Table E-1. Aggregate Biomechanical and Anatomic Data: Preoperative v. Postoperative

|  | $\underset{(\mathbf{n}=50)}{\text { MMSR }}$ |  |  |  | $\begin{gathered} \text { THR } \\ (\mathrm{n}=40) \end{gathered}$ |  |  |  |  | Difference between groups (adjusted by baseline characteristics) | 95\% CI for the adjusted difference | p value for the adjusted difference |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Pre-op | Post-op | Difference | $p$ value | Pre-op | Post-op | Difference | $p$ value |  |  |  |  |
| Horizontal COR (mm) | $\begin{gathered} 39.34 \\ (22.0 \text { to } 50.5) \\ {[5.1]} \end{gathered}$ | $\begin{gathered} 32.82 \\ (22.4 \text { to } 40.3) \\ {[3.6]} \end{gathered}$ | $\begin{gathered} -6.52 \\ (-14.1 \text { to } 7.3) \\ {[4.3]} \end{gathered}$ | <0.00001 | $\begin{gathered} 36.2 \\ (21.7 \text { to } 59.1) \\ {[7.8]} \end{gathered}$ | $\begin{gathered} 30.7 \\ (22.8 \text { to } 38.9) \\ {[4.0]} \end{gathered}$ | $\begin{gathered} -5.6 \\ (-22.0 \text { to } 5.2) \\ {[6.3]} \end{gathered}$ | <0.00001 | 1.1 | 0.9 | -0.5 to 2.2 | 0.20 |
| Vertical COR (mm) | $\begin{gathered} 16.7 \\ (9.5 \text { to } 26.9) \\ {[4.1]} \end{gathered}$ | $\begin{gathered} 16.3 \\ (5.5 \text { to } 29.9) \\ {[5.1]} \end{gathered}$ | $\begin{gathered} -0.5 \\ (-6.1 \text { to } 7.8) \\ {[3.3]} \end{gathered}$ | 0.264 | $\begin{gathered} 16.5 \\ \text { (5.5 to } 29.9 \text { ) } \\ {[5.1]} \end{gathered}$ | $\begin{gathered} 16.2 \\ (3.3 \text { to } 27.6) \\ {[5.2]} \end{gathered}$ | $\begin{gathered} -0.3 \\ (-8.2 \text { to 10.4) } \\ {[4.6]} \end{gathered}$ | 0.70 | 0.2 | 1.3 | -0.3 to 3.0 | 0.11 |
| Vertical Femoral Offset (mm) | $\begin{gathered} 69.5 \\ (49.7 \text { to } 84.1) \\ {[8.1]} \\ \hline \end{gathered}$ | $\begin{gathered} 74.4 \\ (56.5 \text { to } 92.8) \\ {[9.0]} \end{gathered}$ | $\begin{gathered} 4.9 \\ (-5.0 \text { to } 15.7) \\ {[4.1]} \end{gathered}$ | <0.00001 | $\begin{gathered} 68.9 \\ (40.7 \text { to } 85.3) \\ {[8.9]} \\ \hline \end{gathered}$ | $\begin{gathered} 71.2 \\ (59.0 \text { to } 87.0) \\ {[5.8]} \\ \hline \end{gathered}$ | $\begin{gathered} 2.3 \\ (-12.9 \text { to } 23.4) \\ {[6.8]} \\ \hline \end{gathered}$ | 0.030 | 2.6 | 0.8 | -3.0 to 1.3 | 0.44 |
| Horizontal Femoral Offset (mm) | $\begin{gathered} 32.2 \\ (21.5 \text { to } 45.3) \\ {[6.4]} \end{gathered}$ | $\begin{gathered} 31.4 \\ (17.9 \text { to } 44.4) \\ {[5.9]} \end{gathered}$ | $\begin{gathered} -0.8 \\ (-12.4 \text { to } 9.3) \\ {[4.5]} \end{gathered}$ | 0.207 | $\begin{gathered} 32.7 \\ (7.2 \text { to } 53.3) \\ {[8.4]} \end{gathered}$ | $\begin{gathered} 42.3 \\ (25.7 \text { to } 49.4) \\ {[5.4]} \end{gathered}$ | $\begin{gathered} 9.5 \\ (-8.5 \text { to } 23.1) \\ {[7.2]} \end{gathered}$ | <0.00001 | 10.3 | 11.7 | 9.7 to 13.8 | $<0.0001$ |
| Limb Length (mm) | $\begin{gathered} 53.4 \\ (28.8 \text { to } 70.5) \\ {[9.5]} \\ \hline \end{gathered}$ | $\begin{gathered} 58.0 \\ (36.5 \text { to } 75.6) \\ {[7.9]} \\ \hline \end{gathered}$ | $\begin{gathered} 4.6 \\ (-4.4 \text { to } 12.0) \\ {[3.9]} \end{gathered}$ | <0.00001 | $\begin{gathered} 53.5 \\ (28.0 \text { to } 66.7) \\ {[8.4]} \\ \hline \end{gathered}$ | $\begin{gathered} 56.4 \\ (37.7 \text { to } 71.8) \\ {[7.5]} \end{gathered}$ | $\begin{gathered} 2.9 \\ (-6.7 \text { to } 12.1) \\ {[5.3]} \end{gathered}$ | 0.001 | 1.7 | 1.3 | -3.2 to 0.5 | 0.15 |
| Neck-Shaft Angle ( ${ }^{\circ}$ ) | $\begin{gathered} 140.3 \\ (128 \text { to } 152) \\ {[4.8]} \end{gathered}$ | $\begin{gathered} 145.7^{*} \\ (128 \text { to } 163) \\ {[6.2]} \end{gathered}$ | $\begin{gathered} 5.4 \\ (-12 \text { to } 19) \\ {[6.4]} \end{gathered}$ | <0.00001 | $\begin{gathered} 137.2 \\ (128 \text { to } 152) \\ {[5.5]} \end{gathered}$ | $\begin{gathered} 132.9 \\ (130 \text { to } 140) \\ {[2.7]} \end{gathered}$ | $\begin{gathered} -4.4 \\ (-15 \text { to } 4) \\ {[4.5]} \end{gathered}$ | <0.00001 | 9.8 | 9.6 | -12.0 to -7.2 | <0.0001 |

