

Supplemental Document:
Development and Implementation of a Forward Solution Hip
Mathematical Model to Determine In Vivo Mechanics and
Predict Hip Separation

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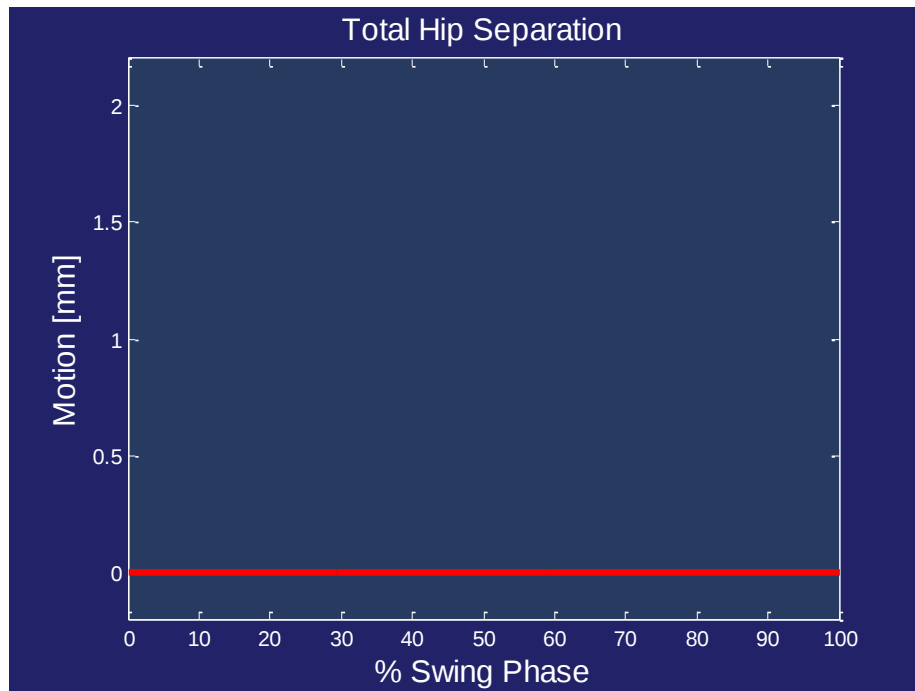
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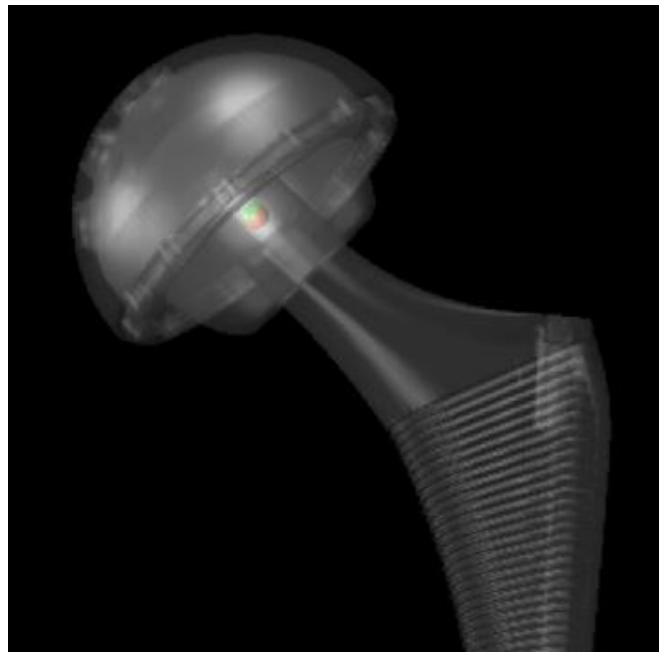
Figure E102: Pat 4: Augmented Liner: Hip Force 180° I/E Cup Rotation	394
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APPENDICES

Appendix A: Cup Alignment during Swing Phase Figures

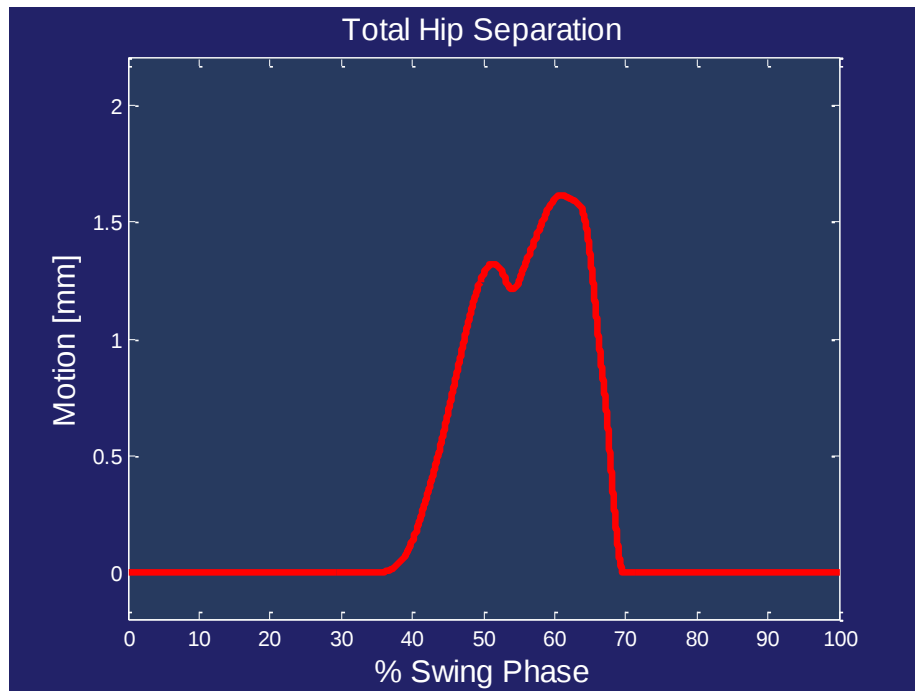


(a)

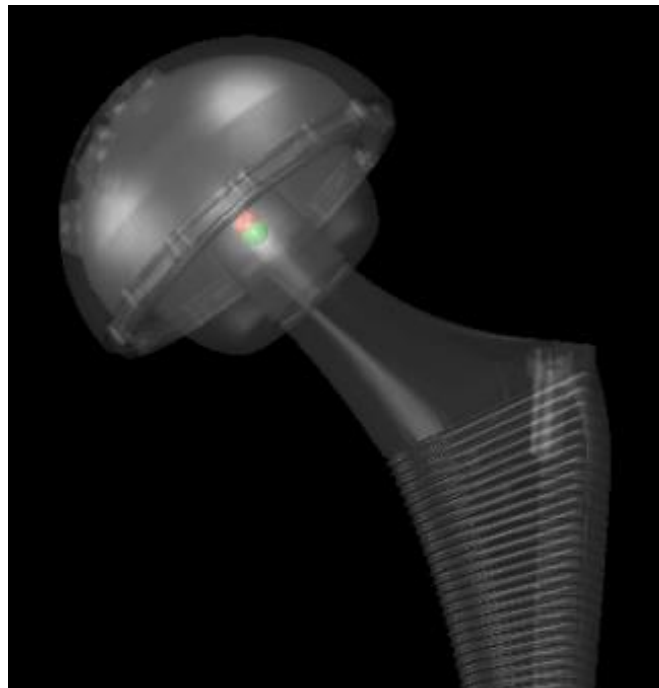


(b)

Figure A1: Perfect alignment, 40° inclination, 15° anteversion: 0mm separation.



(a)

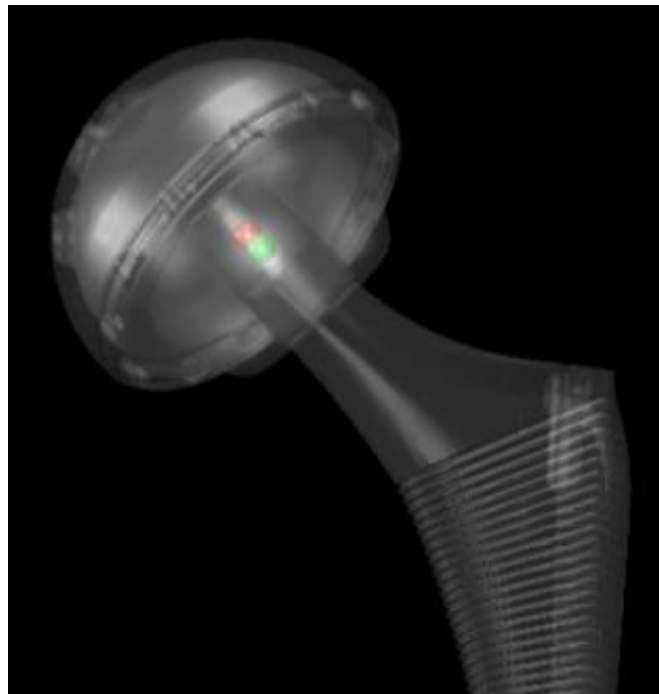


(b)

Figure A2: 1cm medial shift, 40° inclination, 15° anteversion: 1.6mm separation.

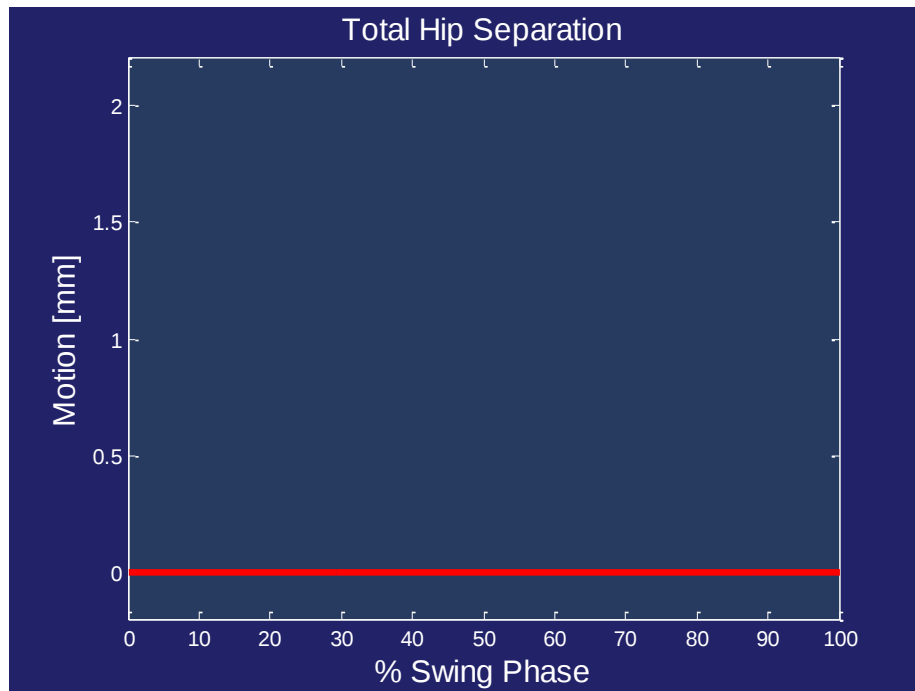


(a)

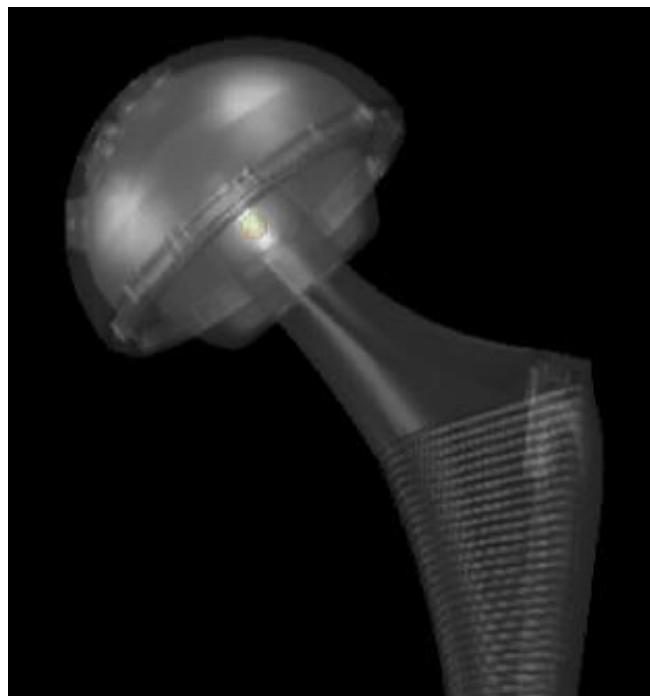


(b)

Figure A3: 1cm medial shift, 40° inclination, 35° anteversion: 3.4mm separation.

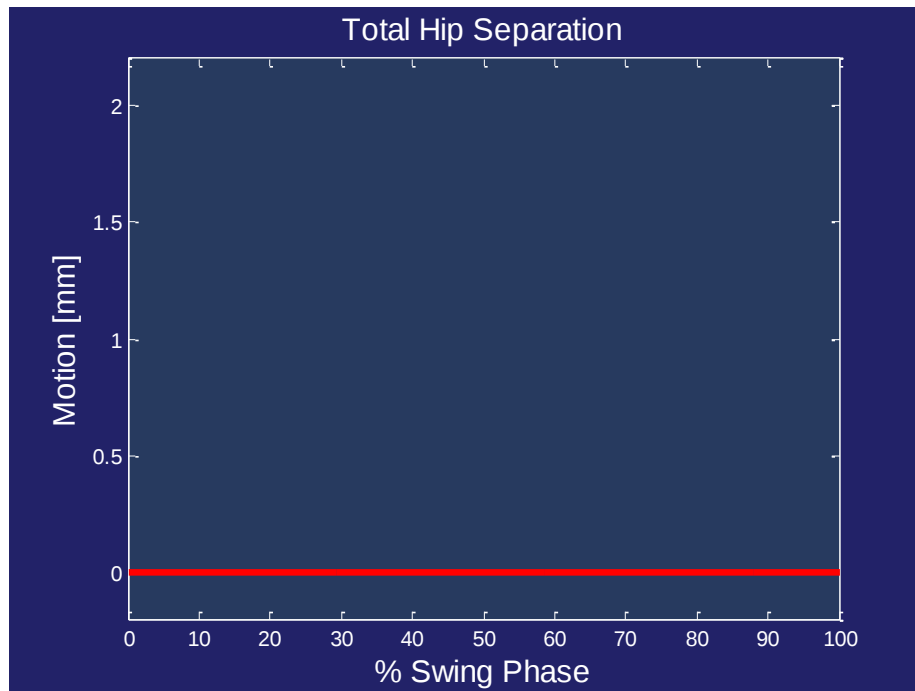


(a)

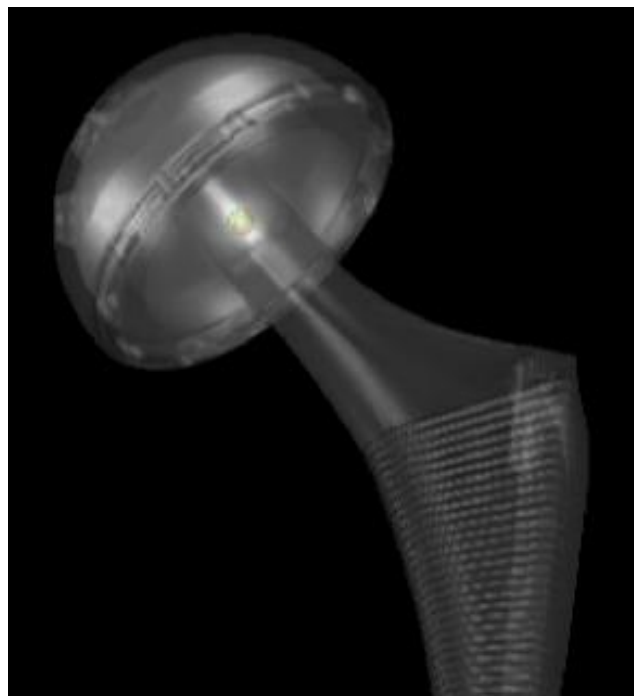


(b)

Figure A4: 0.5 cm medial shift, 40° inclination, 15° anteversion: 0.0mm separation.

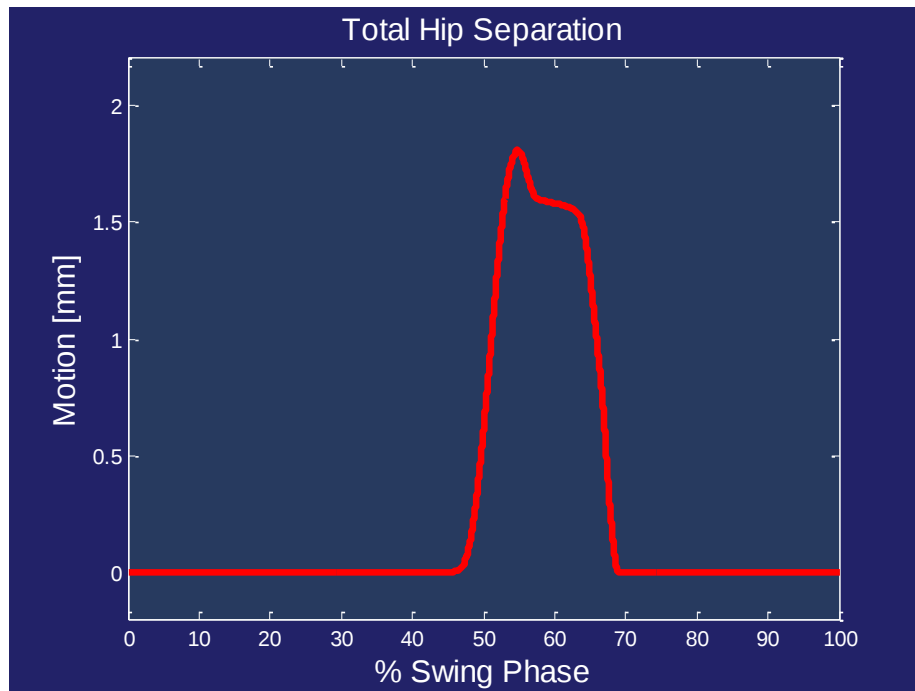


(a)

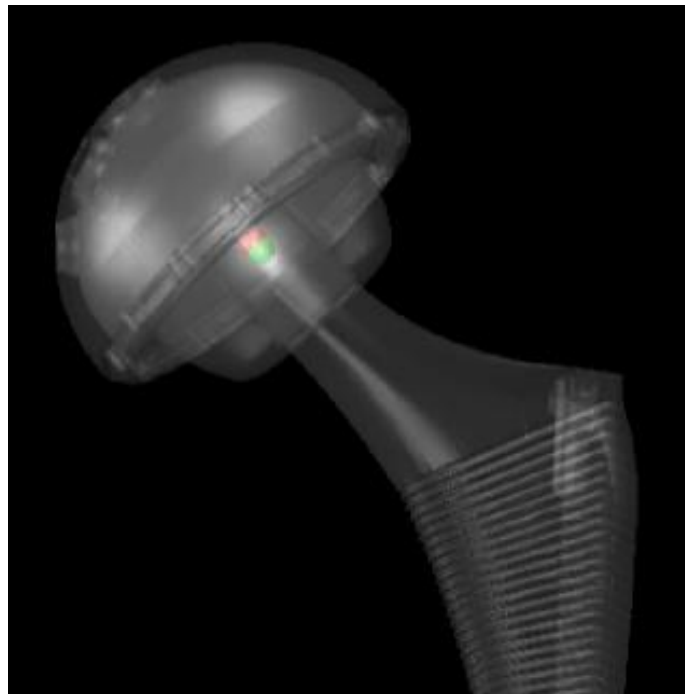


(b)

Figure A5: 0.5 cm medial shift, 40° inclination, 35° anteversion: 0.0mm separation.

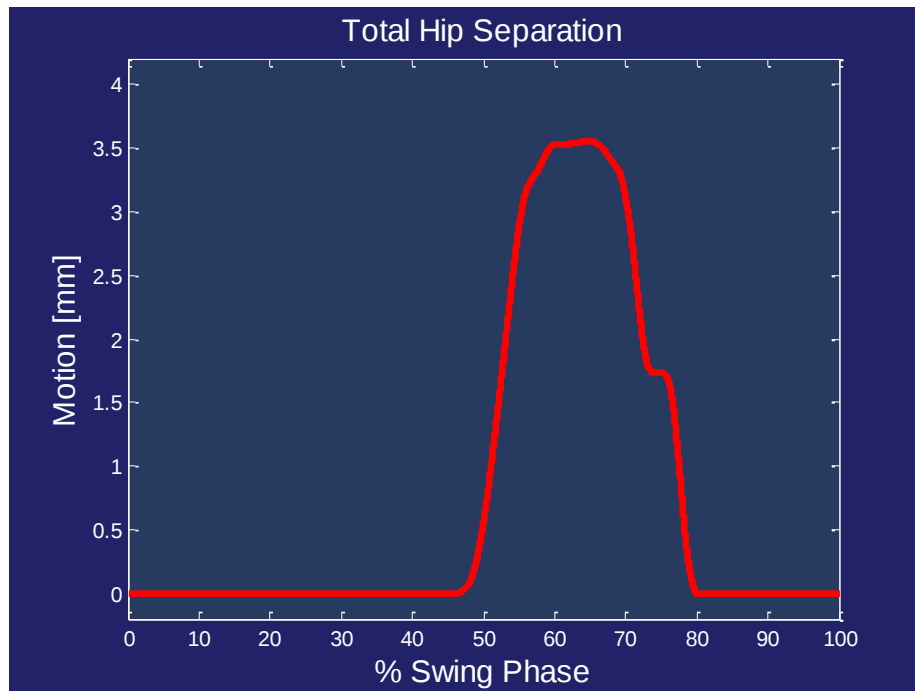


(a)

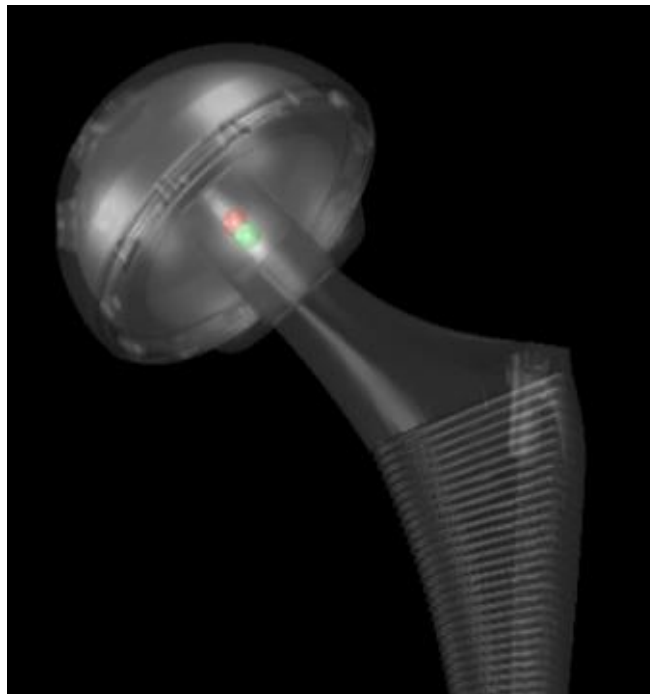


(b)

Figure A6: 1 cm superior shift, 40° inclination, 15° anteversion: 1.8mm separation.

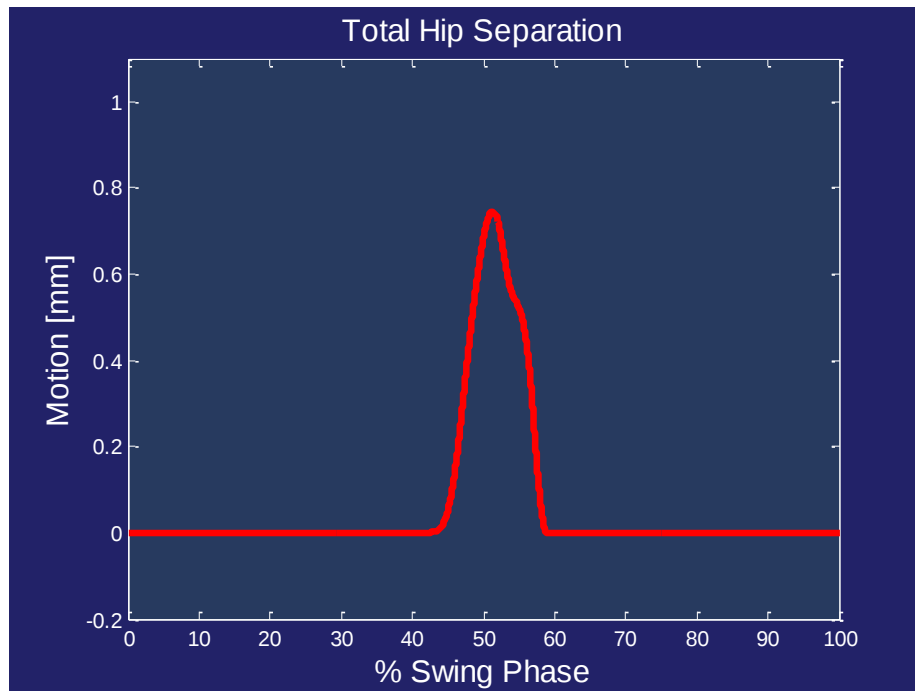


(a)

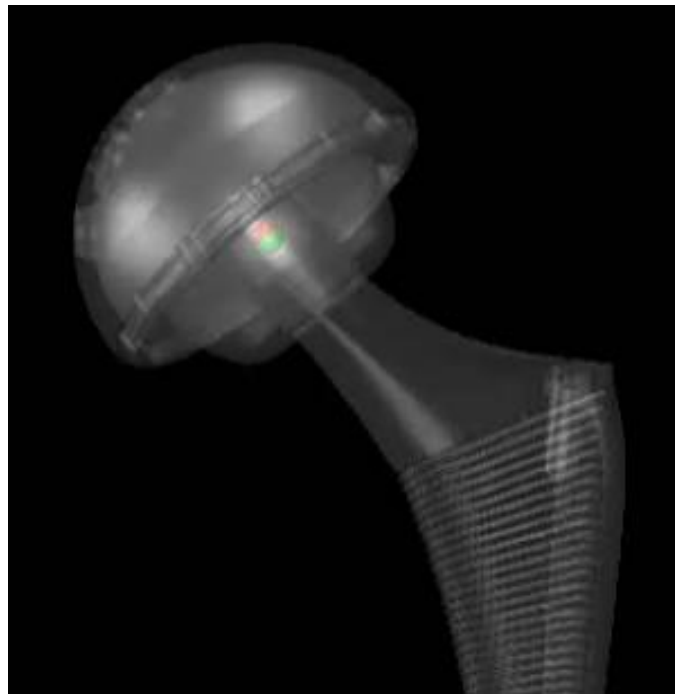


(b)

Figure A7: 1 cm superior shift, 40° inclination, 35° anteversion: 3.5mm separation.

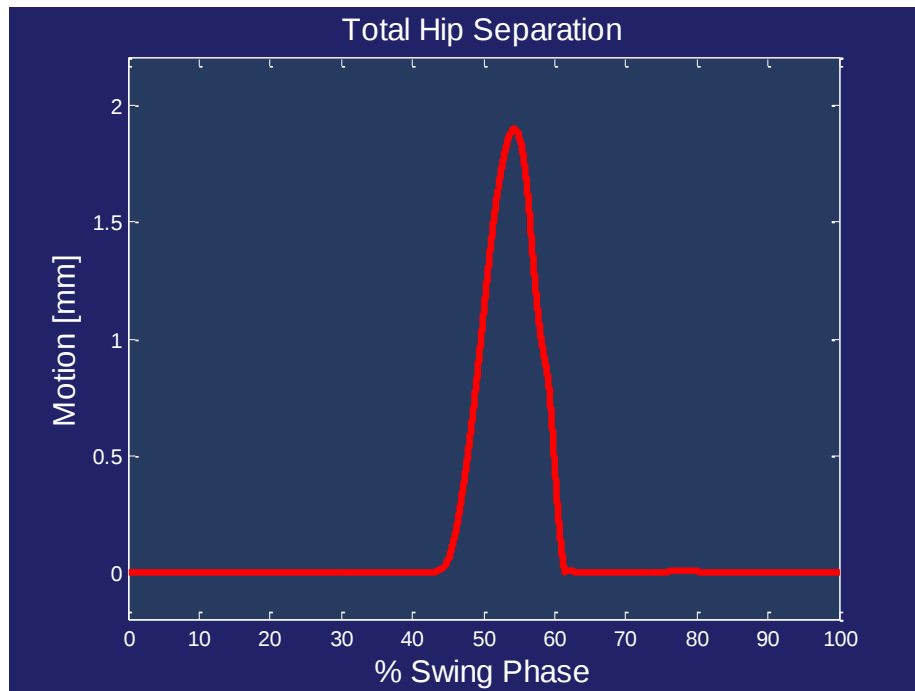


(a)

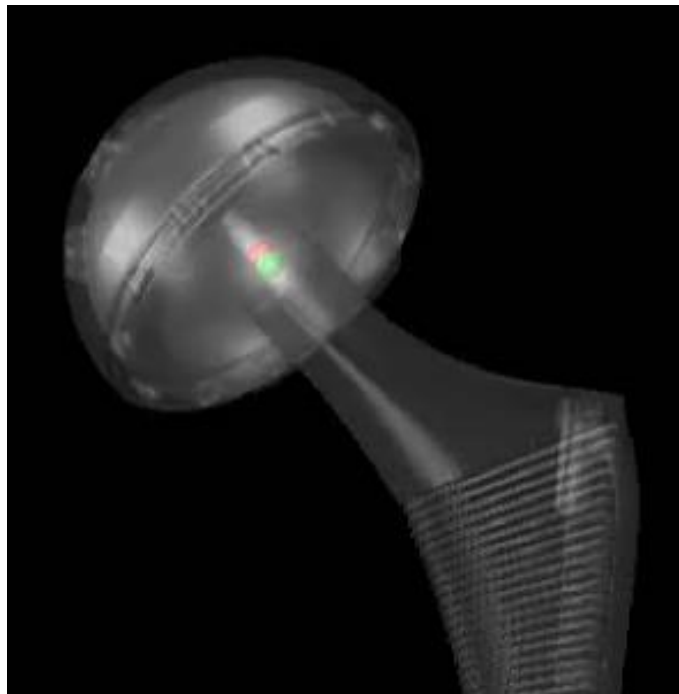


(b)

Figure A8: 0.5 cm superior shift, 40° inclination, 15° anteversion: 0.8mm separation.



(a)

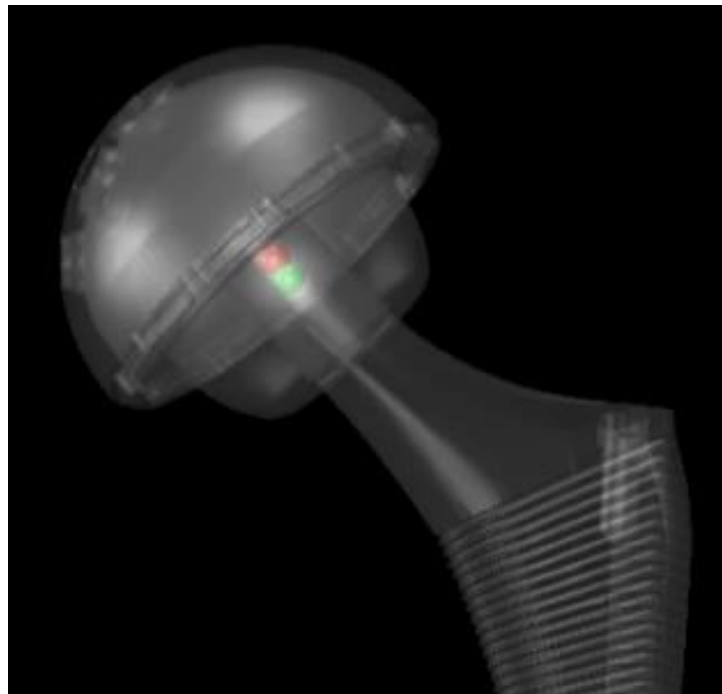


(b)

Figure A9: 0.5 cm superior shift, 40° inclination, 35° anteversion: 2.0mm separation.



(a)

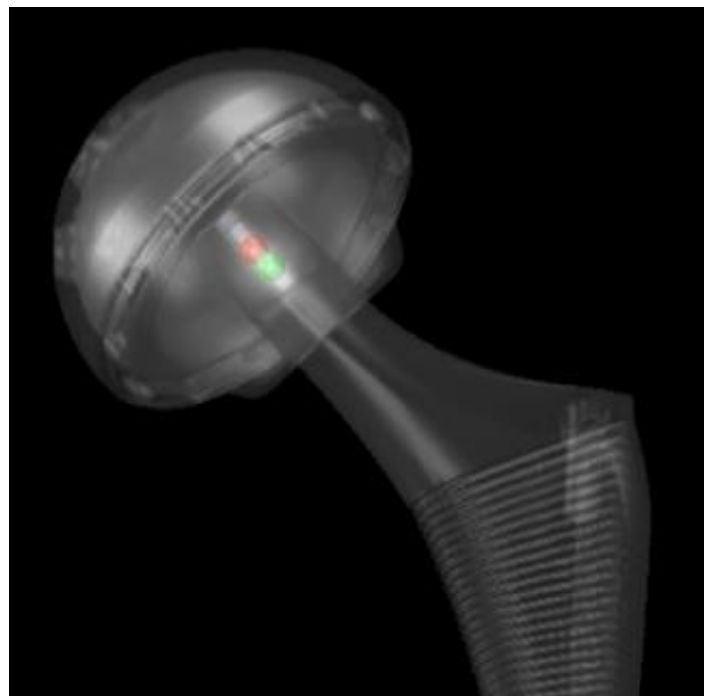


(b)

Figure A10: 0.71 cm supero-medial shift, 40° inclination, 15° anteversion: 3.3mm separation.



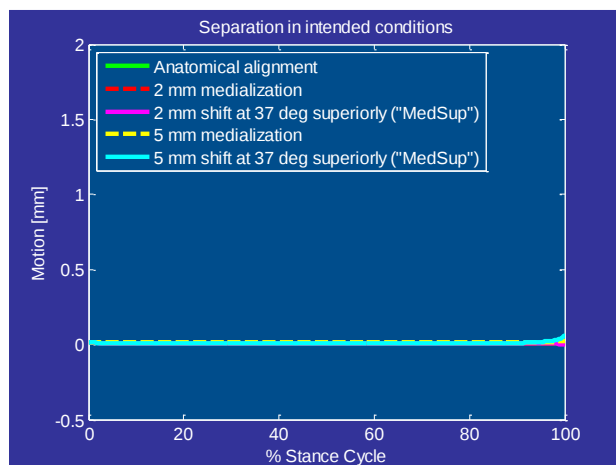
(a)



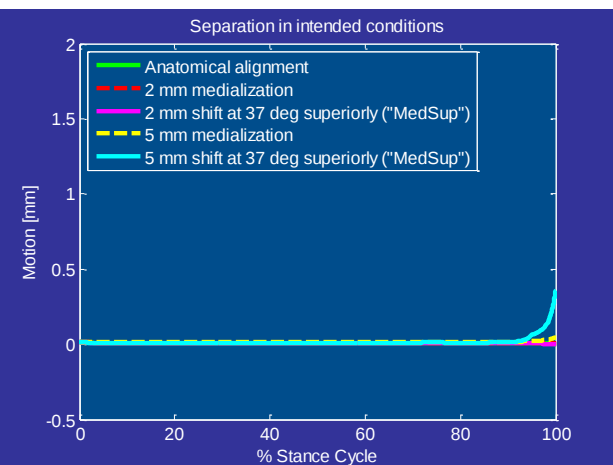
(b)

Figure A11: 0.71 cm supero-medial shift, 40° inclination, 35° anteversion: 4.9mm separation.

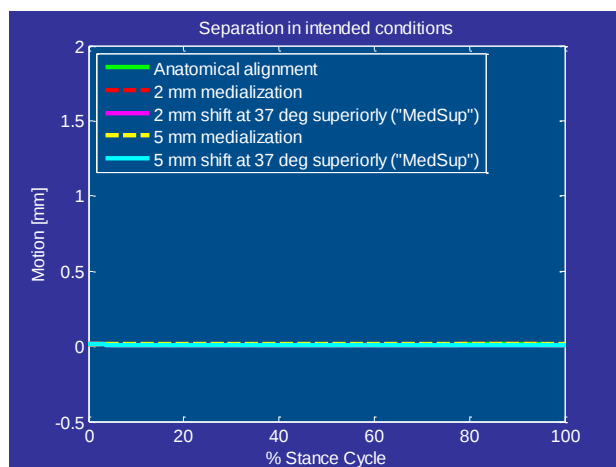
Appendix B: Cup Alignment during Stance Phase Figures



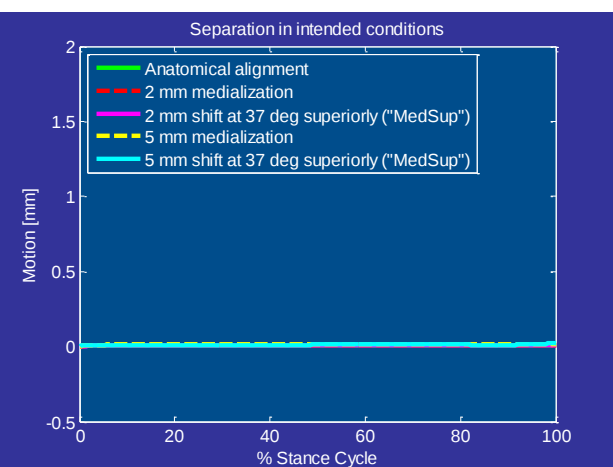
(a)



(b)

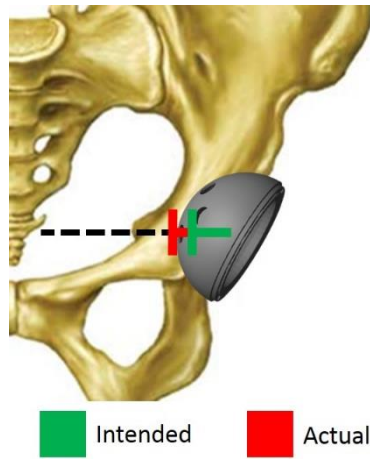


(c)

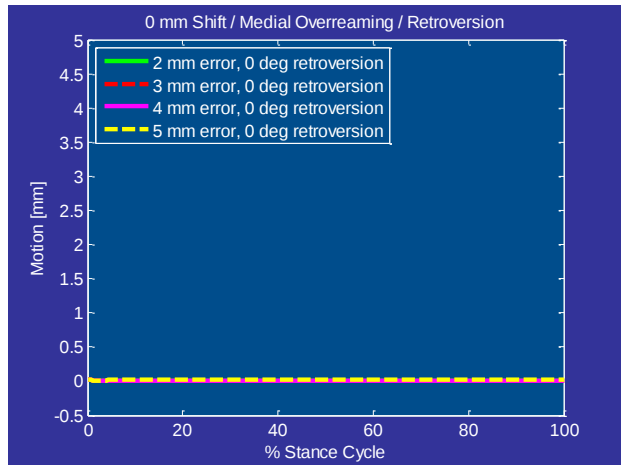


(d)

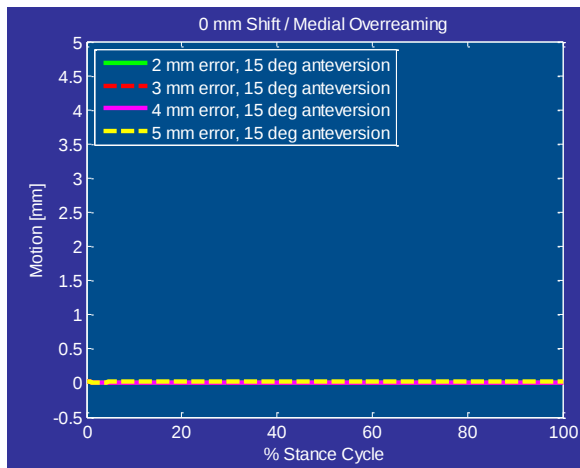
Figure B1 : Intended conditions for Patients (a) 1, (b) 2, (c) 3, and (d) 4.



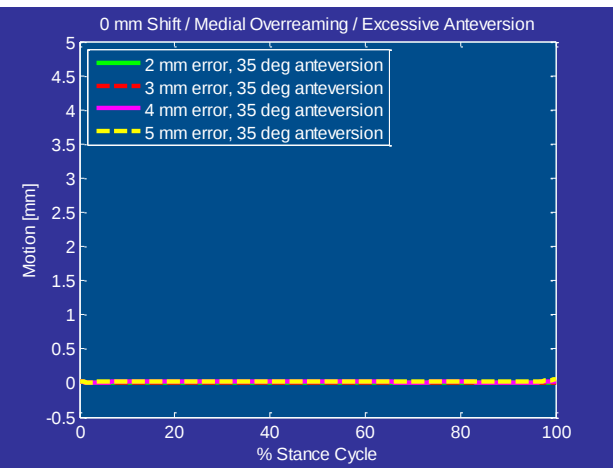
(a)



(b)

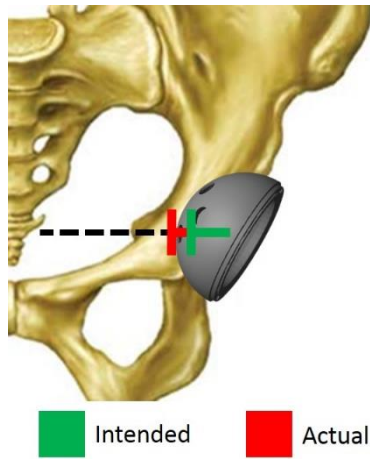


(c)

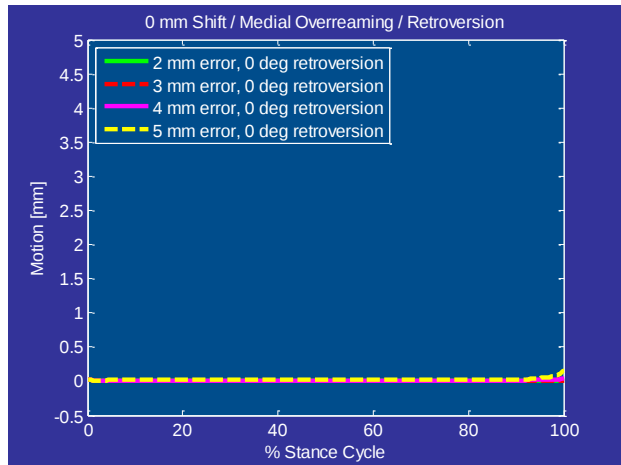


(d)

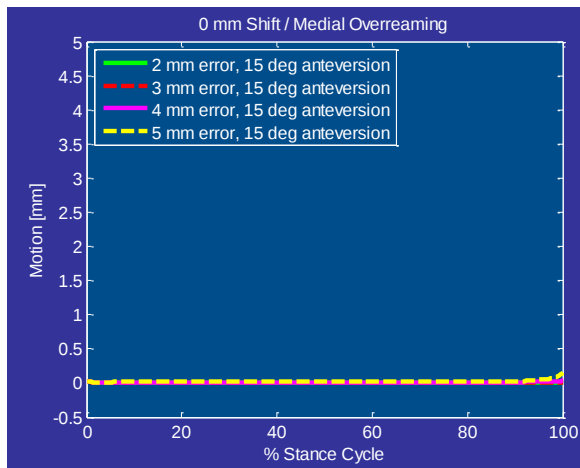
Figure B2: Patients 1 (a) Scenario, (b) 0° Retroversion (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



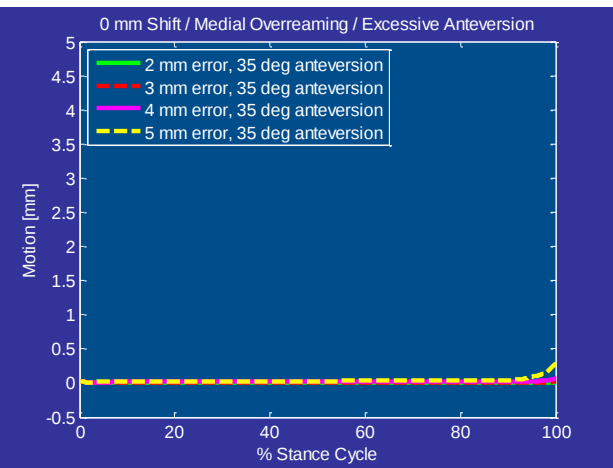
(a)



(b)

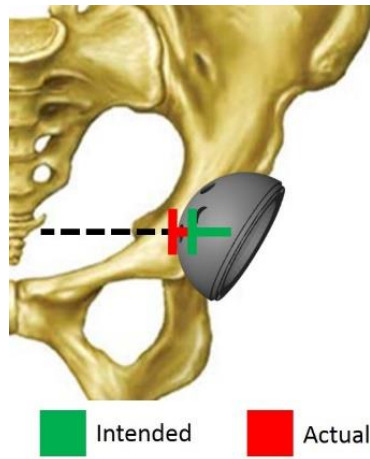


(c)

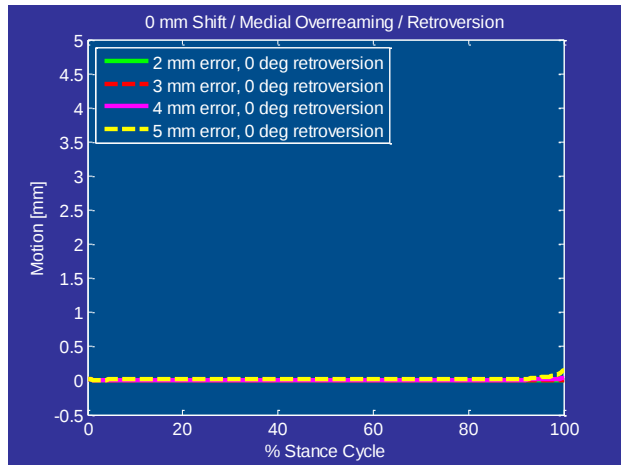


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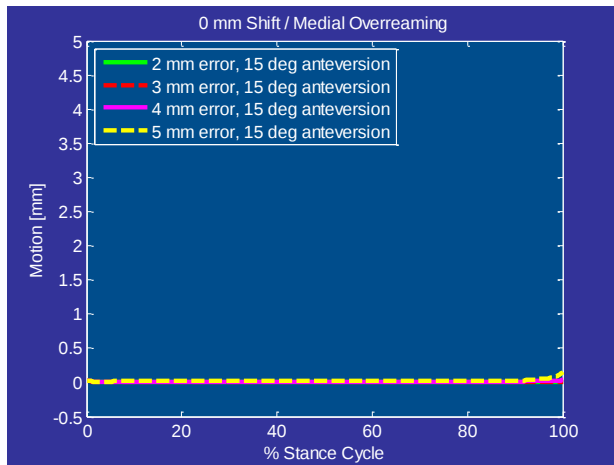
Figure B3: Patient 1 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



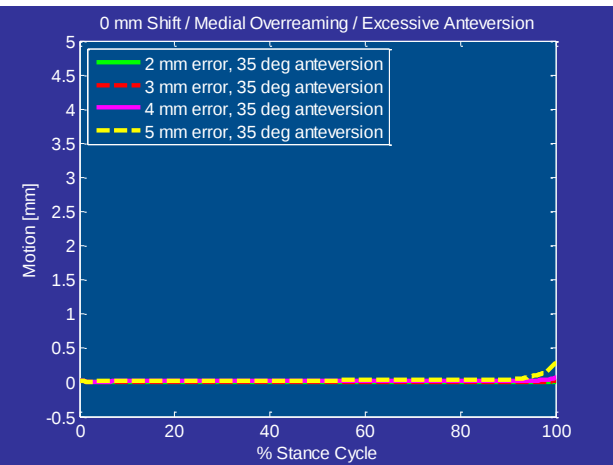
(a)



(b)

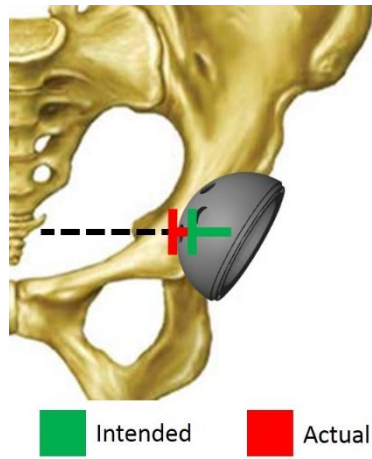


(c)

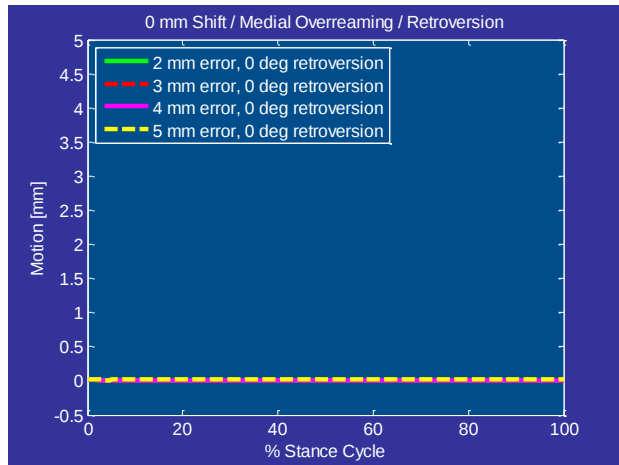


(d)

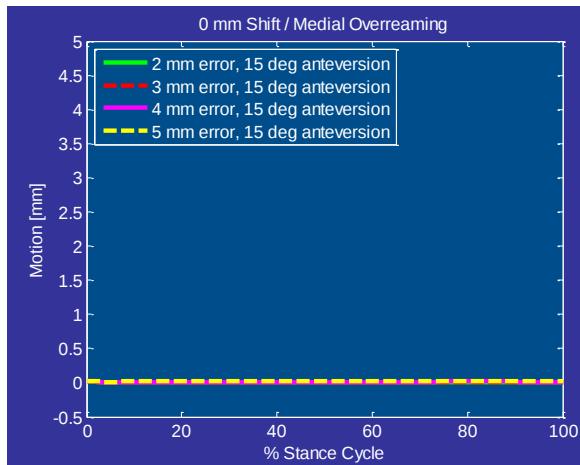
Figure B4: Patient 2 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



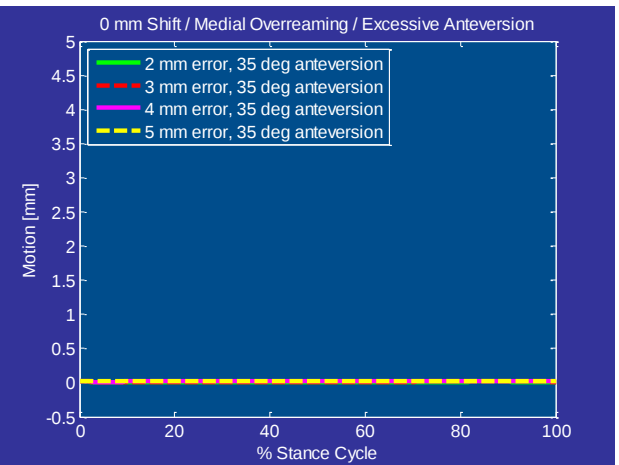
(a)



(b)

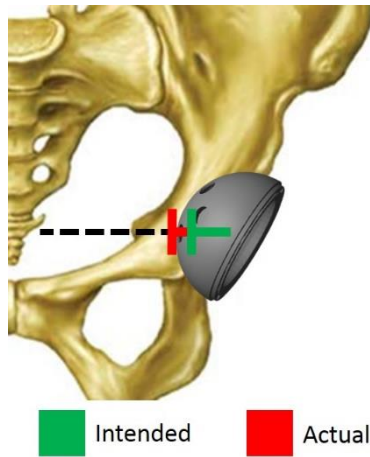


(c)

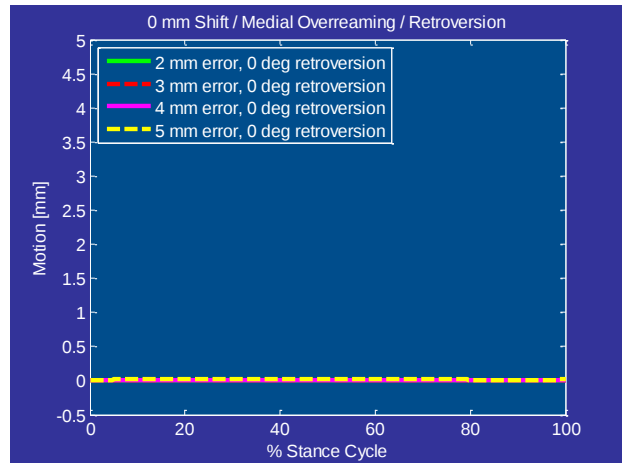


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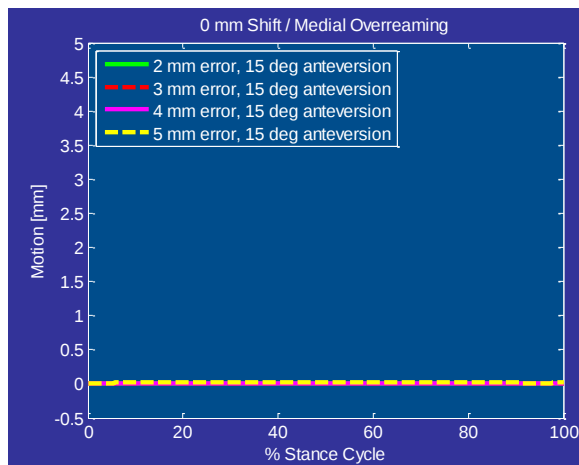
Figure B5: Patient 3 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



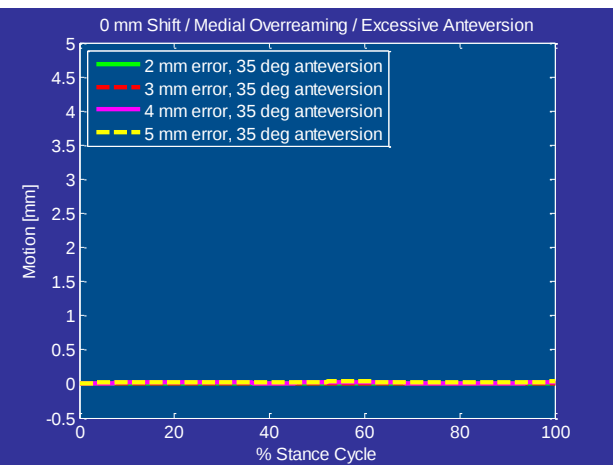
(a)



(b)

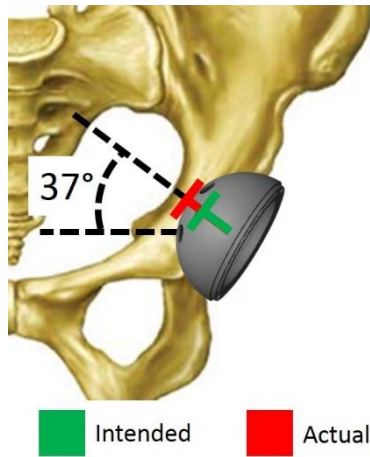


(c)

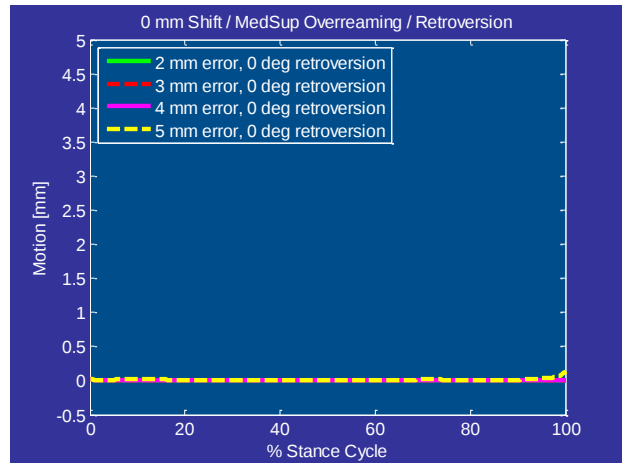


(d)

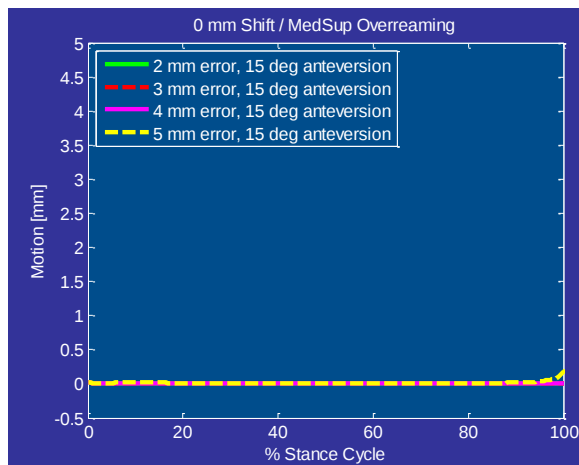
Figure B6 : Patient 4 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



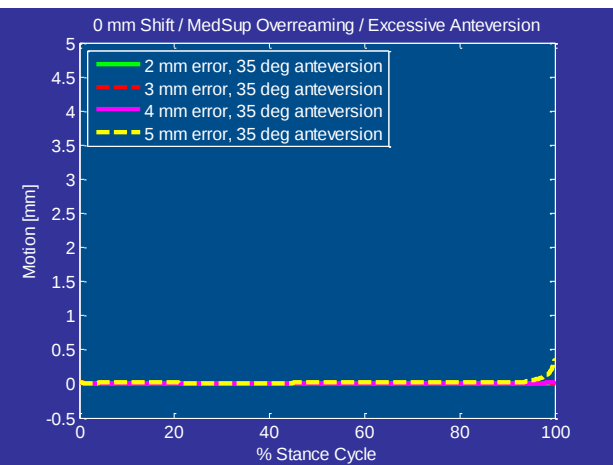
(a)



(b)

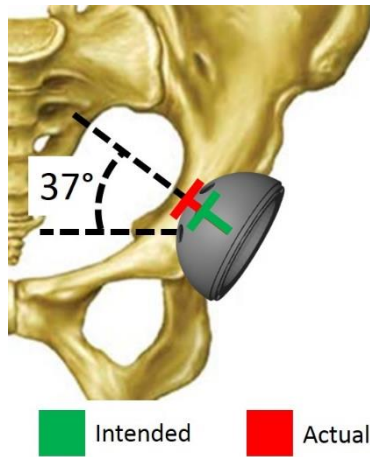


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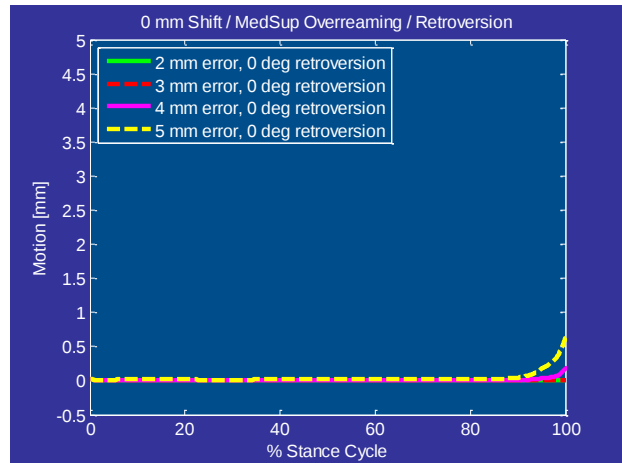


(d)

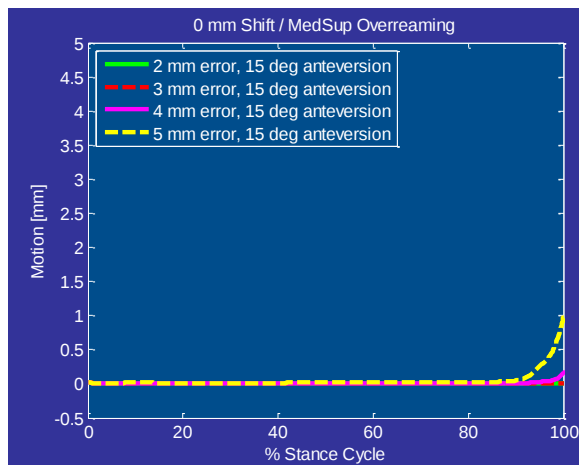
Figure B7: Patient 1 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



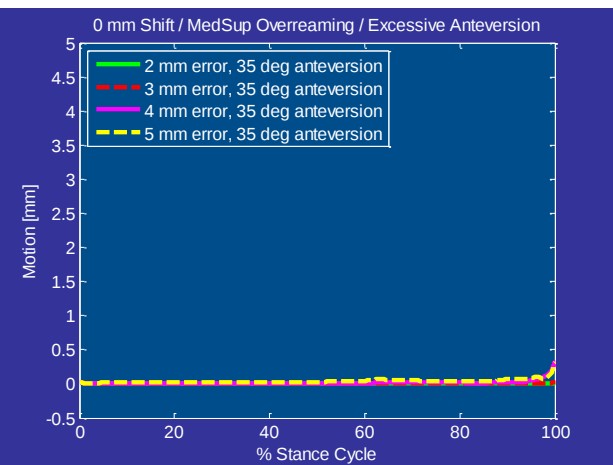
(a)



(b)

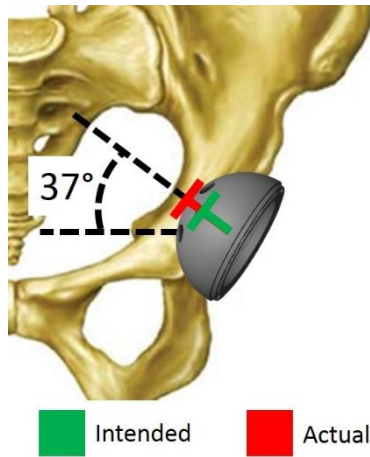


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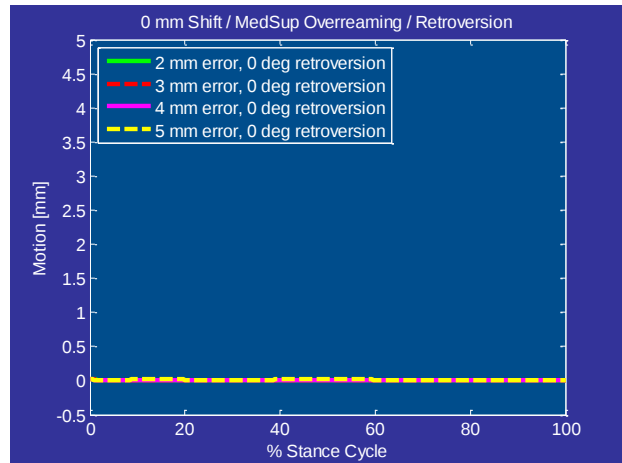


(d)

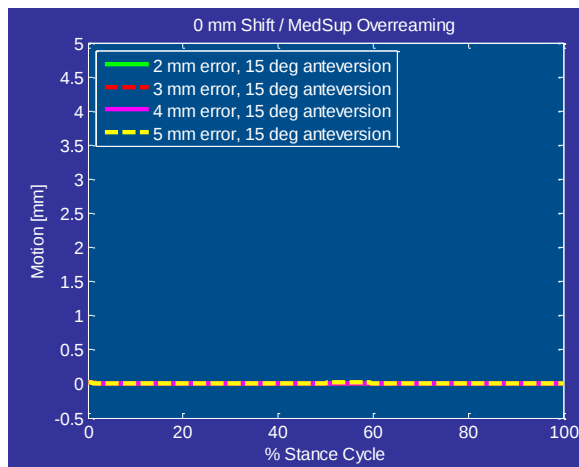
Figure B8: Patient 2 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



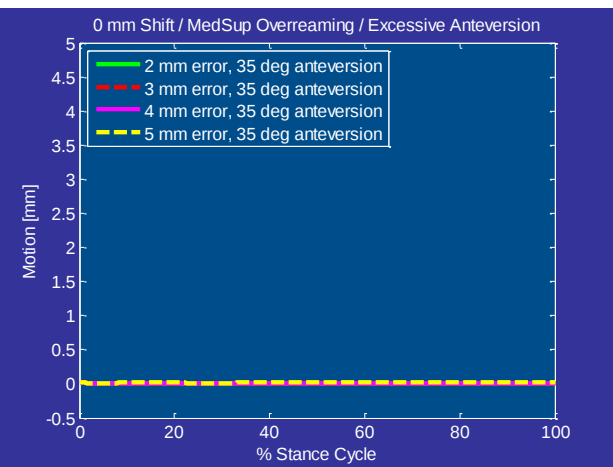
(a)



(b)

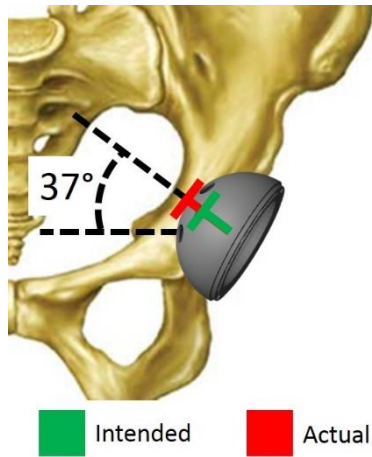


(c)

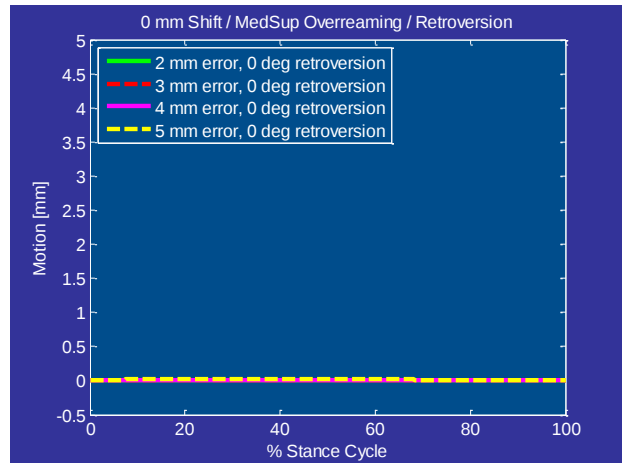


(d)

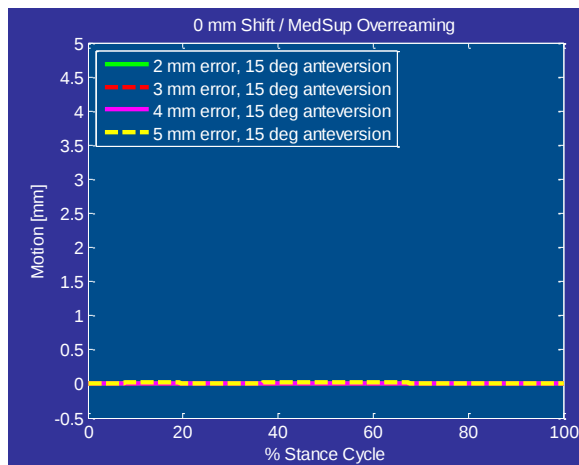
Figure B9: Patient 3 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



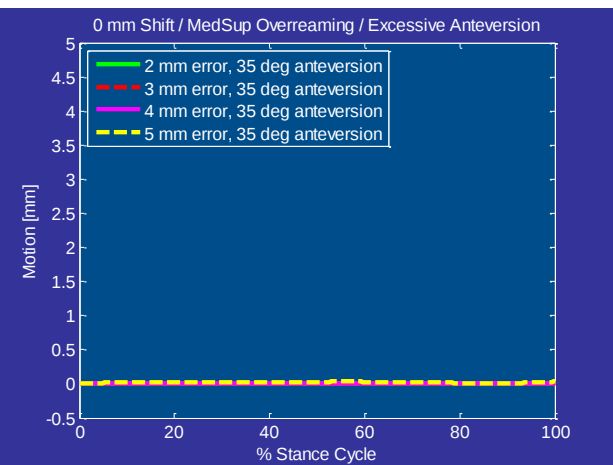
(a)



(b)

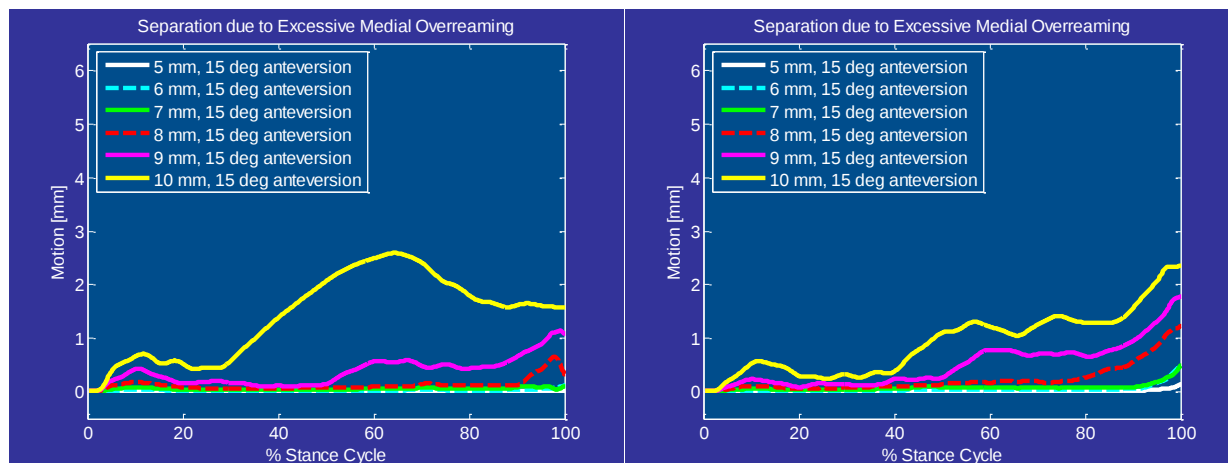


(c)



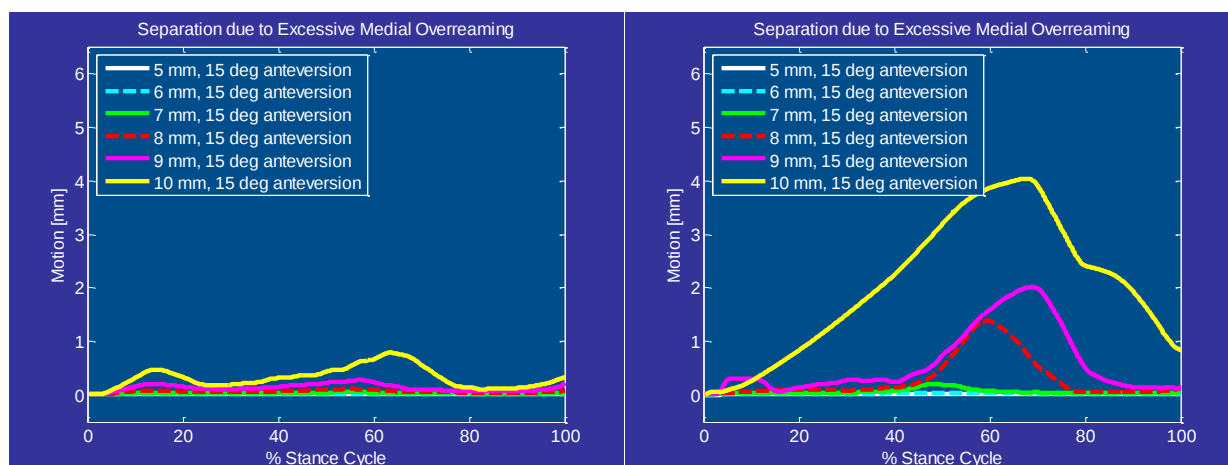
(d)

Figure B10: Patient 4 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



(a)

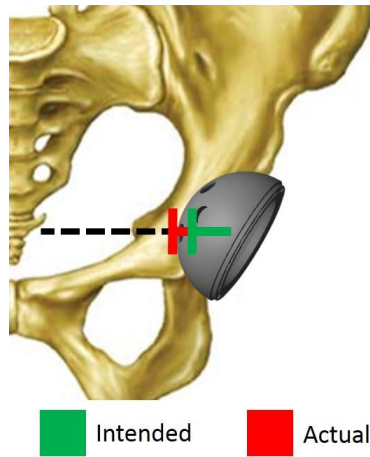
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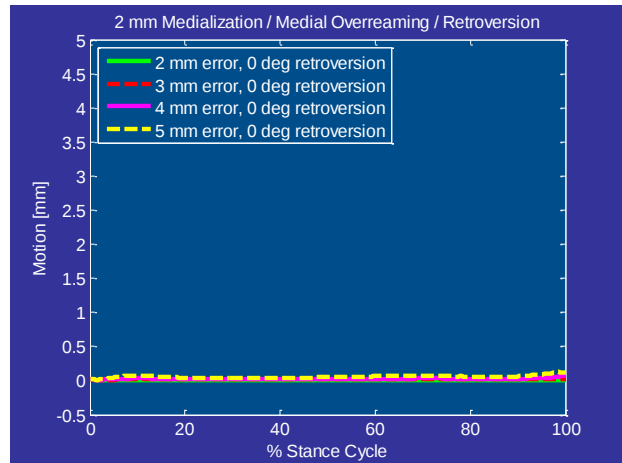
(c)

(d)

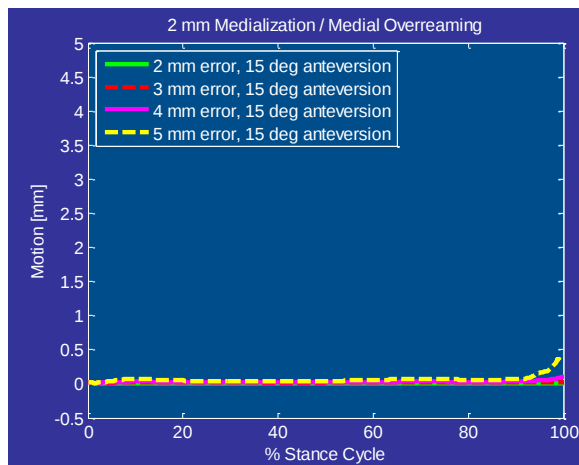
Figure B11: Patients (a) 1, (b) 2, (c) 3, and (d) 4 showing excessive overreaming scenarios.



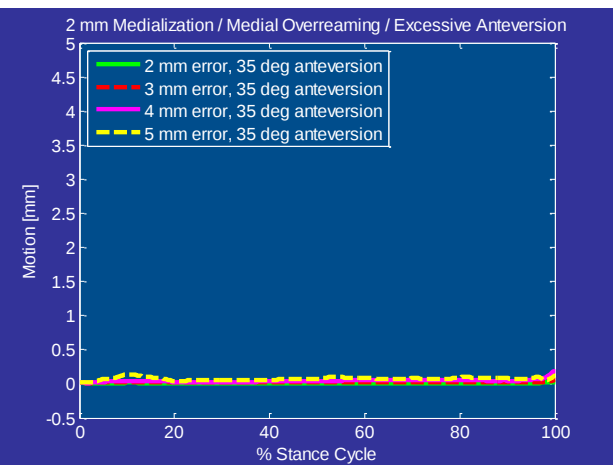
(a)



(b)

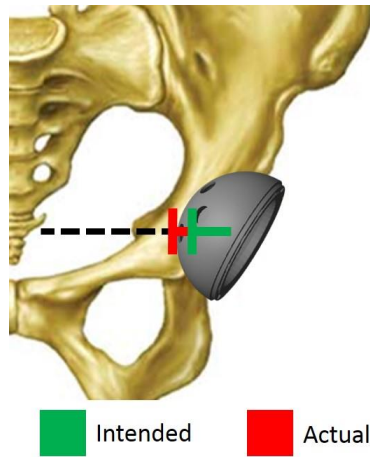


(c)

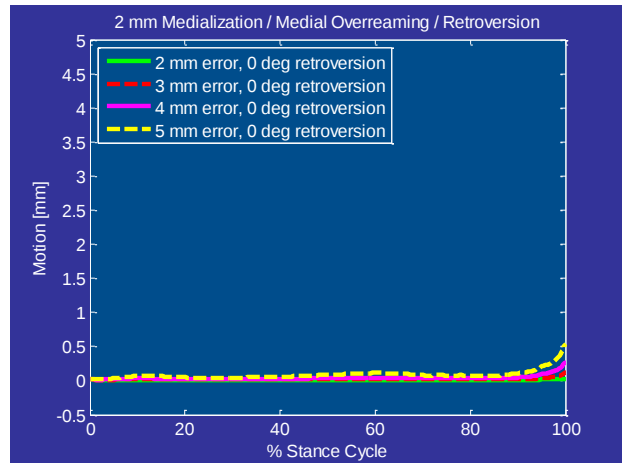


(d)

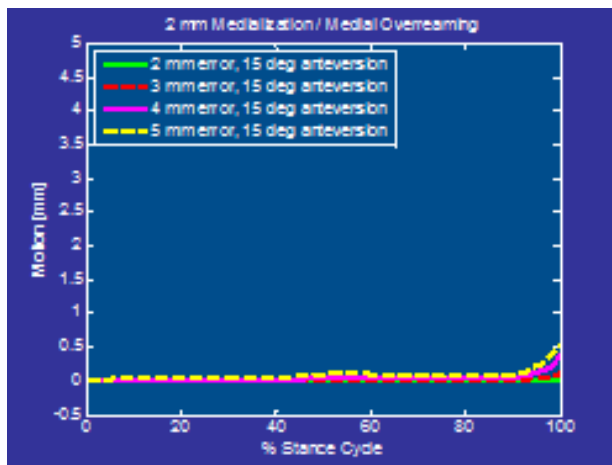
Figure B12: Patient 1 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



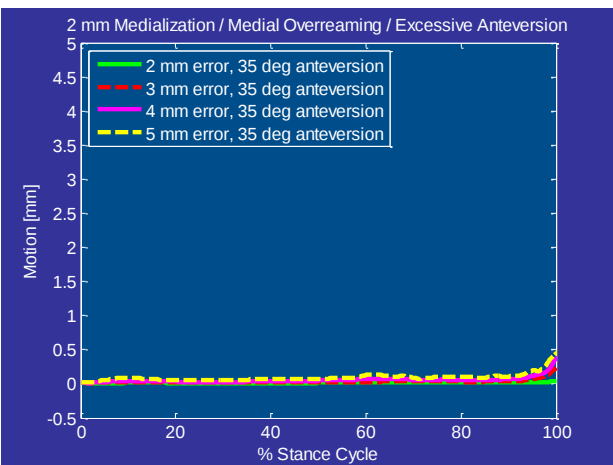
(a)



(b)

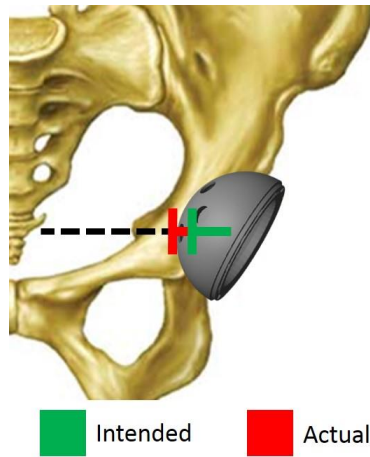


(c)

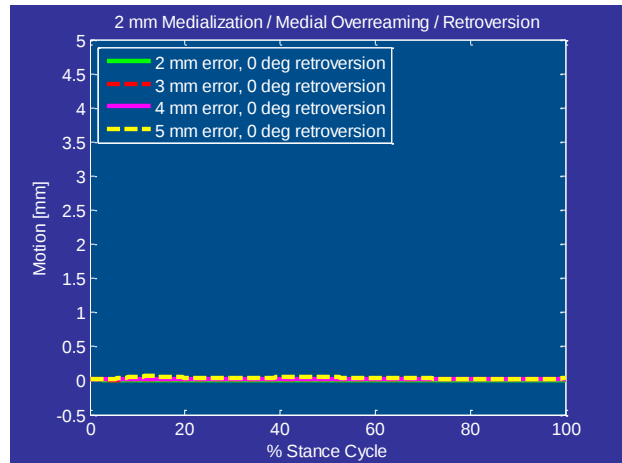


(d)

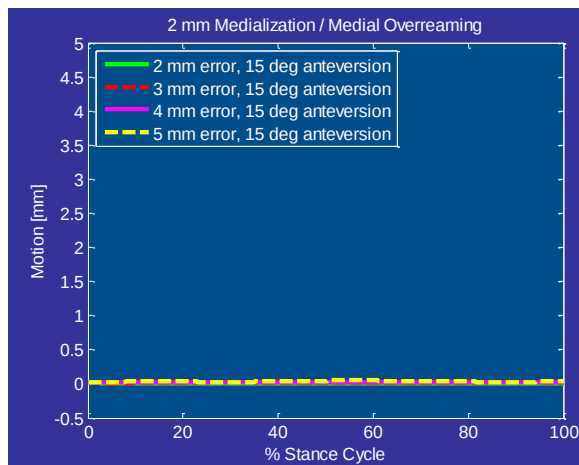
Figure B13: Patient 2 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



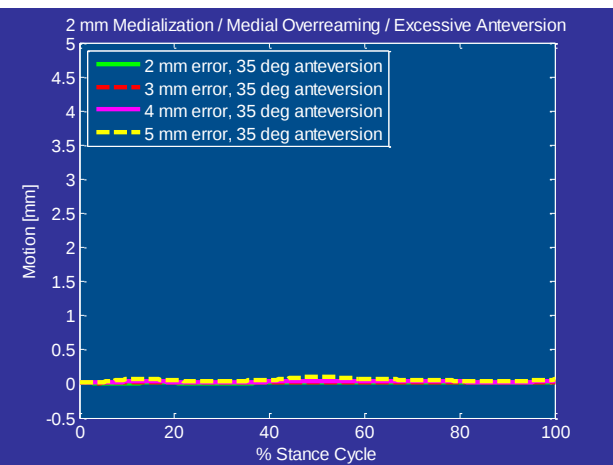
(a)



(b)

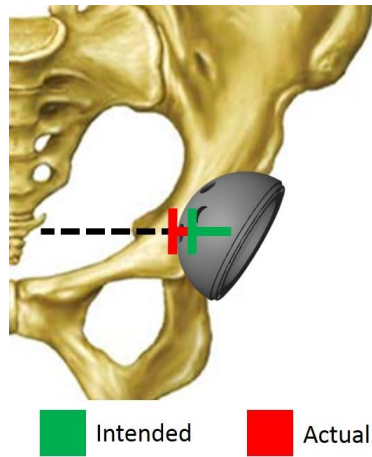


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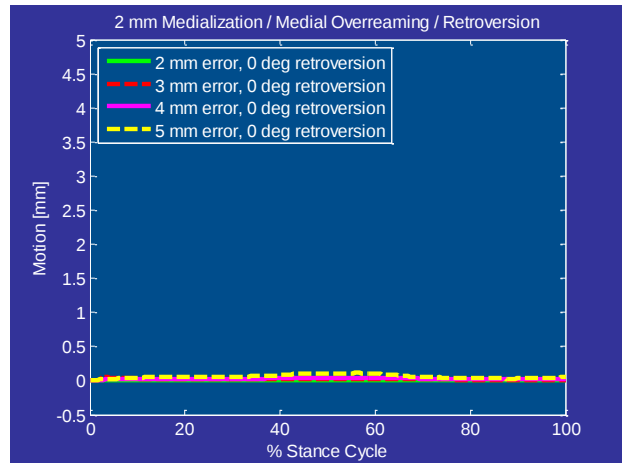


(d)

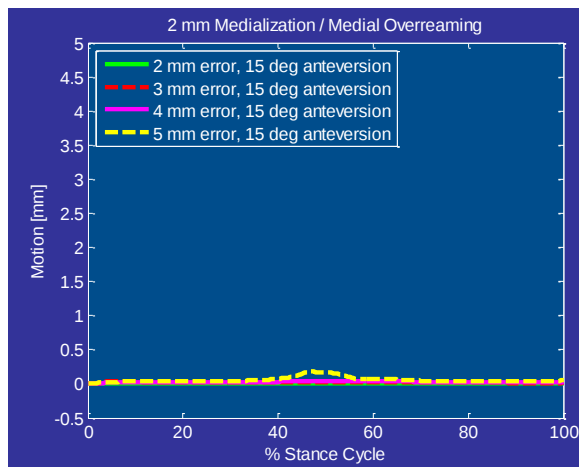
Figure B14: Patient 3 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



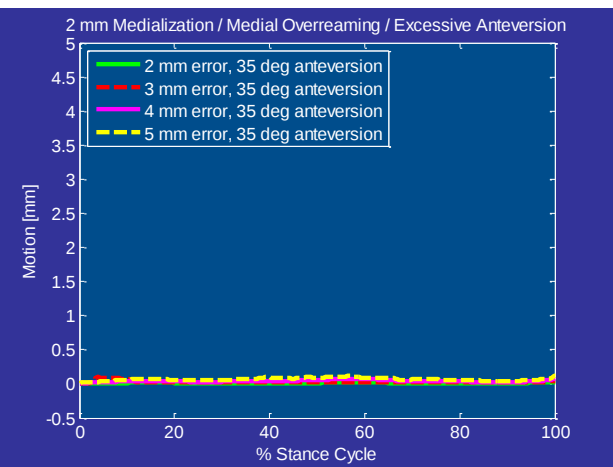
(a)



(b)

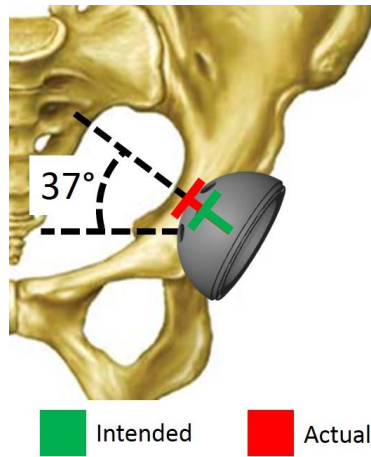


(c)

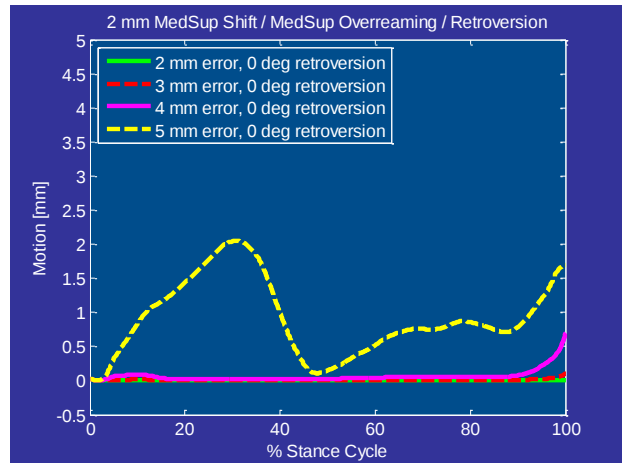


(d)

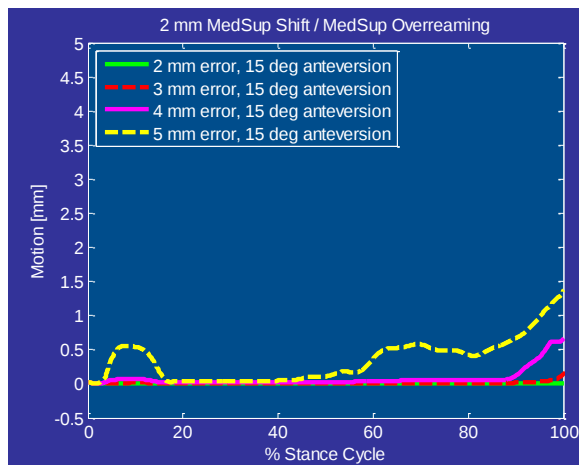
Figure B15: Patient 4 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



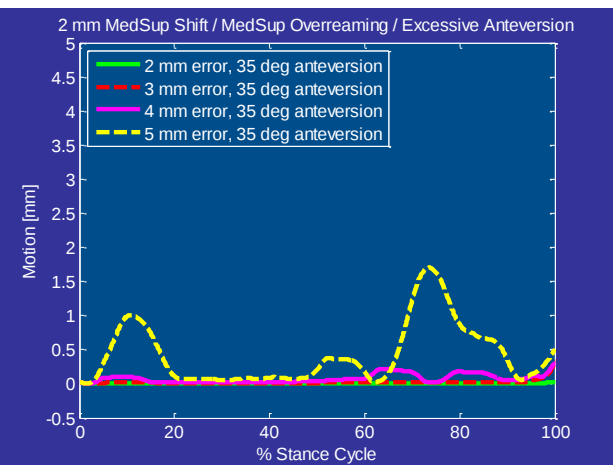
(a)



(b)

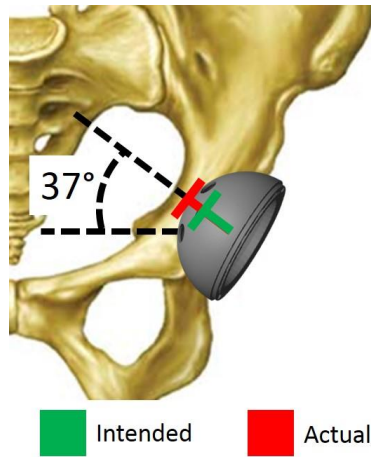


(c)

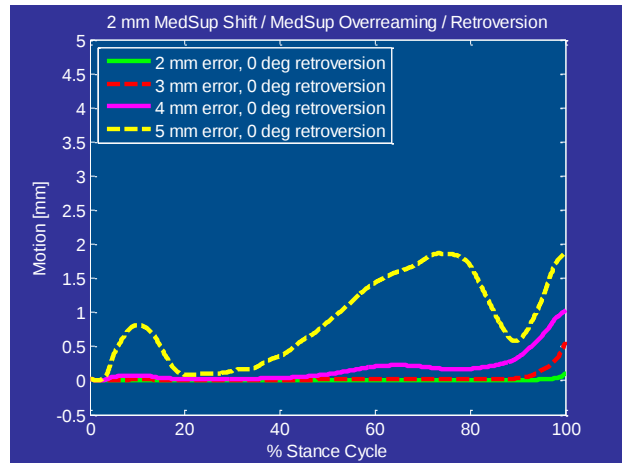


(d)

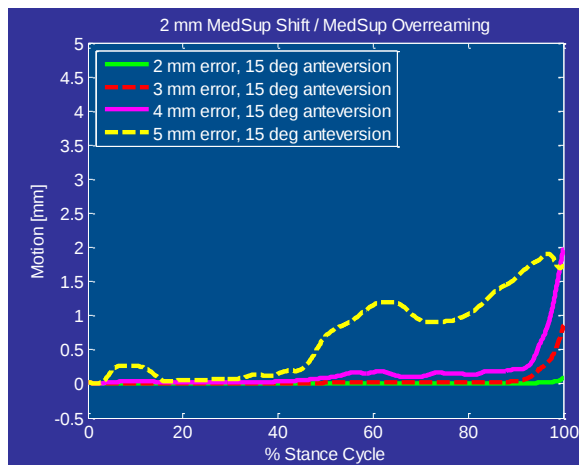
Figure B16: Patient 1 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



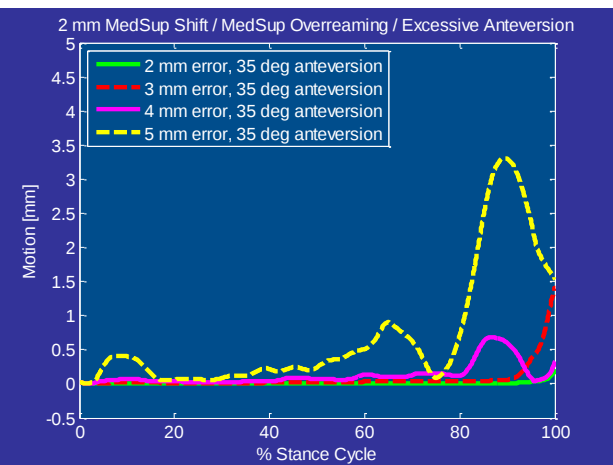
(a)



(b)

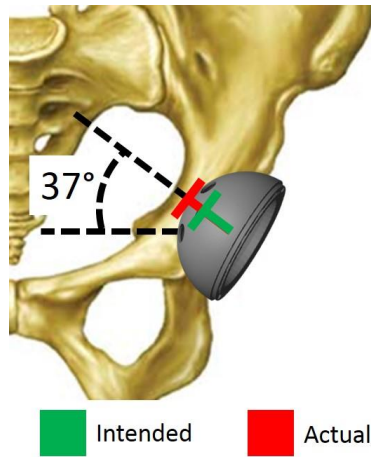


(c)

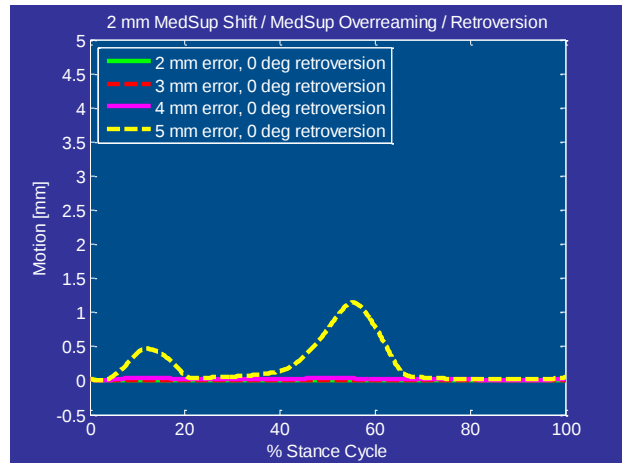


(d)

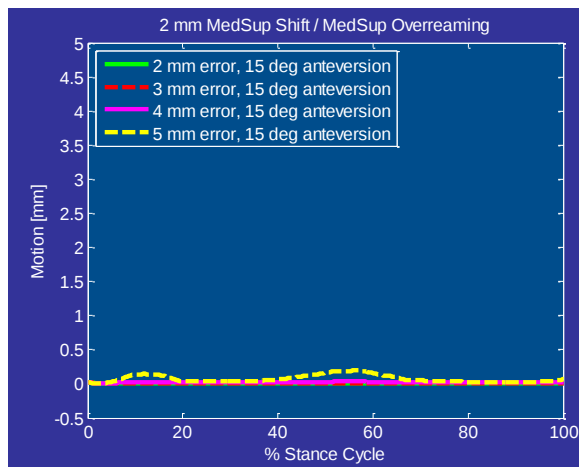
Figure B17: Patient 2 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



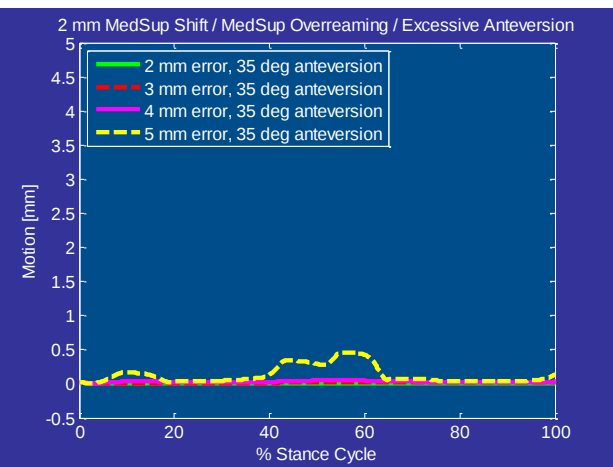
(a)



(b)

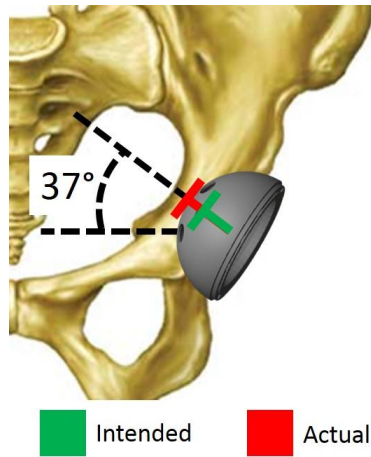


(c)

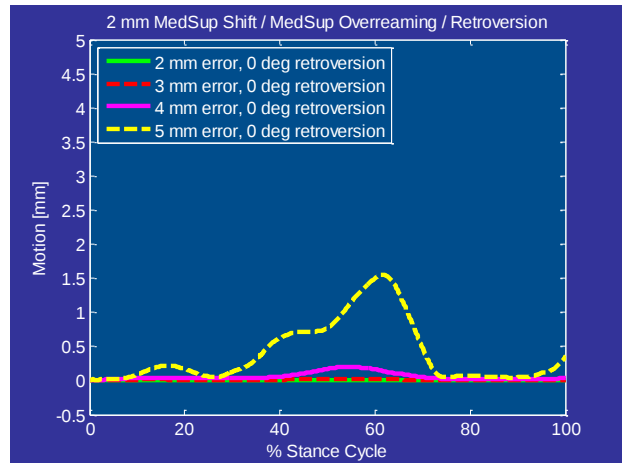


(d)

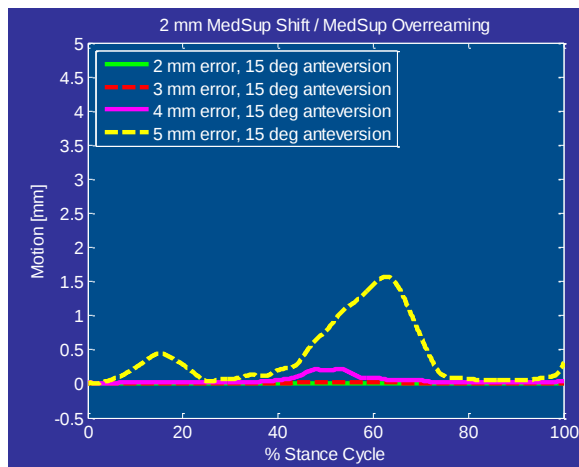
Figure B18: Patient 3 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



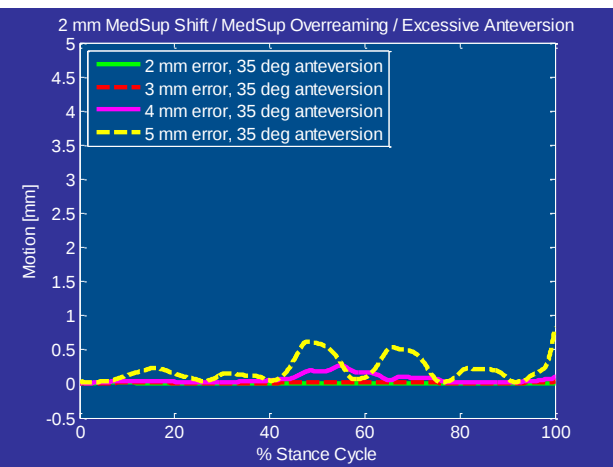
(a)



(b)

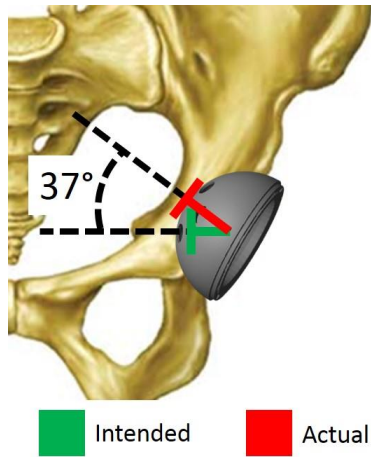


(c)

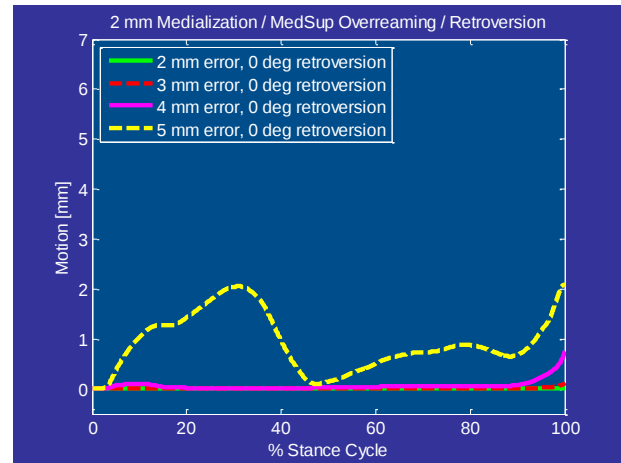


(d)

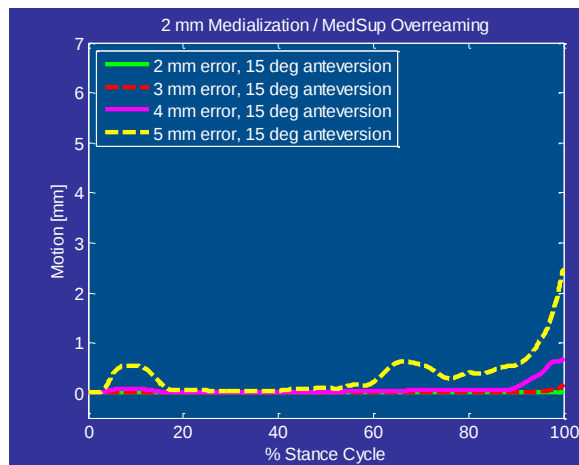
Figure B19: Patient 4 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



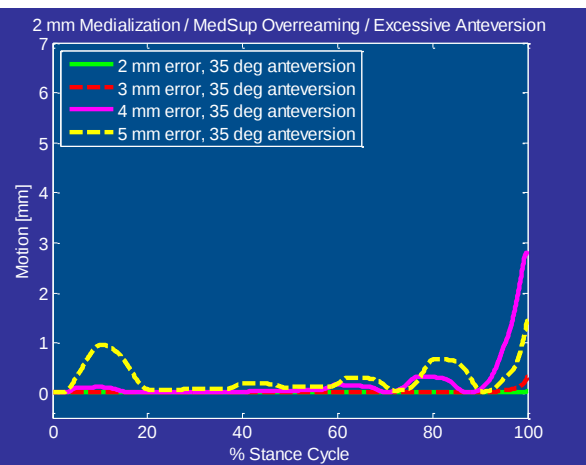
(a)



(b)

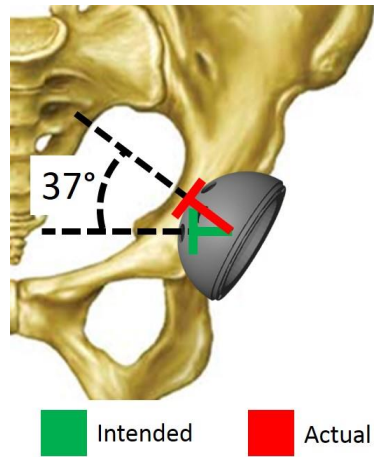


(c)

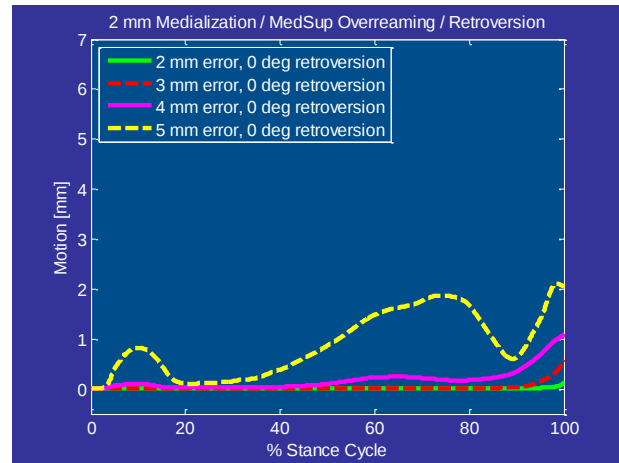


(d)

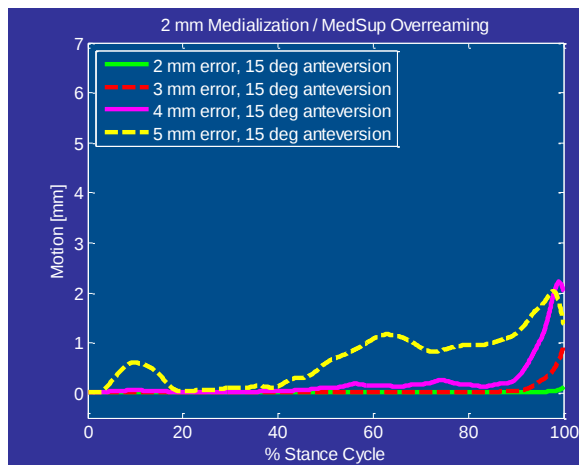
Figure B20: Patient 1 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



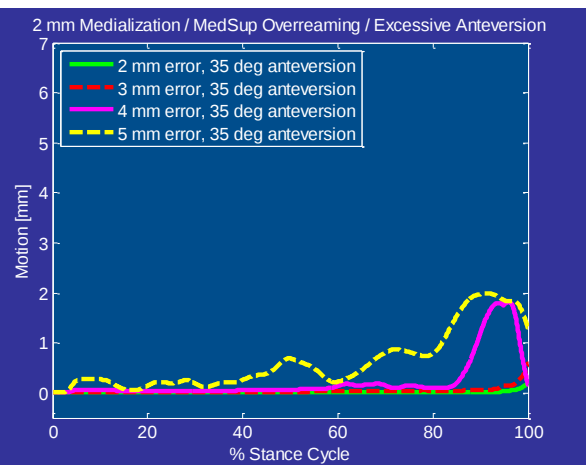
(a)



(b)

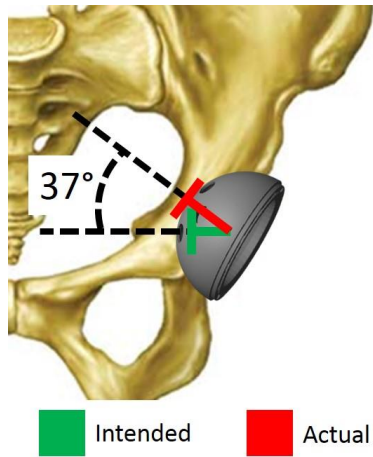


(c)

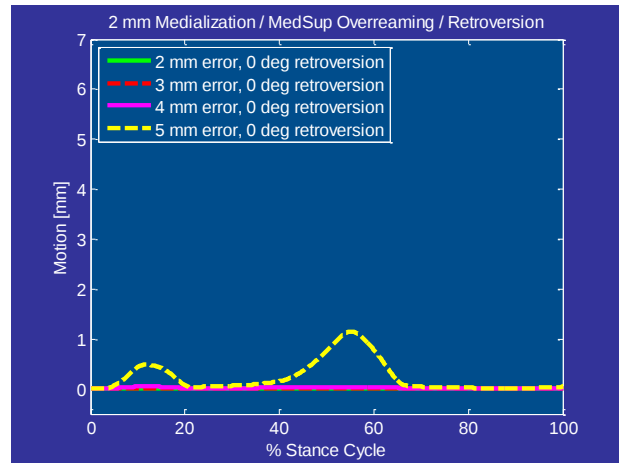


(d)

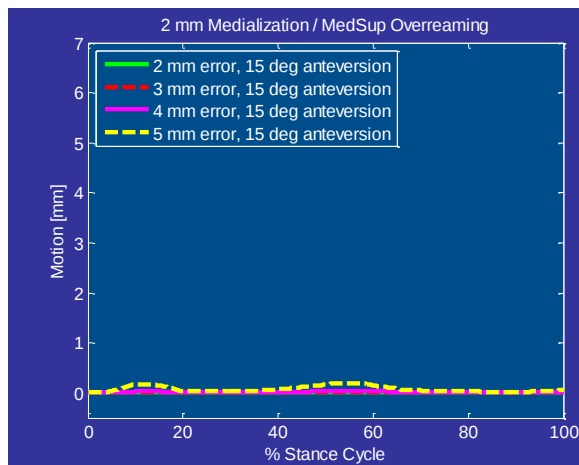
Figure B21: Patient 2 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



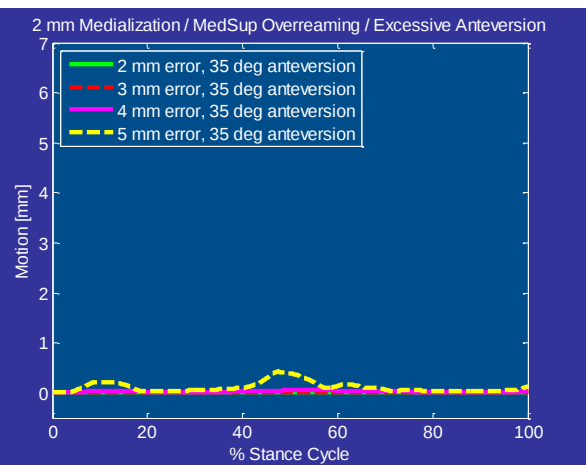
(a)



(b)

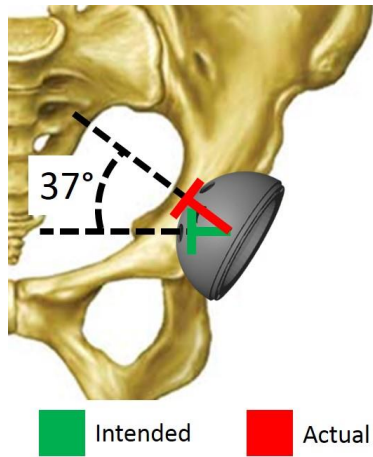


(c)

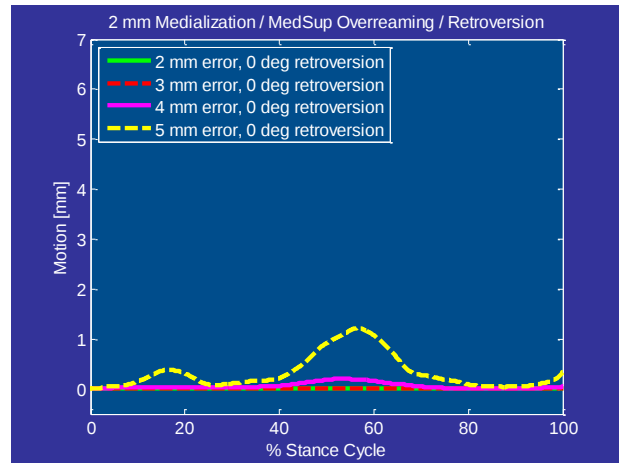


(d)

