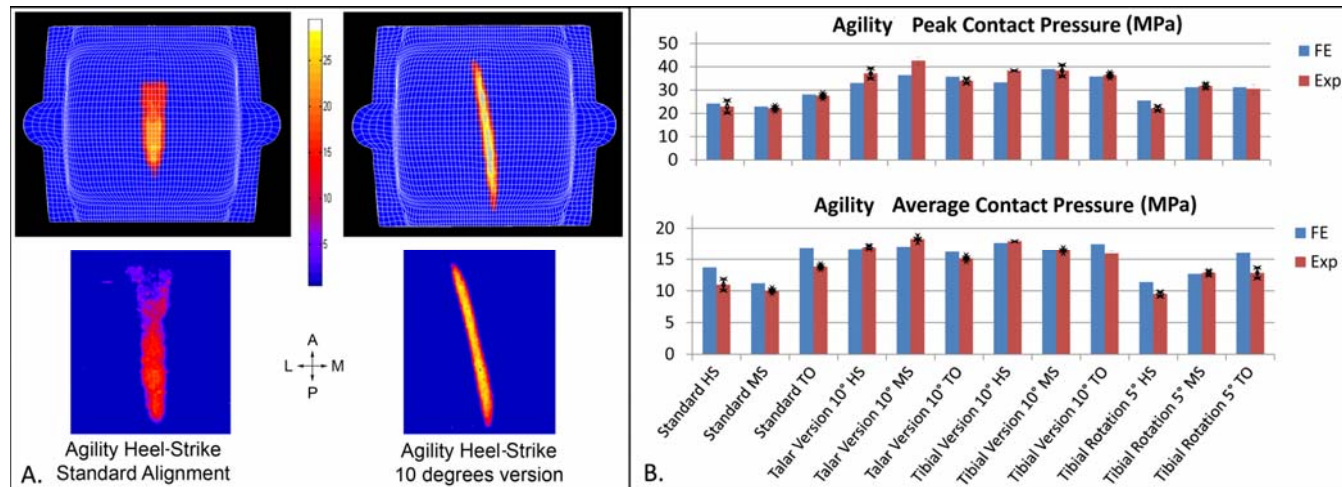


Fig. E-1

Results from validation of the finite element (FE) model of the Agility implant against actual pressure measurements (Exp). All values indicate MPa. A: Visual comparison of finite-element-simulated and experimentally measured pressure distributions. B: Peak and average pressures for the model finite element version experiments. The range of results from any repeated tests is indicated on the individual bars. HS = heel-strike, MS = midstance, HO = heel-off, TO = toe-off, A = anterior, P = posterior, L = lateral, and M = medial direction.