## Mean (range) <br> [SD]

* Stem-Shaft Angle $\left({ }^{\circ}\right)$

Table E-2. Agregate Biomechanical and Anatomical Data: Postoperative v. Normal Contralateral.

|  | $\underset{(n=22)}{\text { MMSR }}$ |  |  |  | $\begin{gathered} \text { THR } \\ (\mathrm{n}=19) \end{gathered}$ |  |  |  | Rawdifference between groups | Difference between groups (adjusted by baseline characteristics) | $\mathbf{9 5 \%}$ CI for the adjusted difference | p value for the adjusted difference |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Post-op | Contralateral | Difference | $p$ value | Post-op | Contralateral | Difference | $p$ value |  |  |  |  |
| Horizontal COR (mm) | $\begin{gathered} 32.8 \\ (27.6 \text { to } 37.7) \\ {[3.3]} \end{gathered}$ | $\begin{gathered} 34.6 \\ (29.6 \text { to } 43.3) \\ {[3.6]} \end{gathered}$ | $\begin{gathered} -1.8 \\ (-7.5 \text { to } 5.4) \\ {[3.0]} \end{gathered}$ | 0.009 | $\begin{gathered} 28.7 \\ (22.8 \text { to } 34.2) \\ {[3.6]} \end{gathered}$ | $\begin{array}{\|c\|} \hline 29.7 \\ (24.6 \text { to } 34.3) \\ {[3.3]} \end{array}$ | $\begin{gathered} -1.0 \\ (-6.2 \text { to } 5.5) \\ {[2.8]} \end{gathered}$ | 0.134 | 0.8 | 0.7 | -1.4 to 2.9 | 0.50 |
| Vertical COR (mm) | $\begin{gathered} 16.6 \\ (10.4 \text { to } 23.6) \\ {[3.6]} \end{gathered}$ | $\begin{gathered} 13.4 \\ (9.5 \text { to } 17.3) \\ {[2.3]} \end{gathered}$ | $\begin{gathered} 3.2 \\ (-1.2 \text { to } 9.3) \\ {[2.9]} \end{gathered}$ | <0.00001 | $\begin{gathered} 16.3 \\ (10.8 \text { to } 25.0) \\ {[4.1]} \end{gathered}$ | $\begin{gathered} 13.0 \\ \text { (5.7 to 22.8) } \\ {[3.6]} \end{gathered}$ | $\begin{gathered} 3.3 \\ (-2.8 \text { to } 11.8) \\ {[4.2]} \\ \hline \end{gathered}$ | 0.003 | 0.1 | 0.4 | -1.8 to 2.57 | 0.73 |
| Vertical Femoral Offset (mm) | $\begin{gathered} 75.6 \\ (61.0 \text { to } 92.8) \\ {[8.8]} \\ \hline \end{gathered}$ | $\begin{gathered} 73.2 \\ (59.4 \text { to } 87.0) \\ {[8.3]} \\ \hline \end{gathered}$ | $\begin{gathered} 2.4 \\ (-6.5 \text { to } 16.8) \\ {[5.0]} \end{gathered}$ | 0.033 | $\begin{array}{\|c\|} 69.4 \\ (59.0 \text { to } 87.0) \\ {[6.4]} \\ \hline \end{array}$ | $\begin{gathered} 66.5 \\ (56.4 \text { to } 82.7) \\ {[6.4]} \end{gathered}$ | $\begin{gathered} 2.9 \\ (-4.1 \text { to } 15.5) \\ {[4.4]} \end{gathered}$ | 0.010 | 0.5 | 0.5 | -2.5 to 3.49 | 0.74 |