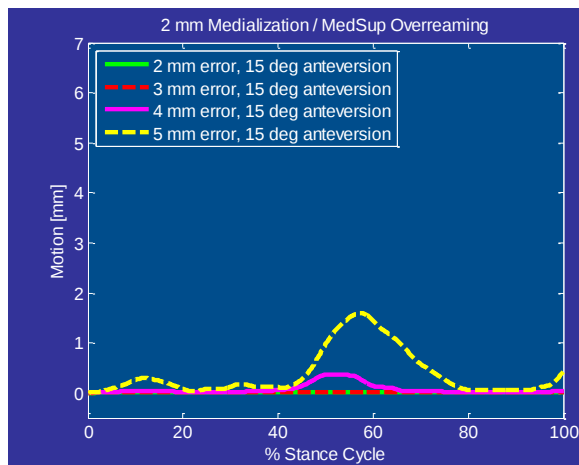
Figure B22: Patient 3 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



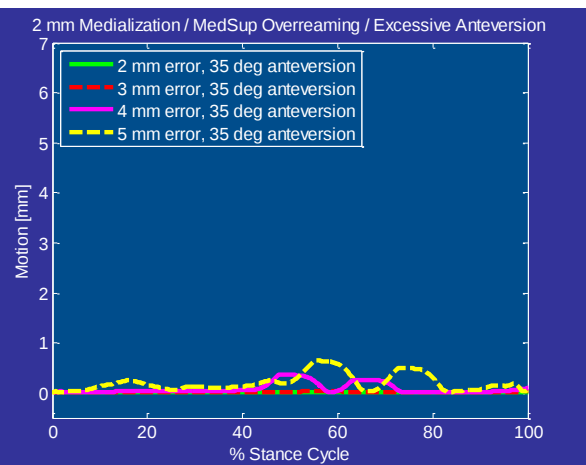
(a)



(b)

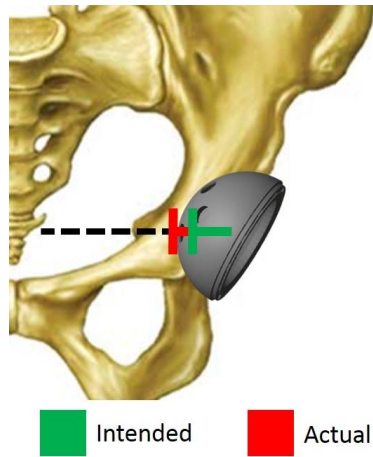


(c)

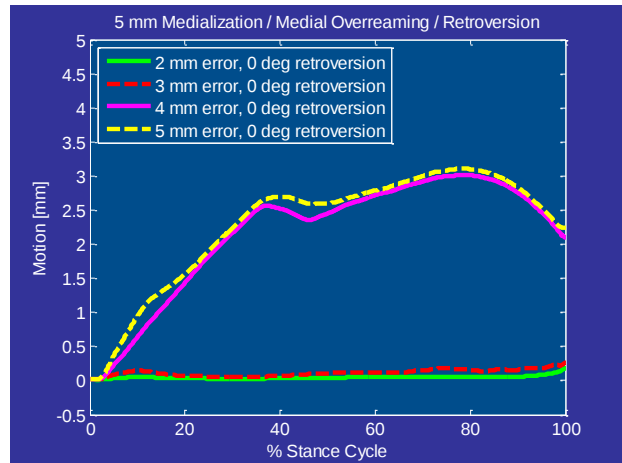


(d)

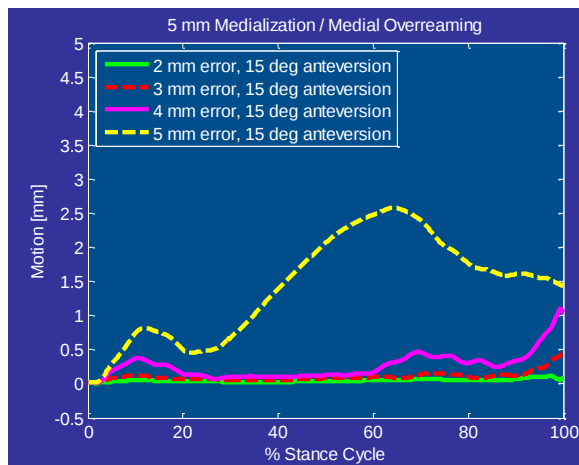
Figure B23: Patient 4 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



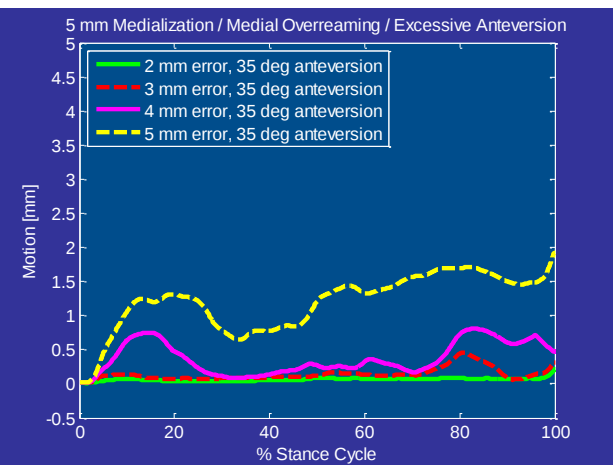
(a)



(b)

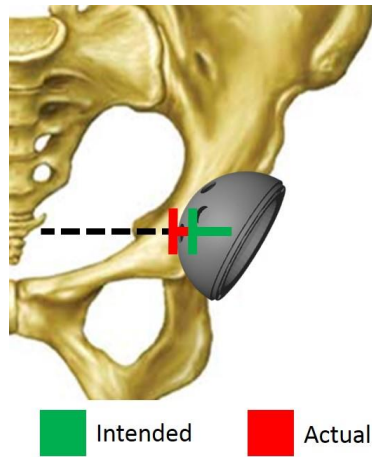


(c)

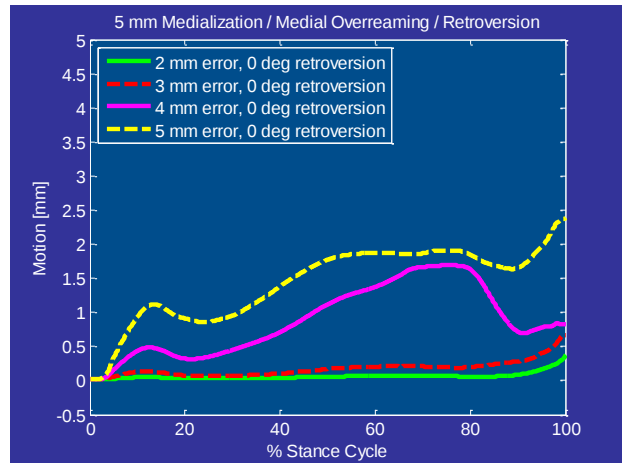


(d)

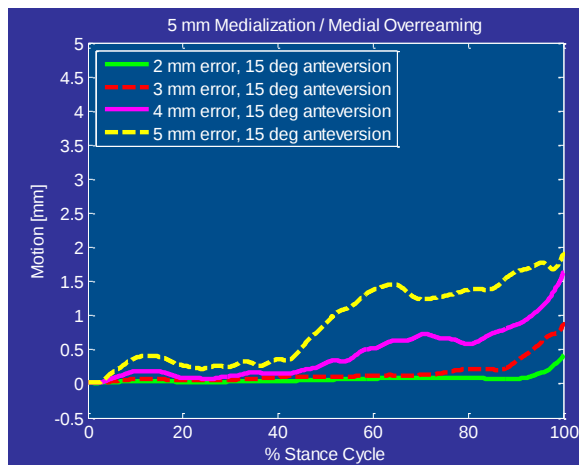
Figure B24: Patient 1 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



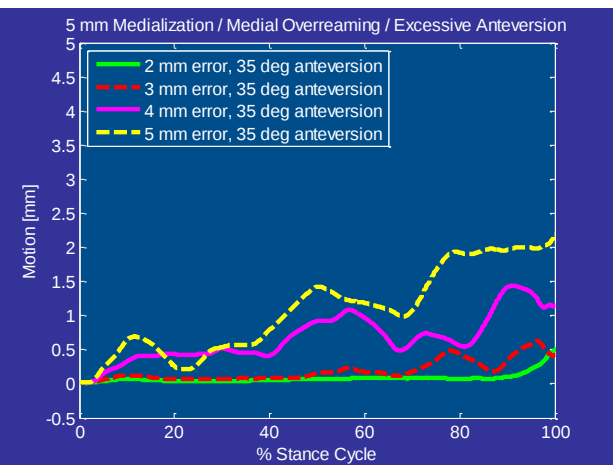
(a)



(b)

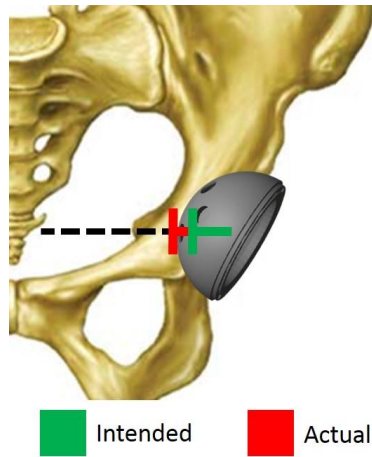


(c)

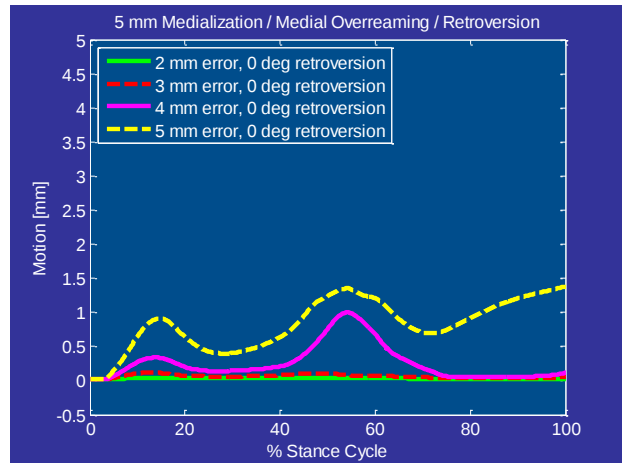


(d)

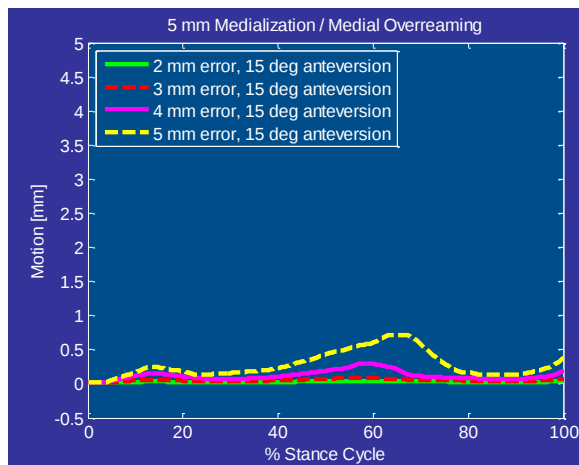
Figure B25: Patient 2 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



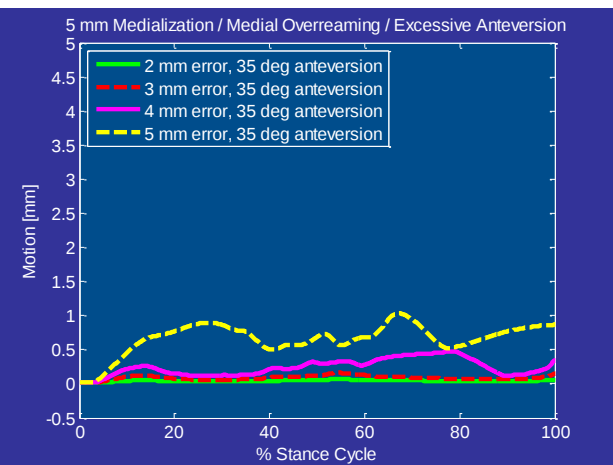
(a)



(b)

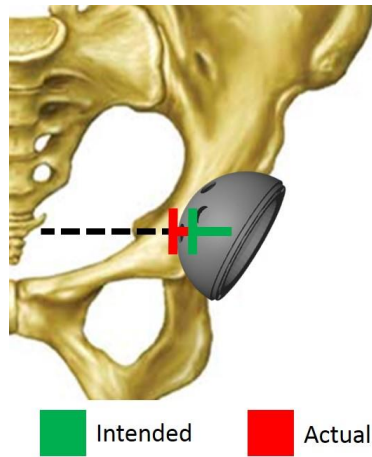


(c)

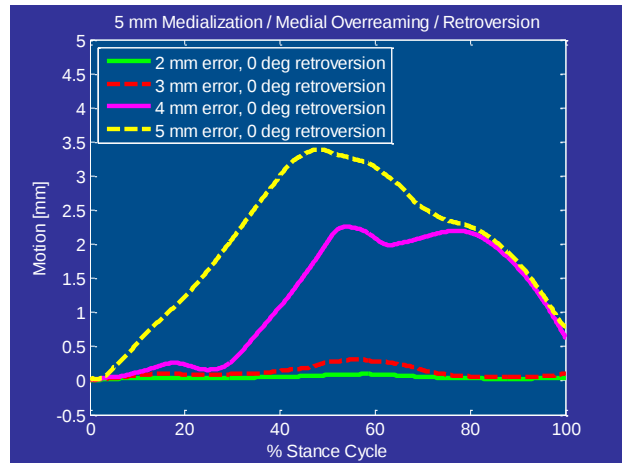


(d)

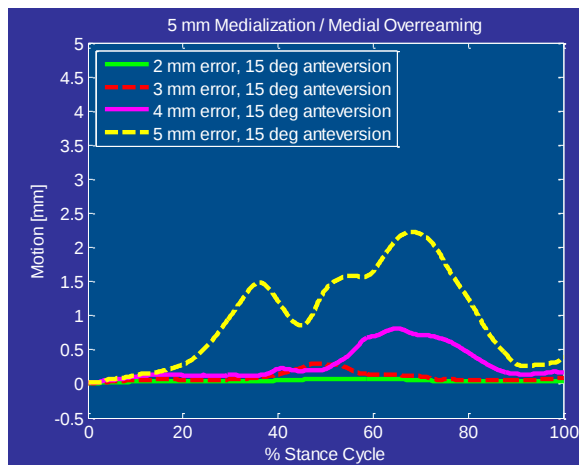
Figure B26: Patient 3 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



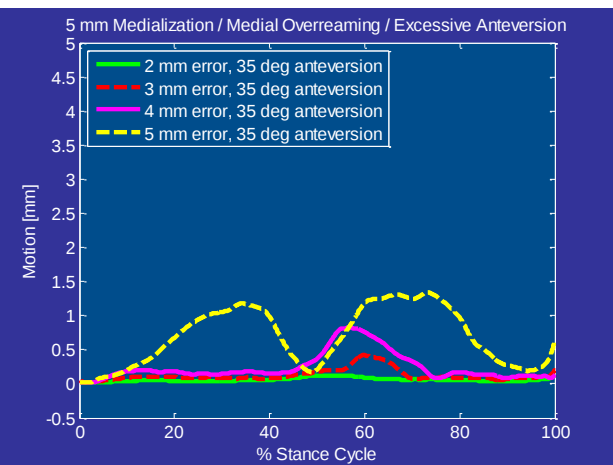
(a)



(b)

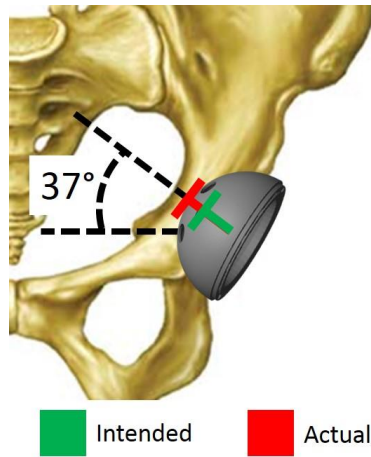


(c)

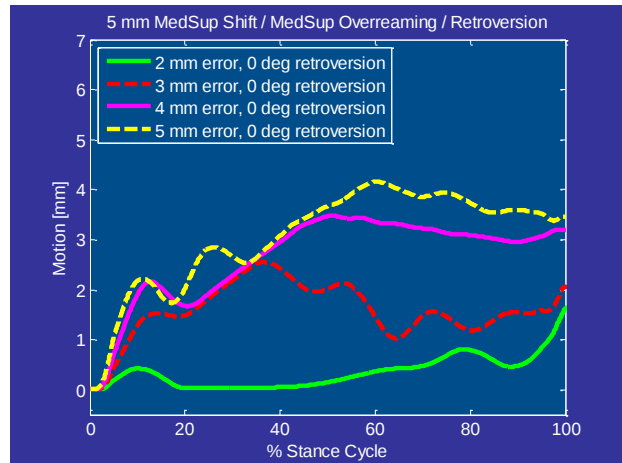


(d)

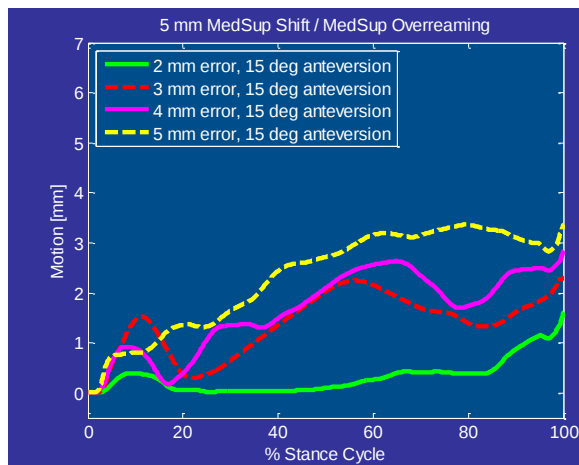
Figure B27: Patient 4 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



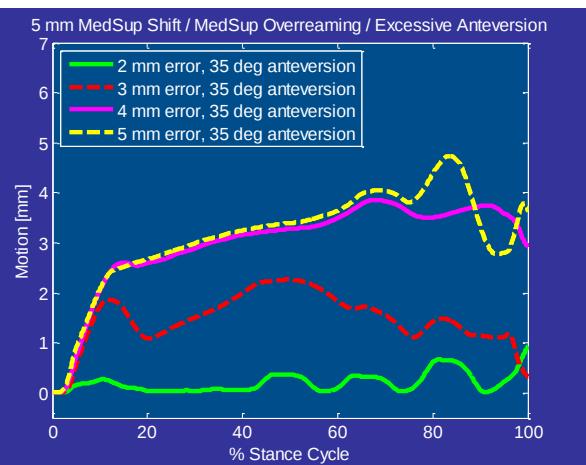
(a)



(b)

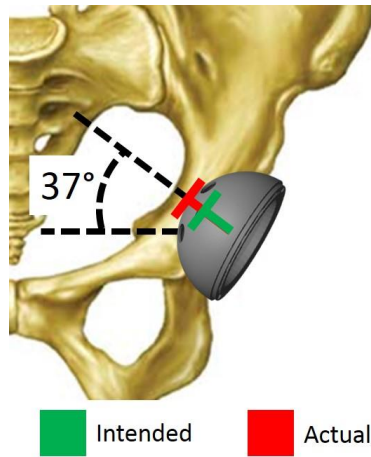


(c)

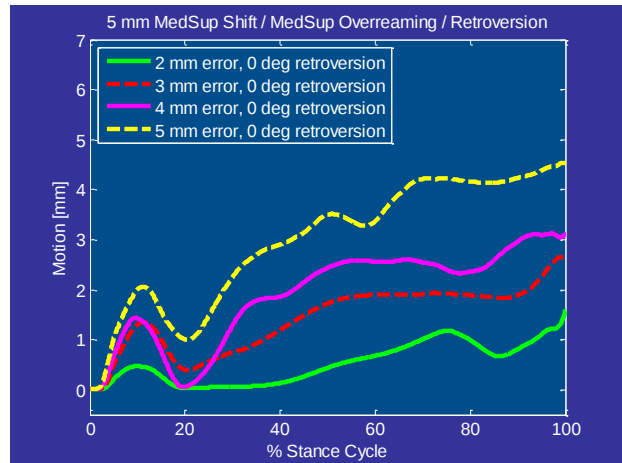


(d)

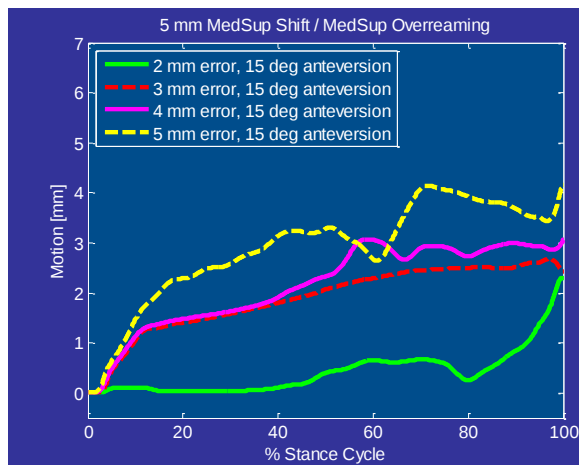
Figure B28: Patient 1 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



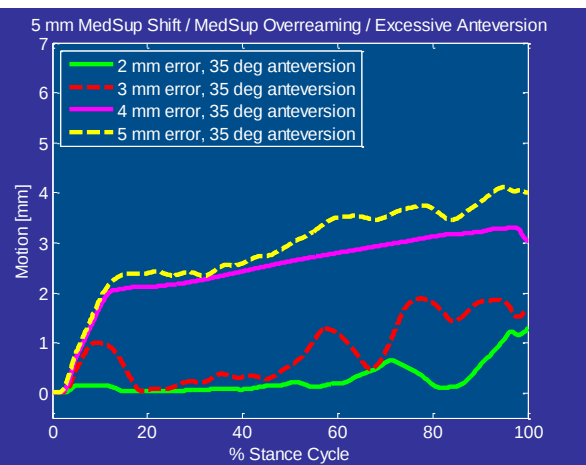
(a)



(b)

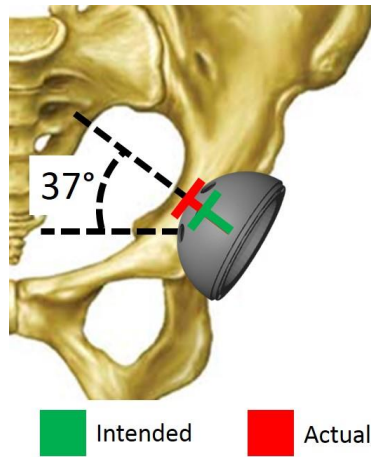


(c)

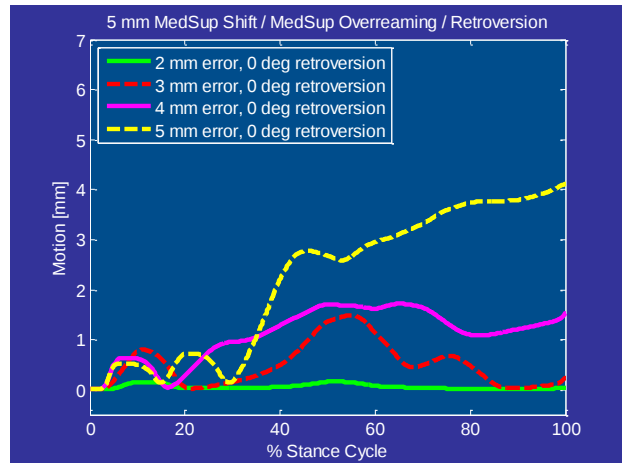


(d)

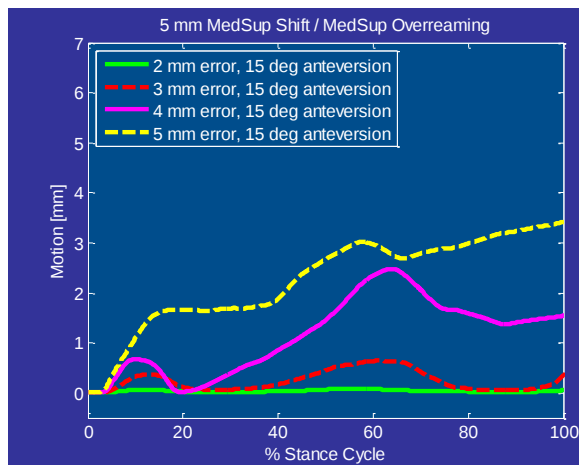
Figure B29: Patient 2 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



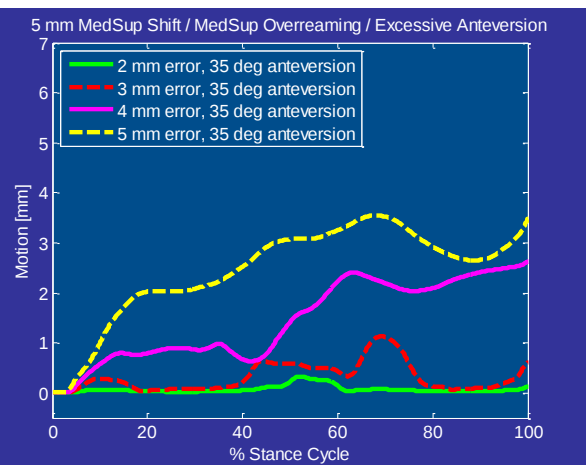
(a)



(b)

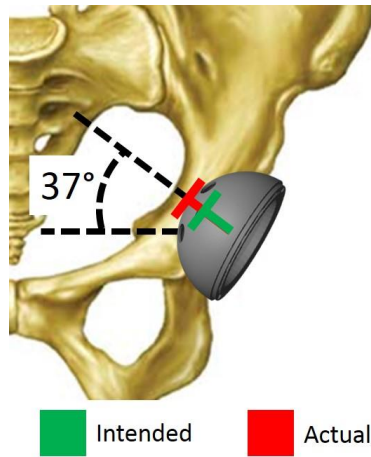


(c)

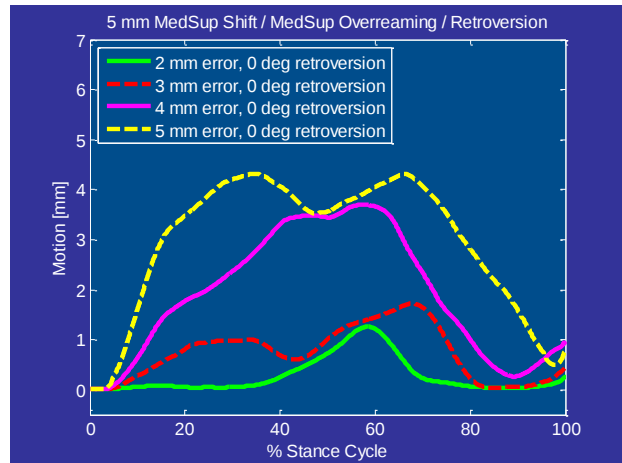


(d)

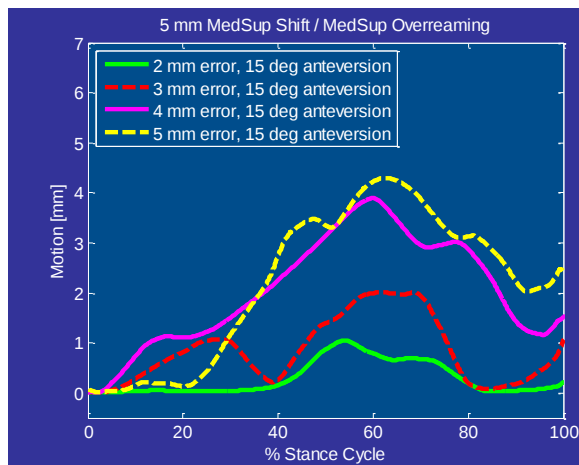
Figure B30: Patient 3 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



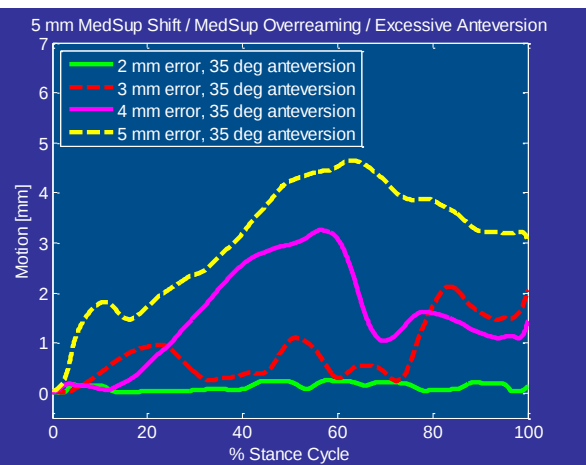
(a)



(b)

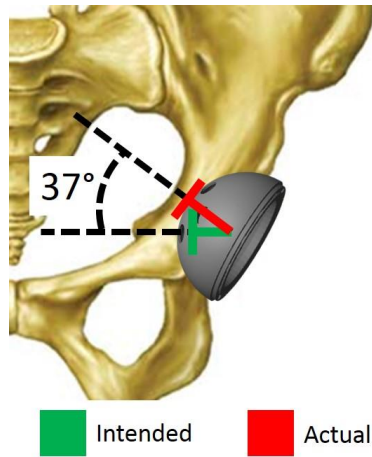


(c)

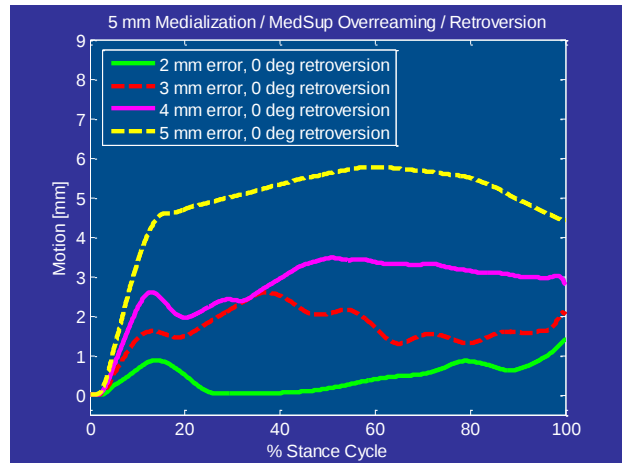


(d)

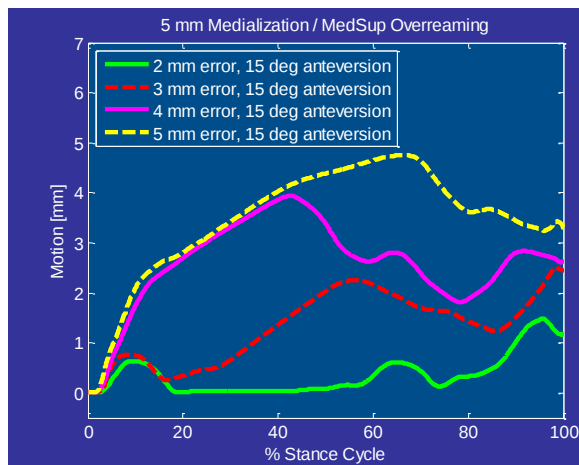
Figure B31: Patient 4 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



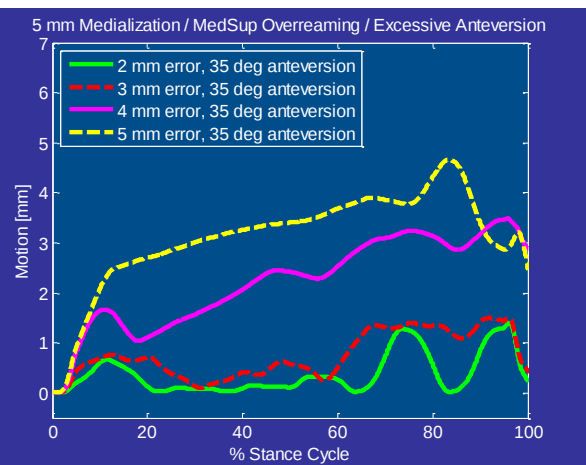
(a)



(b)

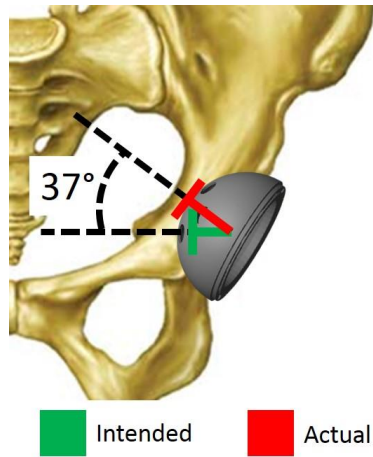


(c)

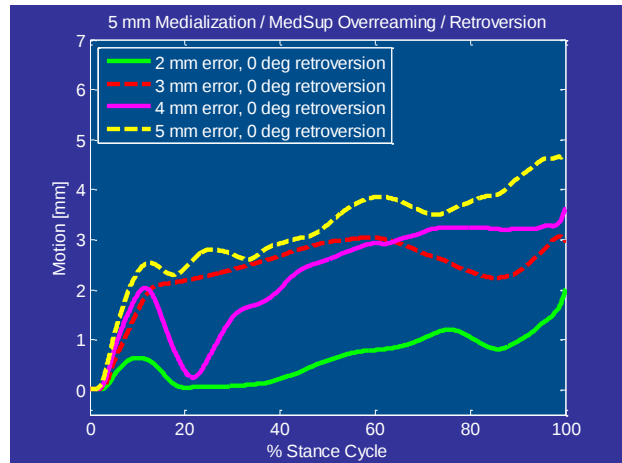


(d)

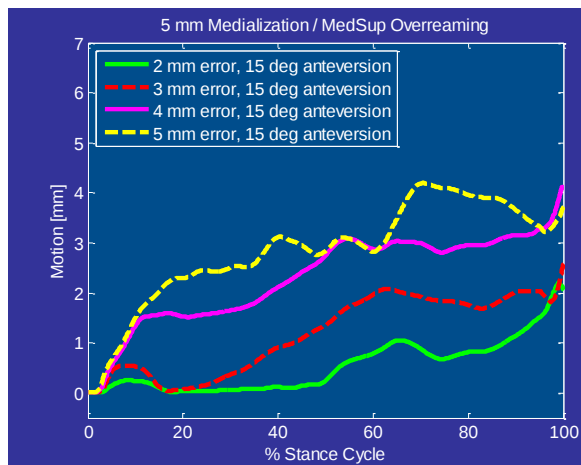
Figure B32: Patient 1 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



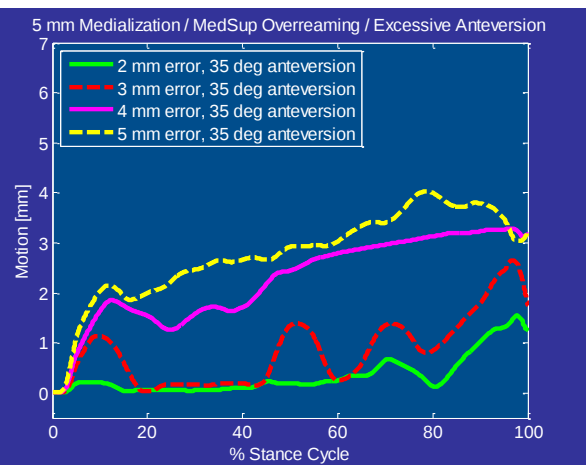
(a)



(b)

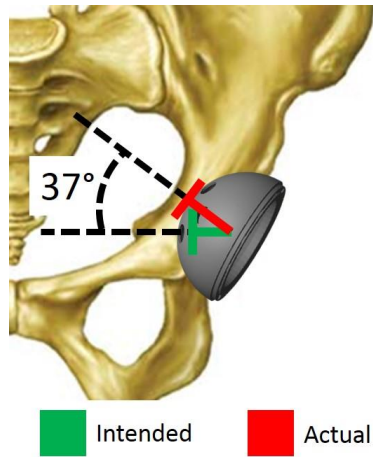


(c)

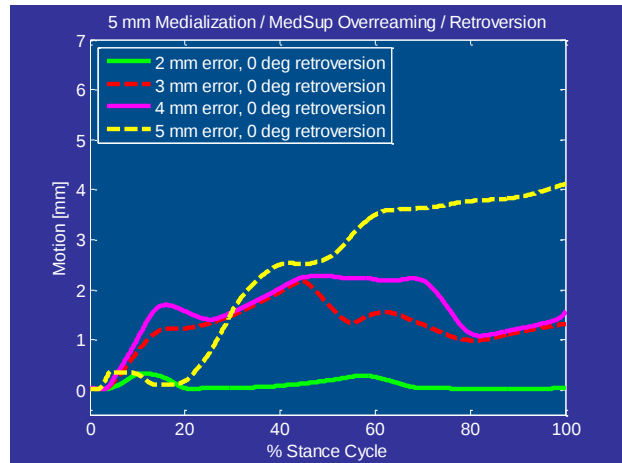


(d)

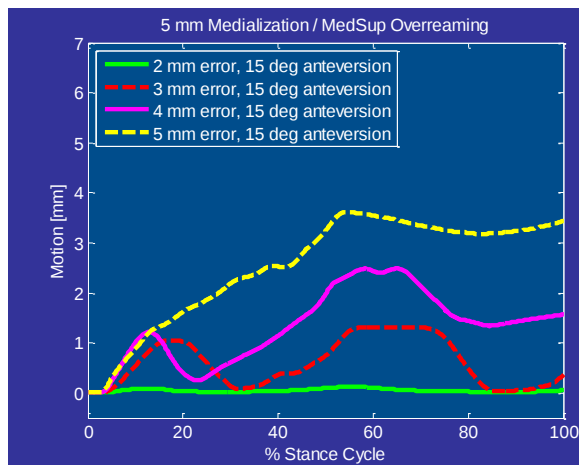
Figure B33: Patient 2 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



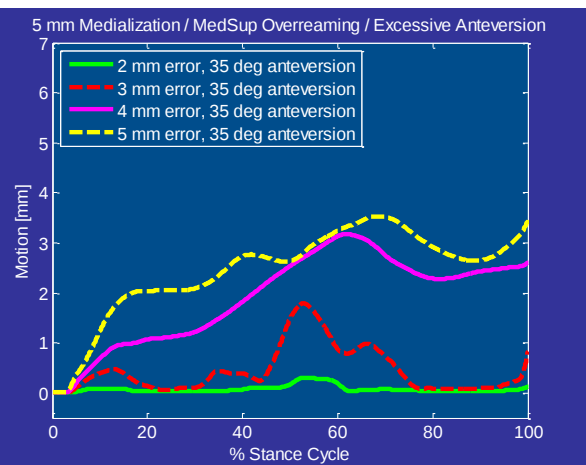
(a)



(b)

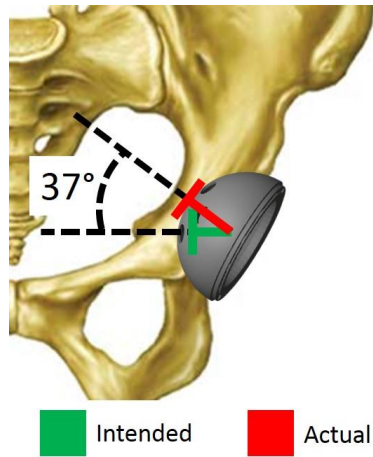


(c)

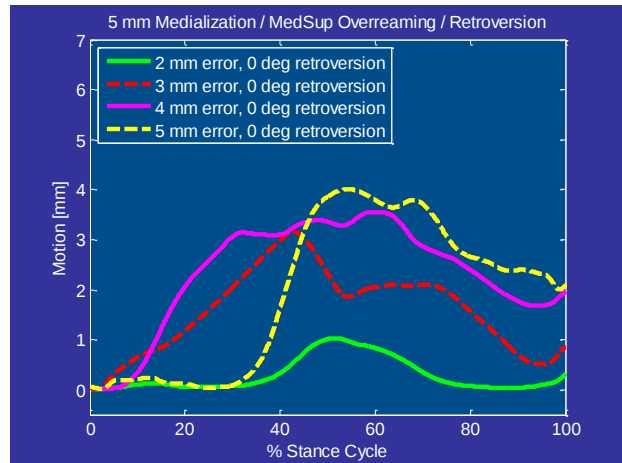


(d)

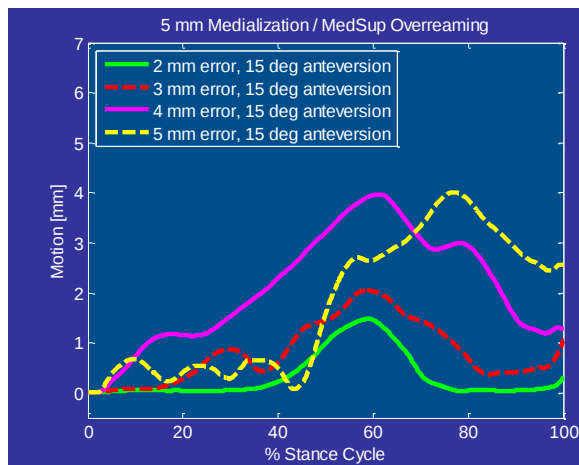
Figure B34: Patient 3 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).



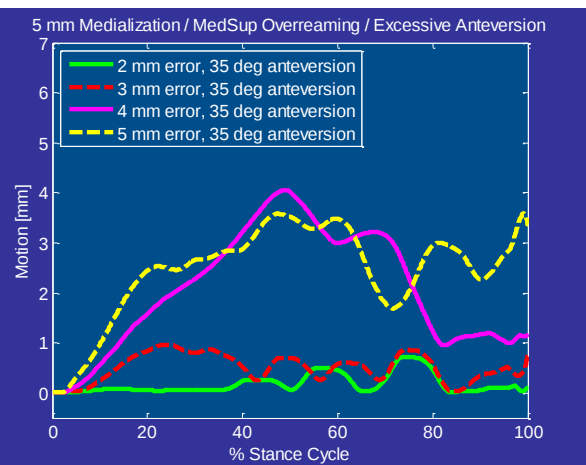
(a)



(b)



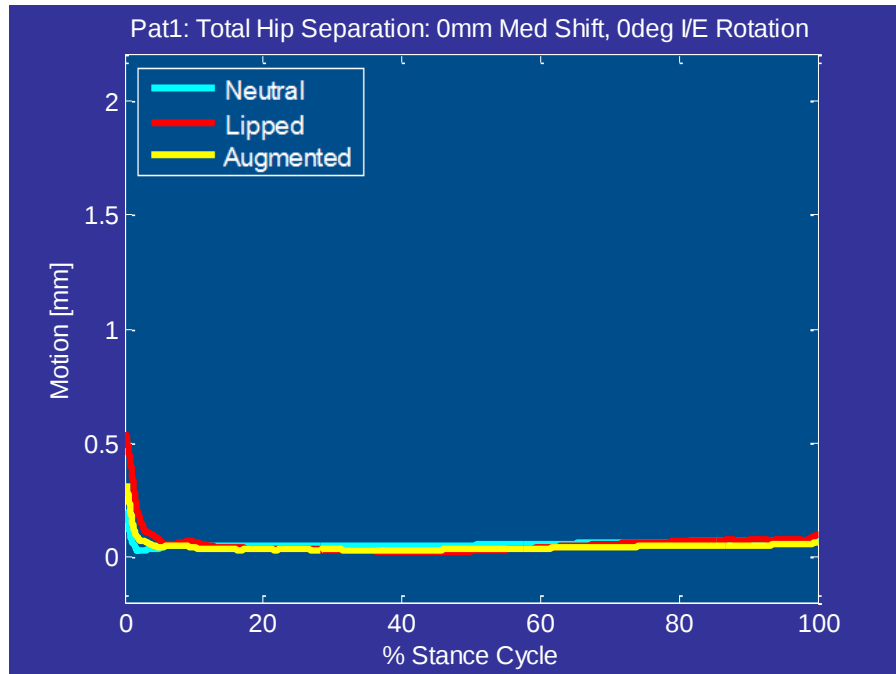
(c)



(d)

Figure B35: Patient 4 (a) Scenario, (b) 0° Retroversion, (c) 15° Anteversion, and (d) 35° Anteversion. Upper left image modified from (humananatomychart.us).

Appendix C: Cup Medialization Figures with Rotation Center Alignment

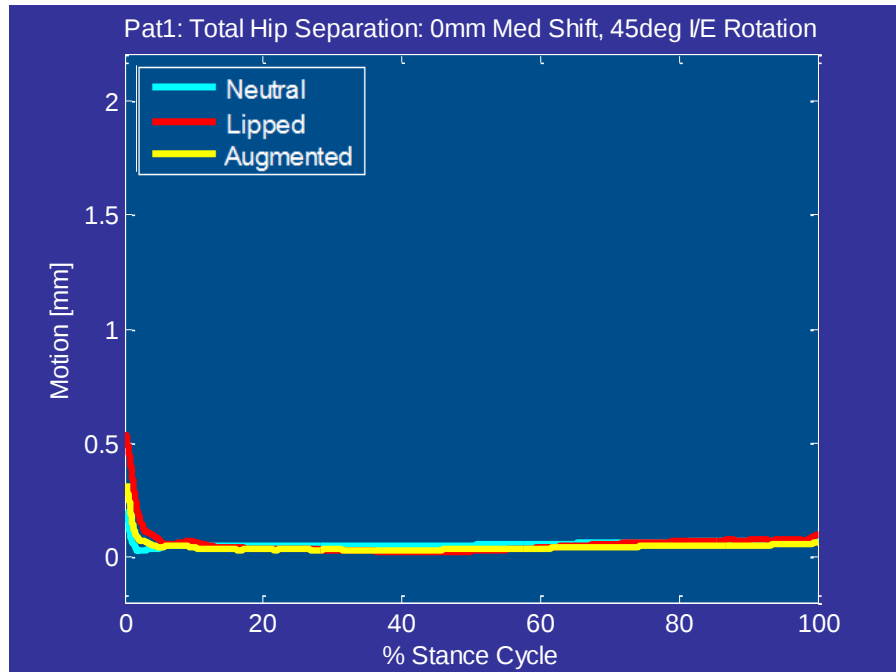


(a)

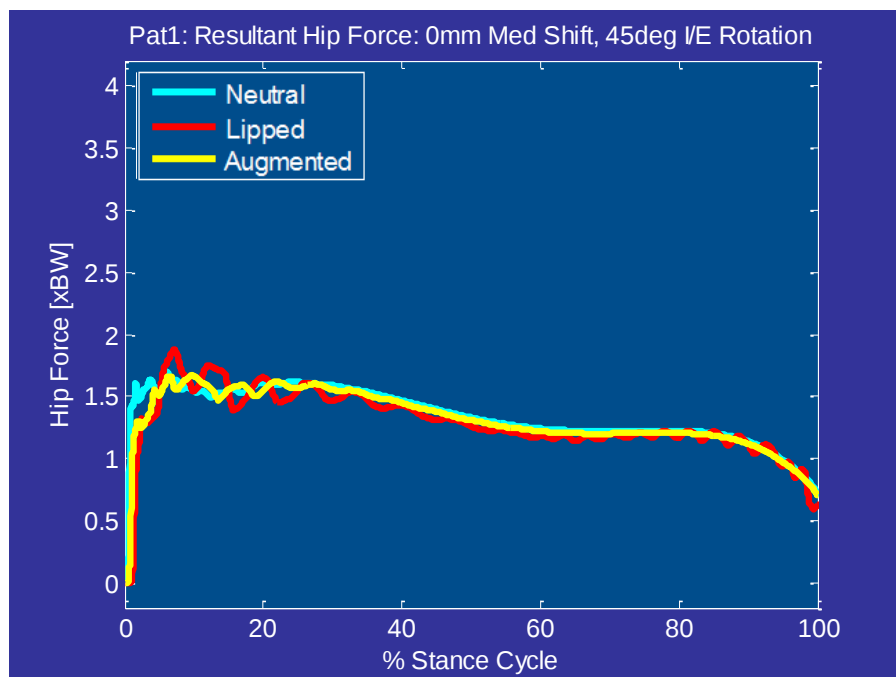


(b)

Figure C1: (a) Hip separation and (b) hip force for Pat 1: 0mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

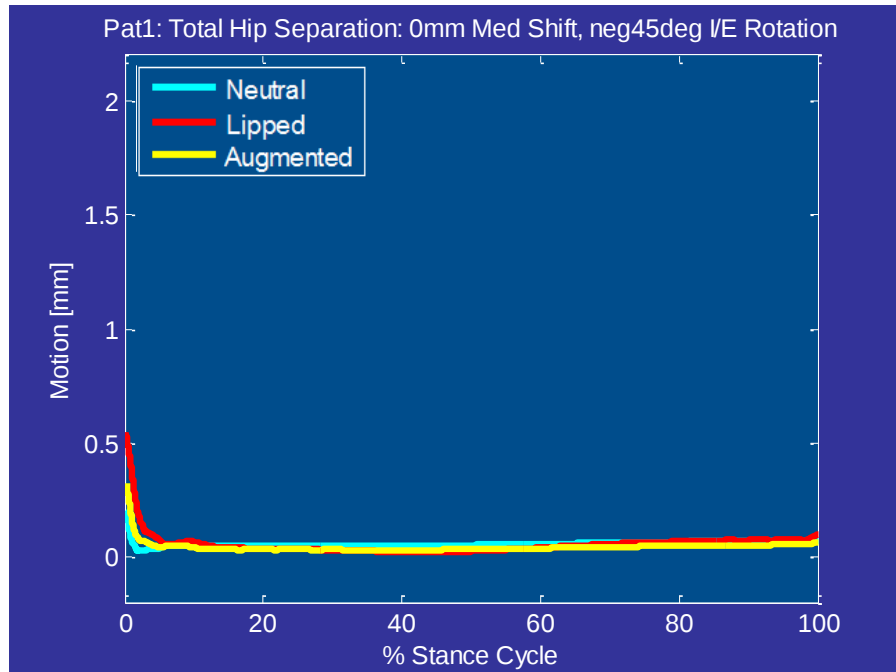


(a)



(b)

Figure C2: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

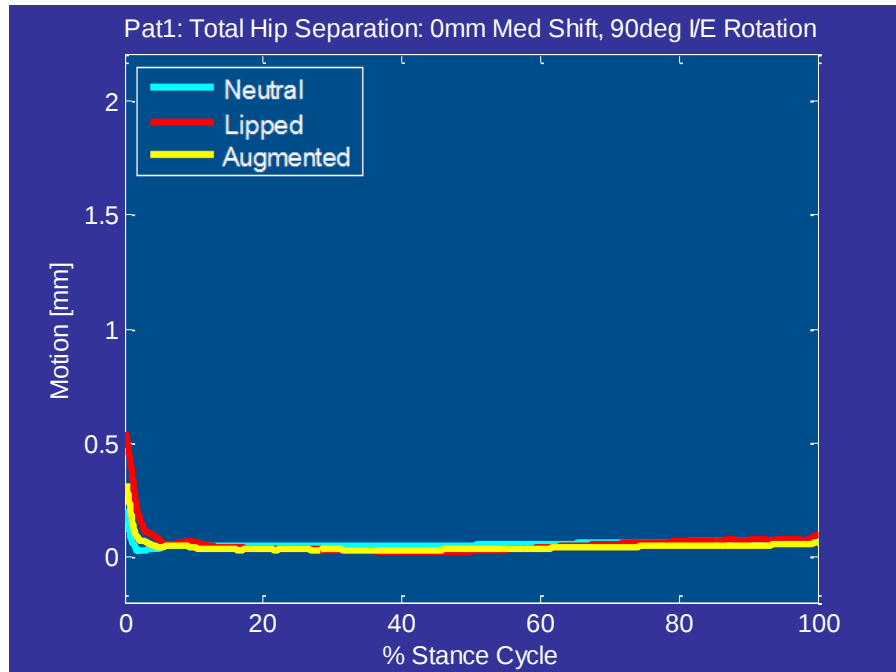


(a)

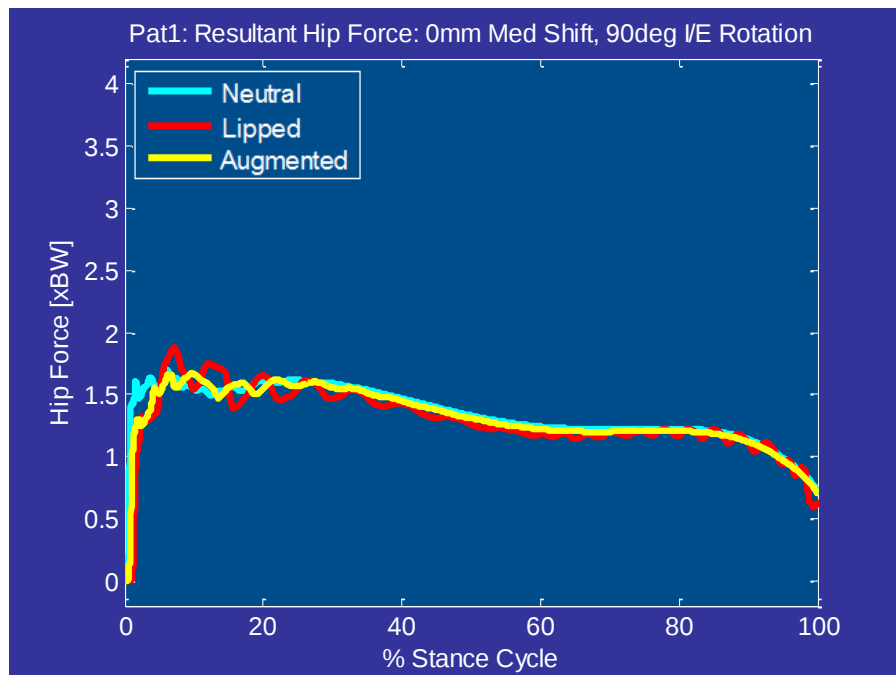


(b)

Figure C3: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

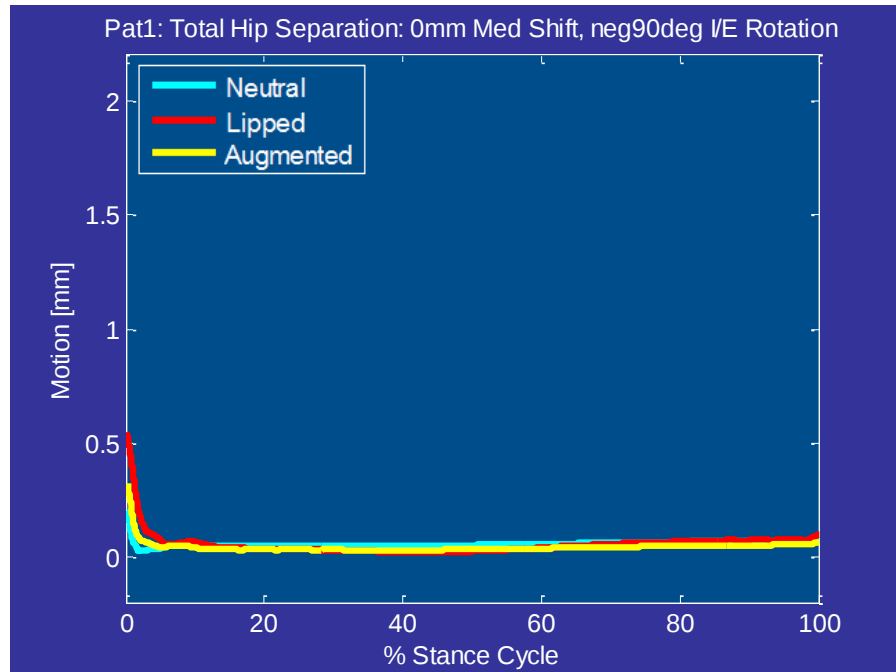


(a)

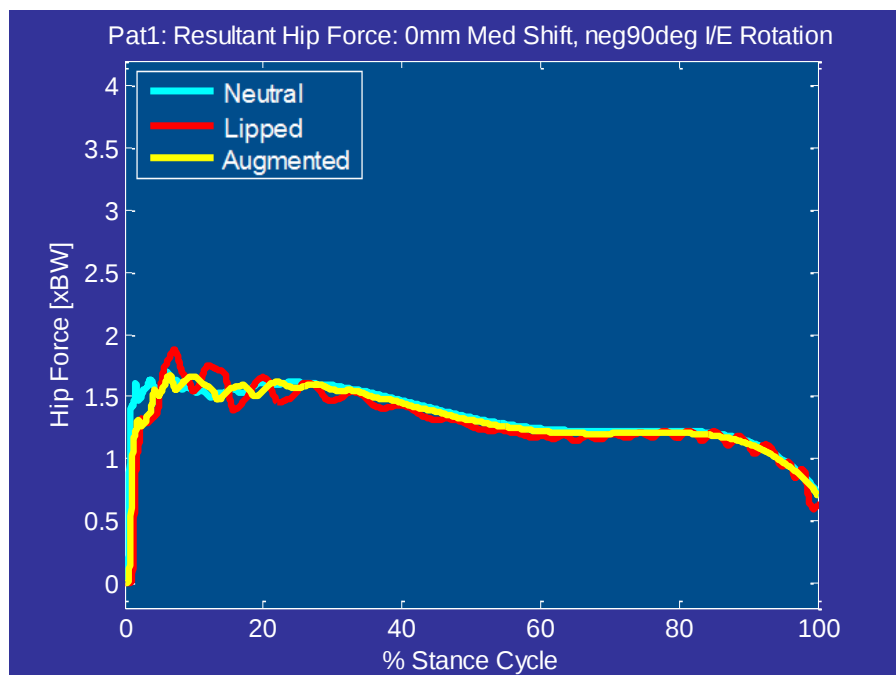


(b)

Figure C4: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

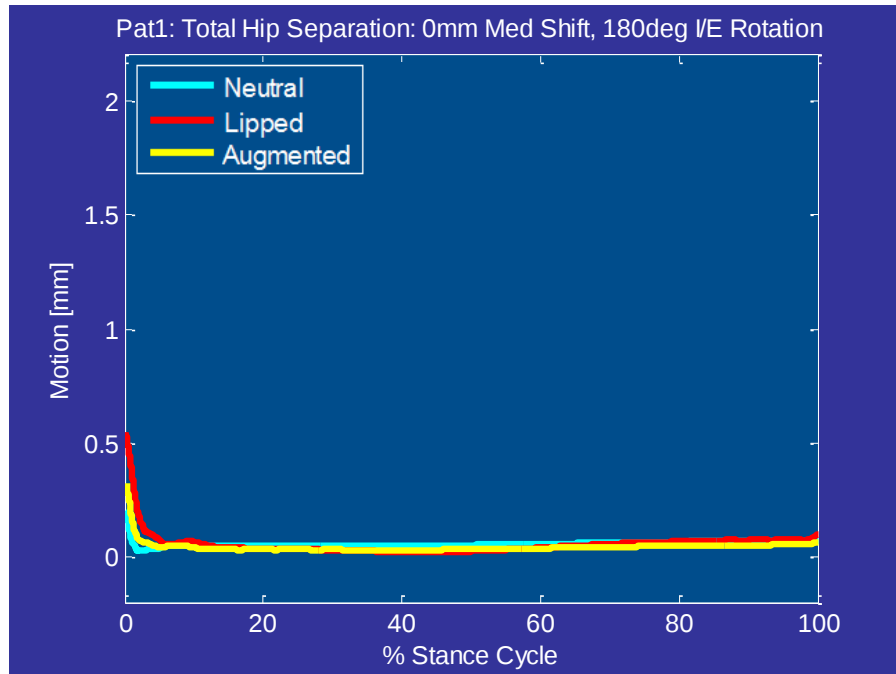


(a)

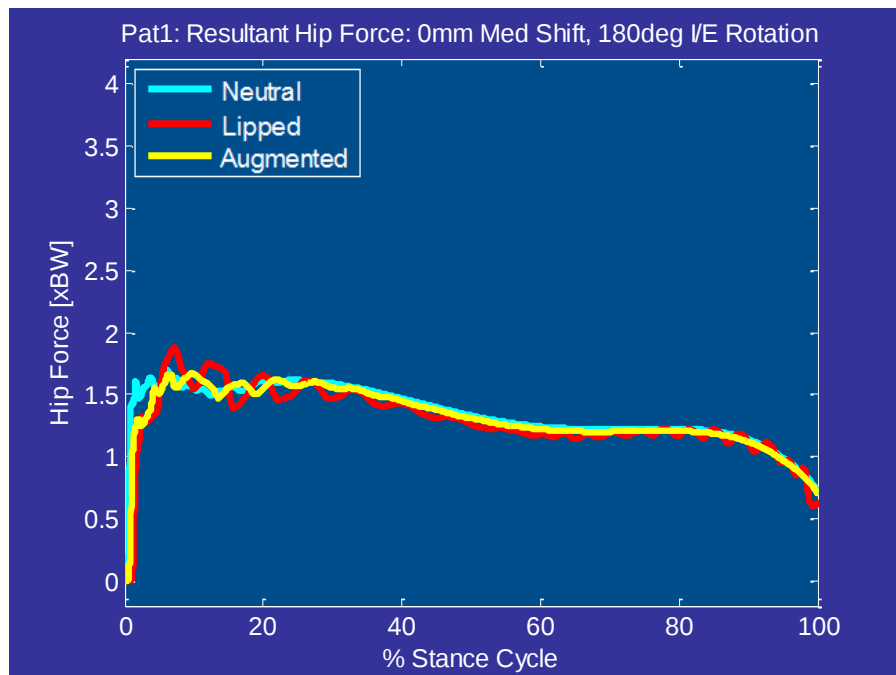


(b)

Figure C5: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

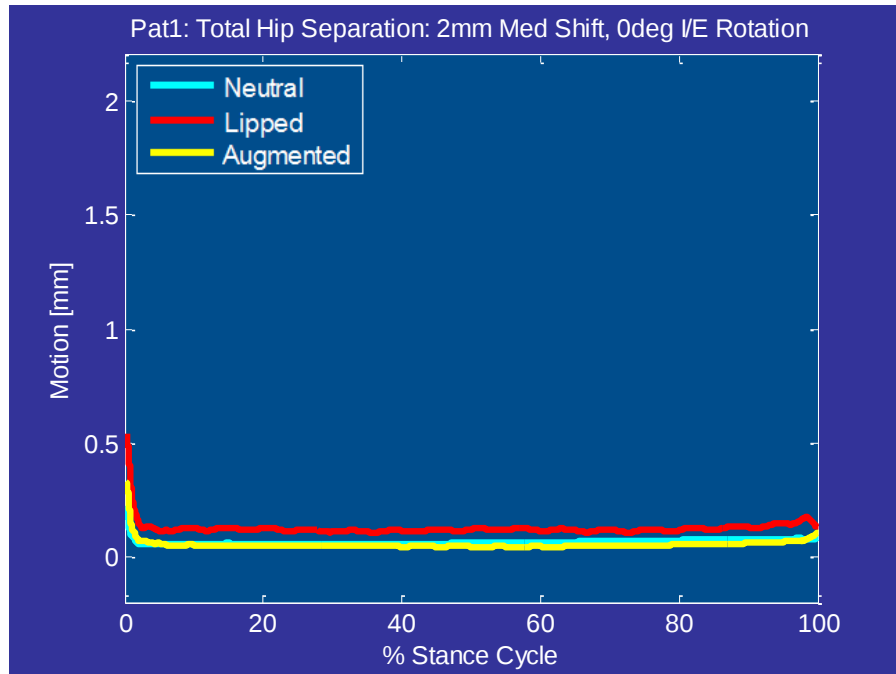


(a)

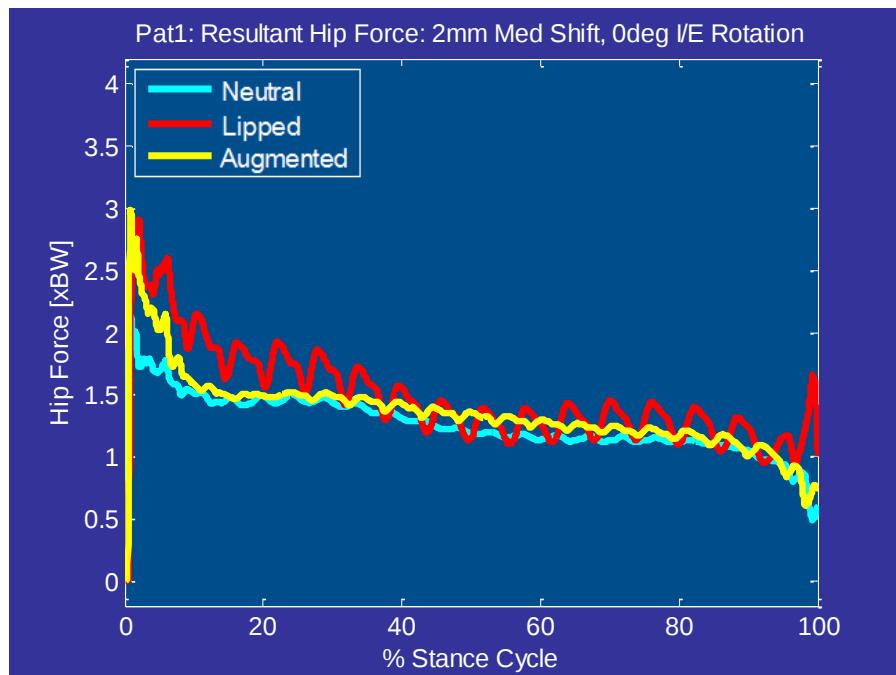


(b)

Figure C6: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

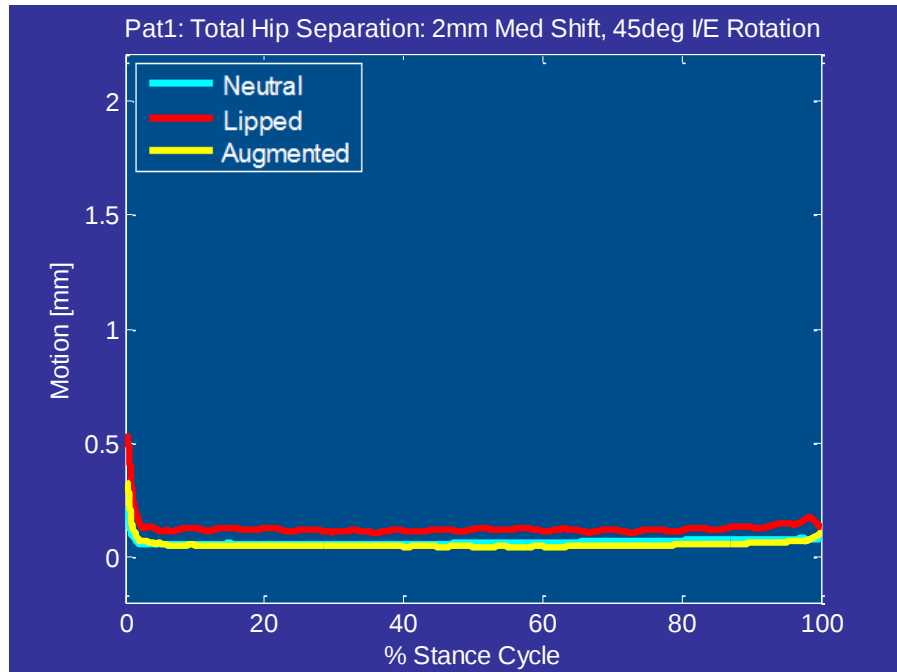


(a)

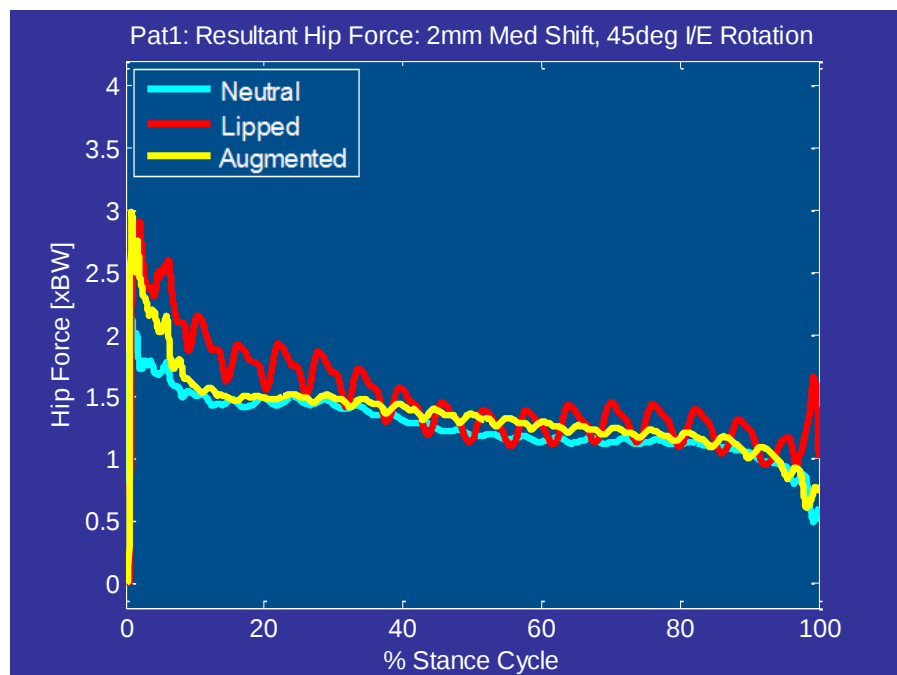


(b)

Figure C7: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

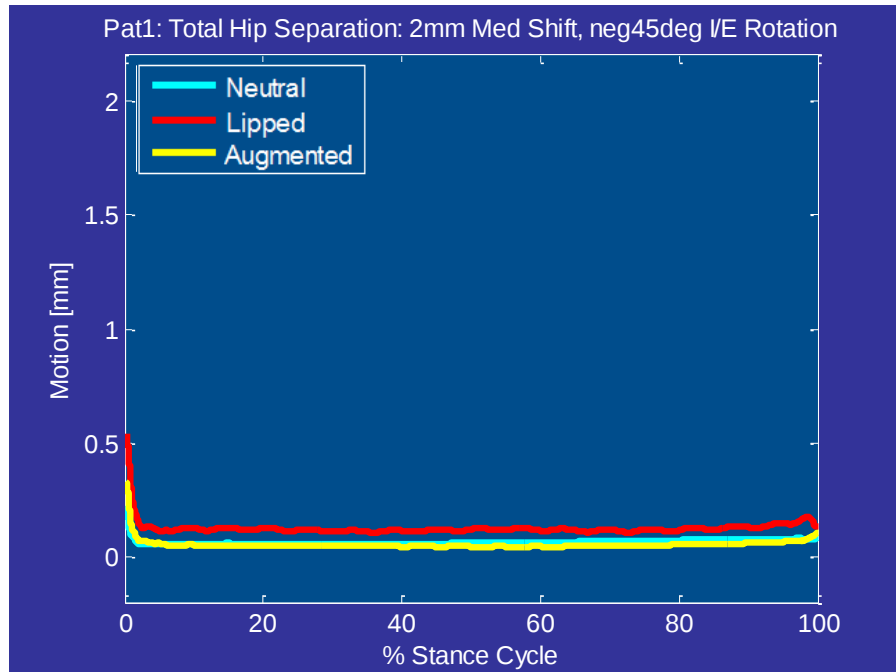


(a)

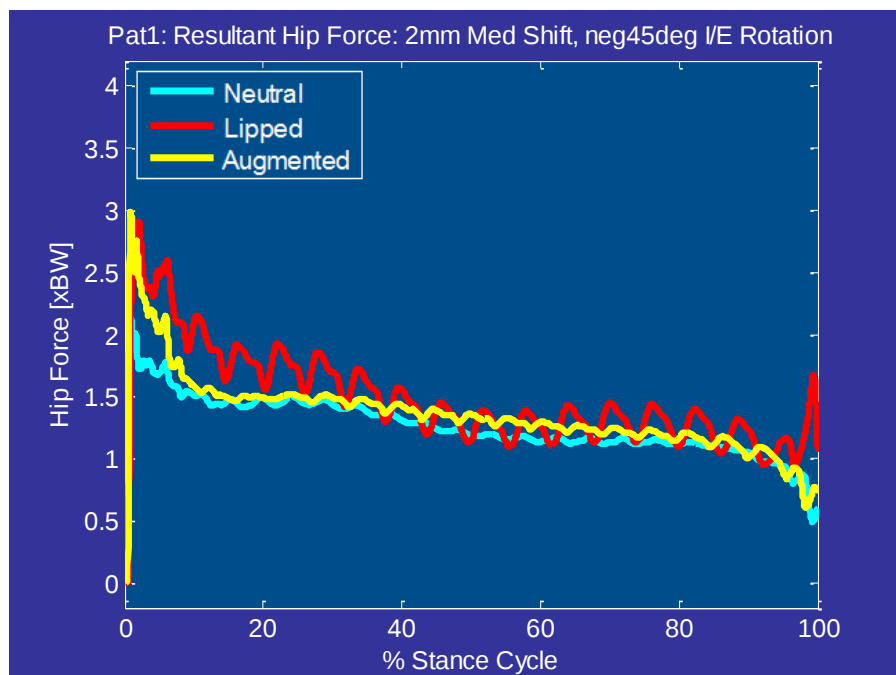


(b)

Figure C8: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

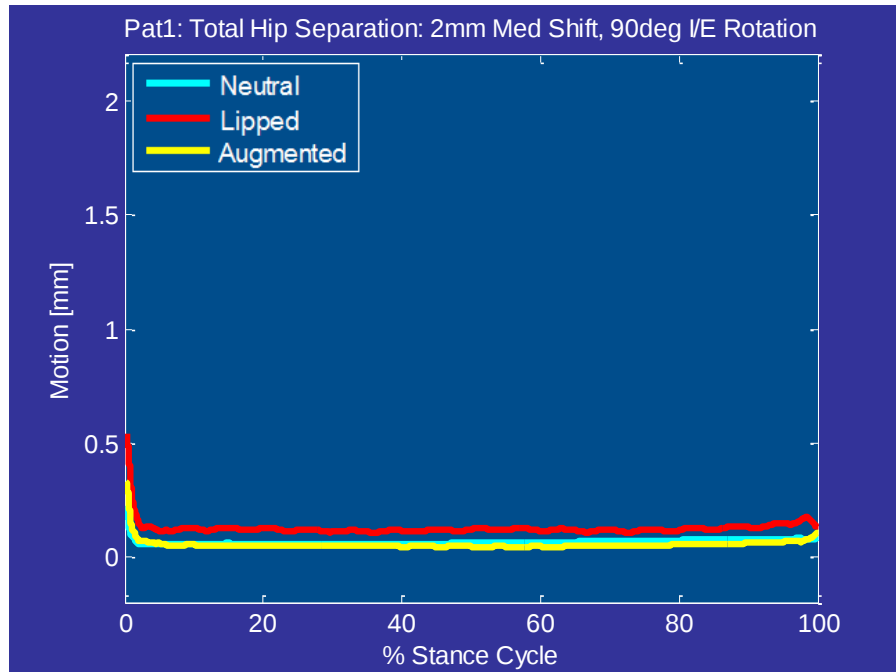


(a)

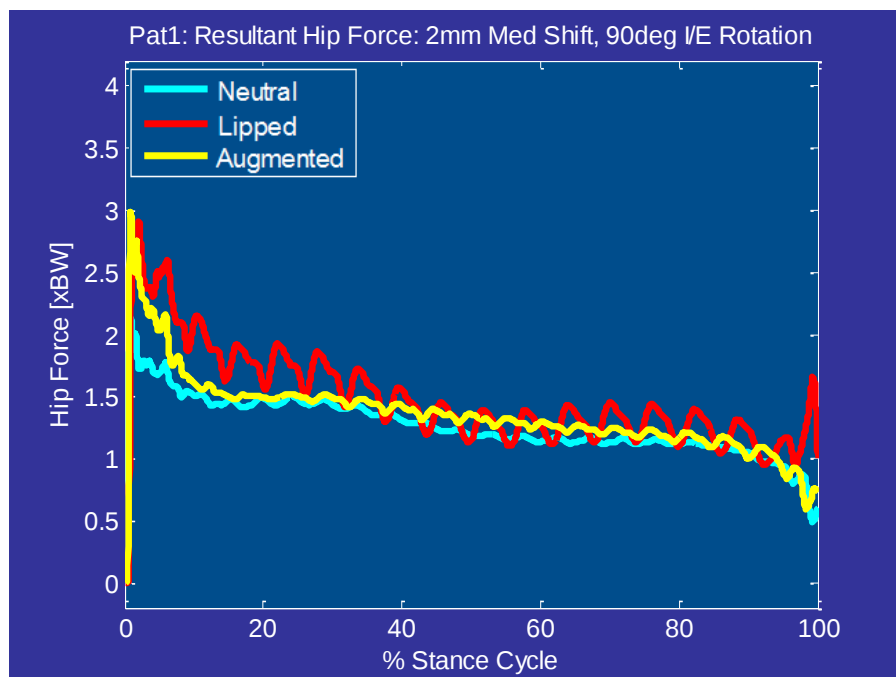


(b)

Figure C9: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

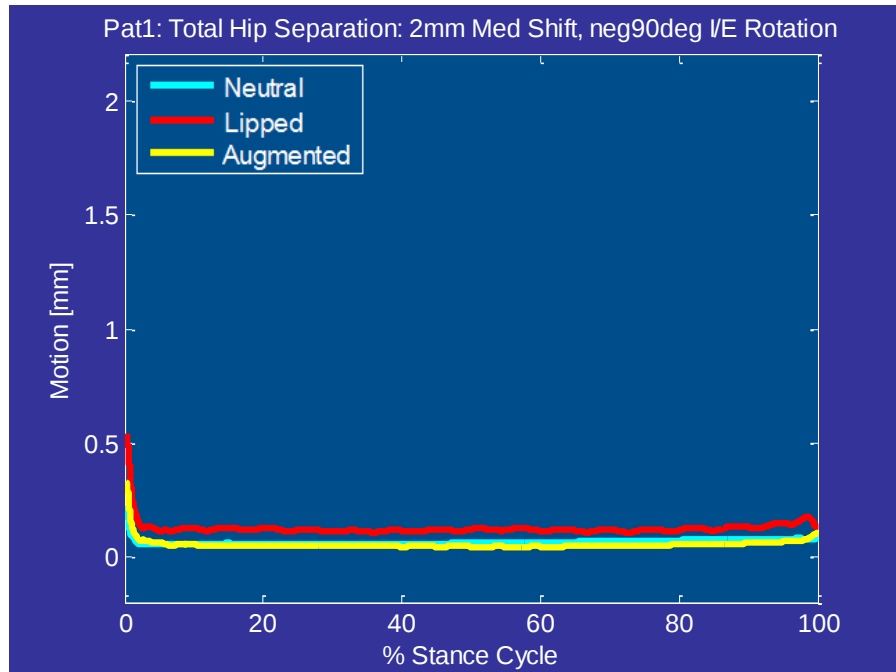


(a)

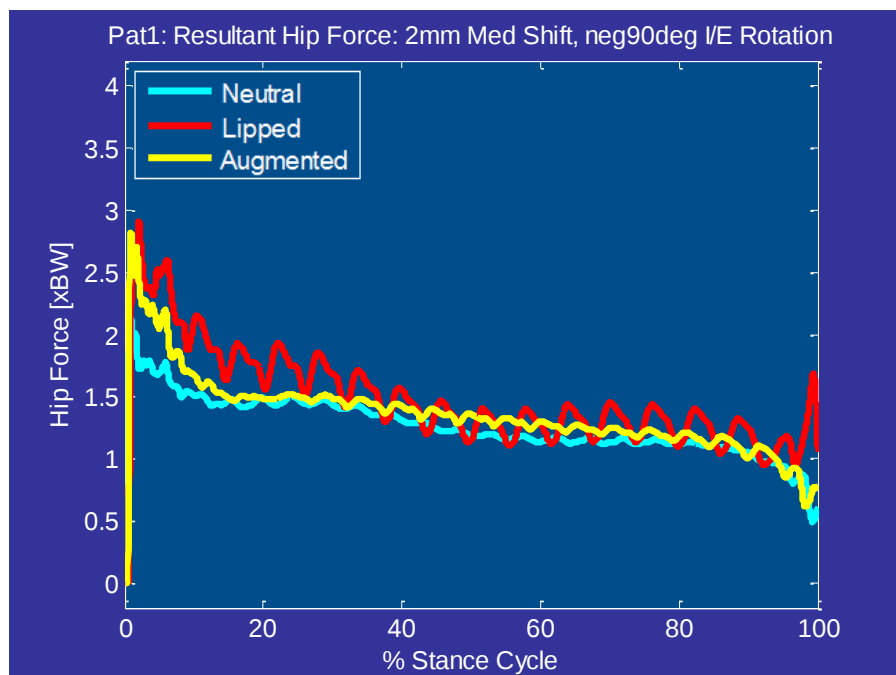


(b)

Figure C10: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

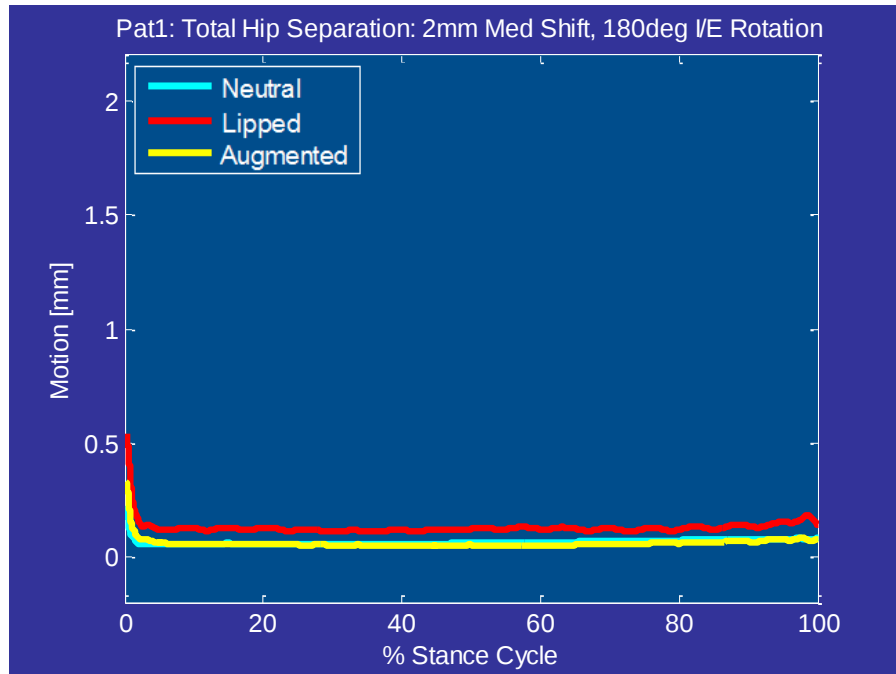


(a)

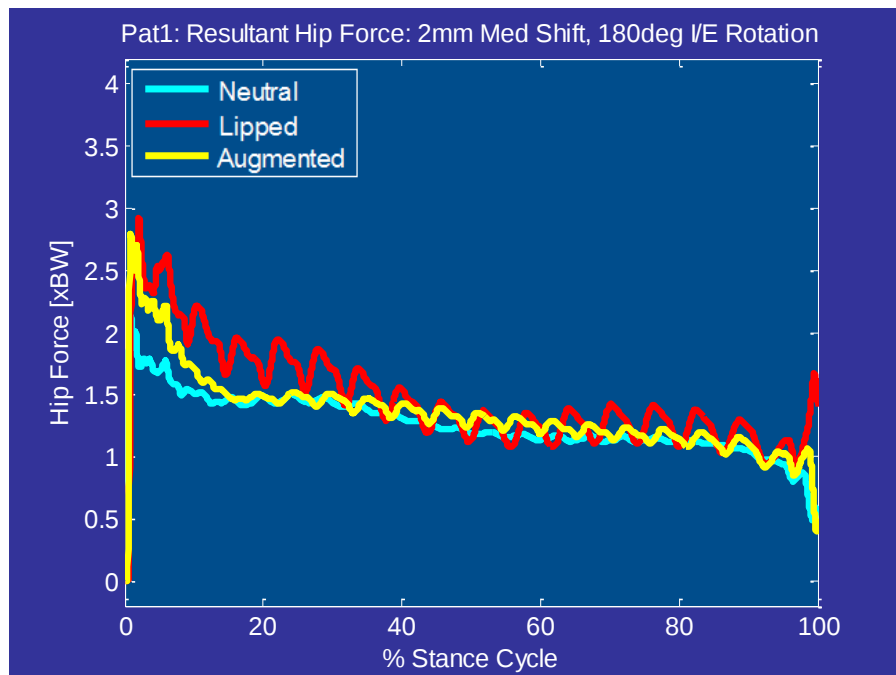


(b)

Figure C11: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

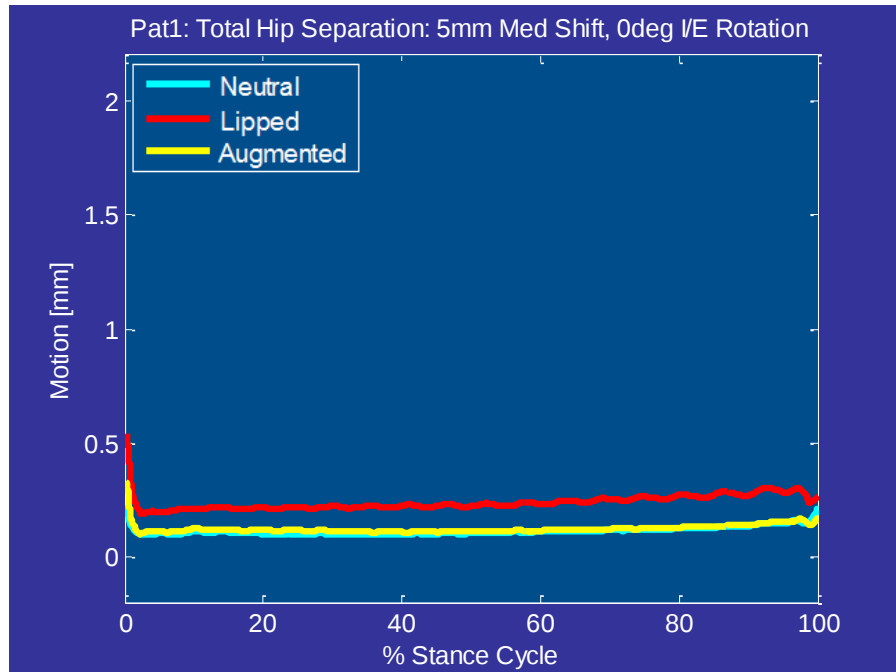


(a)

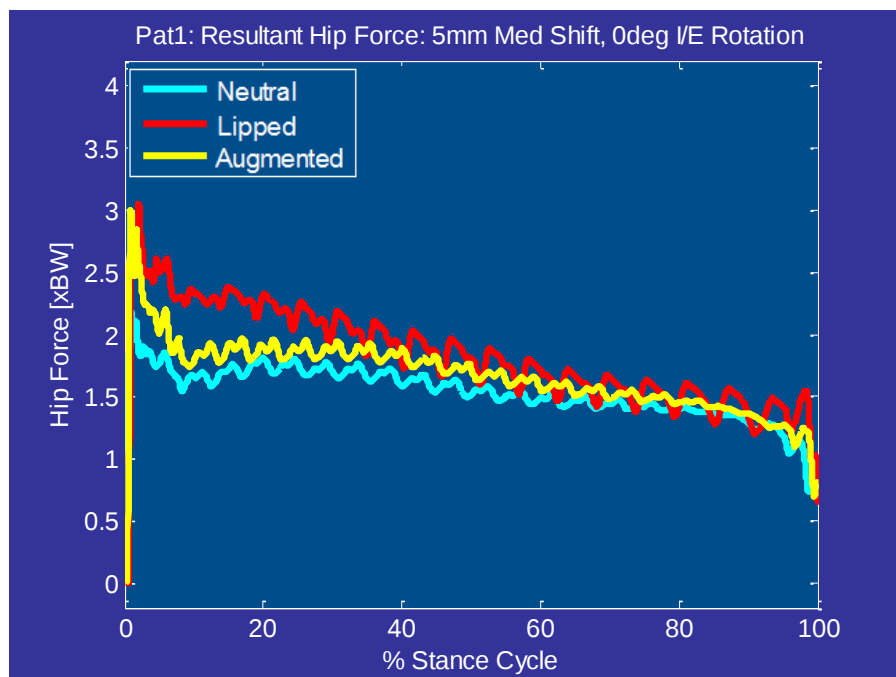


(b)

Figure C12: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

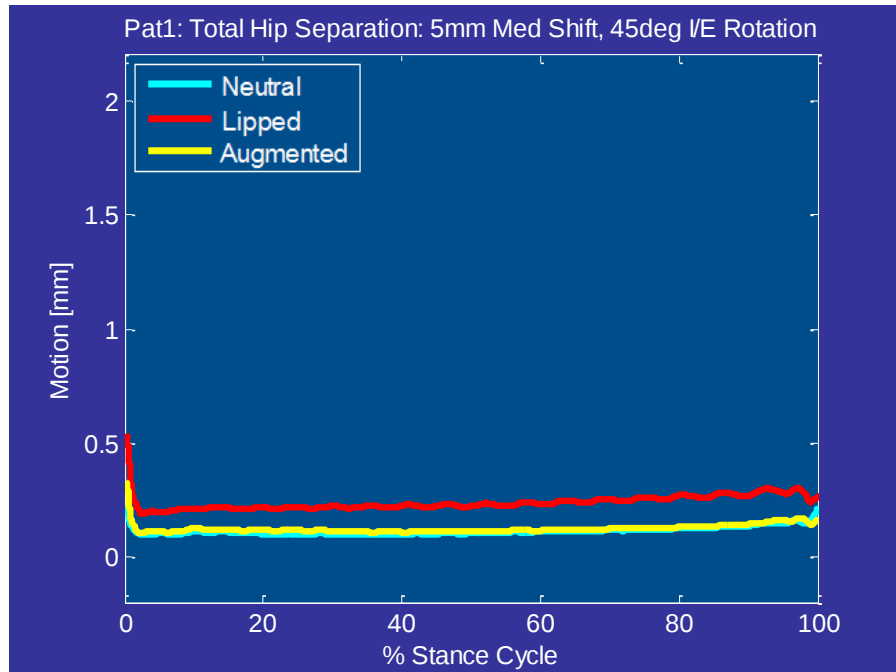


(a)

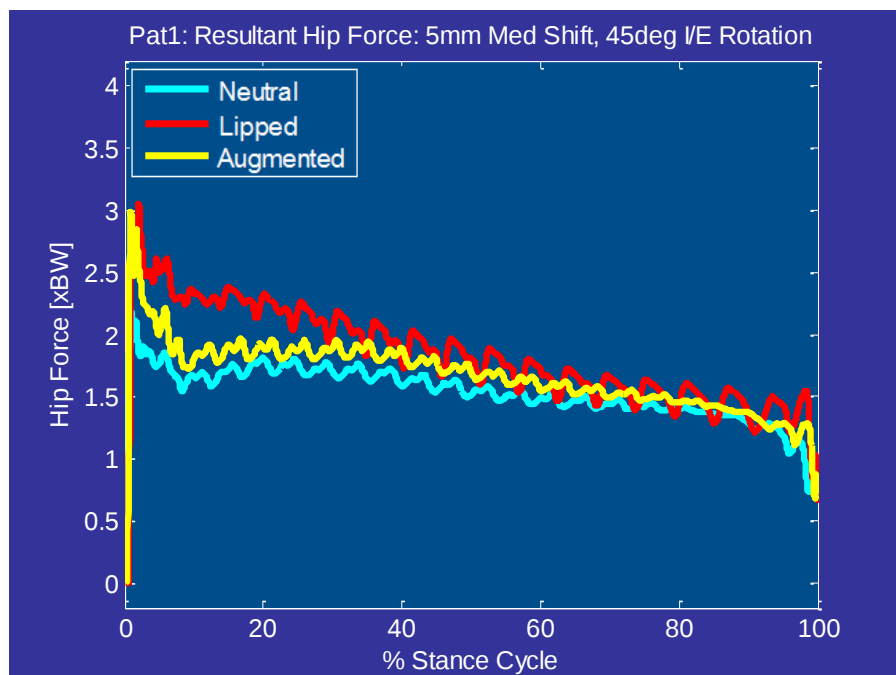


(b)

Figure C13: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

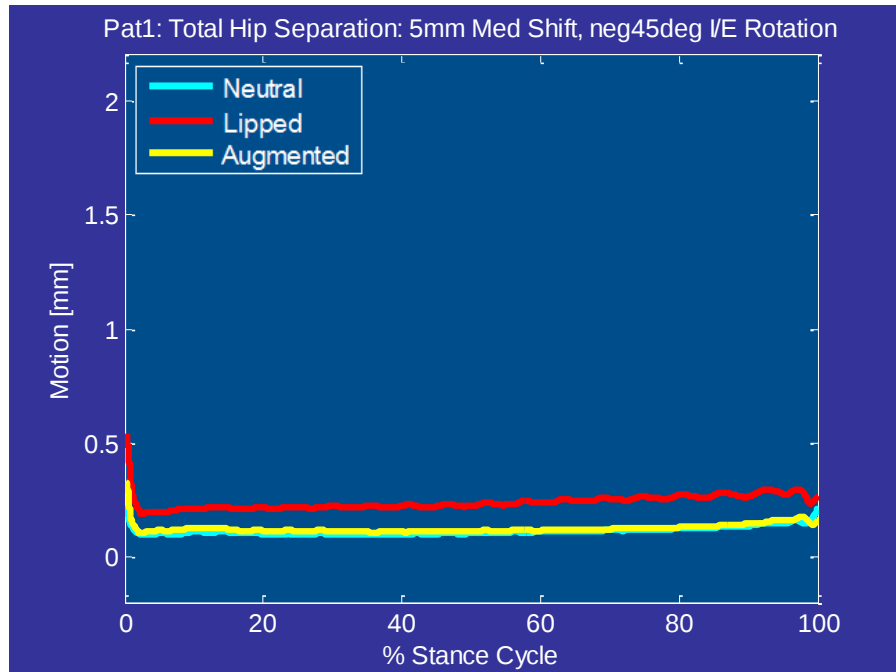


(a)

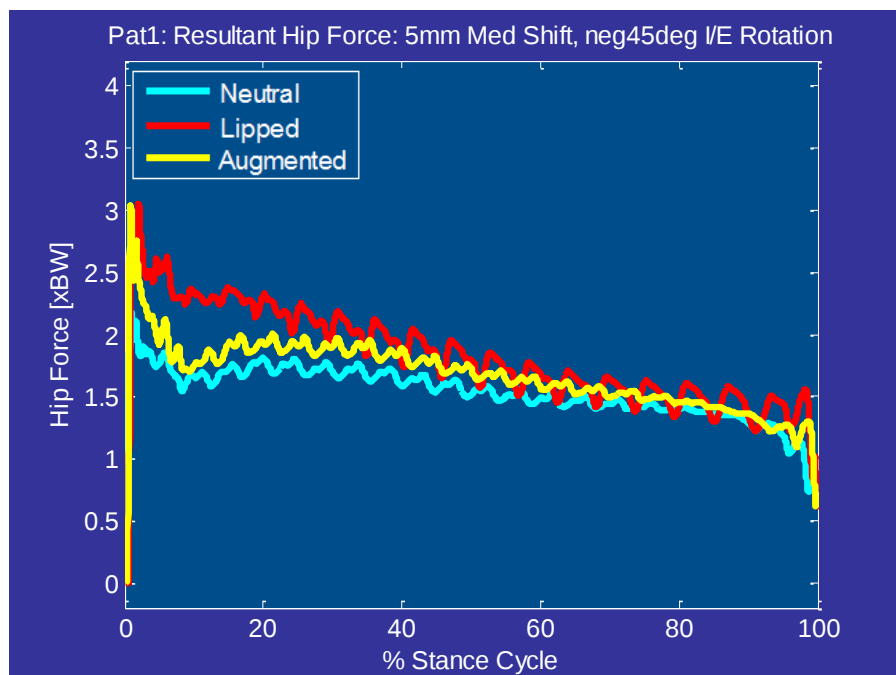


(b)

Figure C14: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

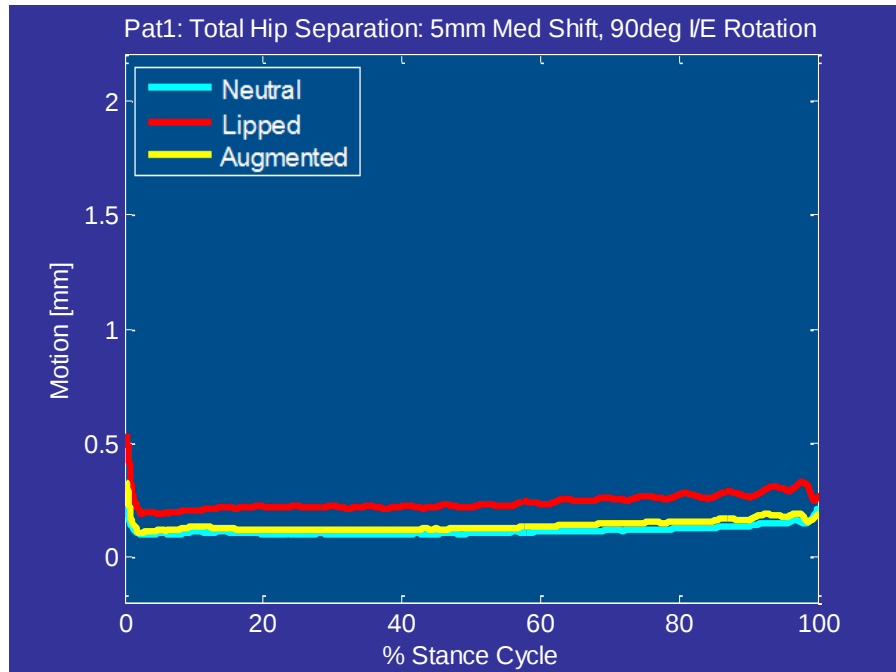


(a)

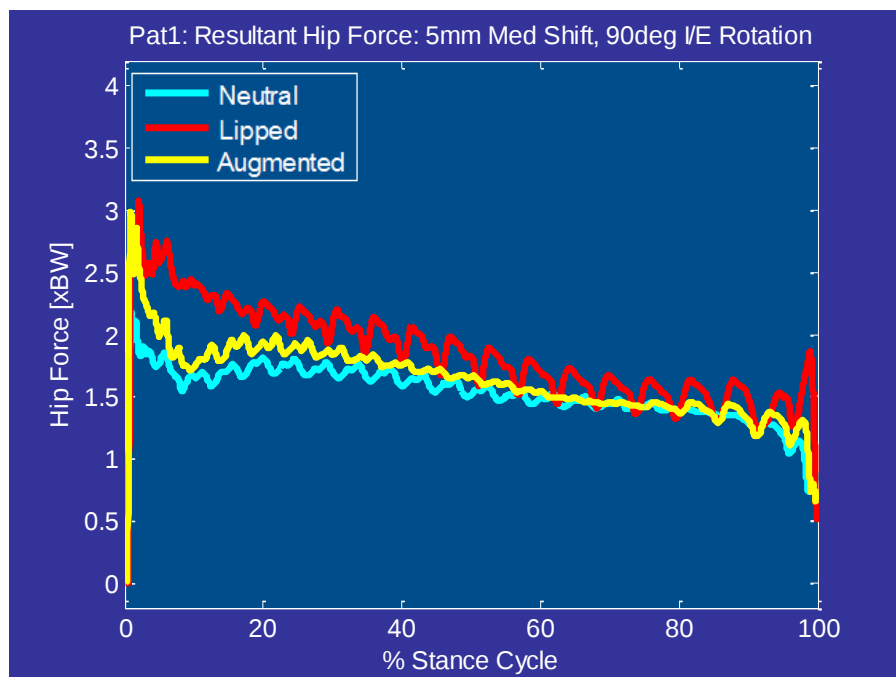


(b)

Figure C15: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

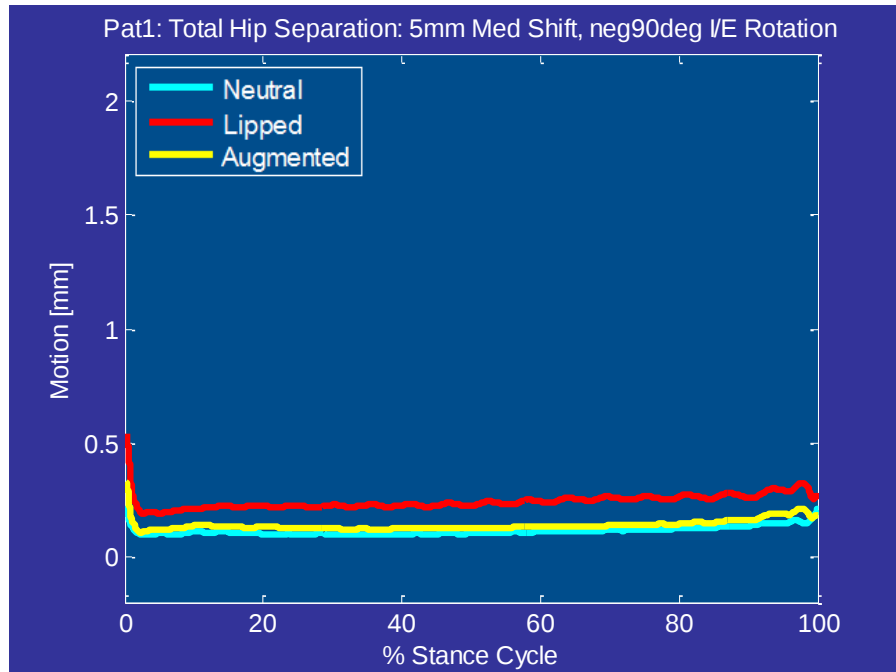


(a)

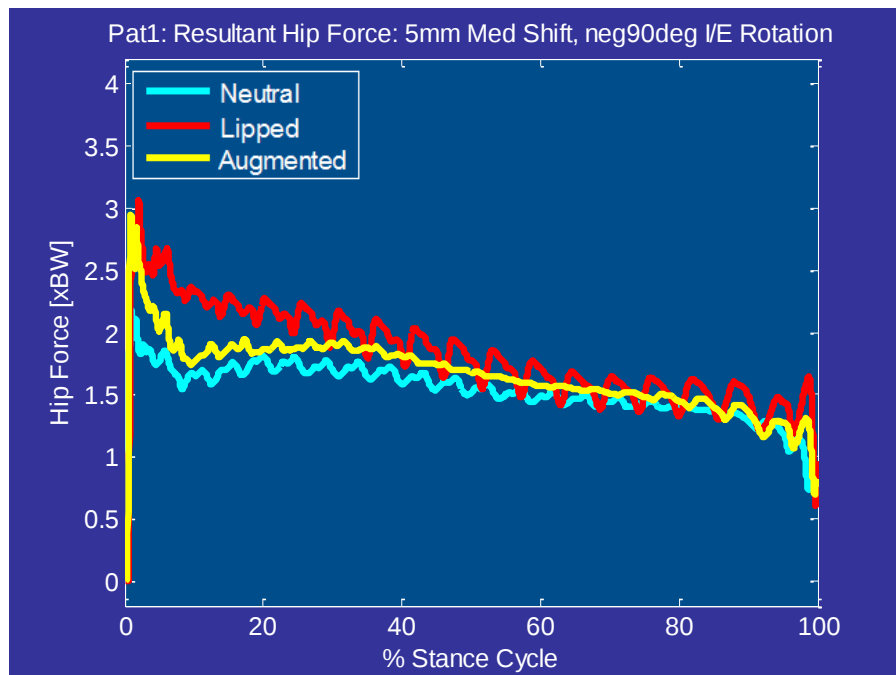


(b)

Figure C16: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

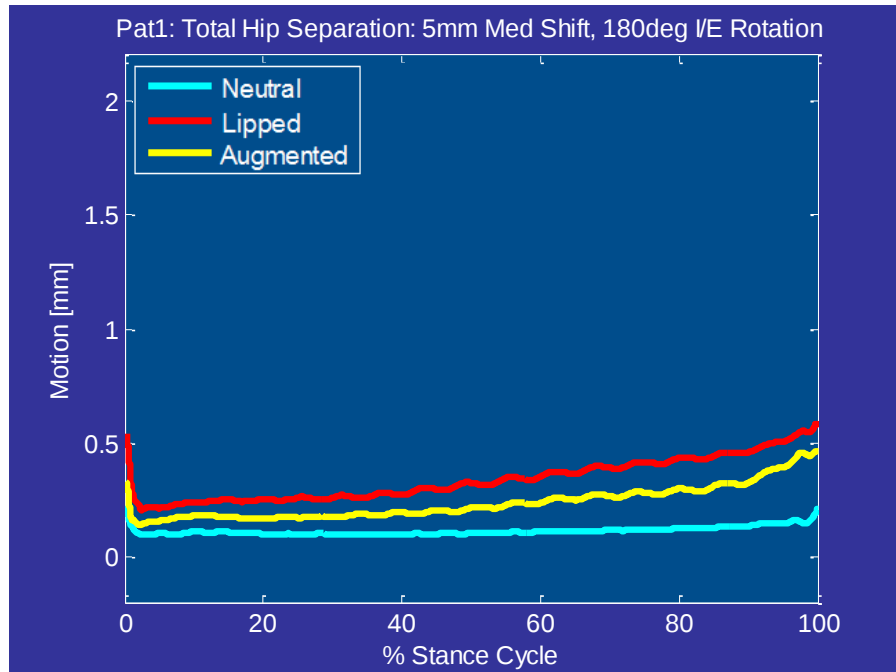


(a)

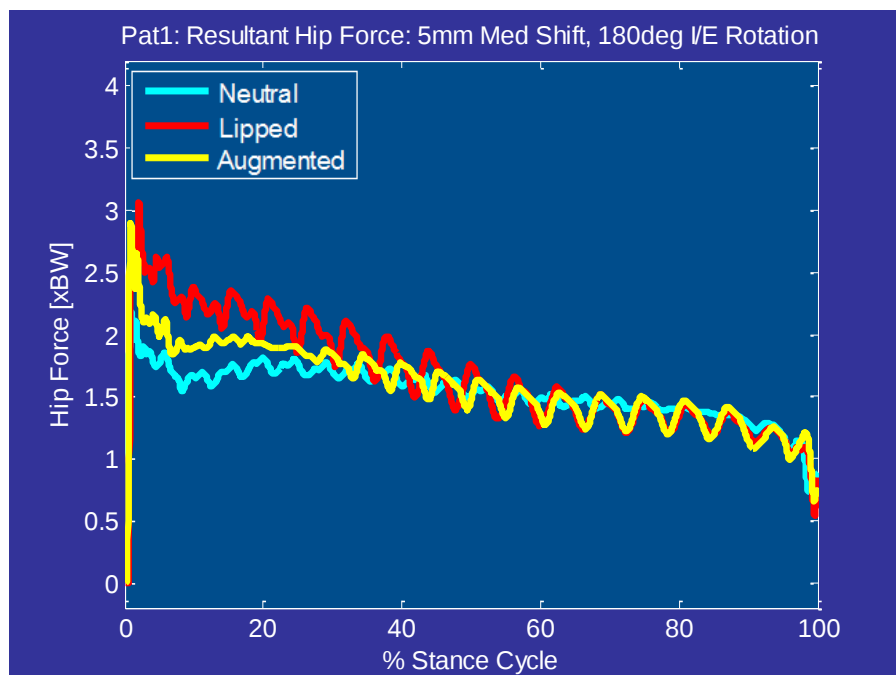


(b)

Figure C17: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

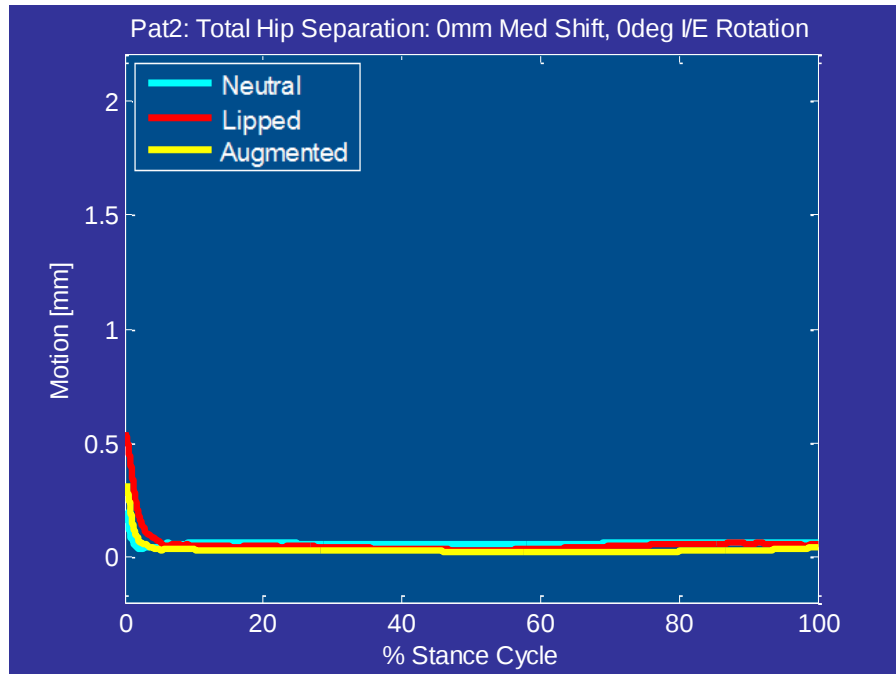


(a)