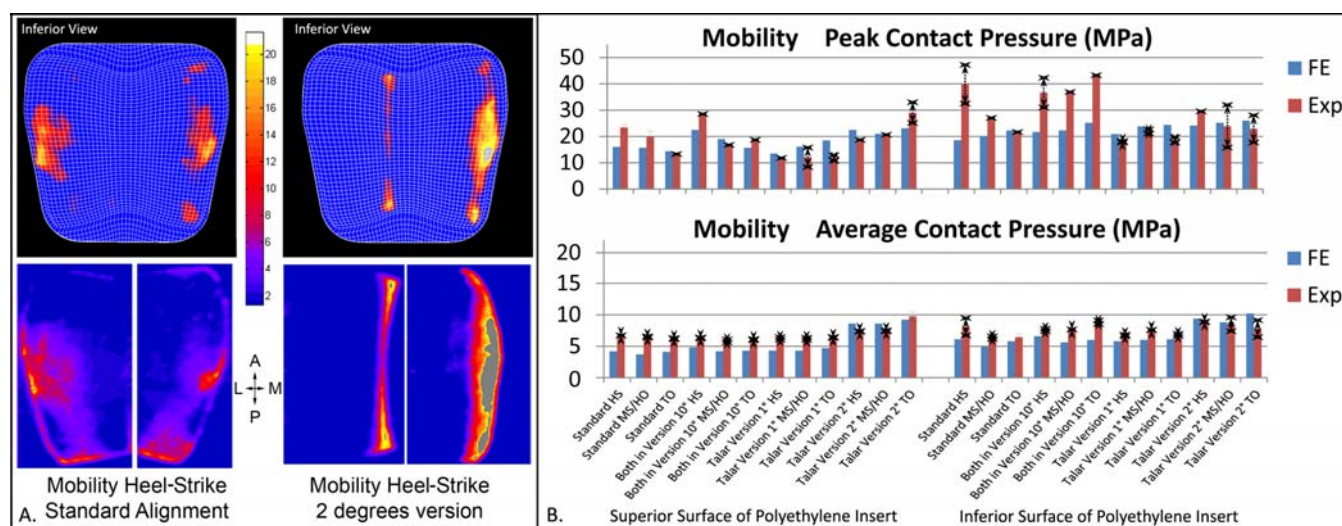


Fig. E-2

Results from validation of the finite element (FE) model of the Mobility implant against actual pressure measurements (Exp). All values indicate MPa. A: Visual comparison of finite-element-simulated and experimentally measured pressure distributions. B: Peak and average pressures for the model finite element version experiments. The range (maximum and minimum values) from repeated tests is also indicated. HS = heel-strike, MS = midstance, HO = heel-off, TO = toe-off, A = anterior, P = posterior, L = lateral, and M = medial direction.

TABLE E-1 Agility and Mobility Joint Contact Peak and Average Pressures for Heel-Strike, Midstance, Heel-off, and Toe-off Phases of Gait*

Position	Load (N)	Peak Pressure (MPa)		Average Pressure (MPa)	
		Agility	Mobility	Agility	Mobility
Standard					
HS	800	24.2	18.6	13.7	6.1
MS	2000	28.5	20.6	17.8	7.0
HO	2800	33.8	22.9	22.5	8.0
TO	800	28.1	22.3	16.9	5.8
Talar version					
10° HS	800	33	49.7	16.7	27.6
10° MS	2000	46	42.4	24.1	30.5
10° HO	2800	46.3	42.5	32	32.1
10° TO	800	35.7	42.2	16.2	28.6
5° HS	800	NA	35.6	NA	17.5
5° MS	2000	NA	37.6	NA	19.1
5° HO	2800	NA	35.1	NA	20.5
5° TO	800	NA	38.7	NA	21.6
2° HS	800	NA	24.1	NA	9.4
2° MS	2000	NA	25.2	NA	8.5
2° HO	2800	NA	28.6	NA	9.3
2° TO	800	NA	26.0	NA	10.2
1° HS	800	NA	20.9	NA	5.8
1° MS	2000	NA	23.1	NA	7.3
1° HO	2800	NA	24.6	NA	8.4
1° TO	800	NA	24.4	NA	6.1
Tibial version					
10° HS	800	33.3	NA	17.7	NA
10° MS	2000	44.4	NA	26	NA
10° HO	2800	46.1	NA	29.4	NA
10° TO	800	35.8	NA	17.5	NA
Both in version					
10° HS	800	NA	21.7	NA	6.6
10° MS	2000	NA	21.9	NA	7.2
10° HO	2800	NA	22.8	NA	8.2
10° TO	800	NA	25.2	NA	6.0
Rotation					
5° HS	800	25.5	NA	11.4	NA
5° MS	2000	33.8	NA	19.7	NA
5° HO	2800	35.3	NA	23	NA
5° TO	800	31.2	NA	16	NA

*Version refers to inversion. Rotation refers to external rotation. Some configurations that were observed to induce no obvious change in contact pressure distribution (such as version of both the tibial and talar components and rotation of the Mobility component) were not applied in further investigation (designated as NA). Similar trends were observed when mirrored misalignments were imposed at the mating component (e.g., tibial component rotation as opposed to talar component rotation). HS = heel-strike, MS = midstance, HO = heel-off, and TO = toe-off.