| Horizontal Femoral Offset (mm) | $\begin{gathered} 29.4 \\ (19.9 \text { to } 41.6) \\ {[5.8]} \\ \hline \end{gathered}$ | $\begin{gathered} 37.8 \\ (26.0 \text { to } 50.0) \\ {[6.3]} \\ \hline \end{gathered}$ | $\begin{gathered} -8.4 \\ (-22.4 \text { to } 1.9) \\ {[5.9]} \end{gathered}$ | <0.00001 | $\begin{gathered} 40.4 \\ (25.7 \text { to } 48.1) \\ {[6.3]} \\ \hline \end{gathered}$ | $\begin{array}{\|c\|} 35.2 \\ (26.3 \text { to } 43.6) \\ {[4.6]} \\ \hline \end{array}$ | $\begin{gathered} 5.2 \\ (-4.7 \text { to 19.8) } \\ {[5.5]} \end{gathered}$ | 0.001 | 13.5 | 11.5 | 7.69 to 15.33 | <0.0001 |
| Limb Length (mm) | $\begin{gathered} 58.5 \\ (42.1 \text { to } 70.4) \\ {[7.9]} \end{gathered}$ | $\begin{gathered} 60.6 \\ (45.1 \text { to } 75.0) \\ {[8.1]} \\ \hline \end{gathered}$ | $\begin{gathered} -2.2 \\ (-13.3 \text { to } 8.2) \\ {[6.0]} \end{gathered}$ | 0.100 | $\begin{gathered} 53.7 \\ (37.7 \text { to } 64.0) \\ {[7.4]} \\ \hline \end{gathered}$ | $\begin{array}{\|c\|} \hline 54.8 \\ (43.7 \text { to } 61.5) \\ {[5.6]} \\ \hline \end{array}$ | $\begin{gathered} -1.1 \\ (-19.5 \text { to } 10.4) \\ {[7.1]} \end{gathered}$ | 0.499 | 1.0 | 0.3 | -5.18 to 4.50 | 0.88 |
| Neck-Shaft Angle ( ${ }^{\circ}$ ) | 147.5 $(139$ to 156$)$ $[5.5]$ | $\begin{gathered} 136.3^{*} \\ (128 \text { to } 148) \\ {[5.5]} \end{gathered}$ | $\begin{gathered} 11.2 \\ (-2 \text { to } 25) \\ {[6.5]} \end{gathered}$ | <0.00001 | $\begin{gathered} 133.4 \\ (130 \text { to } 140) \\ {[3.3]} \end{gathered}$ | $\begin{gathered} 135.4 \\ (130 \text { to } 142) \\ {[3.5]} \end{gathered}$ |  | 0.001 | 13.2 | 13.2 | -16.4 to 10.0 | <0.0001 |
| Mean <br> (range) <br> $[$ SD $]$$*$ Stem-Shaft Angle $\left({ }^{\circ}\right)$ |  |  |  |  |  |  |  |  |  |  |  |  |