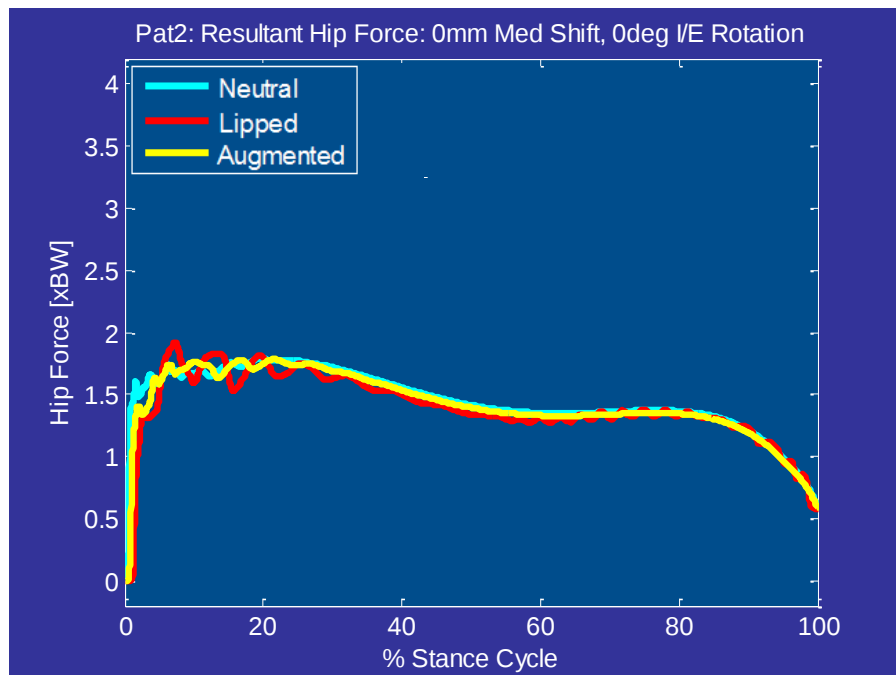


(b)

Figure C18: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

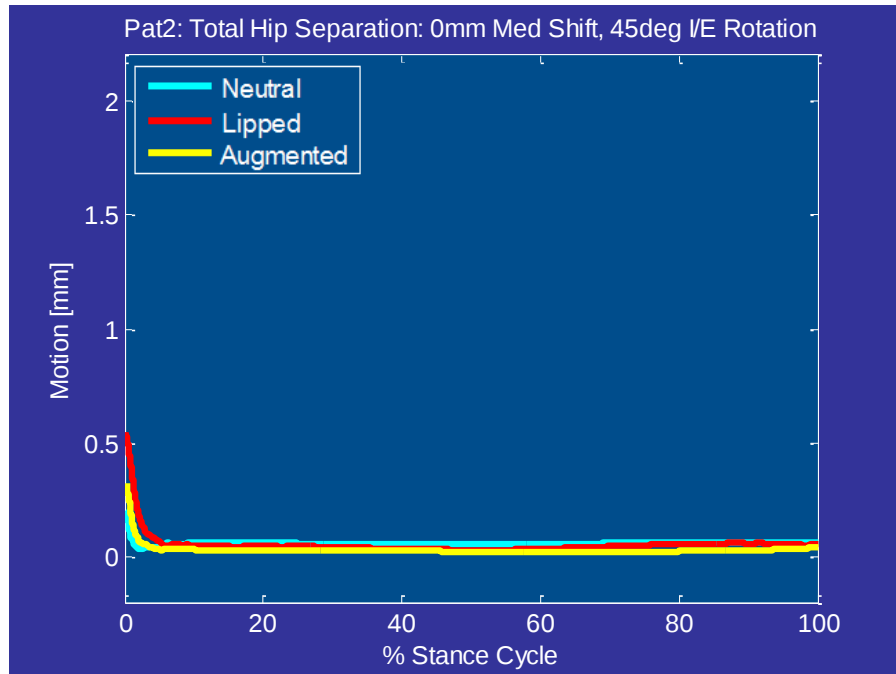


(a)

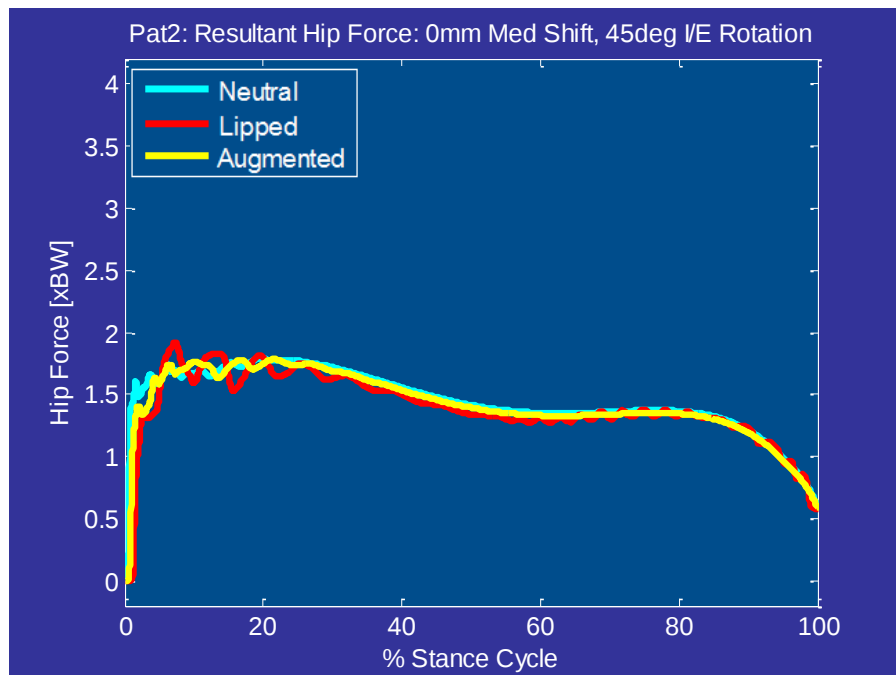


(b)

Figure C19: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

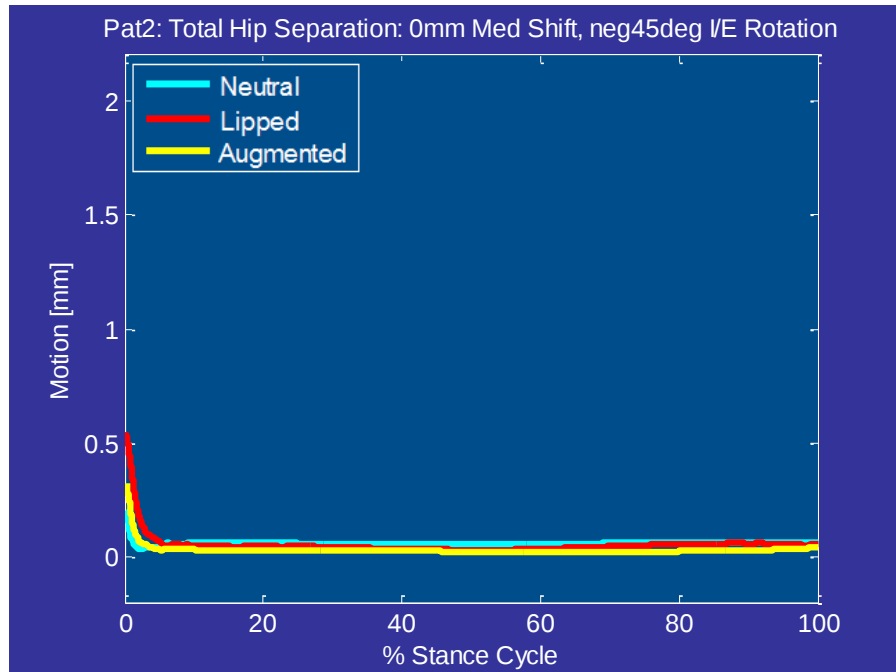


(a)

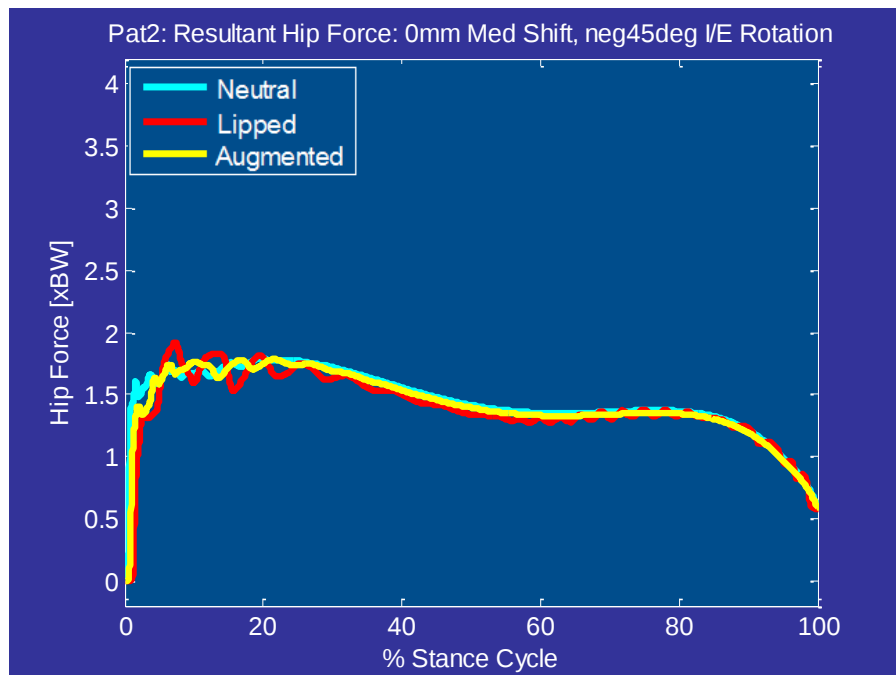


(b)

Figure C20: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

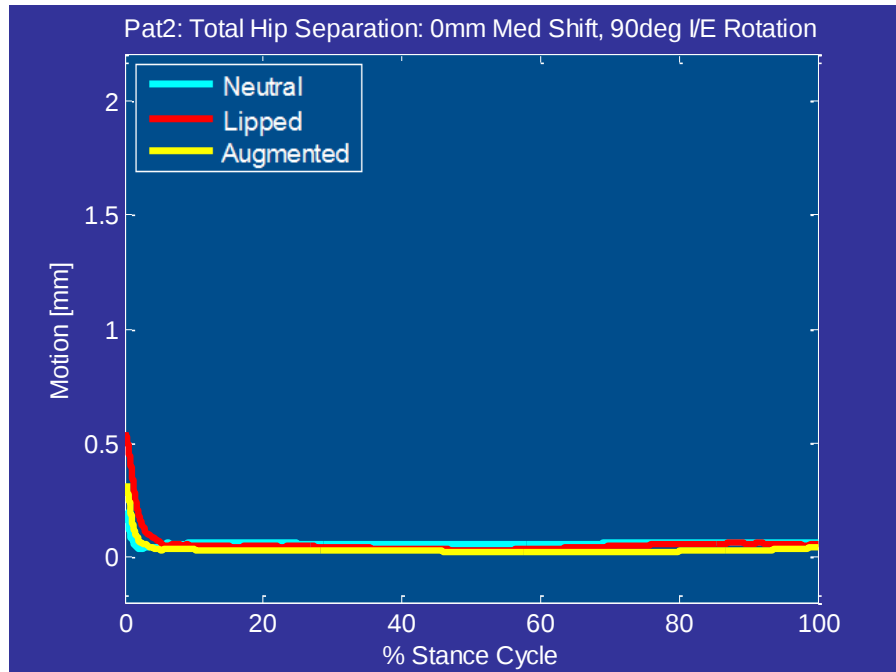


(a)

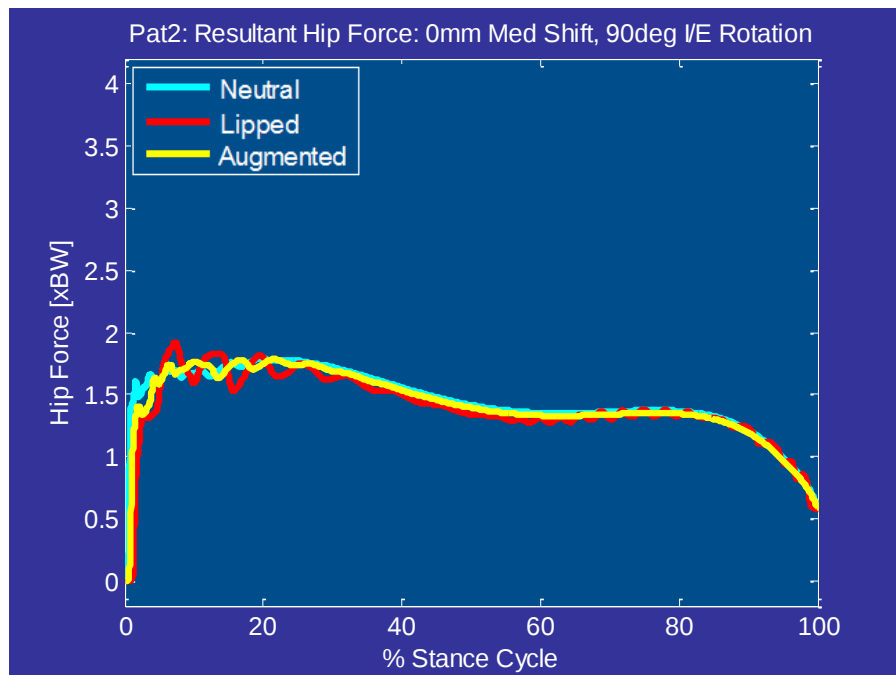


(b)

Figure C21: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

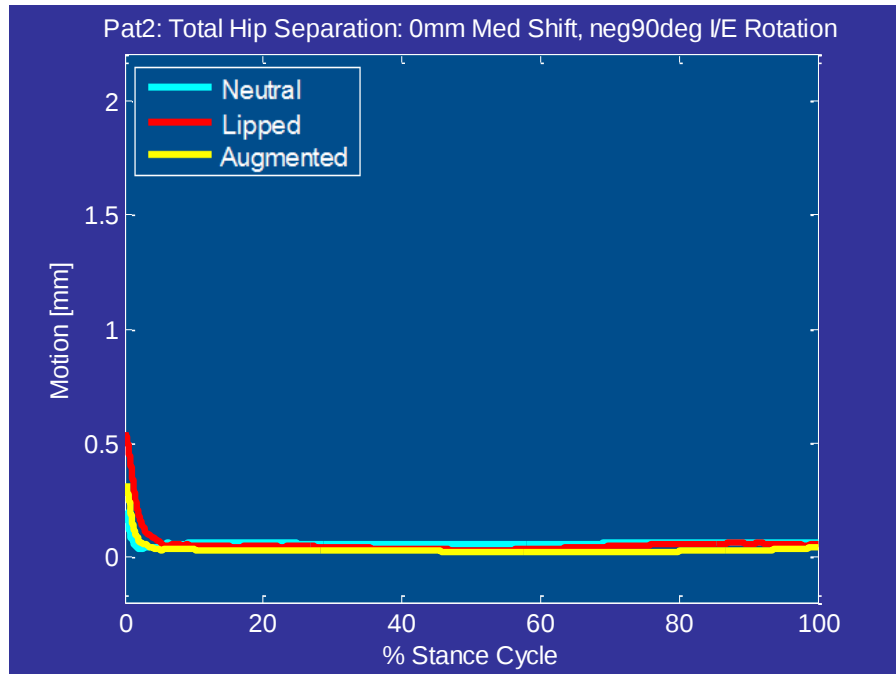


(a)

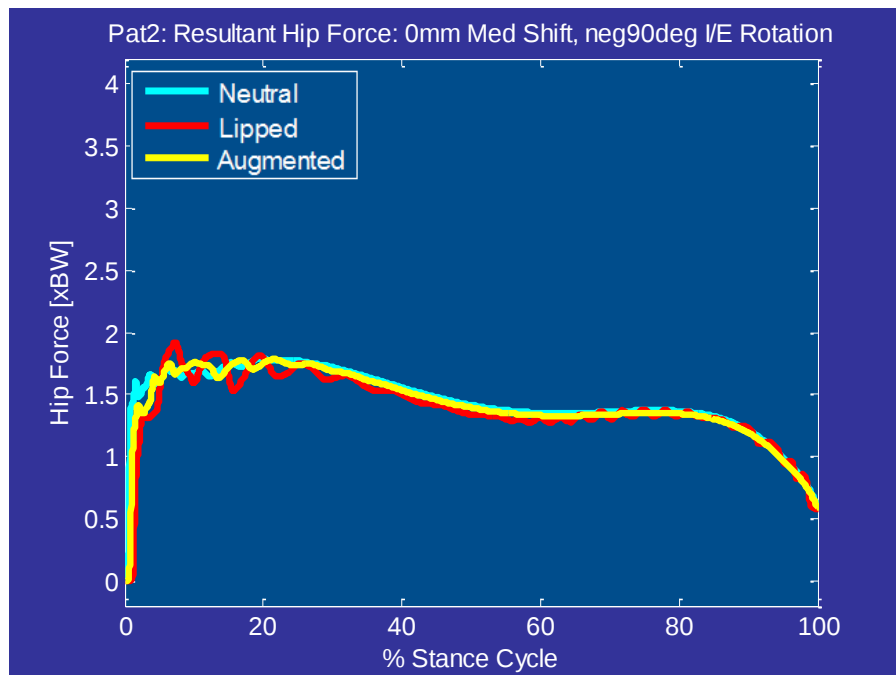


(b)

Figure C22: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

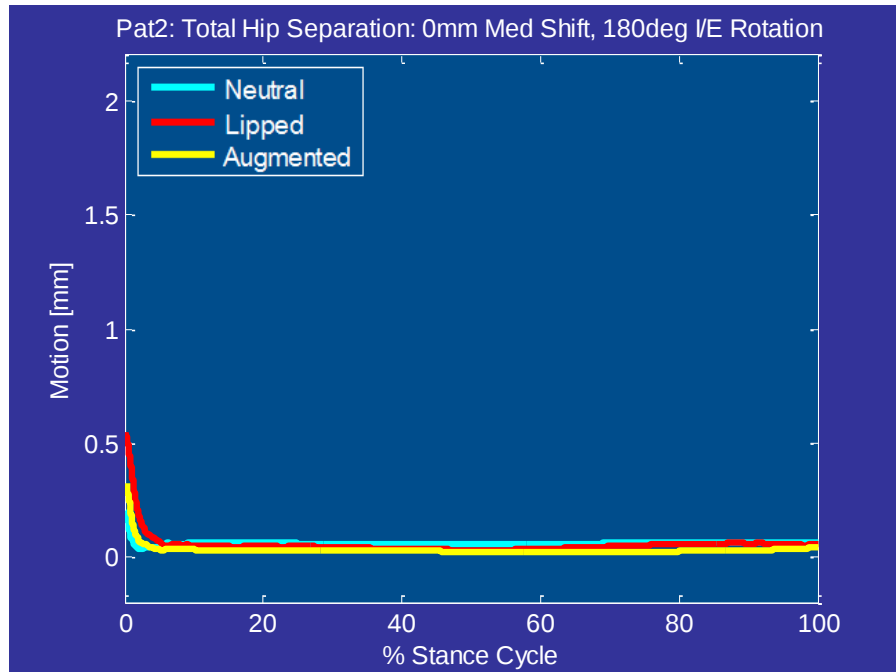


(a)

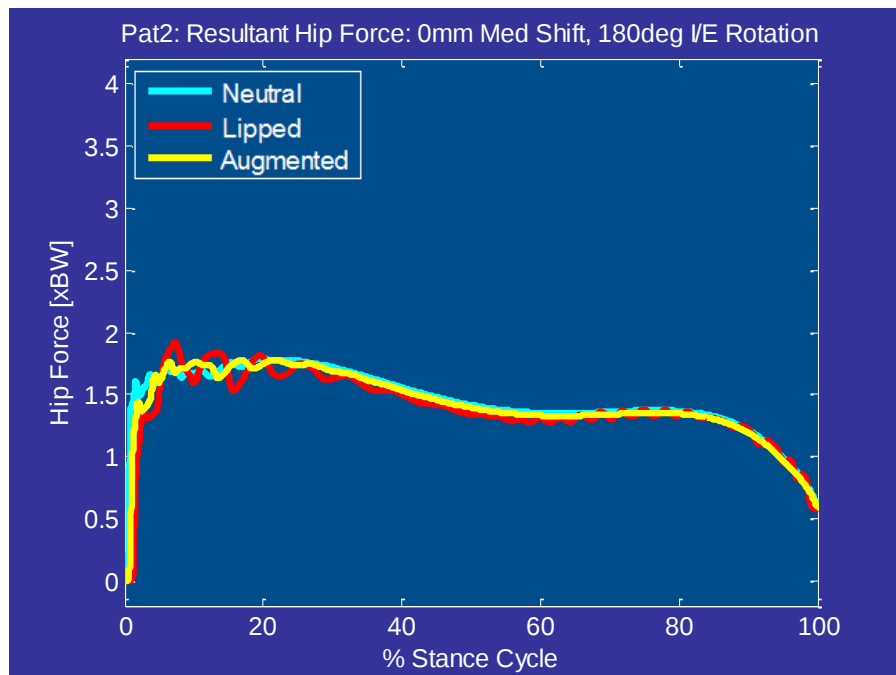


(b)

Figure C23: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

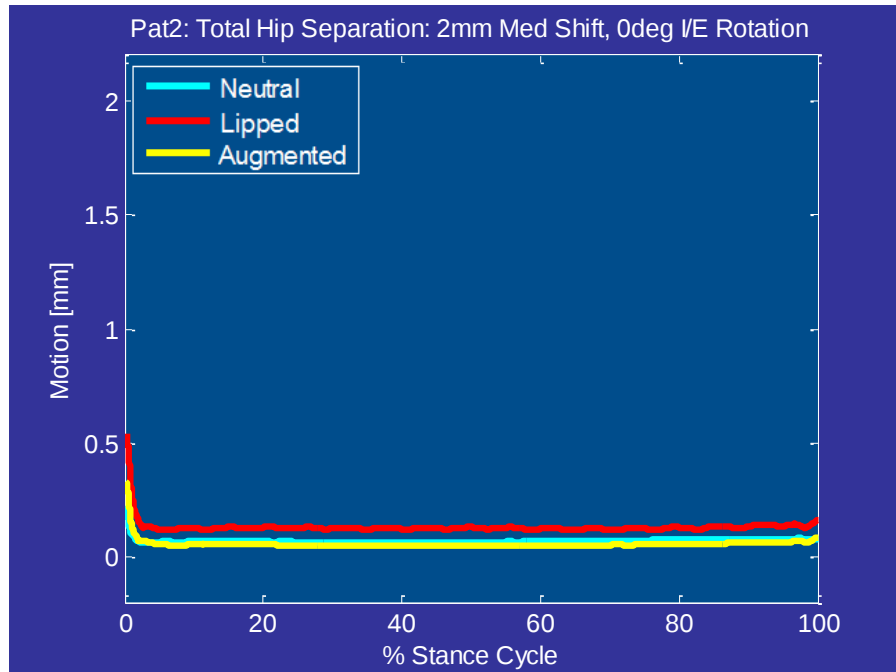


(a)

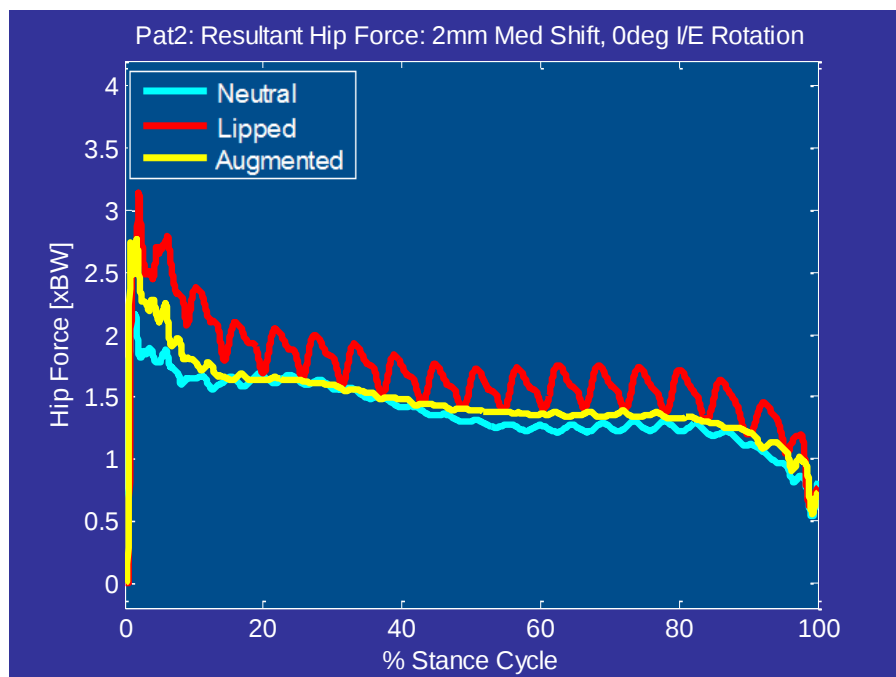


(b)

Figure C24: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

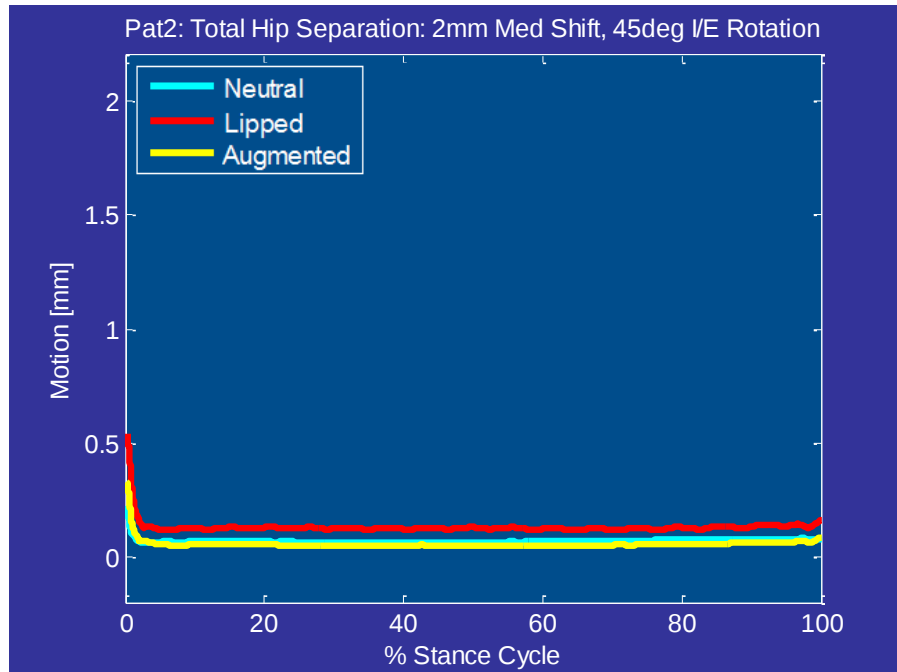


(a)

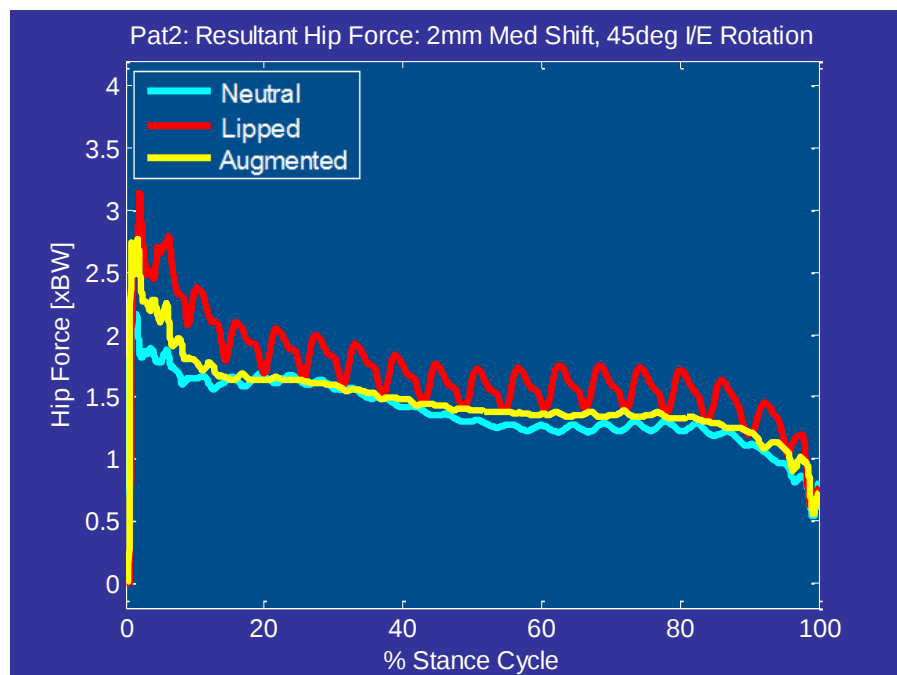


(b)

Figure C25: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

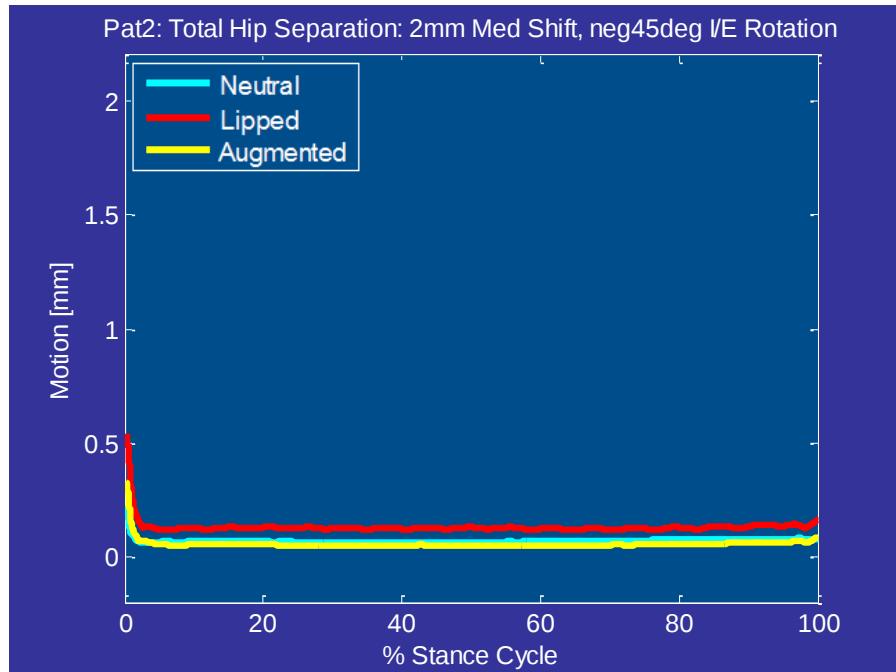


(a)

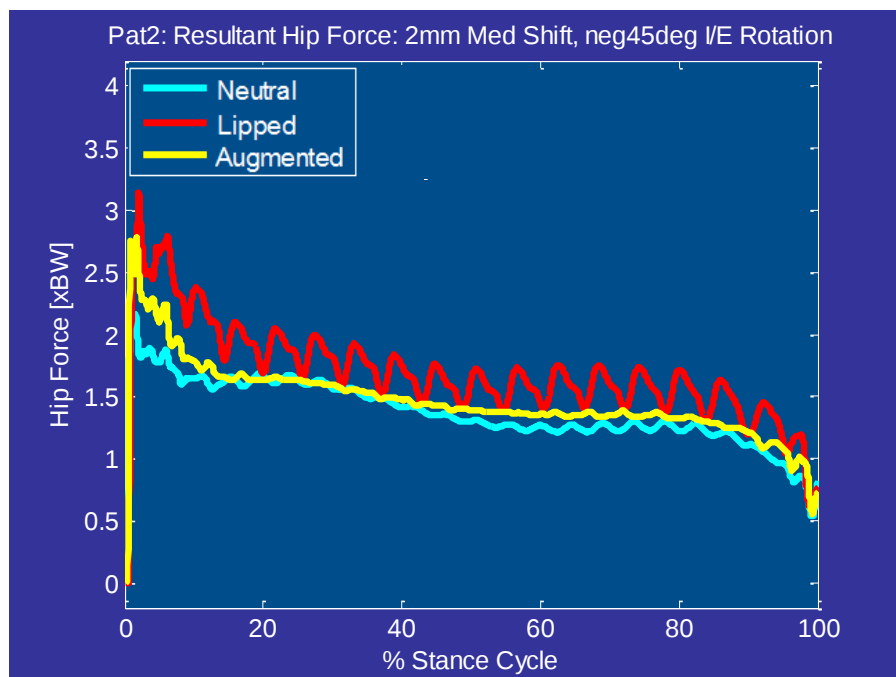


(b)

Figure C26: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

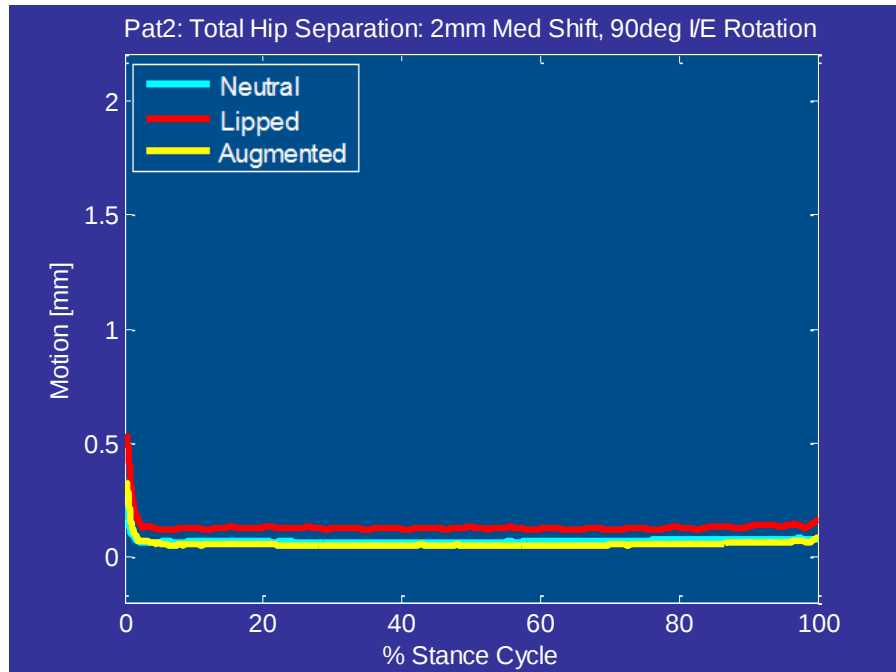


(a)

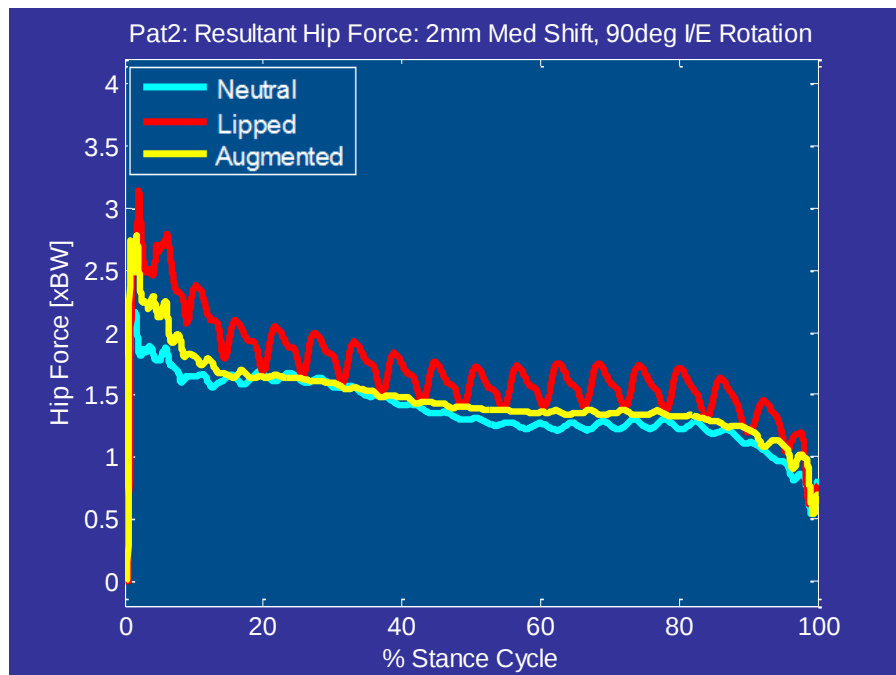


(b)

Figure C27: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

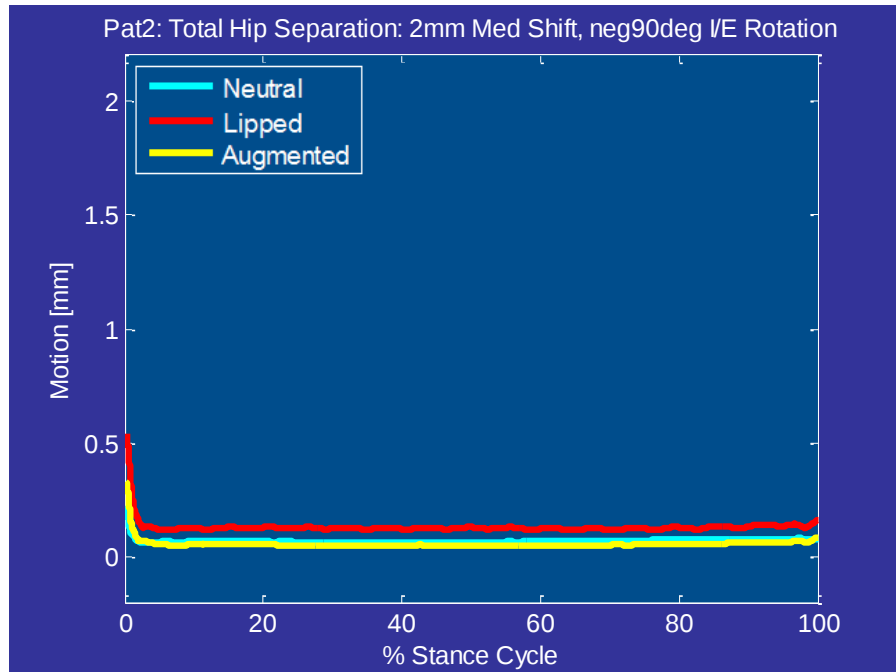


(a)

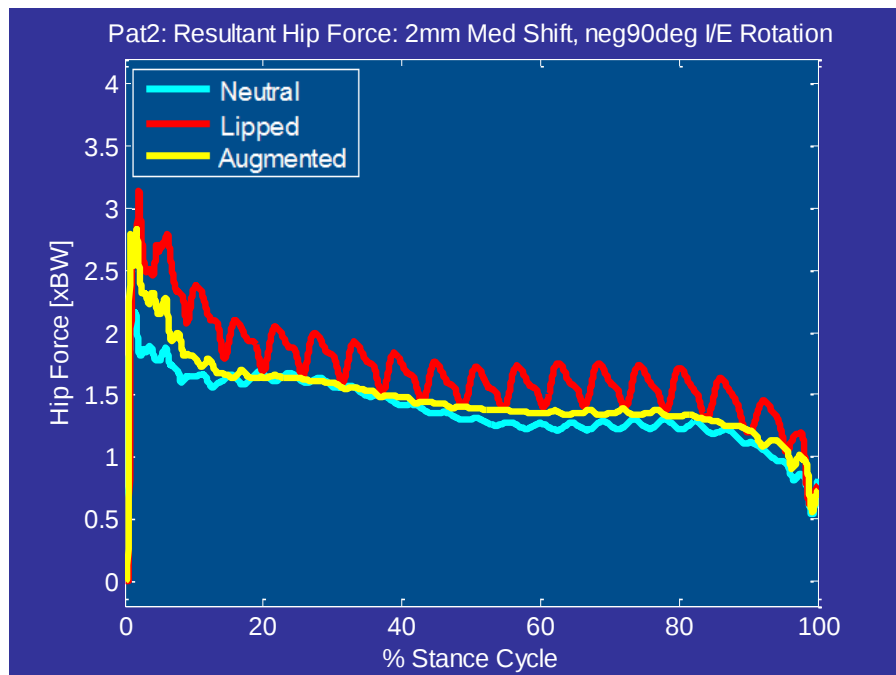


(b)

Figure C28: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

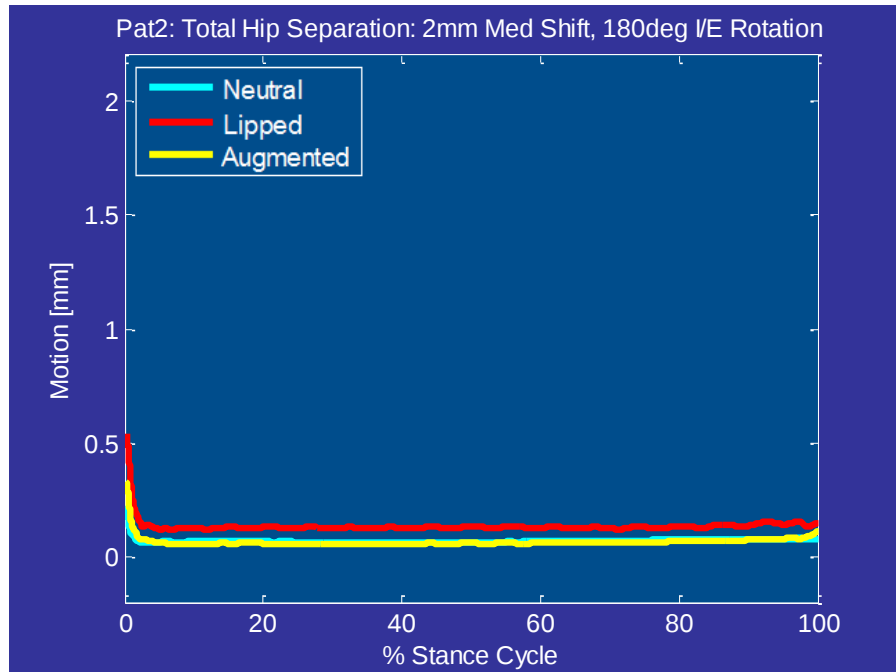


(a)

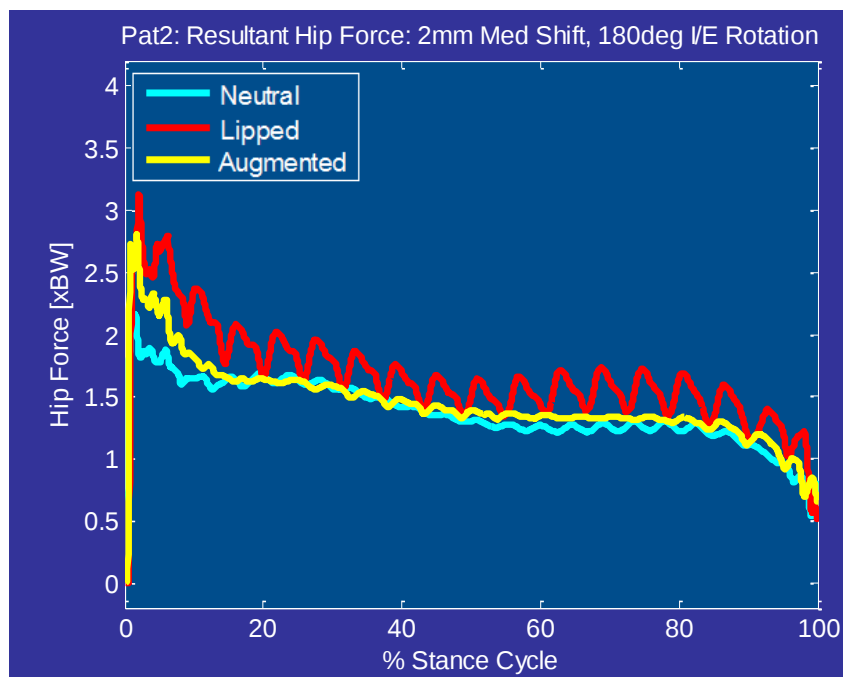


(b)

Figure C29: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

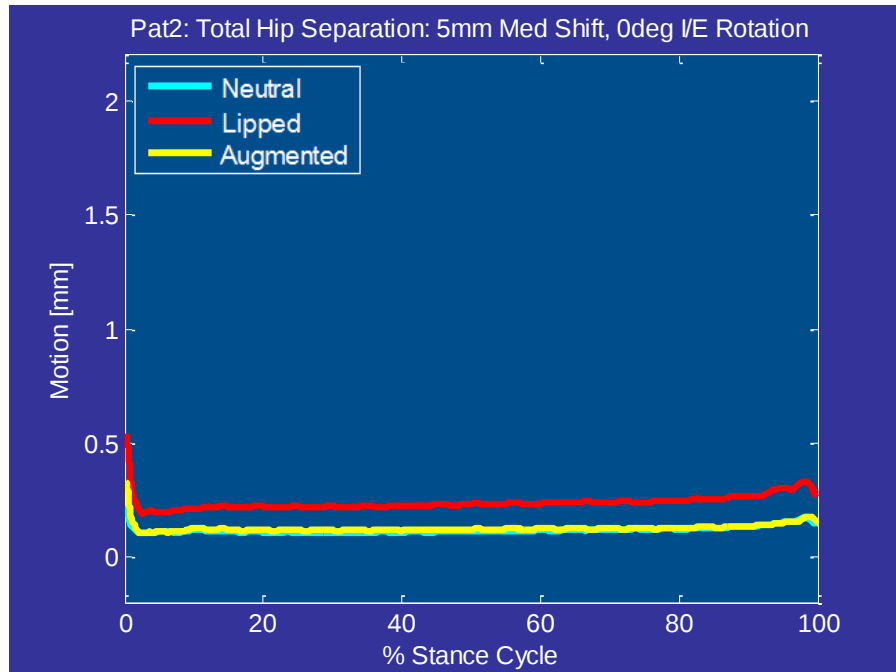


(a)

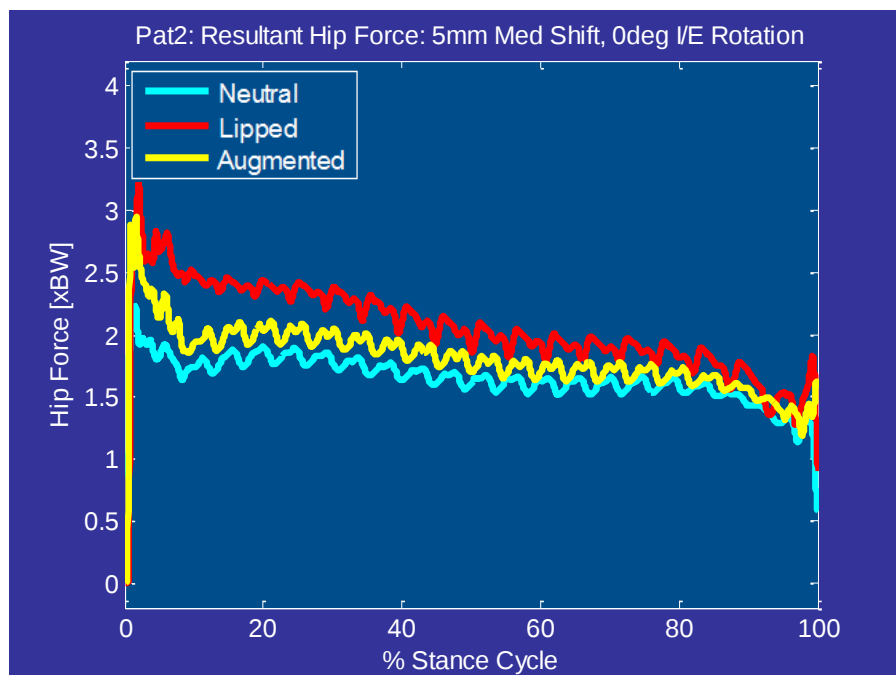


(b)

Figure C30: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

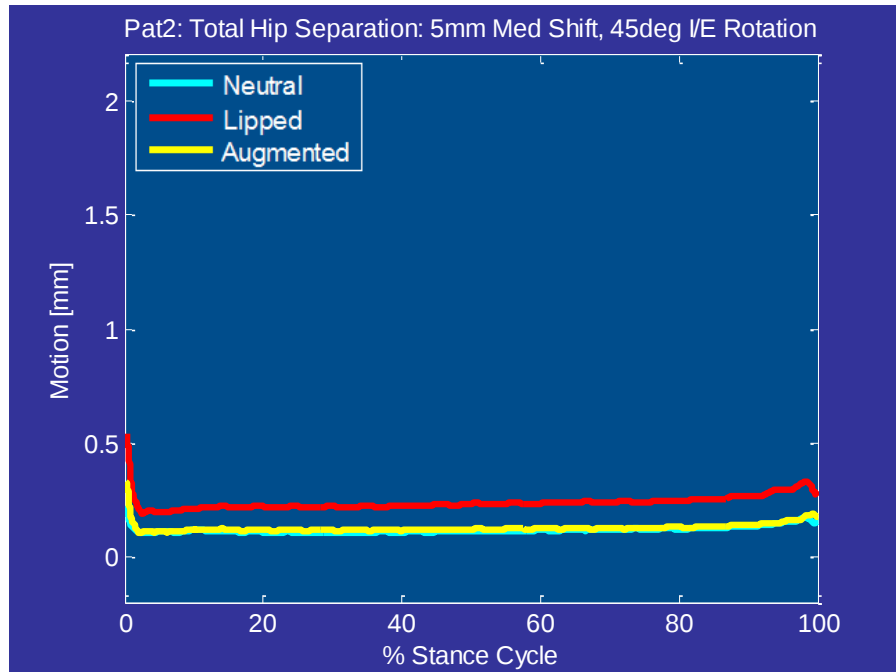


(a)

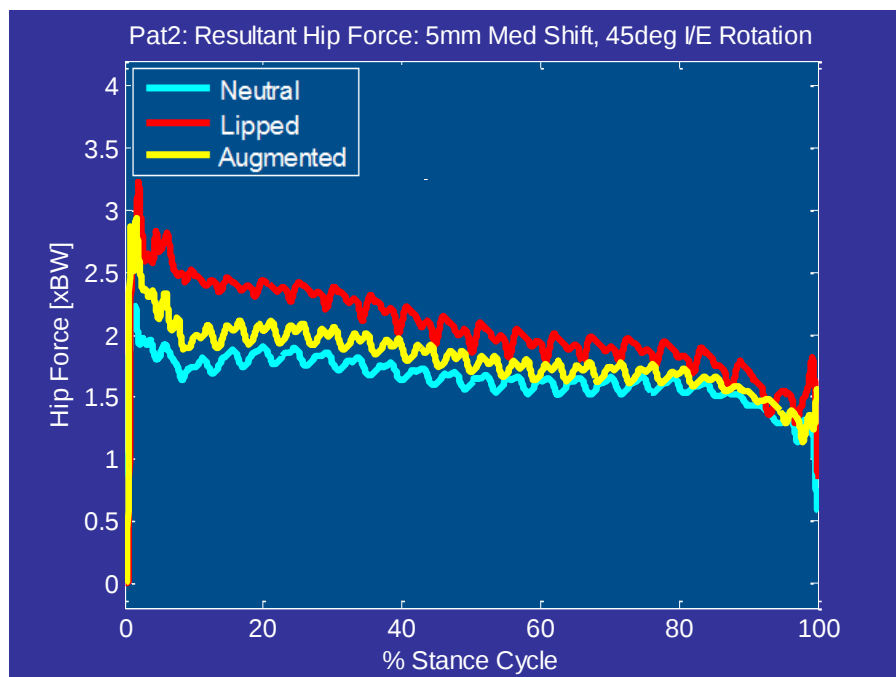


(b)

Figure C31: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

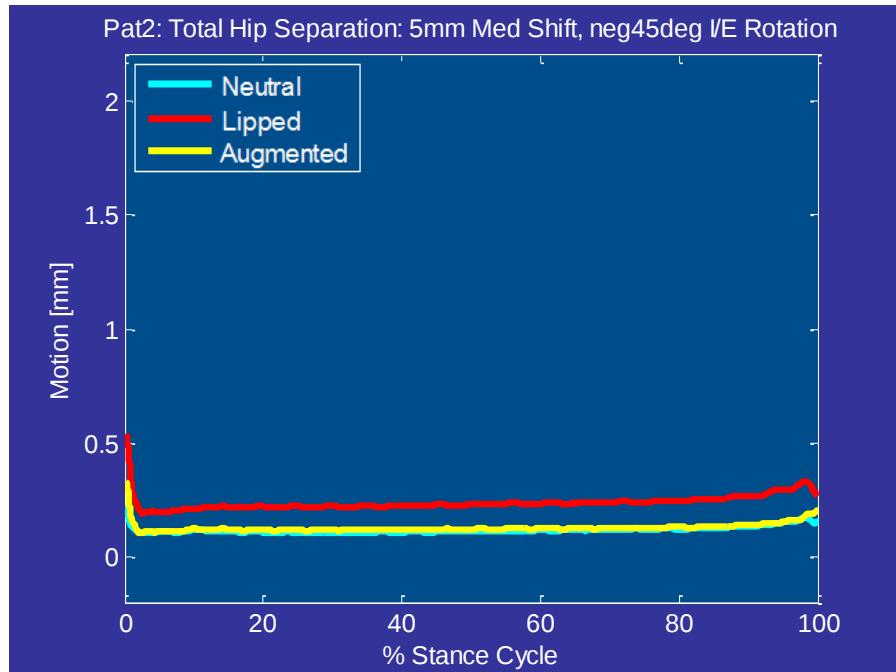


(a)

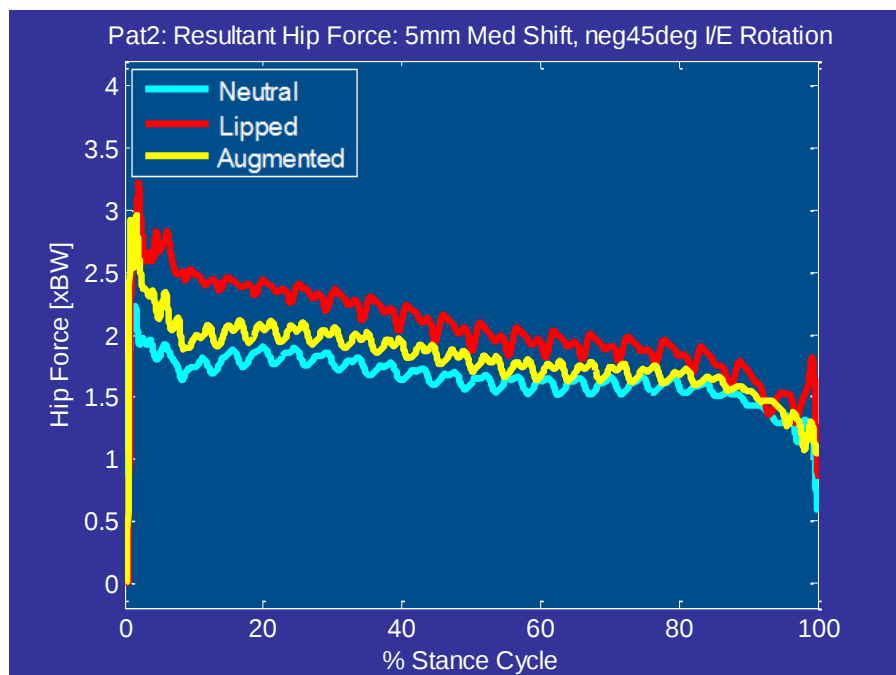


(b)

Figure C32: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

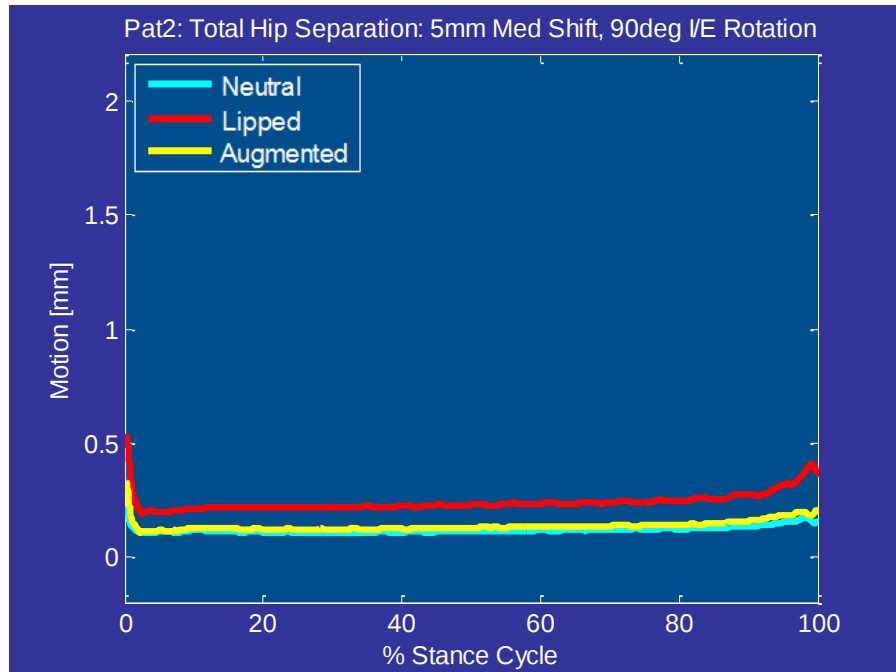


(a)

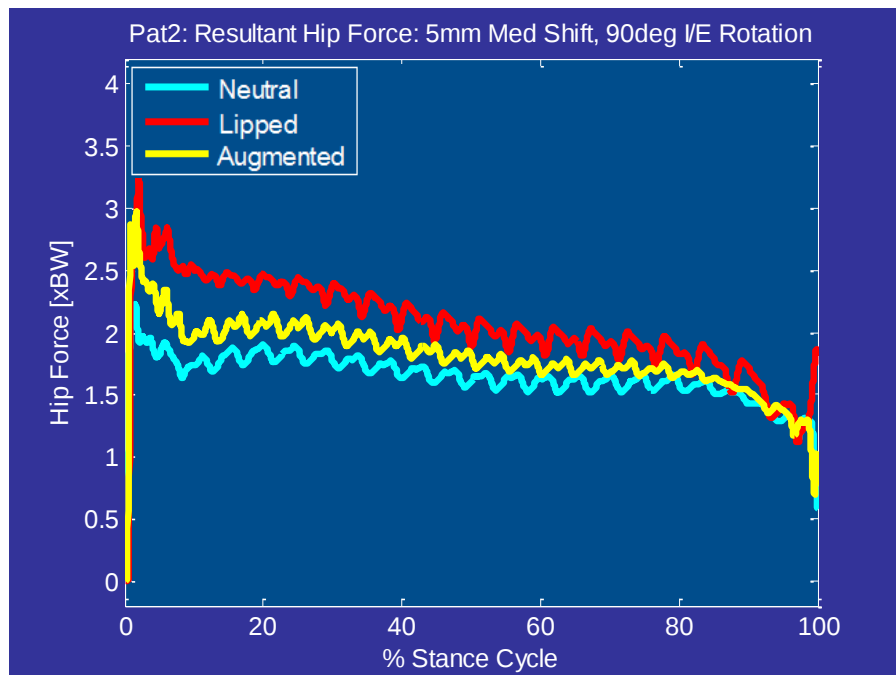


(b)

Figure C33: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

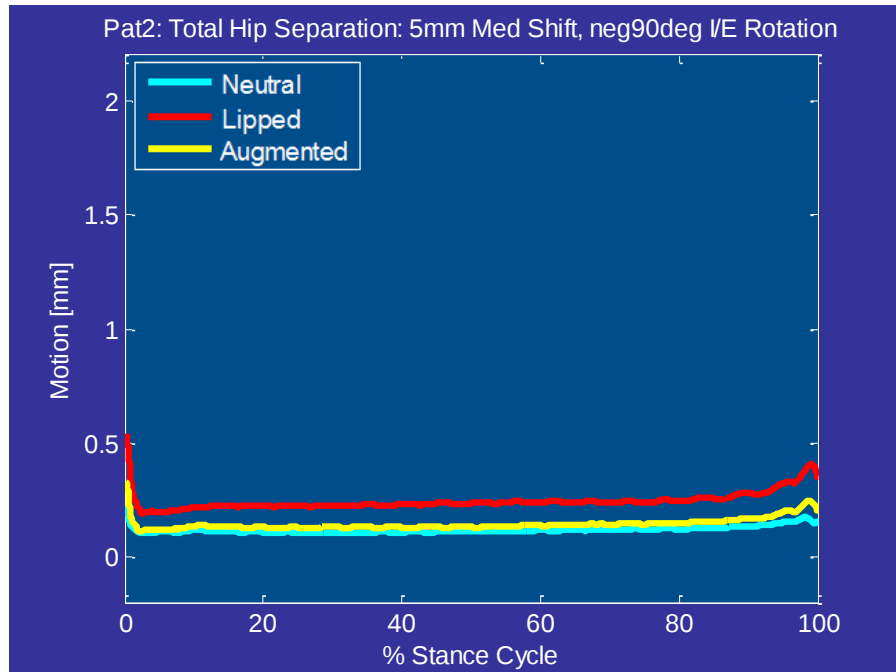


(a)

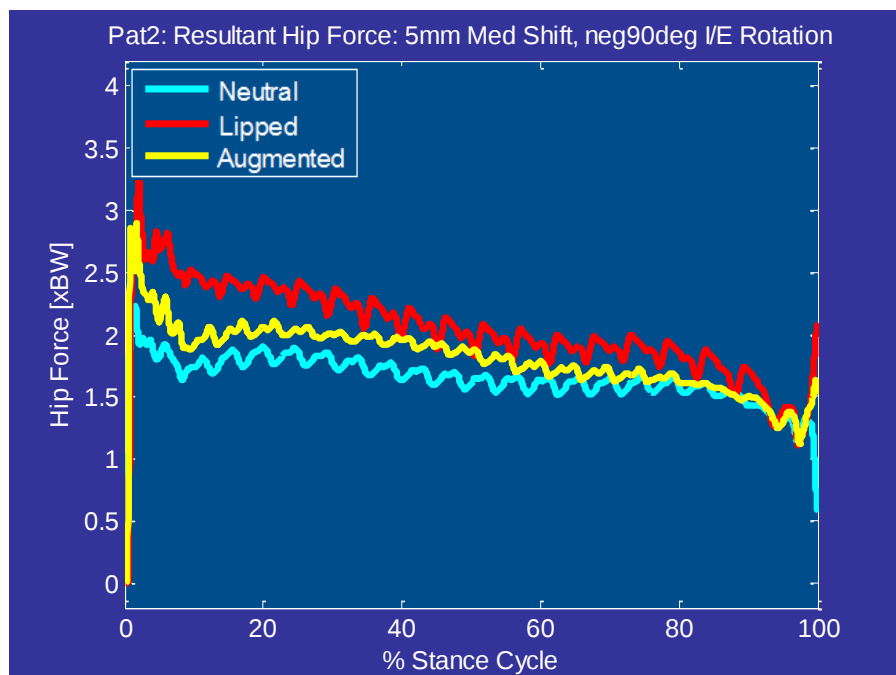


(b)

Figure C34: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

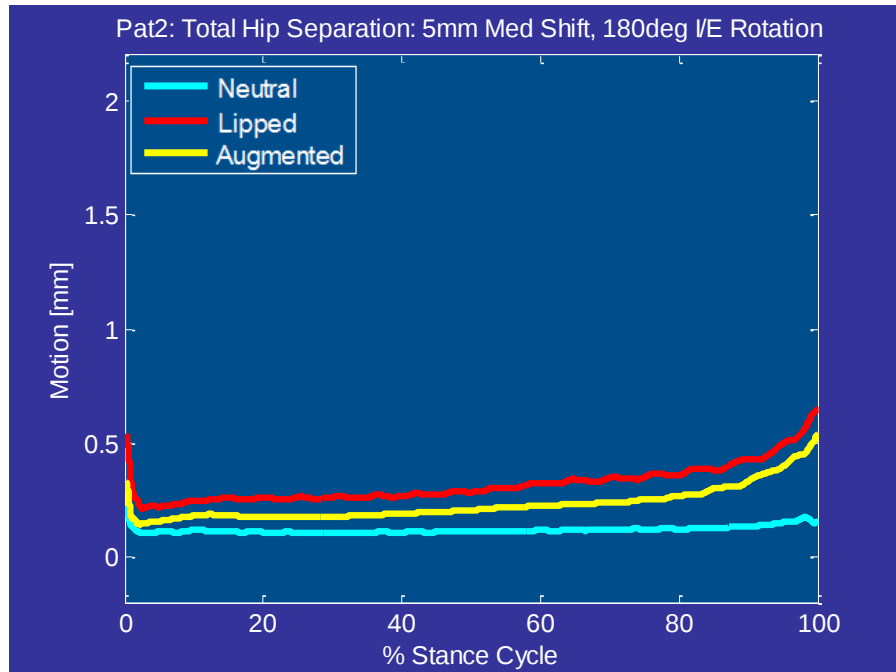


(a)

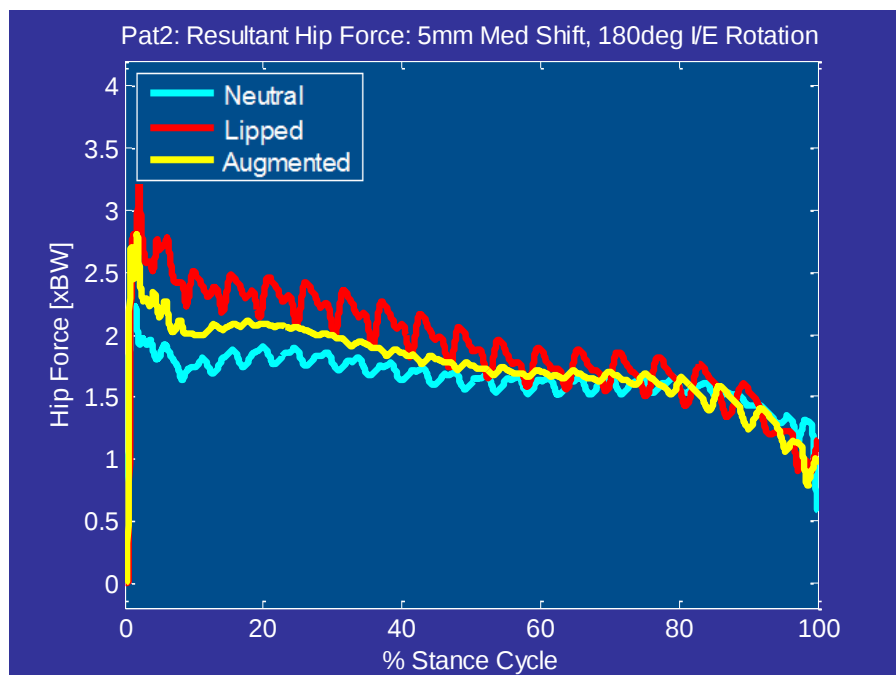


(b)

Figure C35: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

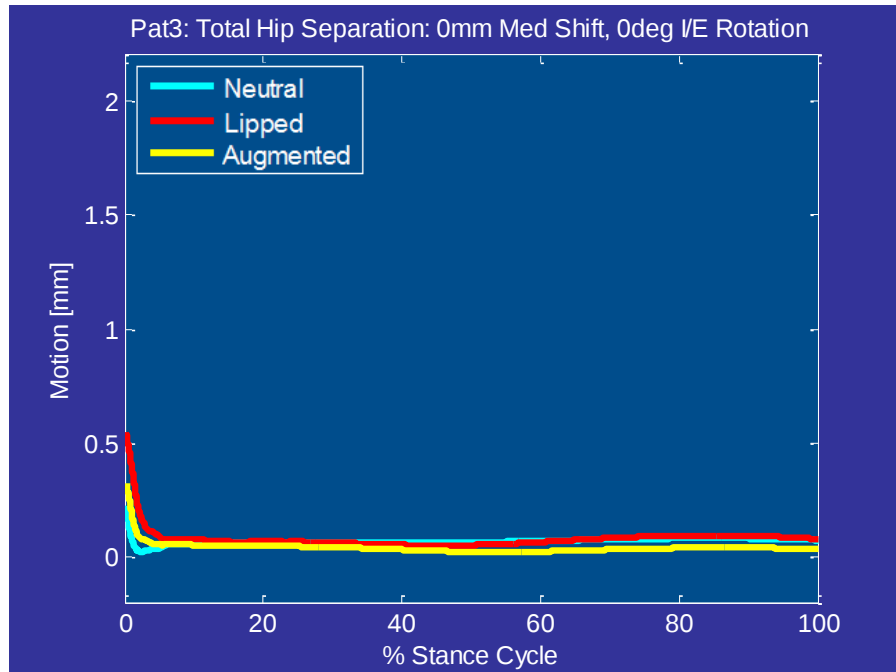


(a)

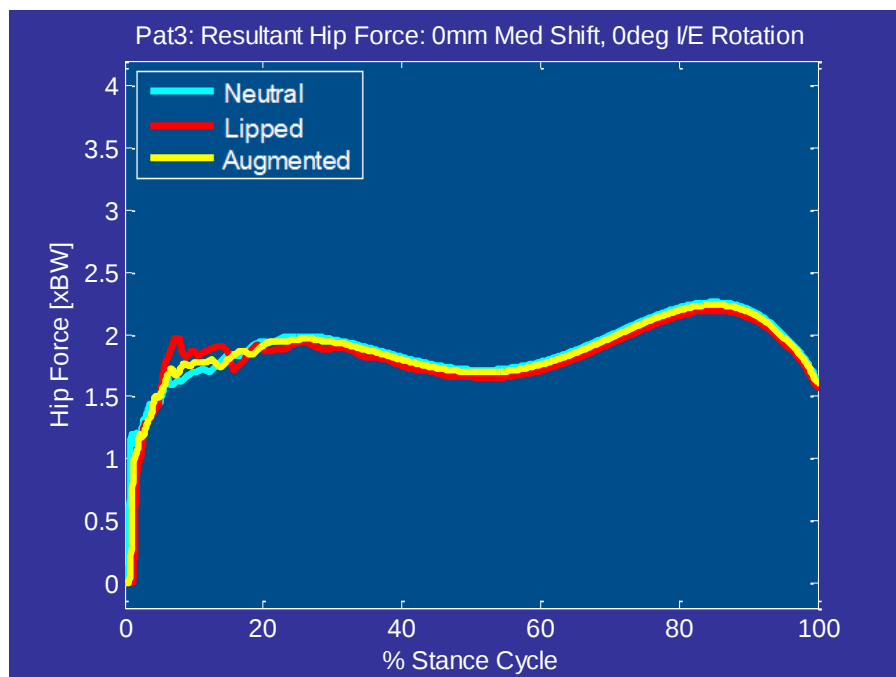


(b)

Figure C36: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

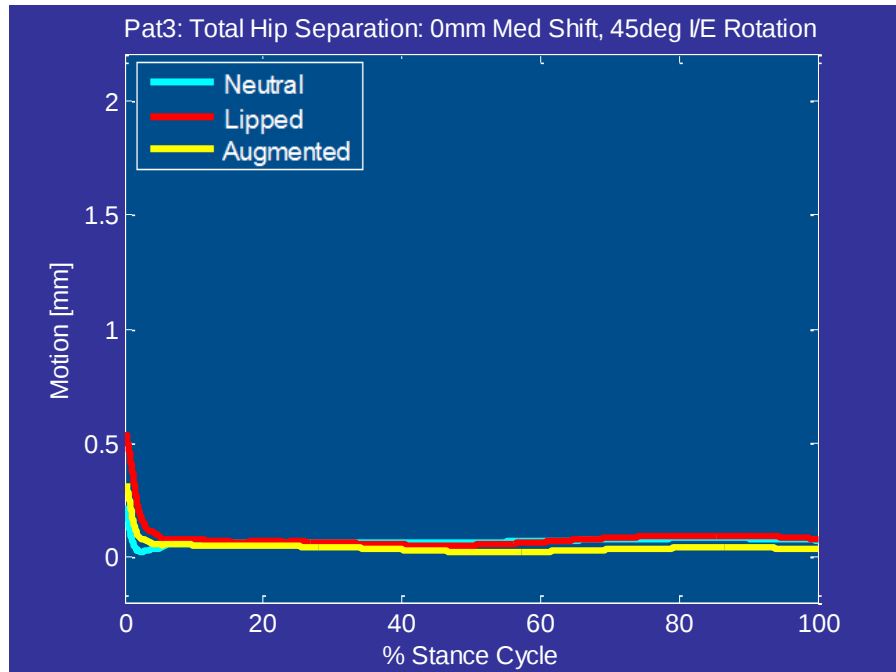


(a)

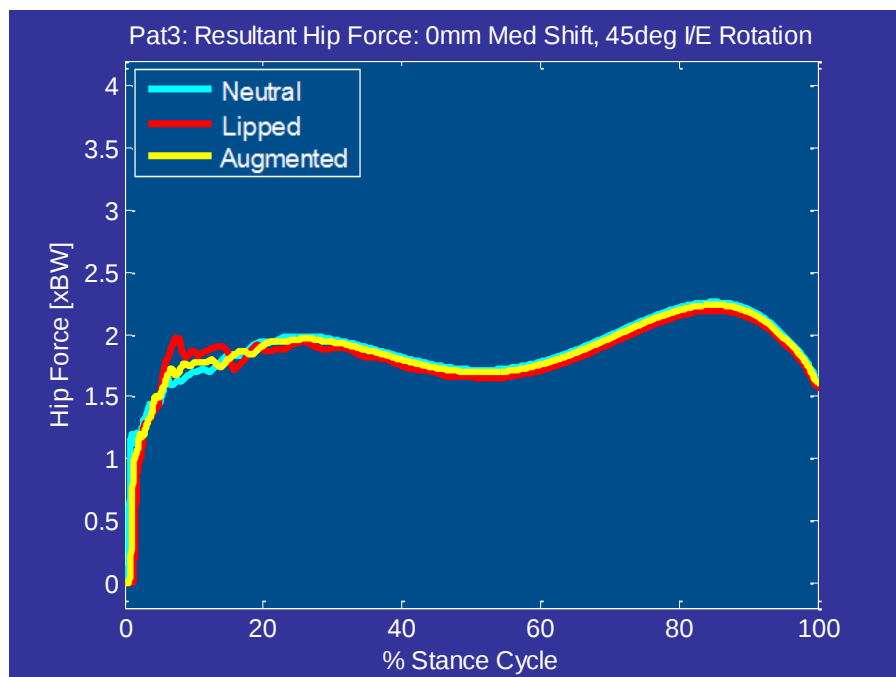


(b)

Figure C37: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

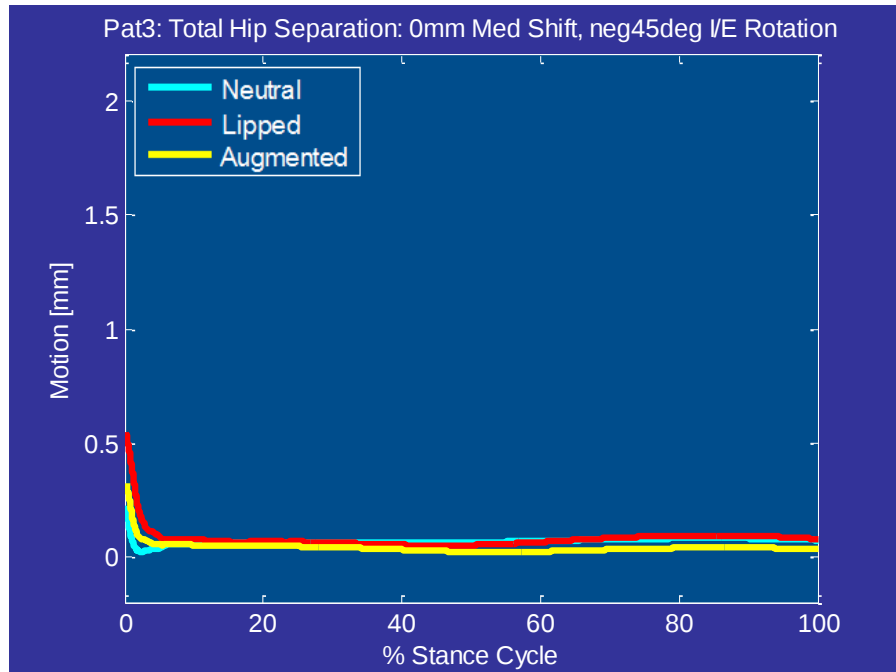


(a)

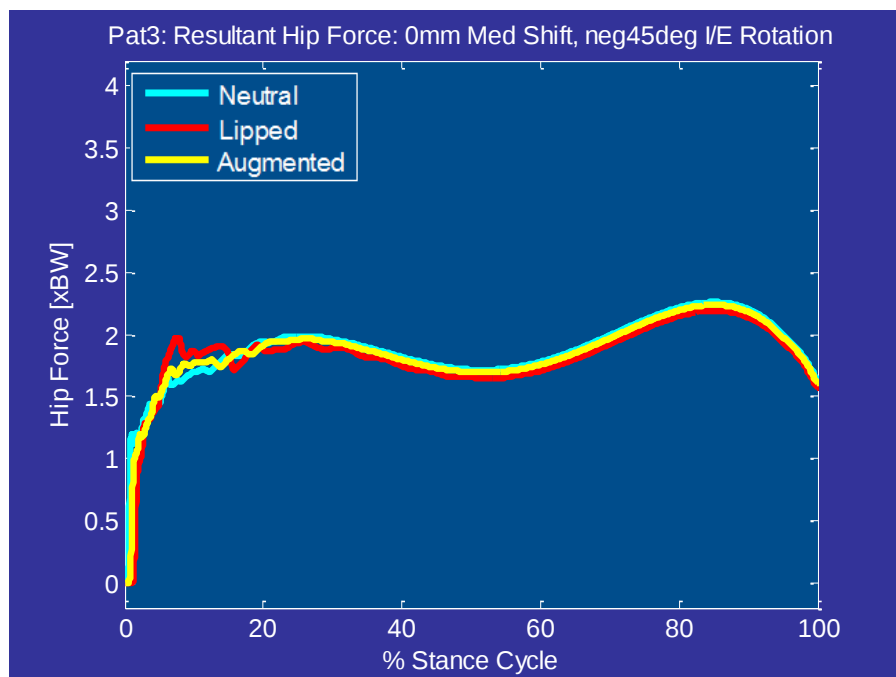


(b)

Figure C38: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

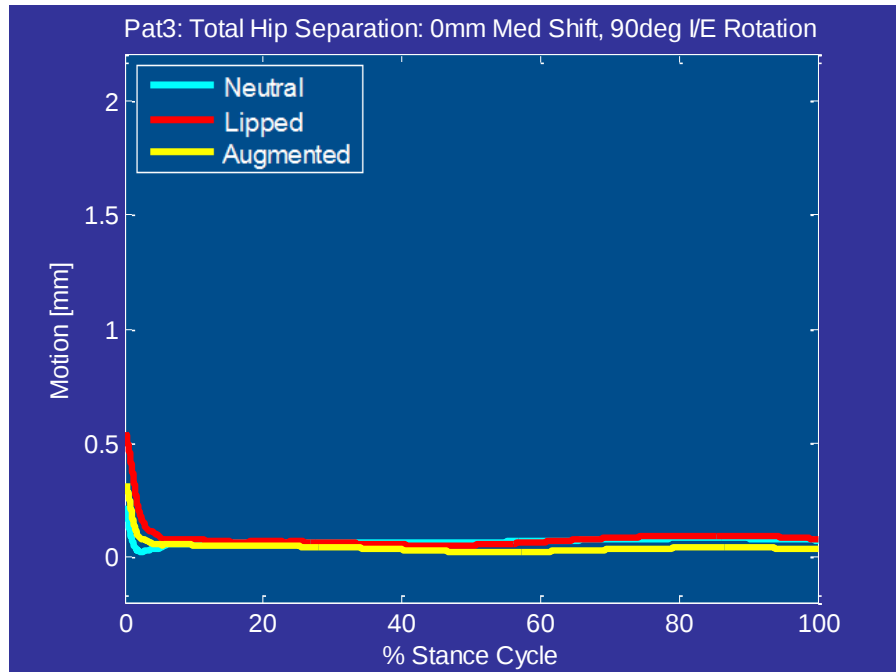


(a)

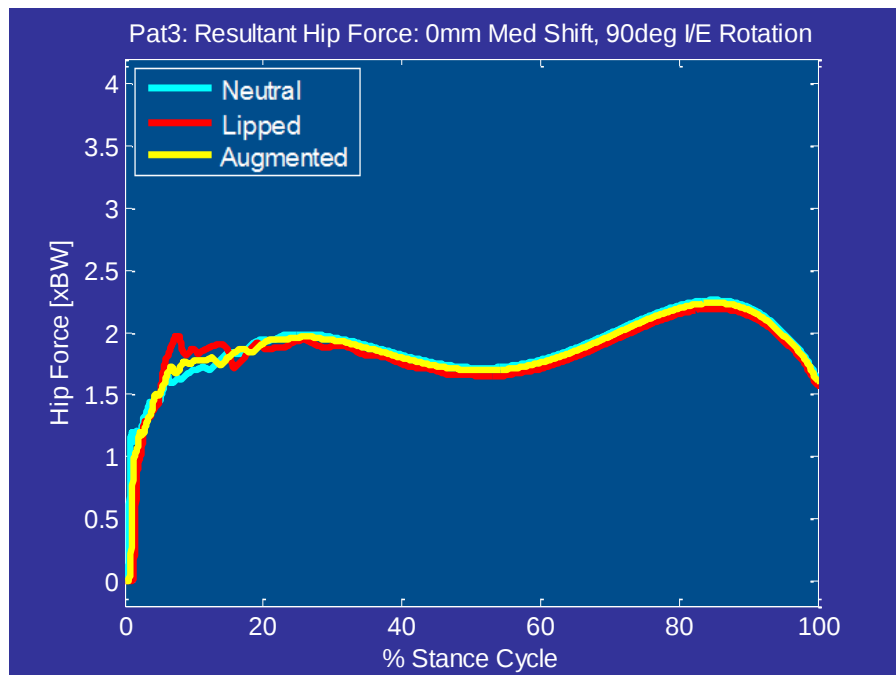


(b)

Figure C39: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

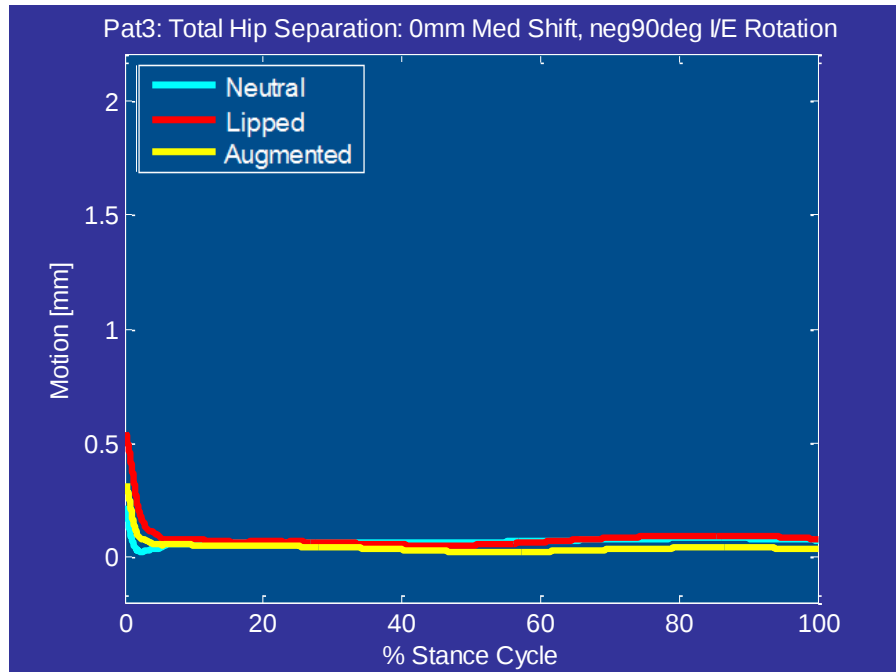


(a)

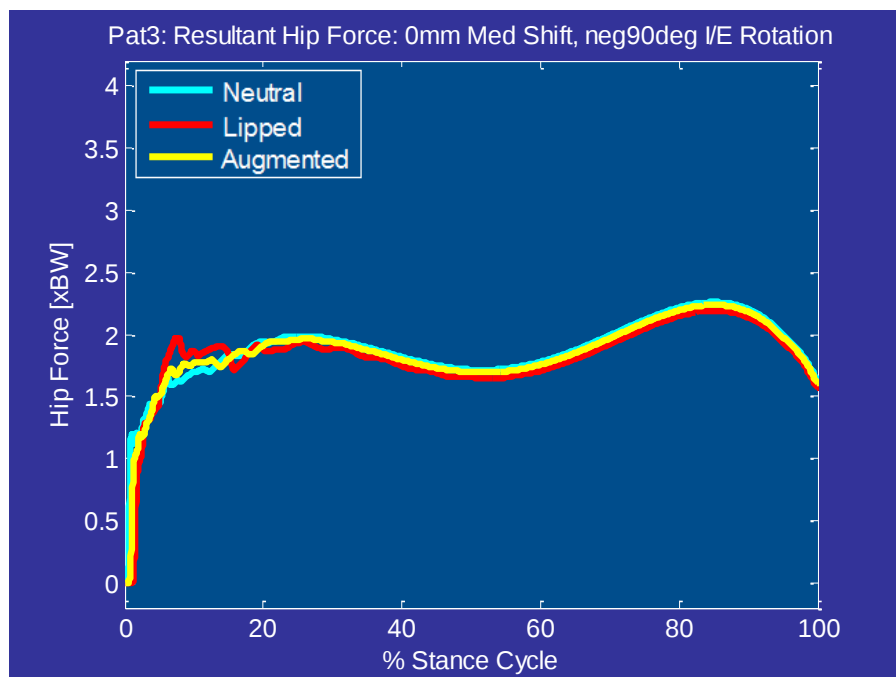


(b)

Figure C40: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

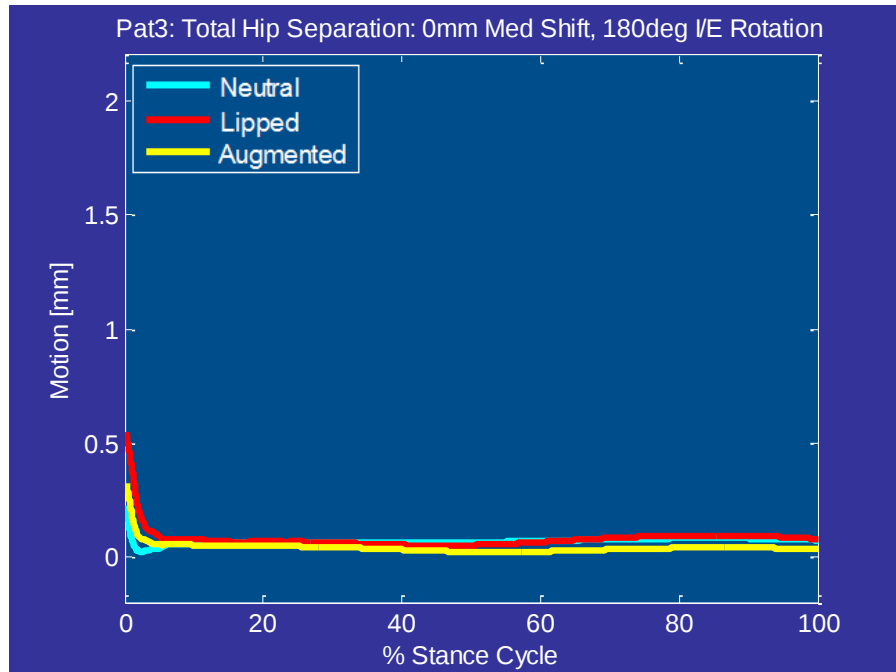


(a)

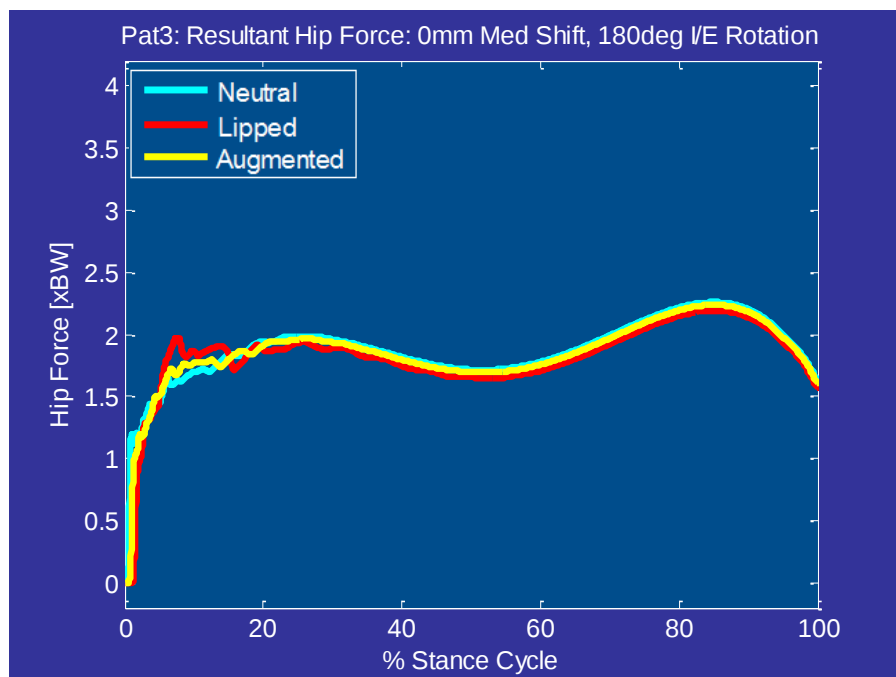


(b)

Figure C41: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

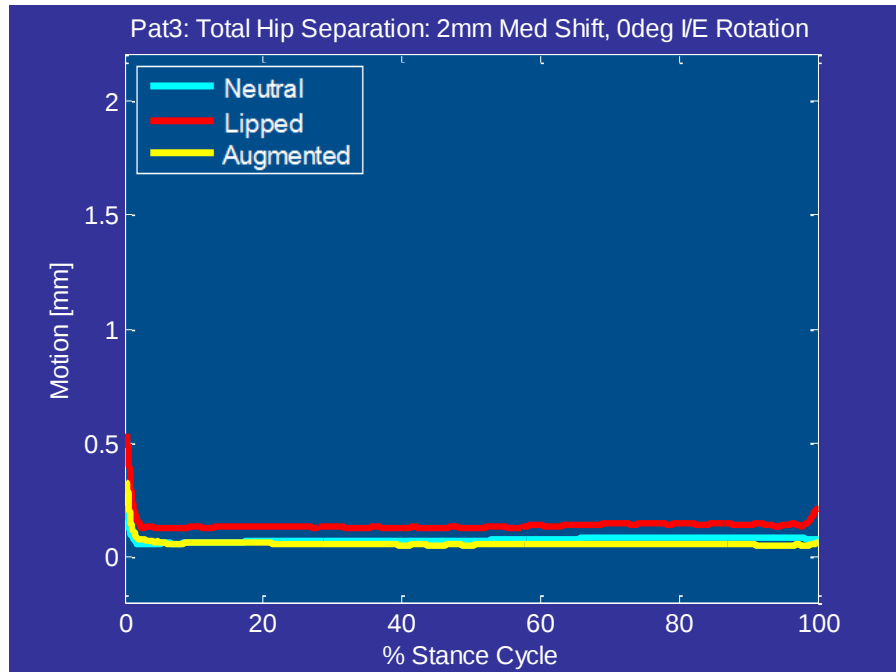


(a)

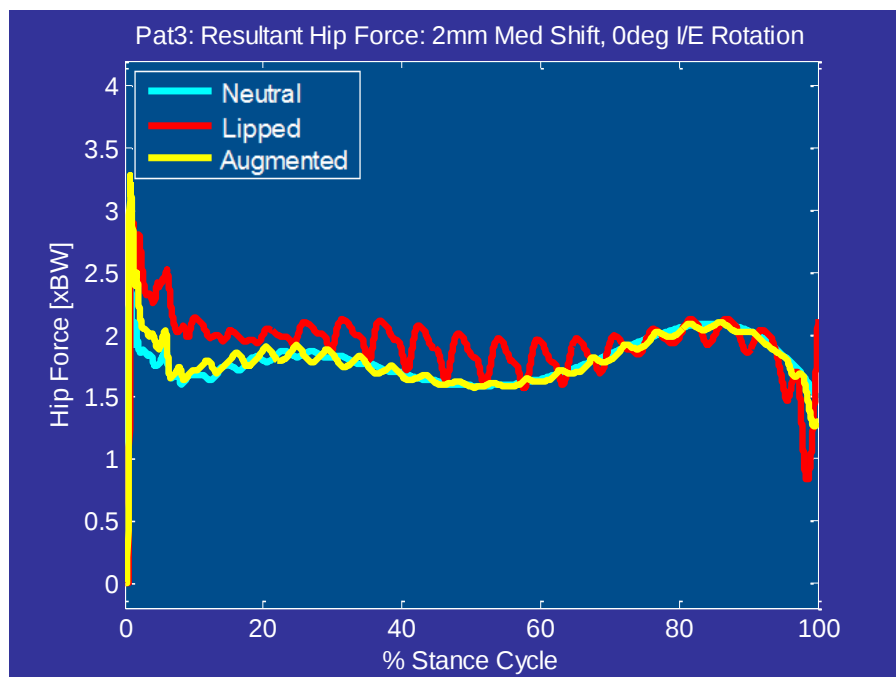


(b)

Figure C42: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

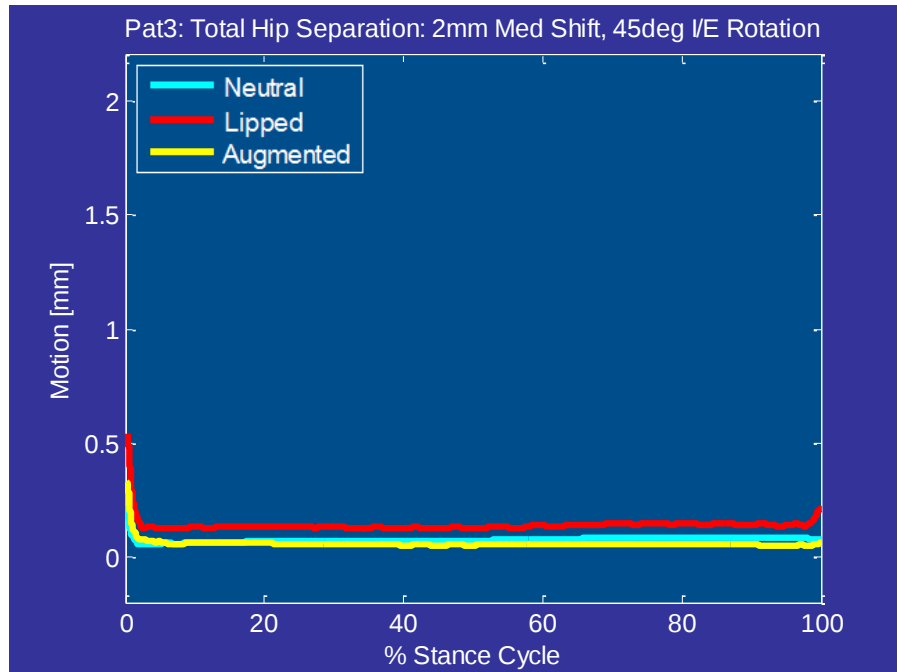


(a)



(b)

Figure C43: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

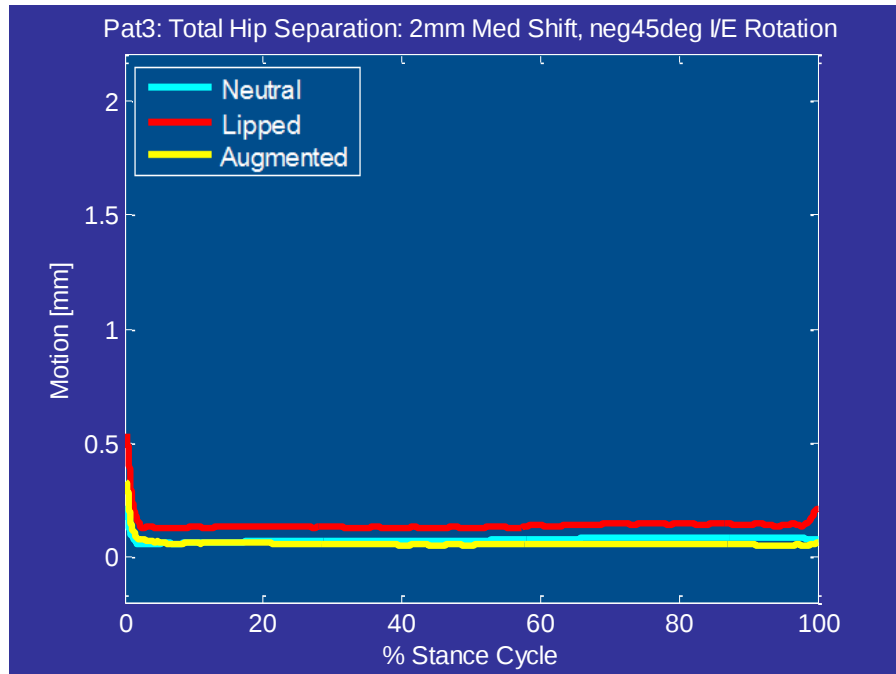


(a)

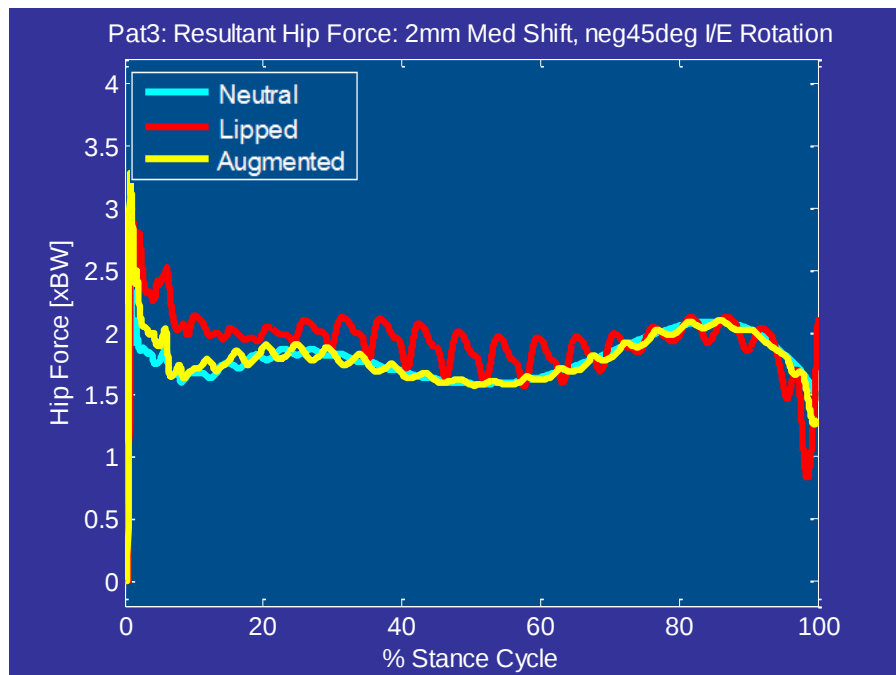


(b)

Figure C44: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

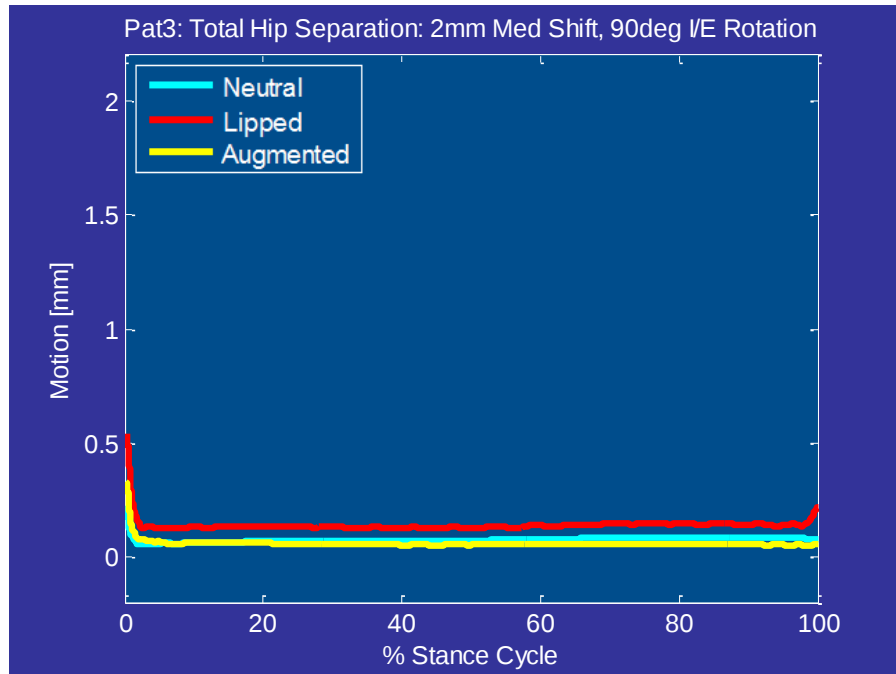


(a)

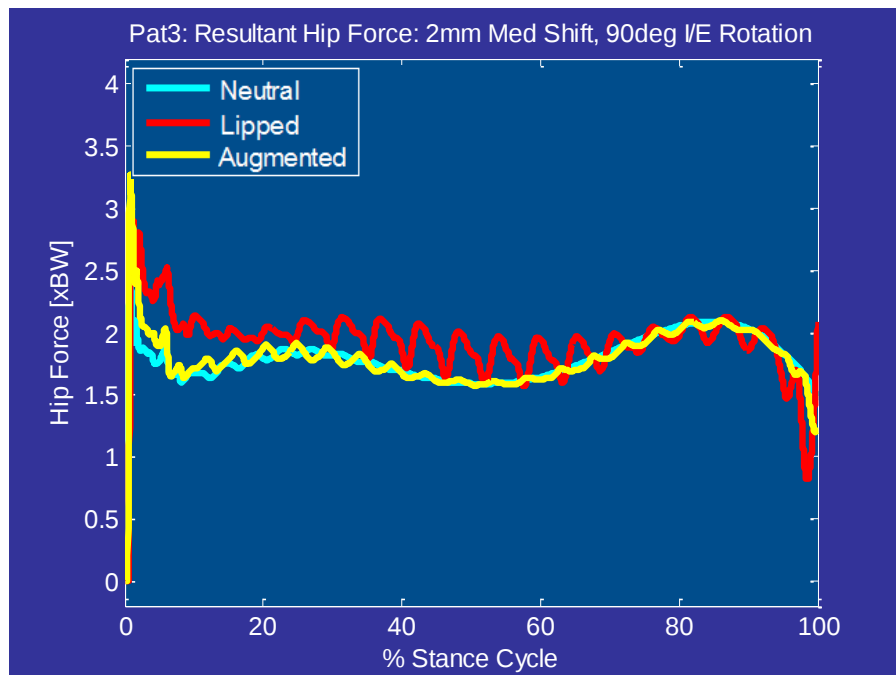


(b)

Figure C45: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

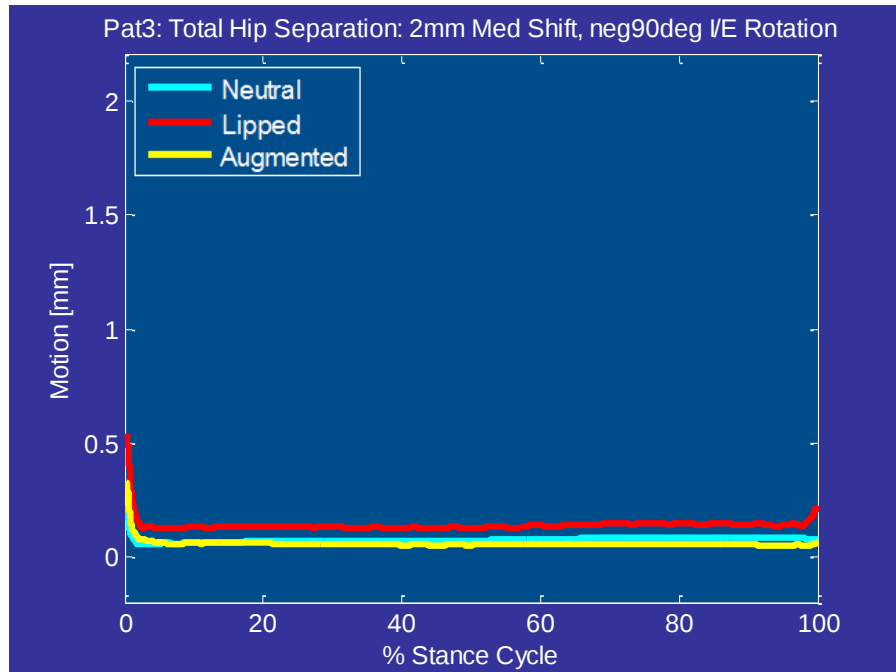


(a)

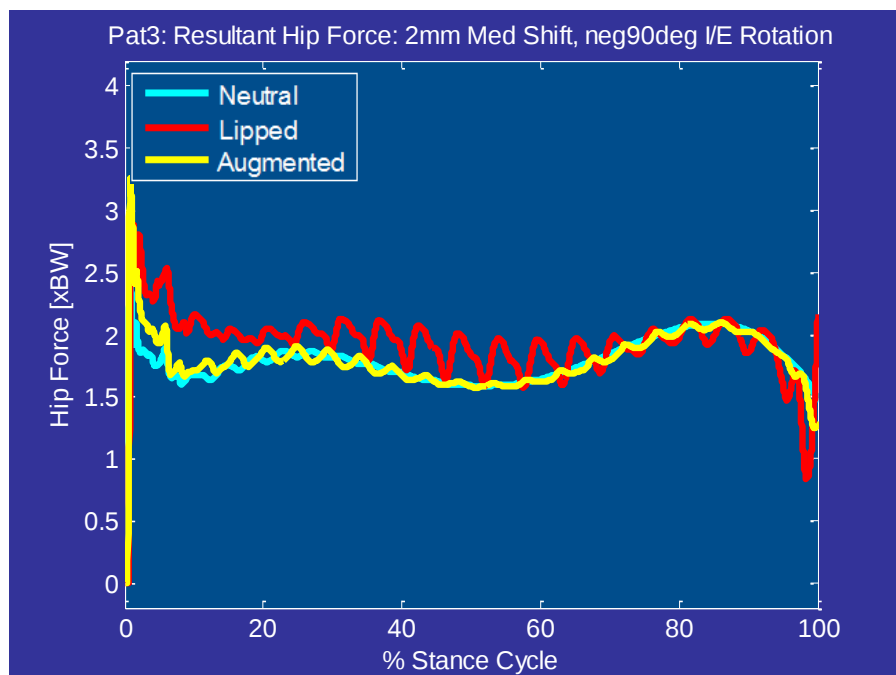


(b)

Figure C46: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

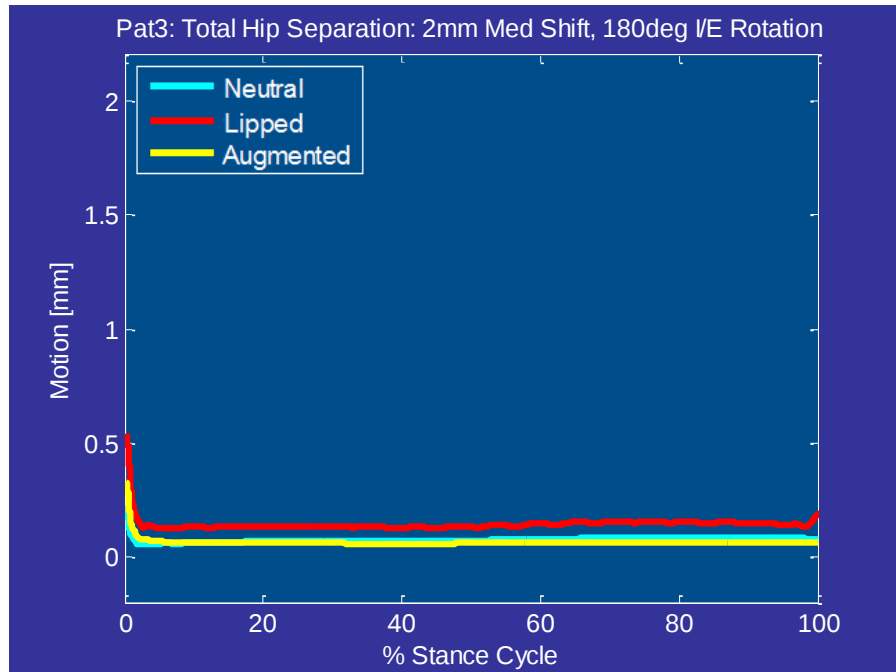


(a)

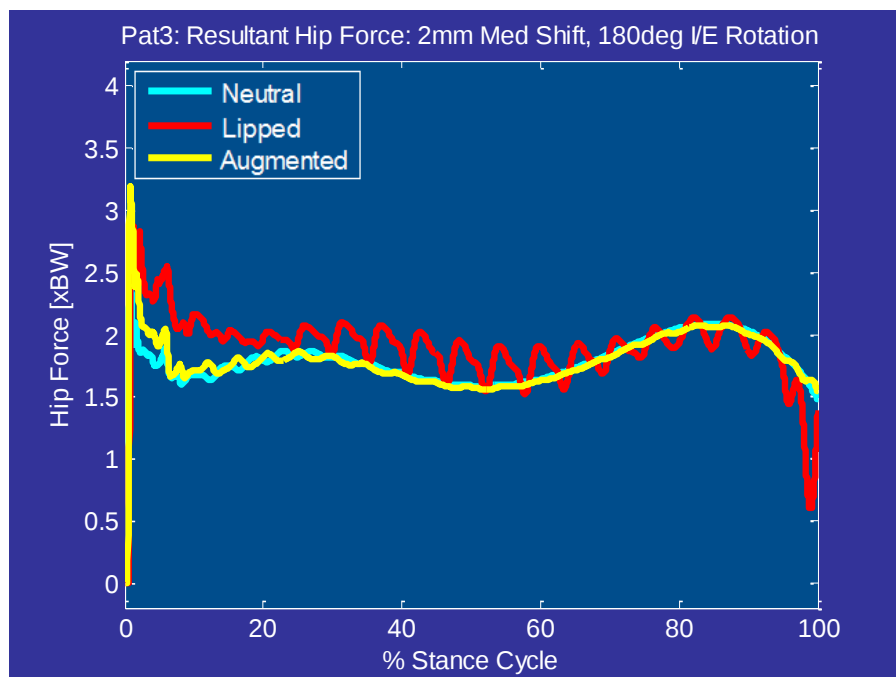


(b)

Figure C47: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

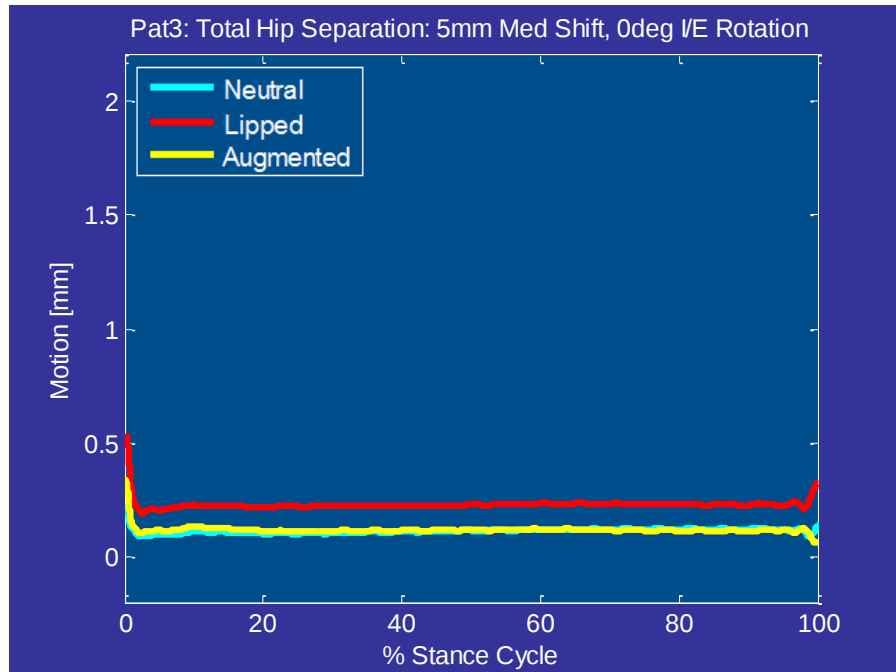


(a)

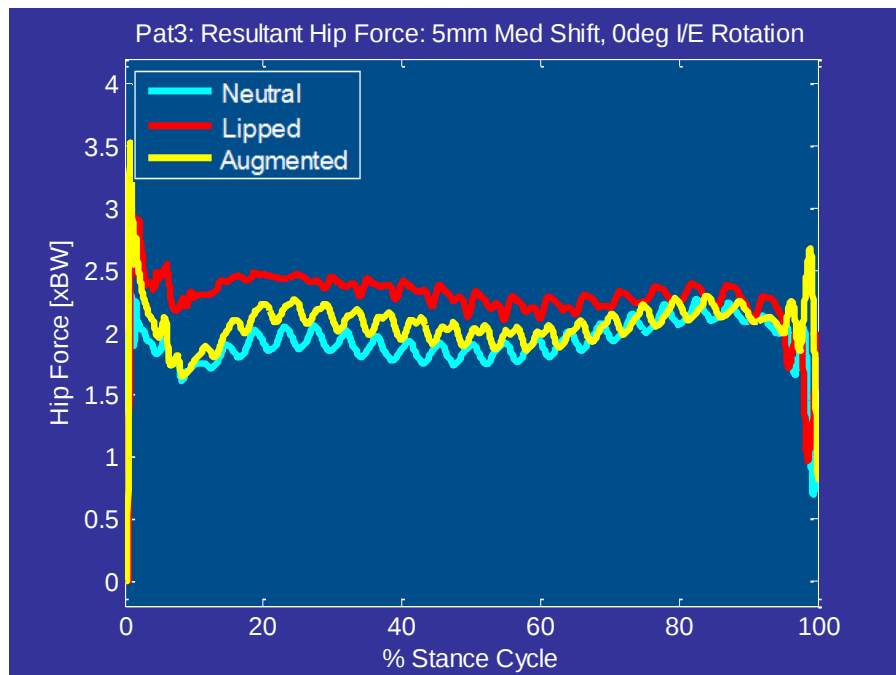


(b)

Figure C48: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

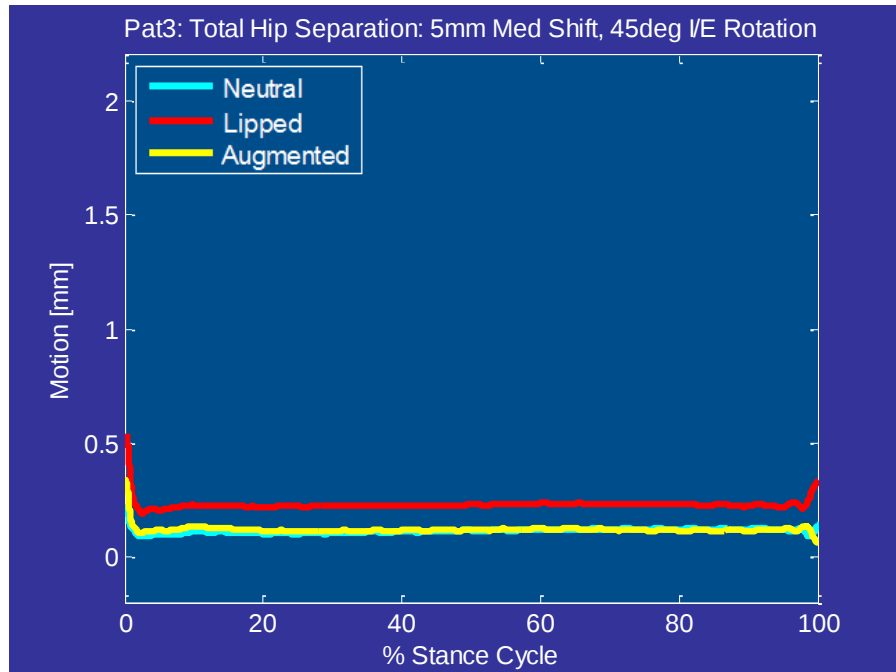


(a)

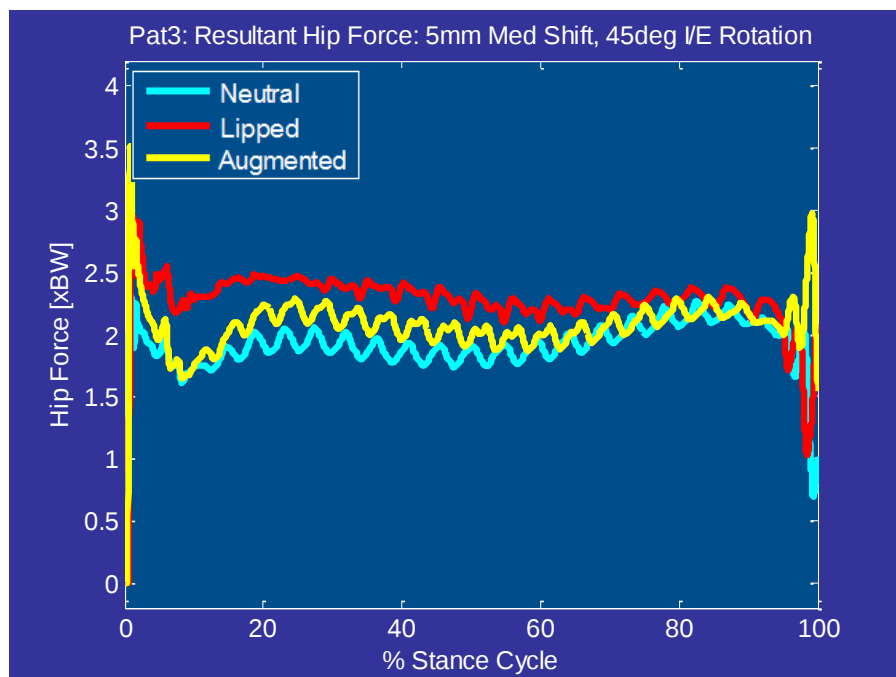


(b)

Figure C49: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

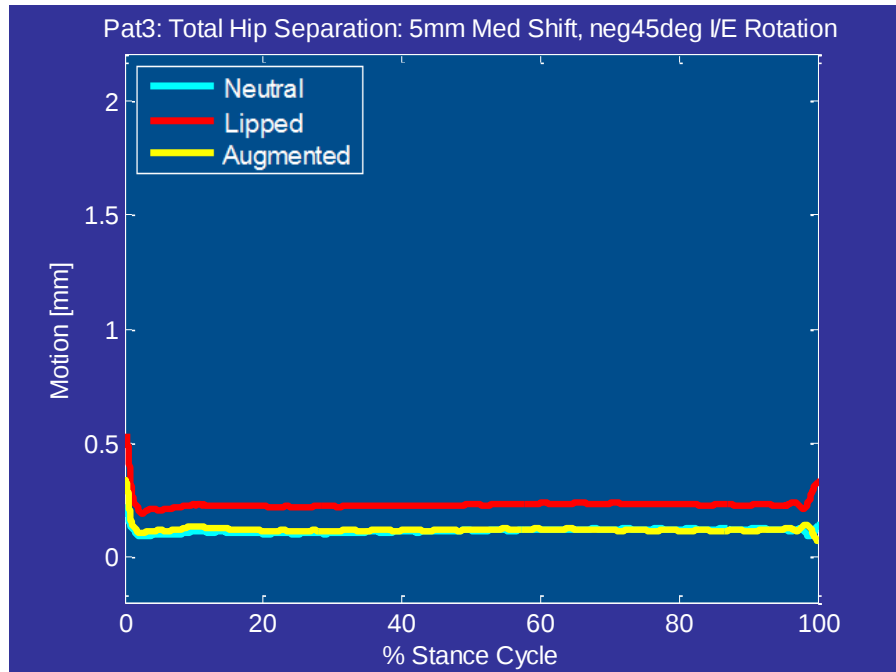


(a)

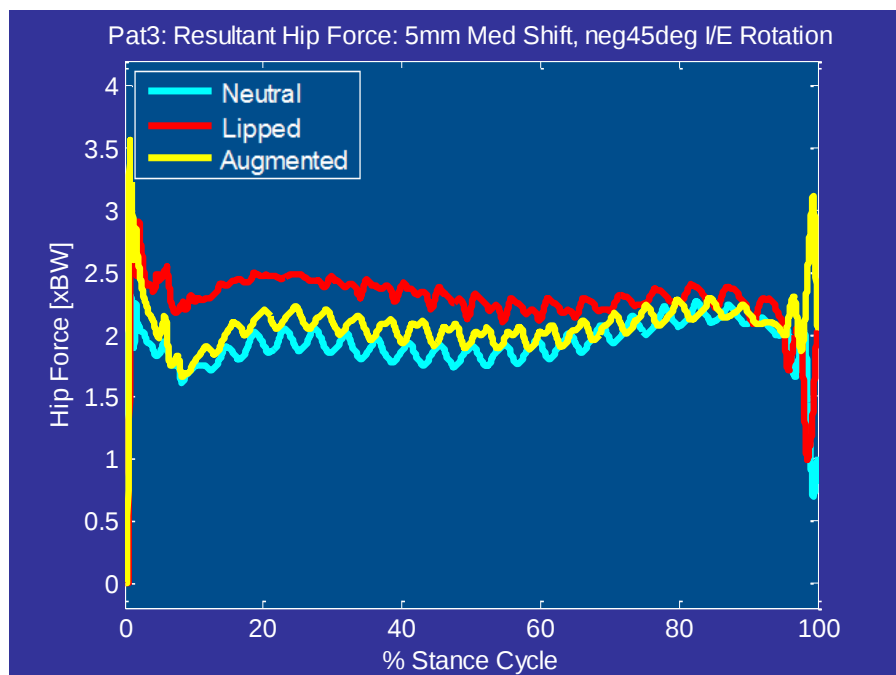


(b)

Figure C50: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

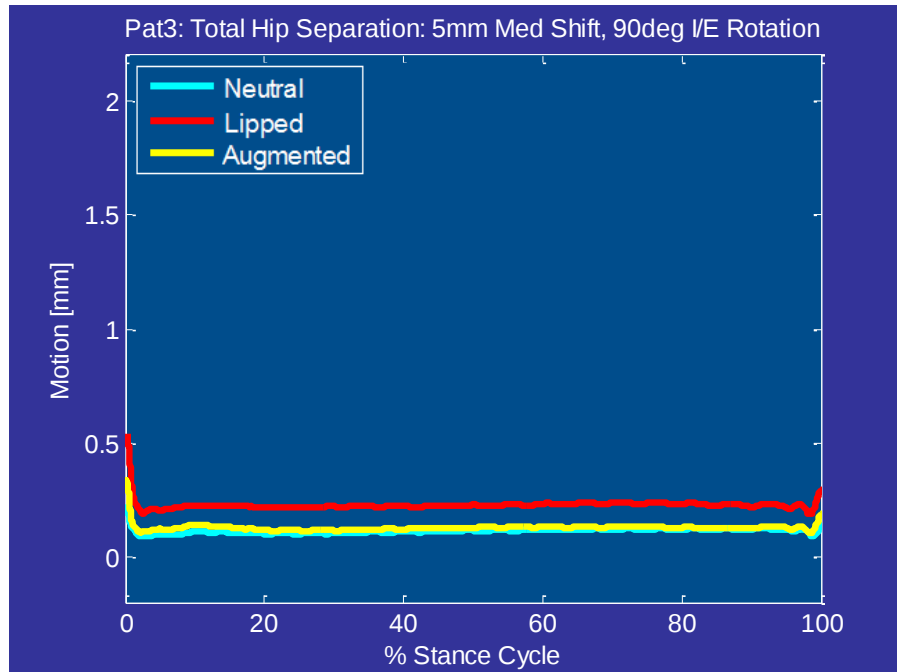


(a)

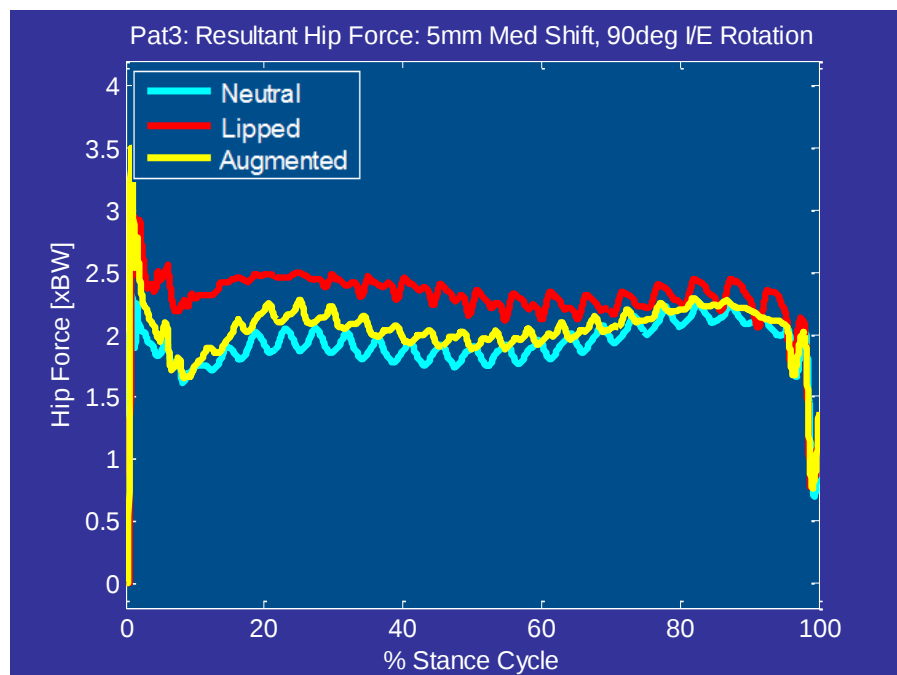


(b)

Figure C51: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

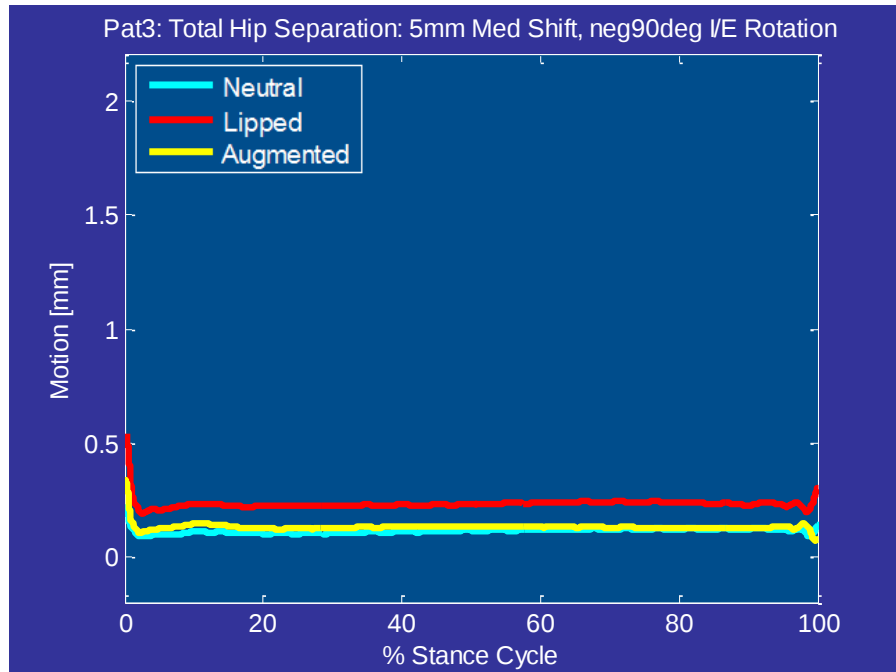


(a)

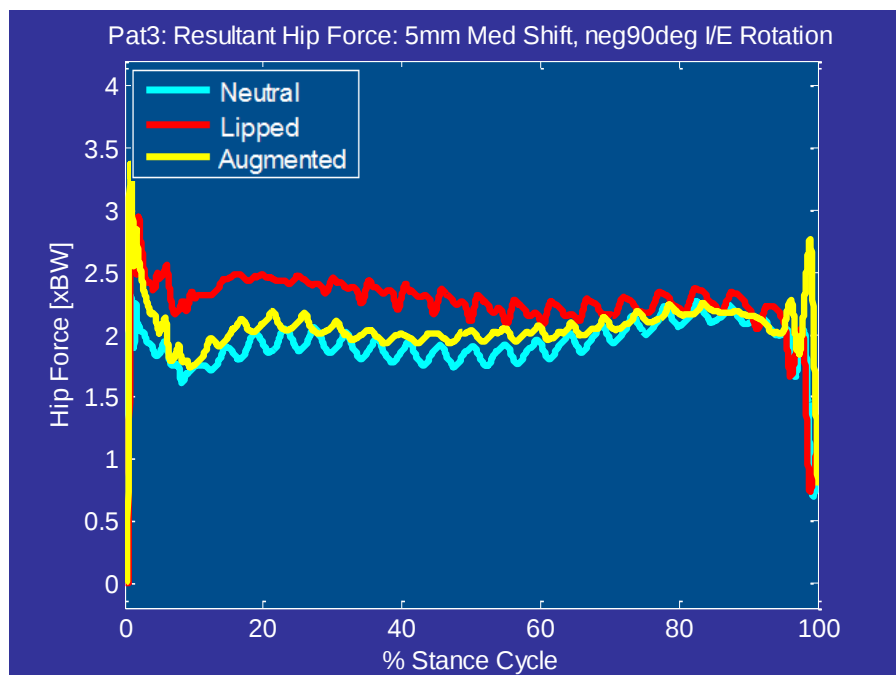


(b)

Figure C52: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

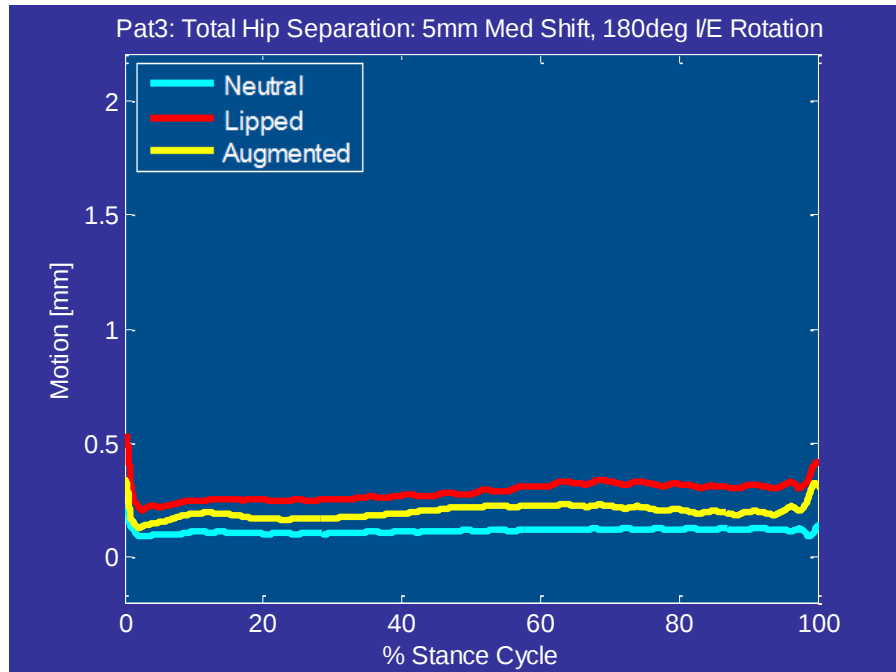


(a)

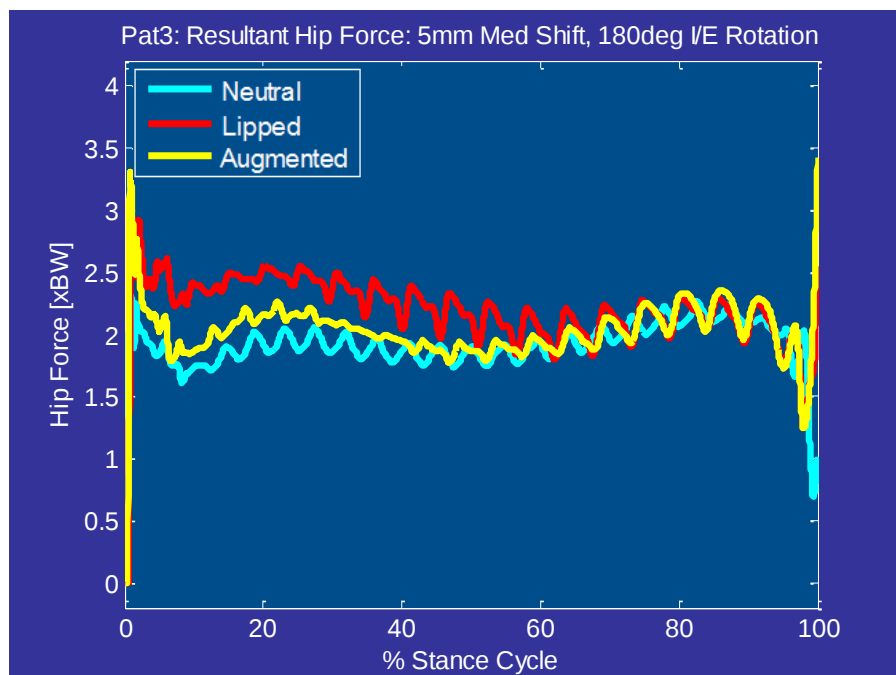


(b)

Figure C53: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

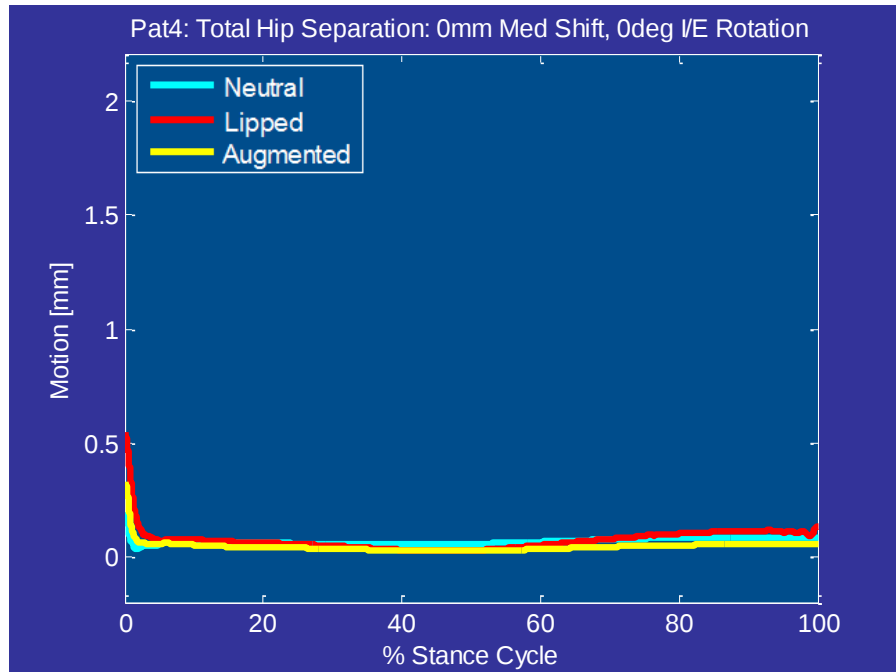


(a)

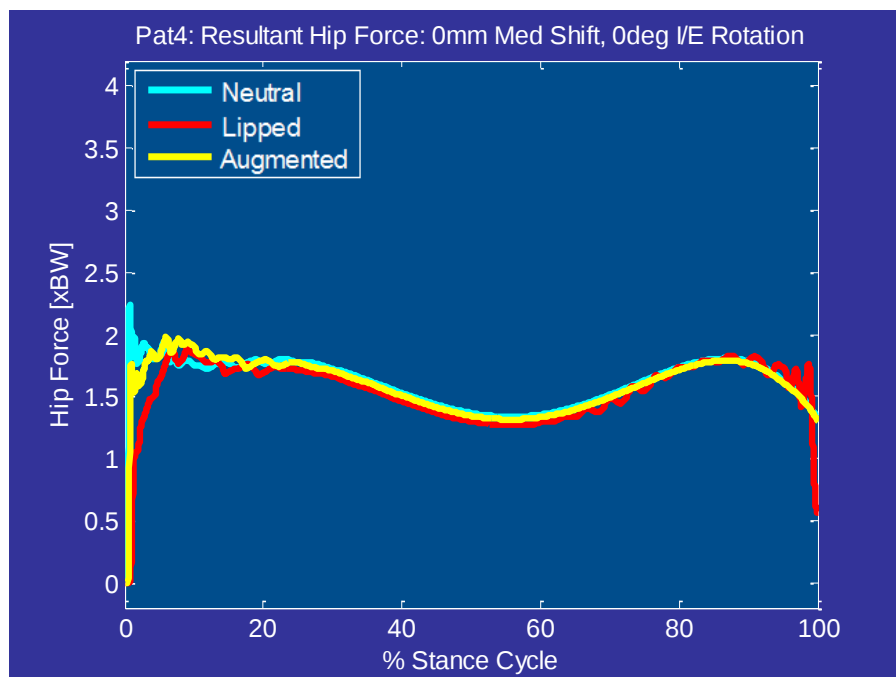


(b)

Figure C54: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

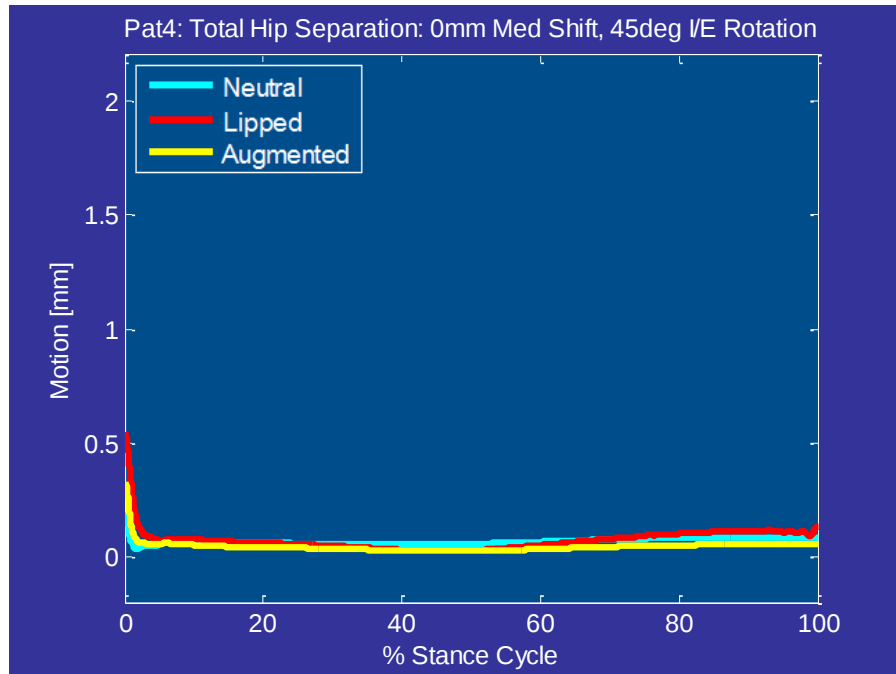


(a)

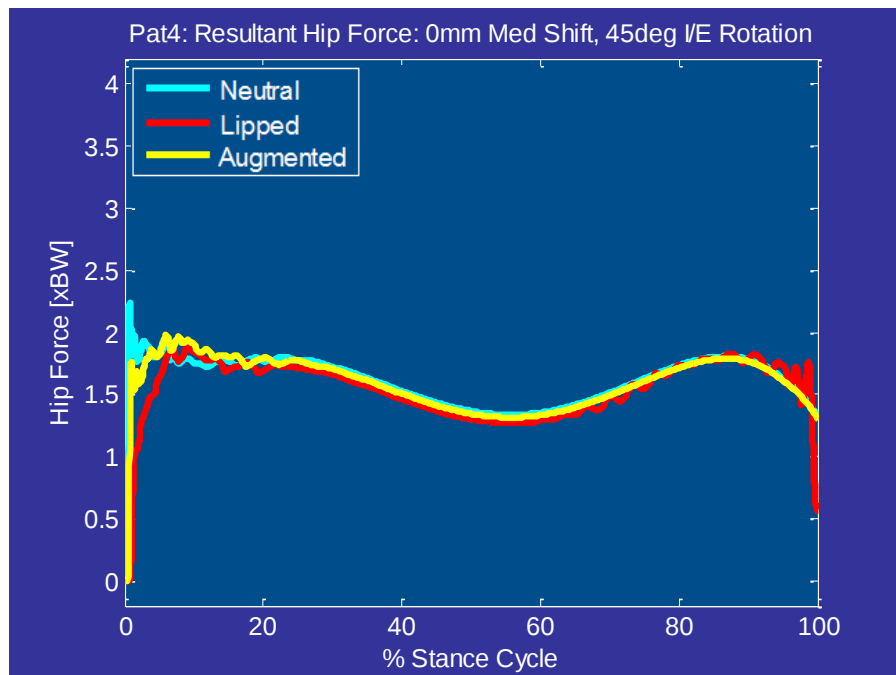


(b)

Figure C55: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

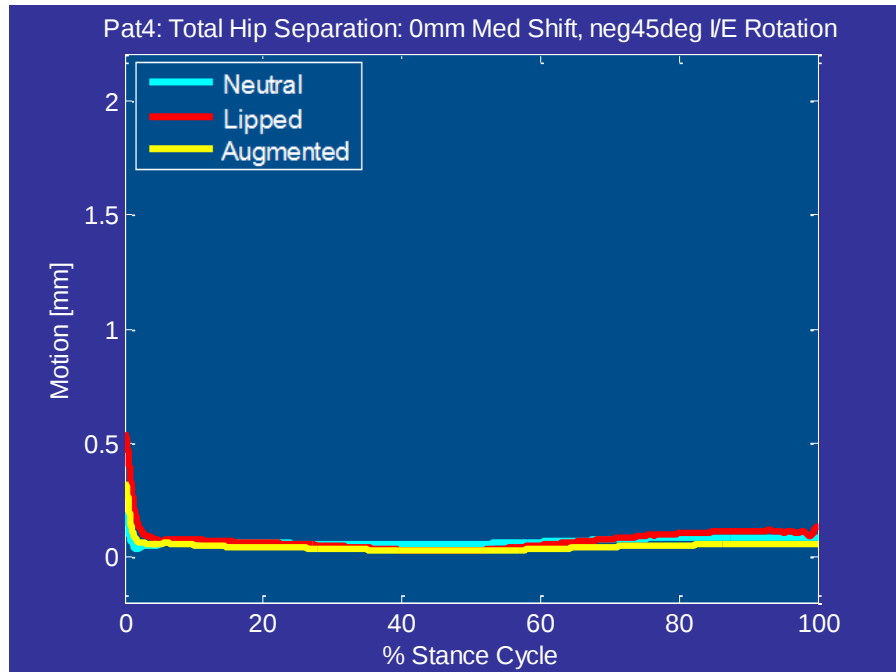


(a)



(b)

Figure C56: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

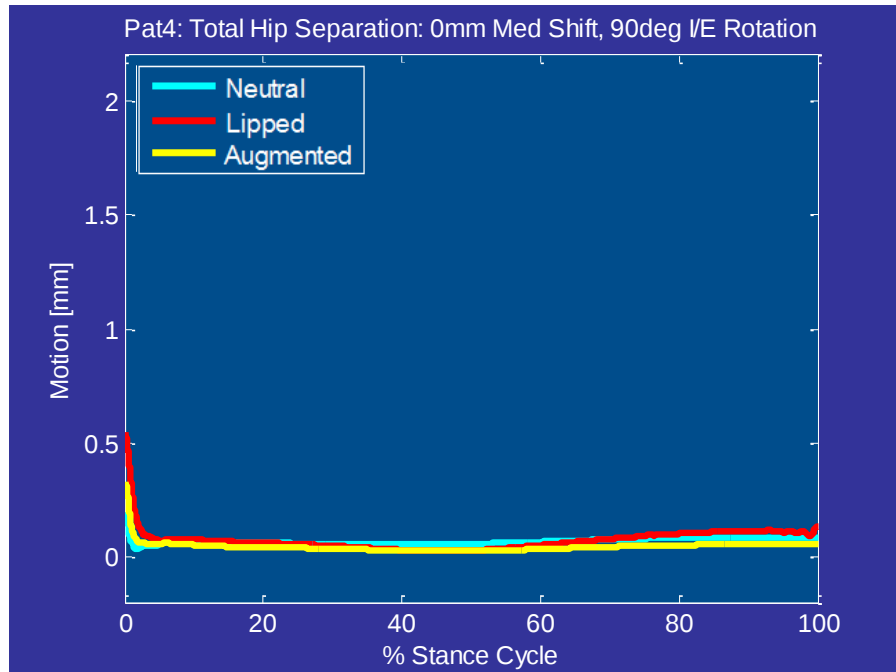


(a)

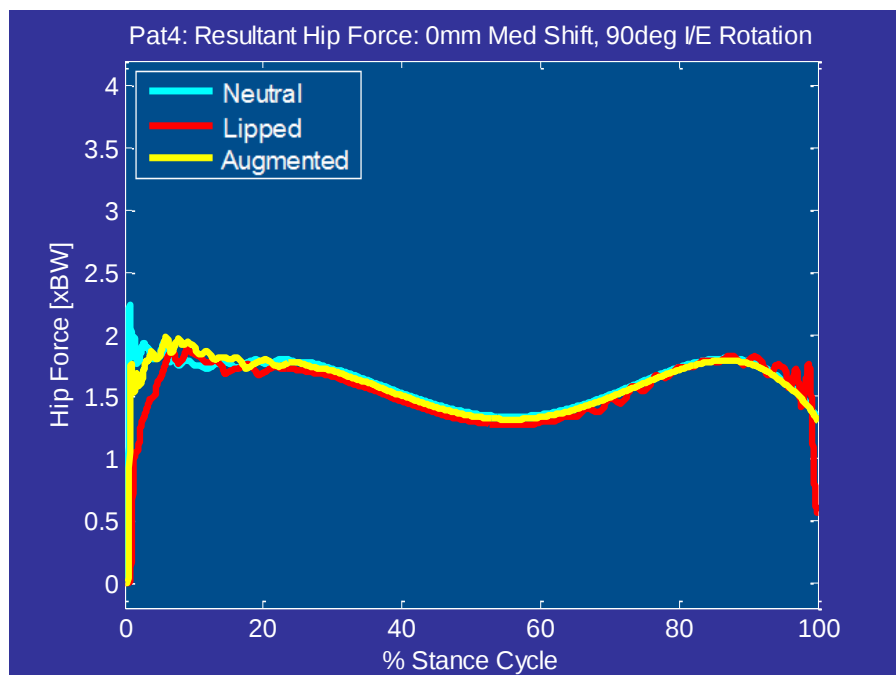


(b)

Figure C57: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

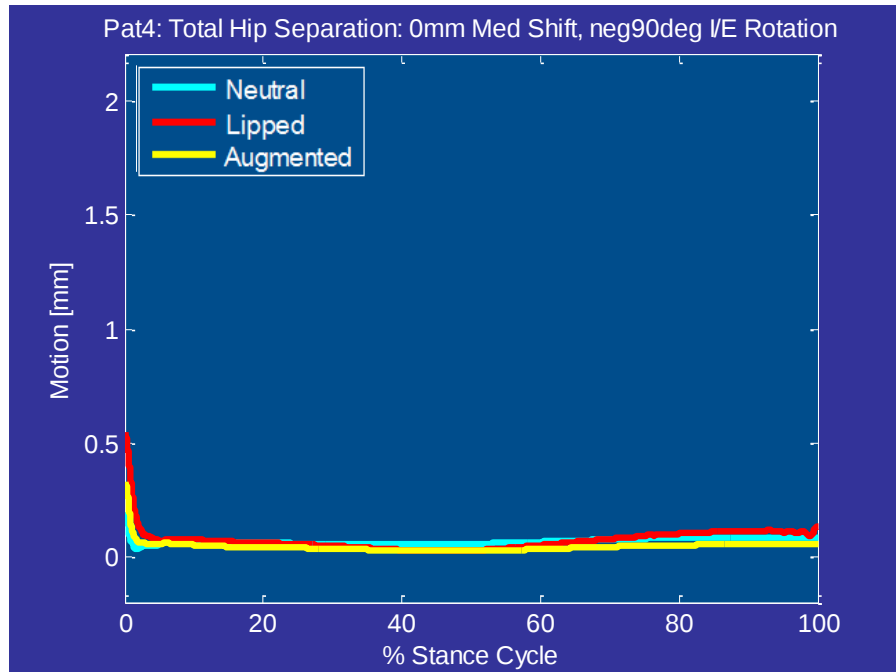


(a)

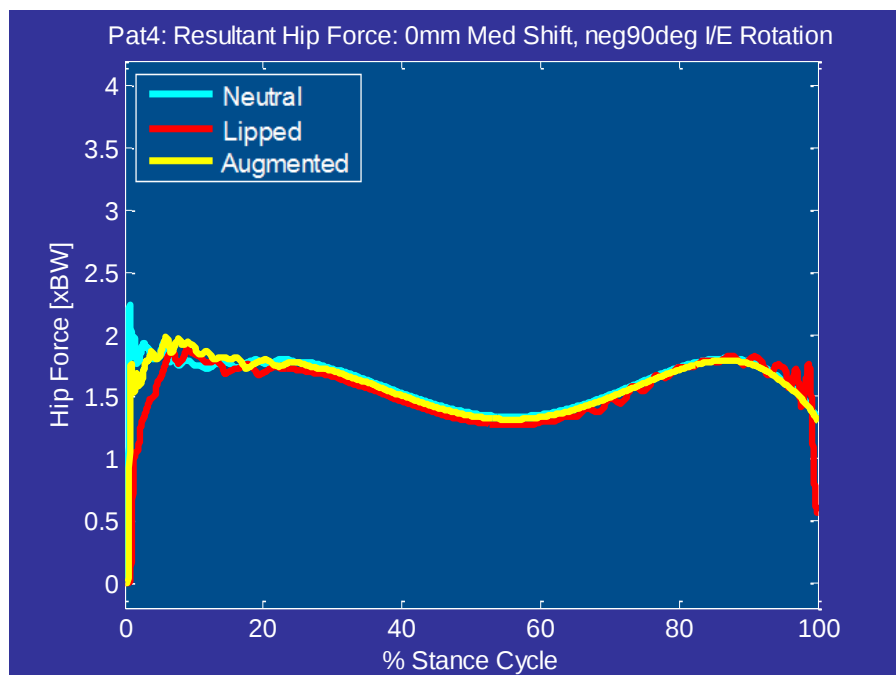


(b)

Figure C58: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

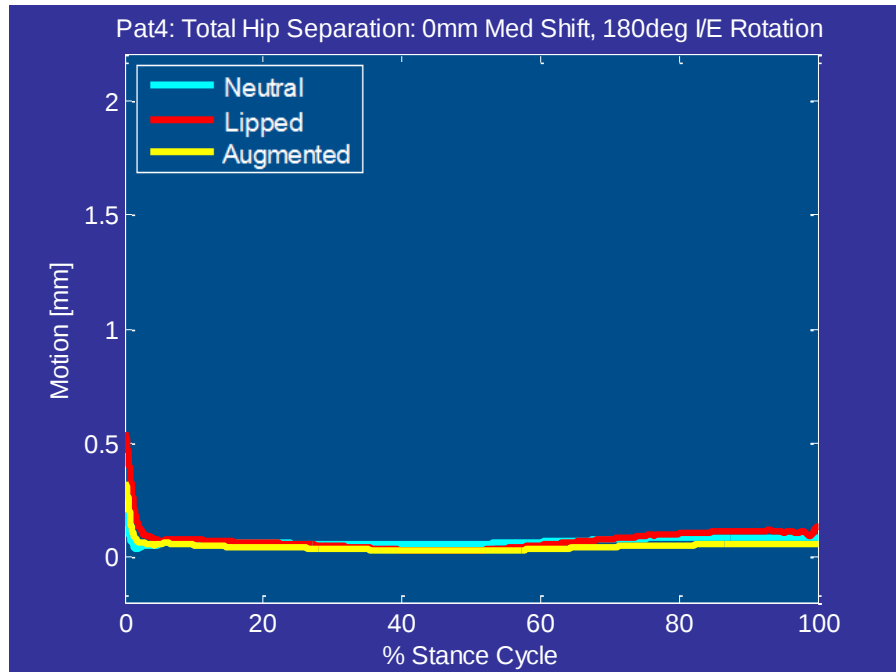


(a)

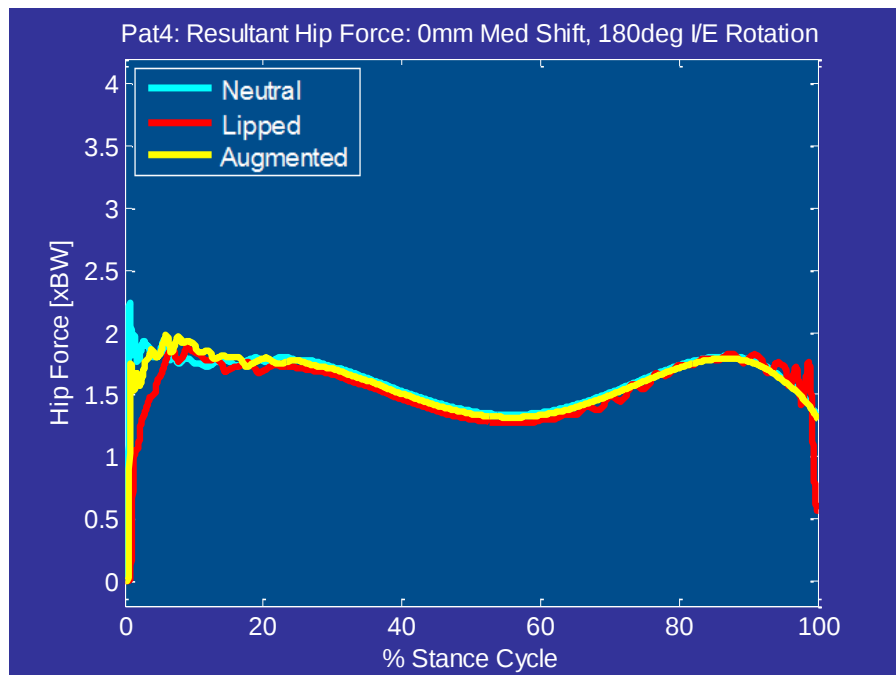


(b)

Figure C59: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

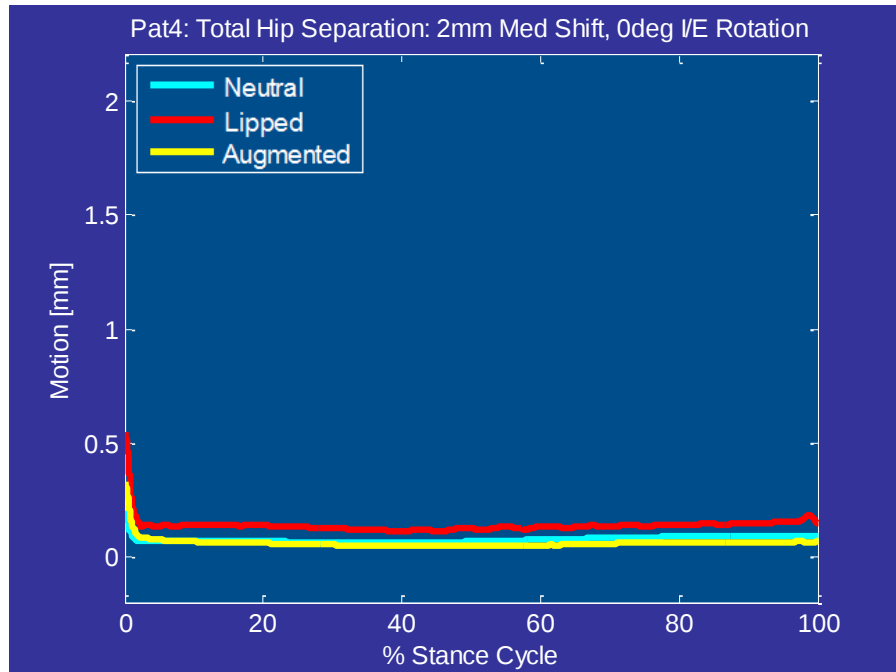


(a)

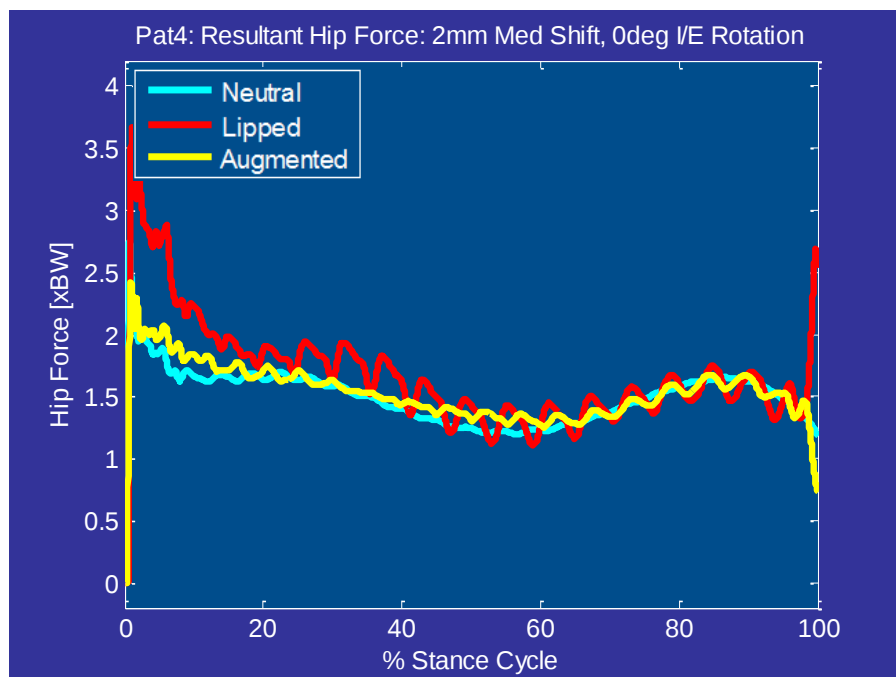


(b)

Figure C60: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

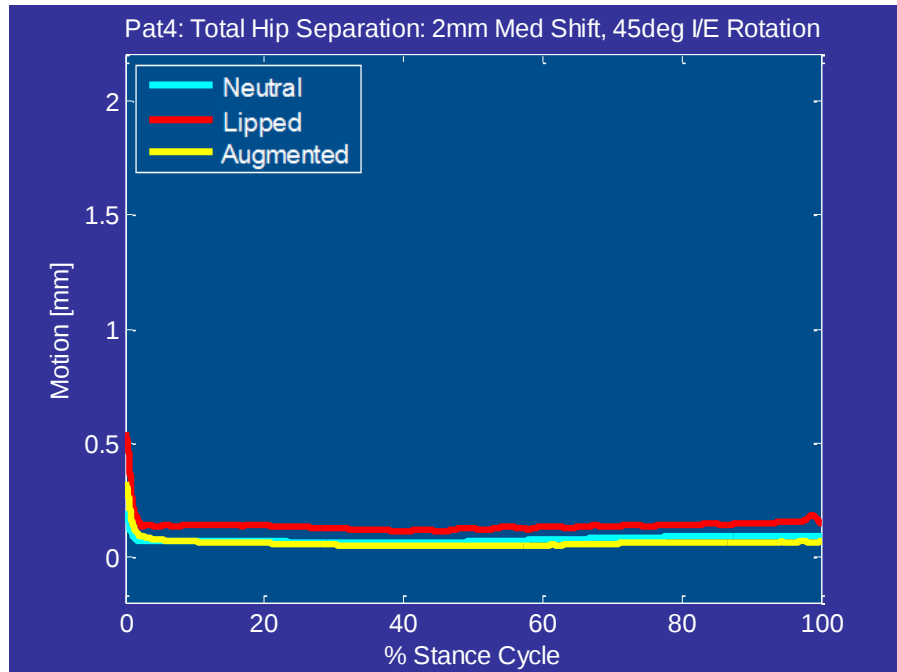


(a)

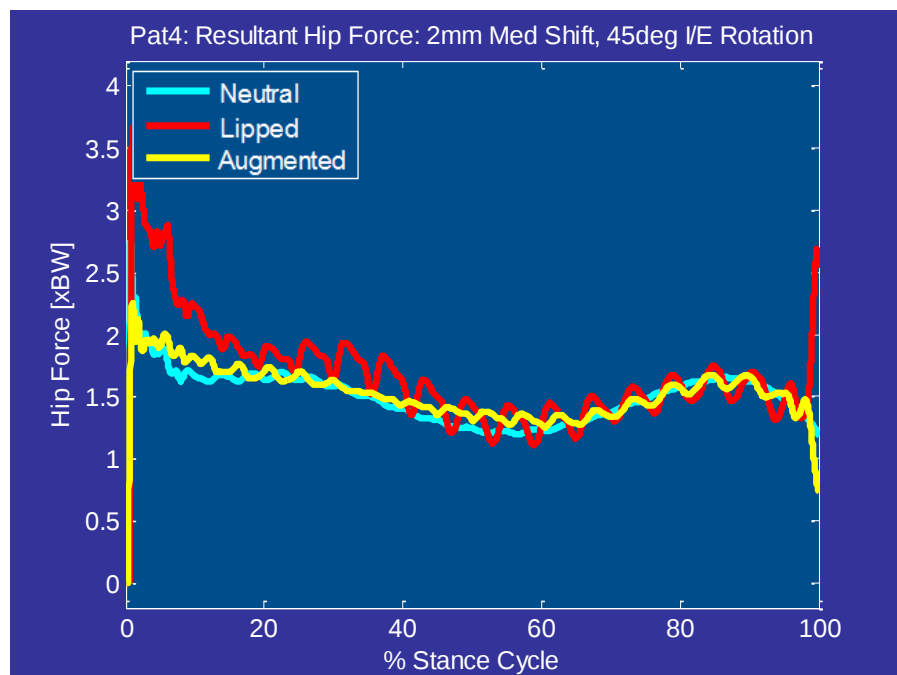


(b)

Figure C61: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

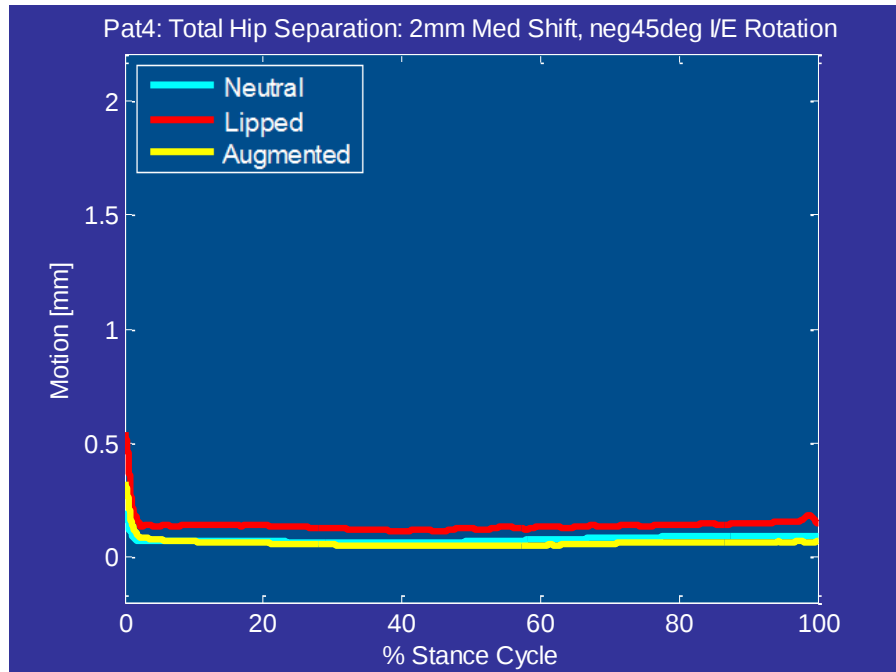


(a)

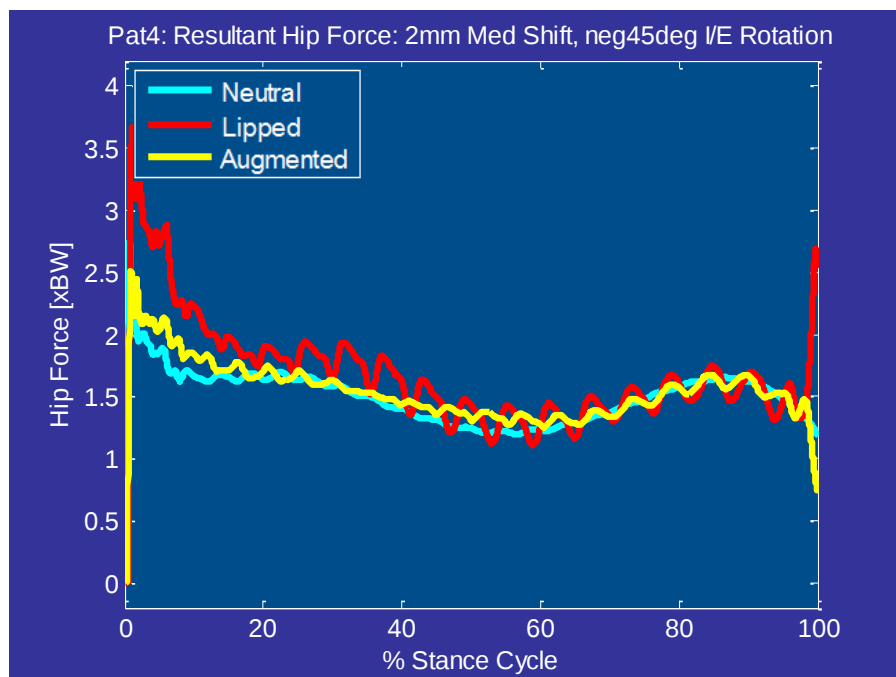


(b)

Figure C62: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

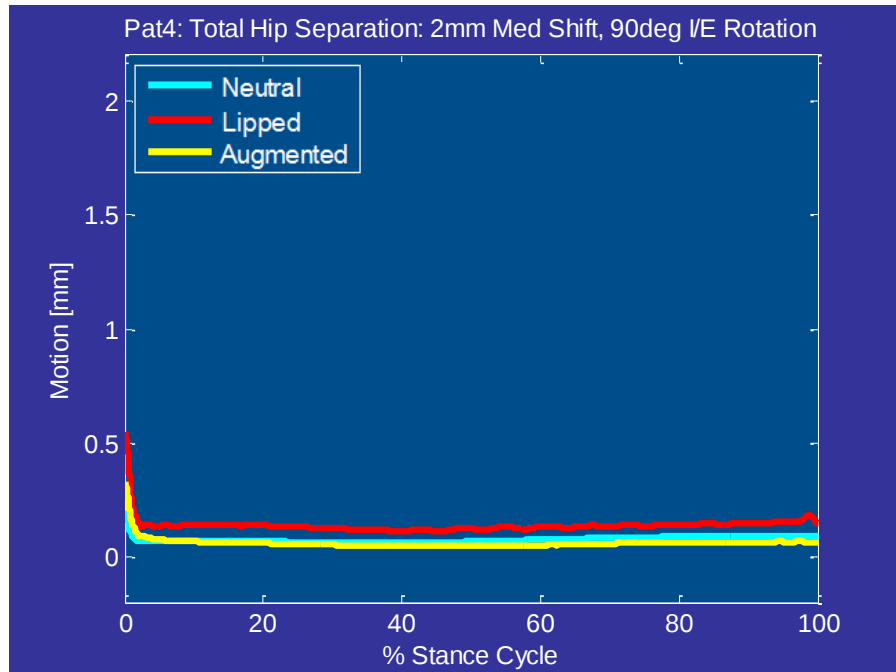


(a)

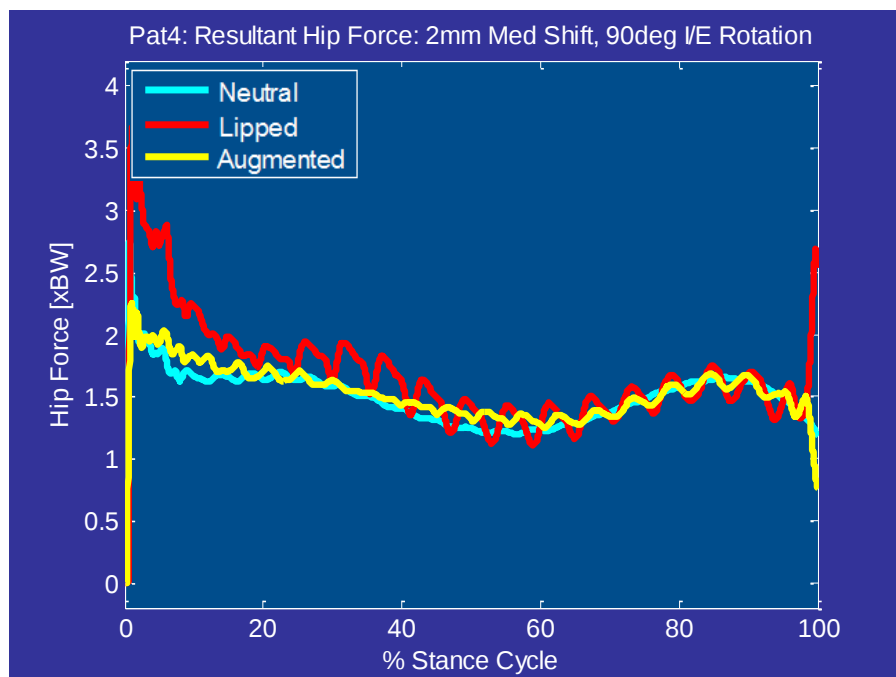


(b)

Figure C63: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

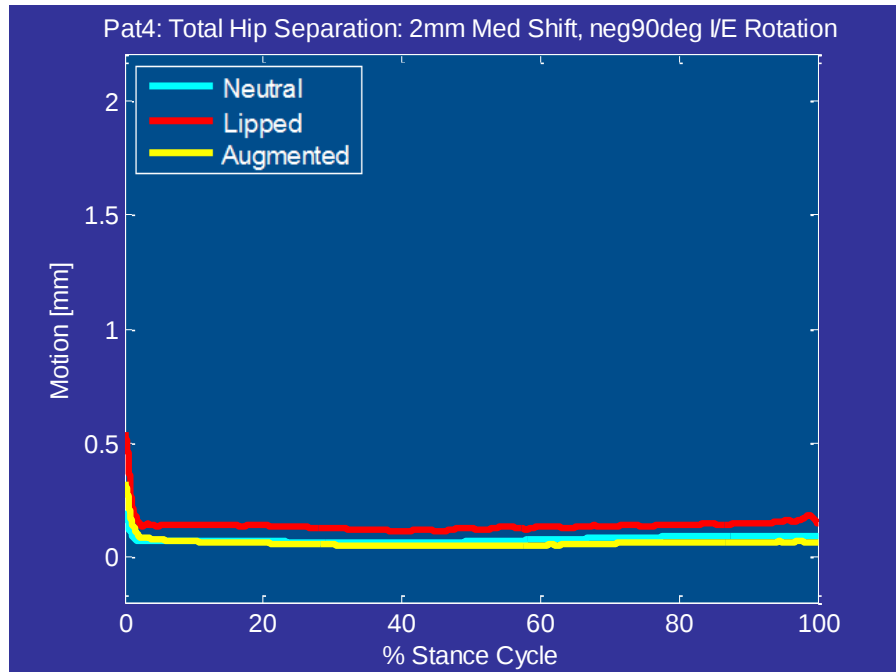


(a)

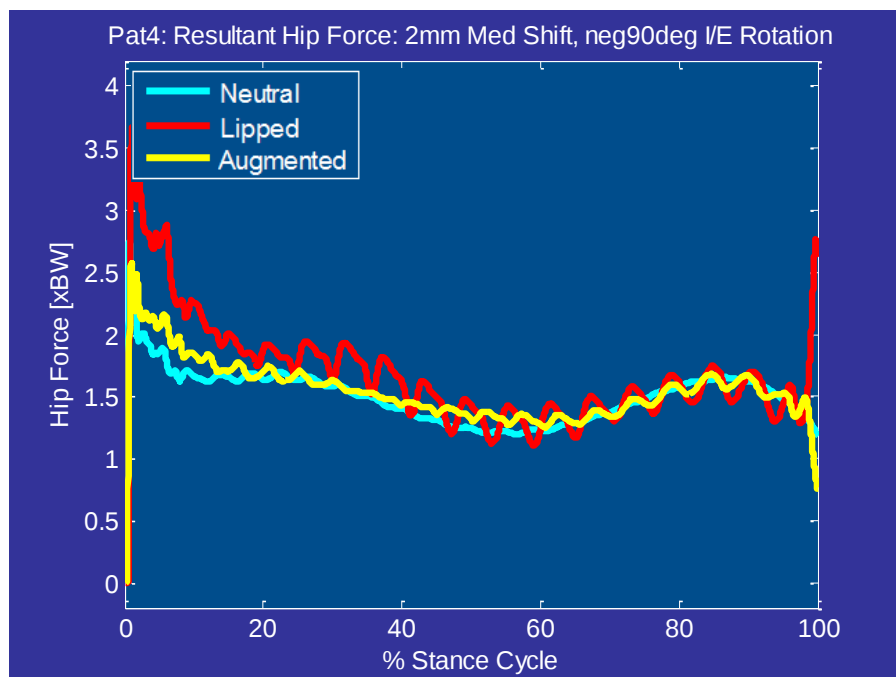


(b)

Figure C64: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

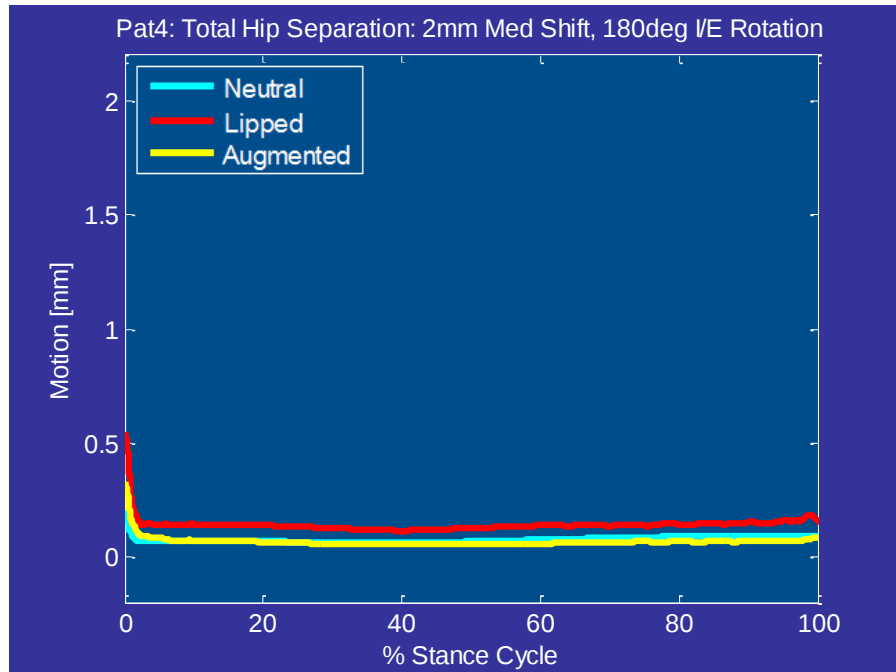


(a)

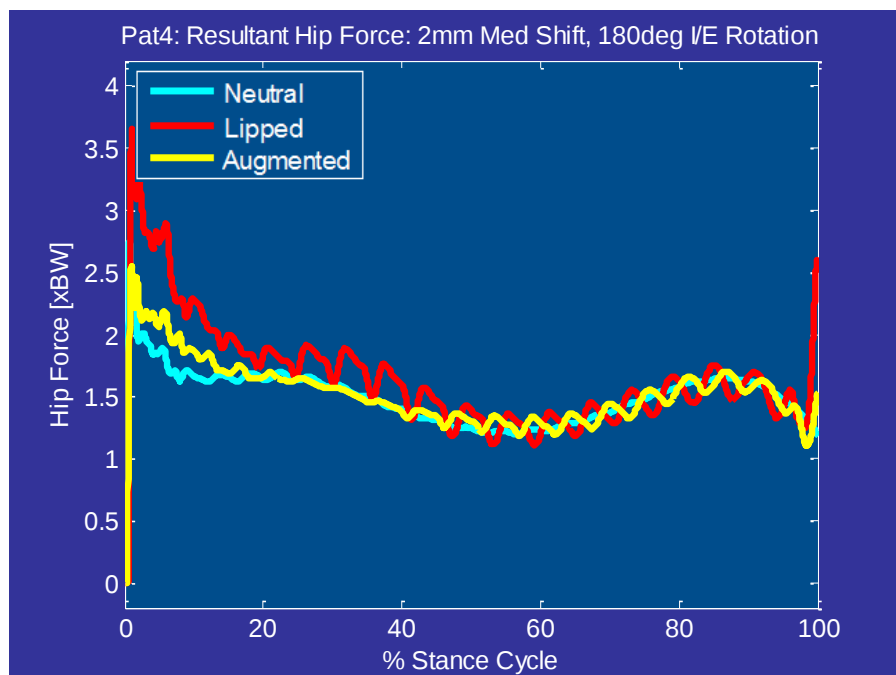


(b)

Figure C65: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

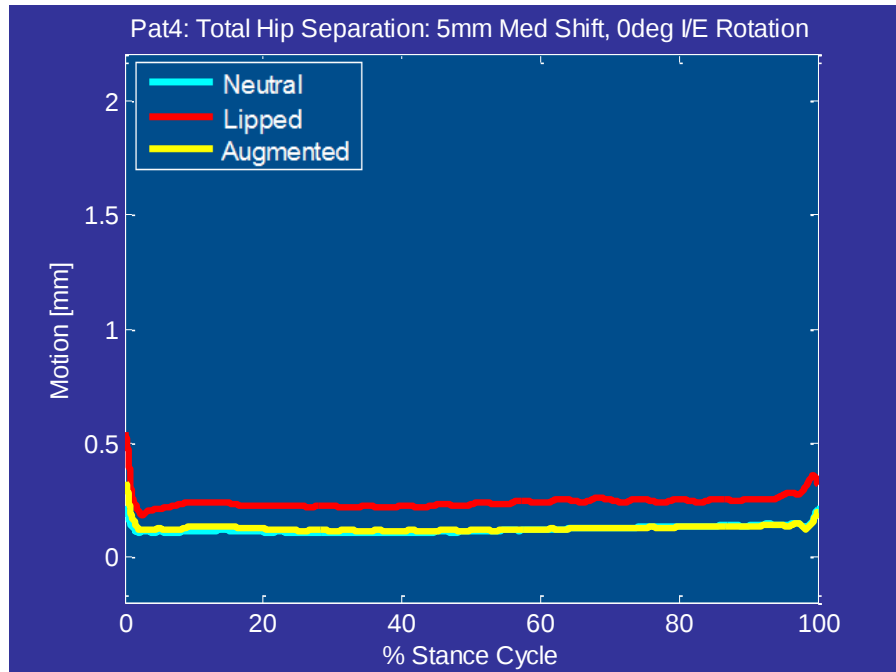


(a)

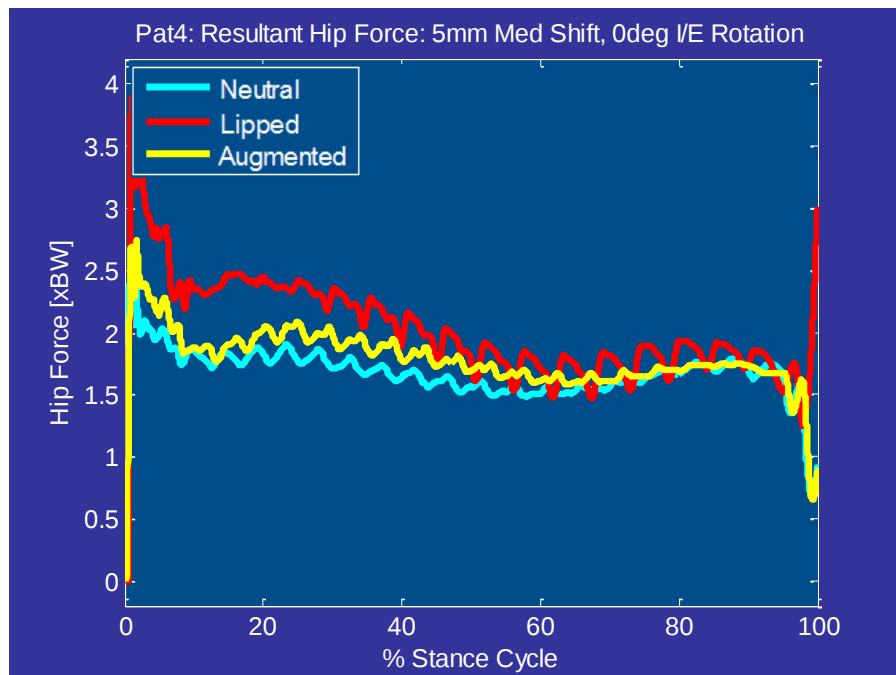


(b)

Figure C66: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

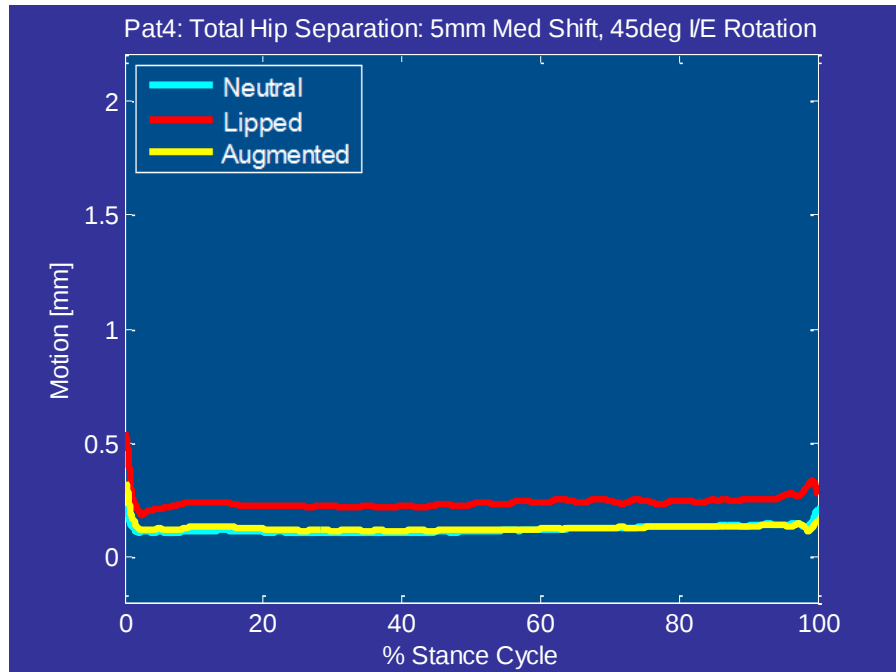


(a)

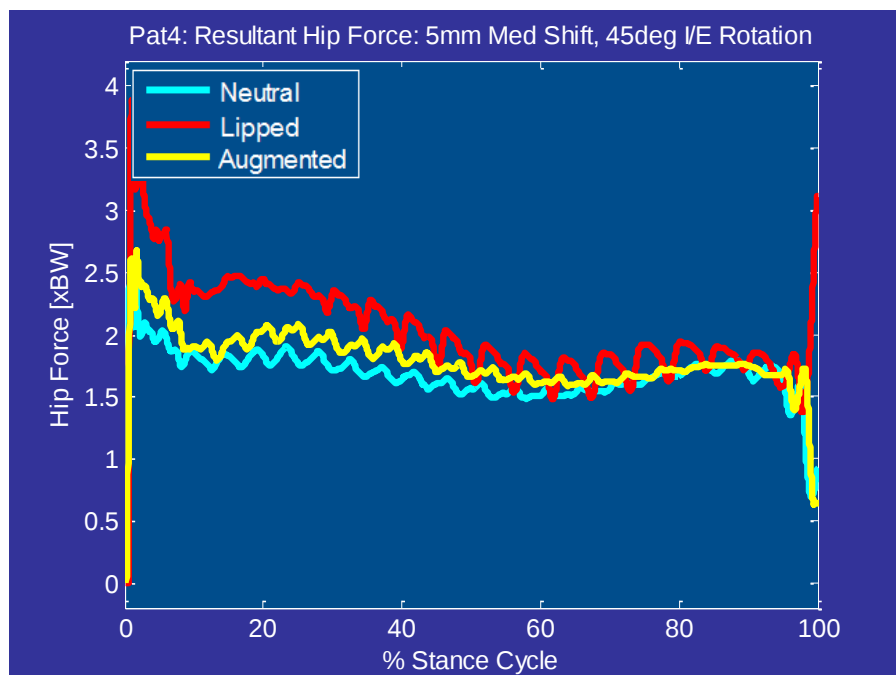


(b)

Figure C67: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

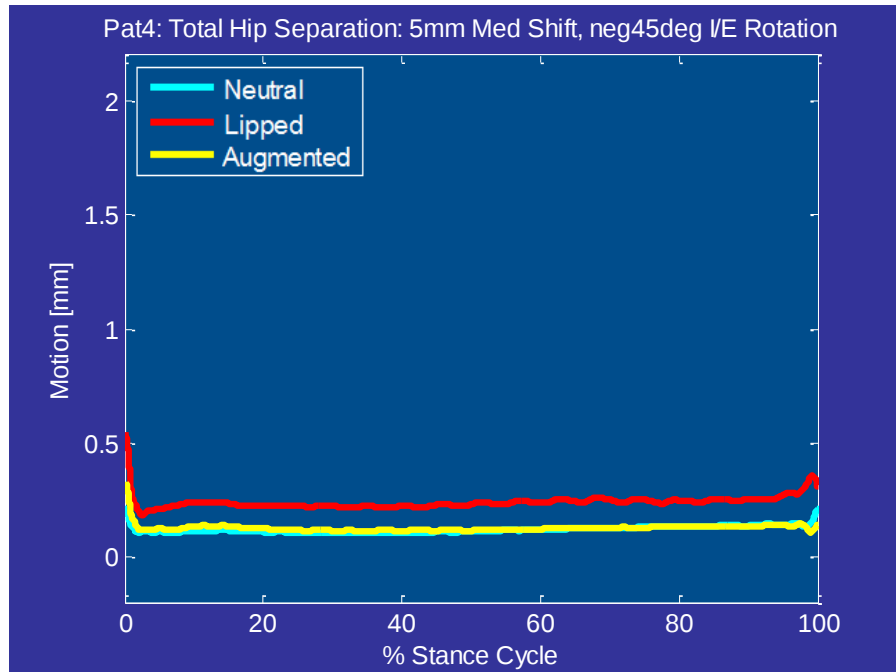


(a)

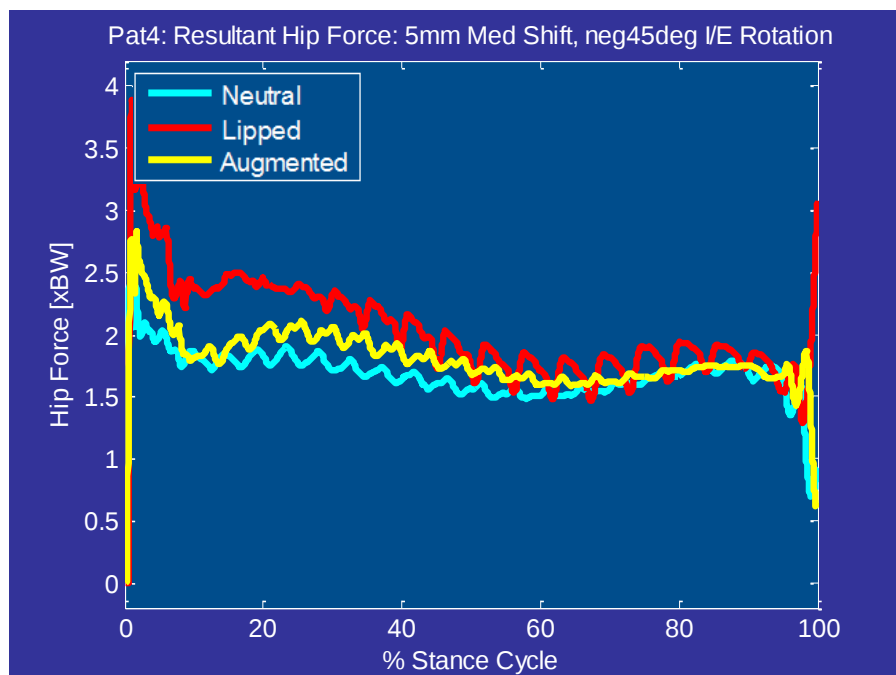


(b)

Figure C68: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

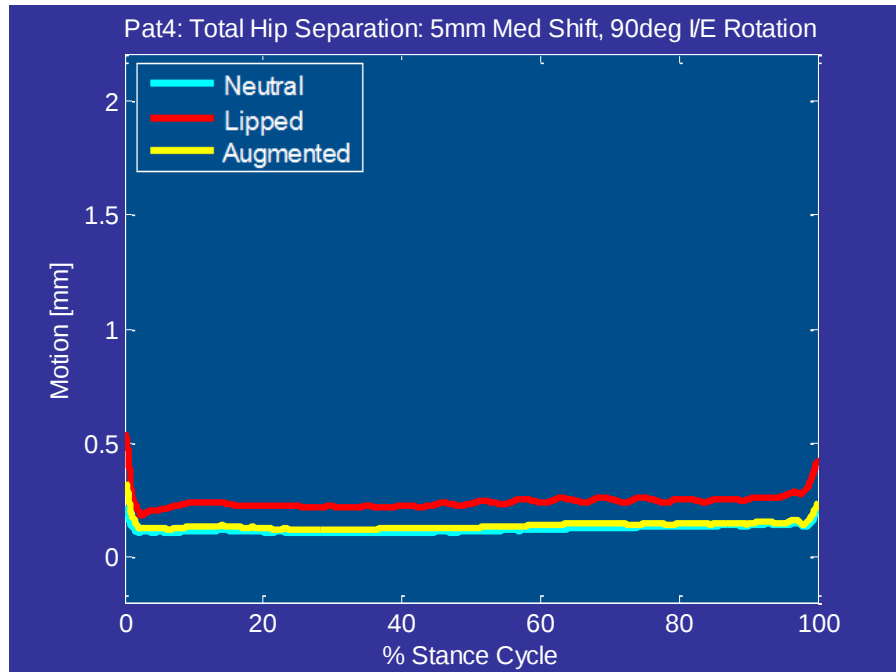


(a)

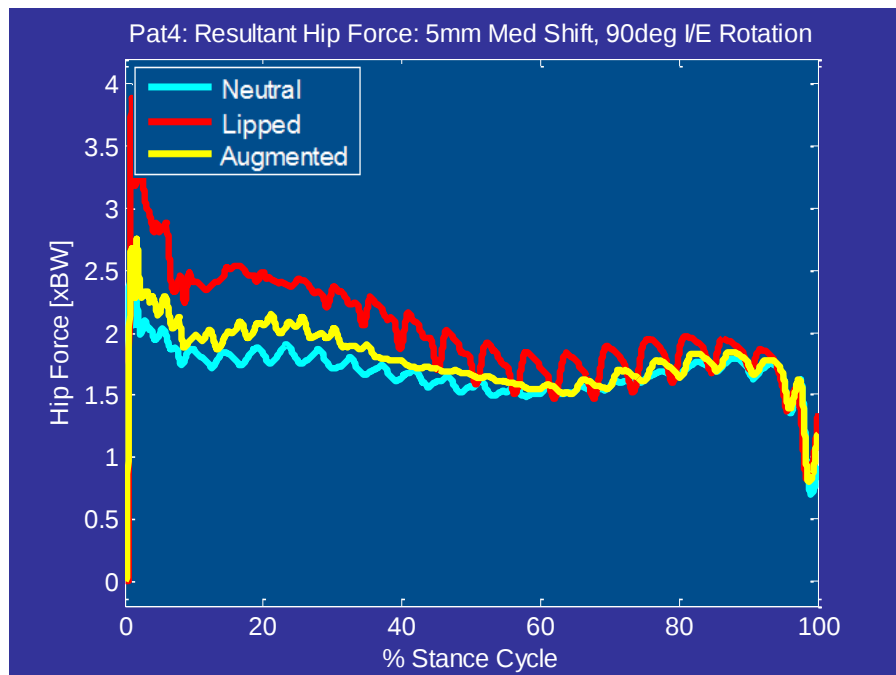


(b)

Figure C69: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

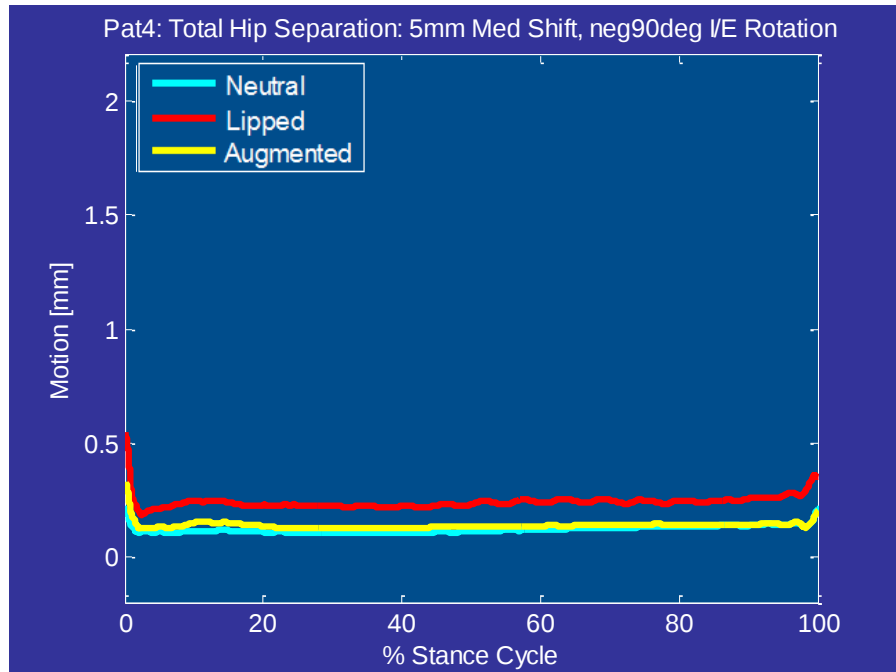


(a)

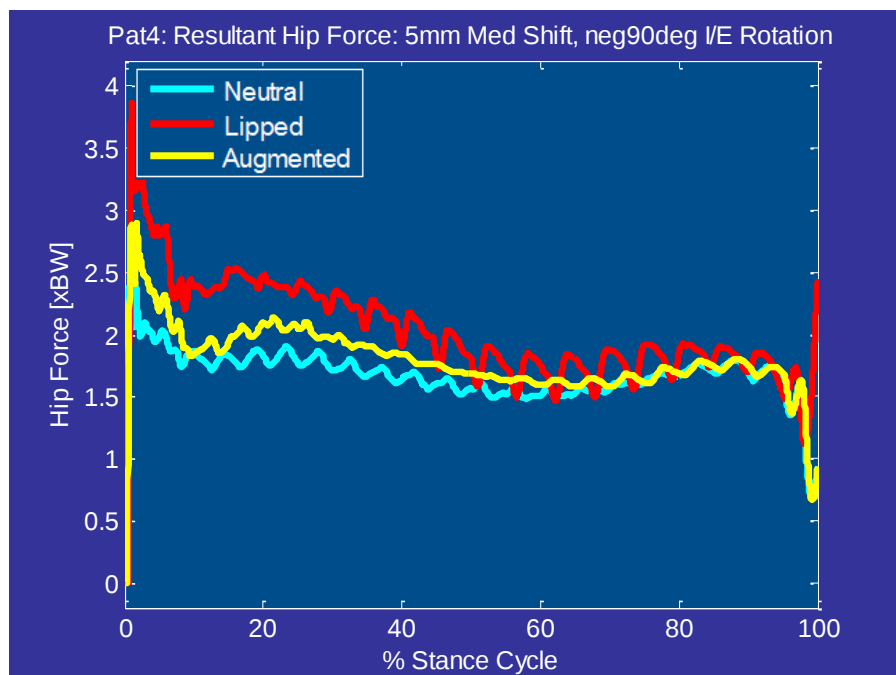


(b)

Figure C70: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

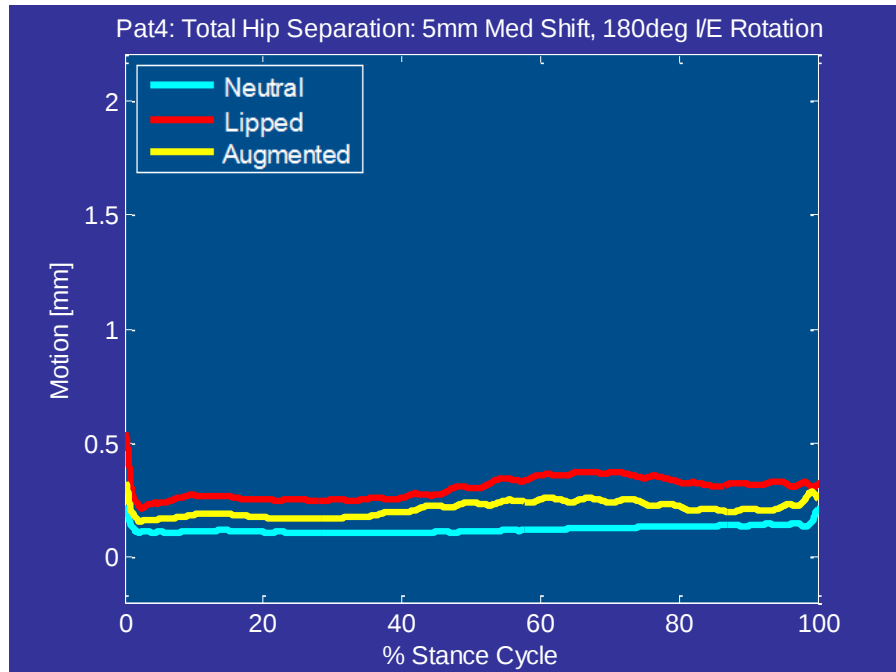


(a)

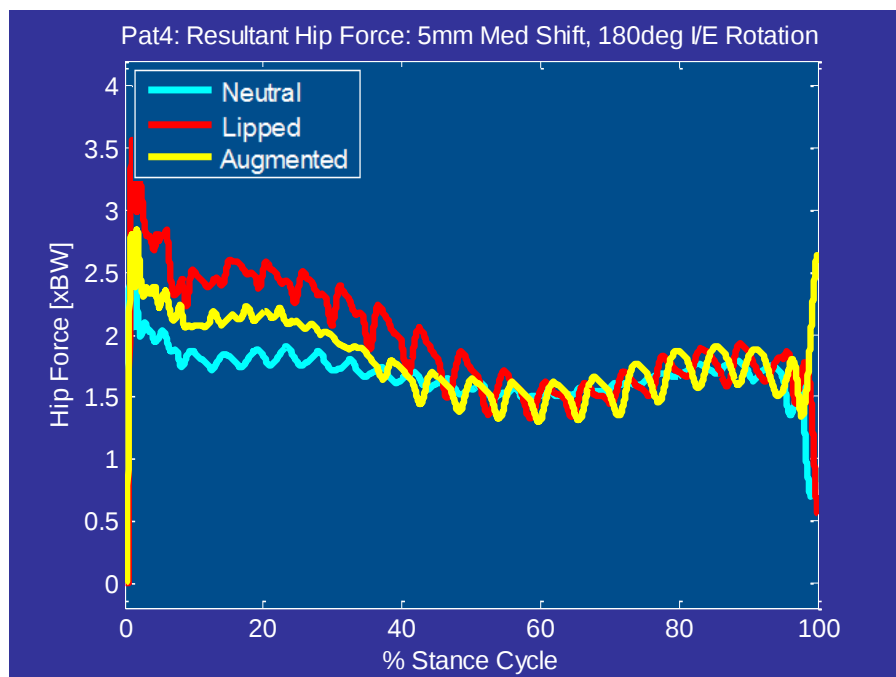


(b)

Figure C71: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

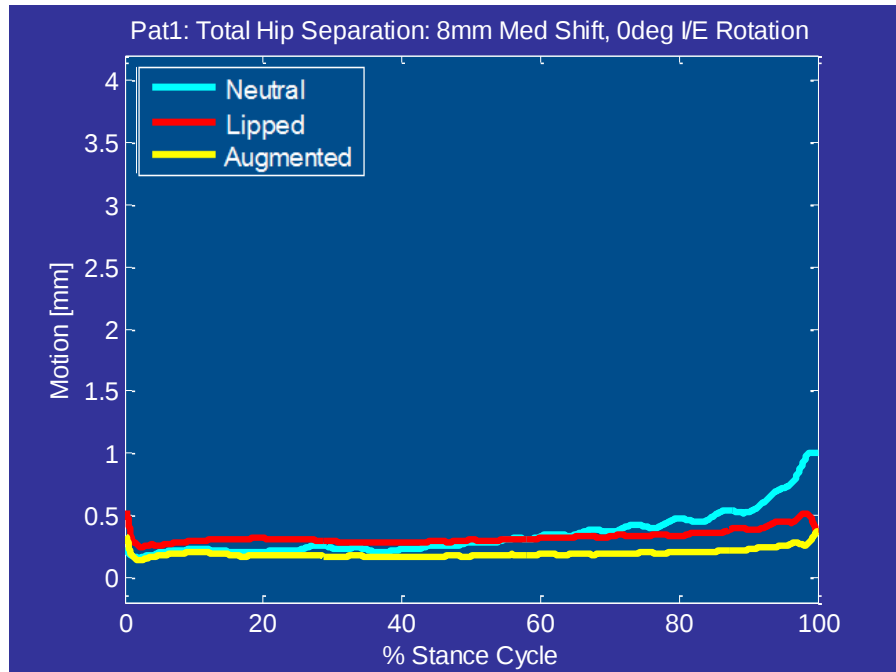


(a)

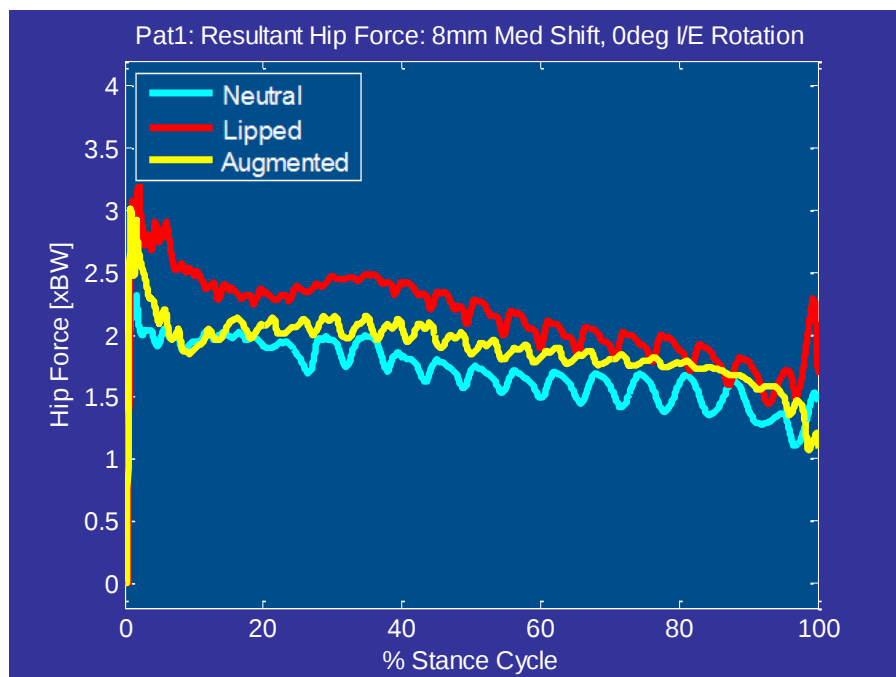


(b)

Figure C72: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

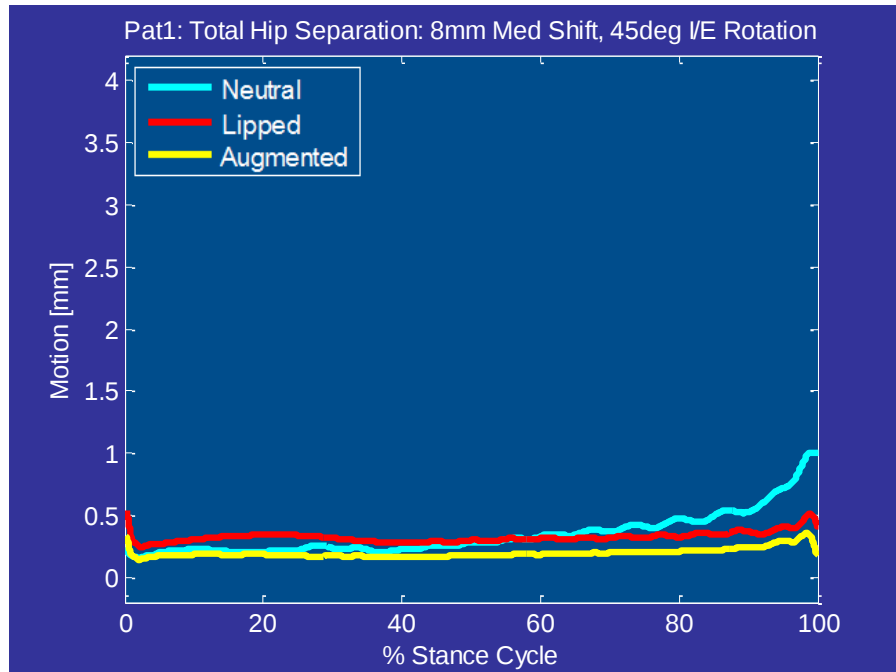


(a)

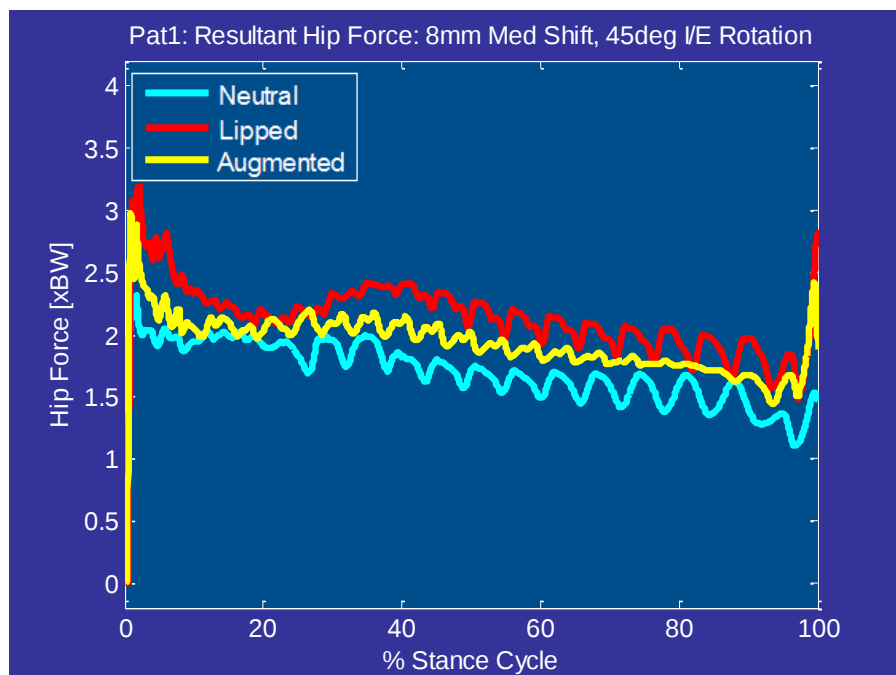


(b)

Figure C73: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

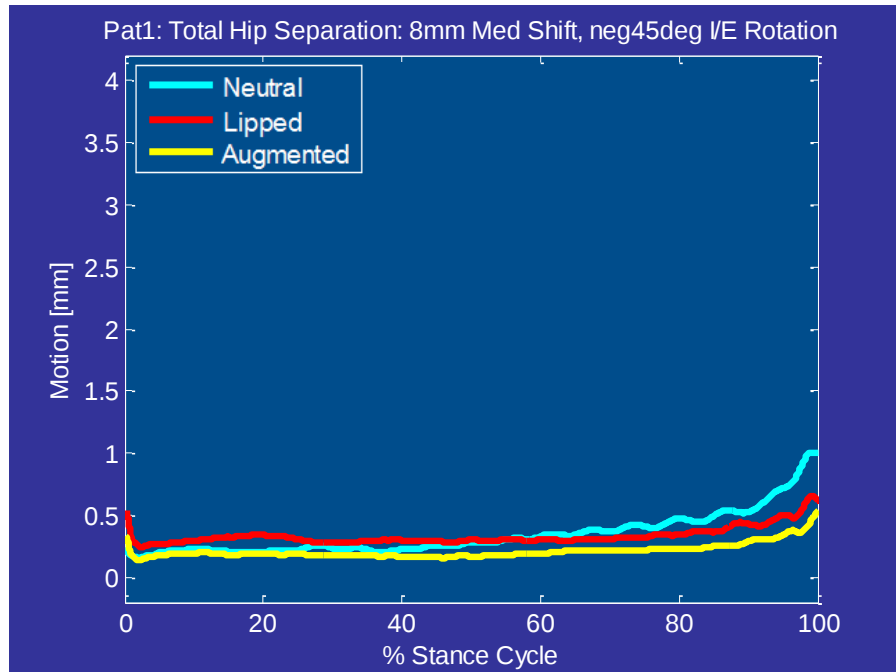


(a)



(b)

Figure C74: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

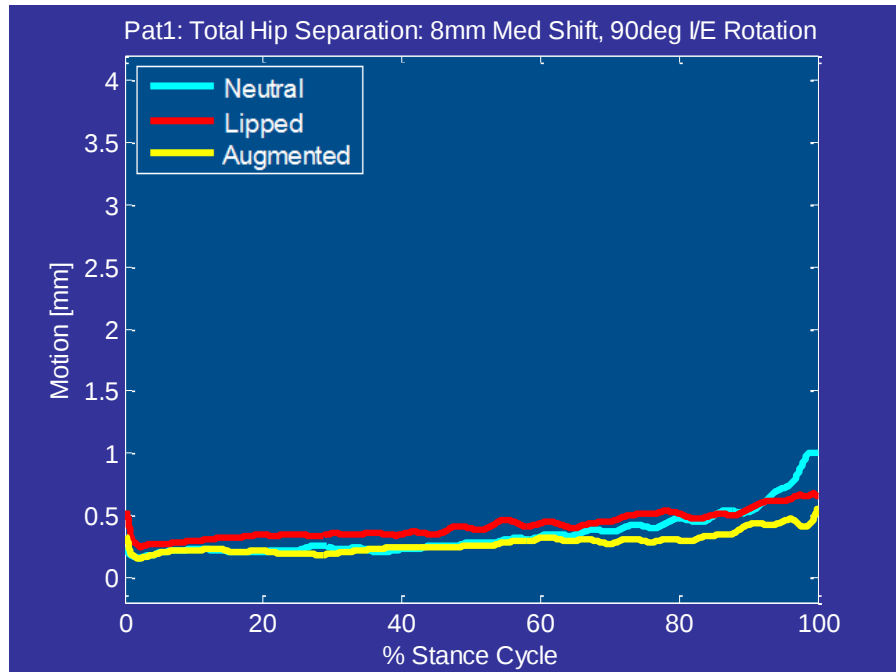


(a)

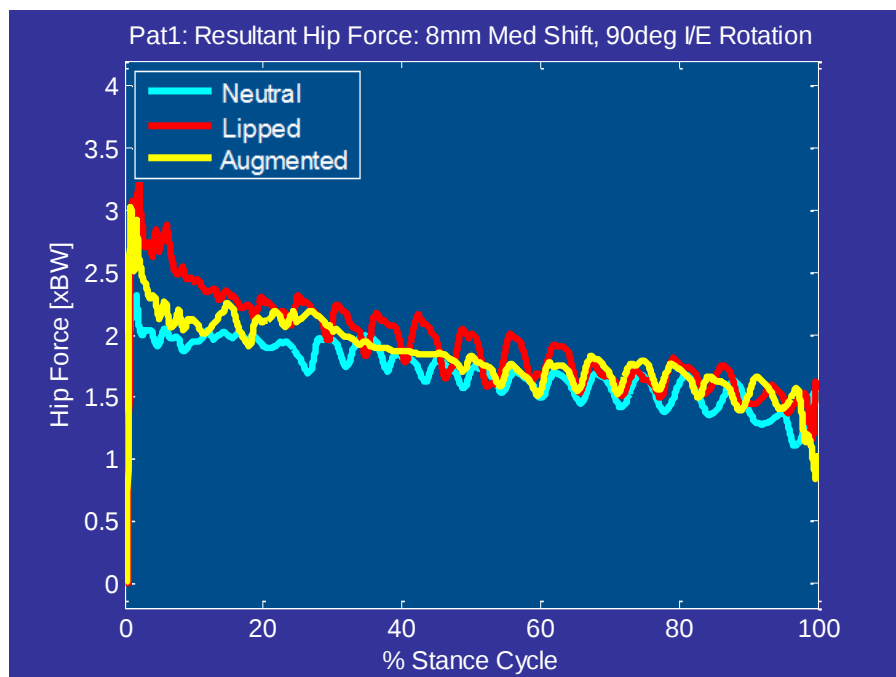


(b)

Figure C75: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

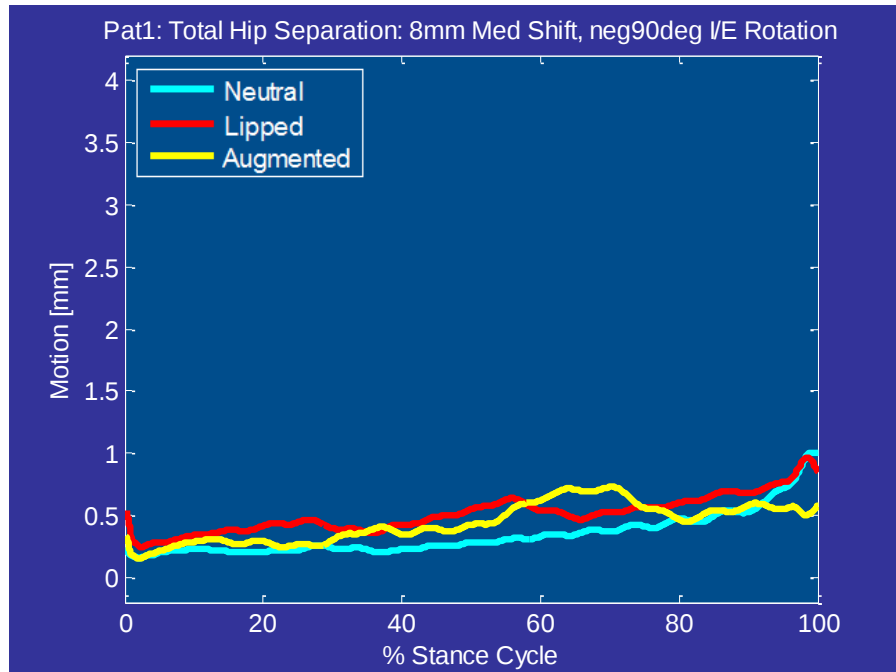


(a)

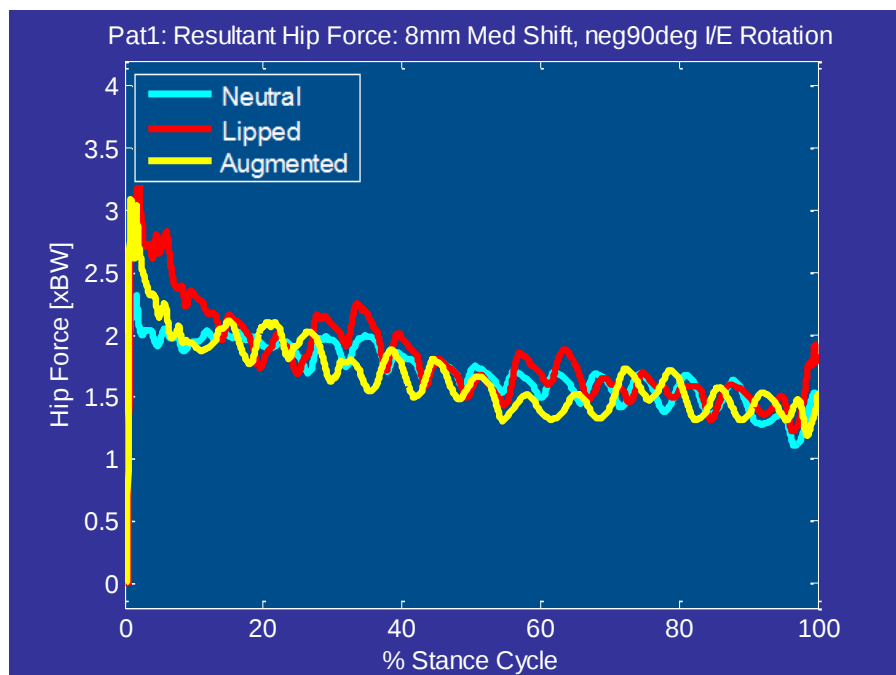


(b)

Figure C76: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

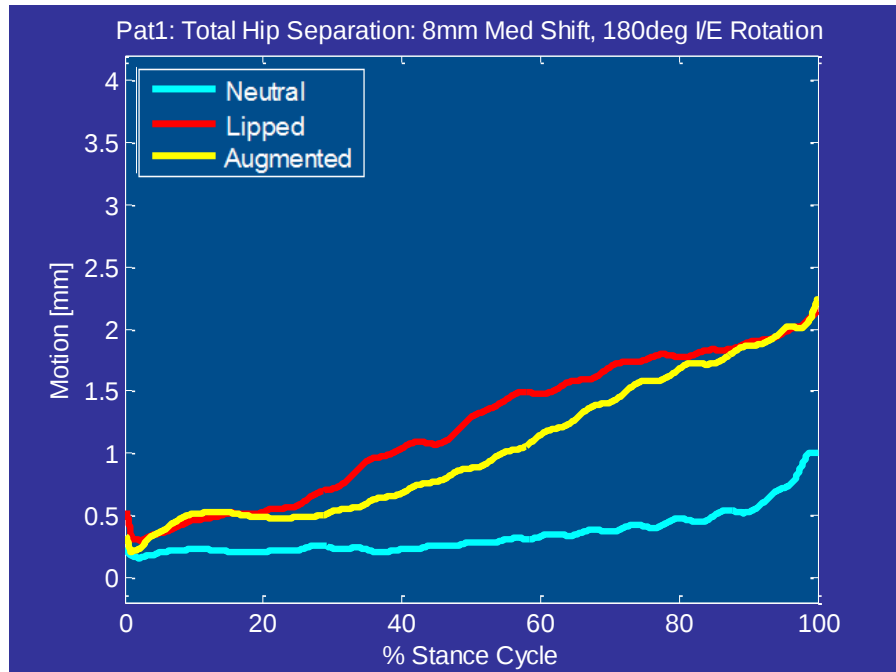


(a)

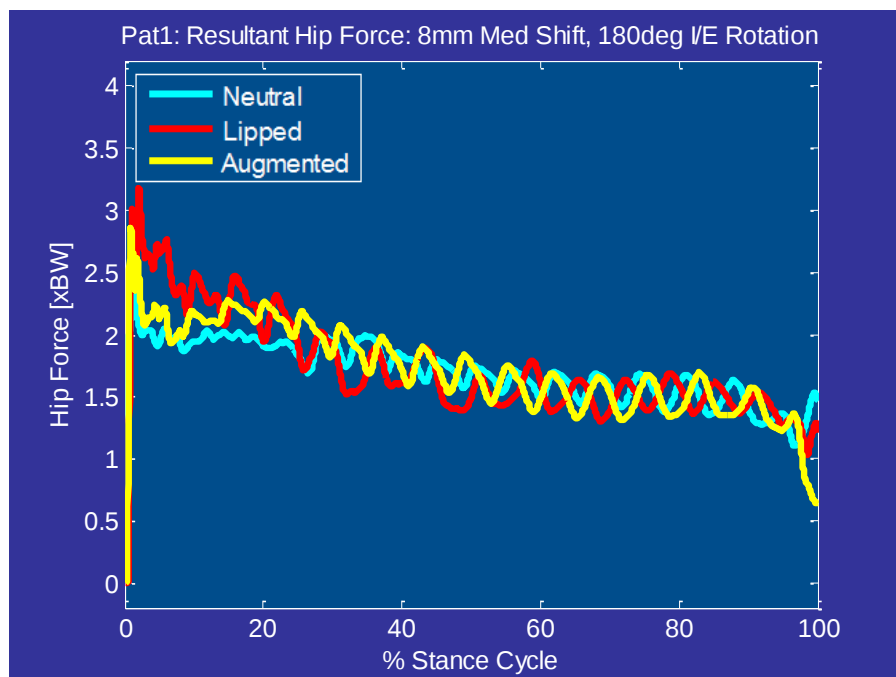


(b)

Figure C77: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

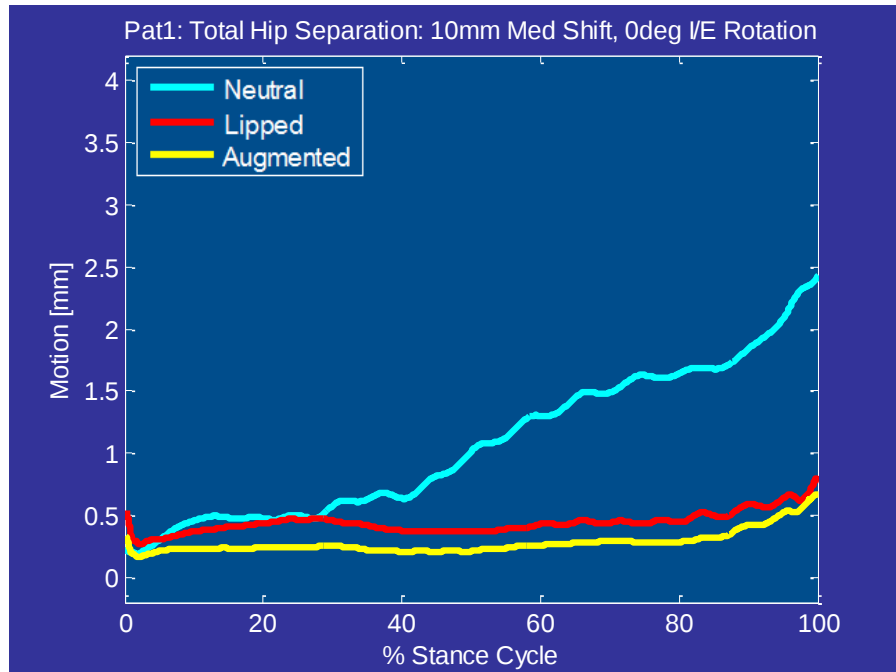


(a)

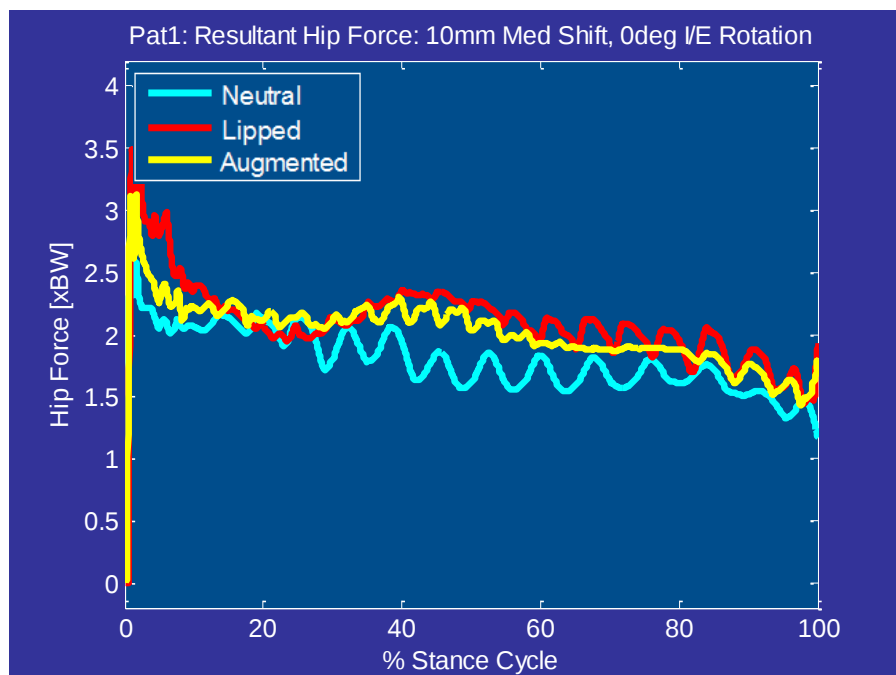


(b)

Figure C78: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

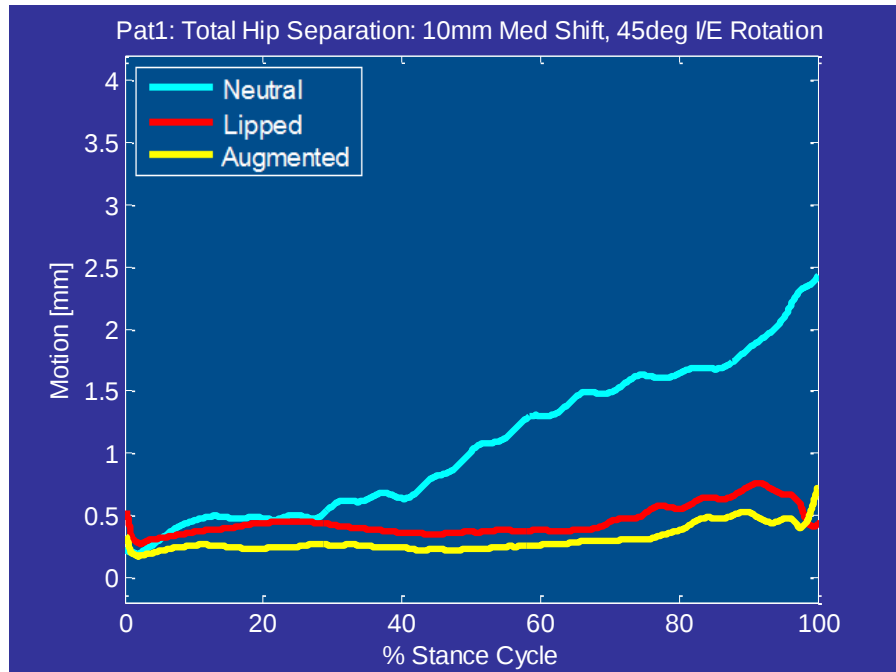


(a)

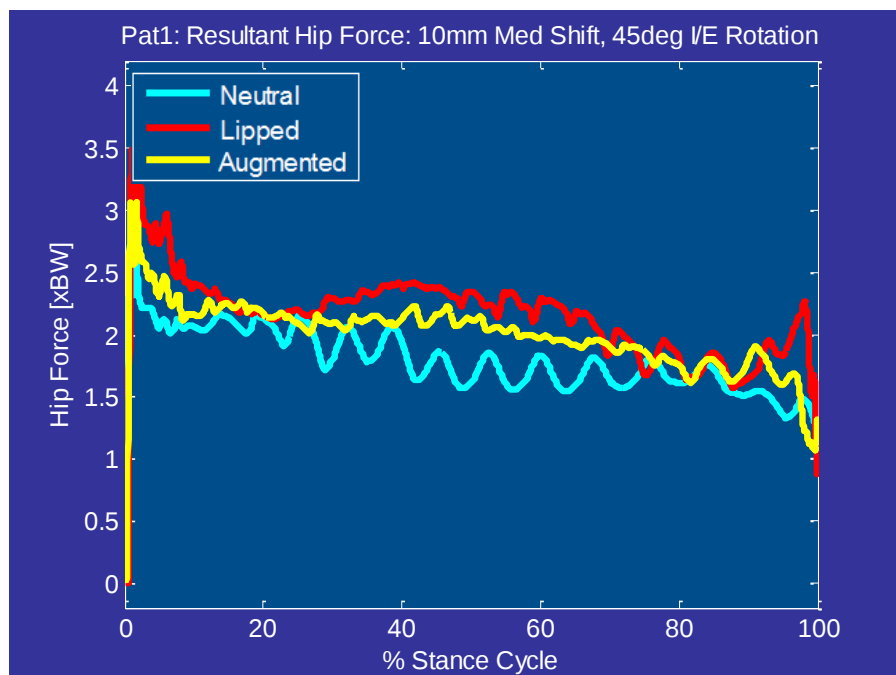


(b)

Figure C79: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

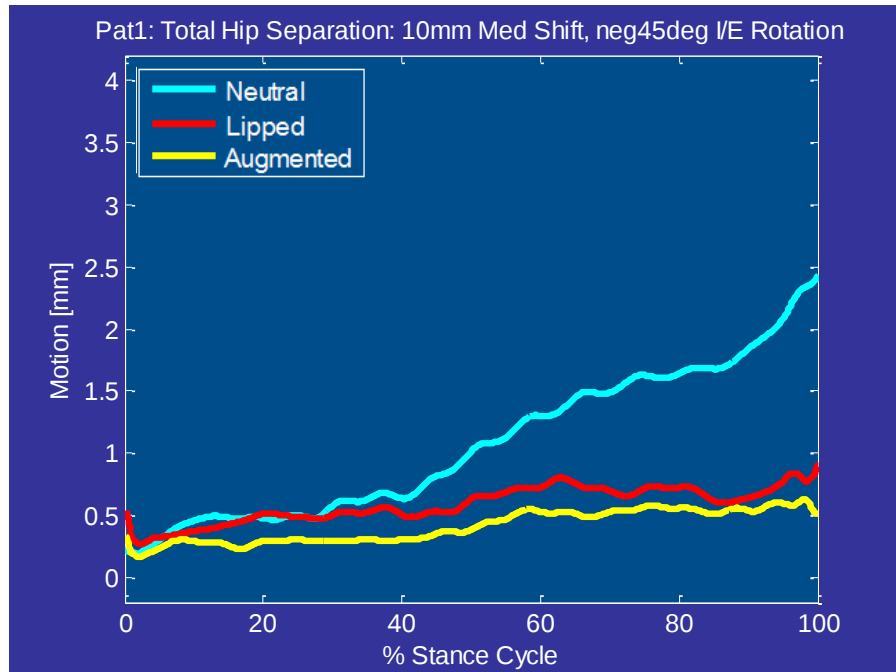


(a)

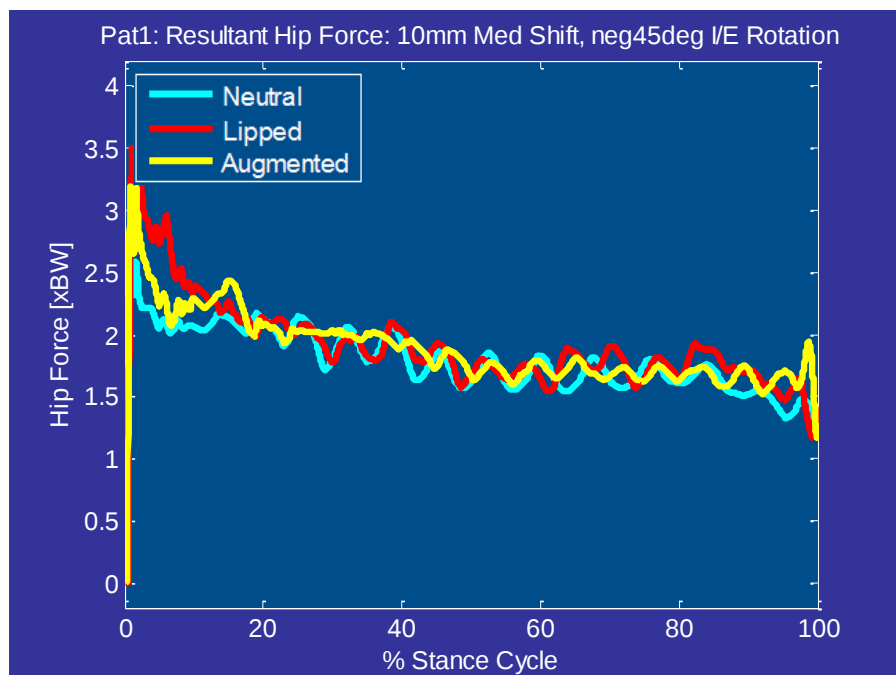


(b)

Figure C80: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

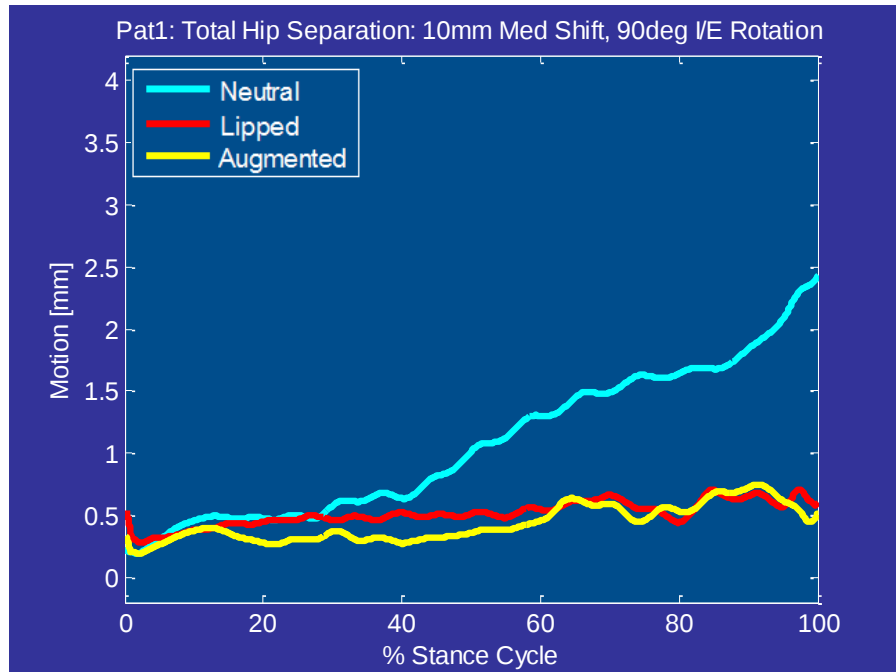


(a)

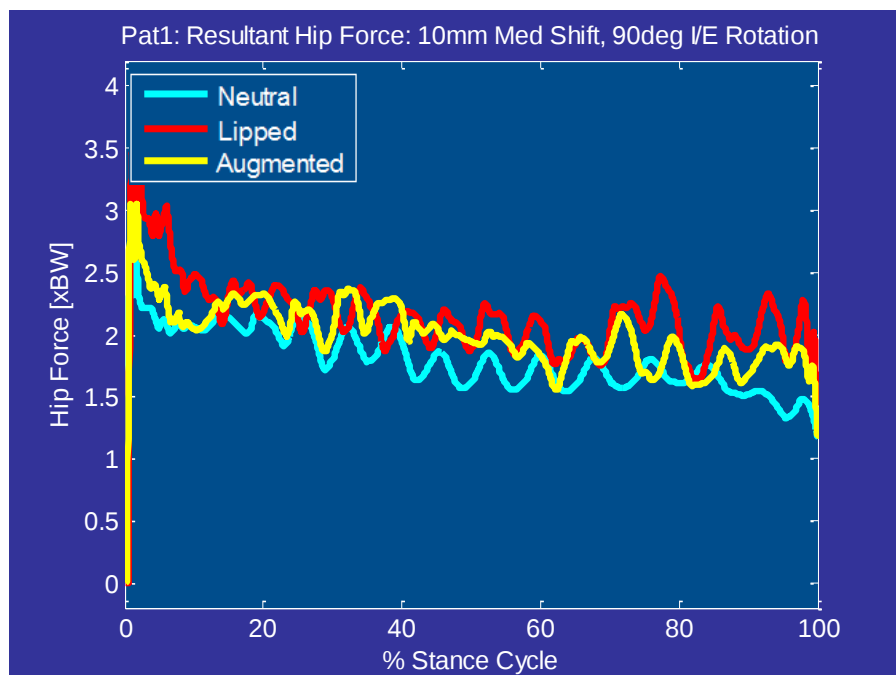


(b)

Figure C81: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

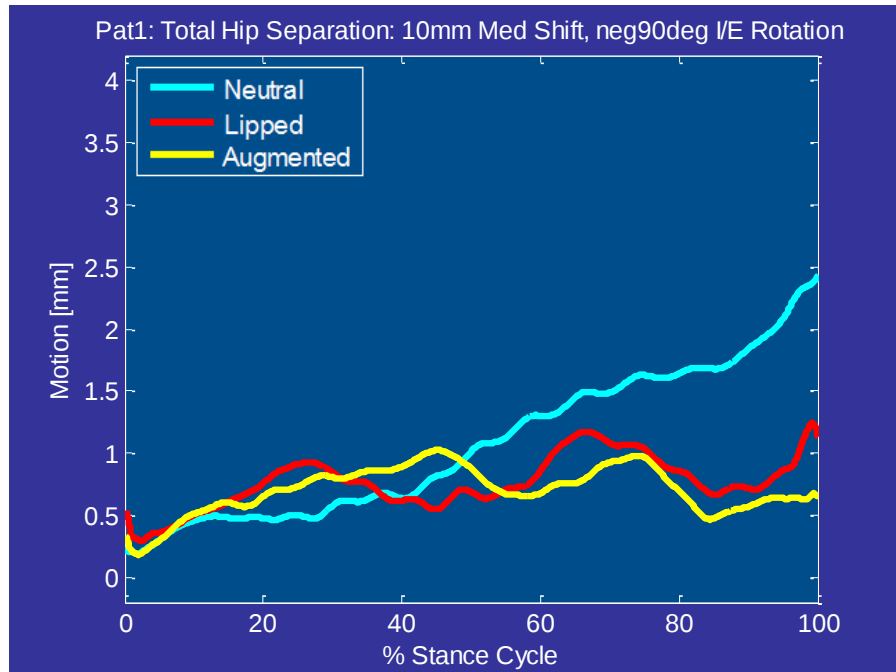


(a)

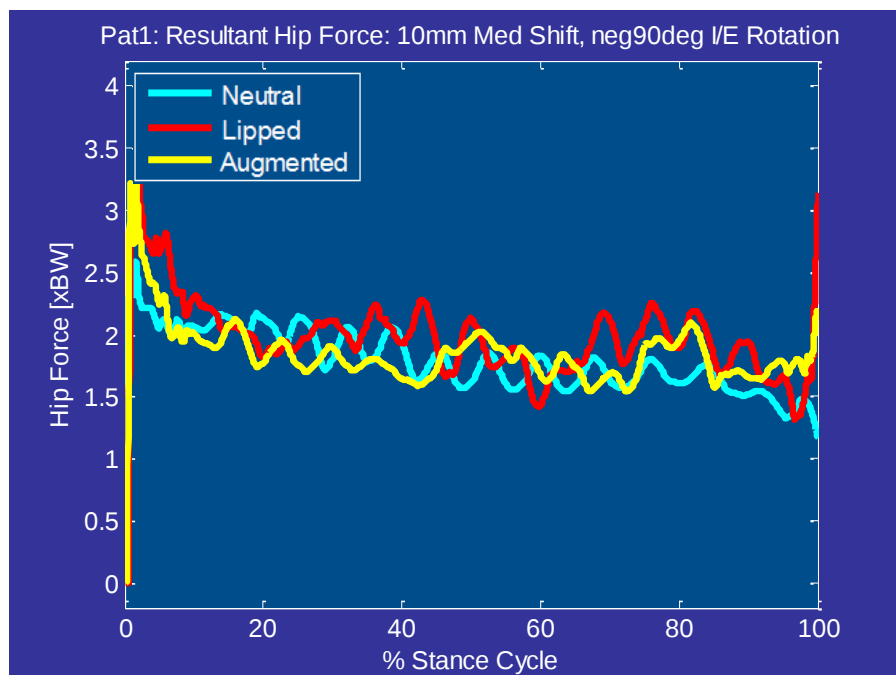


(b)

Figure C82: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

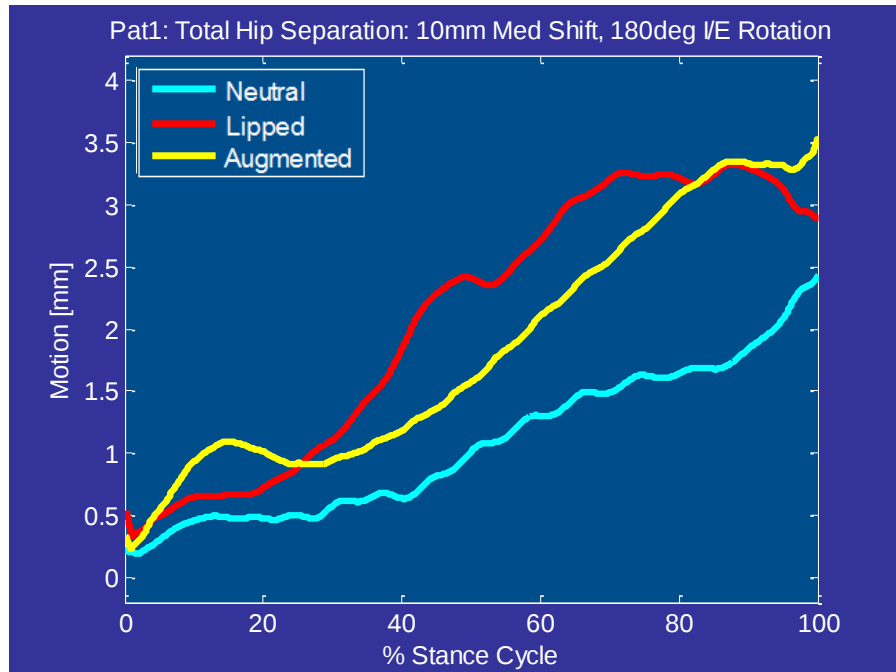


(a)

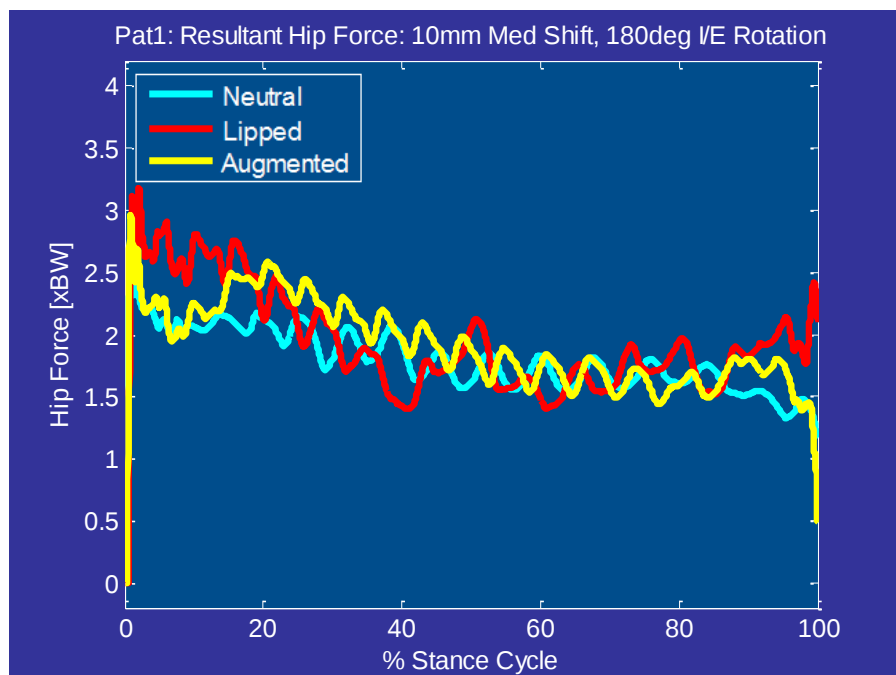


(b)

Figure C83: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

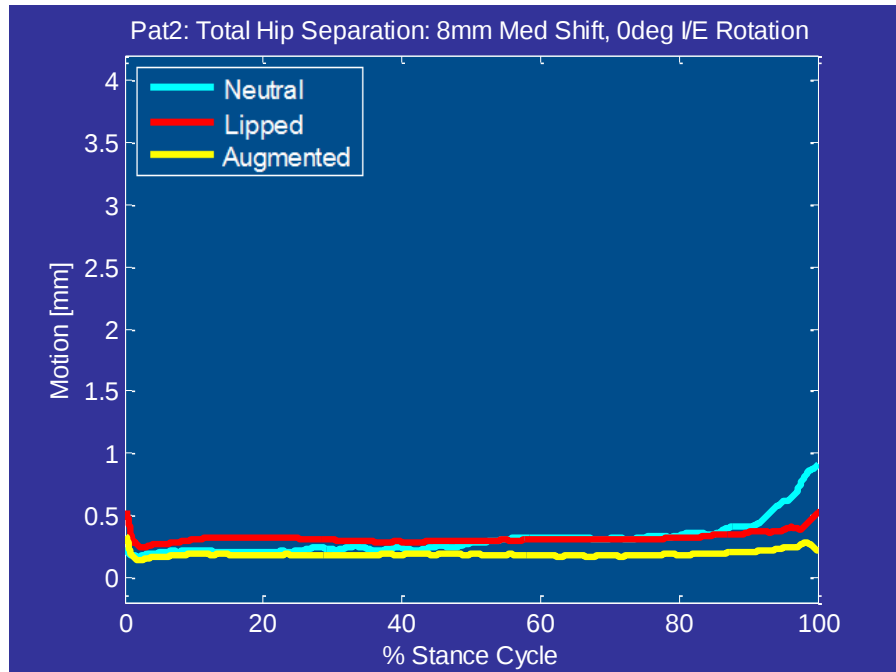


(a)

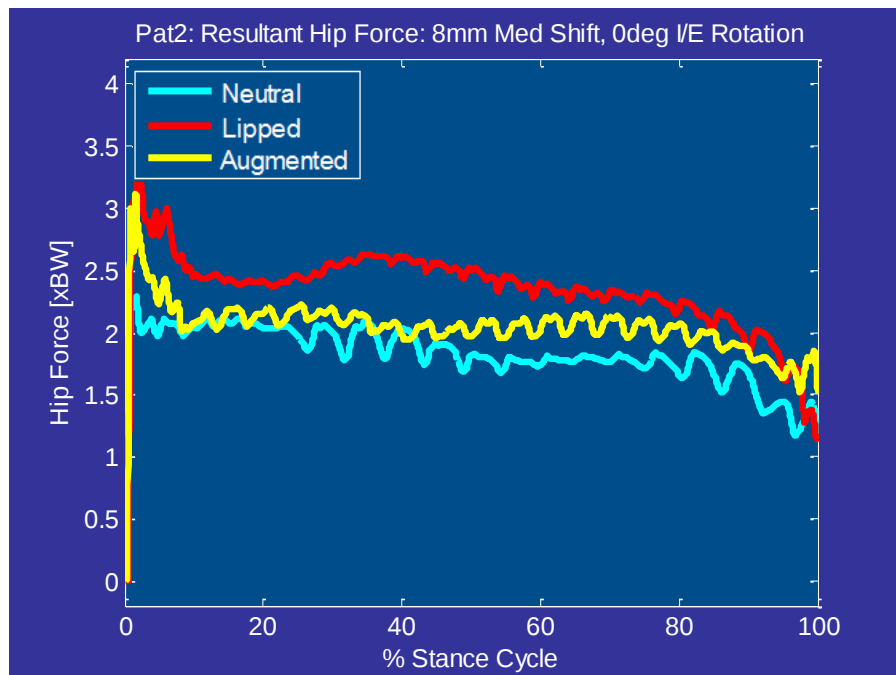


(b)

Figure C84: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

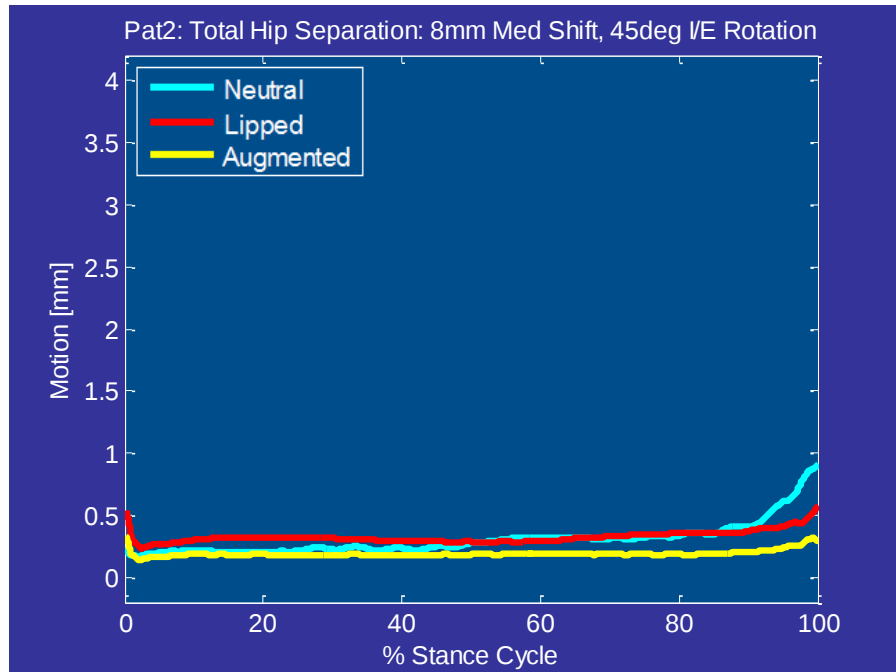


(a)

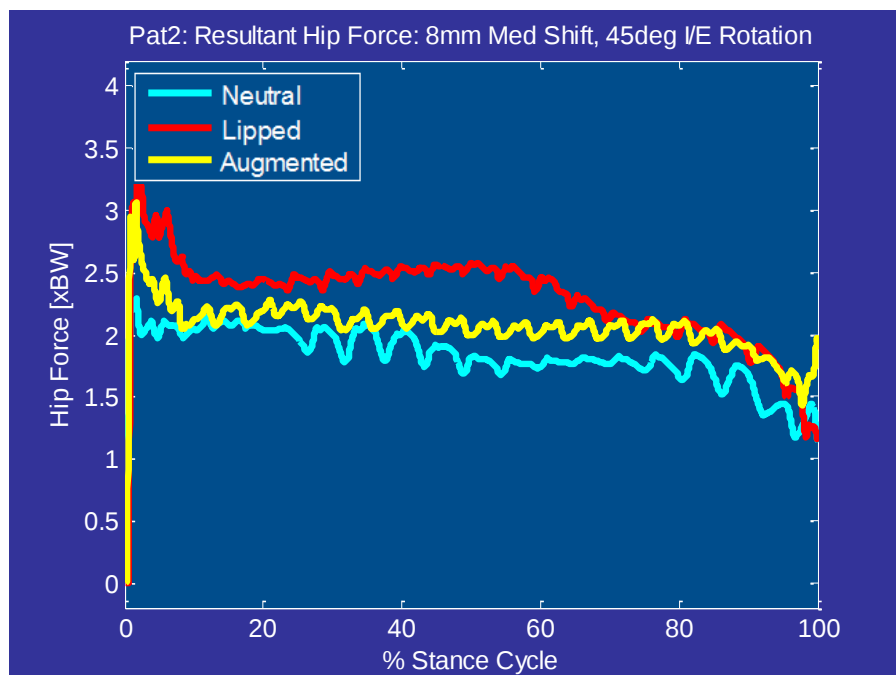


(b)

Figure C85: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

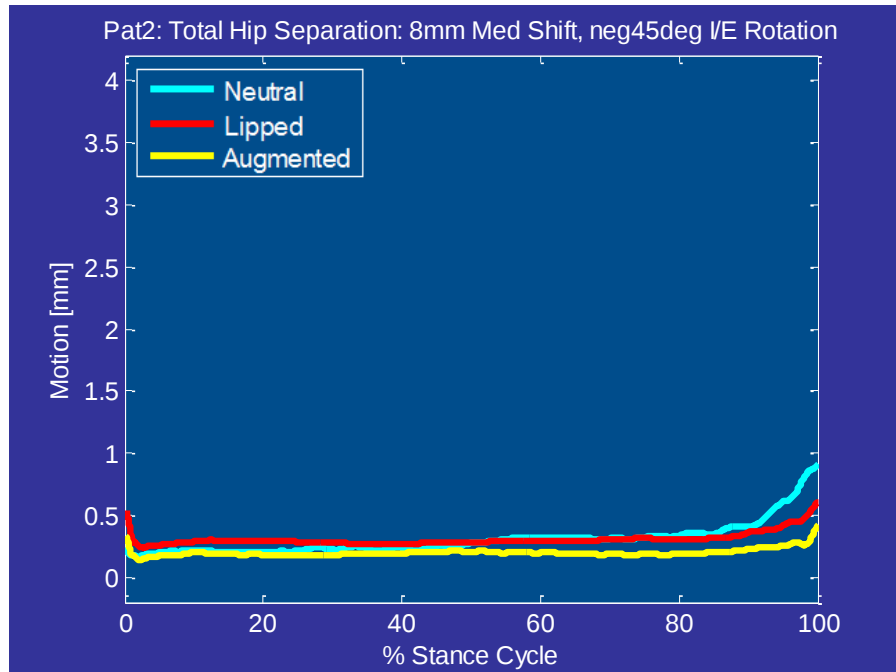


(a)

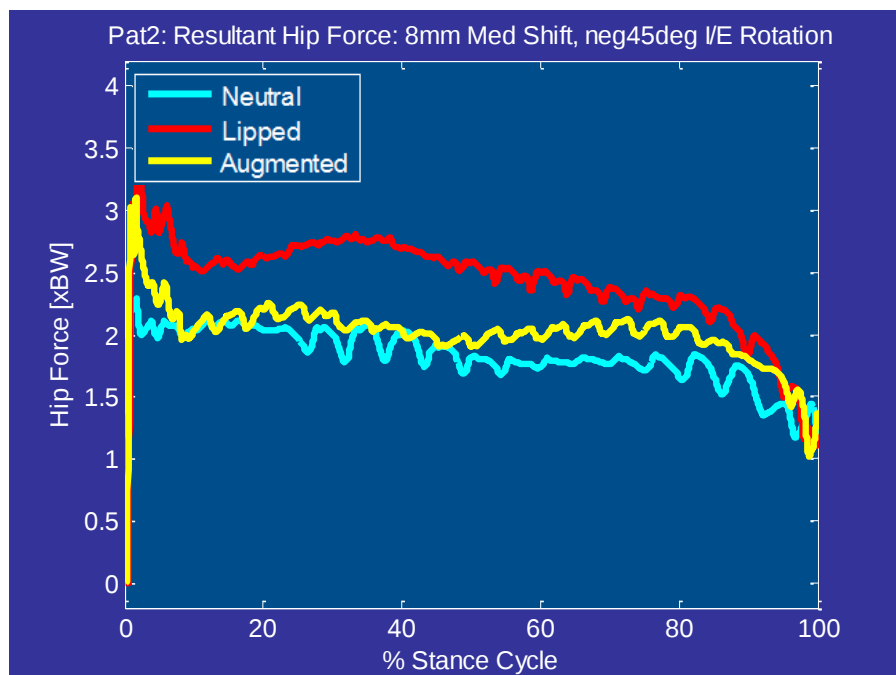


(b)

Figure C86: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

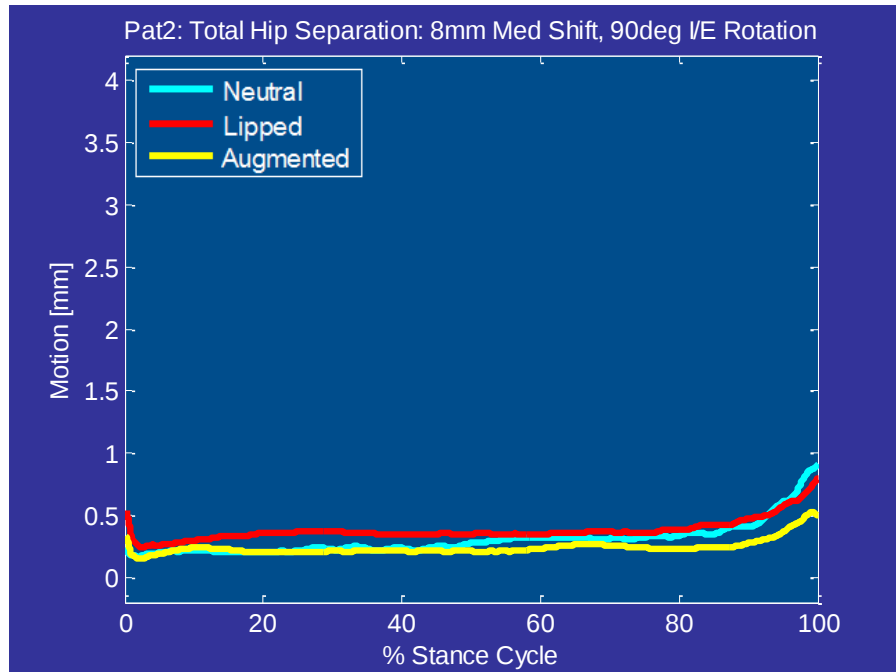


(a)

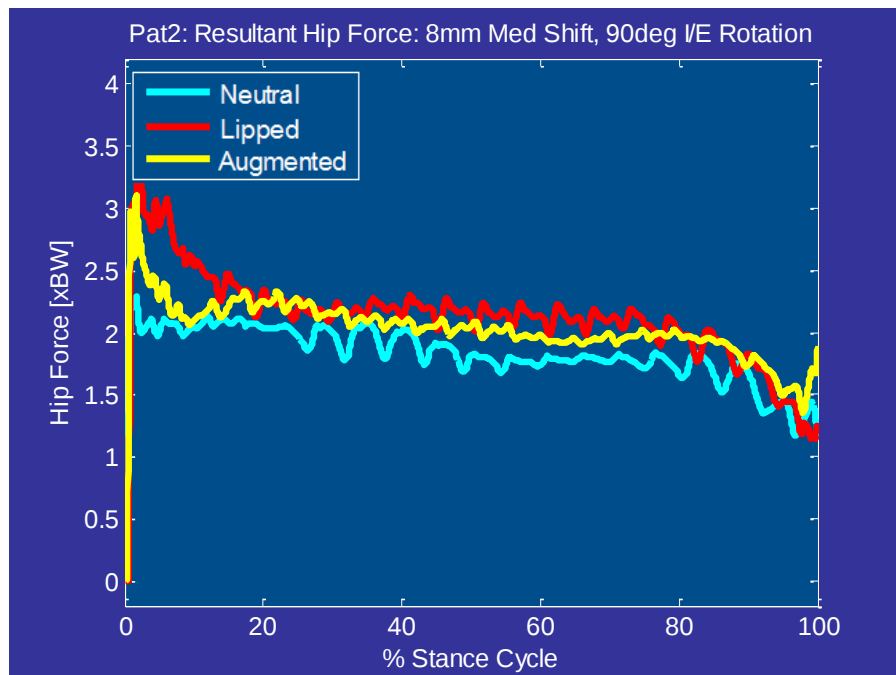


(b)

Figure C87: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

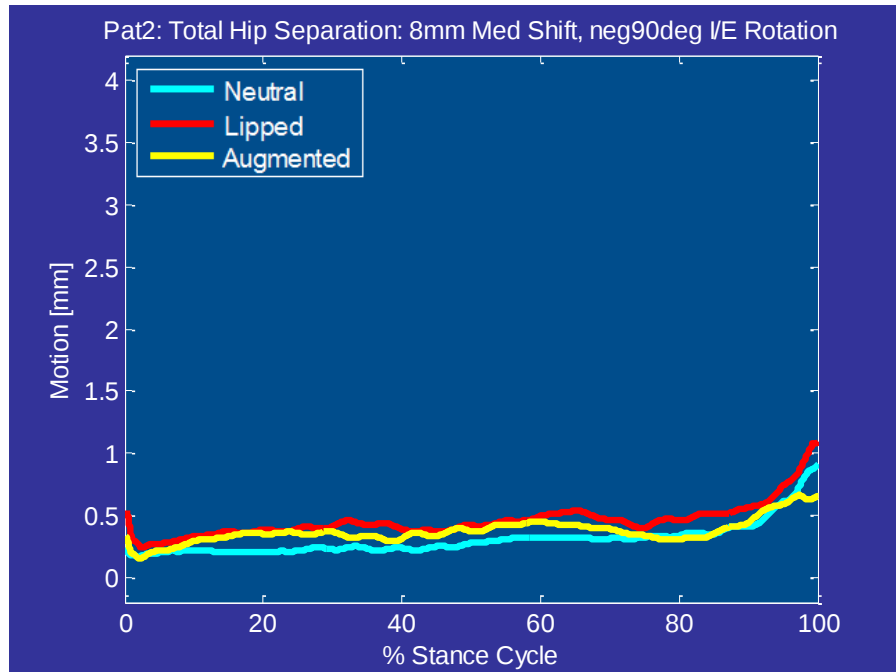


(a)

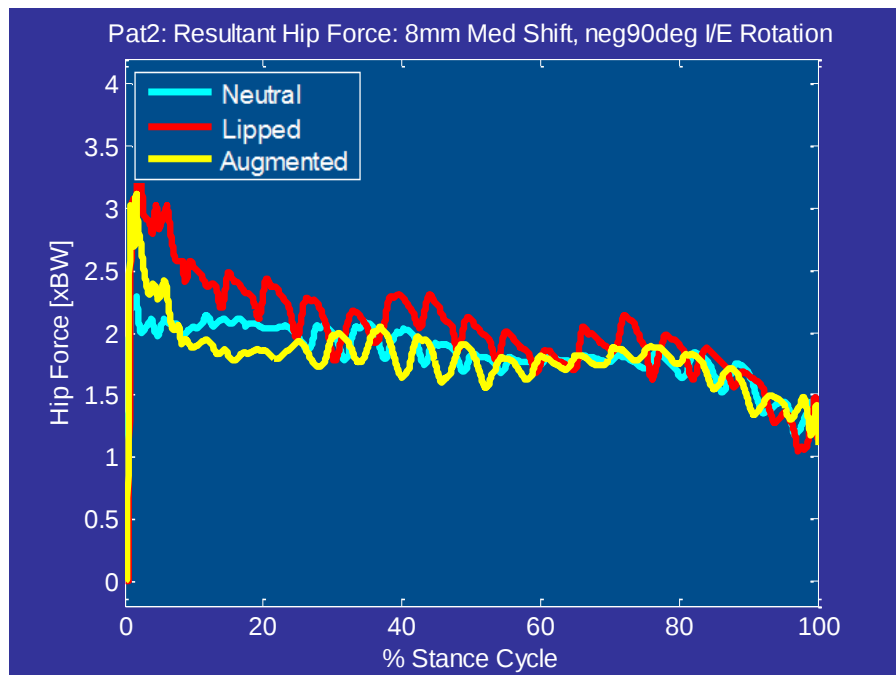


(b)

Figure C88: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

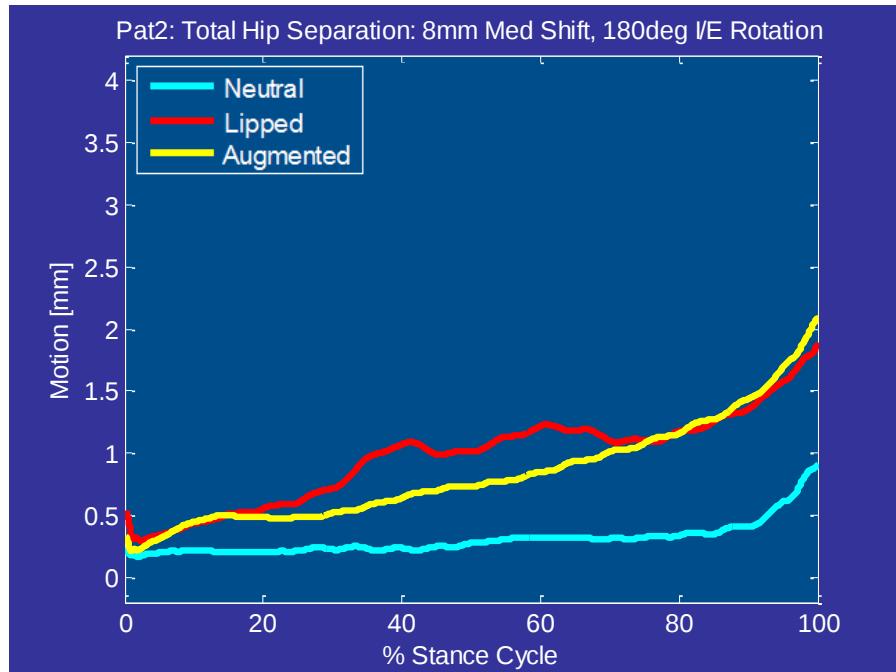


(a)

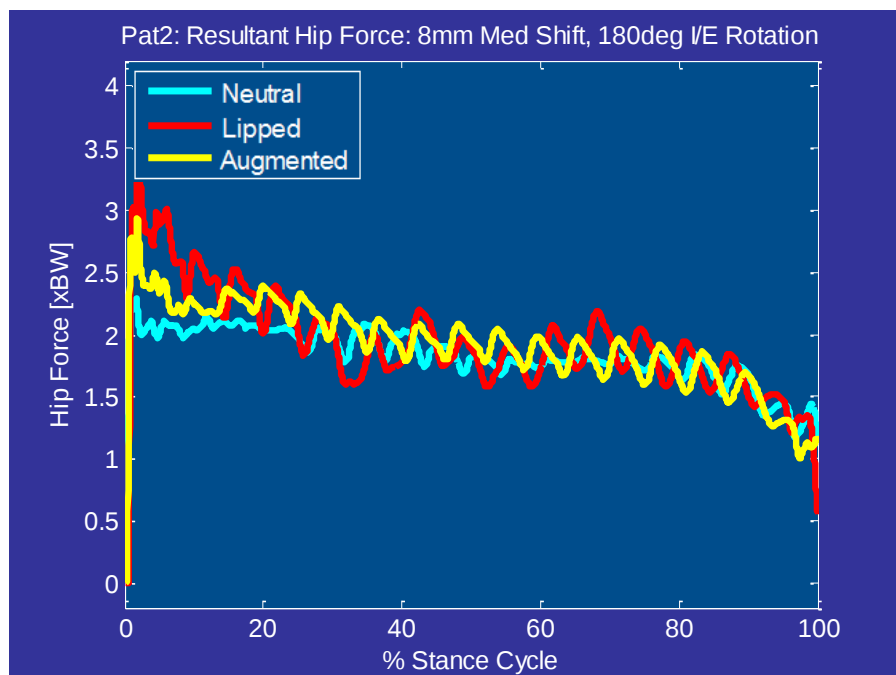


(b)

Figure C89: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

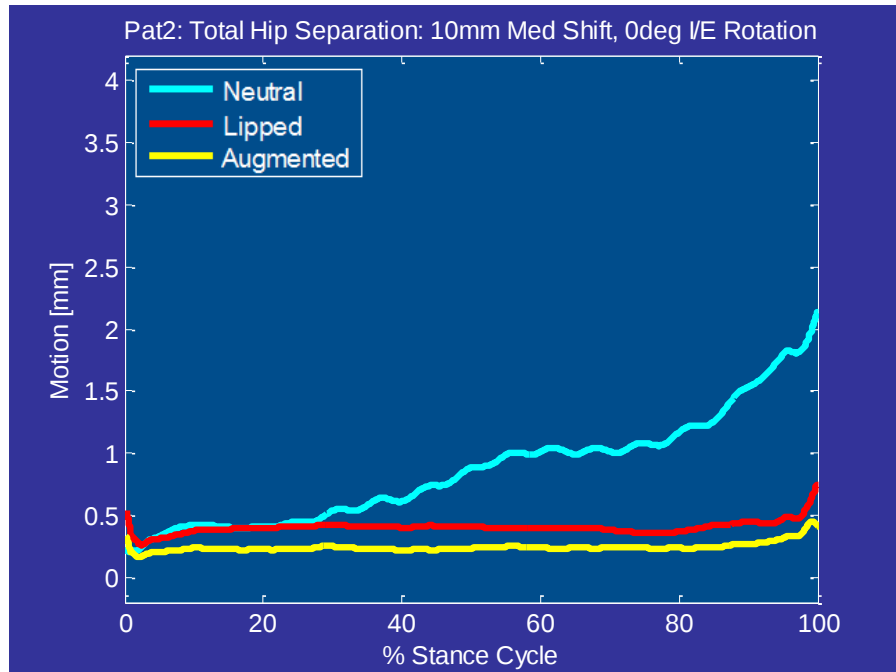


(a)

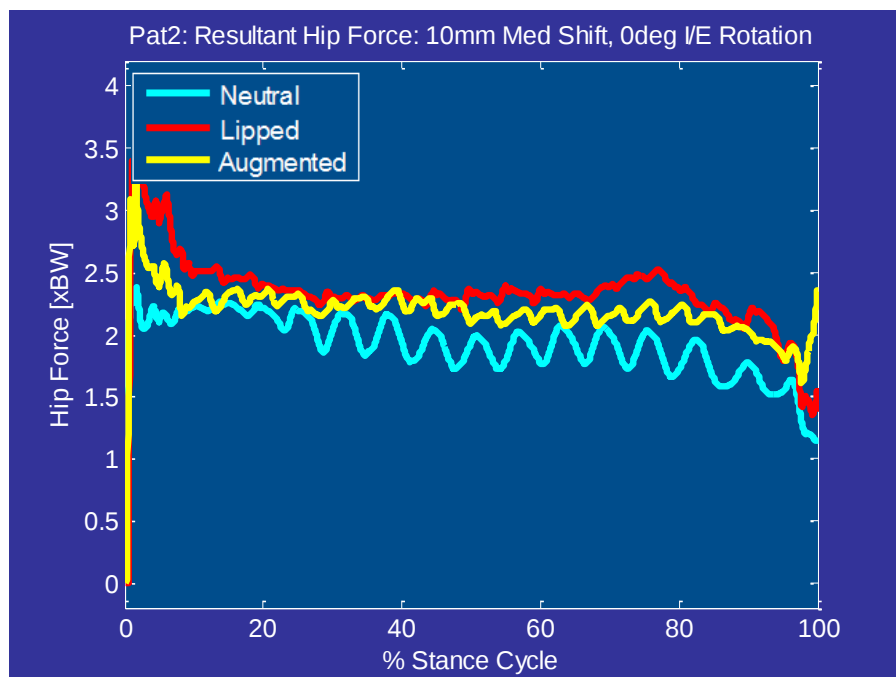


(b)

Figure C90: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

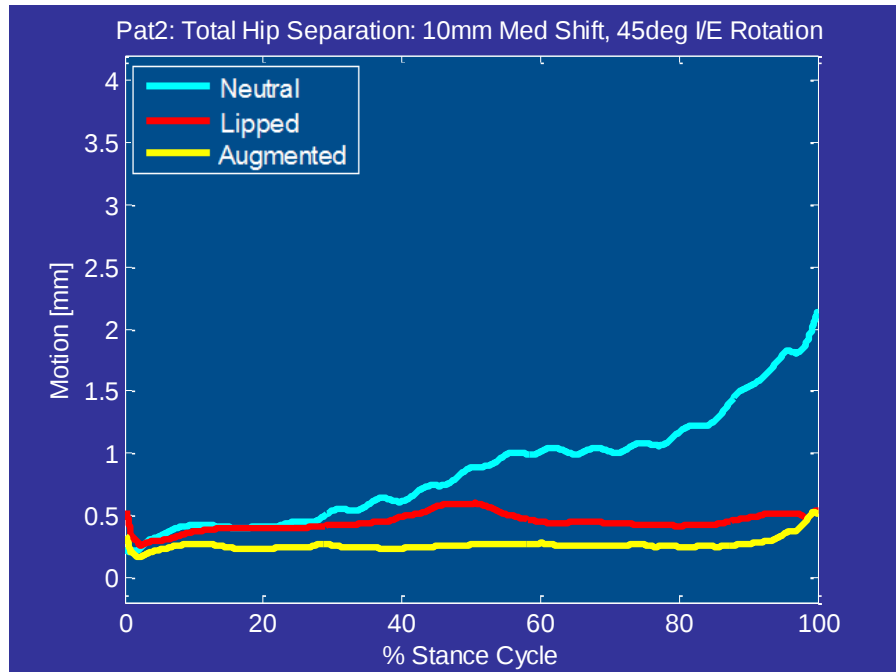


(a)

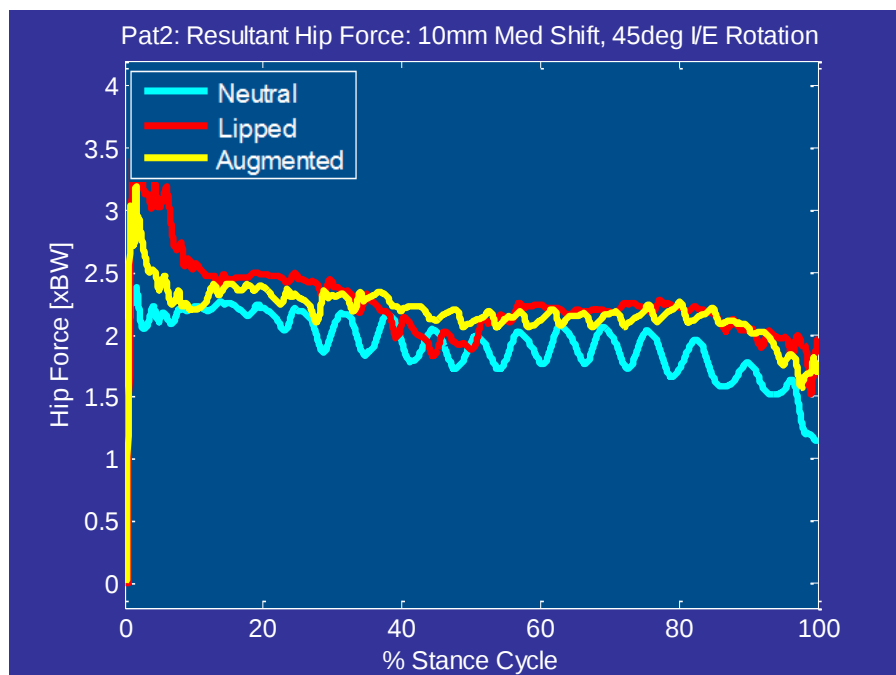


(b)

Figure C91: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

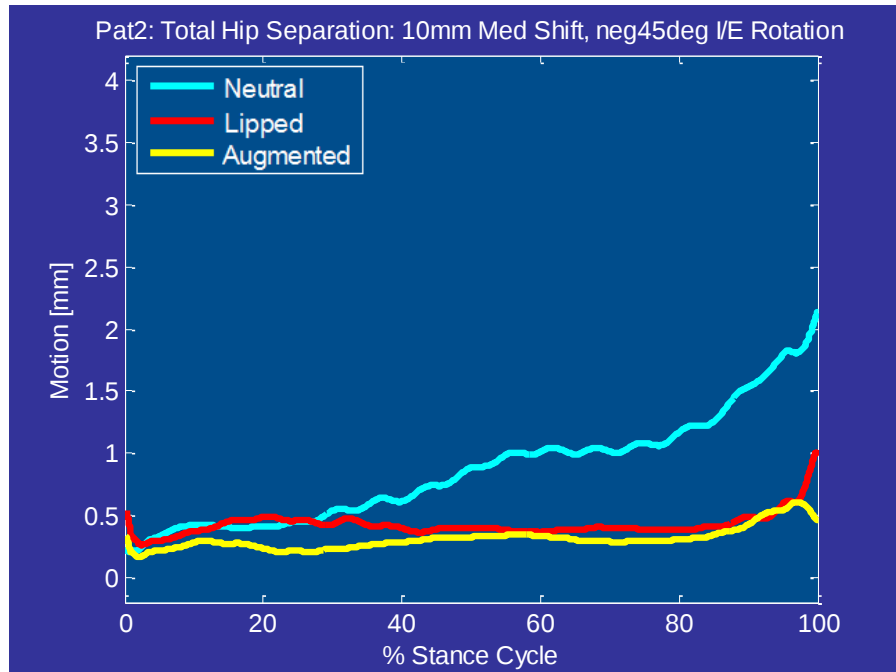


(a)

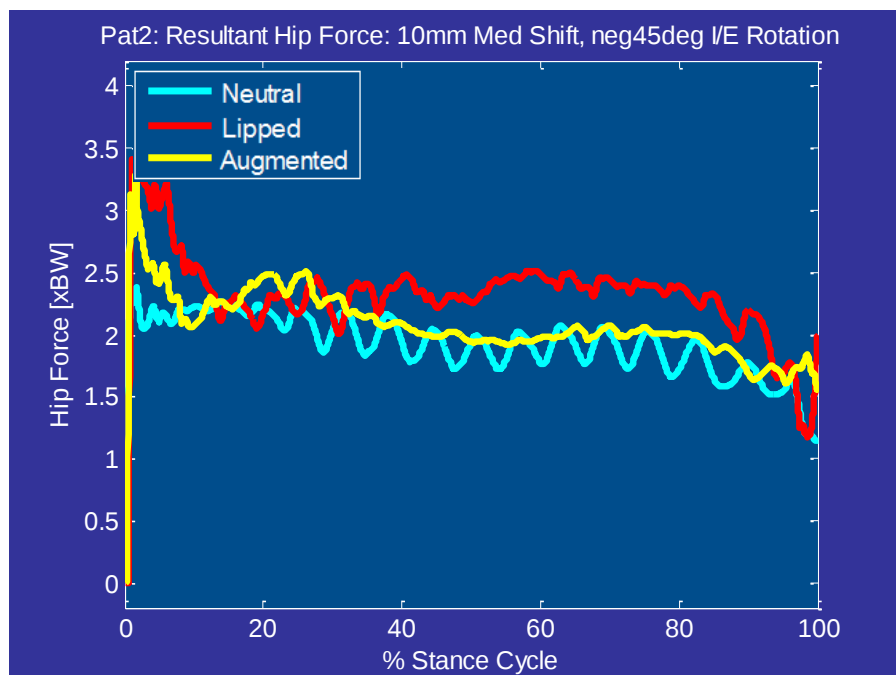


(b)

Figure C92: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

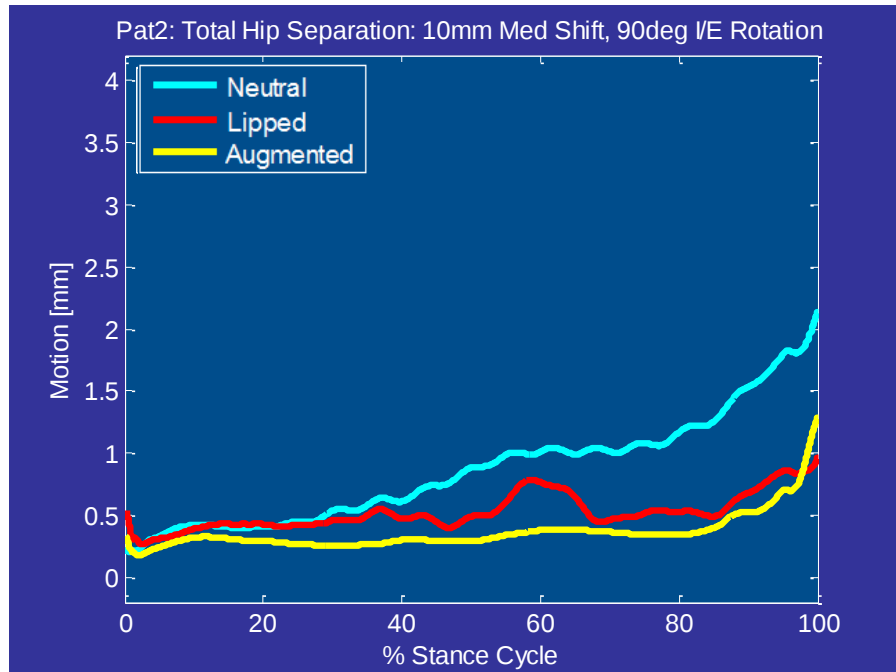


(a)

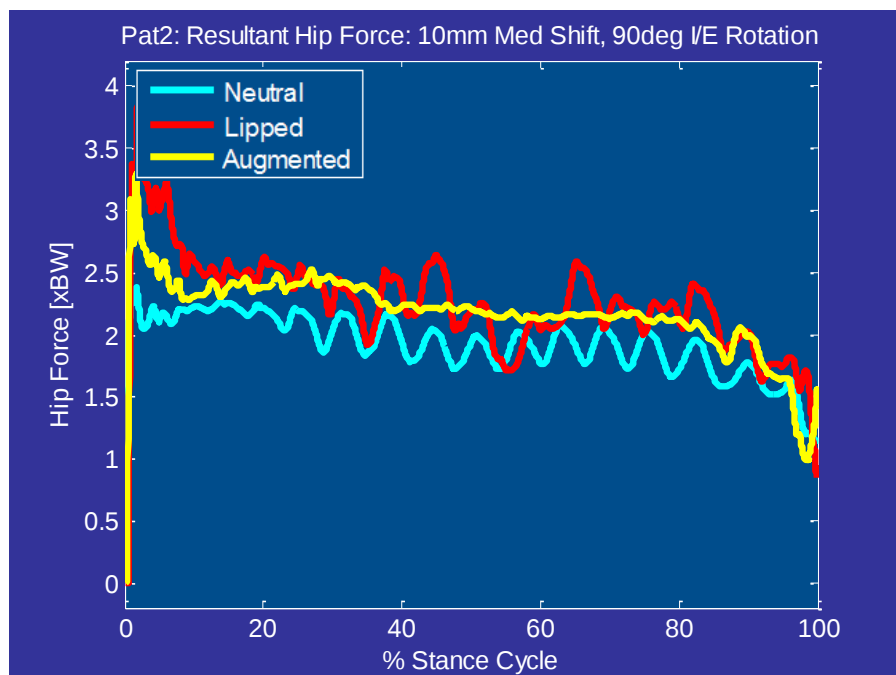


(b)

Figure C93: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

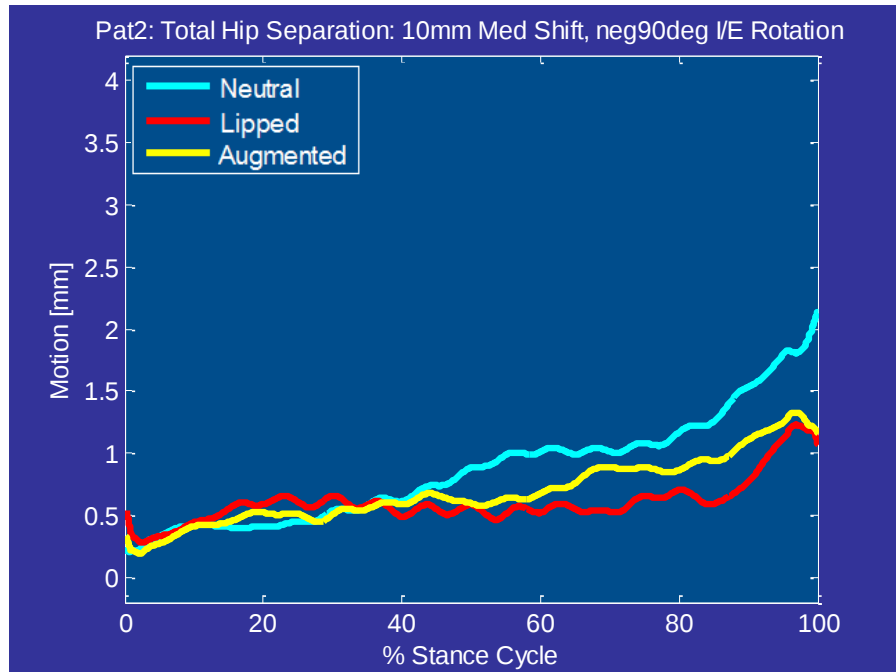


(a)

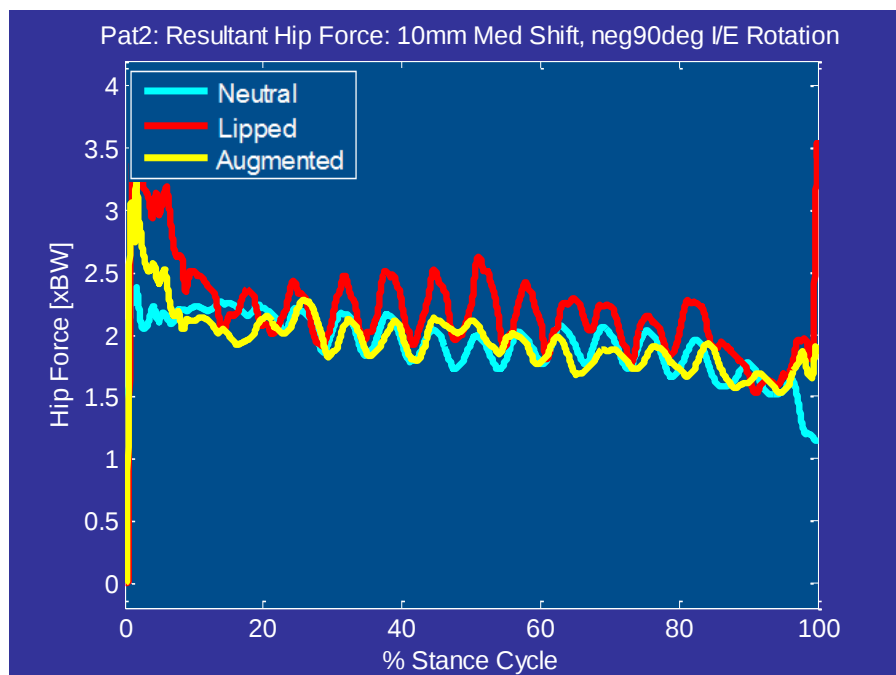


(b)

Figure C94: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

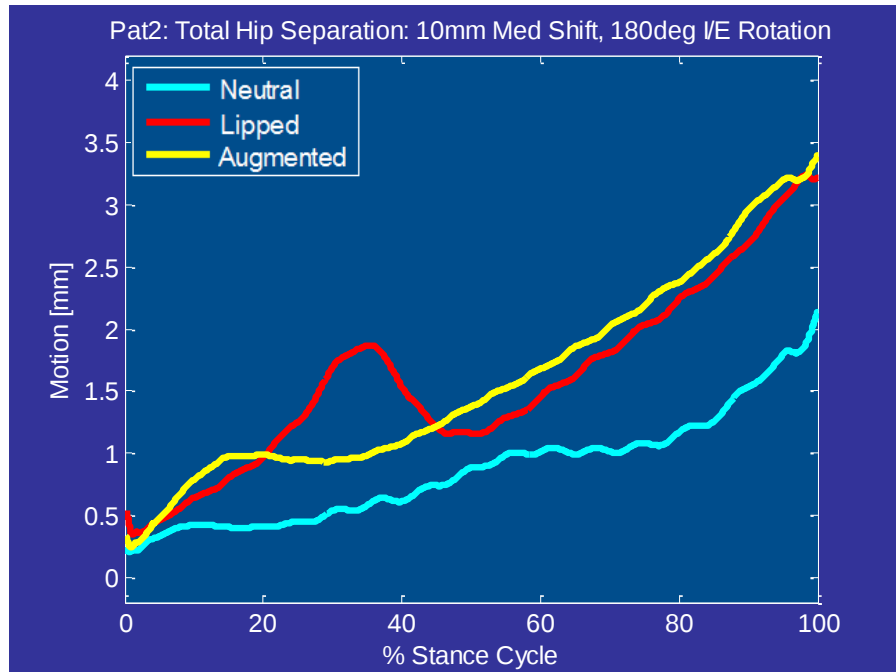


(a)

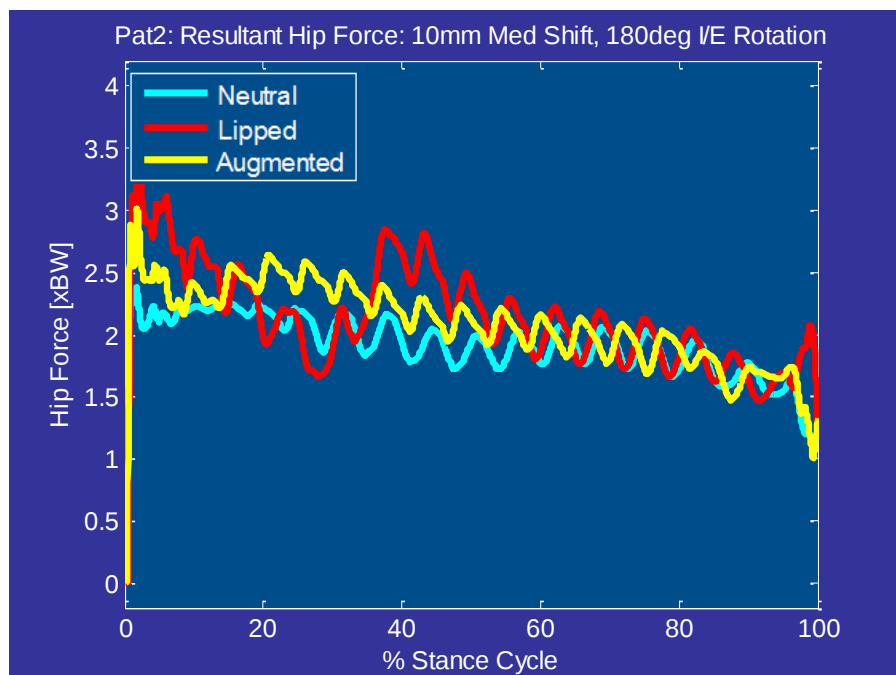


(b)

Figure C95: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

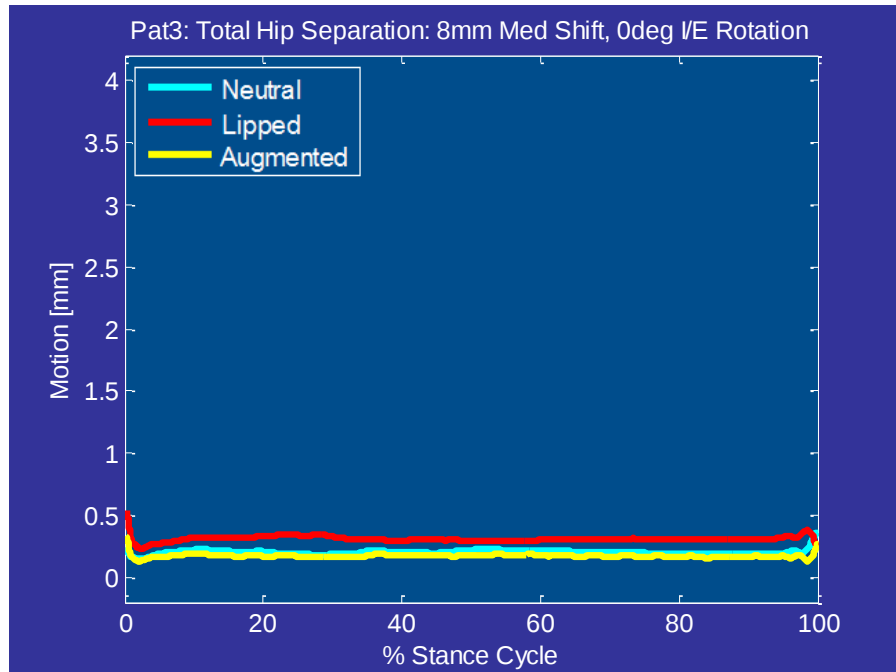


(a)



(b)

Figure C96: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

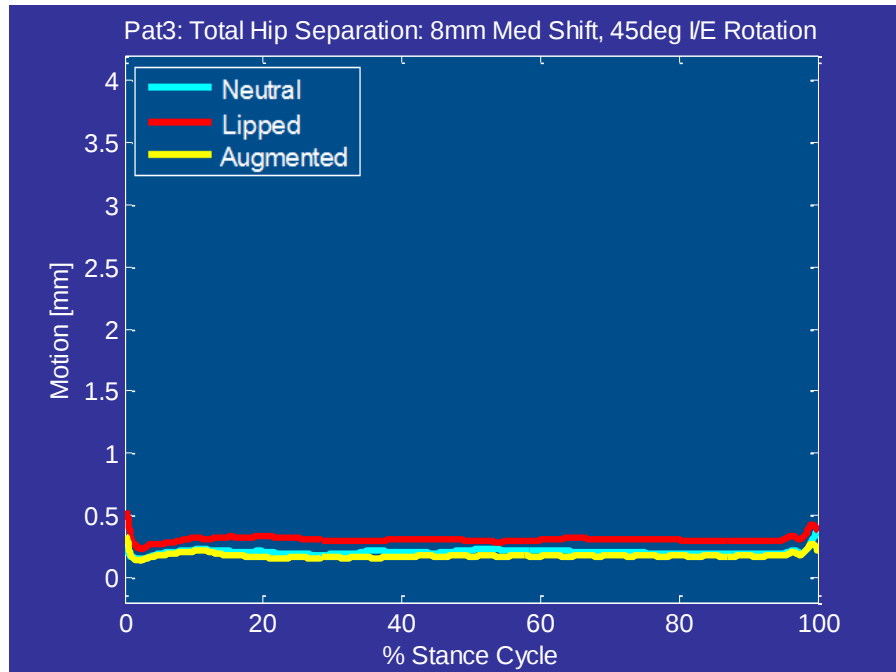


(a)

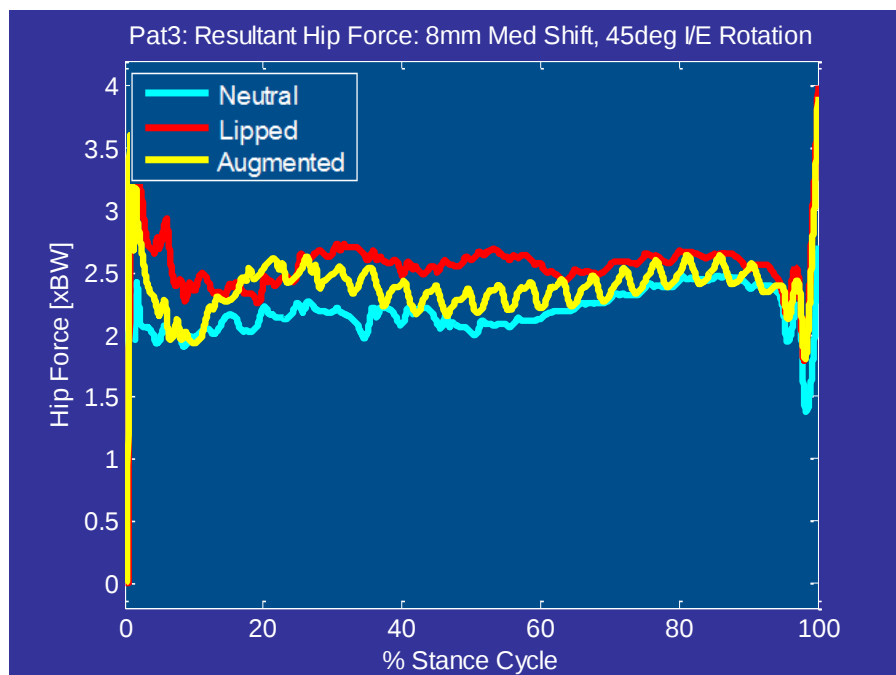


(b)

Figure C97: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

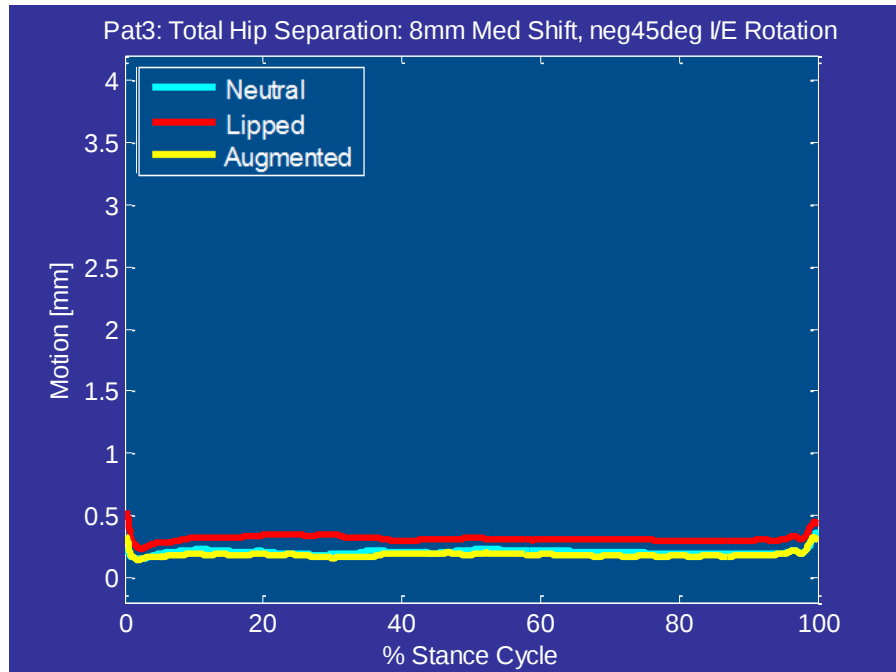


(a)

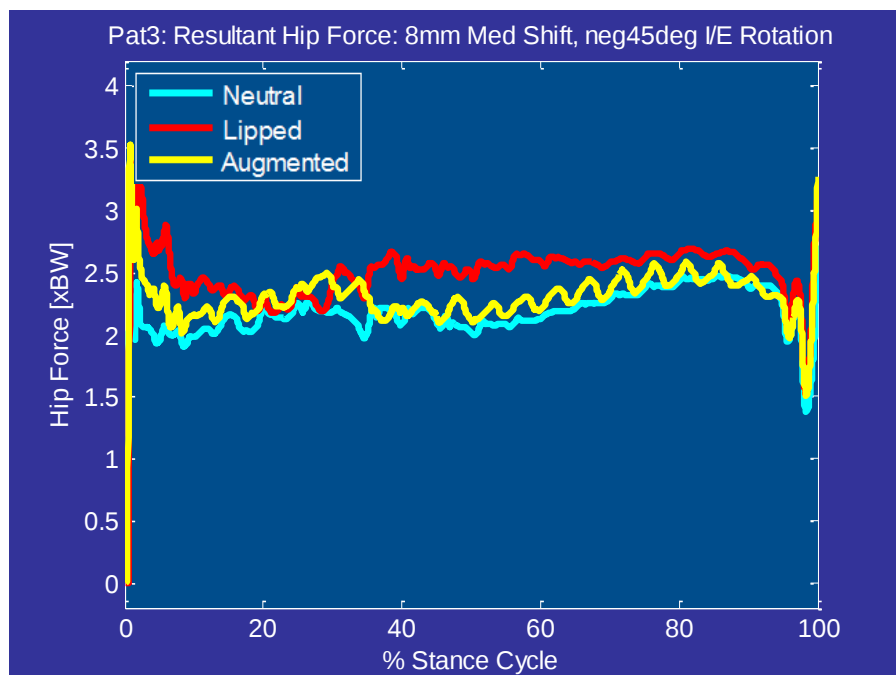


(b)

Figure C98: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

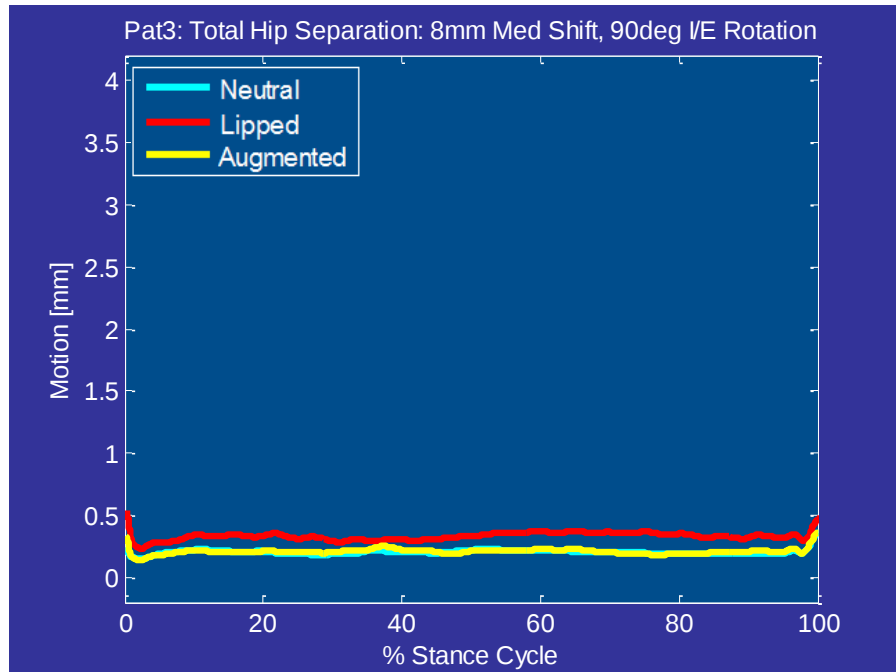


(a)

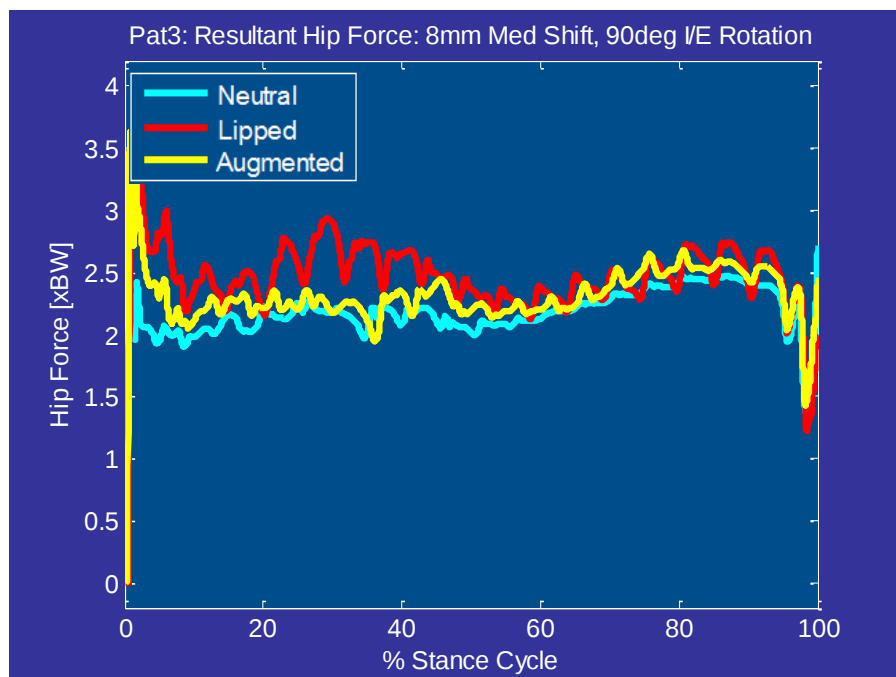


(b)

Figure C99: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

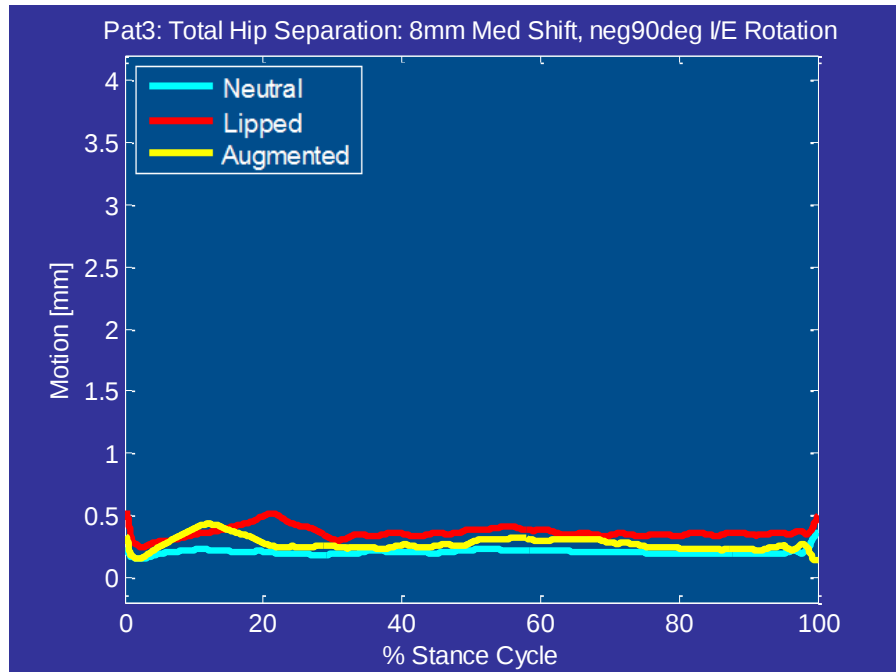


(a)

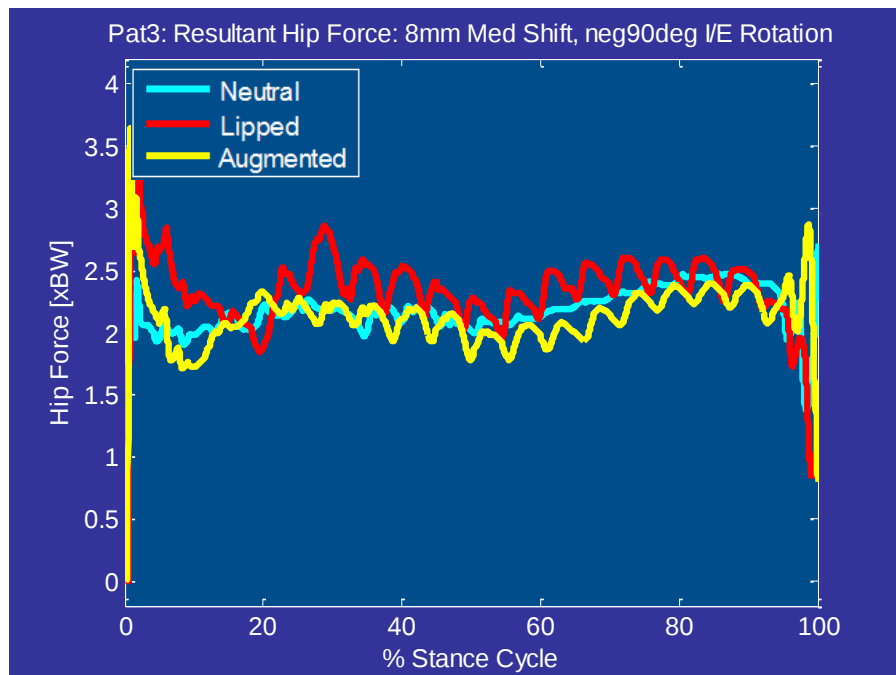


(b)

Figure C100: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

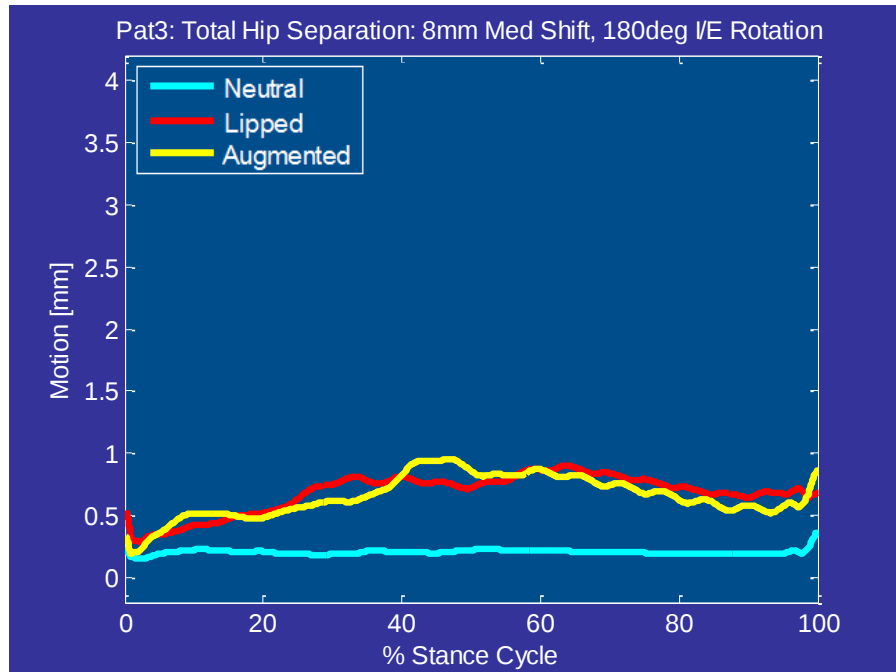


(a)



(b)

Figure C101: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

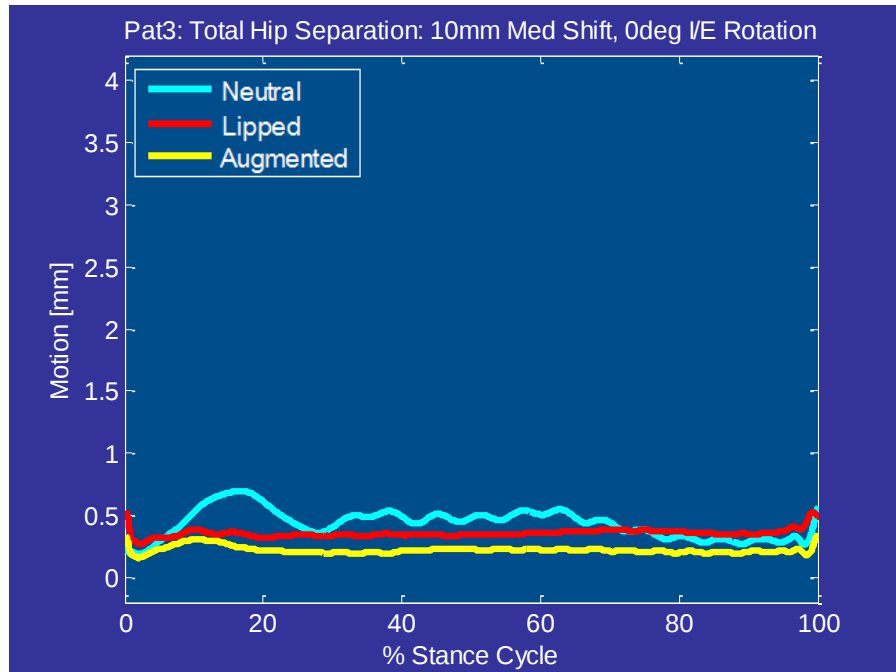


(a)

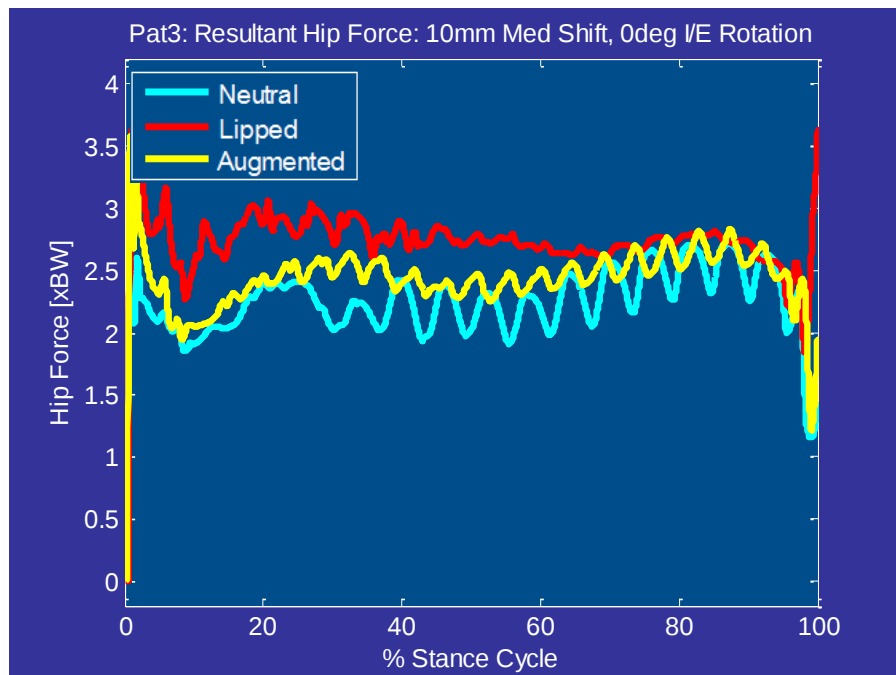


(b)

Figure C102: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

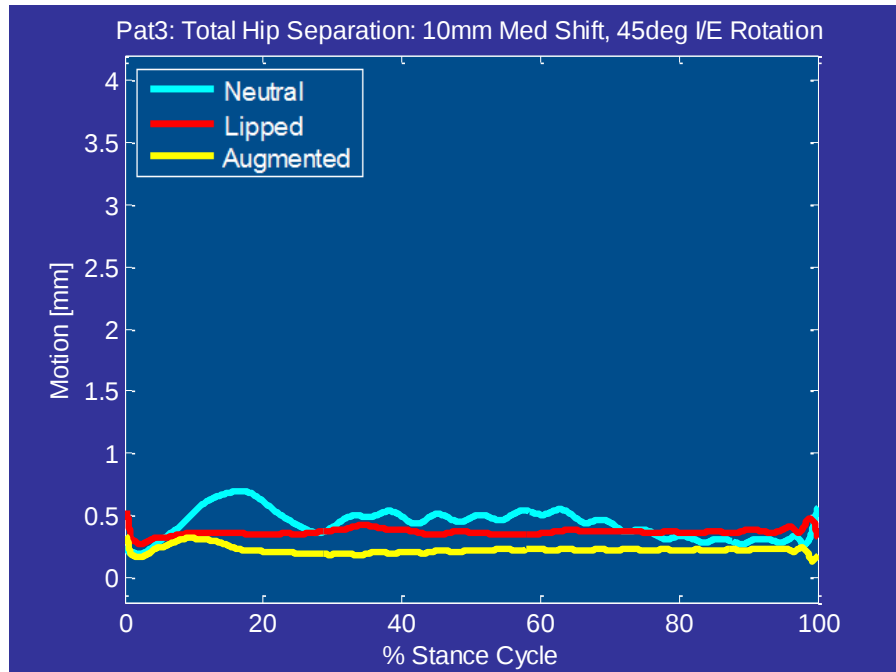


(a)

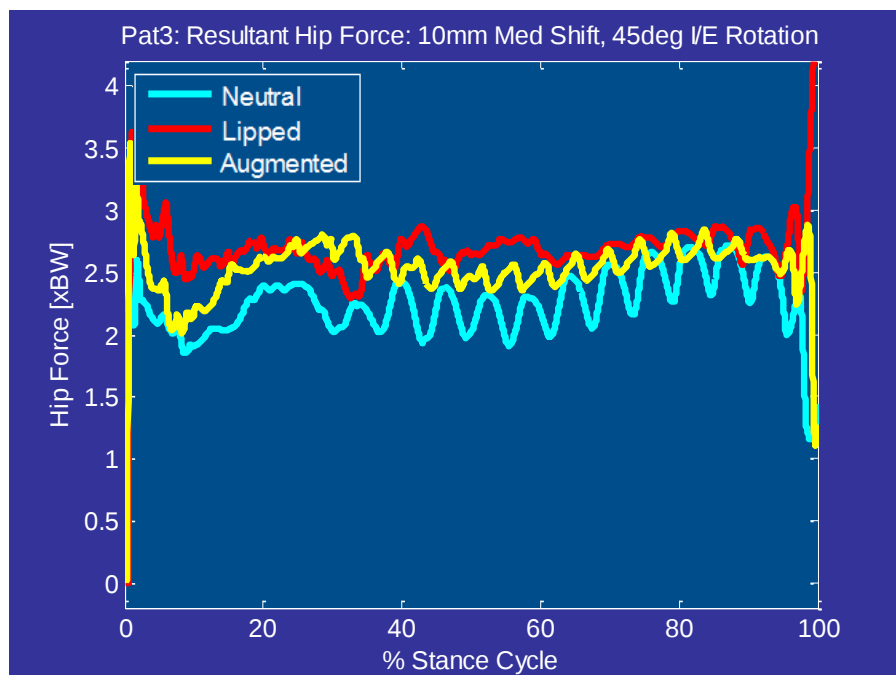


(b)

Figure C103: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

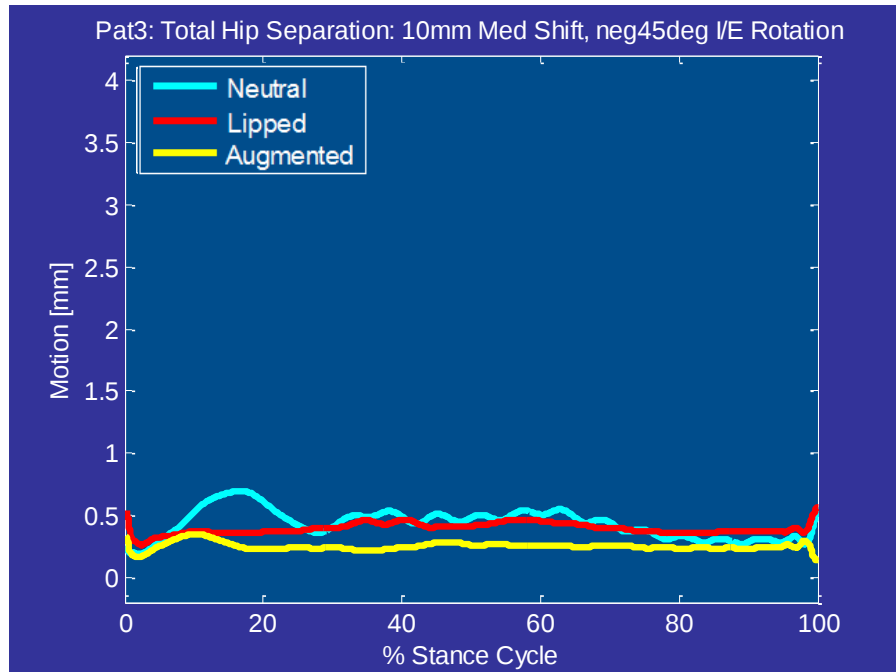


(a)

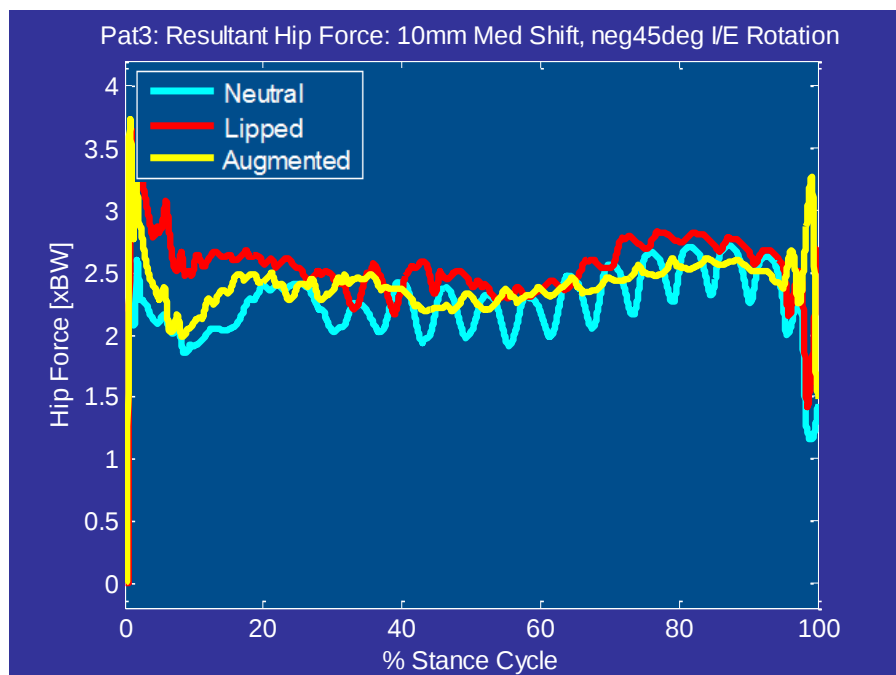


(b)

Figure C104: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

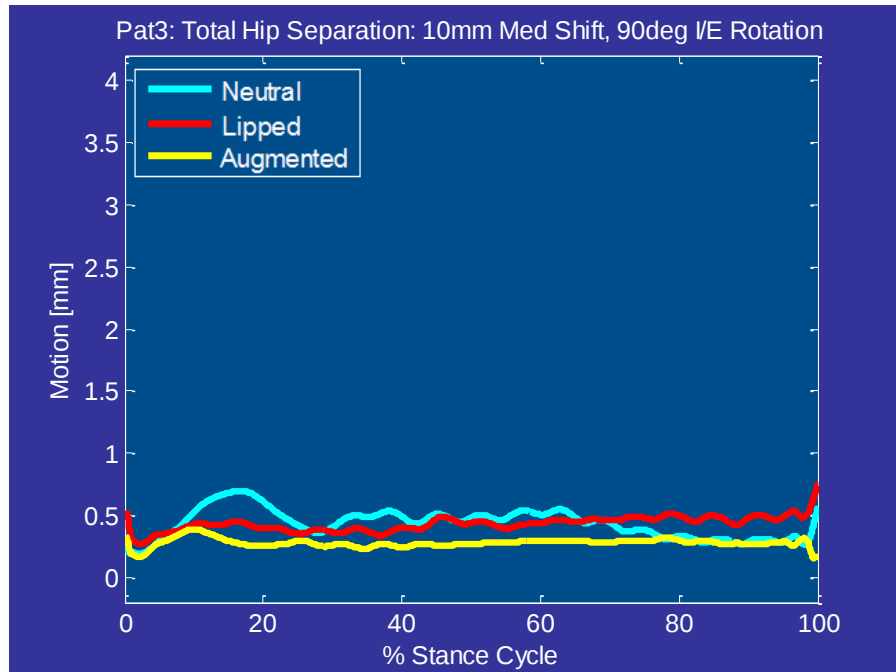


(a)

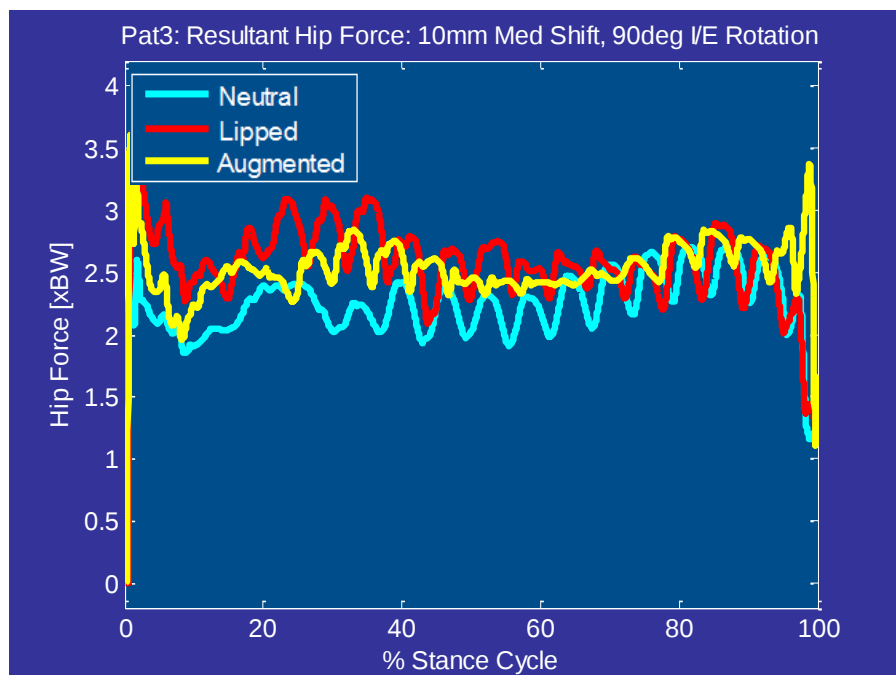


(b)

Figure C105: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

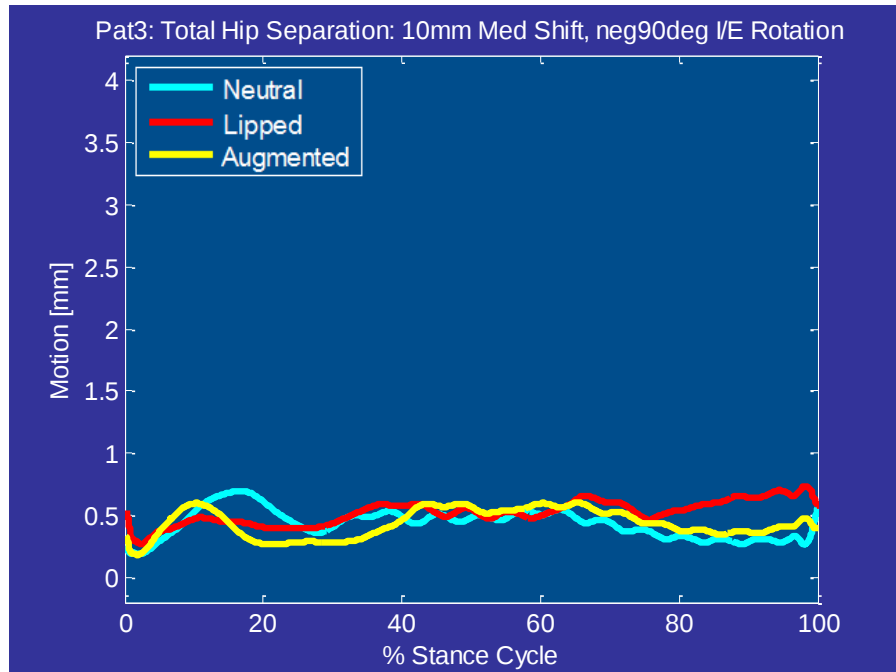


(a)

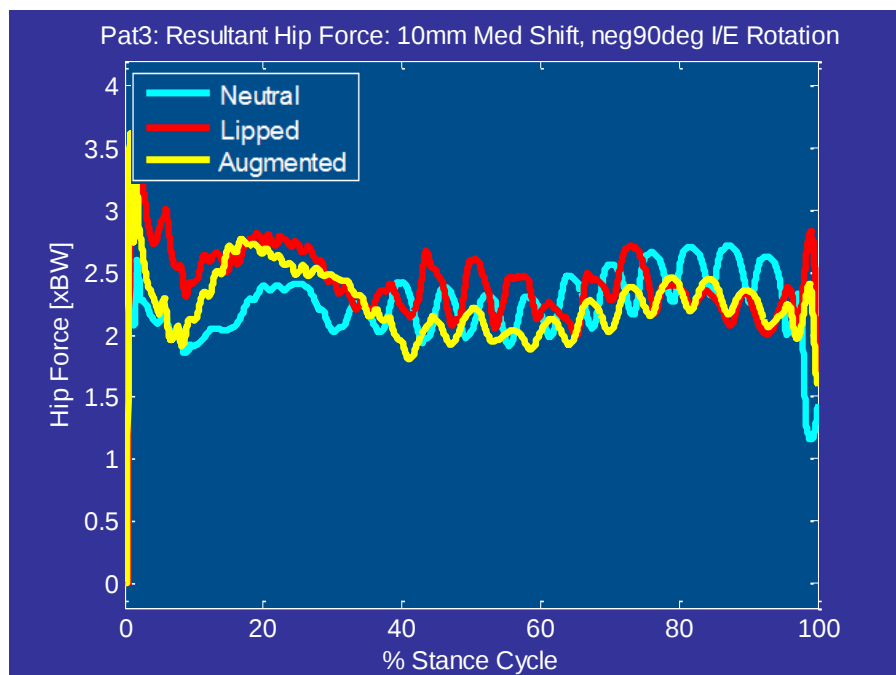


(b)

Figure C106: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

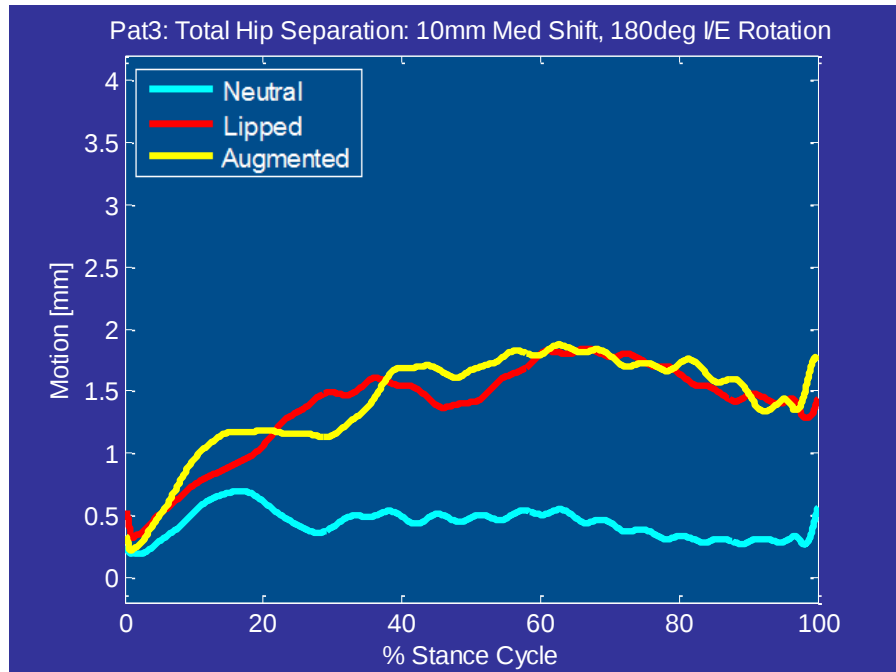


(a)

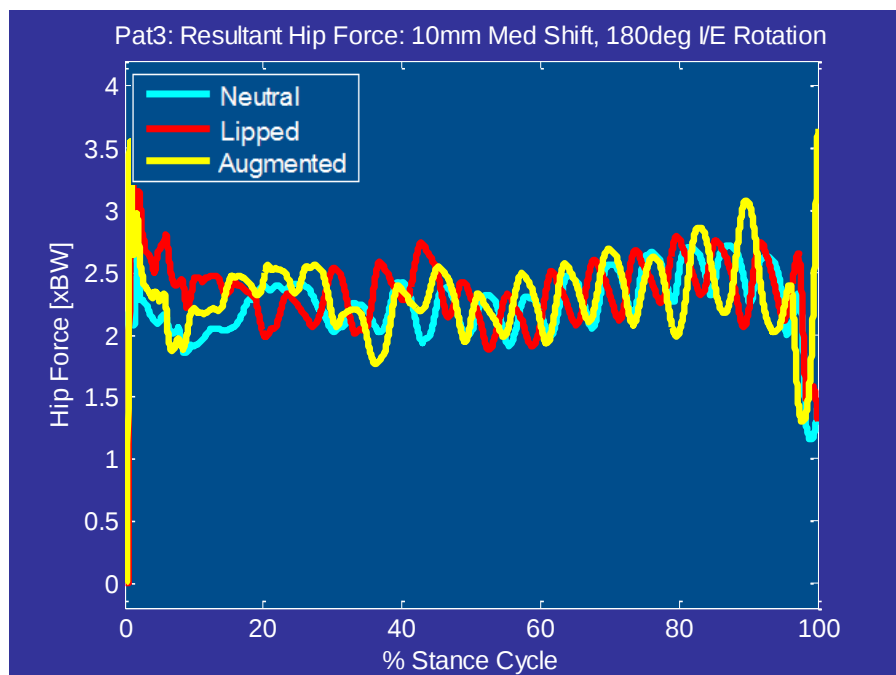


(b)

Figure C107: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

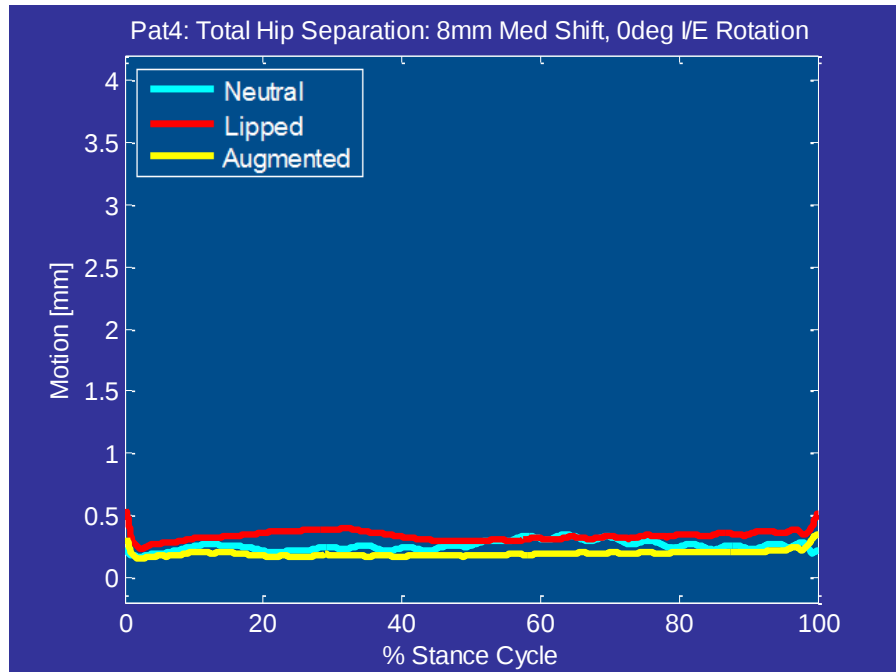


(a)



(b)

Figure C108: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

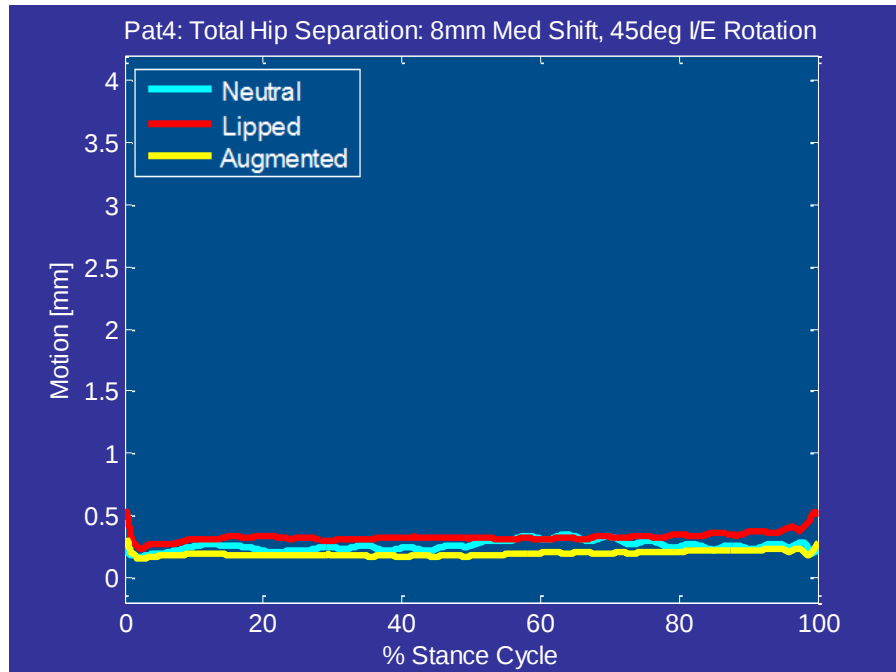


(a)

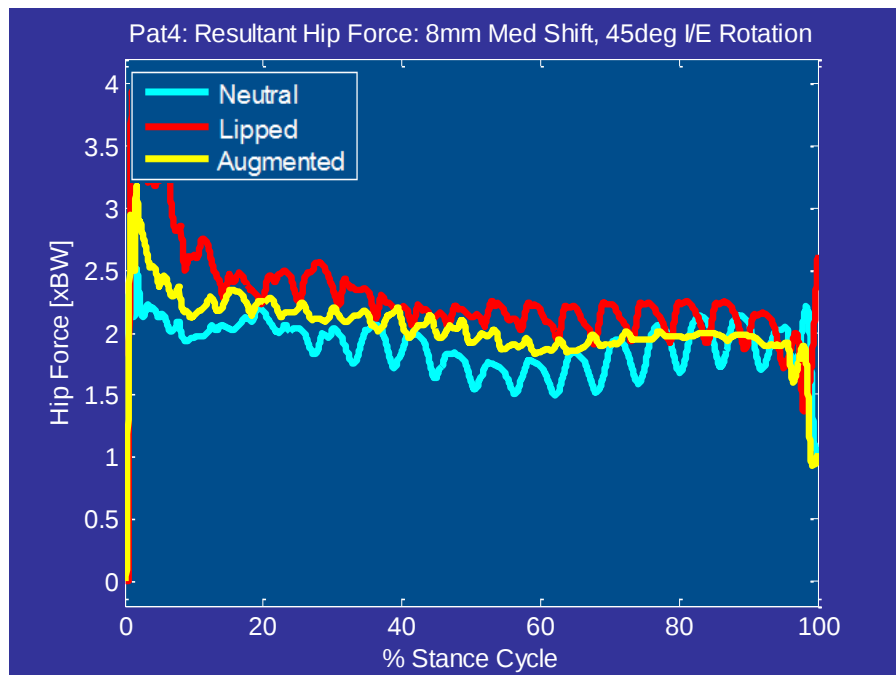


(b)

Figure C109: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

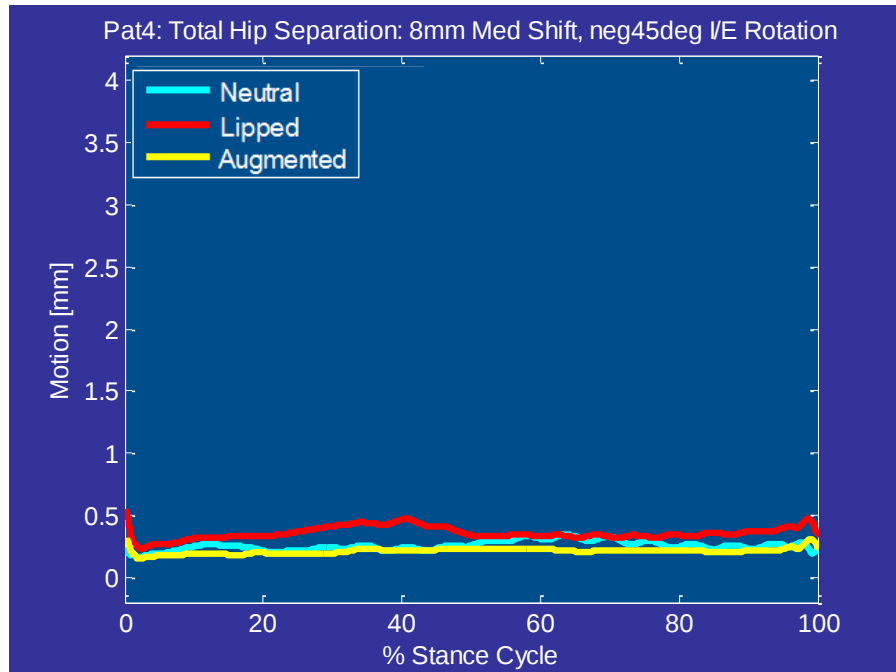


(a)



(b)

Figure C110: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

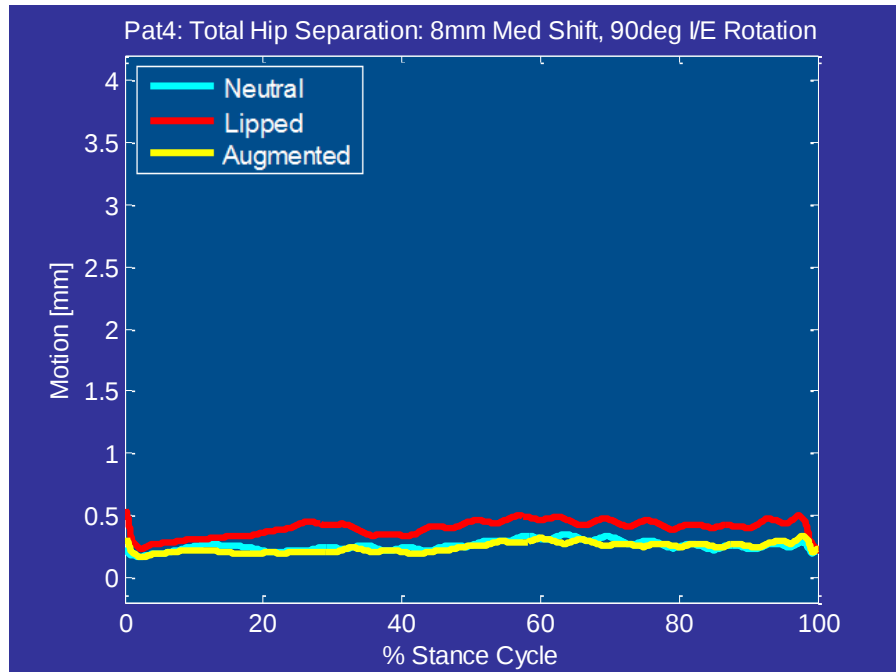


(a)

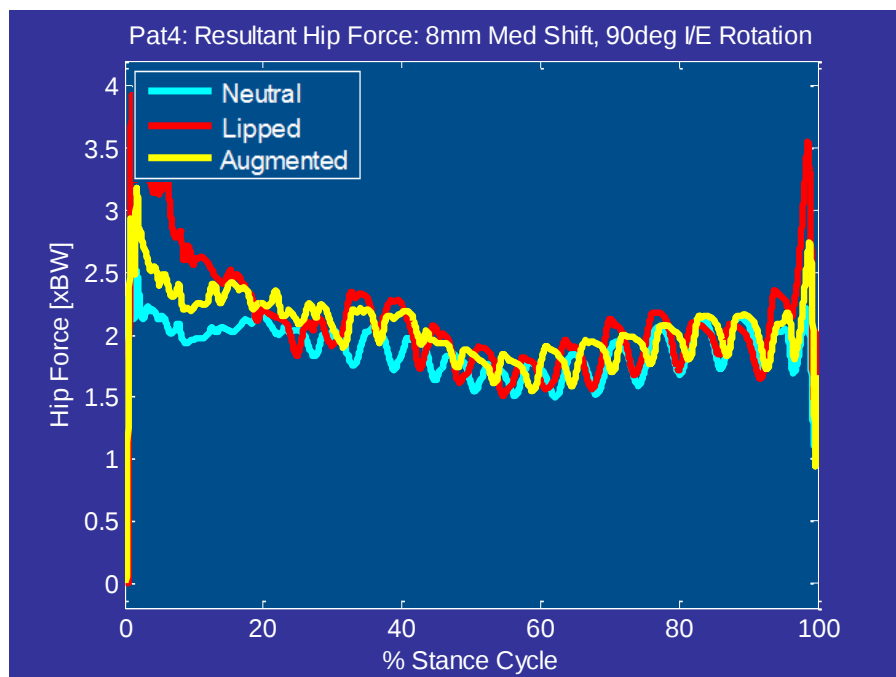


(b)

Figure C111: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

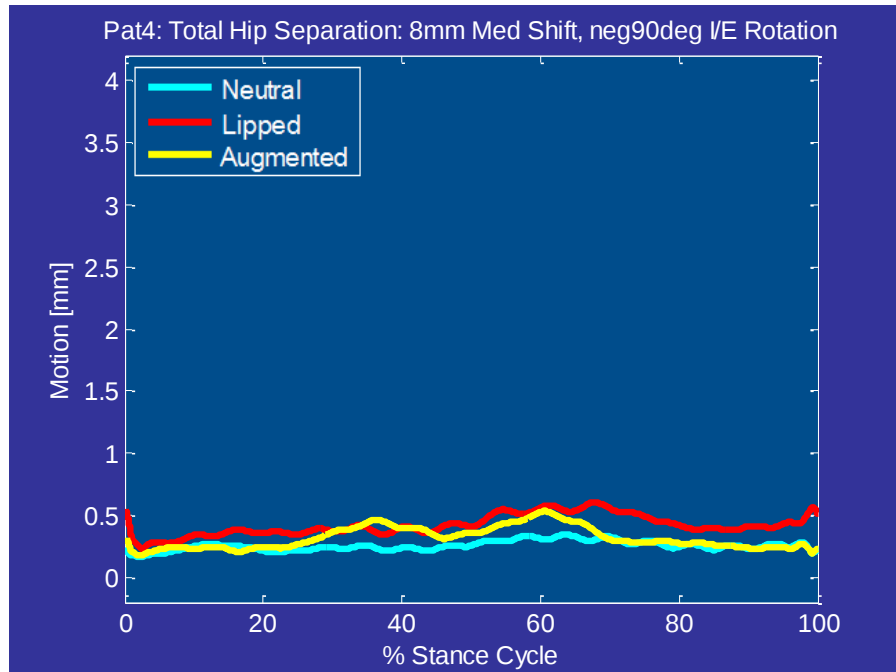


(a)

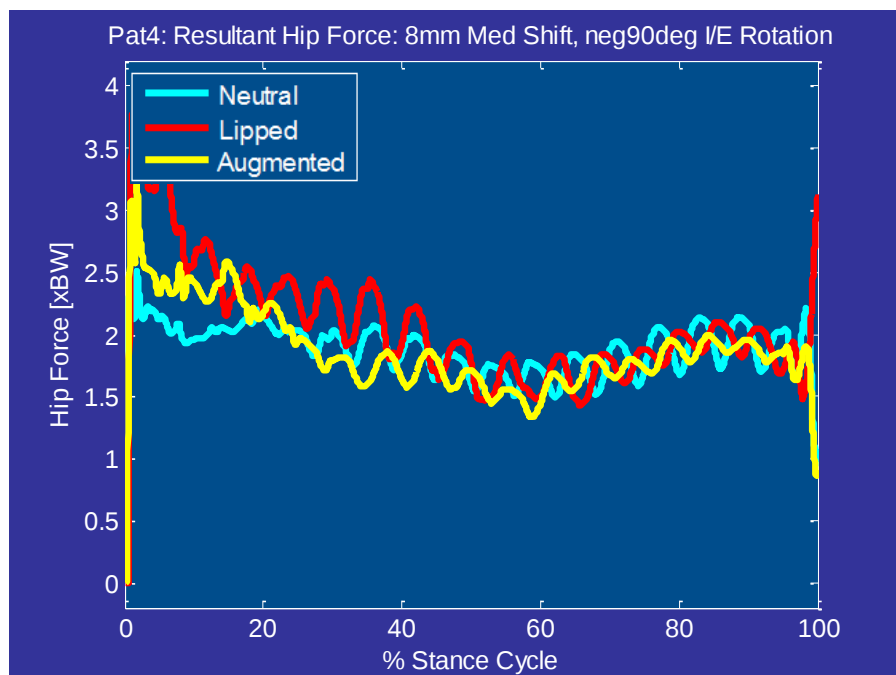


(b)

Figure C112: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

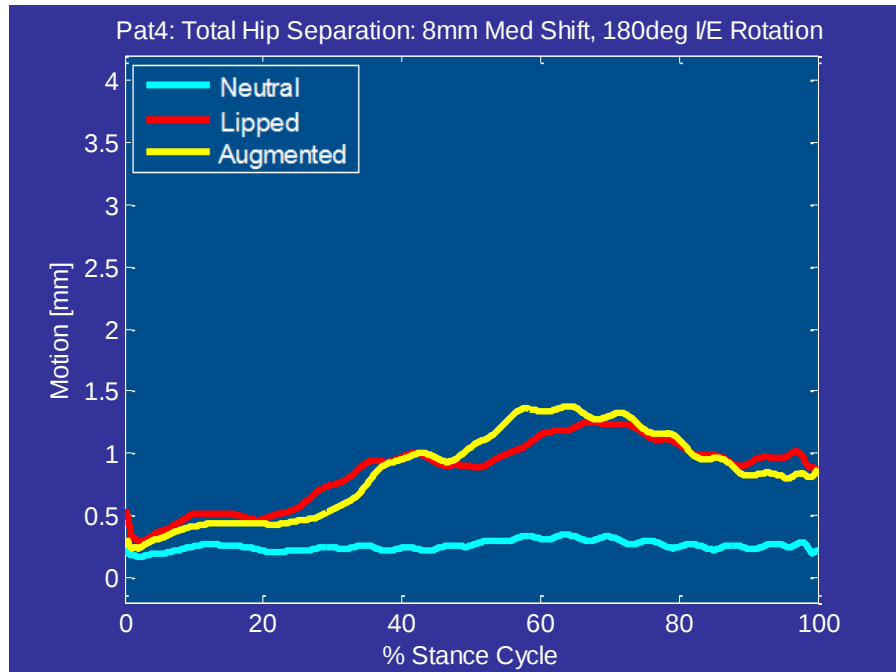


(a)



(b)

Figure C113: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.

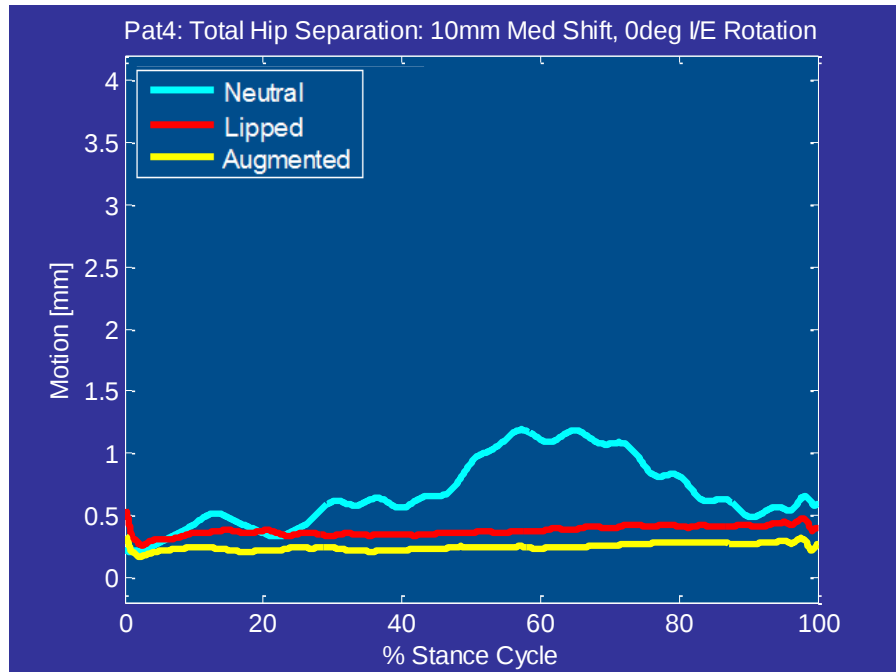


(a)

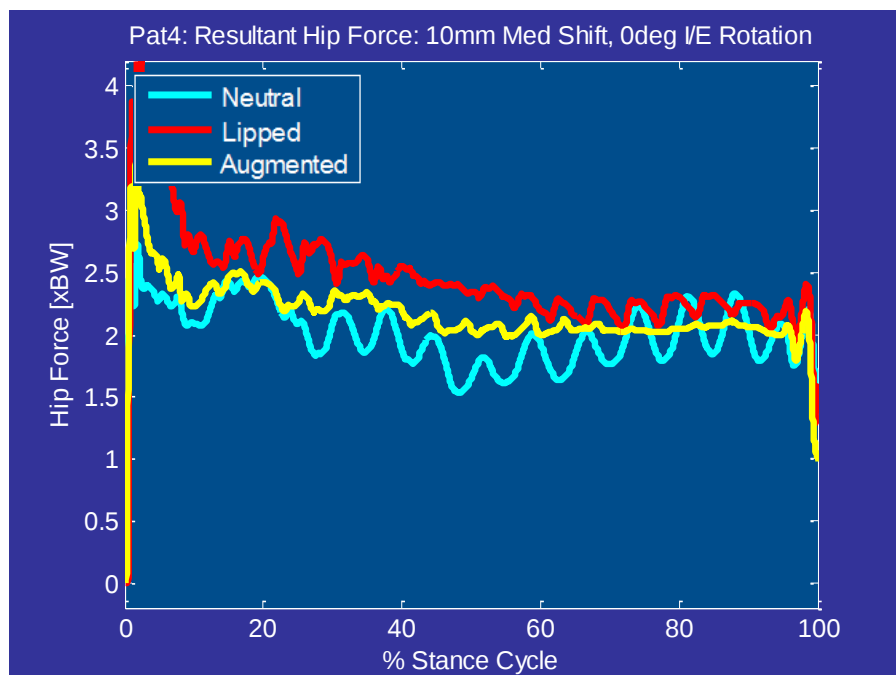


(b)

Figure C114: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

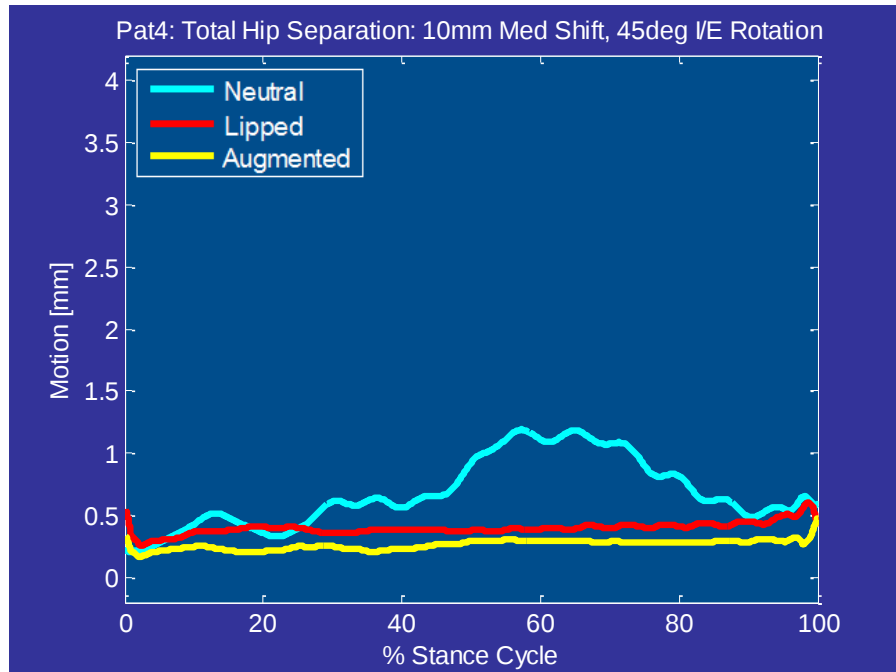


(a)

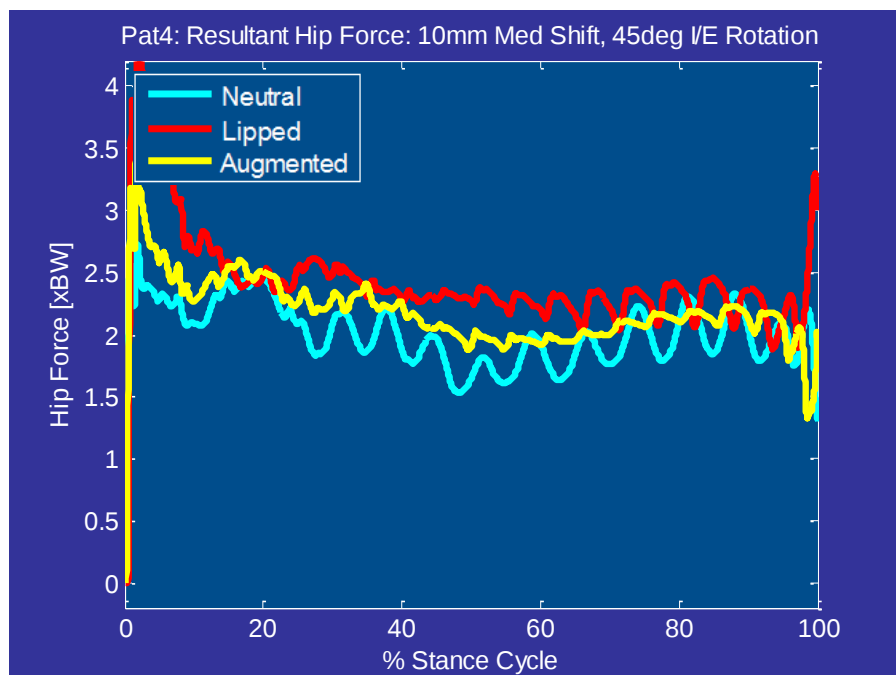


(b)

Figure C115: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
0° I/E Cup Rotation with Rotation Center (RC) alignment.

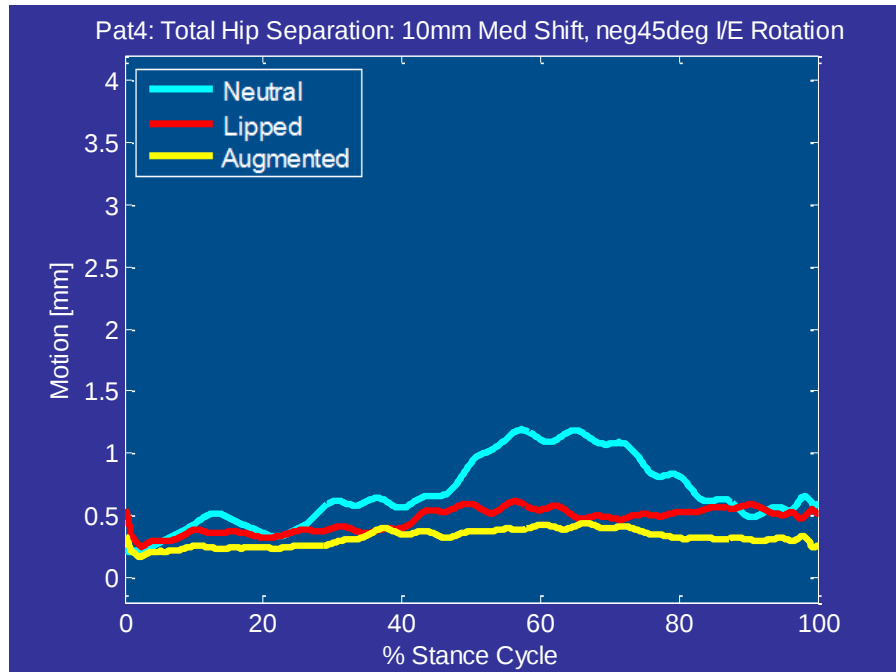


(a)

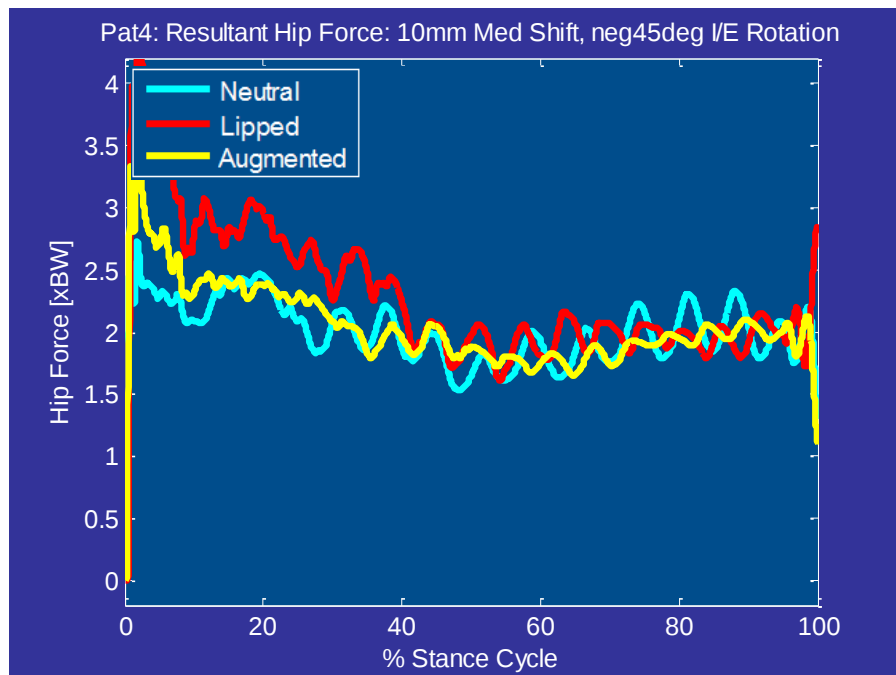


(b)

Figure C116: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
45° I/E Cup Rotation with Rotation Center (RC) alignment.

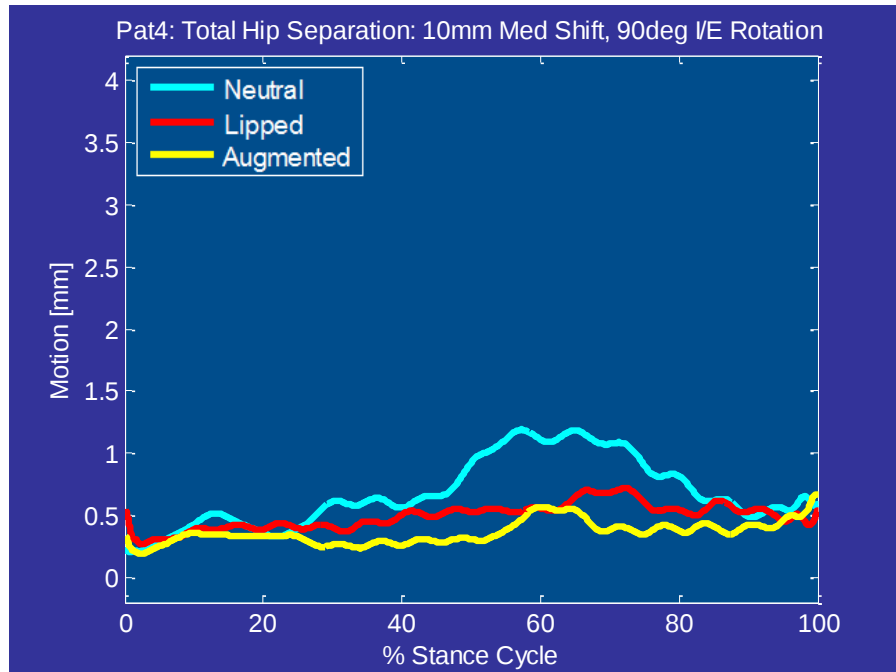


(a)

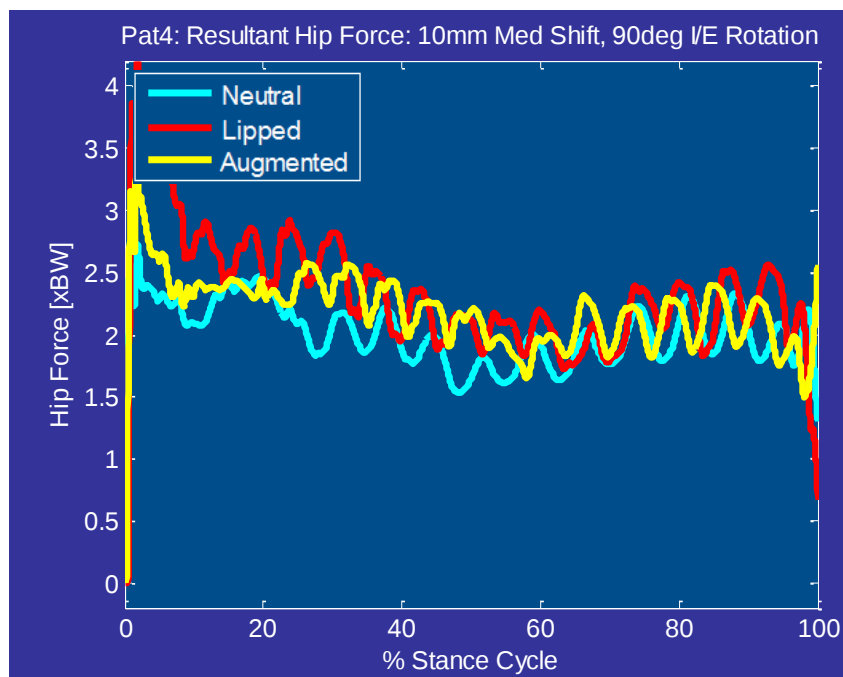


(b)

Figure C117: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
-45° I/E Cup Rotation with Rotation Center (RC) alignment.

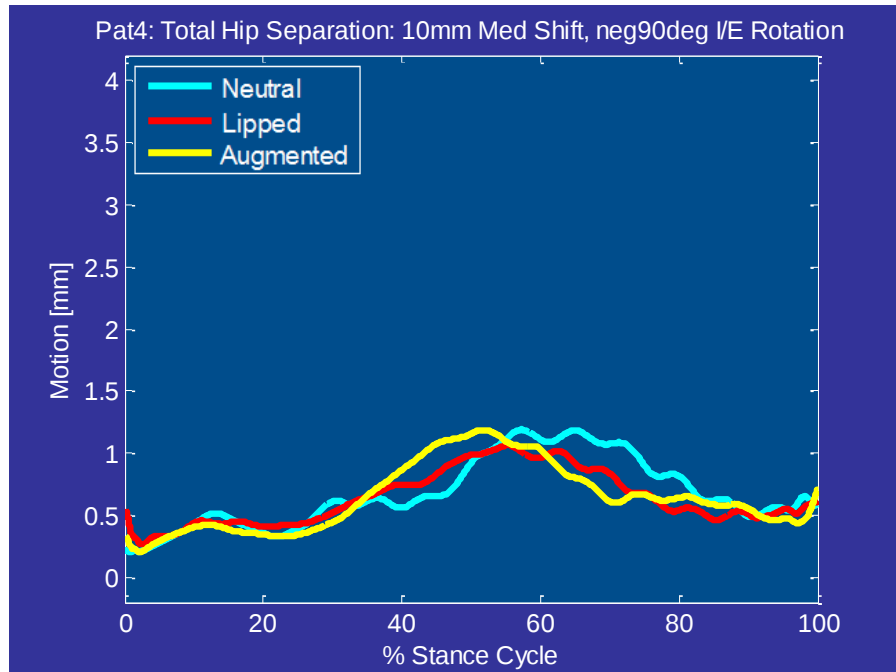


(a)

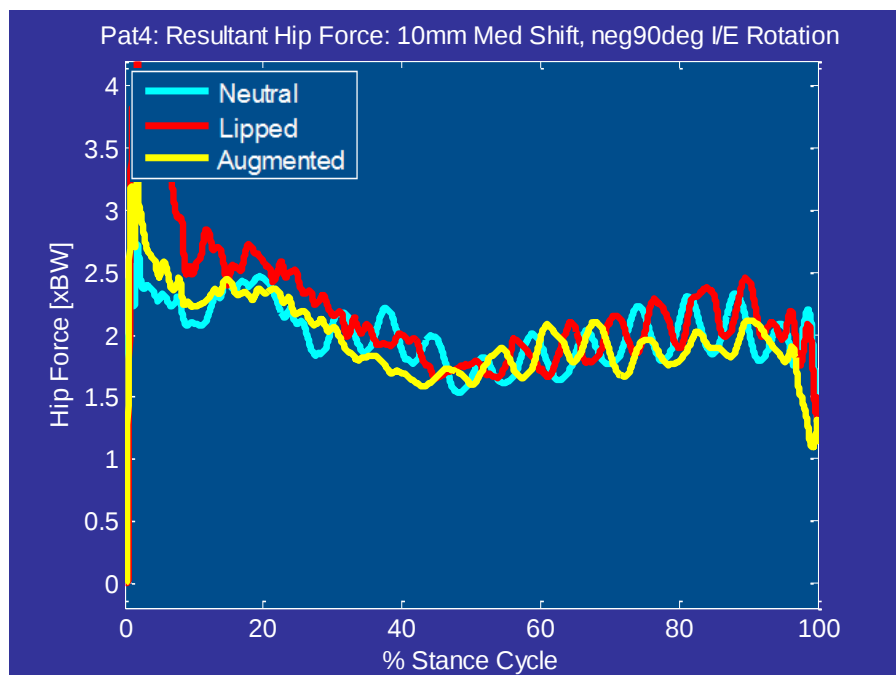


(b)

Figure C118: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
90° I/E Cup Rotation with Rotation Center (RC) alignment.

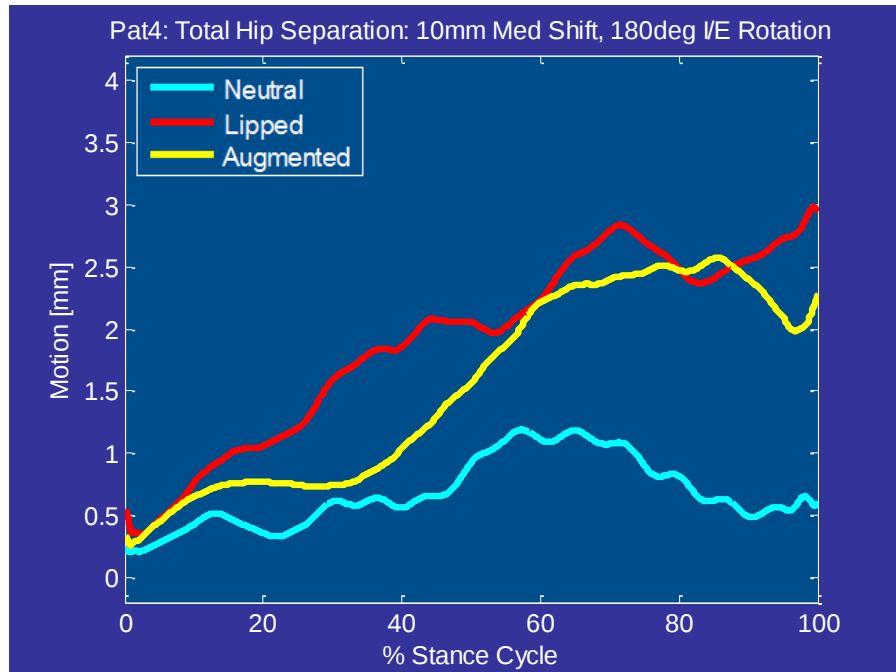


(a)

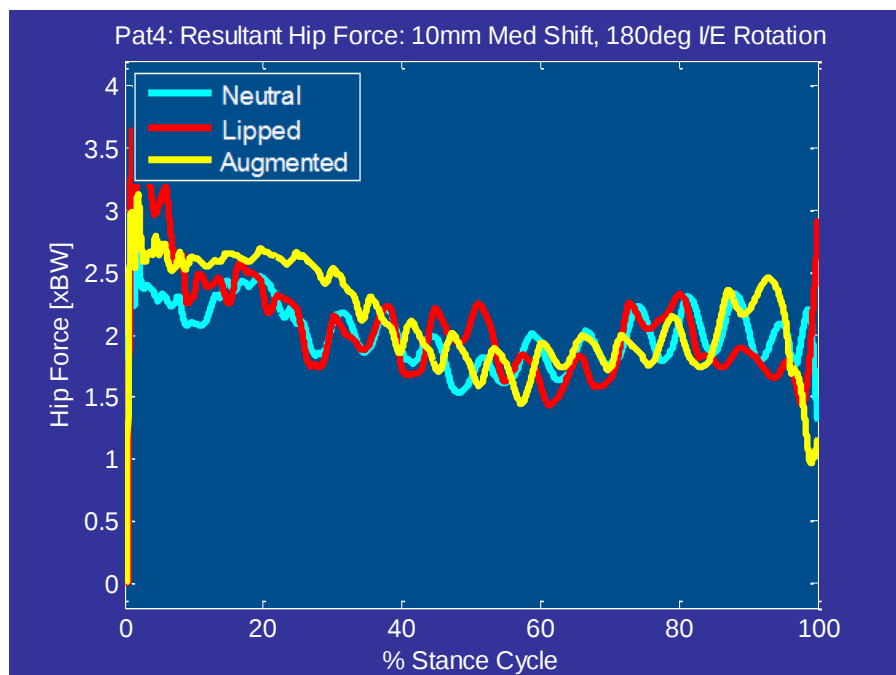


(b)

Figure C119: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
-90° I/E Cup Rotation with Rotation Center (RC) alignment.



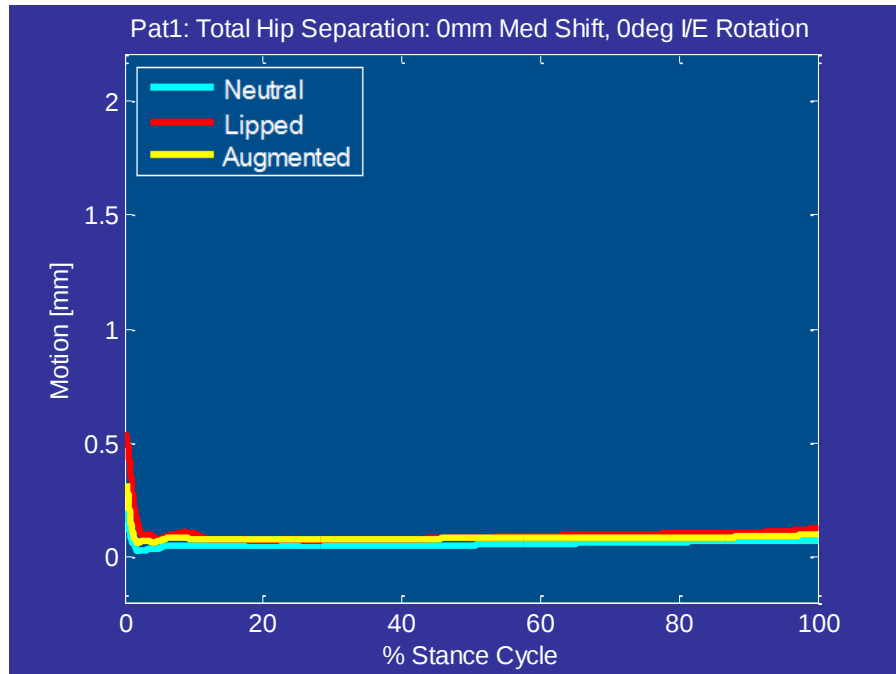
(a)



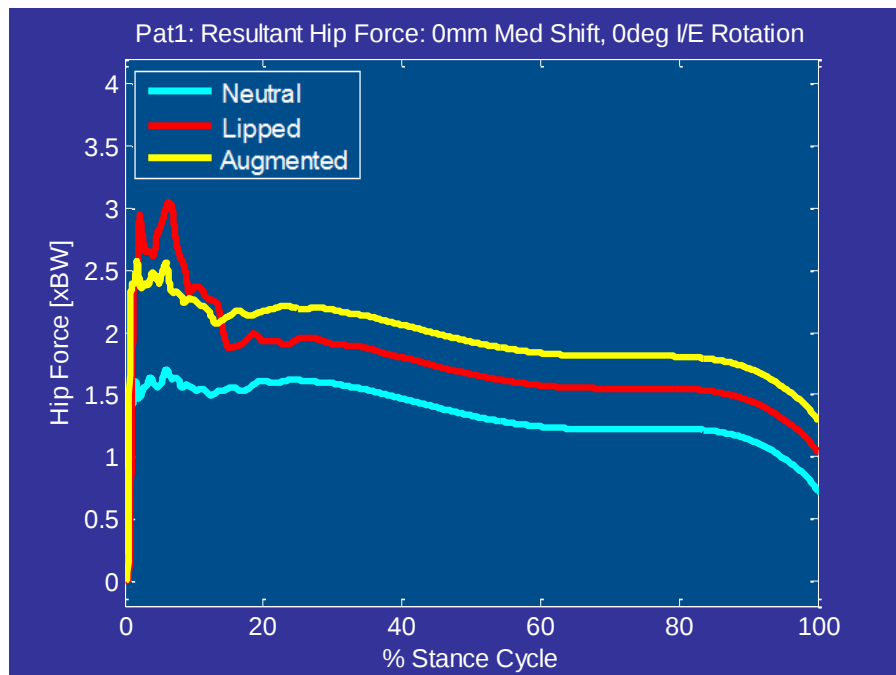
(b)

Figure C120: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
180° I/E Cup Rotation with Rotation Center (RC) alignment.

Appendix D: Cup Medialization Figures with Liner Center Alignment

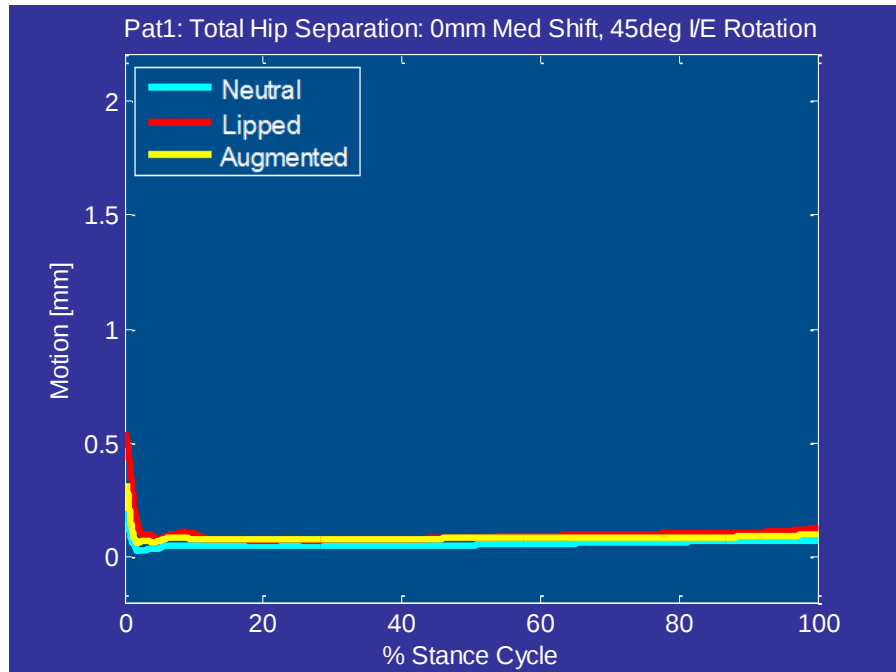


(a)

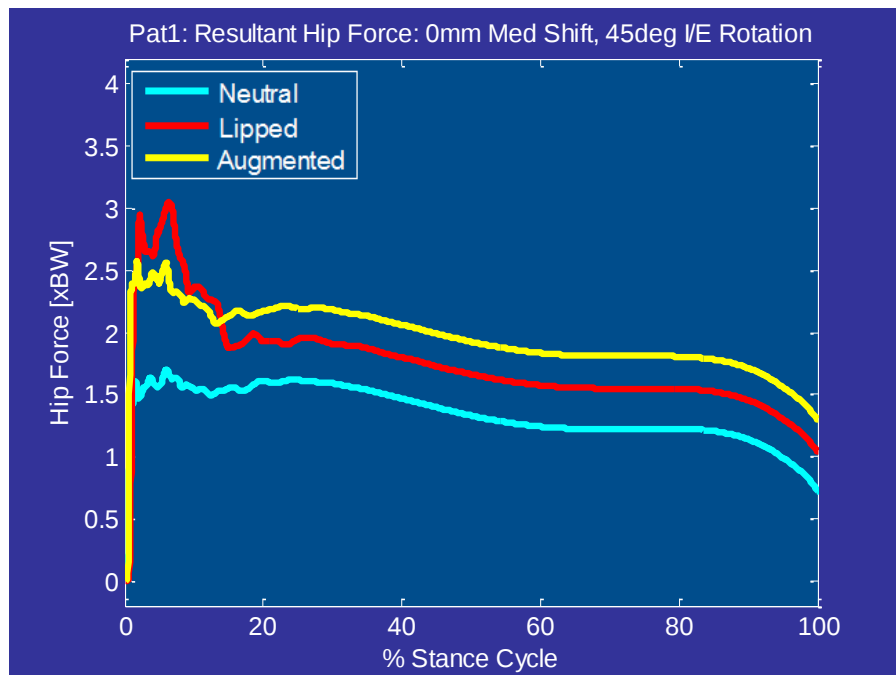


(b)

Figure D1: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

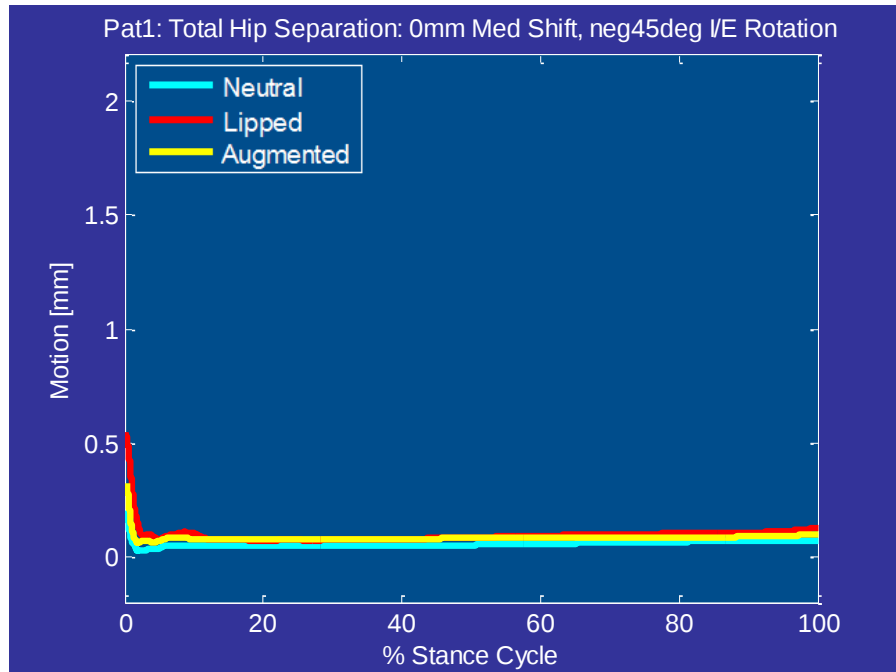


(a)

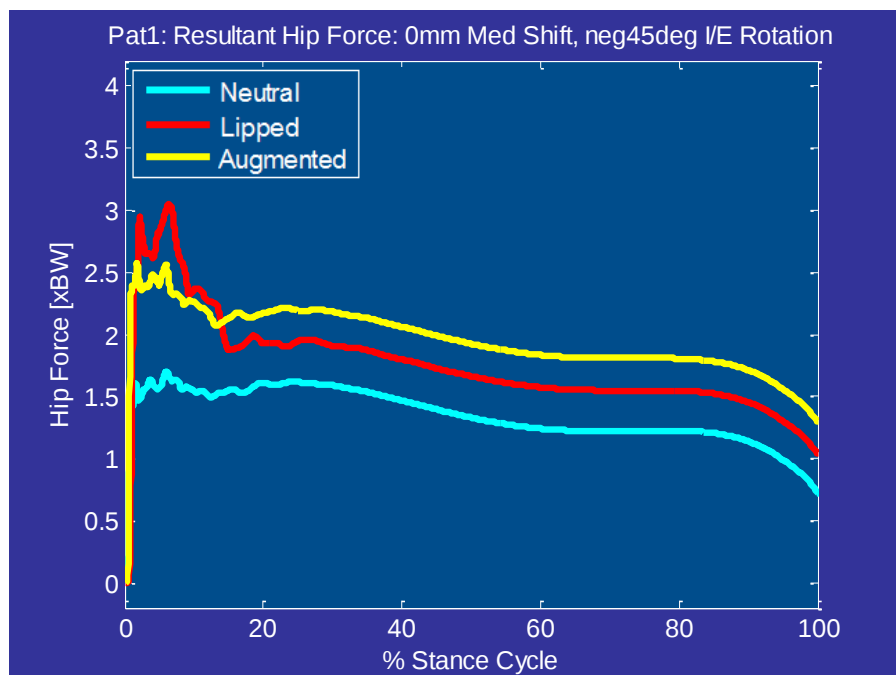


(b)

Figure D2: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

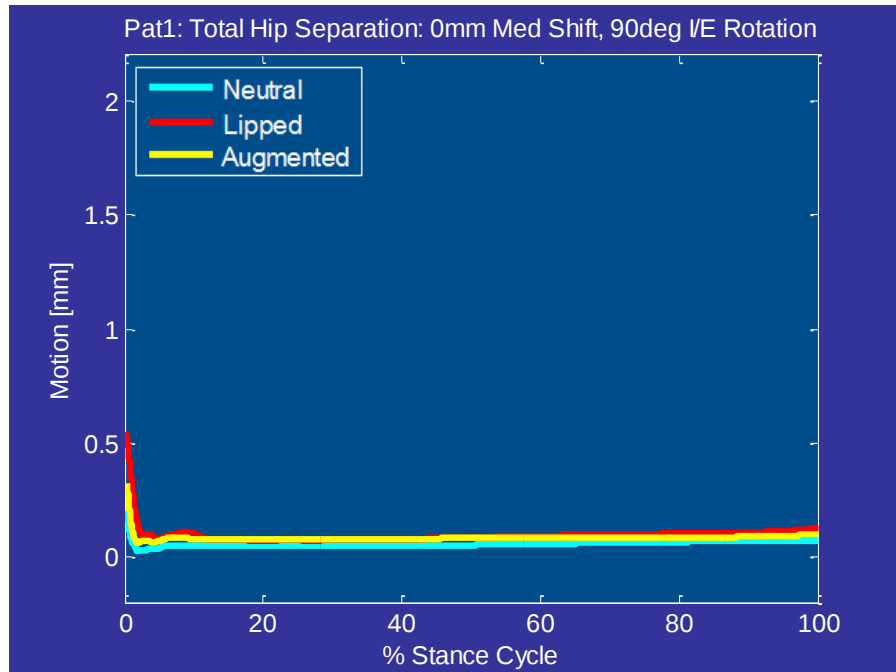


(a)

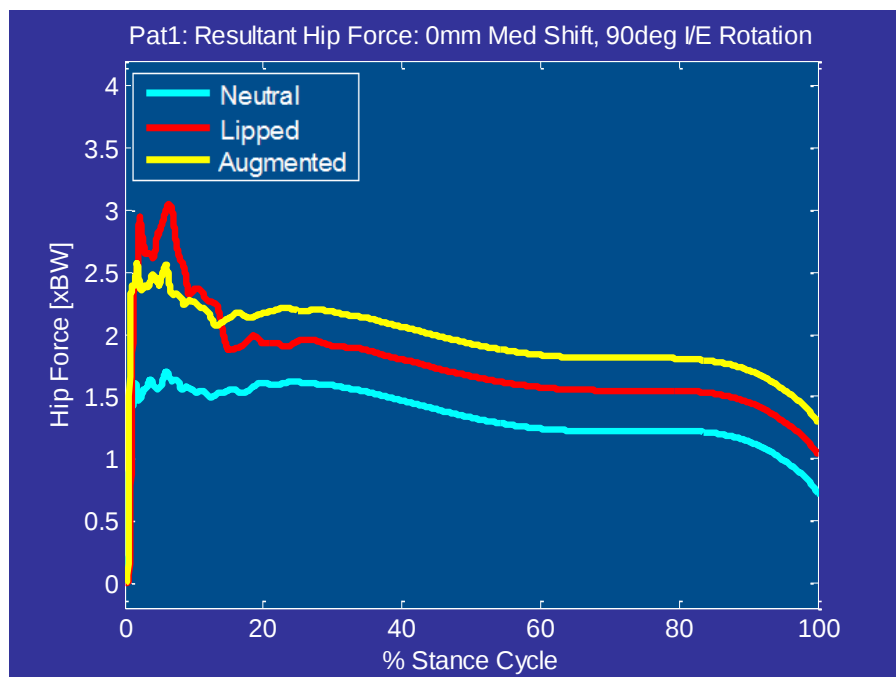


(b)

Figure D3: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

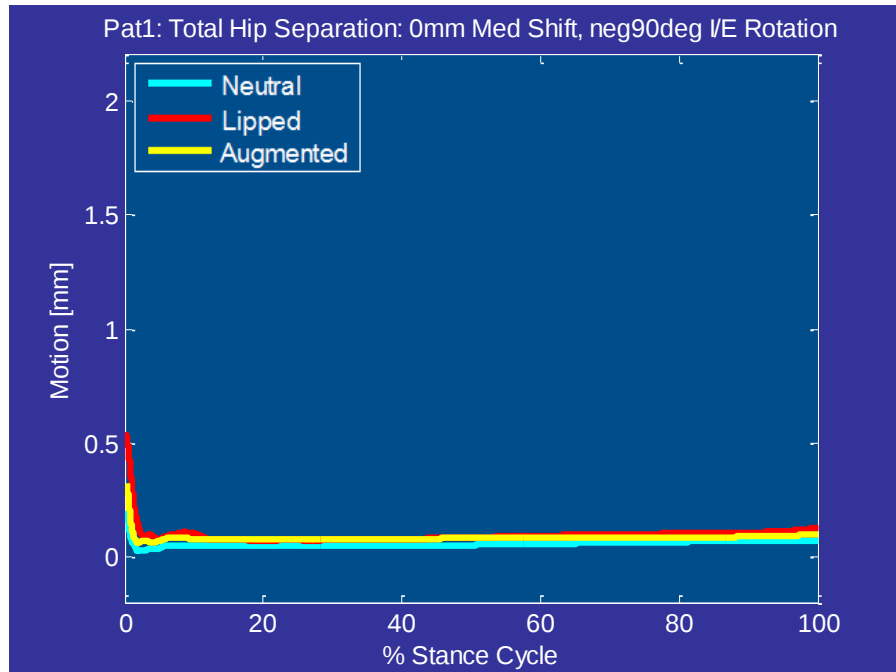


(a)

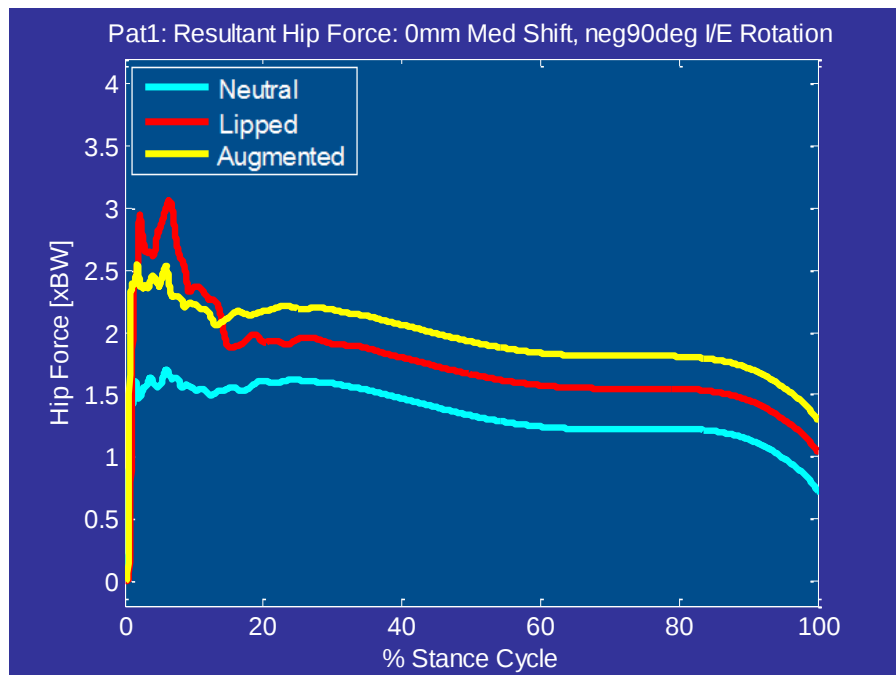


(b)

Figure D4: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

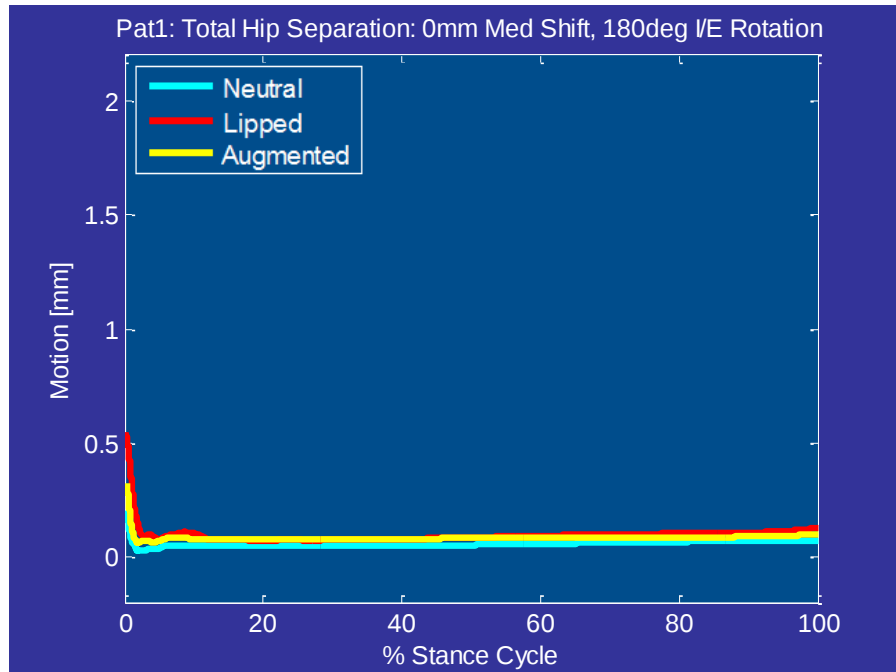


(a)

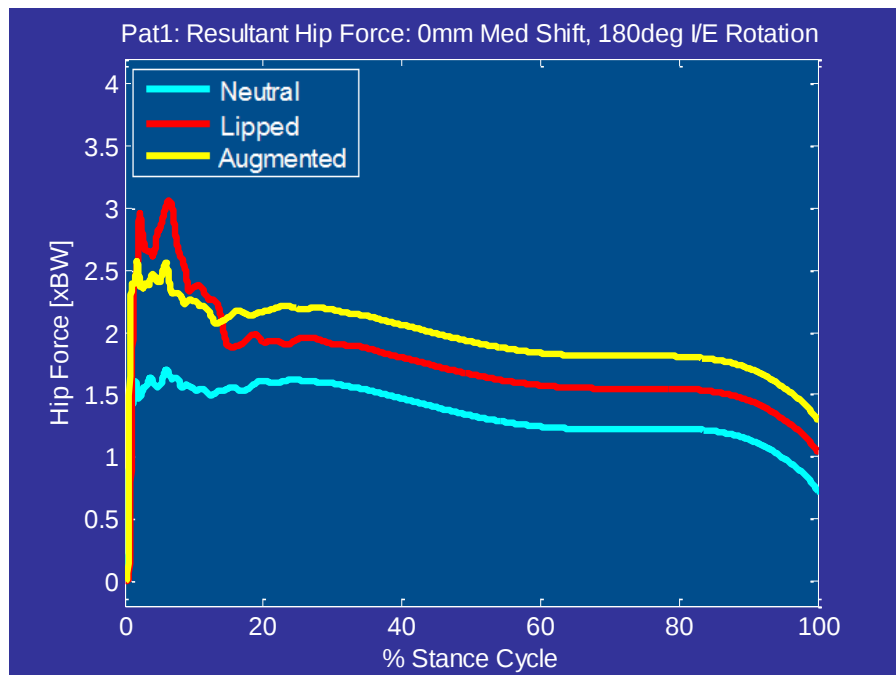


(b)

Figure D5: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

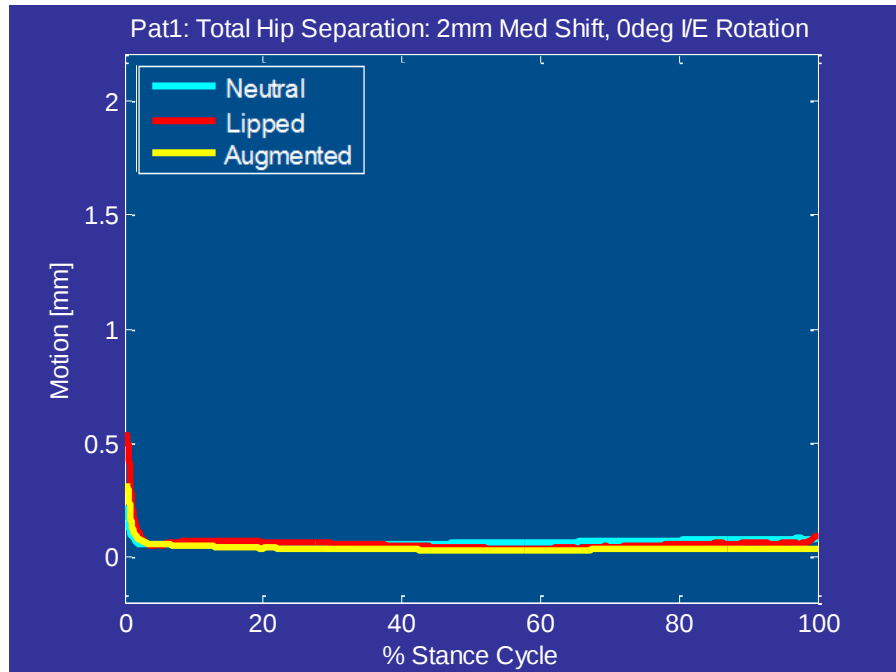


(a)

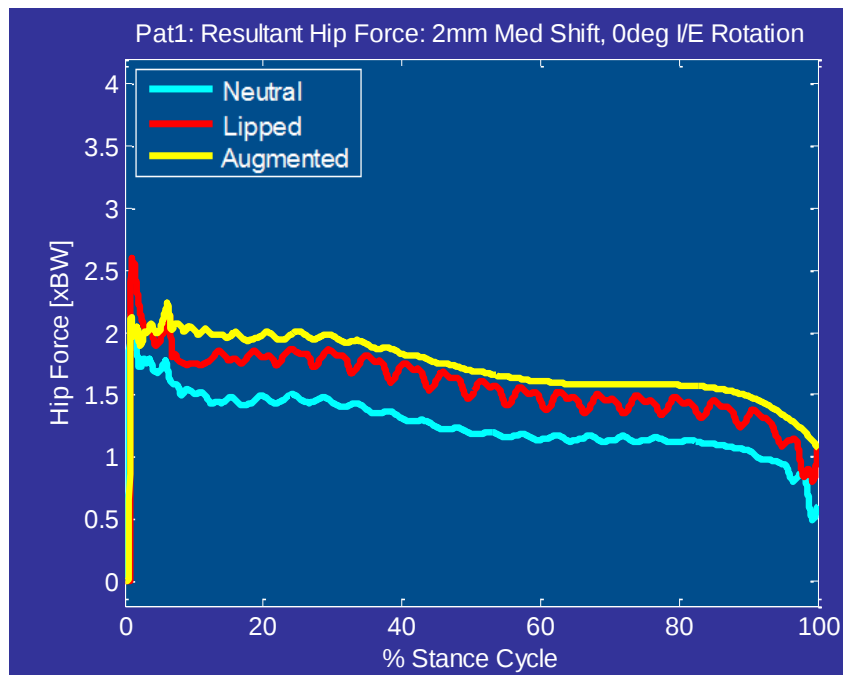


(b)

Figure D6: (a) Hip separation and (b) hip force Pat 1: 0mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

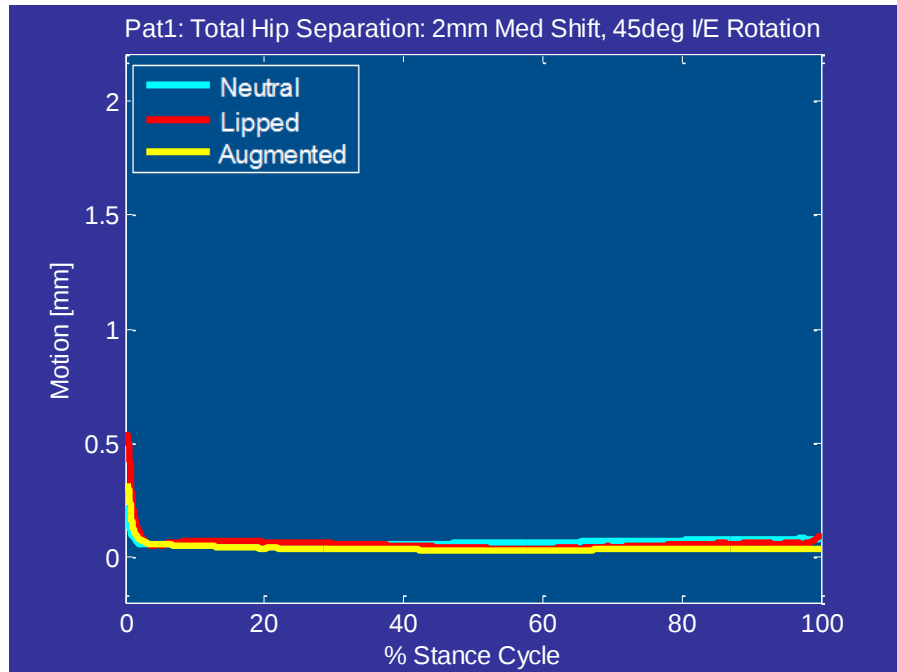


(a)

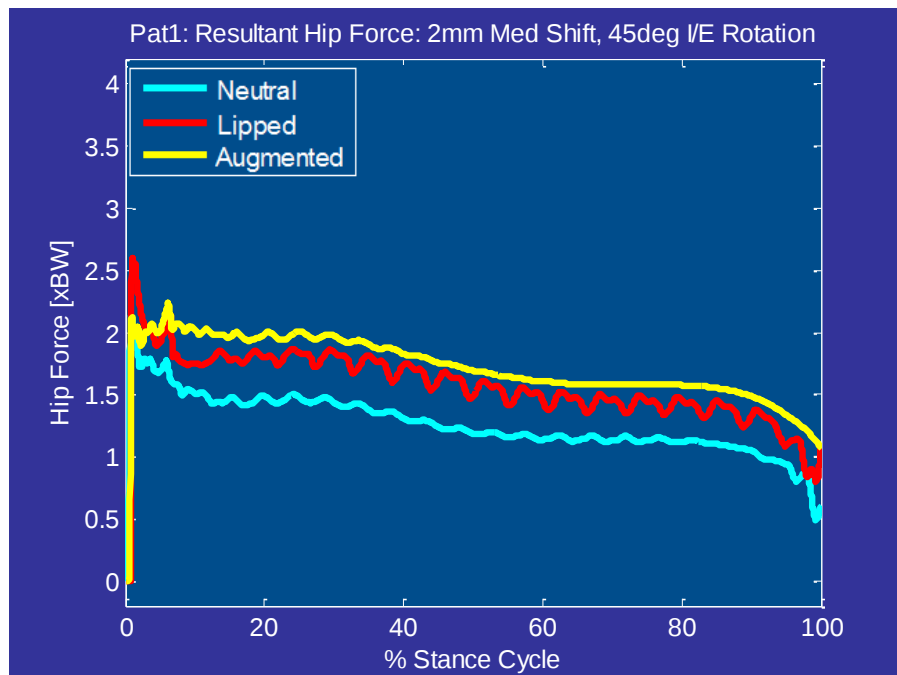


(b)

Figure D7: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

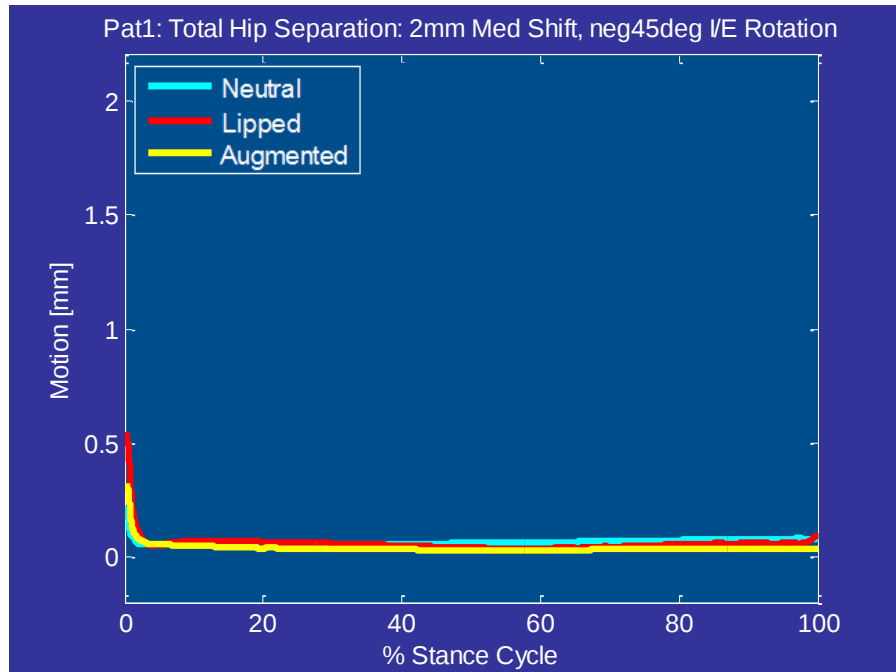


(a)

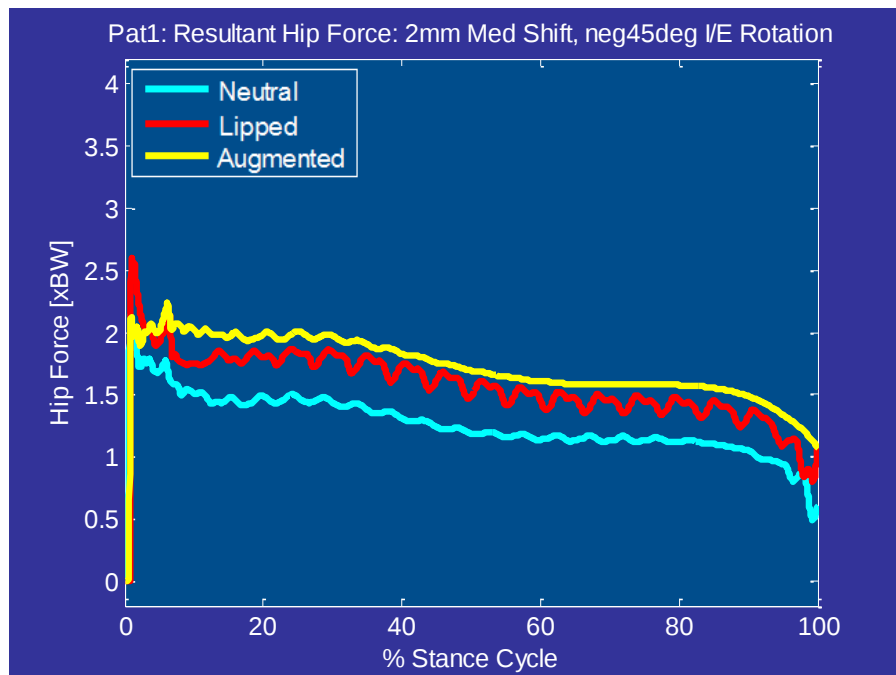


(b)

Figure D8: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

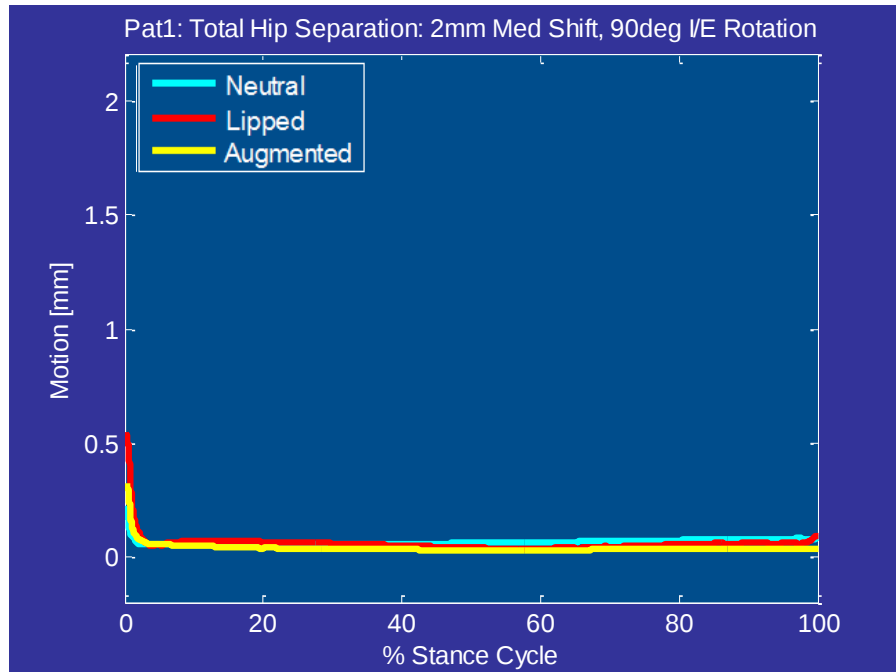


(a)

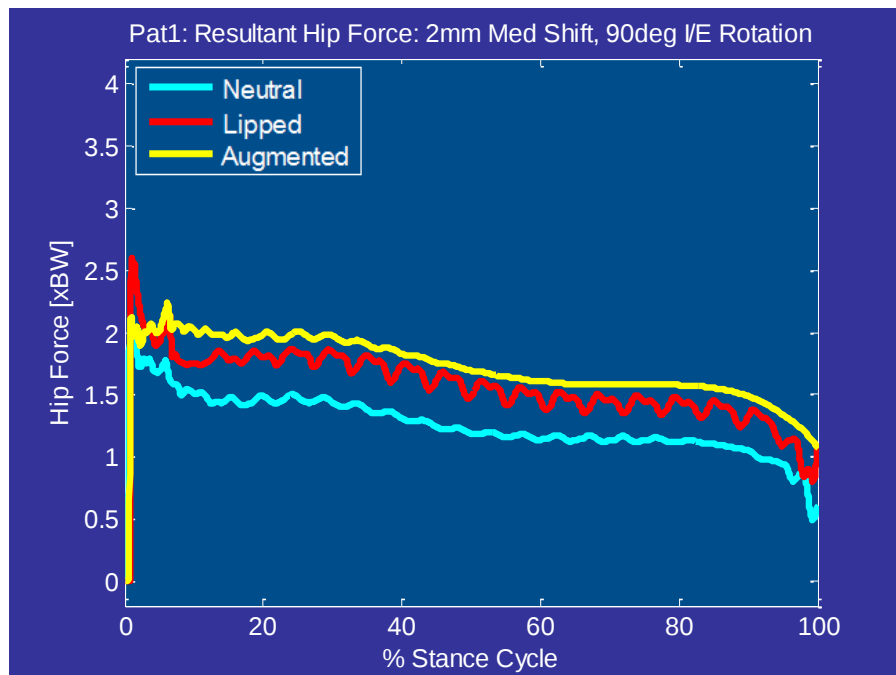


(b)

Figure D9: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

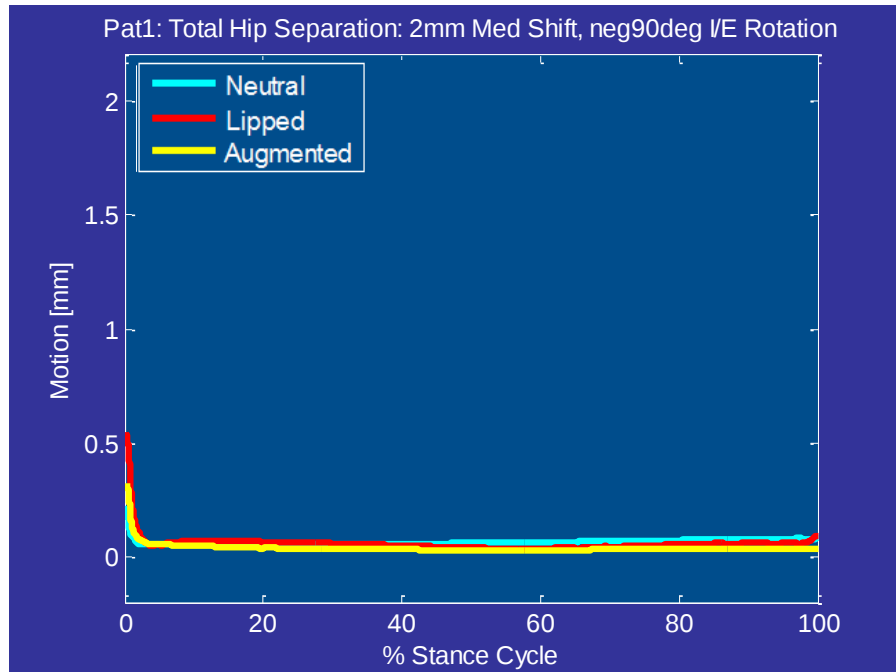


(a)

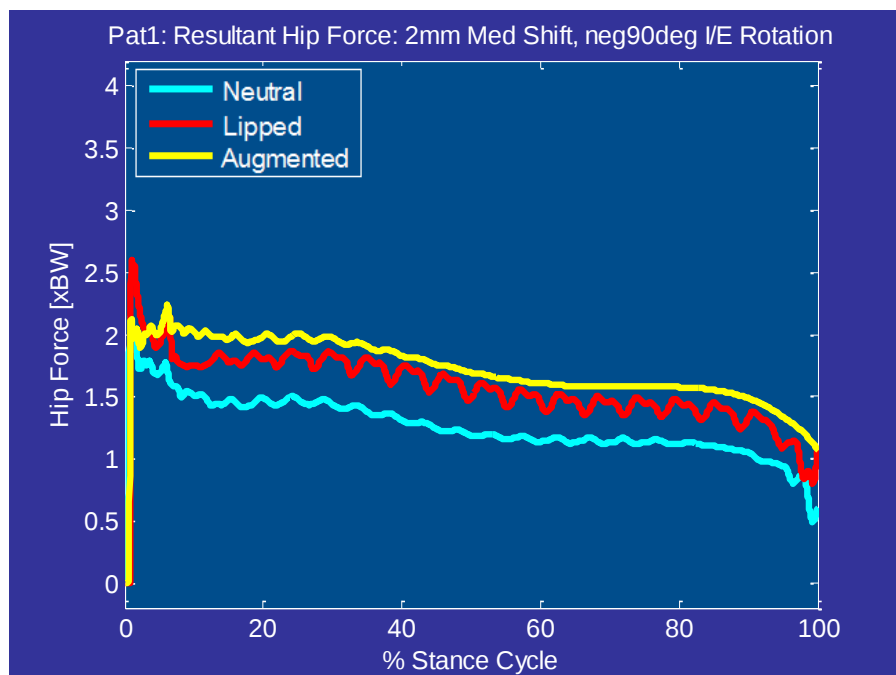


(b)

Figure D10: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

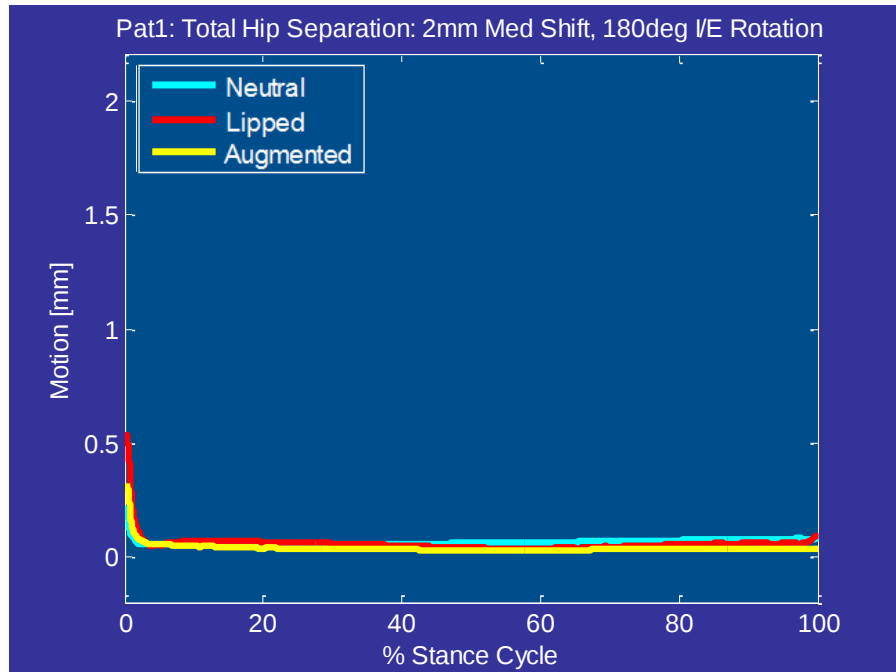


(a)

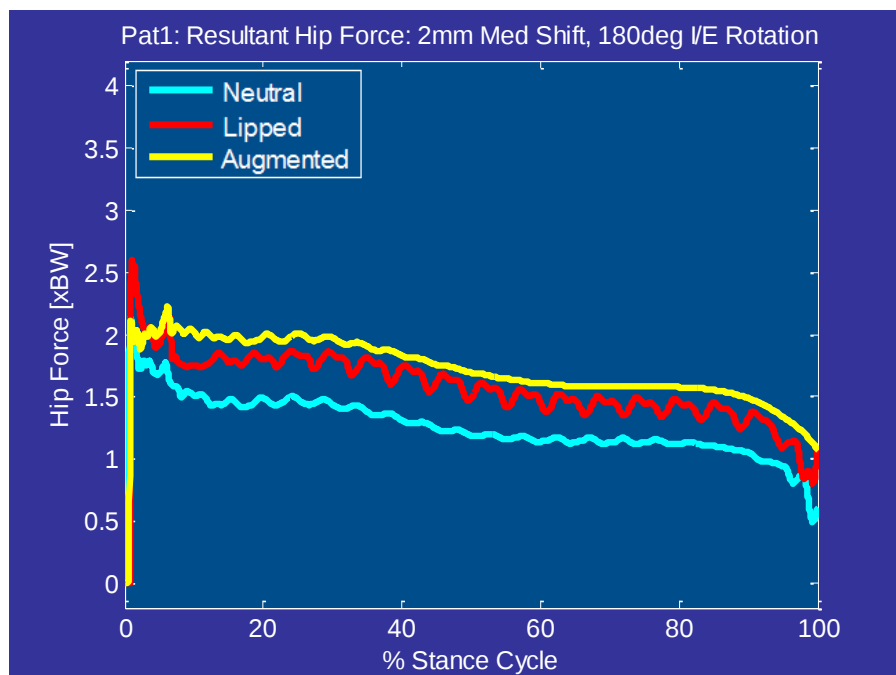


(b)

Figure D11: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

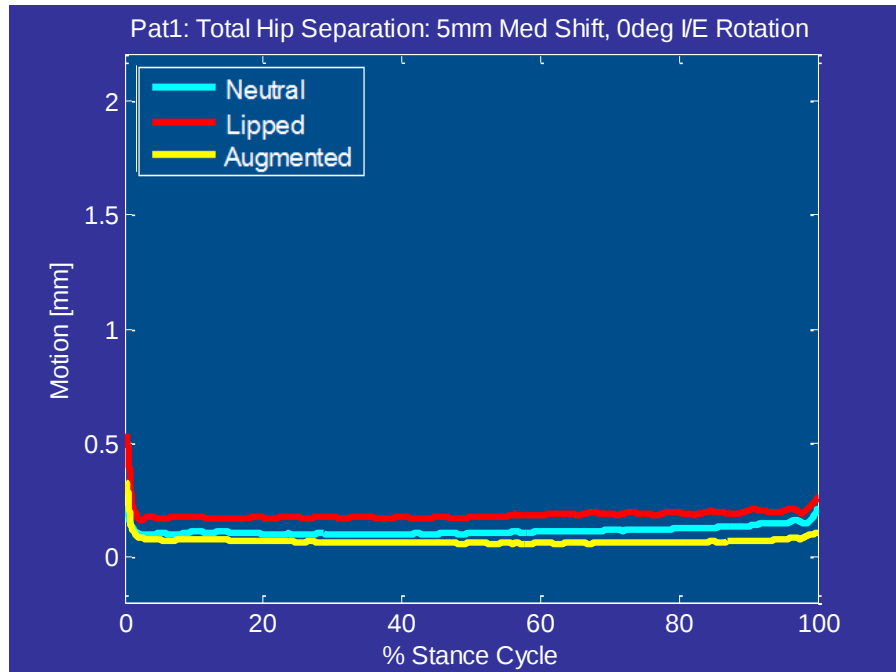


(a)

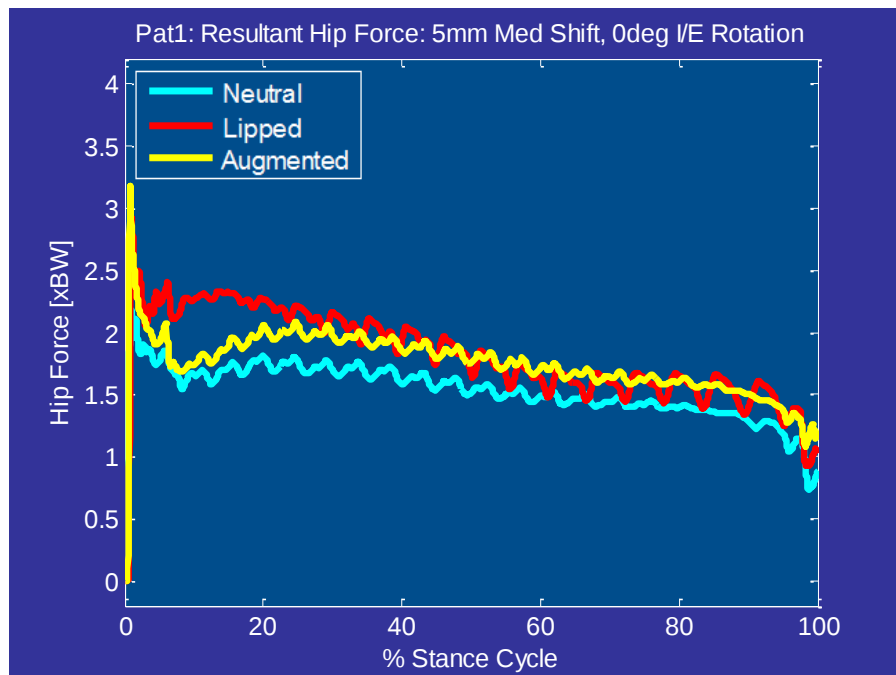


(b)

Figure D12: (a) Hip separation and (b) hip force Pat 1: 2mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

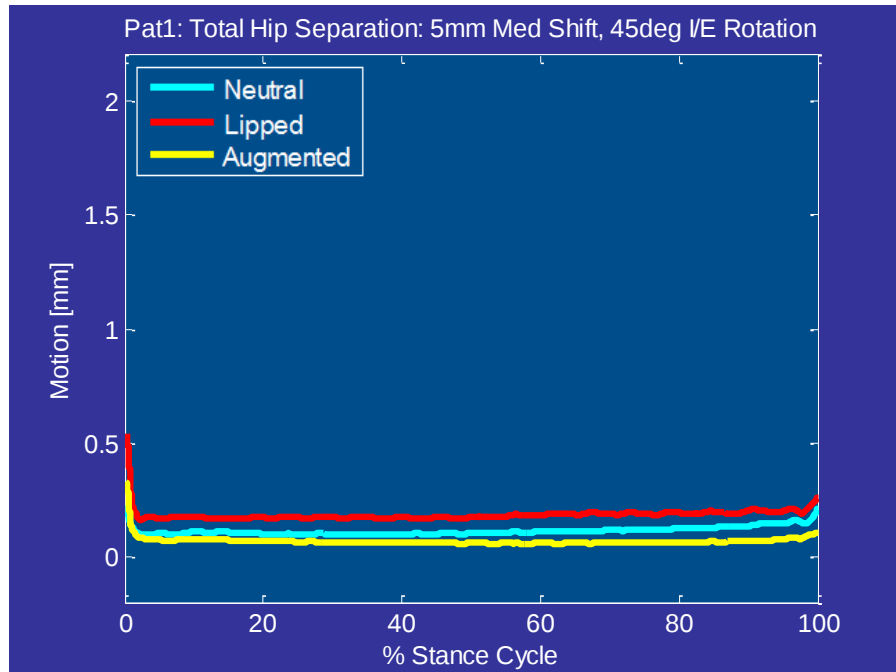


(a)

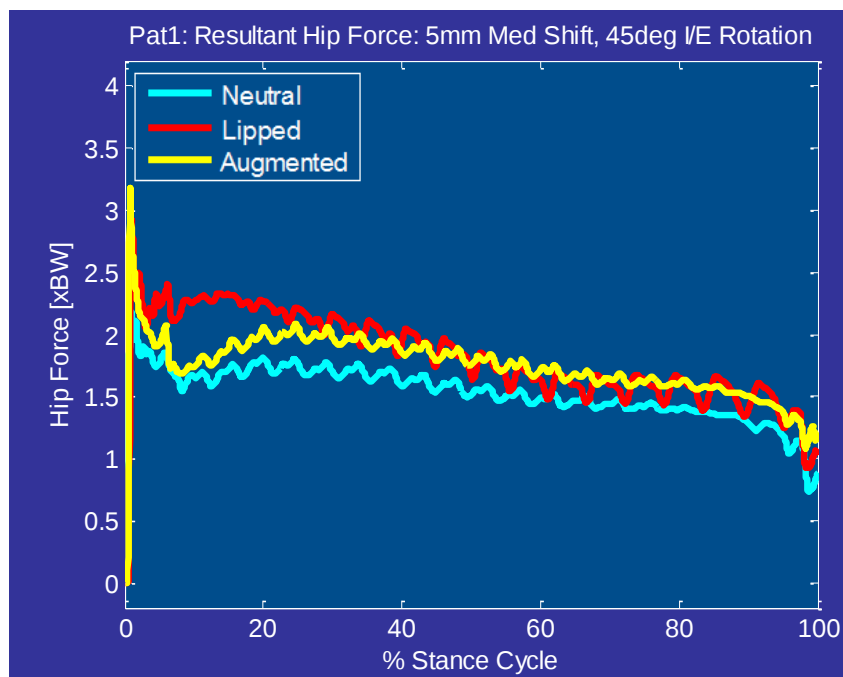


(b)

Figure D13: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

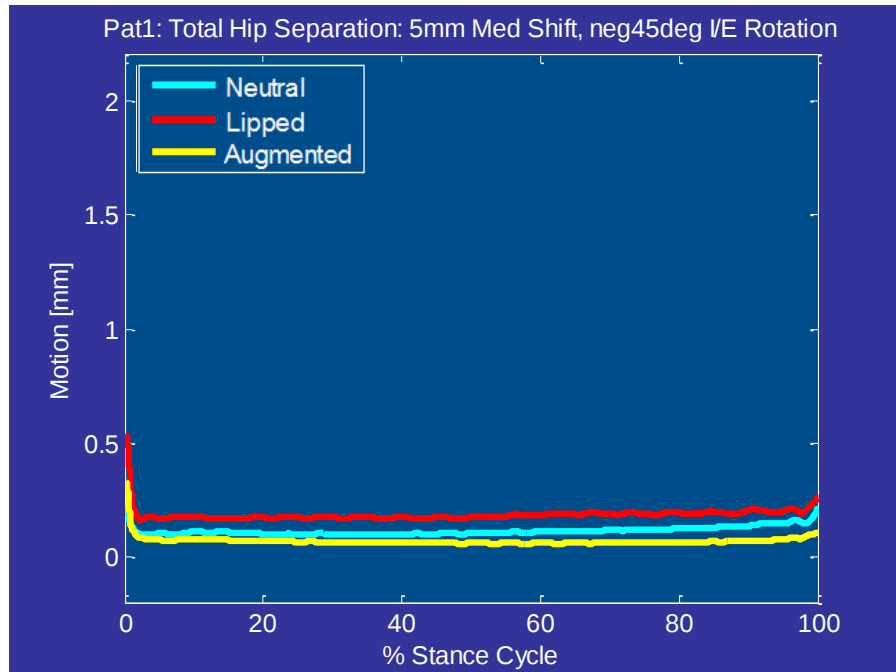


(a)

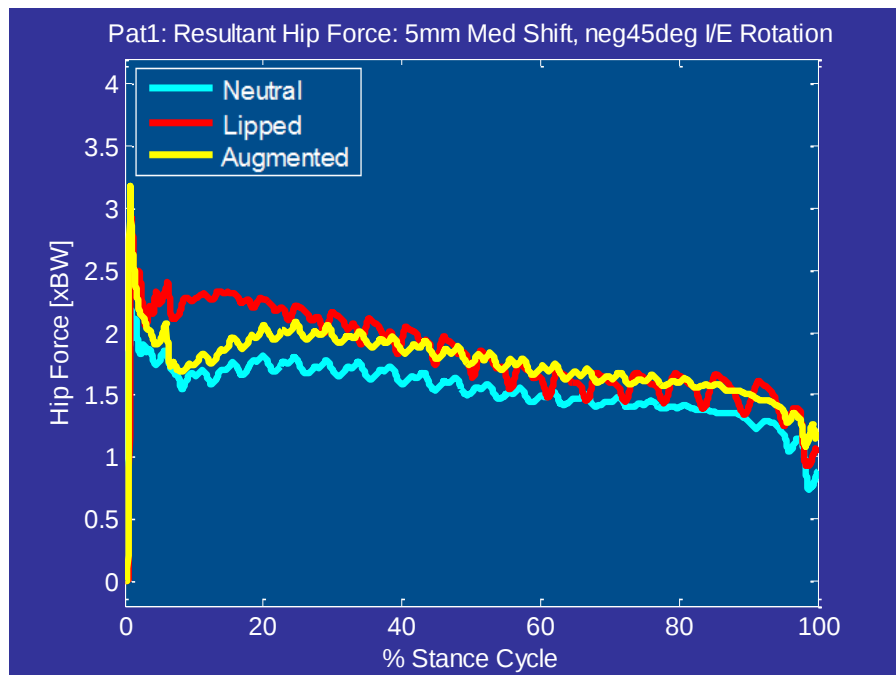


(b)

Figure D14: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

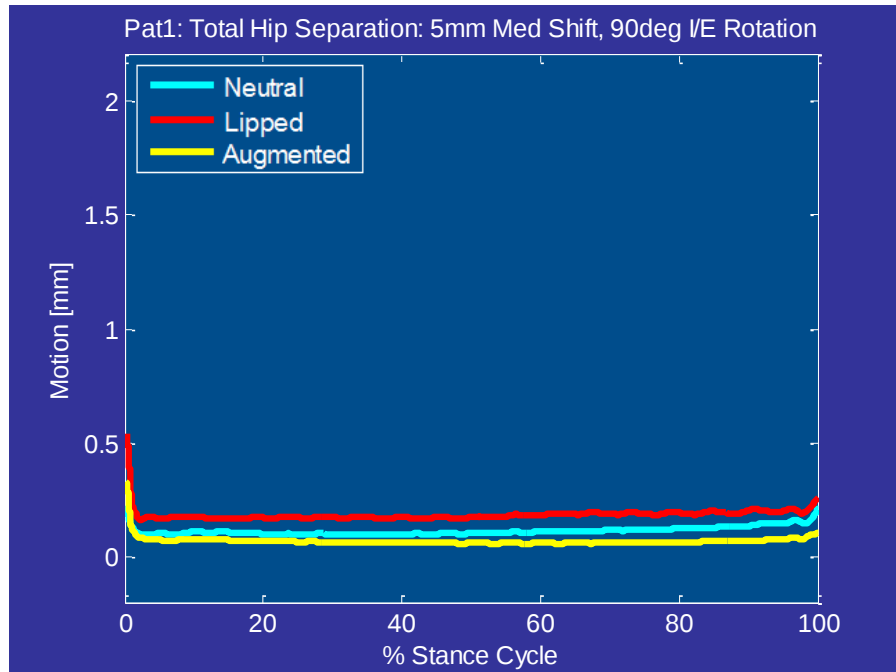


(a)

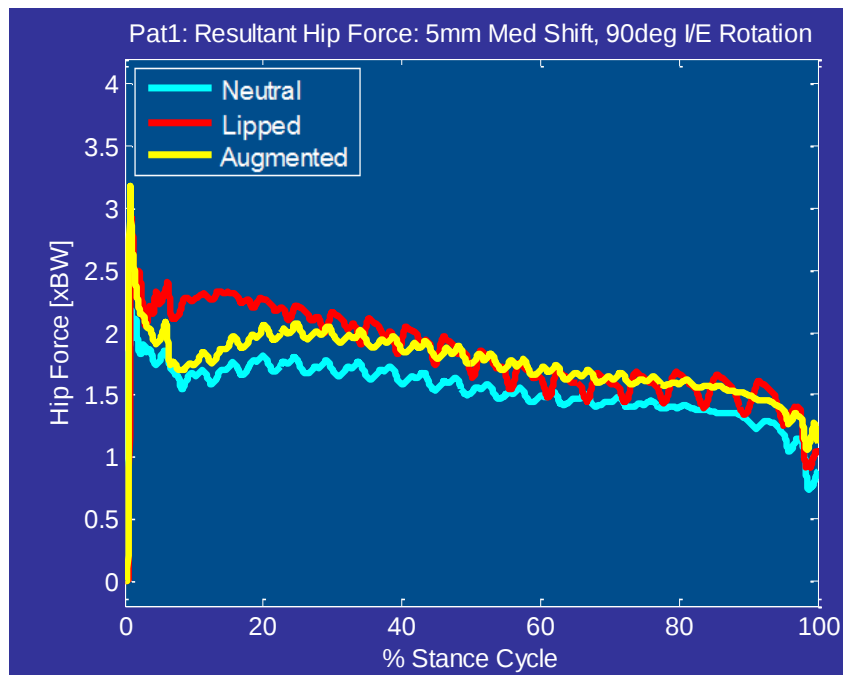


(b)

Figure D15: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

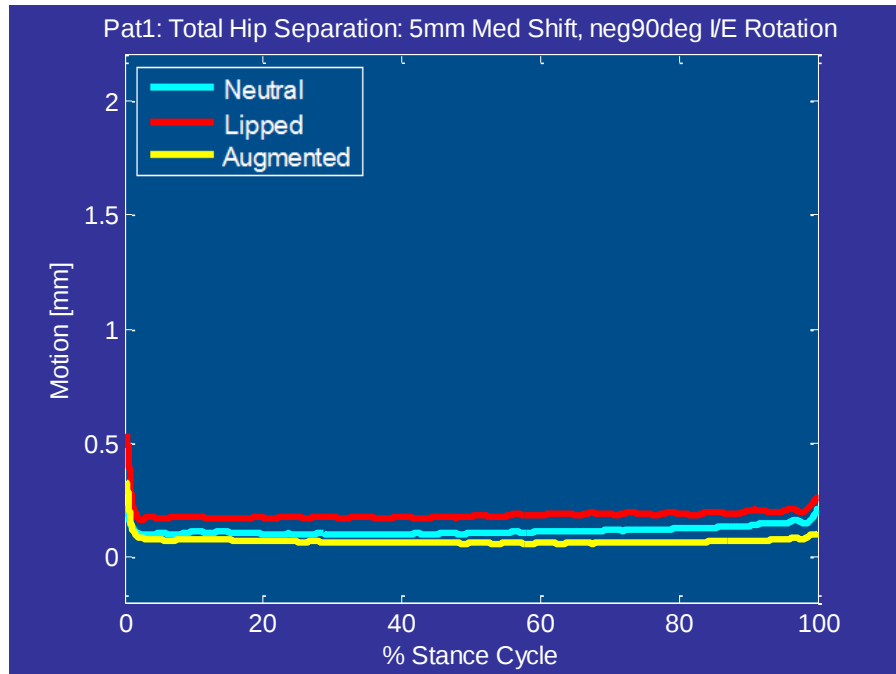


(a)

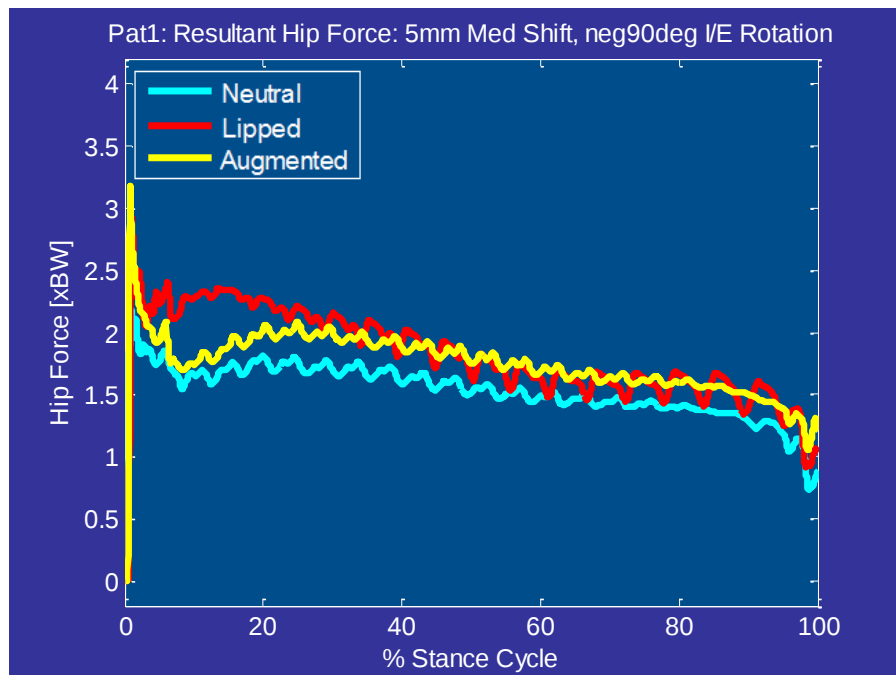


(b)

Figure D16: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

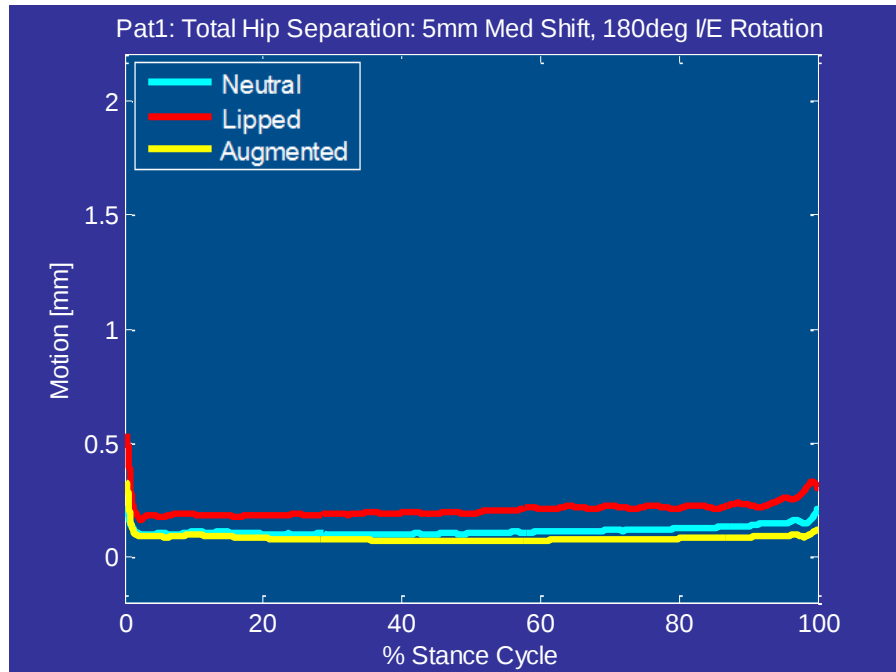


(a)

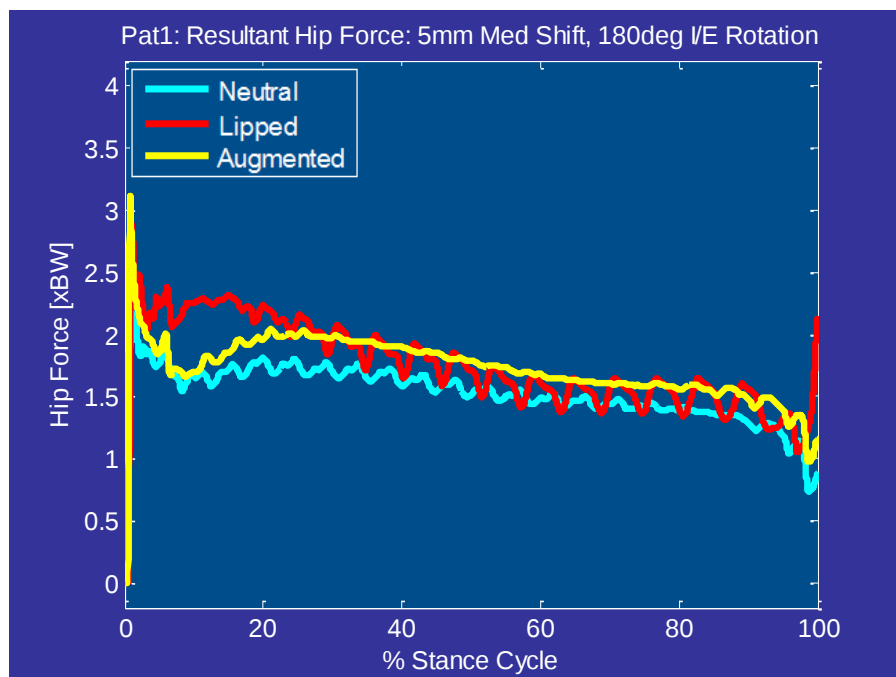


(b)

Figure D17: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

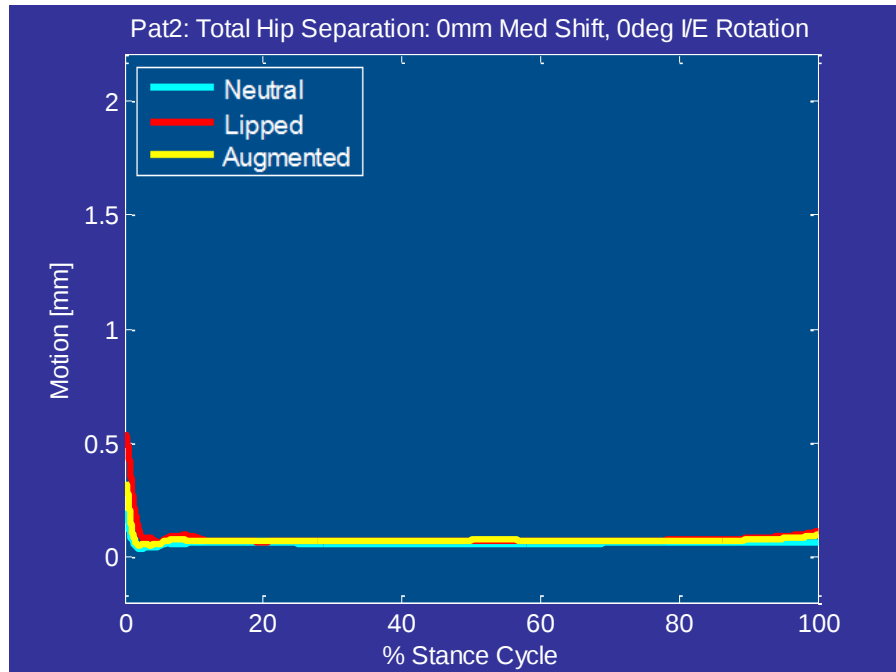


(a)

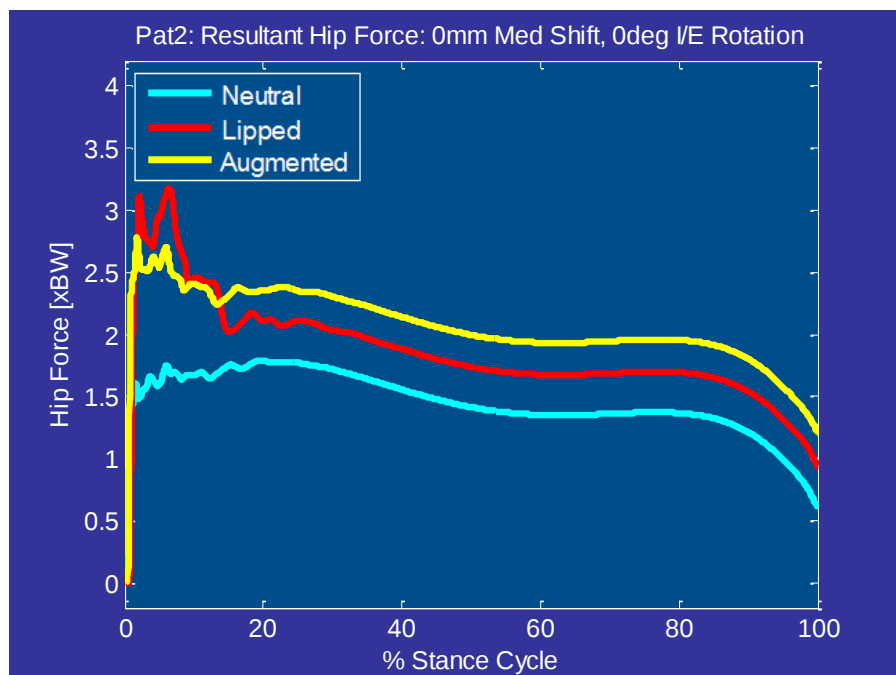


(b)

Figure D18: (a) Hip separation and (b) hip force Pat 1: 5mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

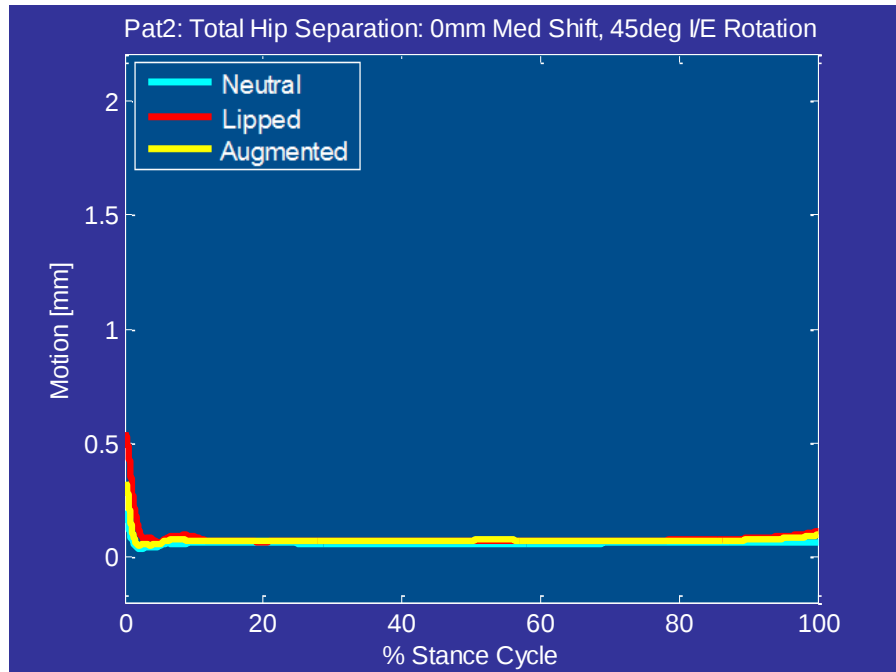


(a)

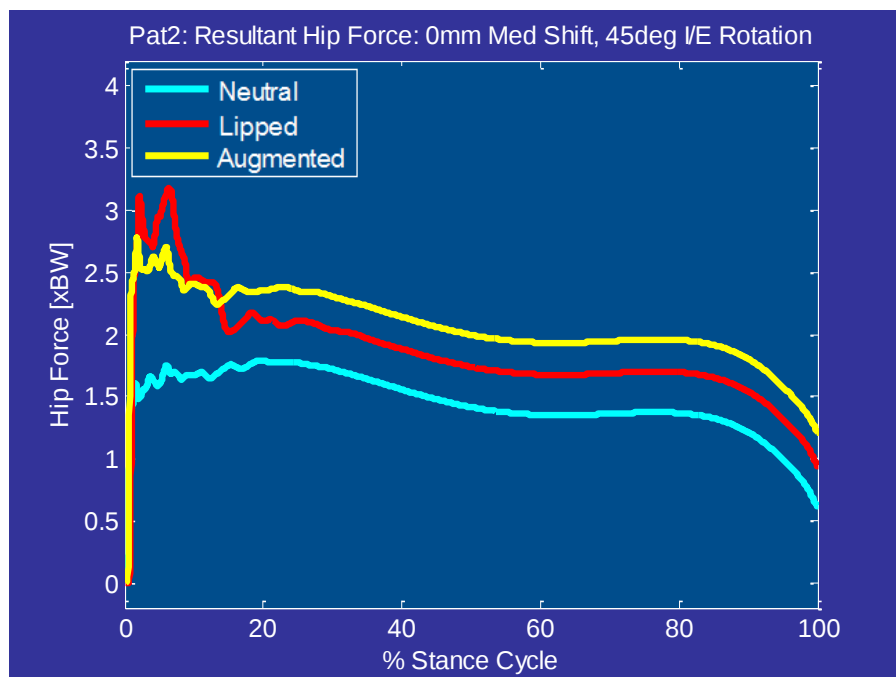


(b)

Figure D19: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

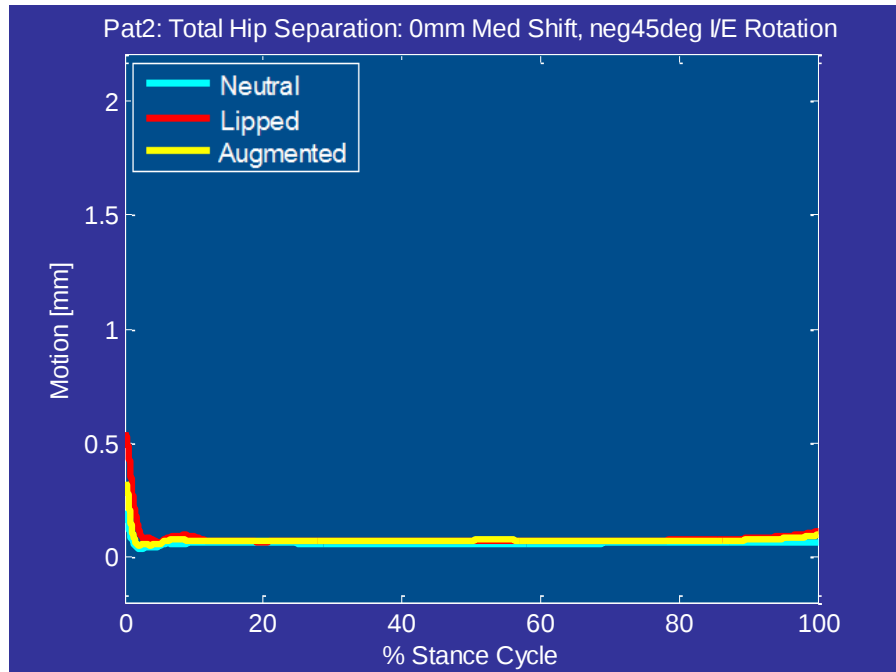


(a)

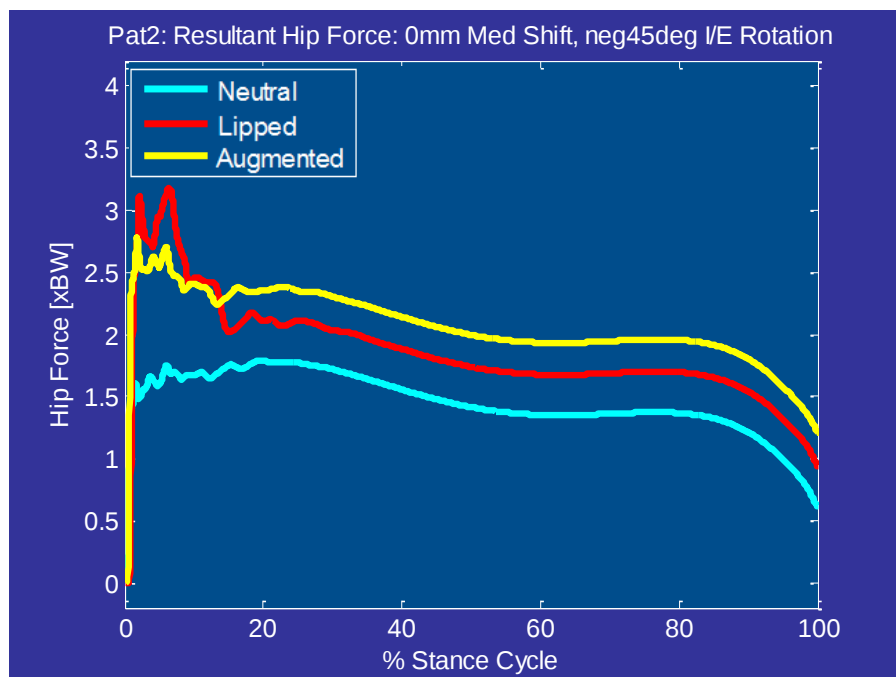


(b)

Figure D20: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

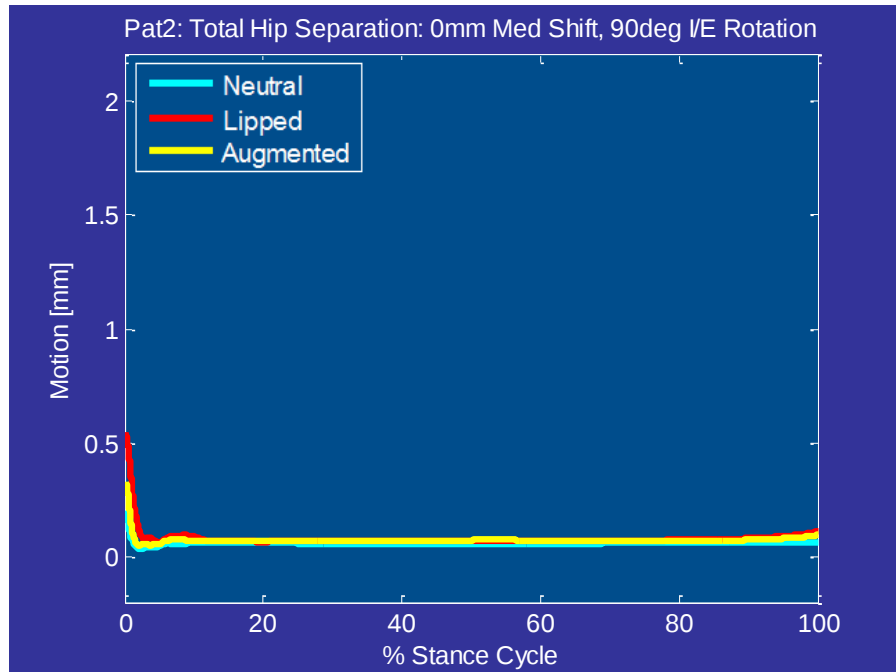


(a)

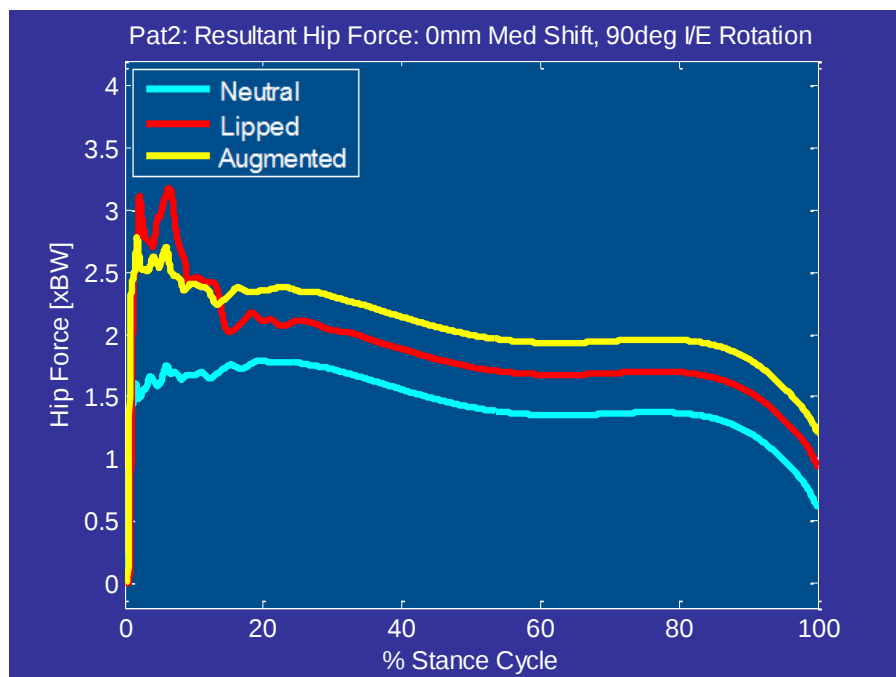


(b)

Figure D21: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

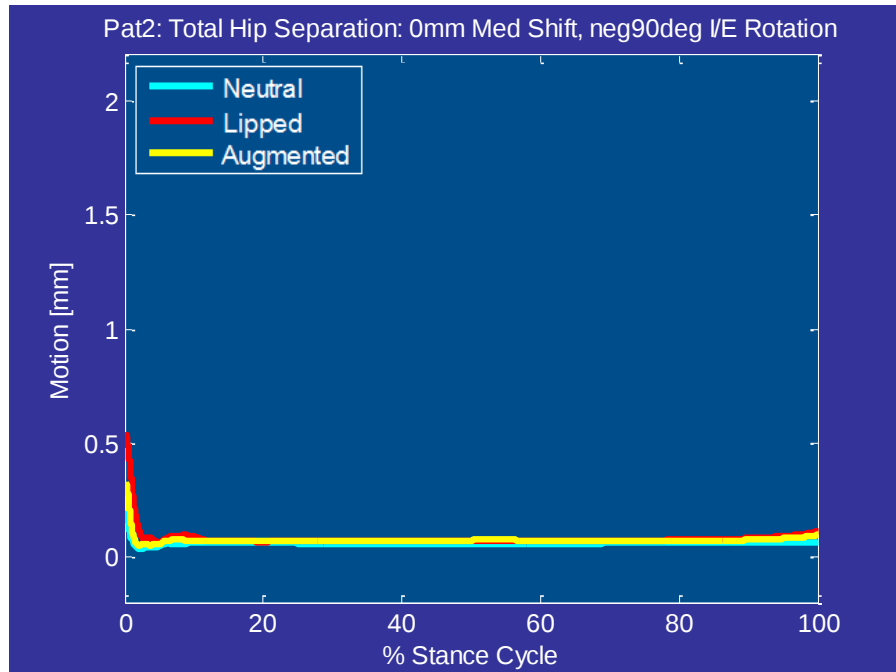


(a)

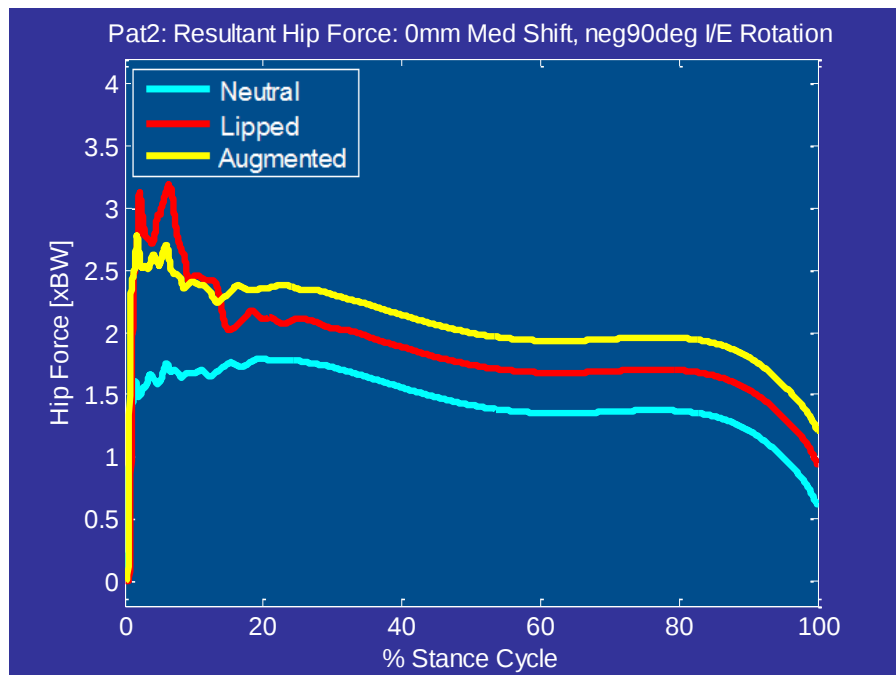


(b)

Figure D22: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

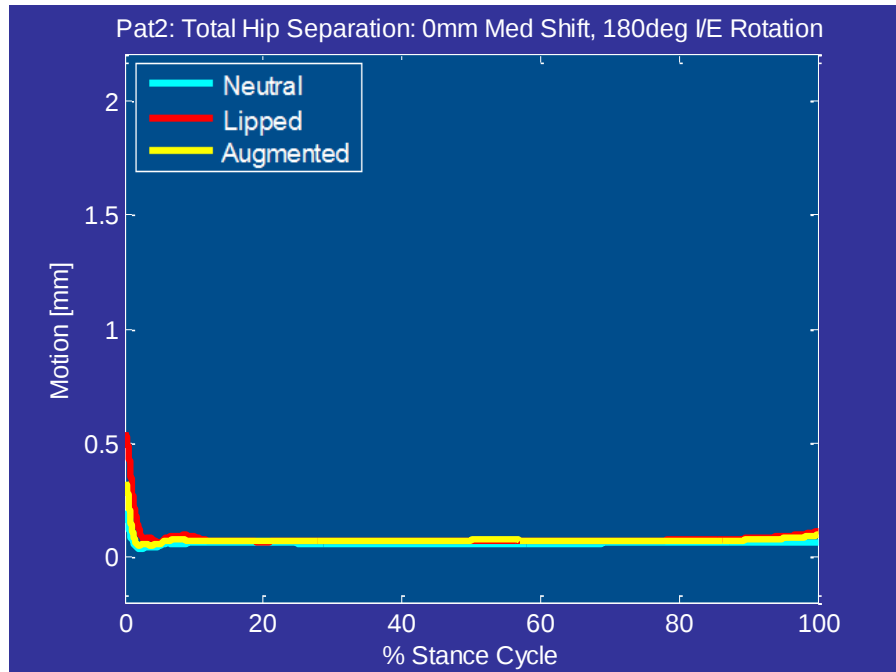


(a)

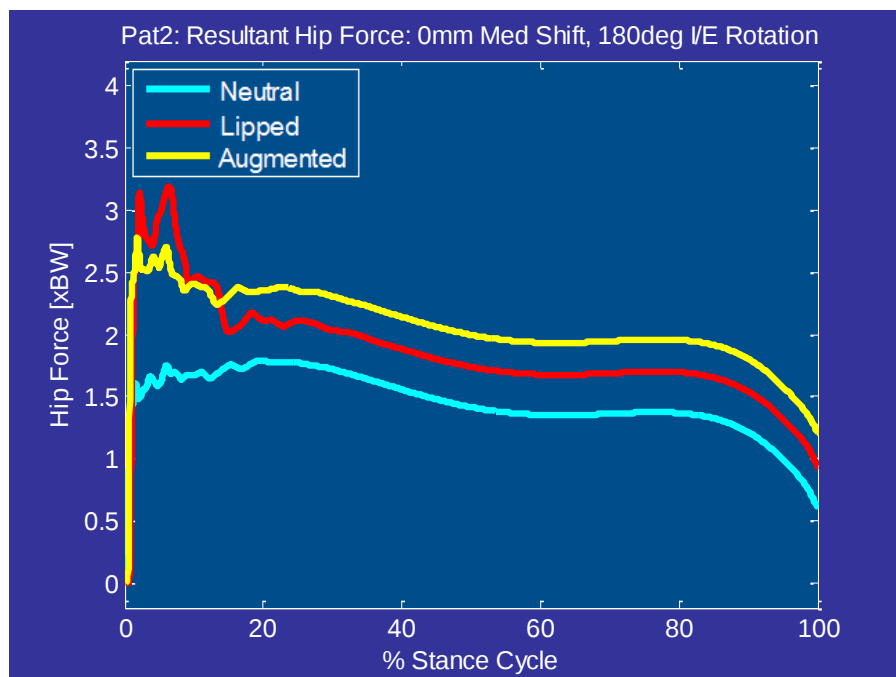


(b)

Figure D23: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

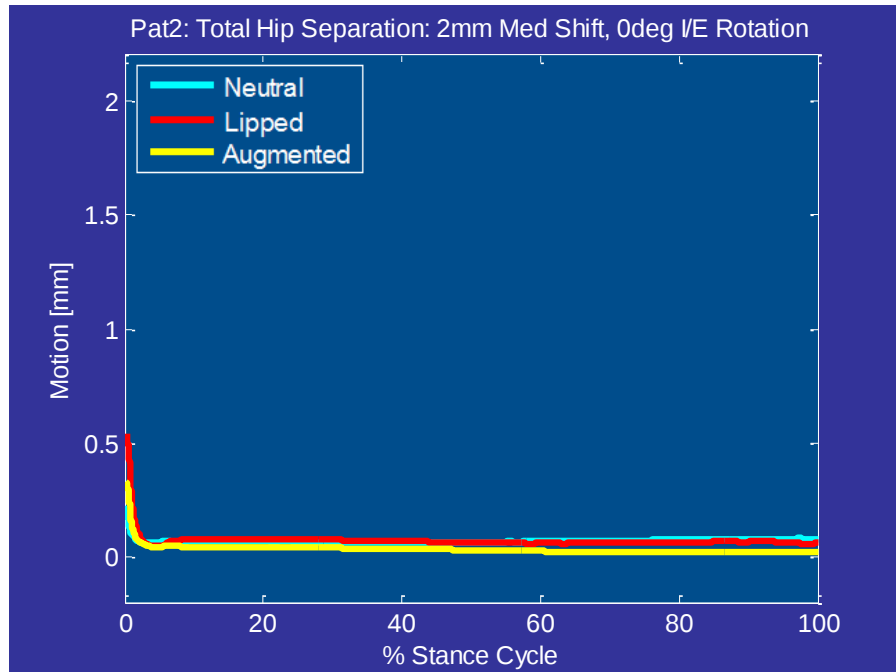


(a)

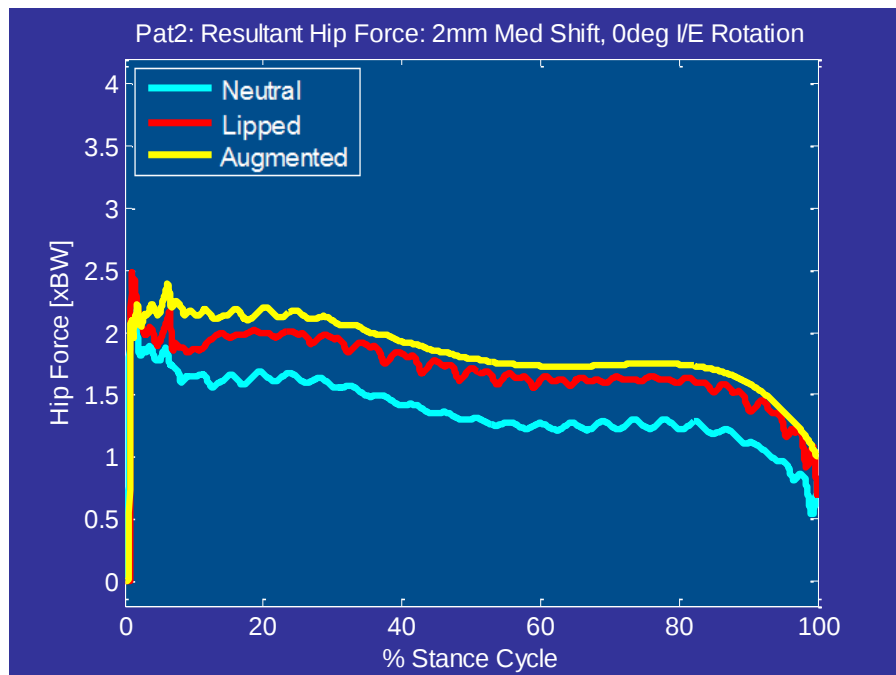


(b)

Figure D24: (a) Hip separation and (b) hip force Pat 2: 0mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

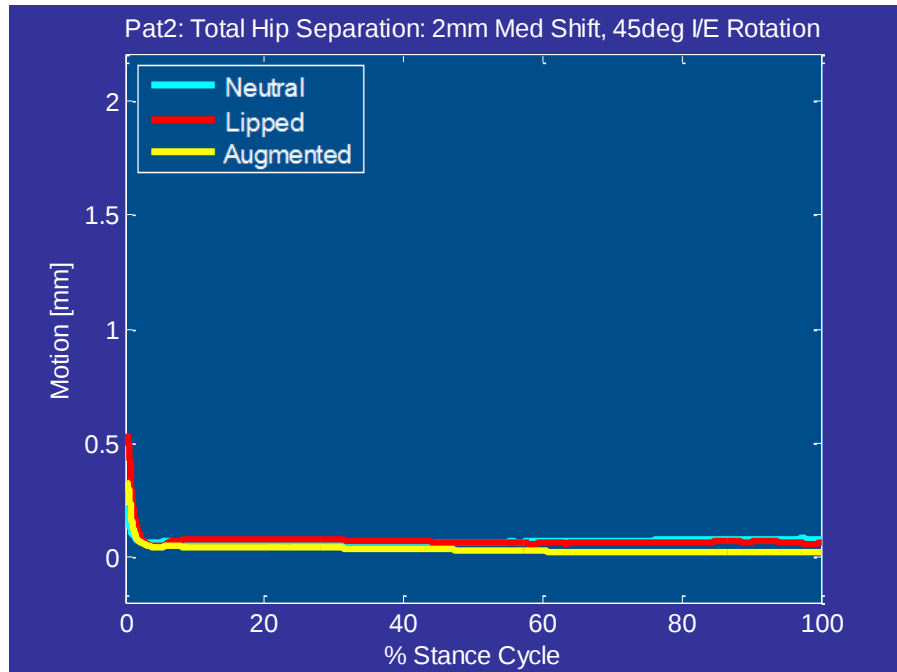


(a)

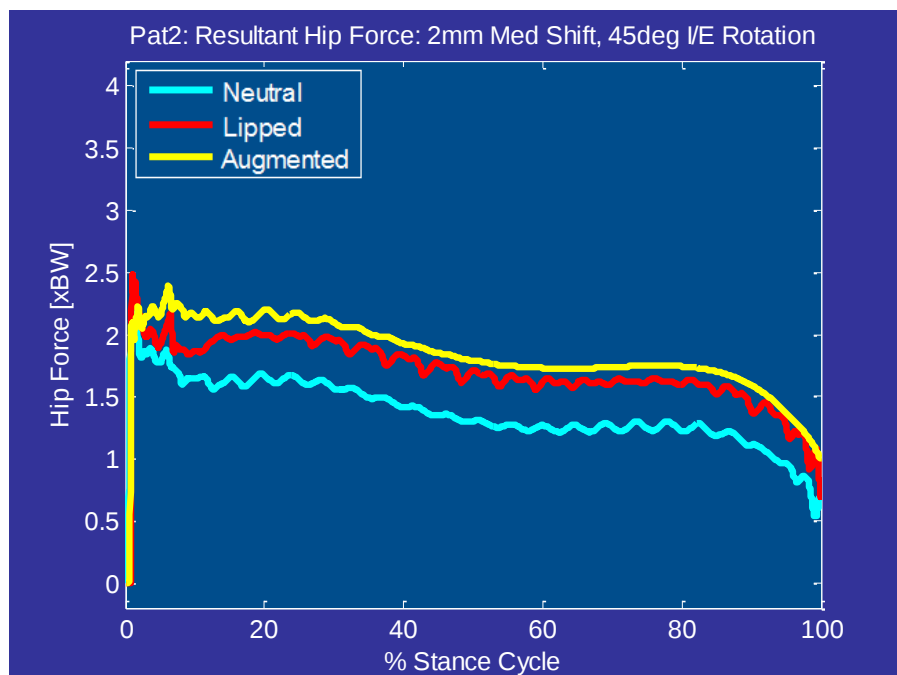


(b)

Figure D25: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

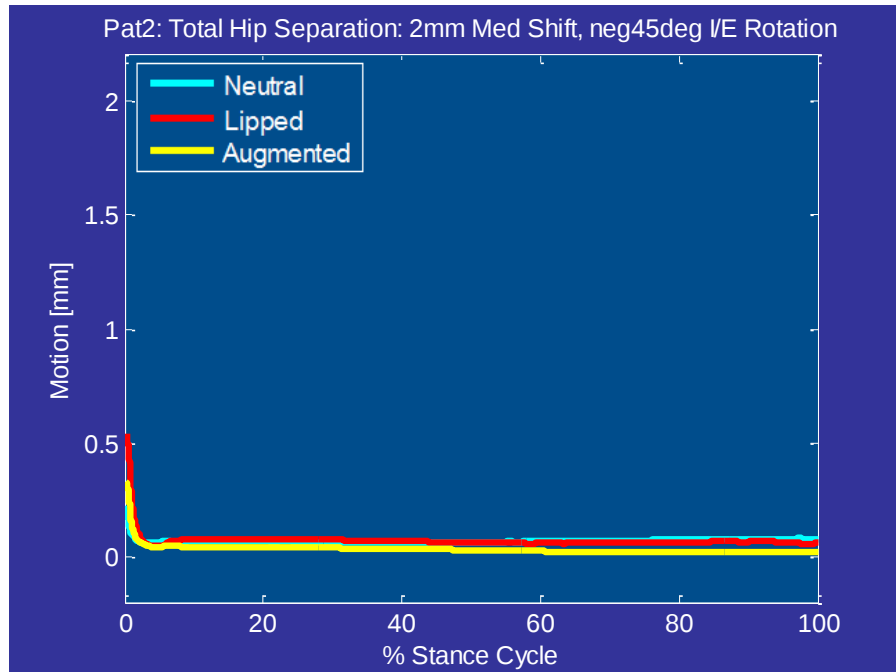


(a)

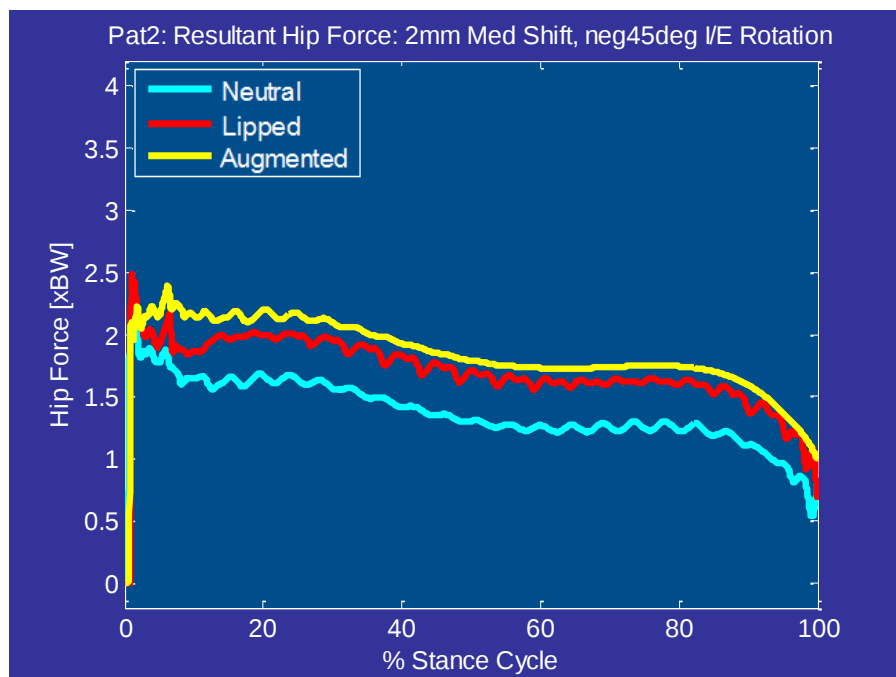


(b)

Figure D26: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

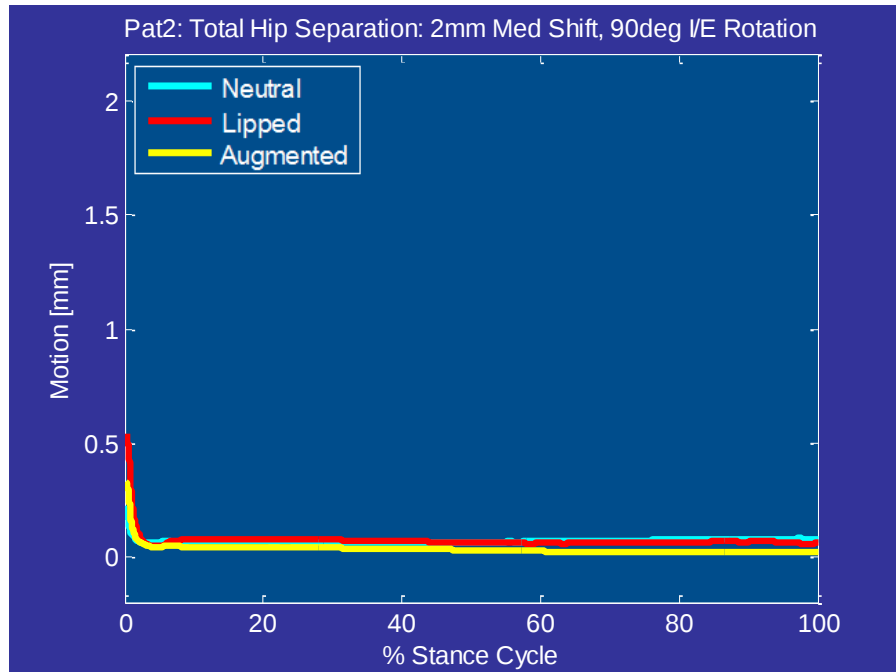


(a)

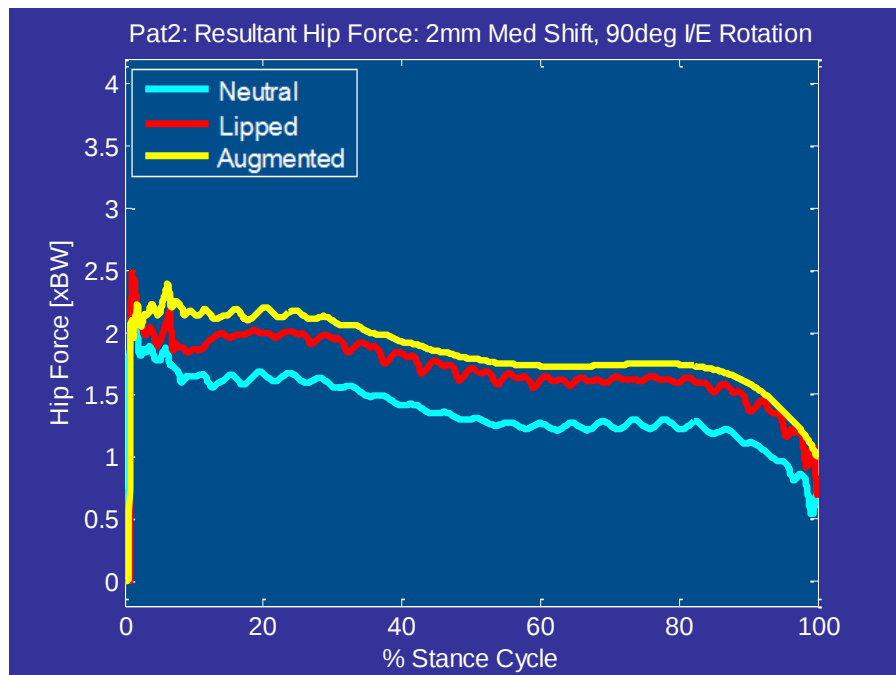


(b)

Figure D27: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

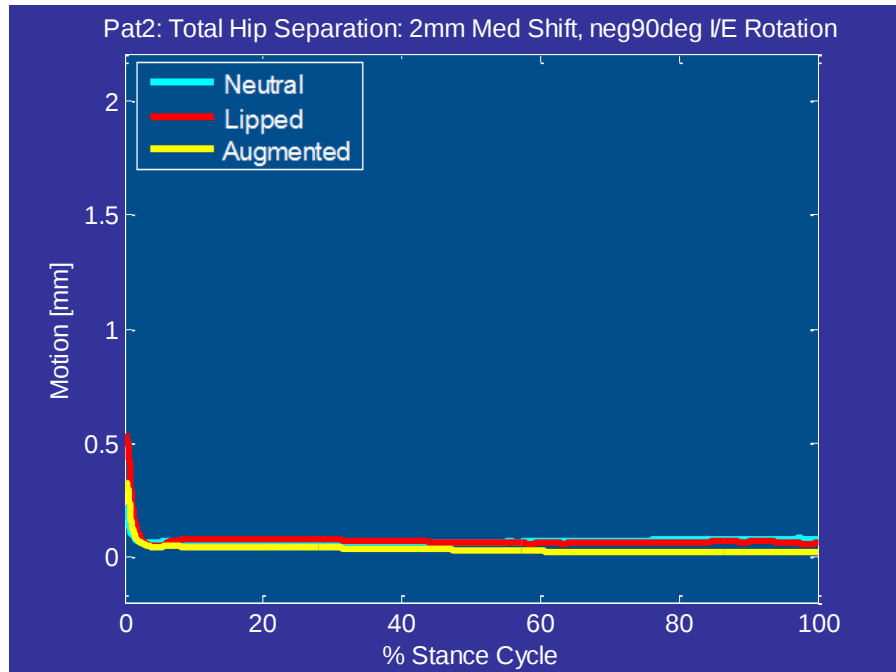


(a)

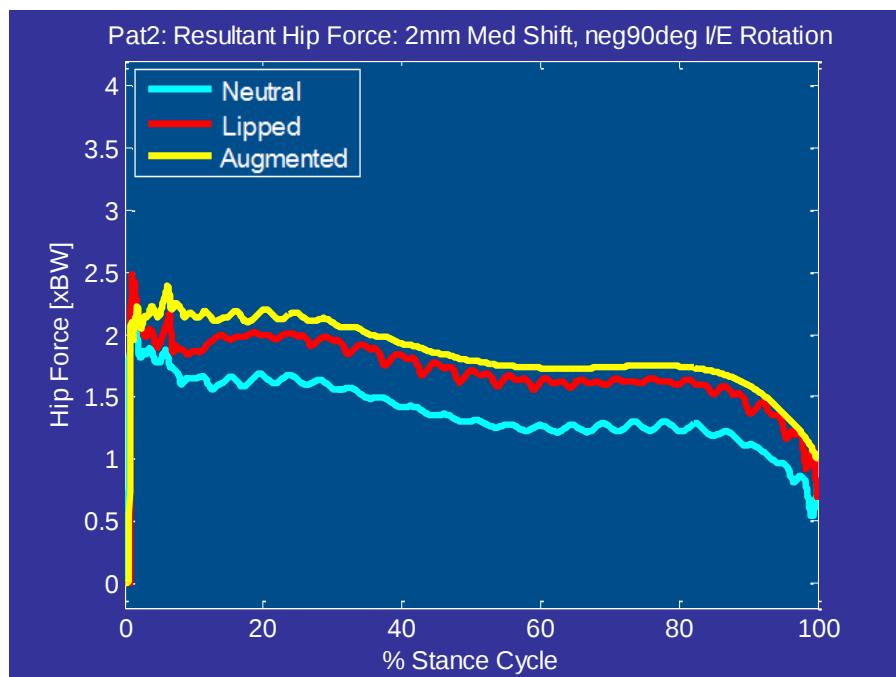


(b)

Figure D28: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

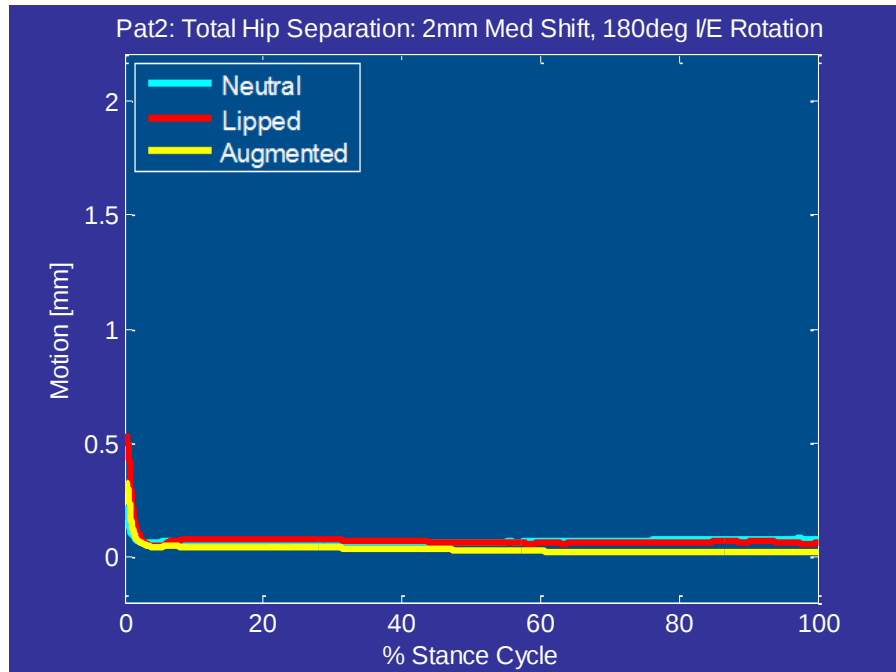


(a)

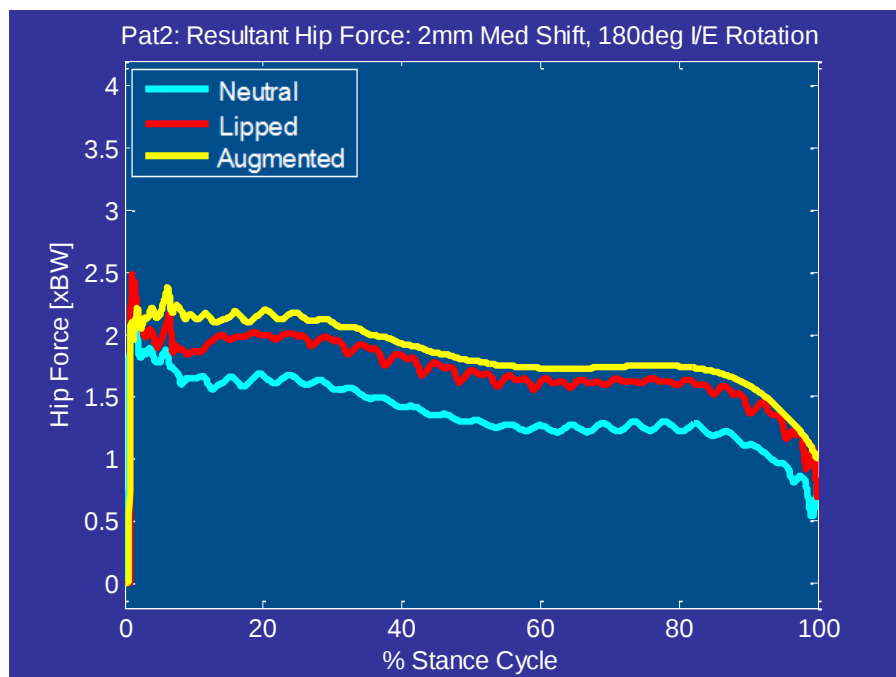


(b)

Figure D29: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

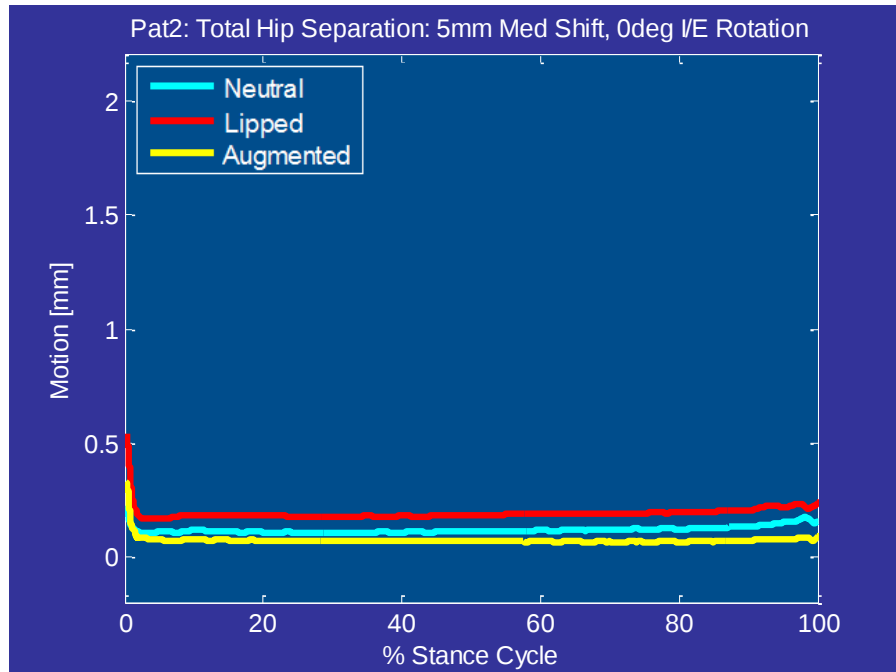


(a)

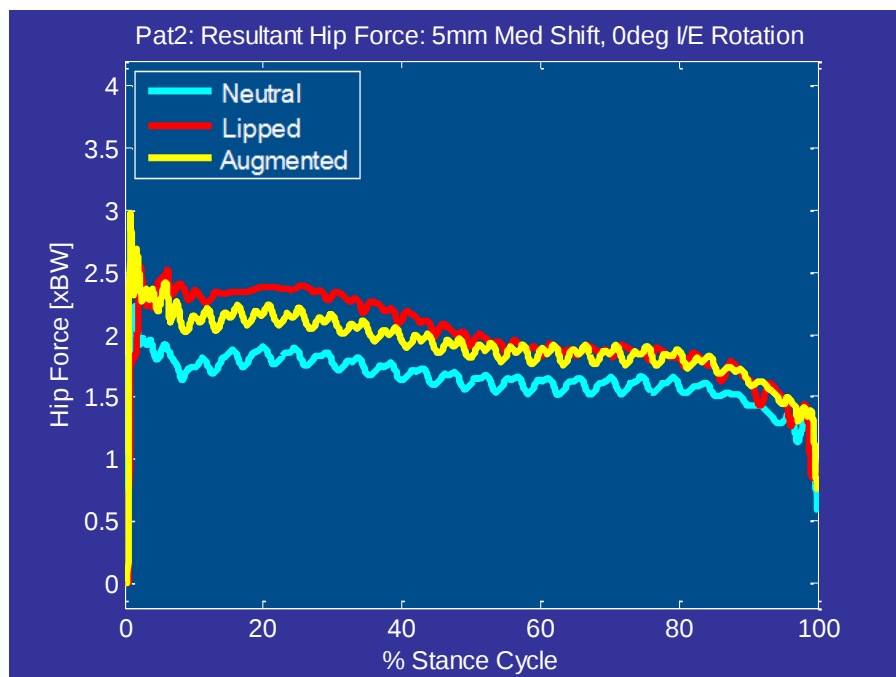


(b)

Figure D30: (a) Hip separation and (b) hip force Pat 2: 2mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

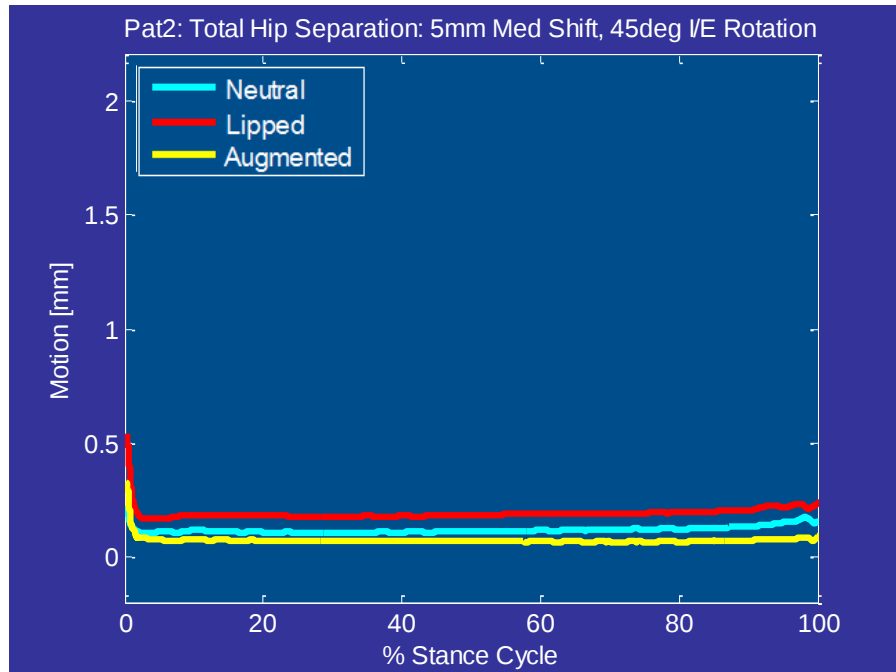


(a)

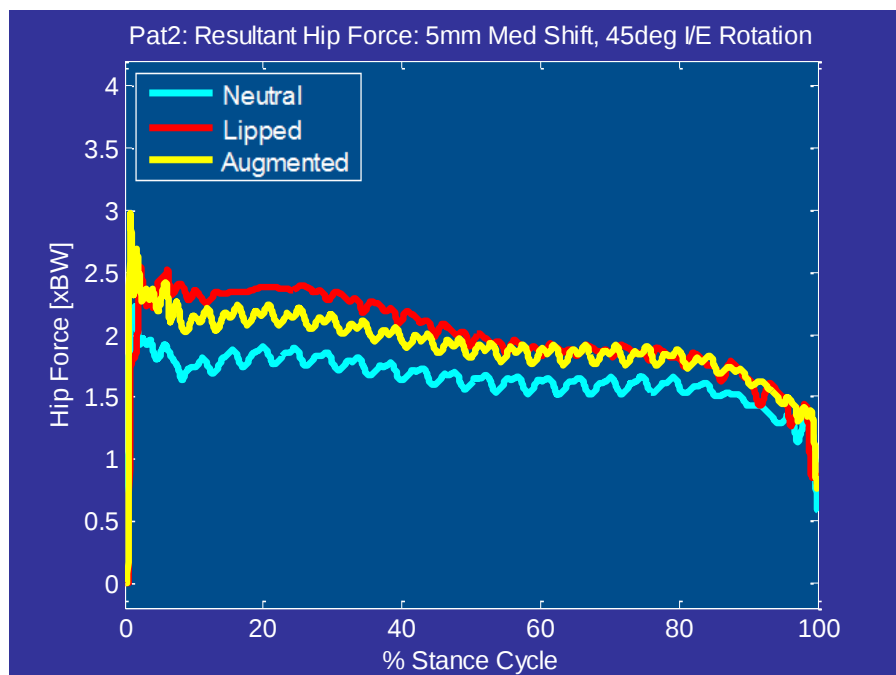


(b)

Figure D31: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

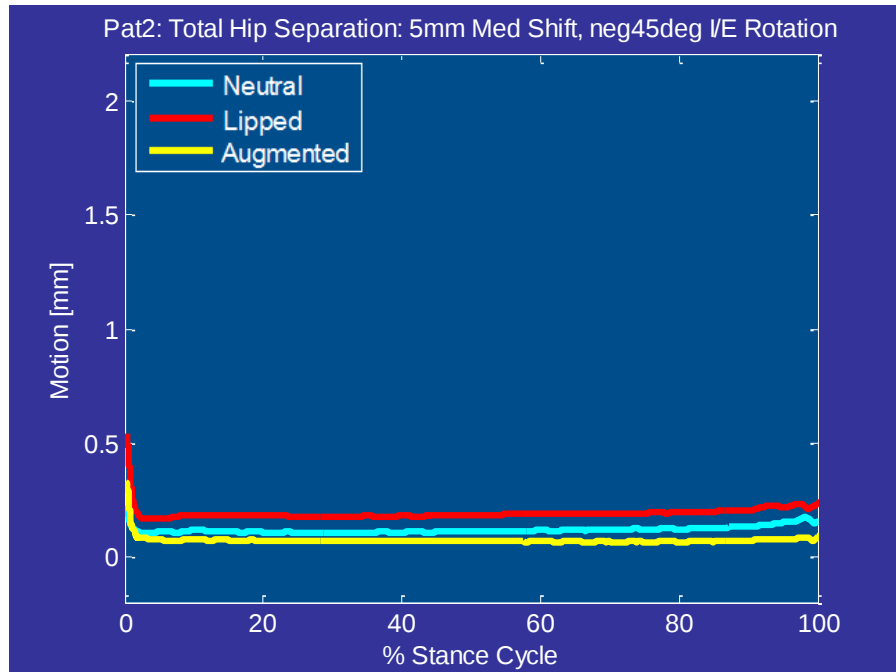


(a)

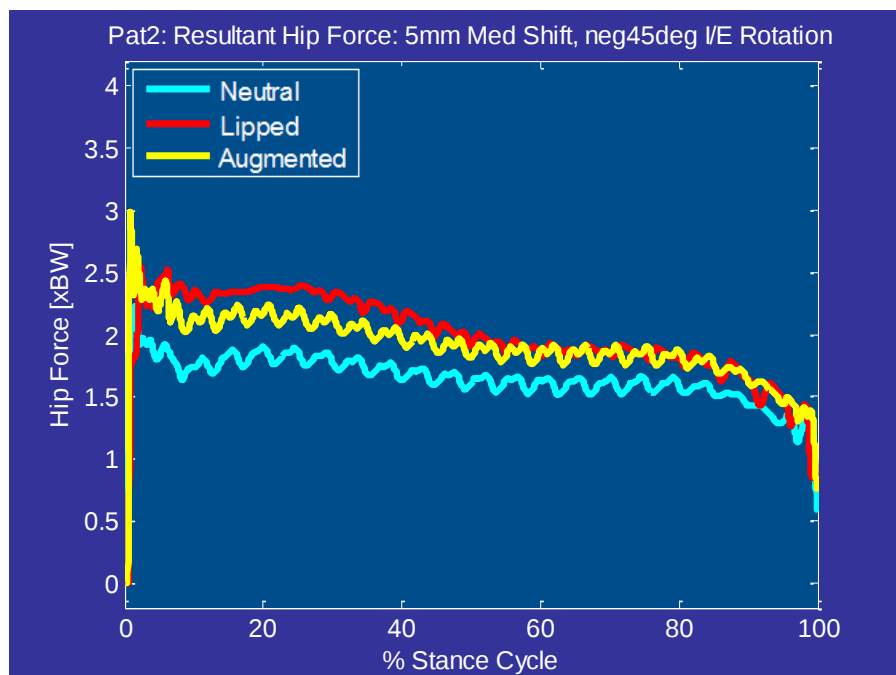


(b)

Figure D32: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

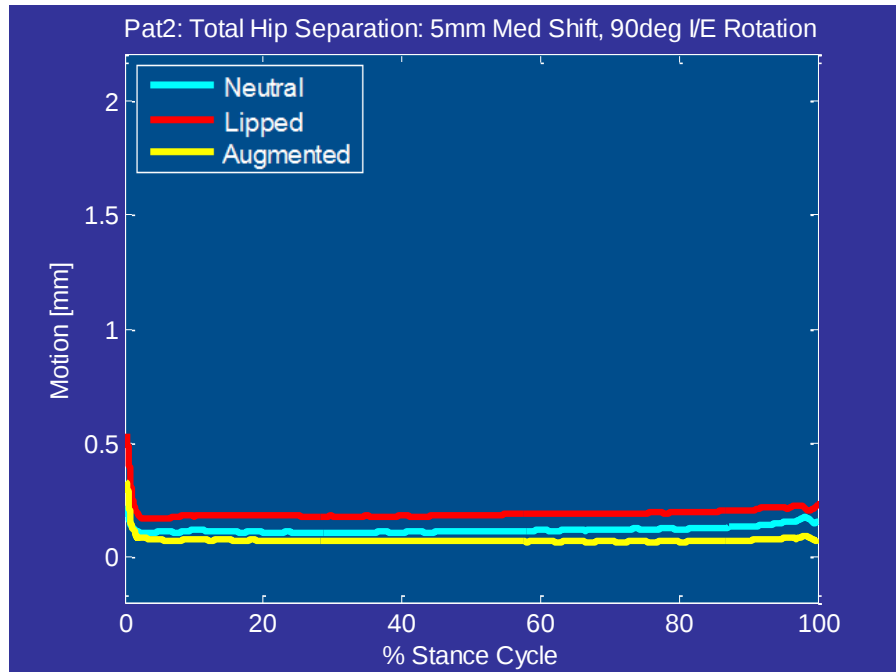


(a)

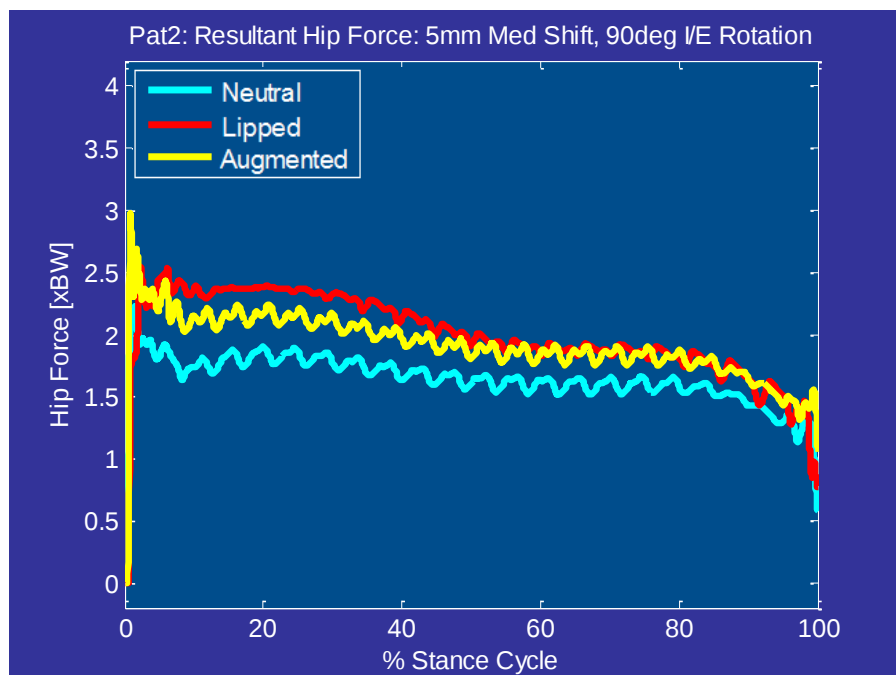


(b)

Figure D33: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

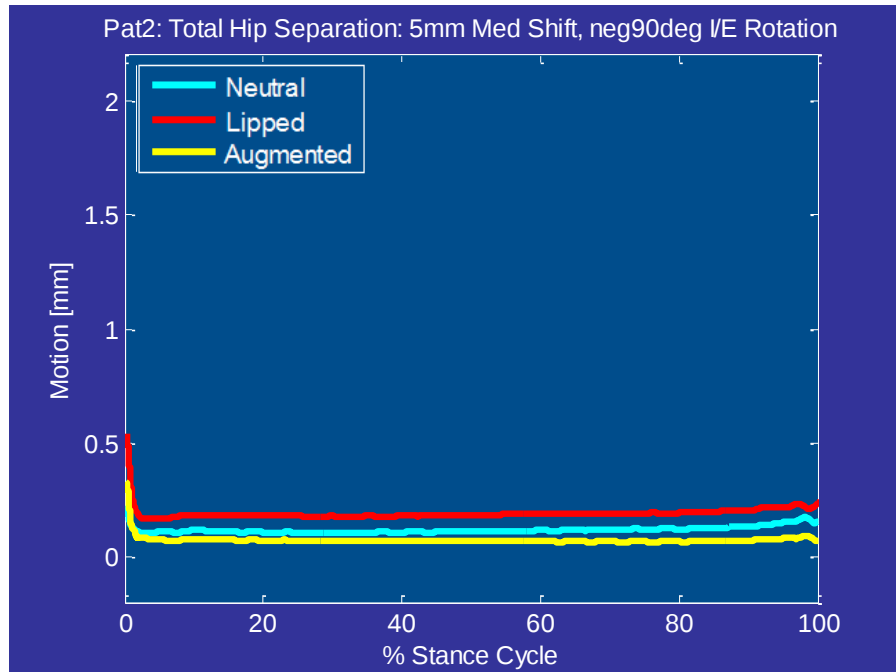


(a)

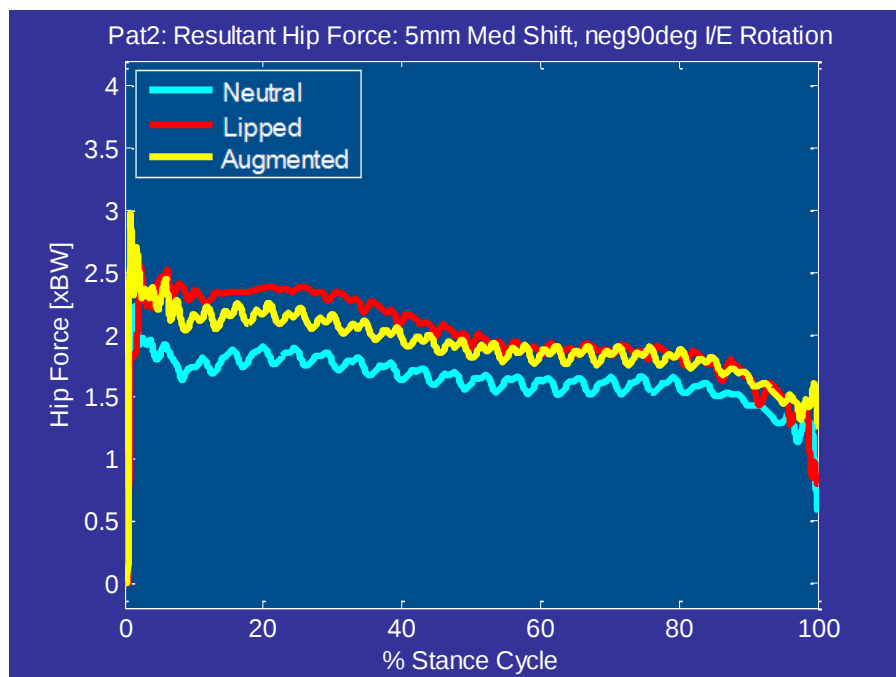


(b)

Figure D34: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

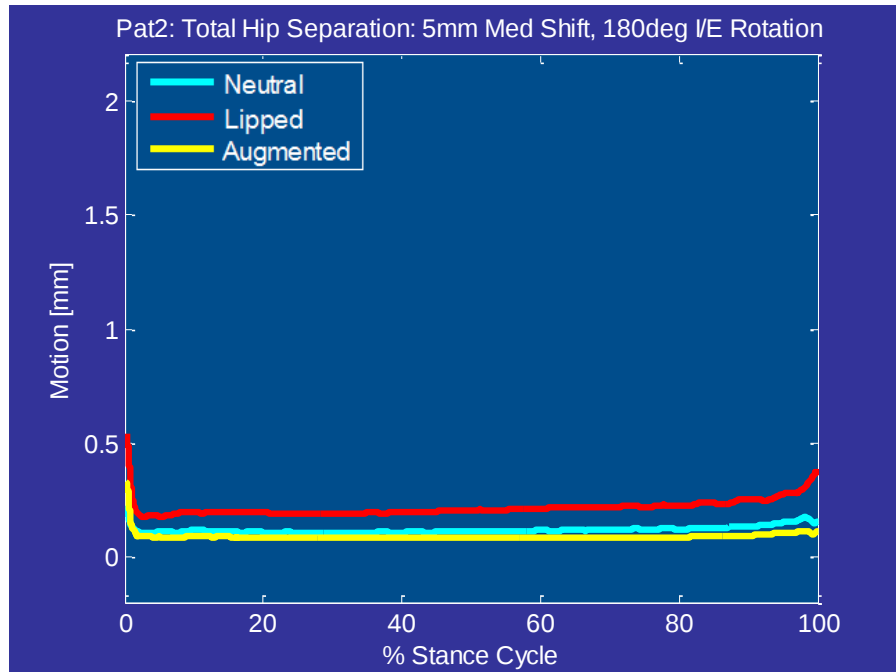


(a)

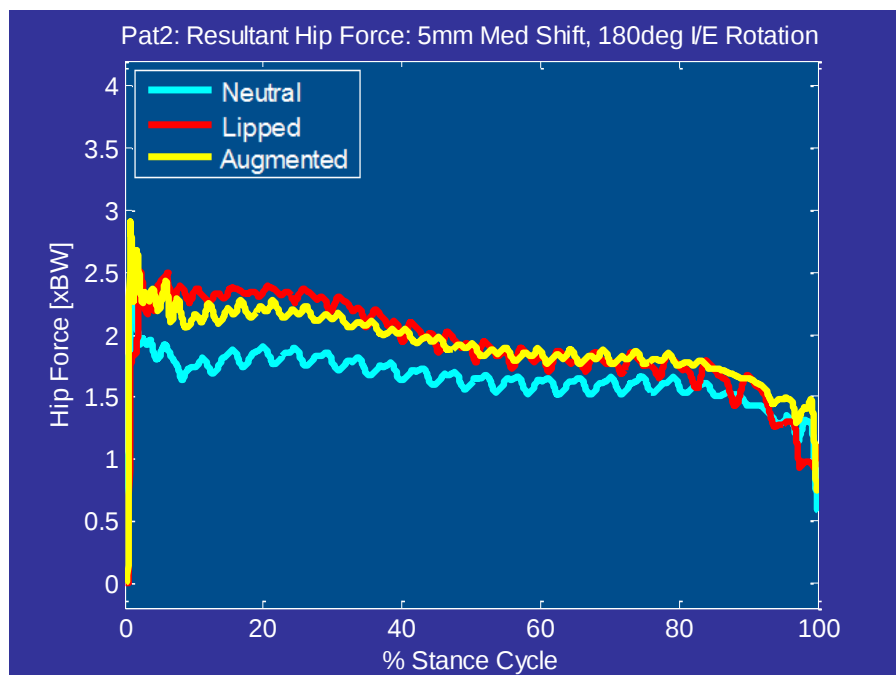


(b)

Figure D35: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

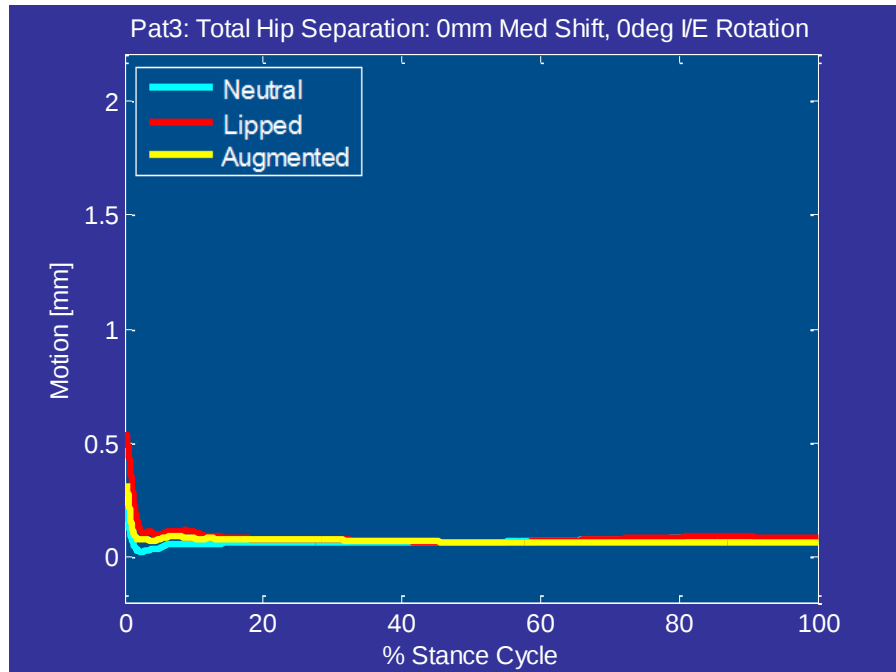


(a)

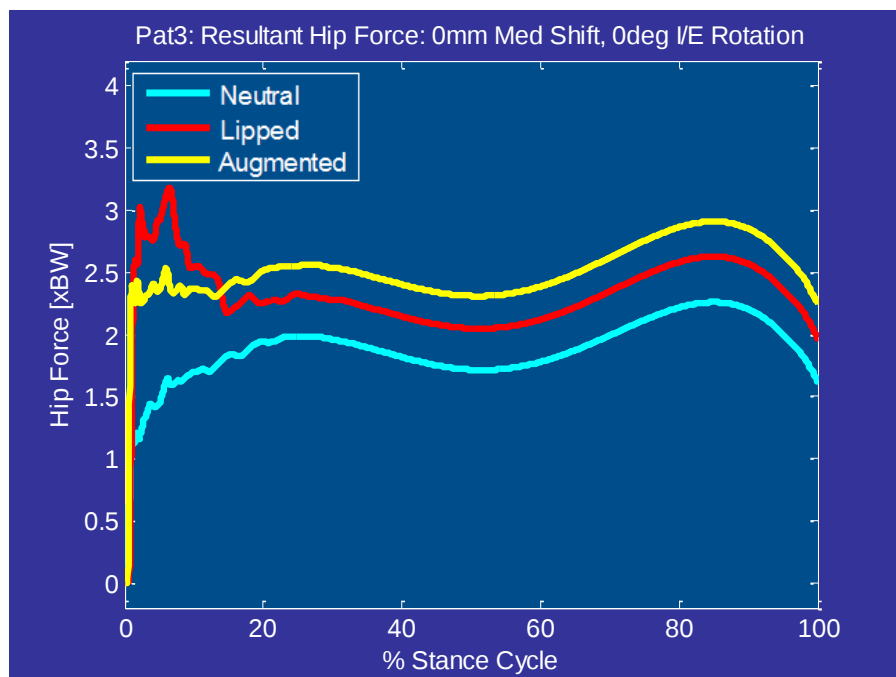


(b)

Figure D36: (a) Hip separation and (b) hip force Pat 2: 5mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

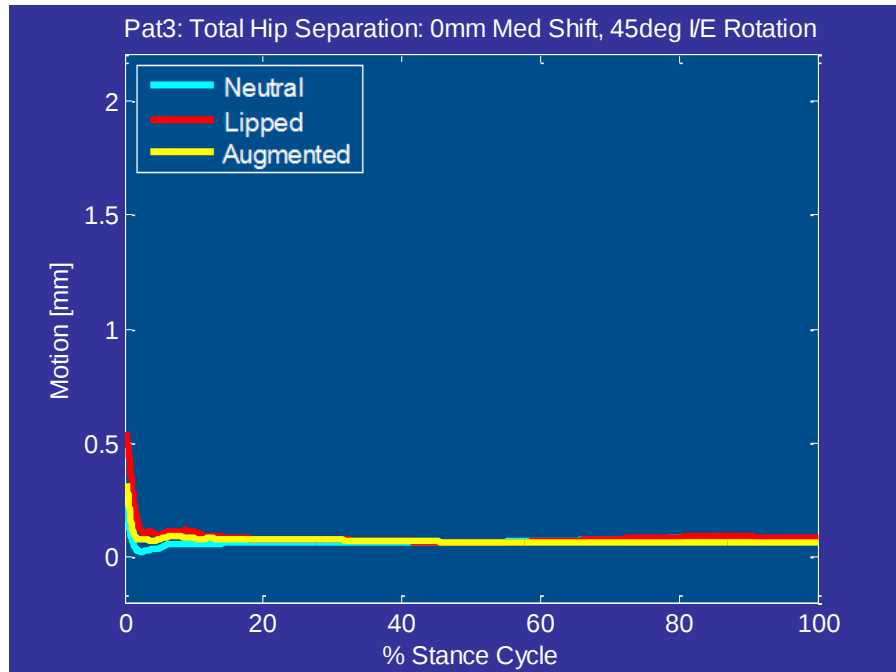


(a)

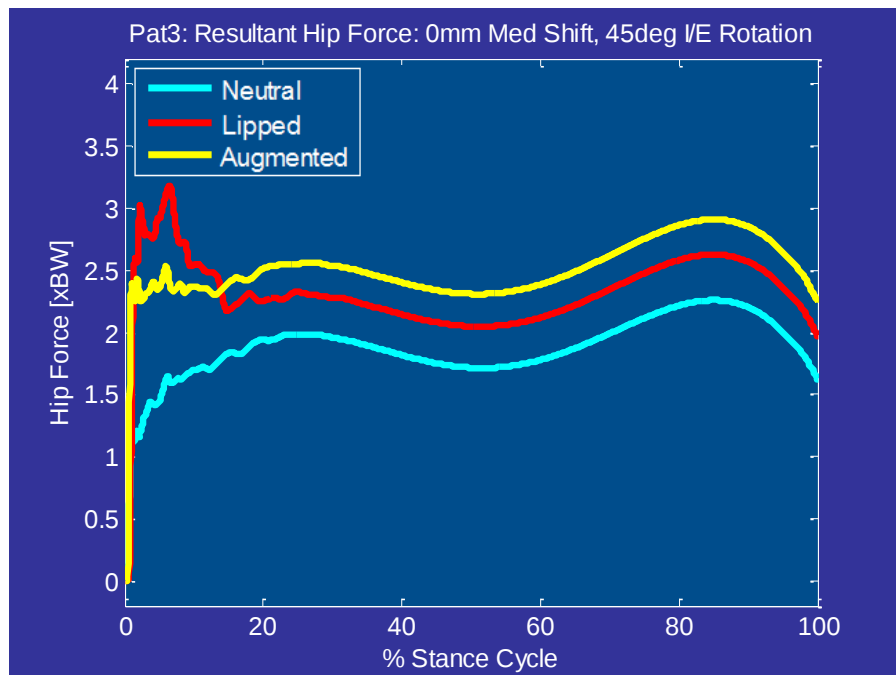


(b)

Figure D37: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

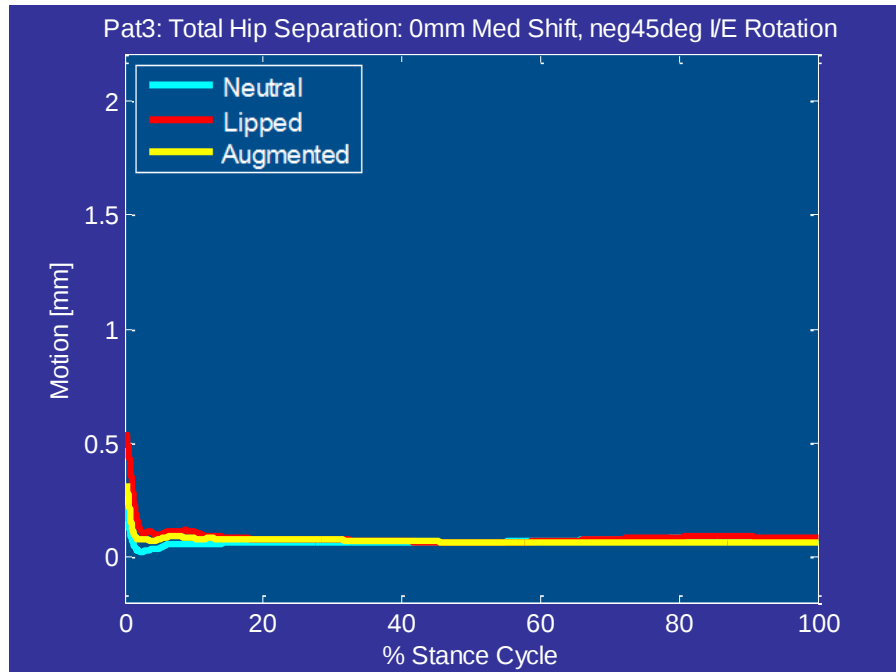


(a)

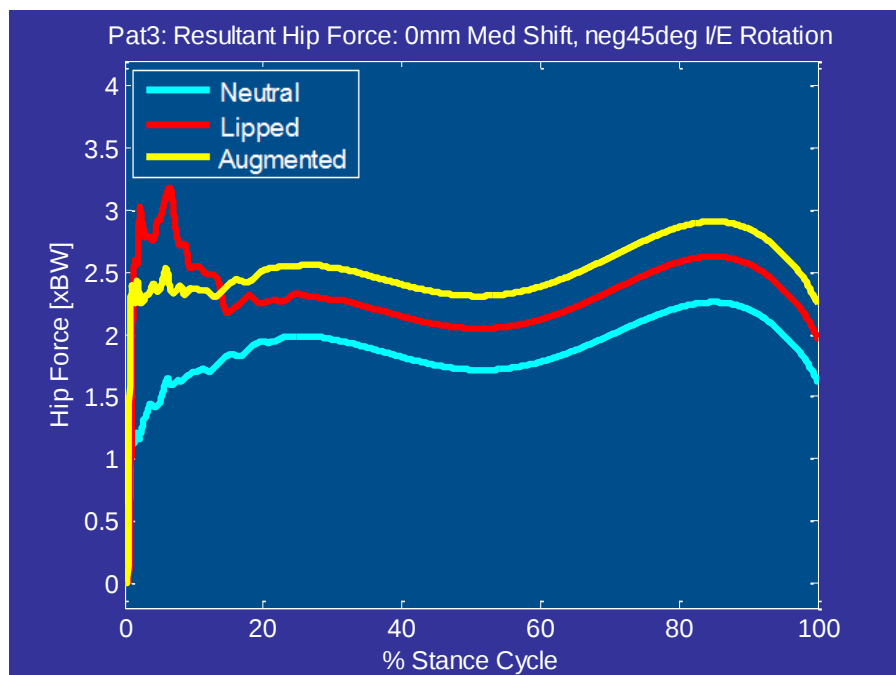


(b)

Figure D38: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

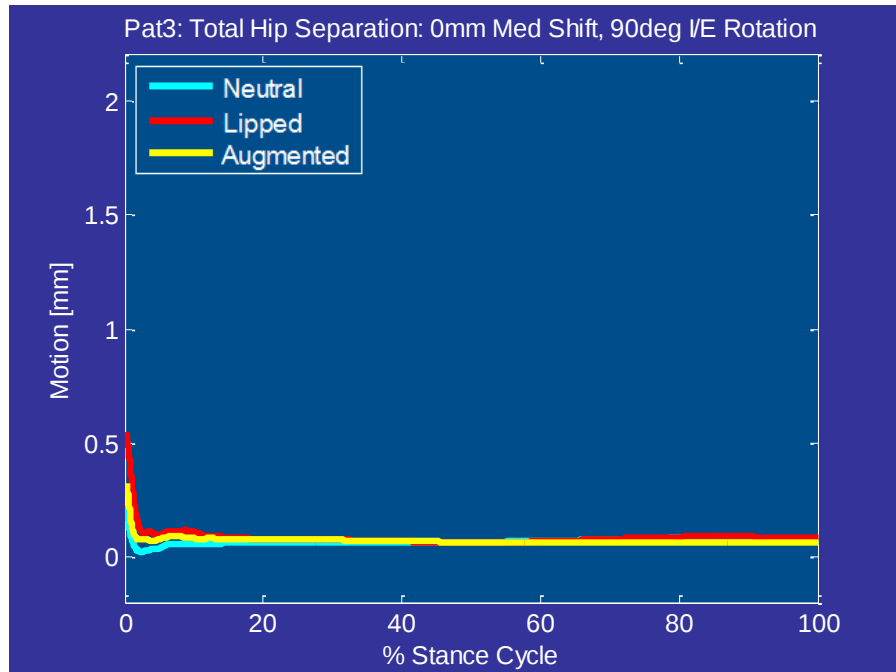


(a)

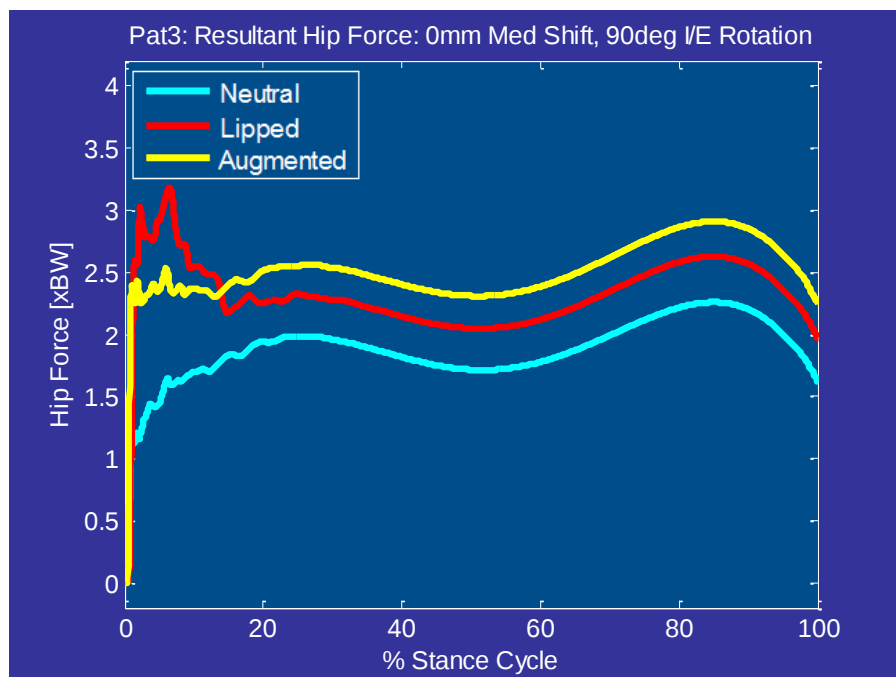


(b)

Figure D39: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

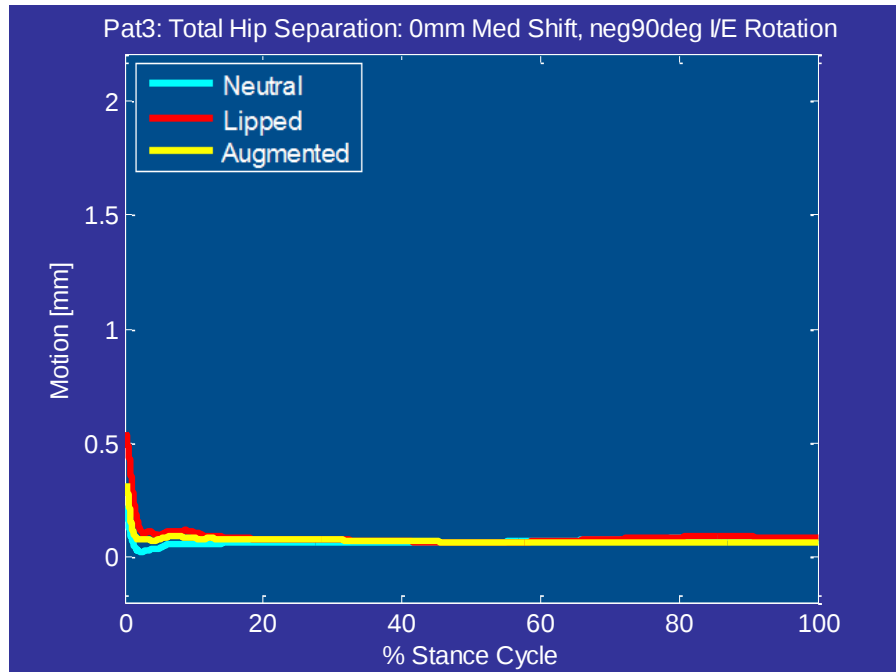


(a)

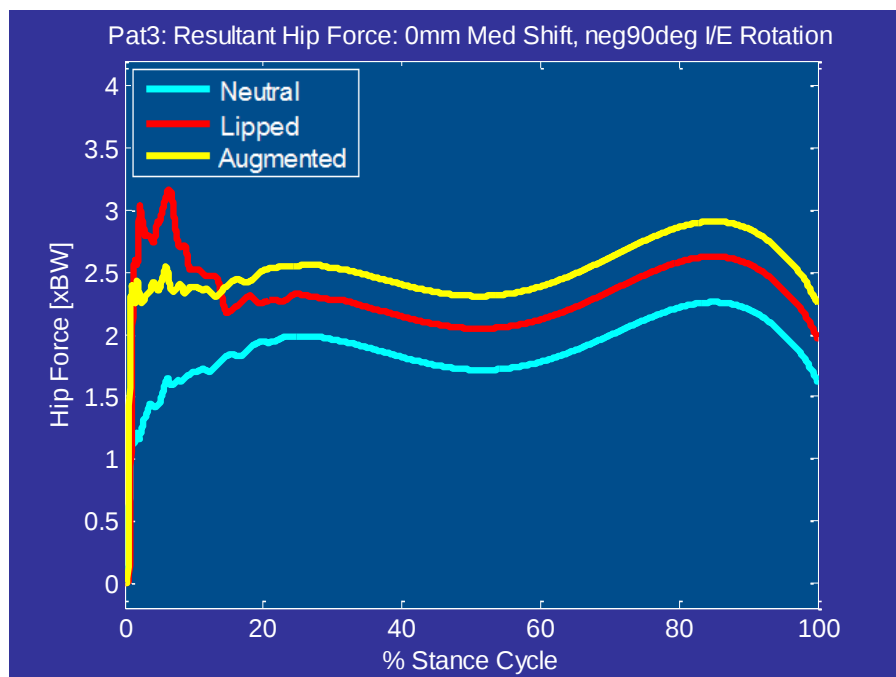


(b)

Figure D40: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

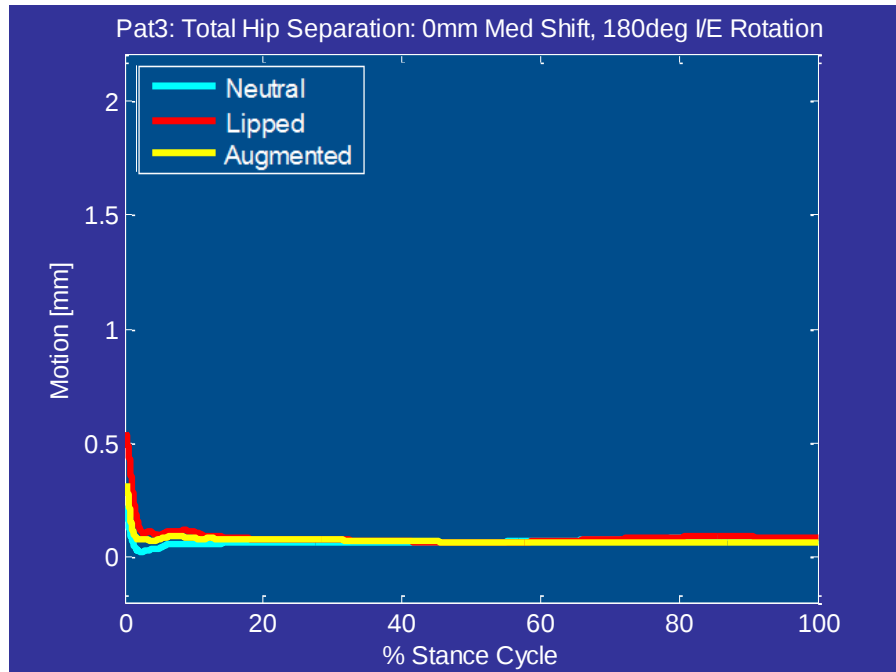


(a)

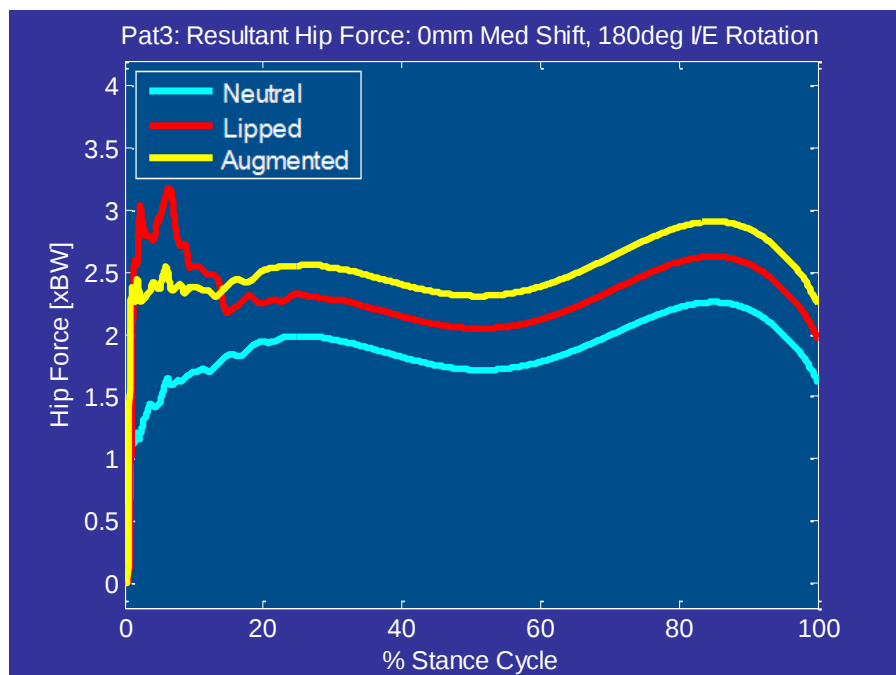


(b)

Figure D41: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

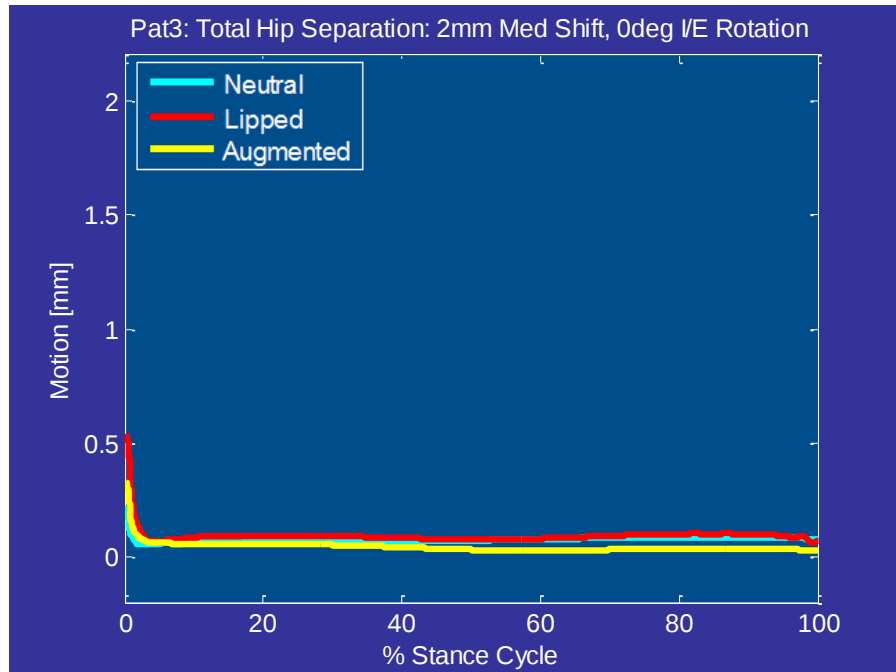


(a)

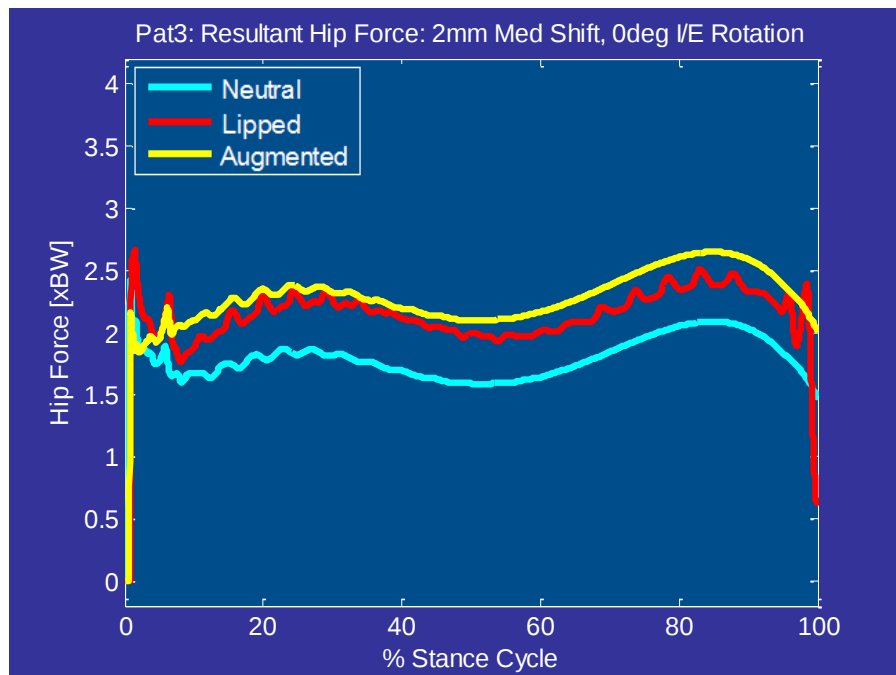


(b)

Figure D42: (a) Hip separation and (b) hip force Pat 3: 0mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

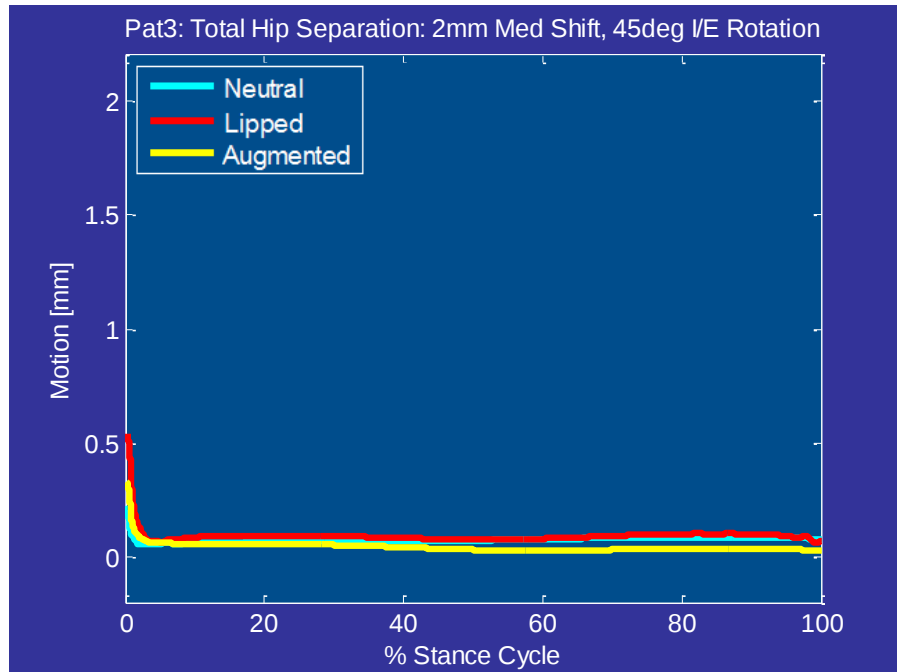


(a)

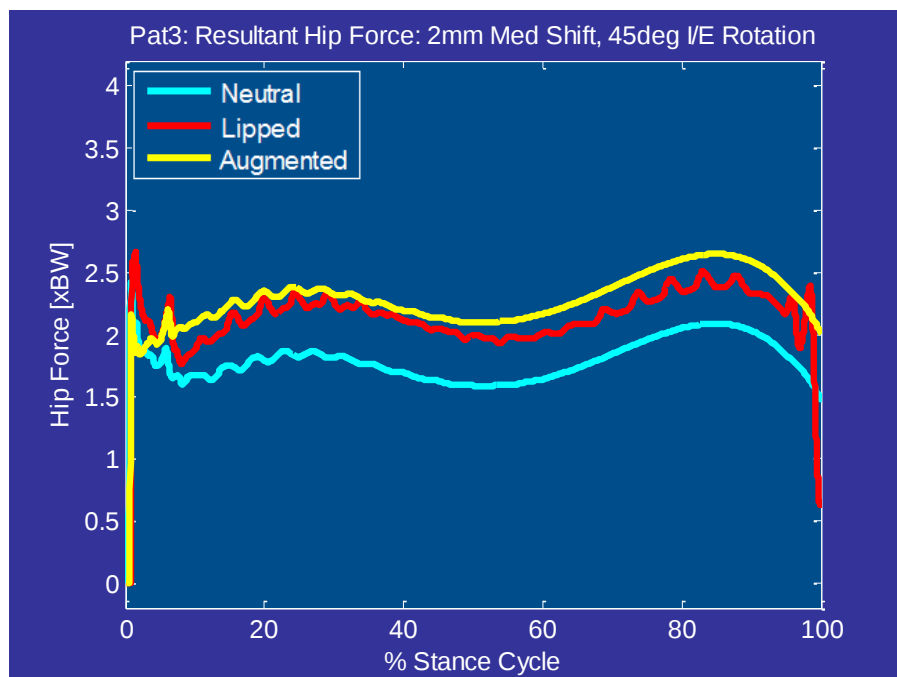


(b)

Figure D43: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

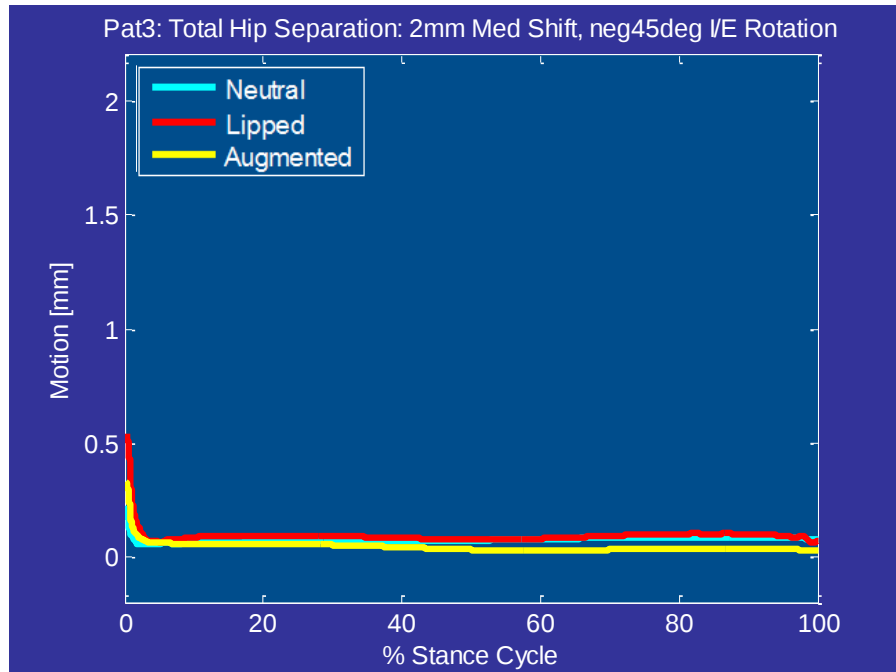


(a)

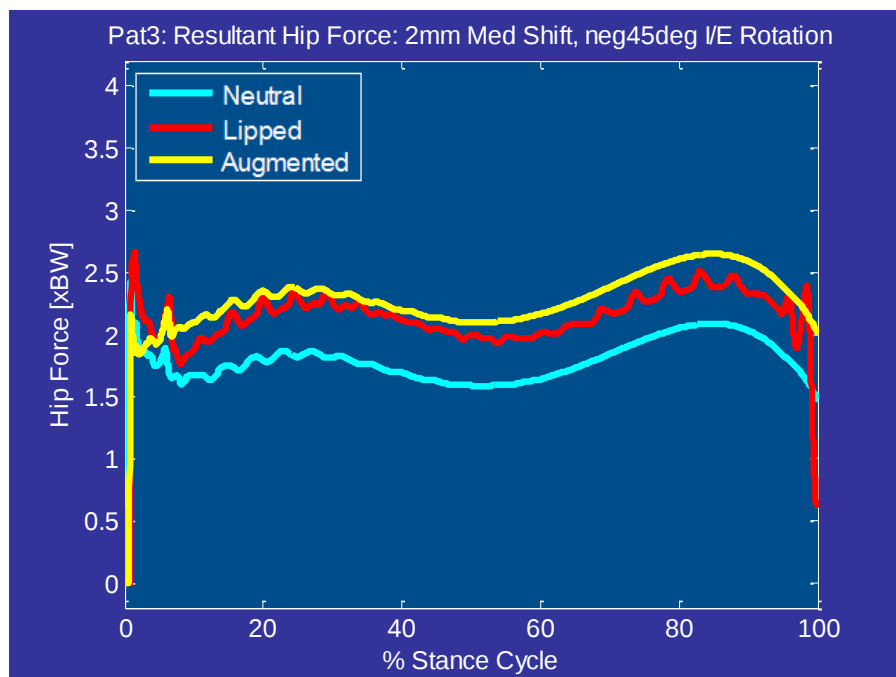


(b)

Figure D44: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

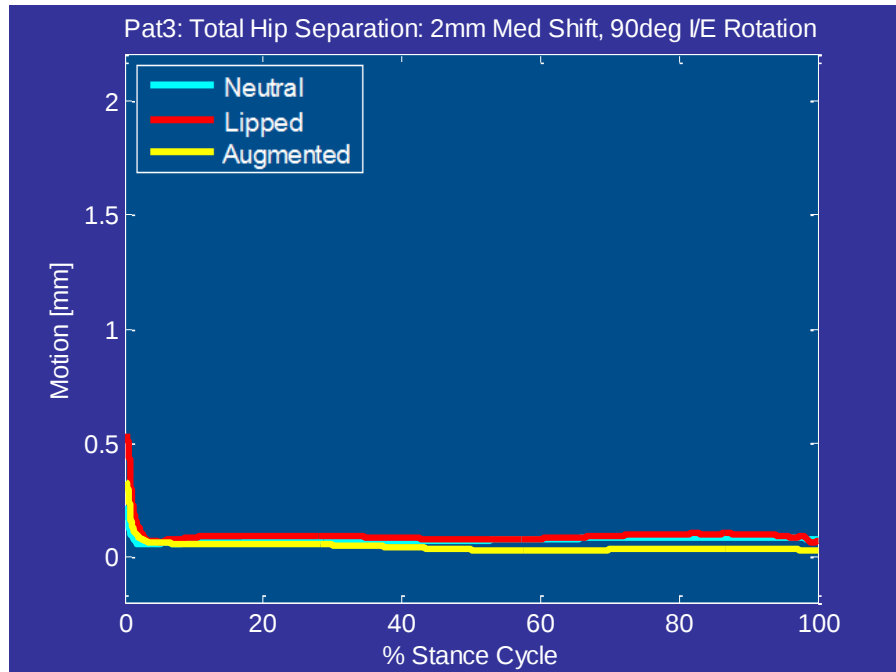


(a)

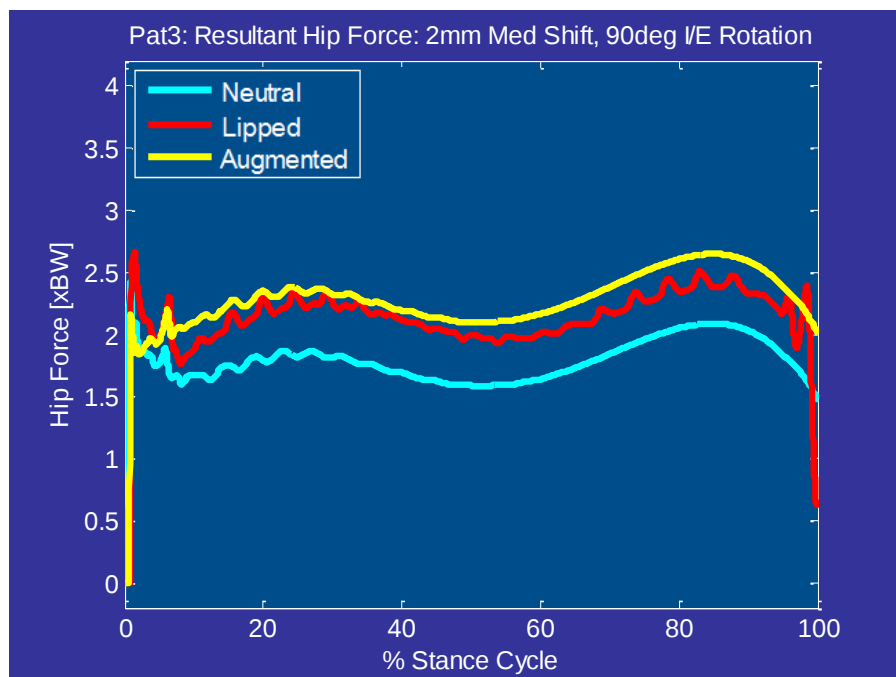


(b)

Figure D45: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

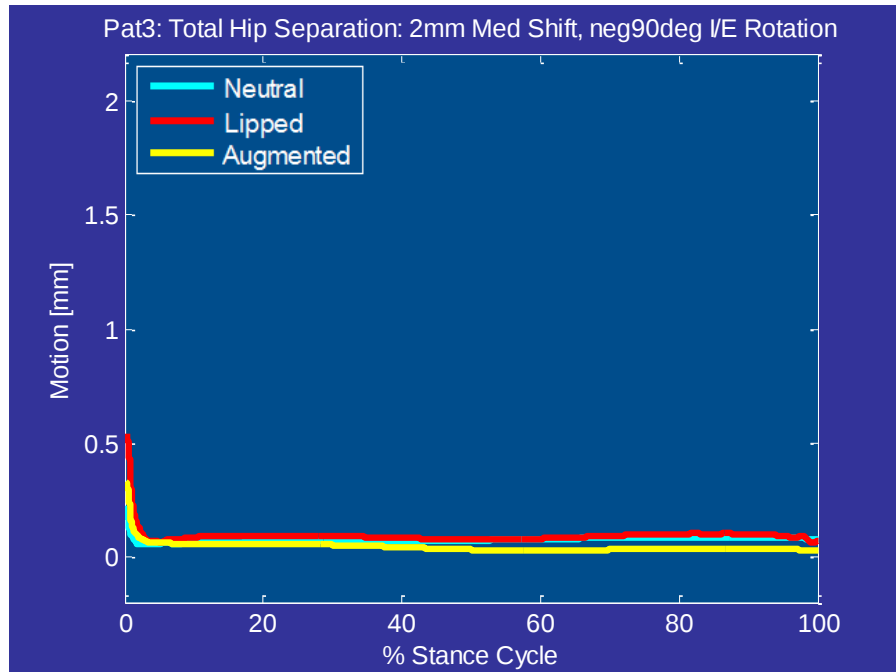


(a)

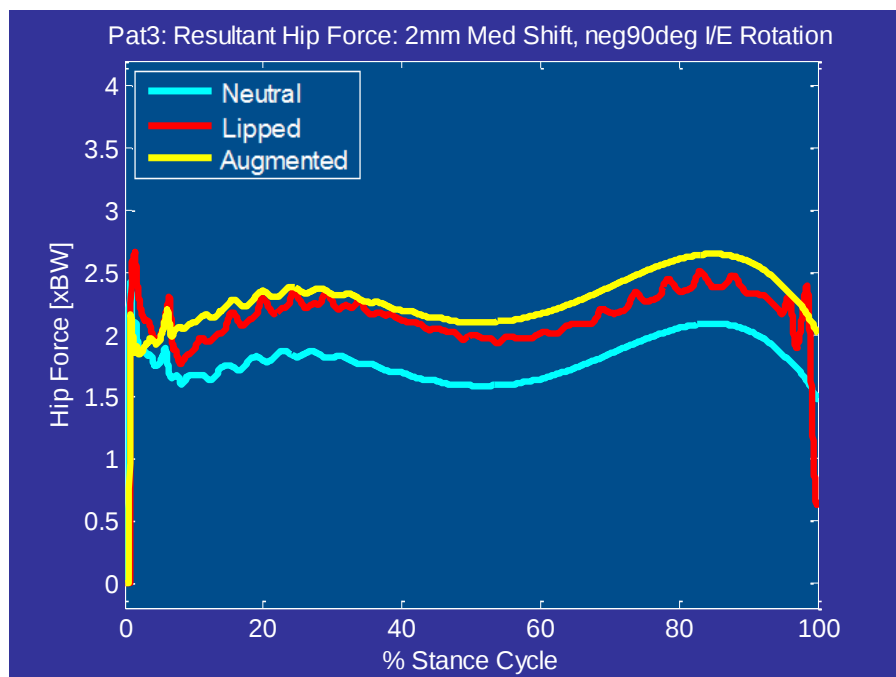


(b)

Figure D46: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

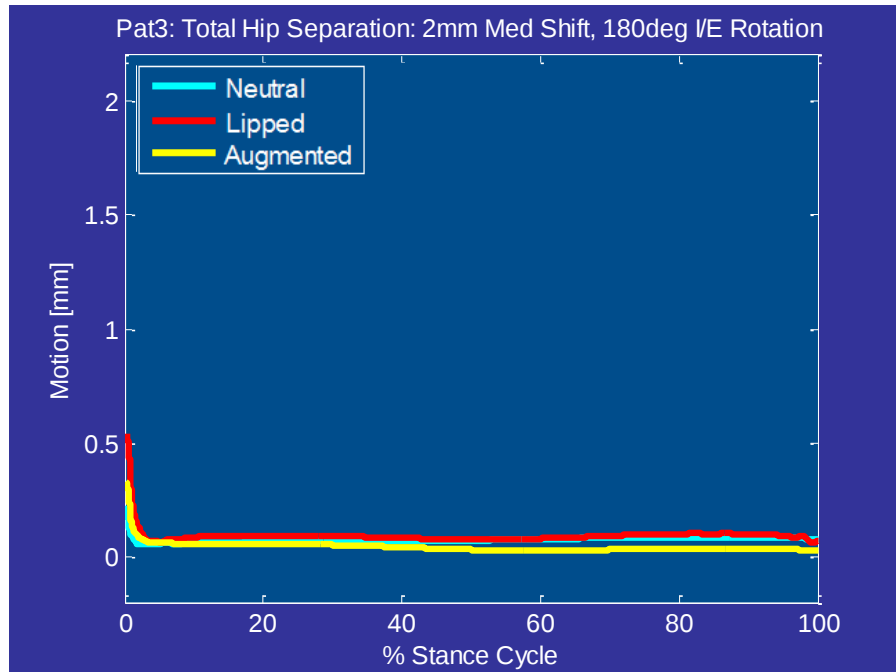


(a)

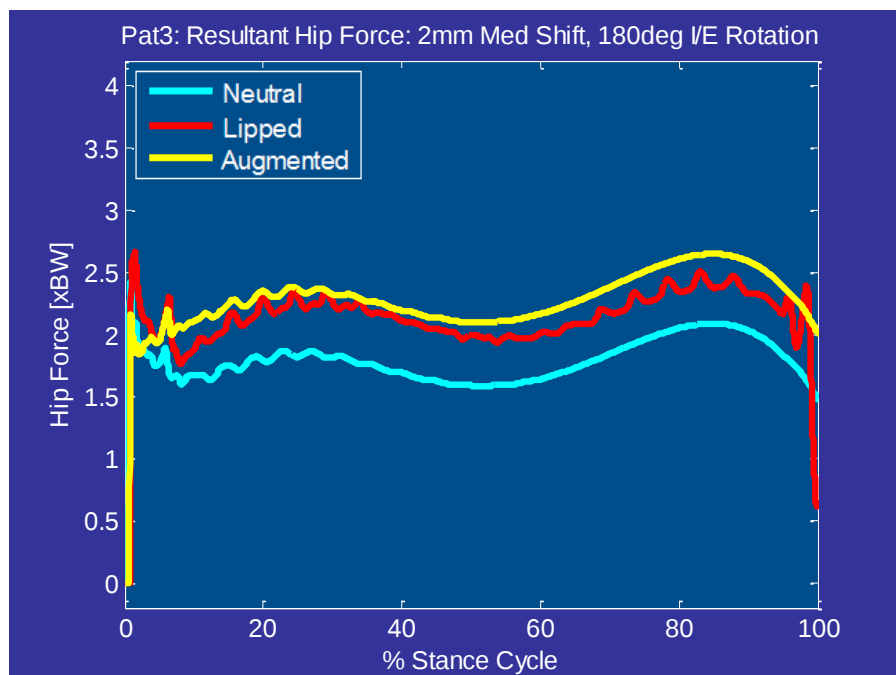


(b)

Figure D47: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

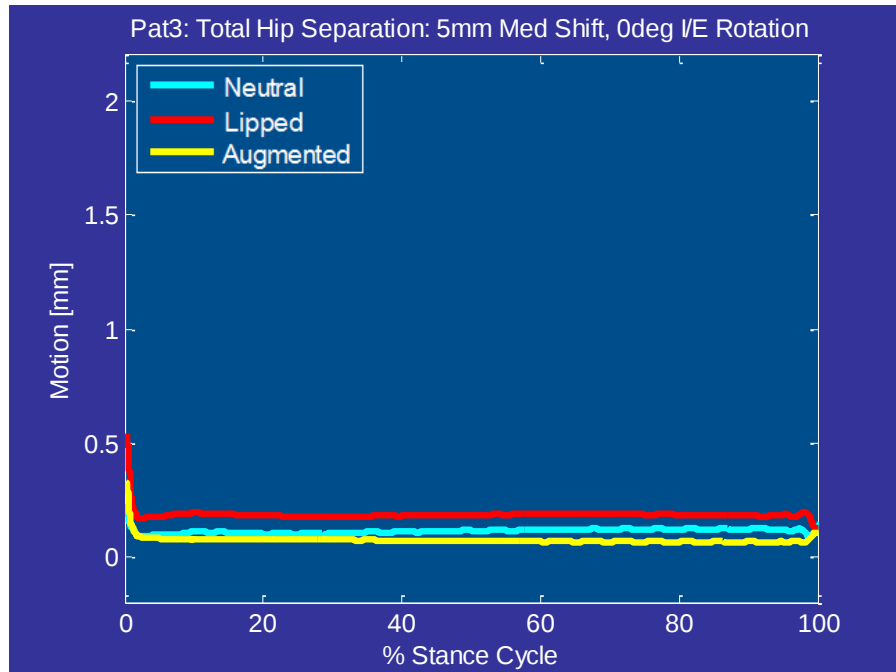


(a)

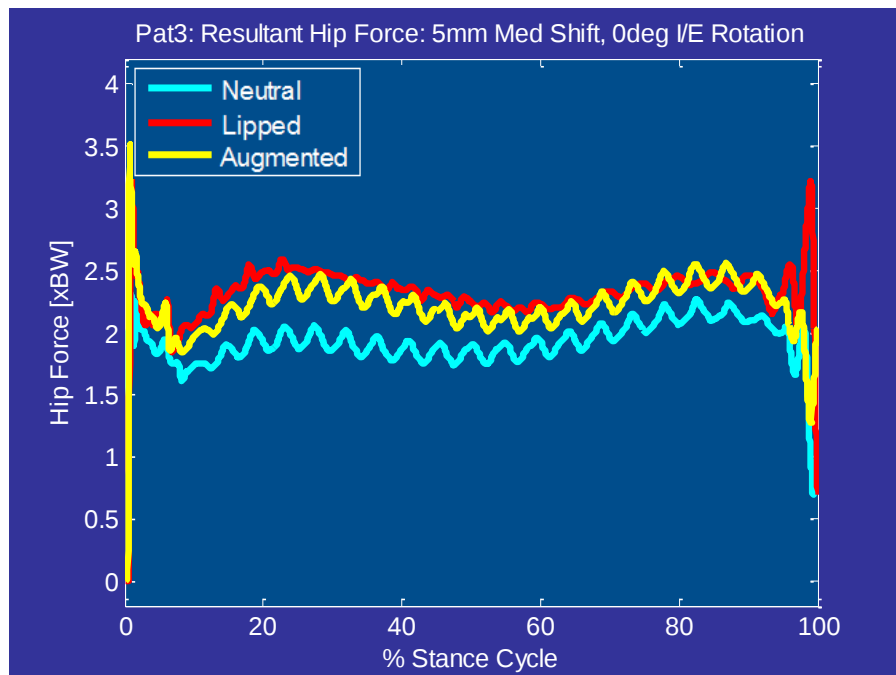


(b)

Figure D48: (a) Hip separation and (b) hip force Pat 3: 2mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

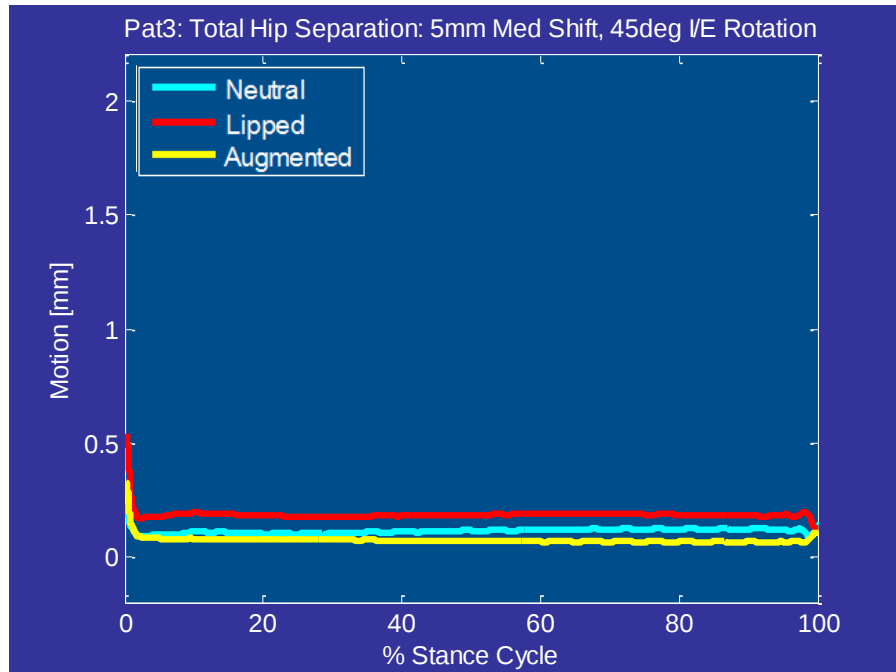


(a)

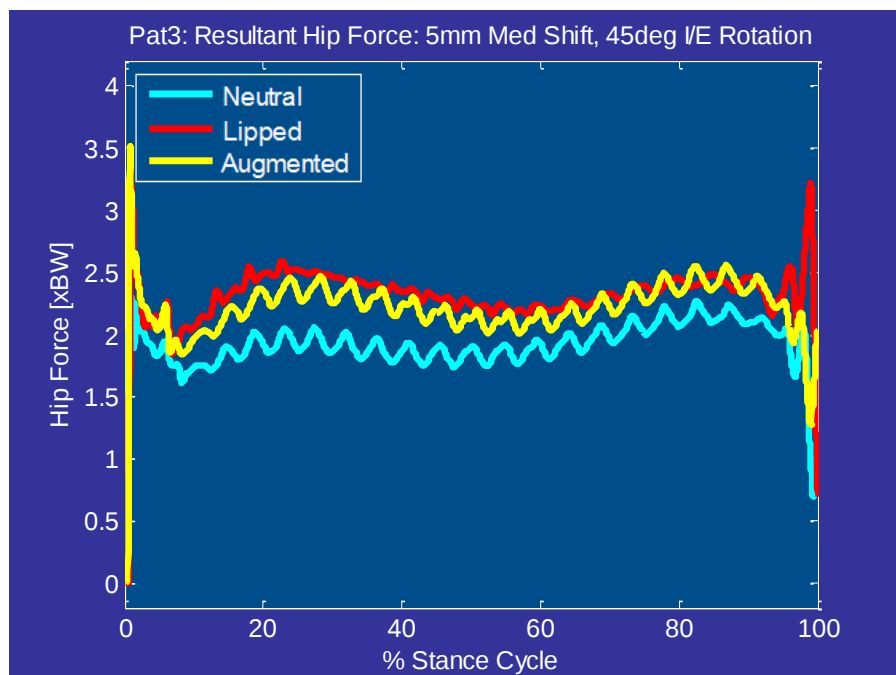


(b)

Figure D49: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

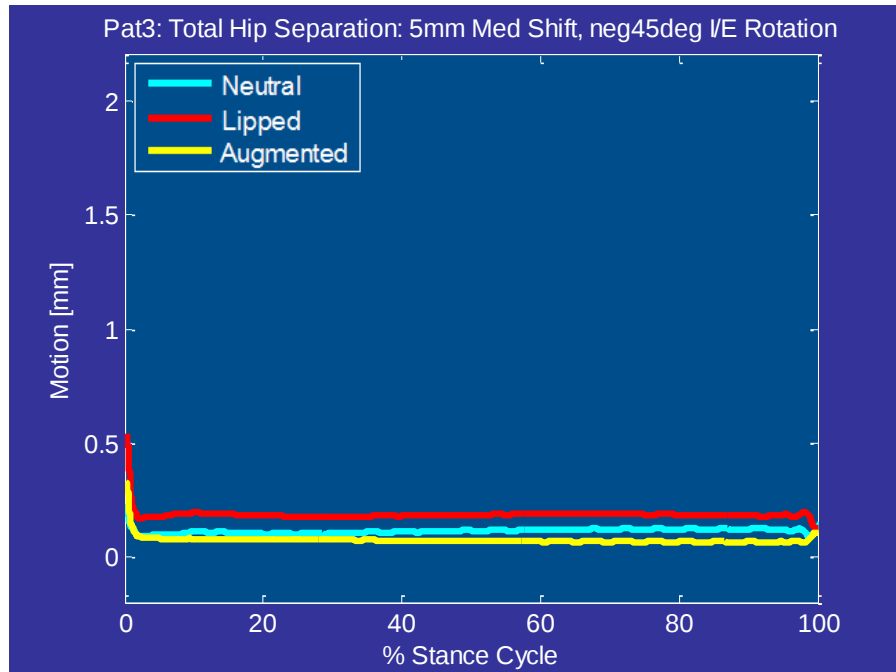


(a)

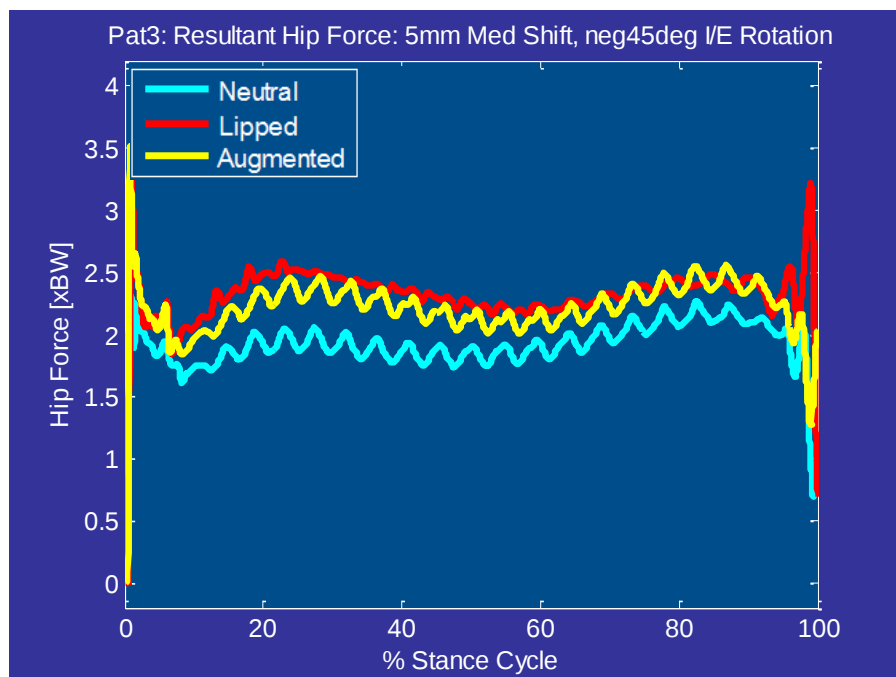


(b)

Figure D50: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

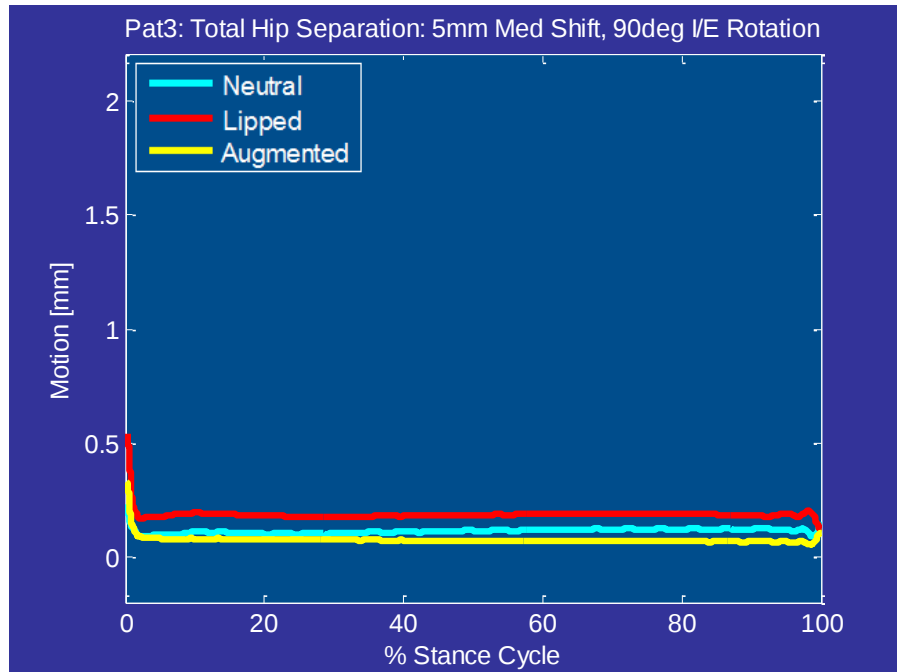


(a)

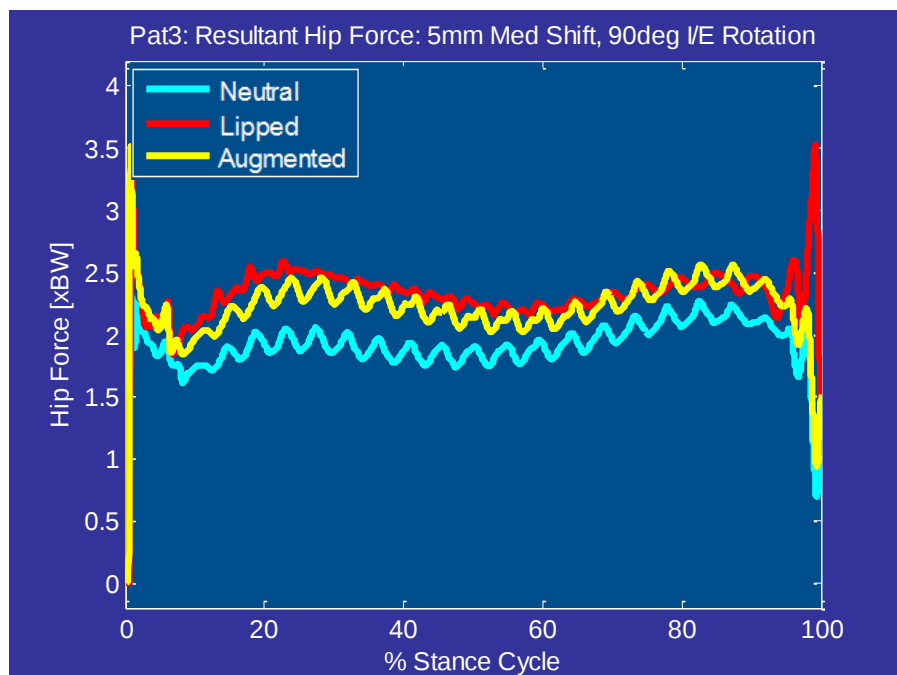


(b)

Figure D51: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

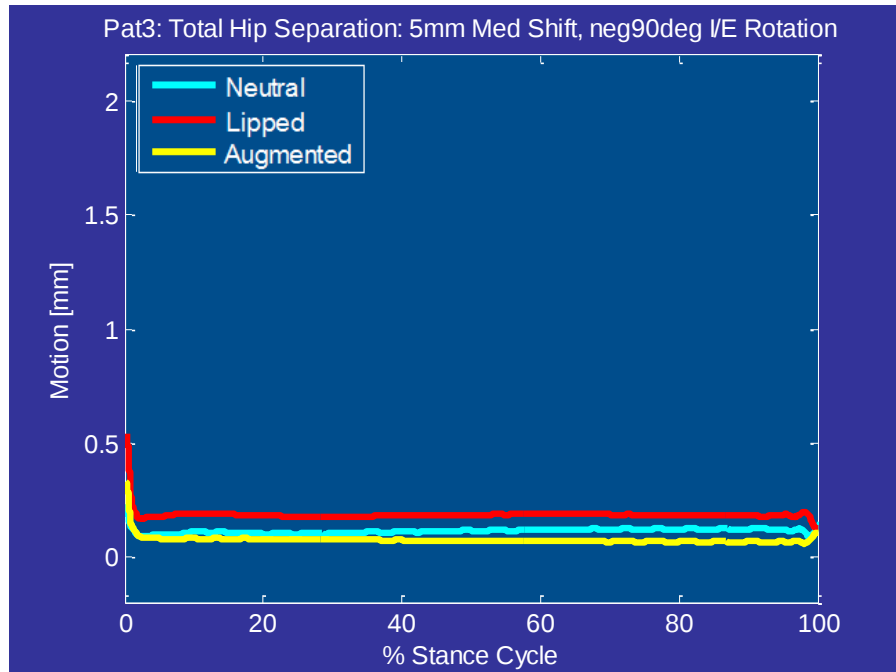


(a)

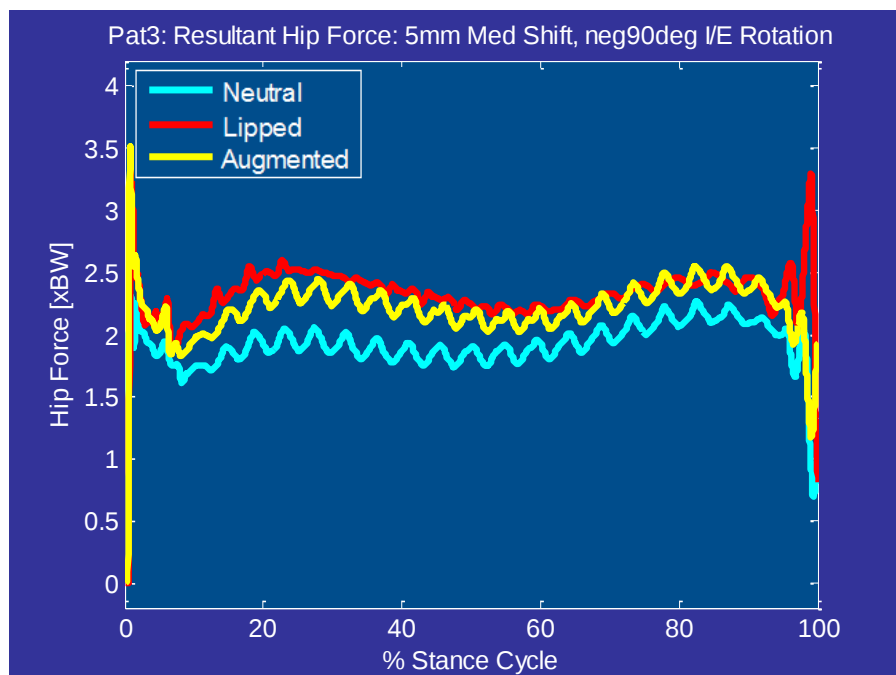


(b)

Figure D52: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

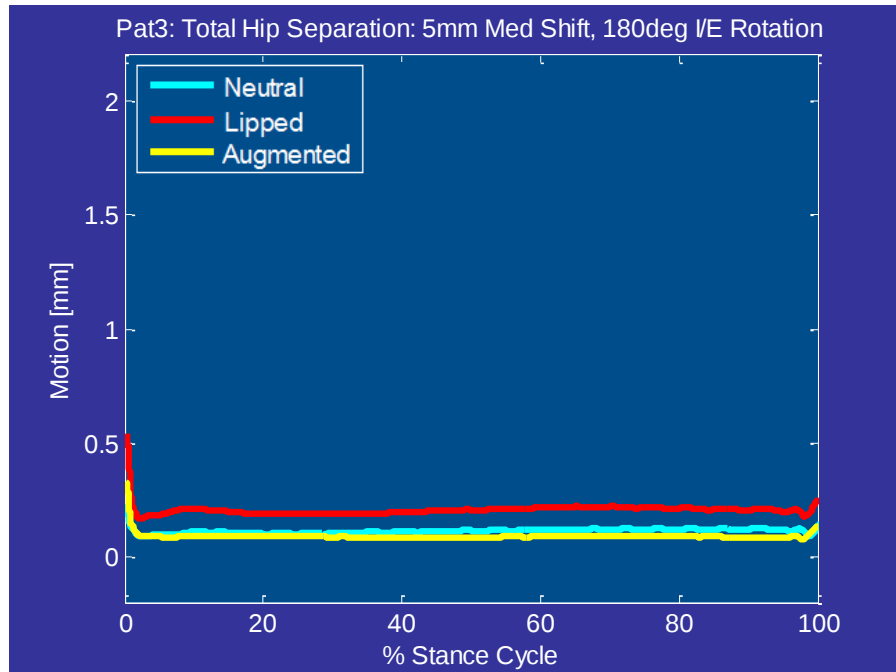


(a)

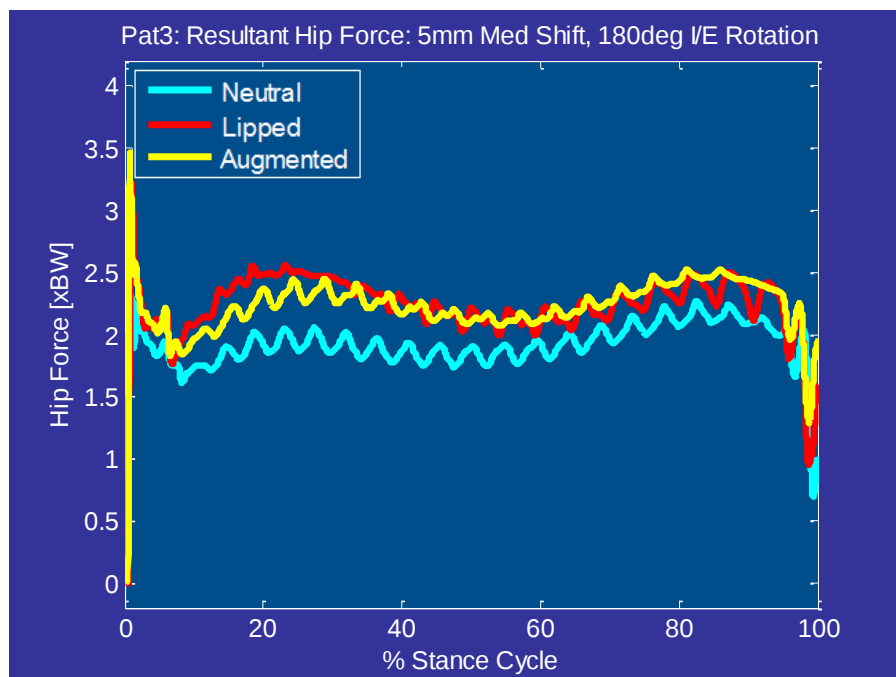


(b)

Figure D53: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

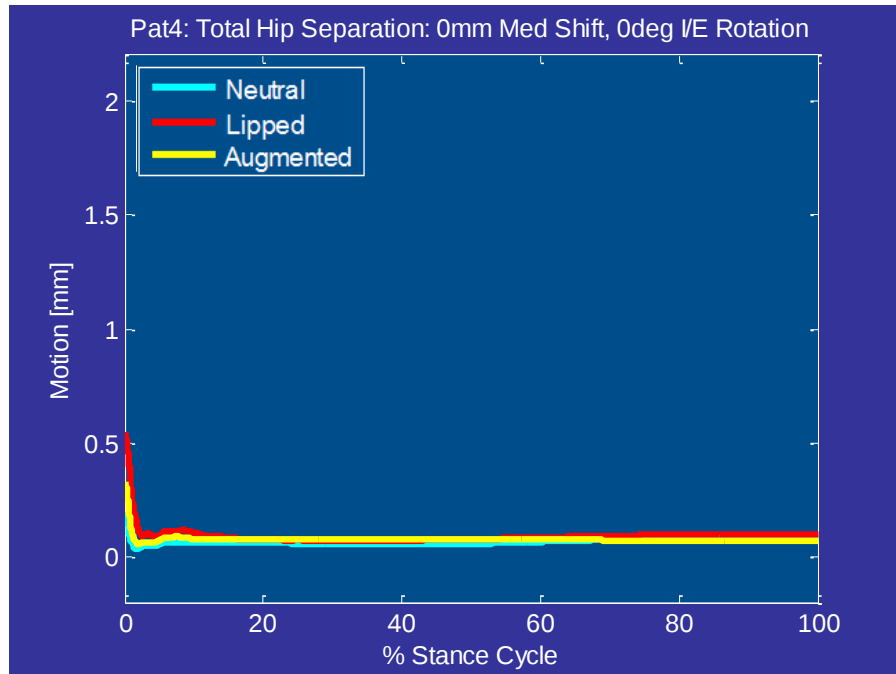


(a)

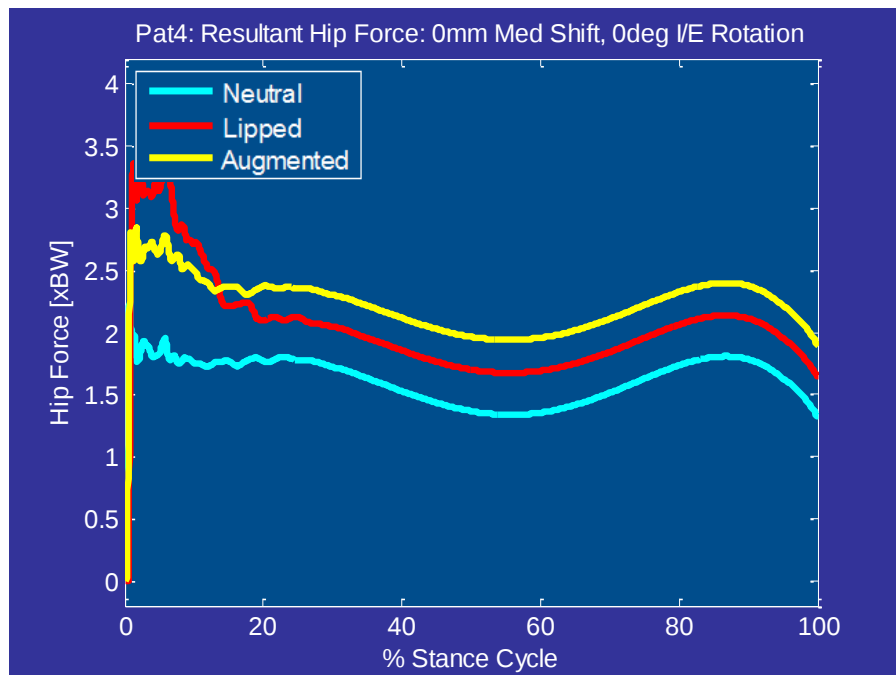


(b)

Figure D54: (a) Hip separation and (b) hip force Pat 3: 5mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

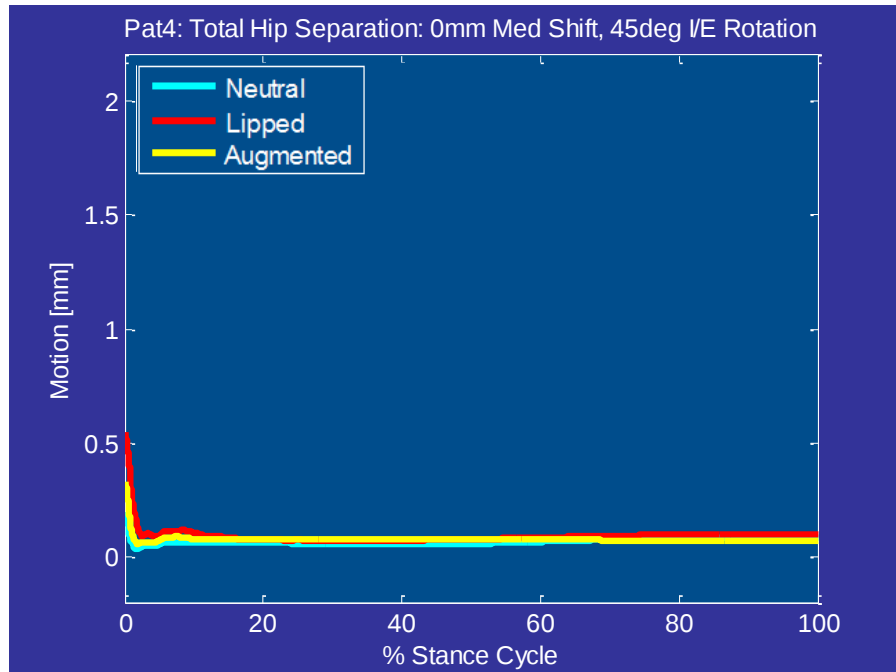


(a)

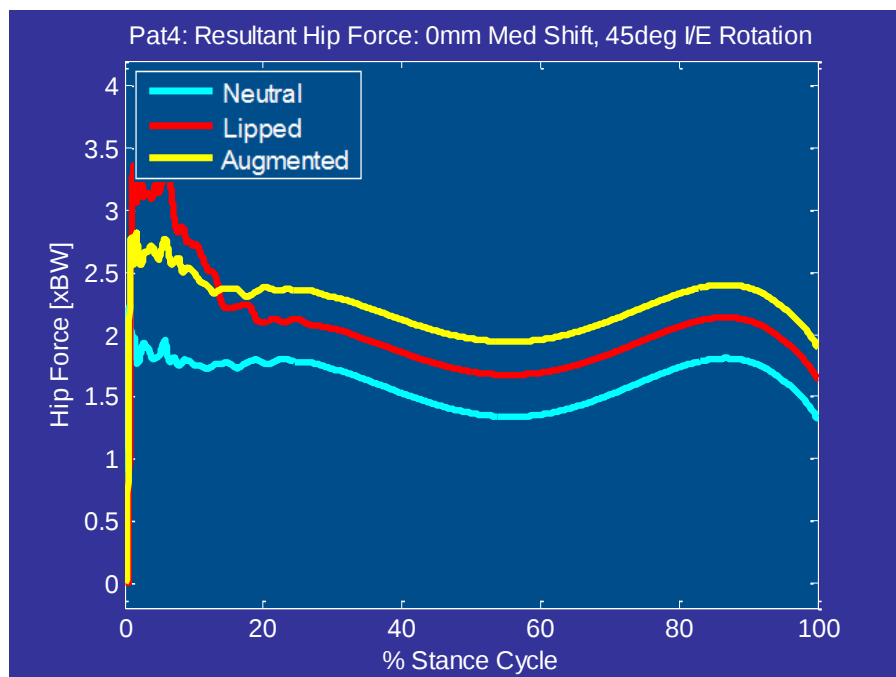


(b)

Figure D55: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

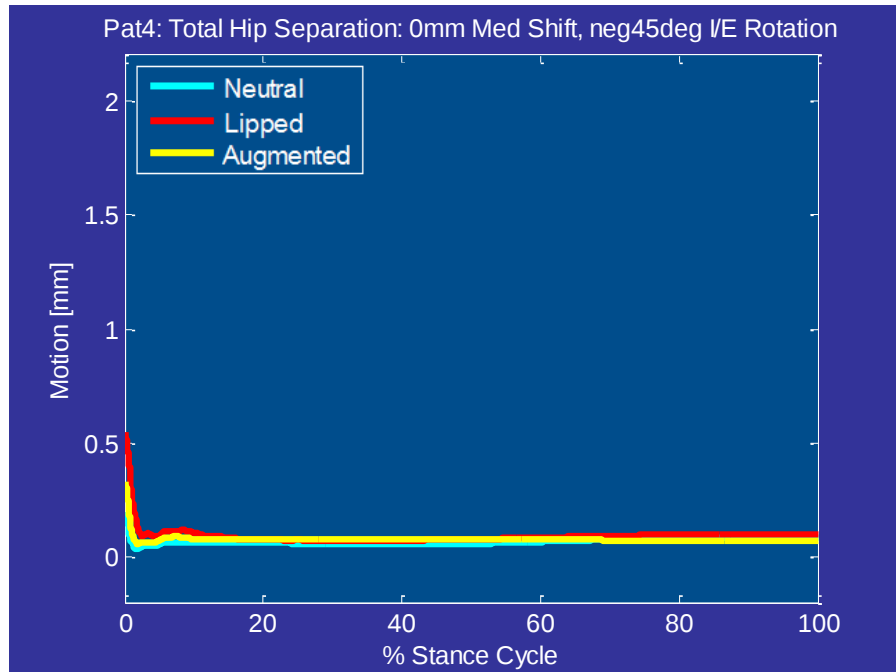


(a)

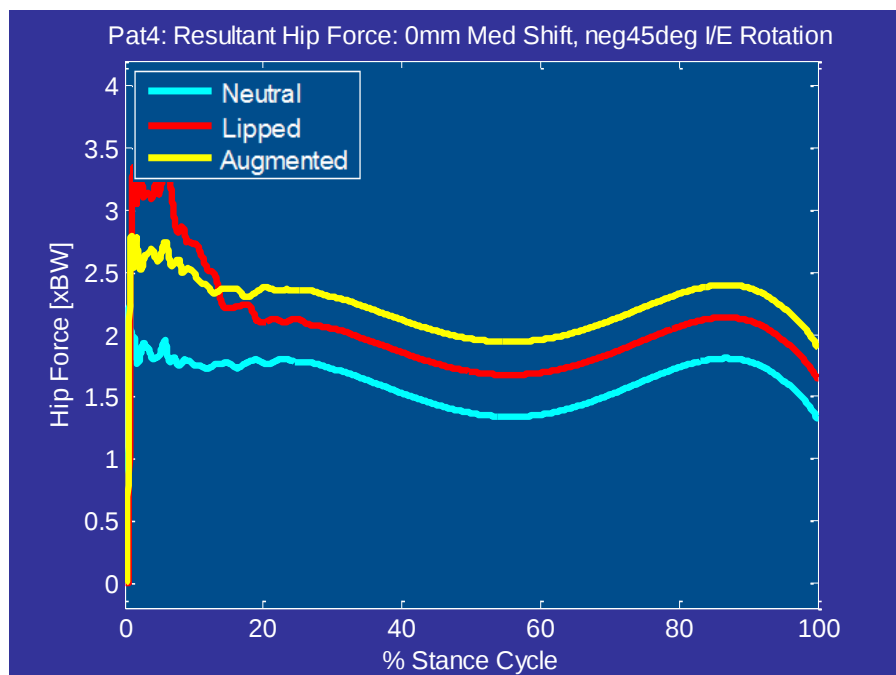


(b)

Figure D56: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

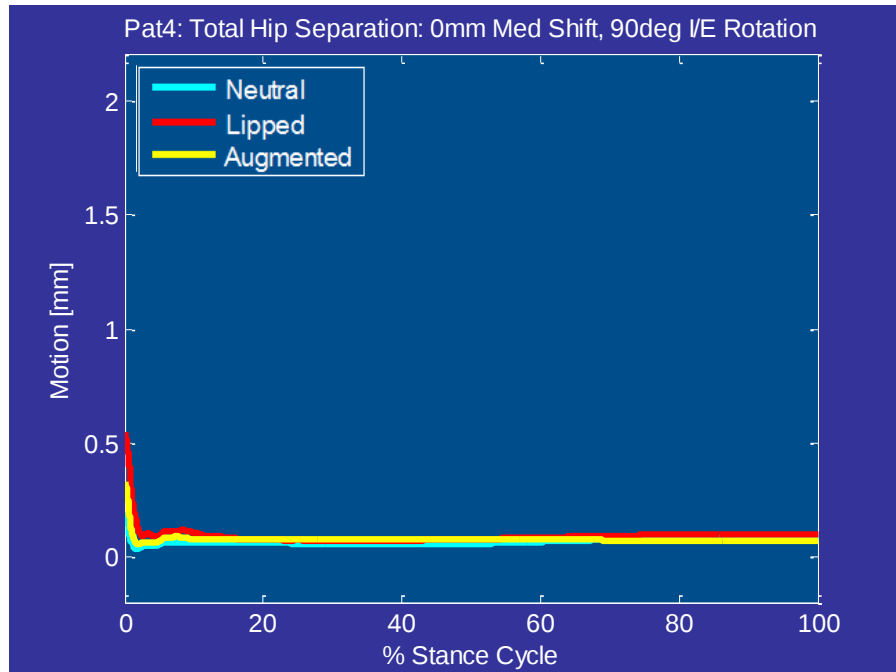


(a)

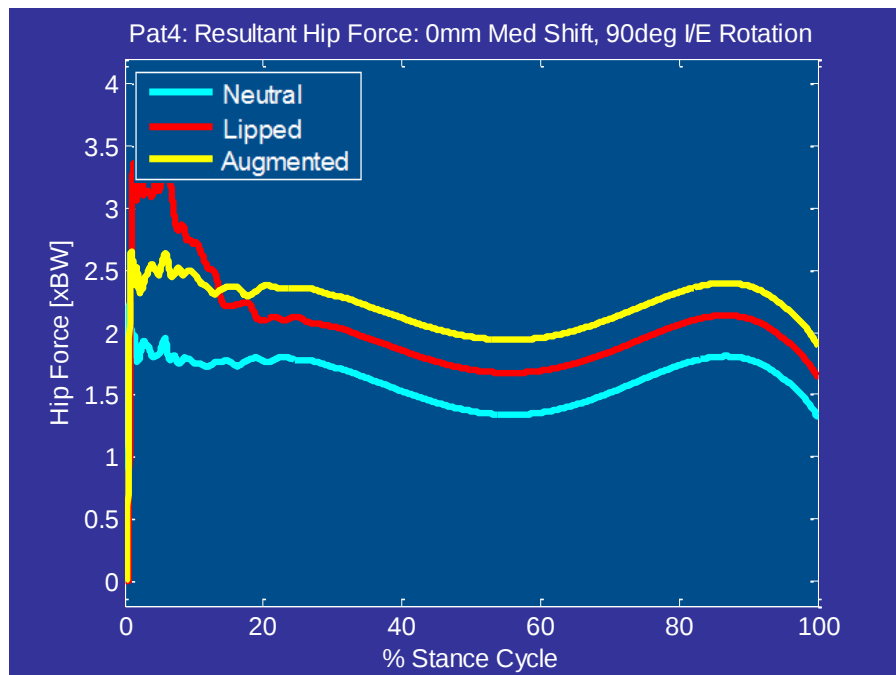


(b)

Figure D57: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

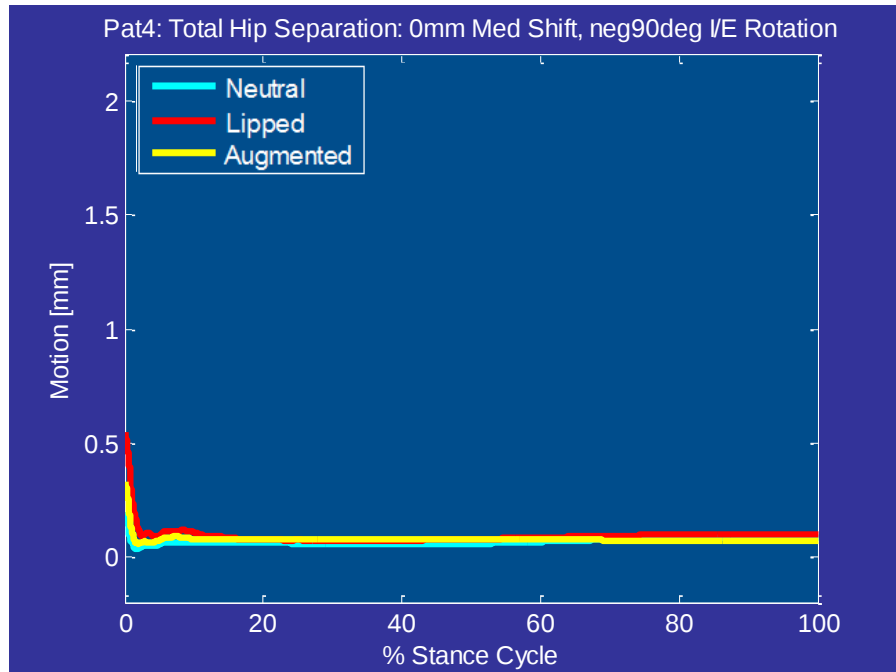


(a)

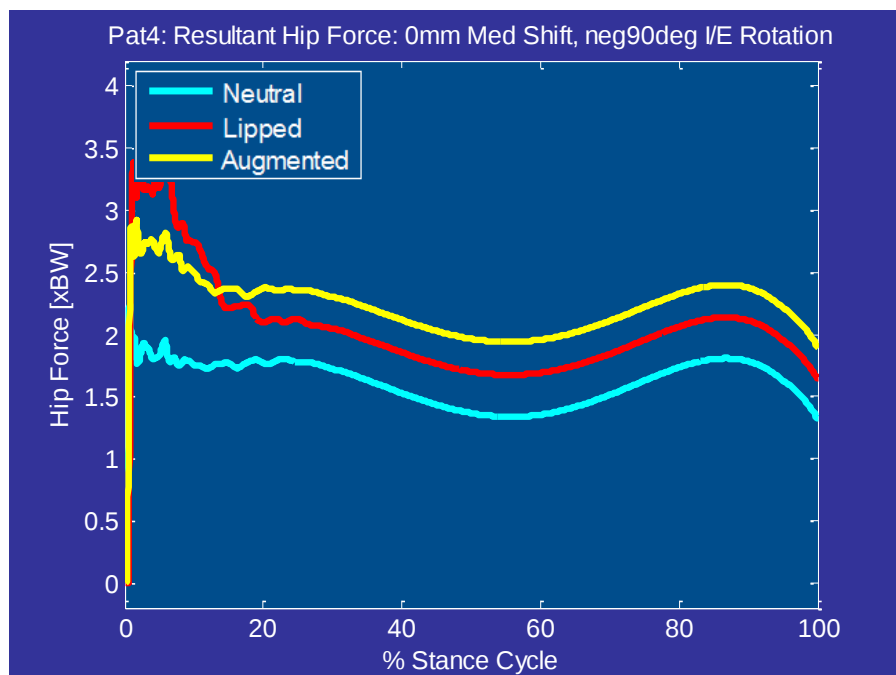


(b)

Figure D58: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

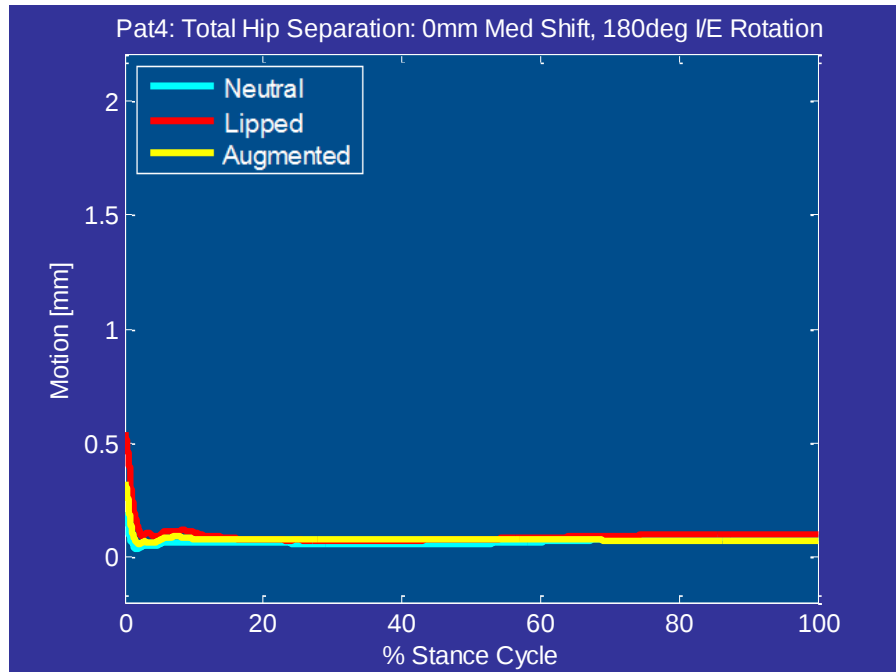


(a)

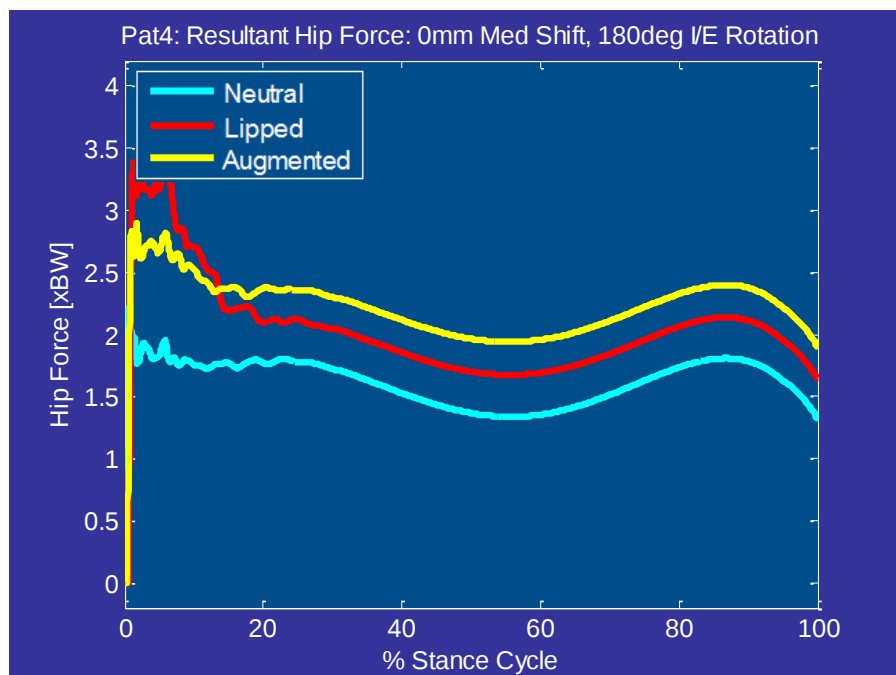


(b)

Figure D59: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

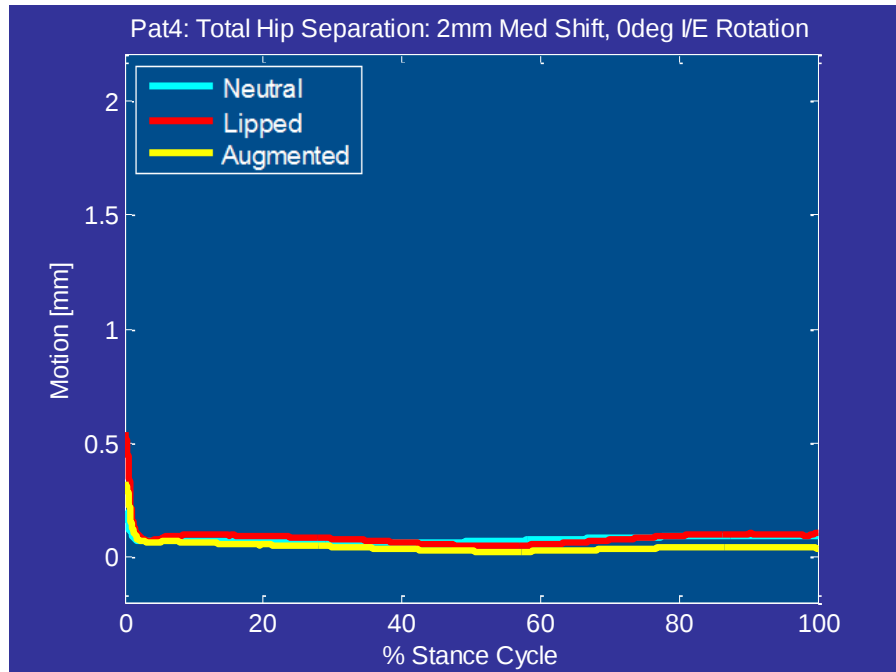


(a)

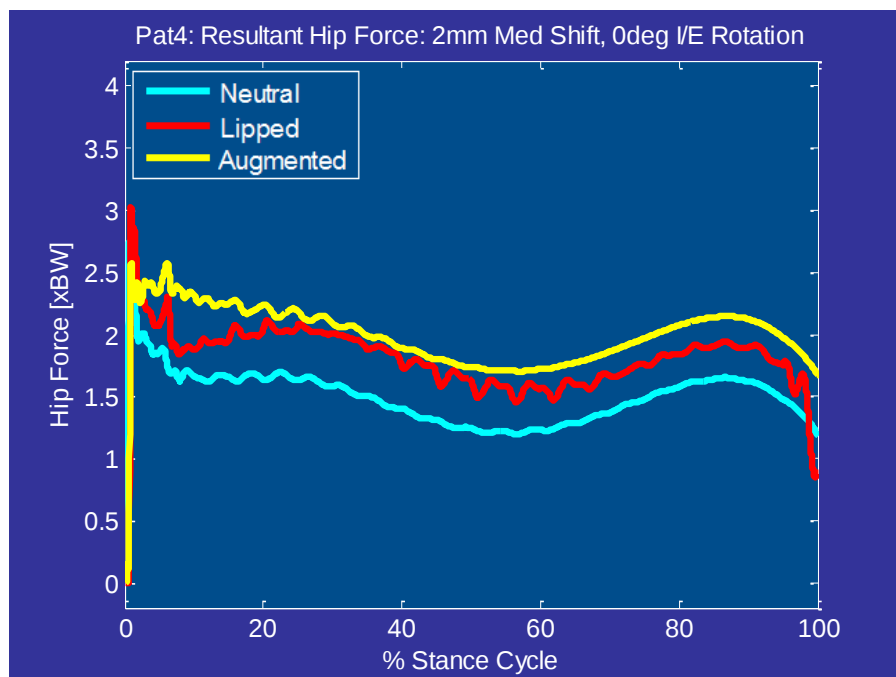


(b)

Figure D60: (a) Hip separation and (b) hip force Pat 4: 0mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

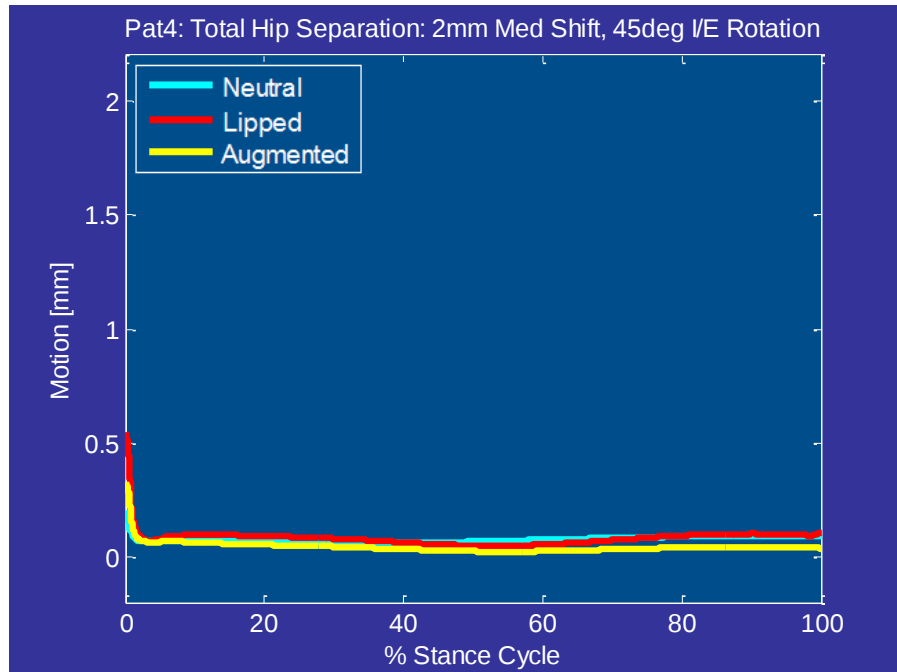


(a)

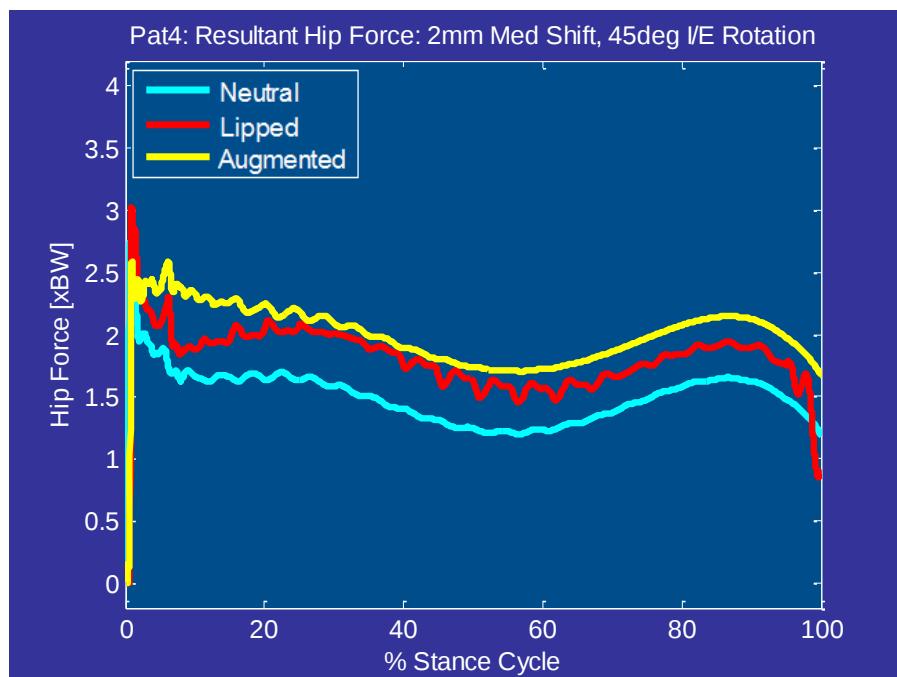


(b)

Figure D61: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

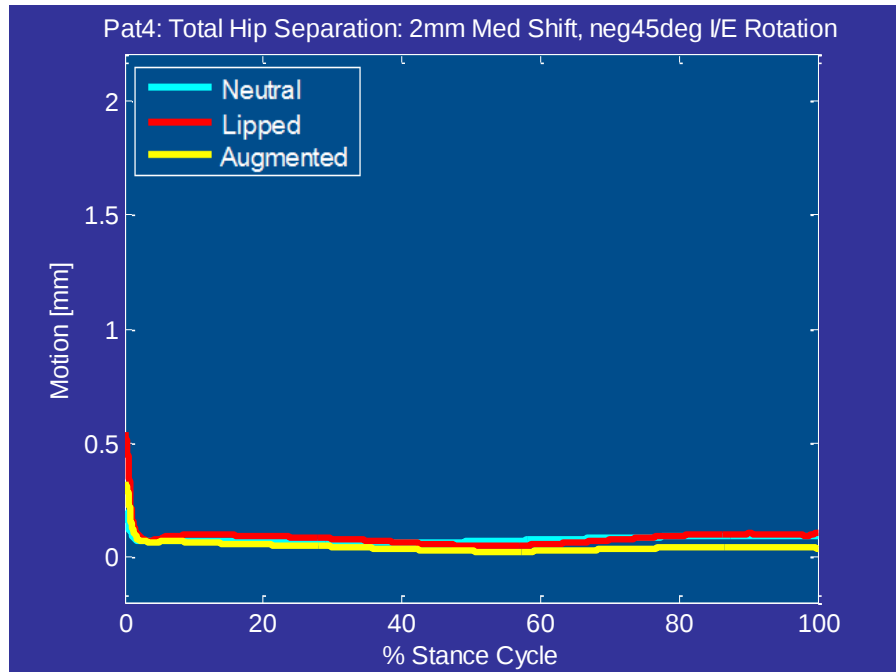


(a)

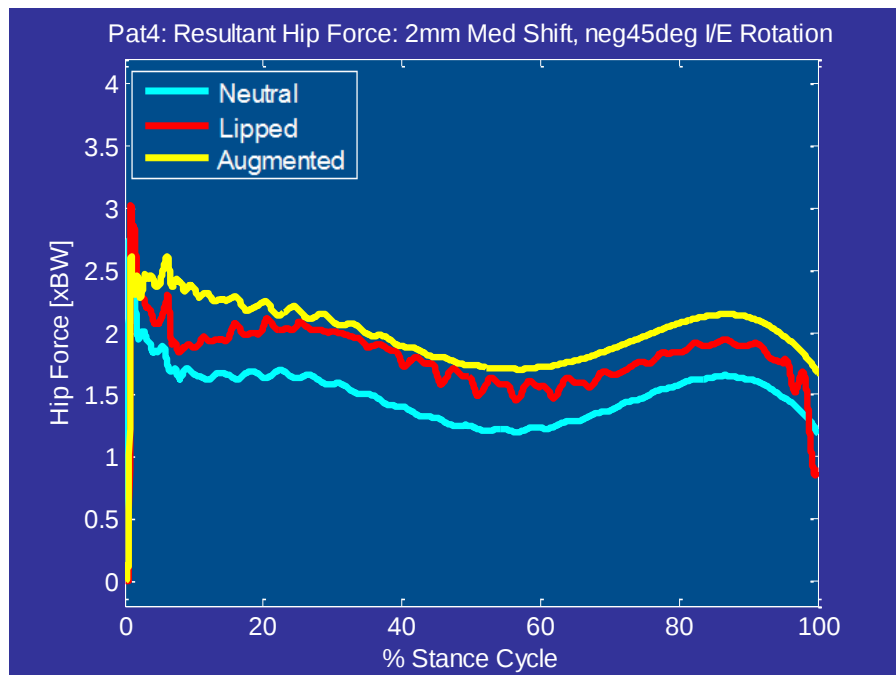


(b)

Figure D62: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

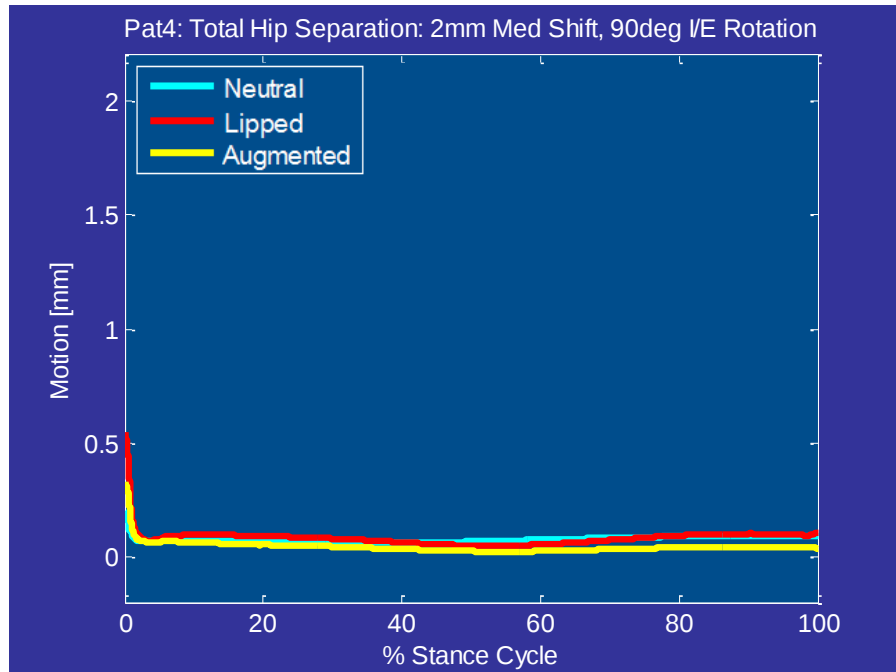


(a)

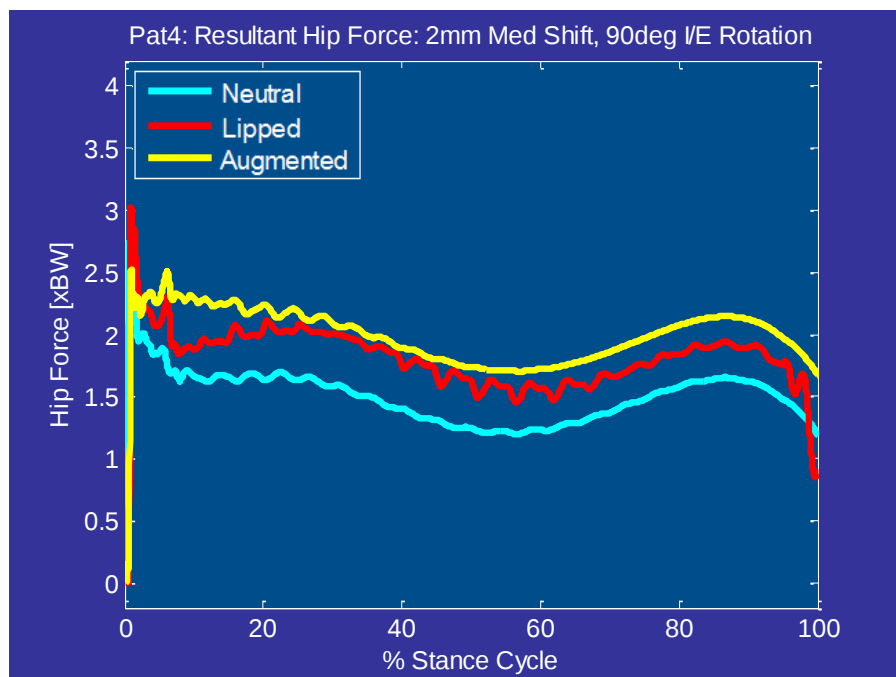


(b)

Figure D63: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

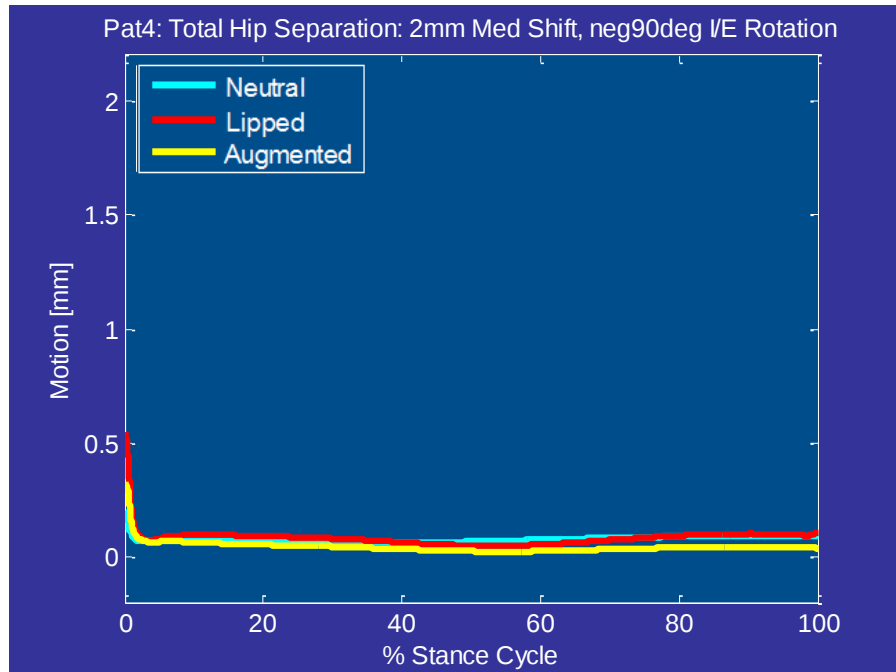


(a)

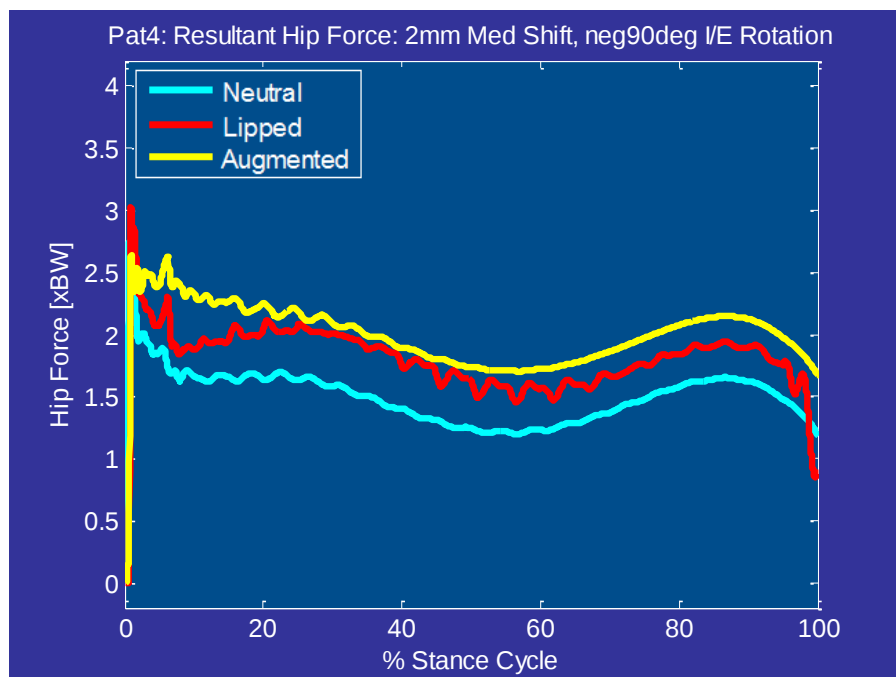


(b)

Figure D64: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

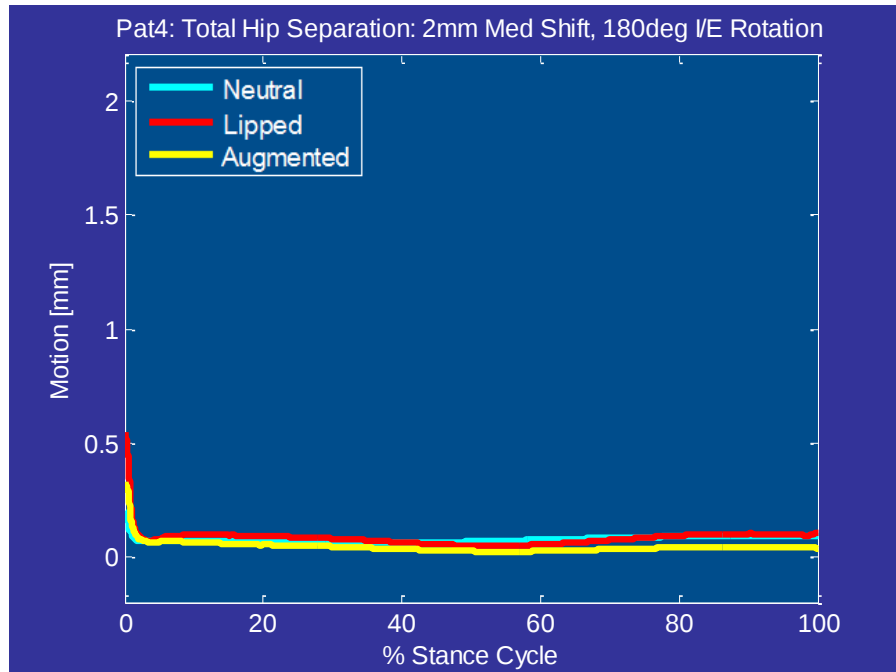


(a)

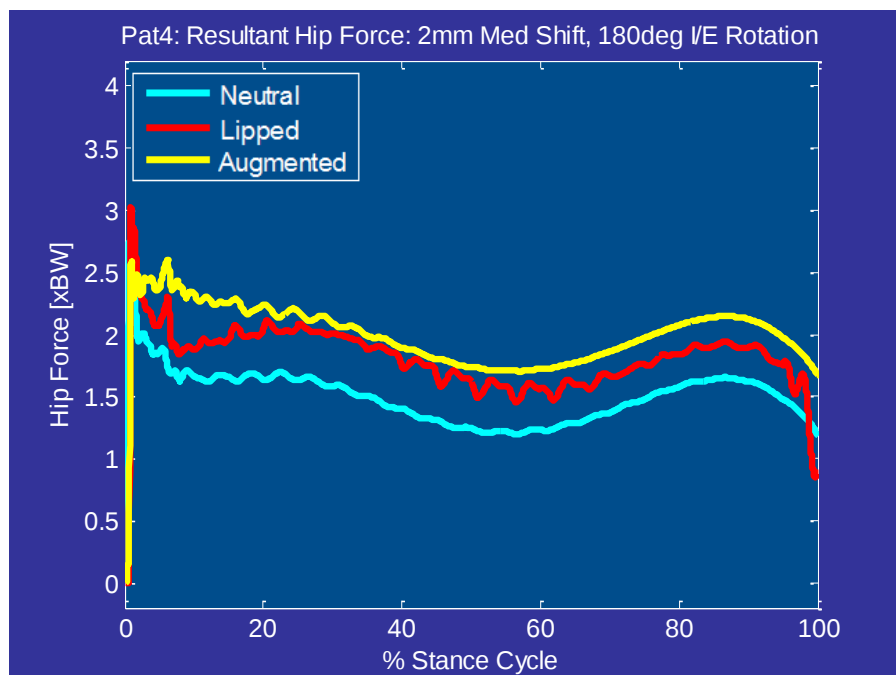


(b)

Figure D65: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

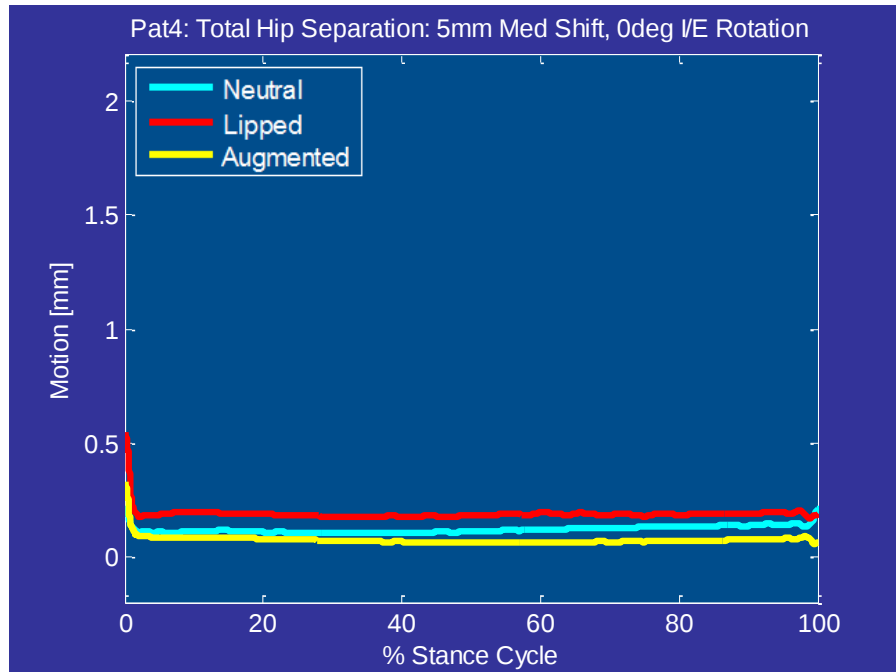


(a)



(b)

Figure D66: (a) Hip separation and (b) hip force Pat 4: 2mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

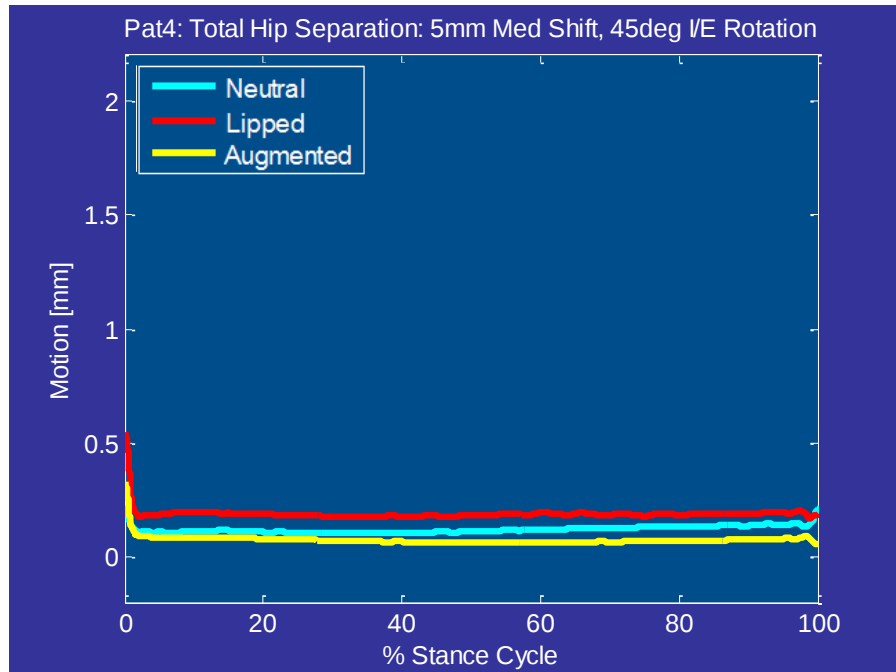


(a)

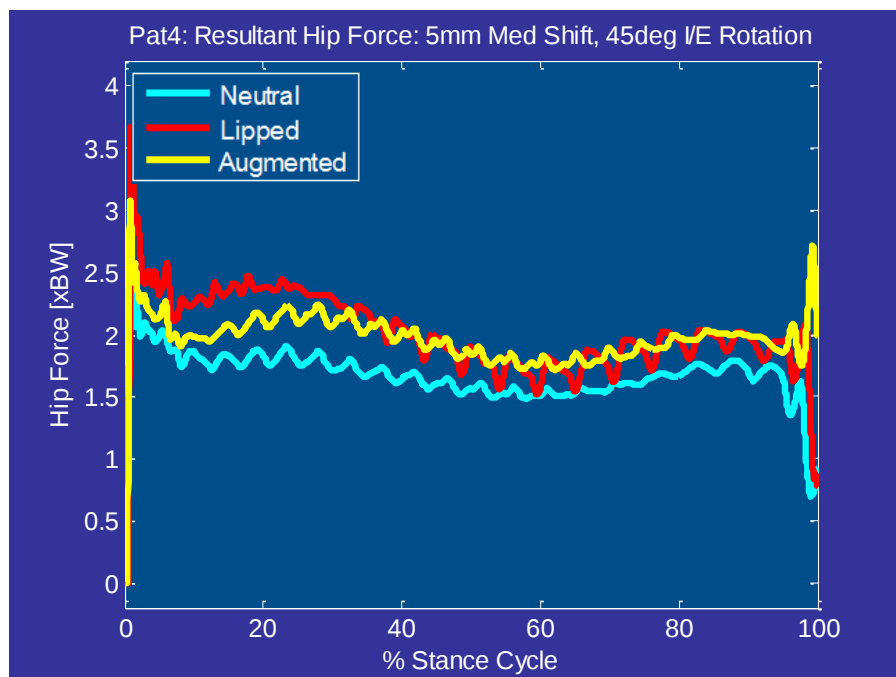


(b)

Figure D67: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

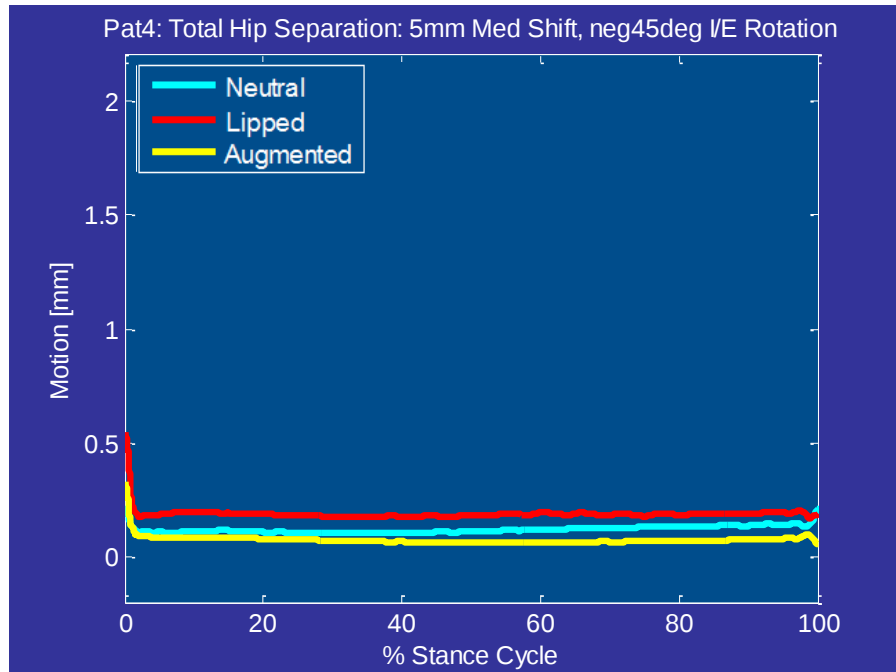


(a)

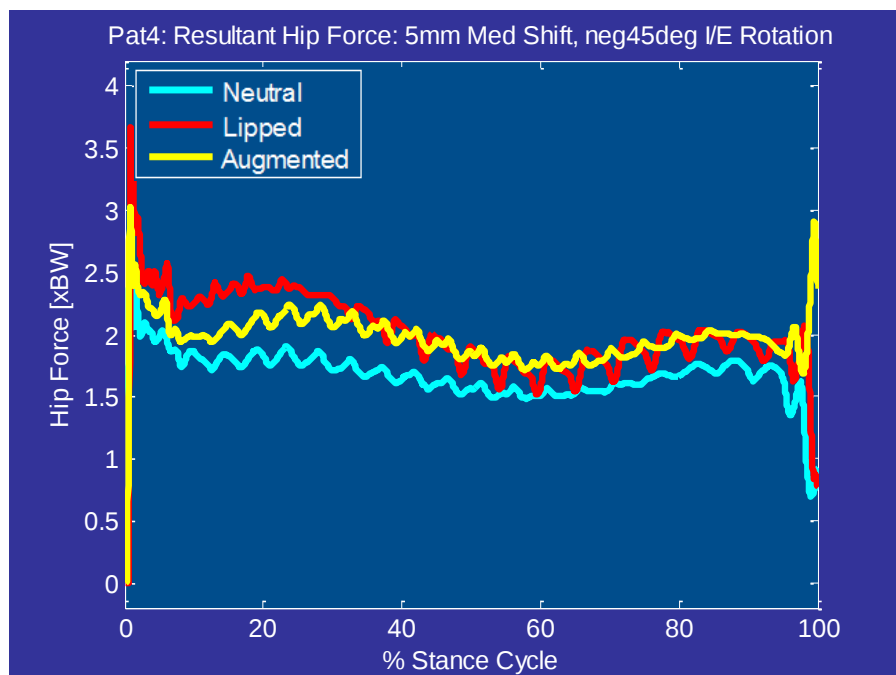


(b)

Figure D68: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

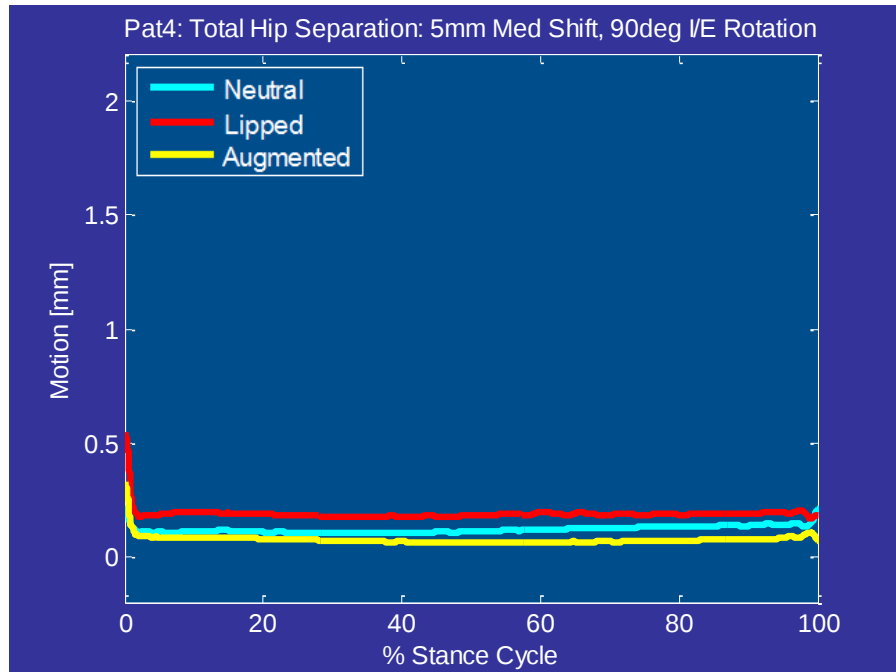


(a)

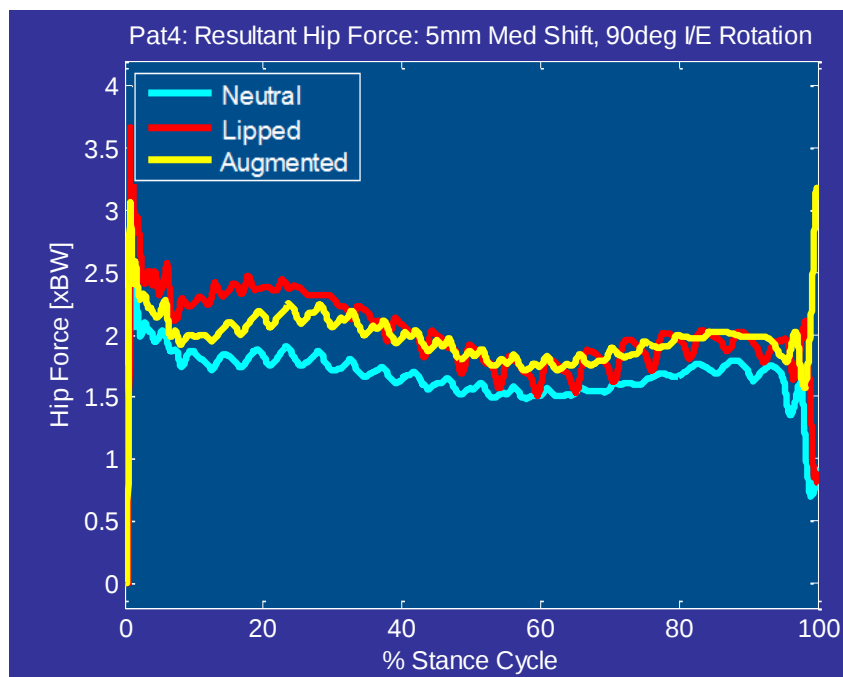


(b)

Figure D69: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

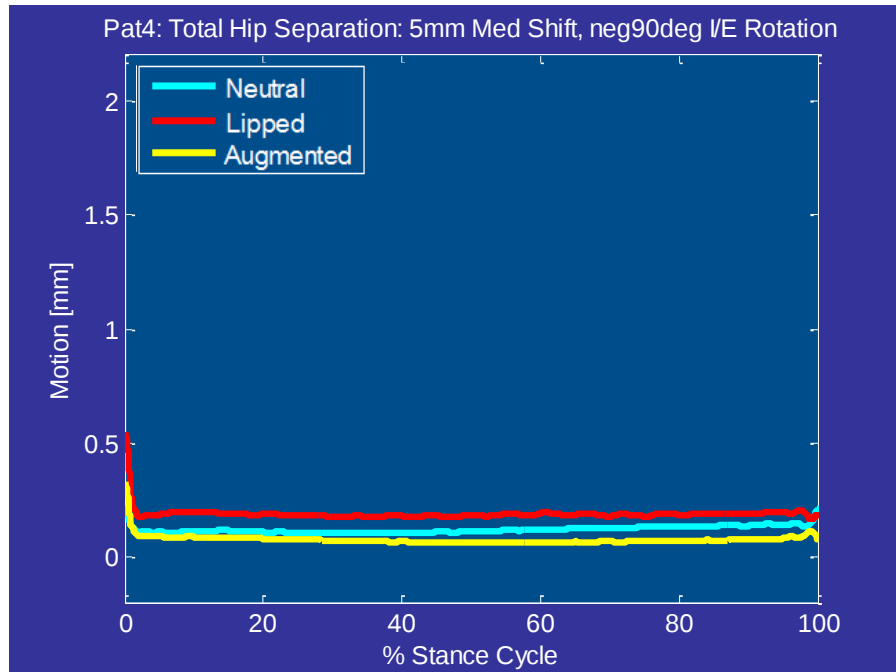


(a)

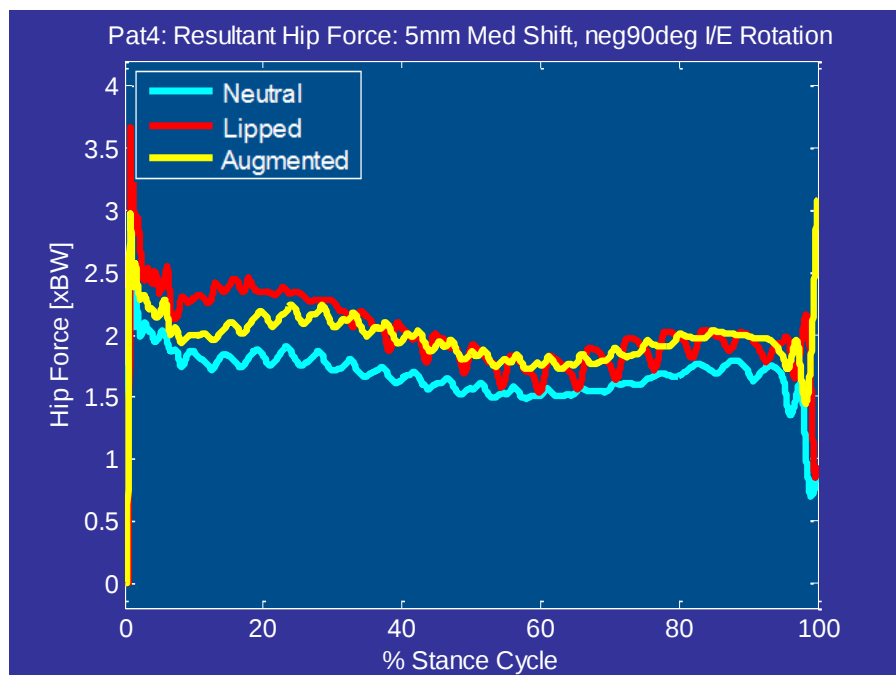


(b)

Figure D70: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

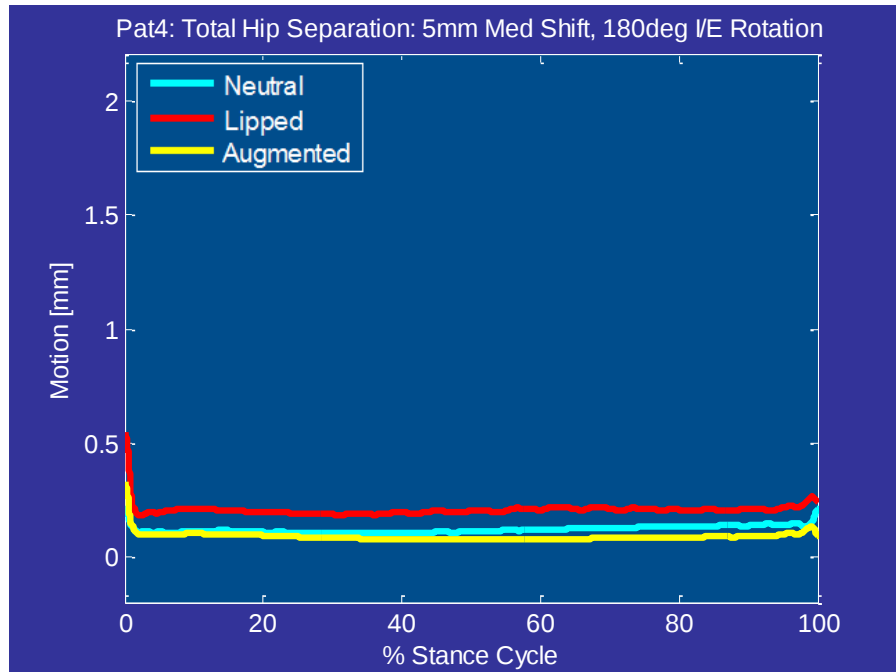


(a)

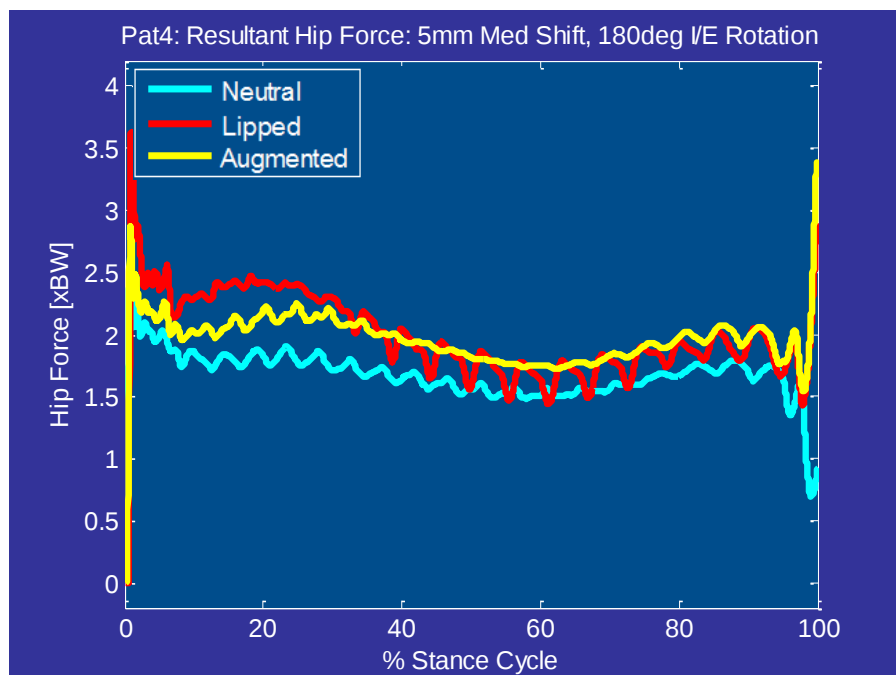


(b)

Figure D71: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

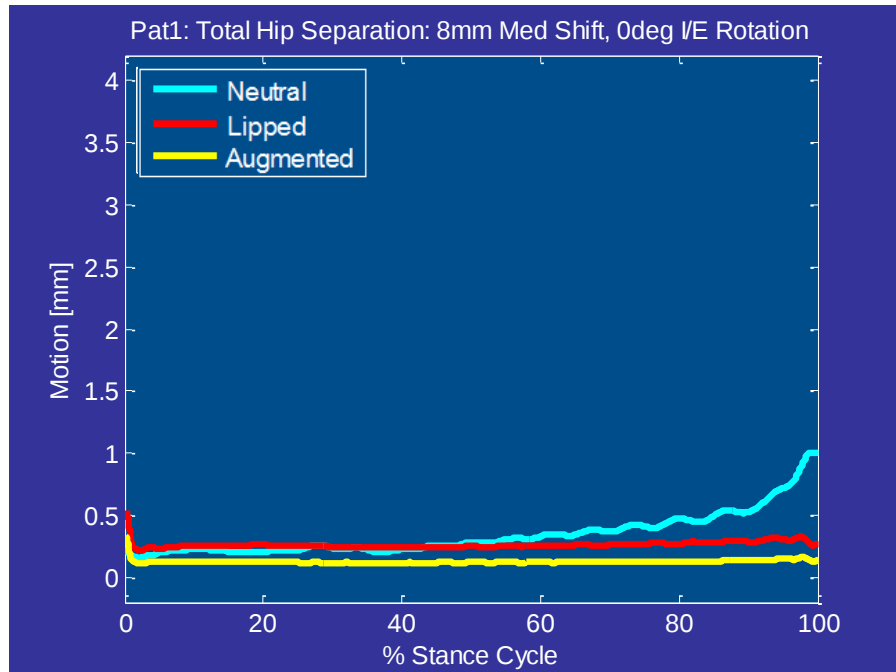


(a)

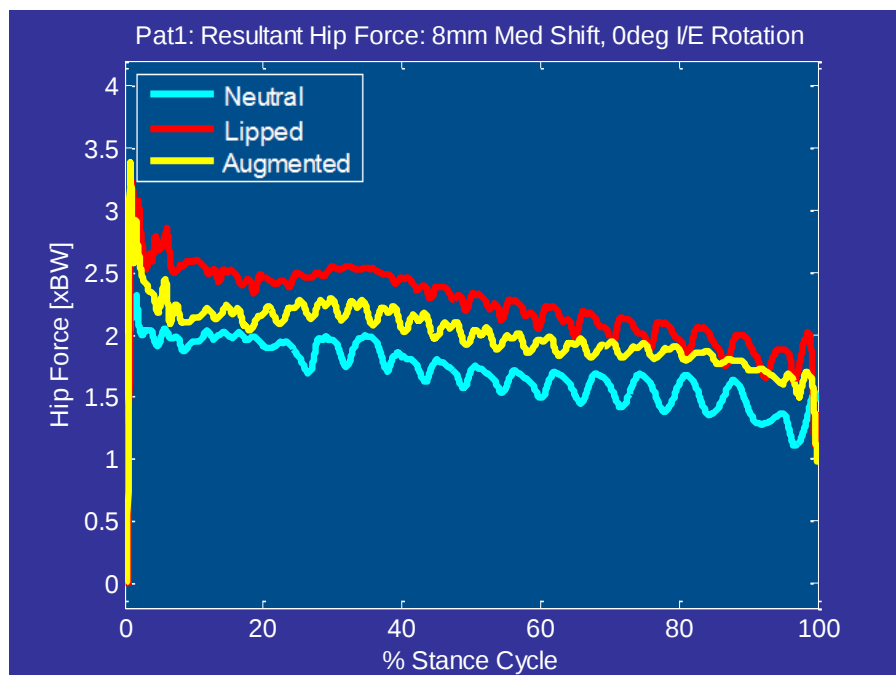


(b)

Figure D72: (a) Hip separation and (b) hip force Pat 4: 5mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

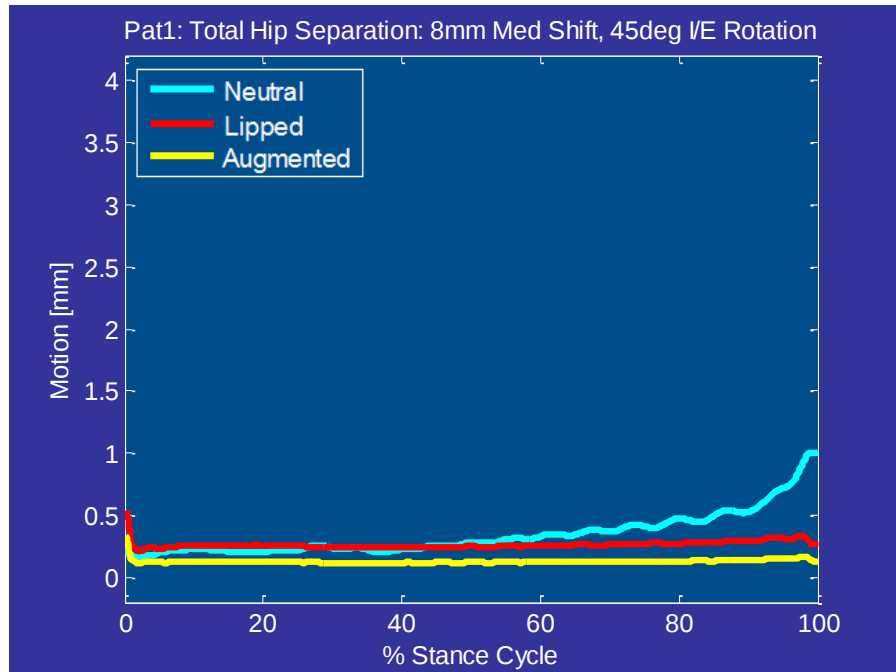


(a)

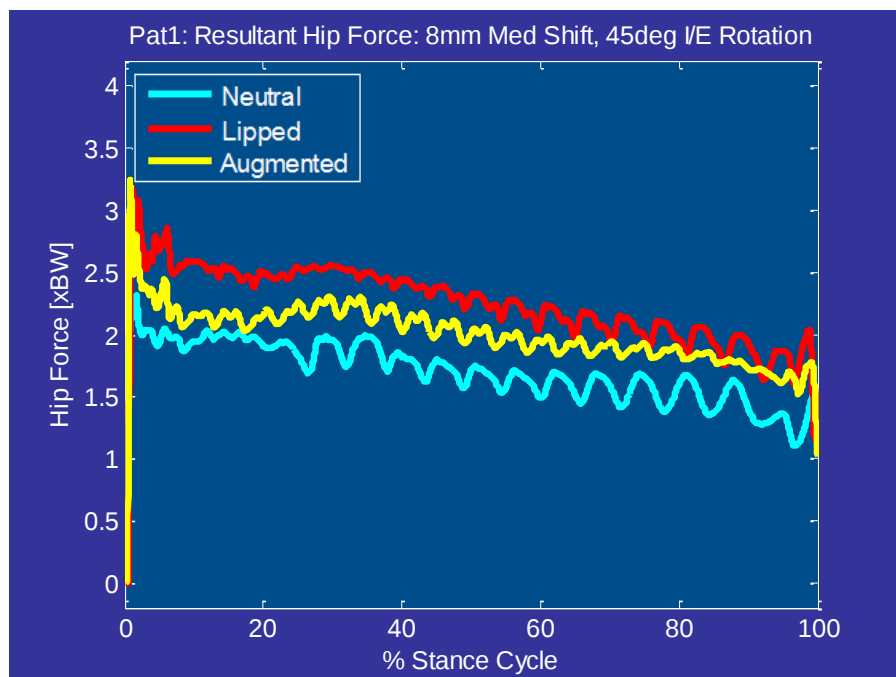


(b)

Figure D73: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

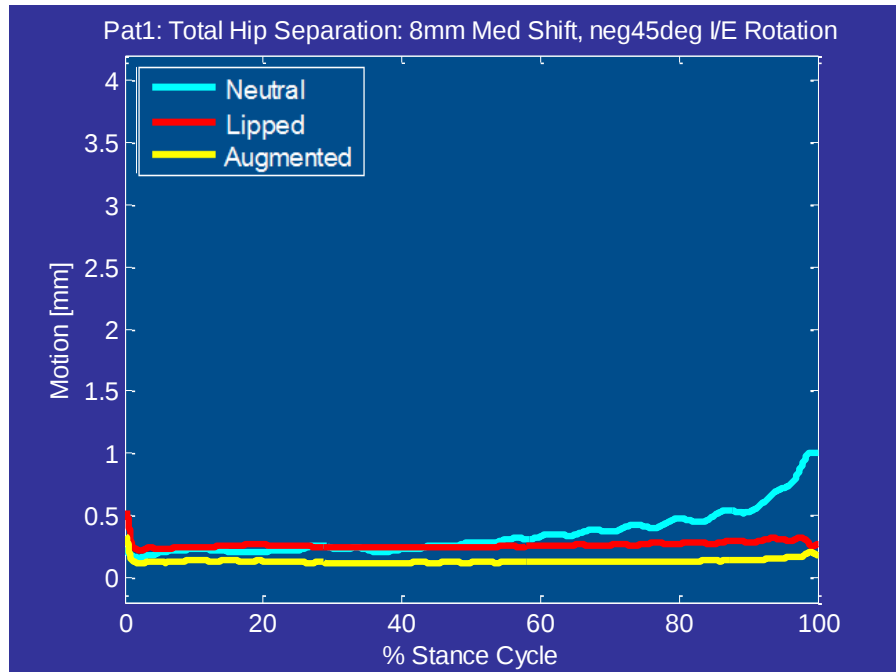


(a)

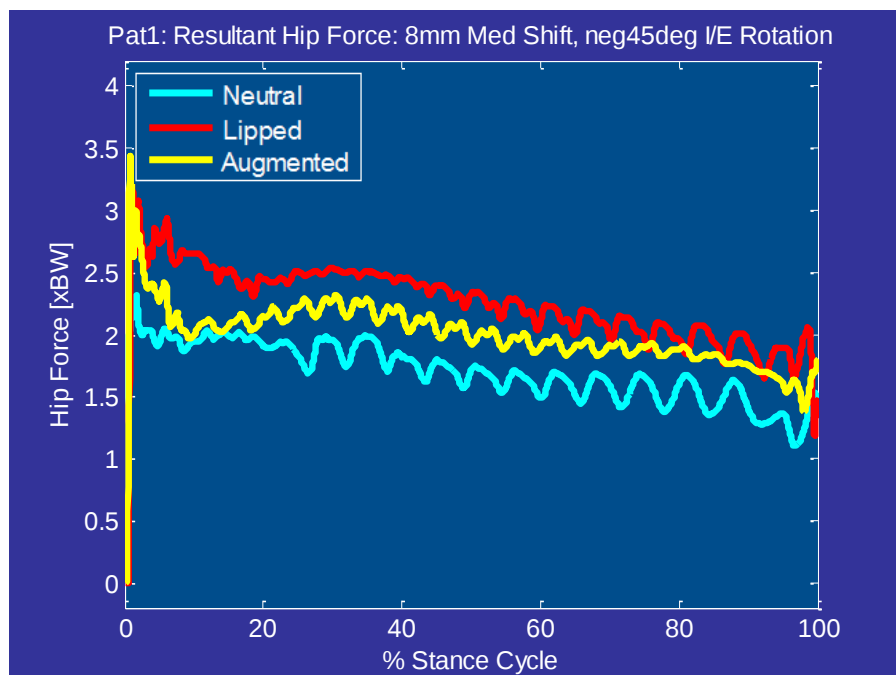


(b)

Figure D74: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

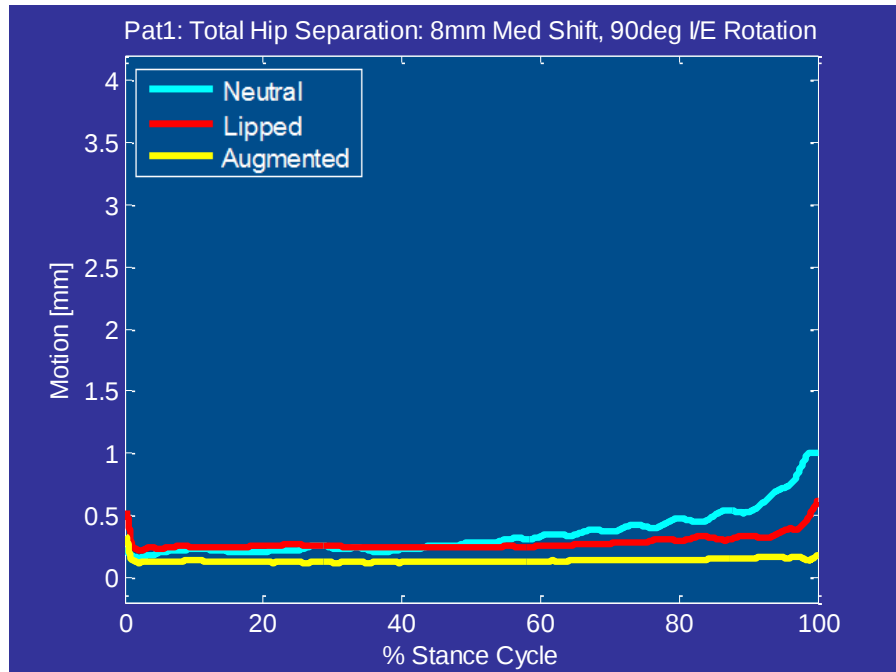


(a)

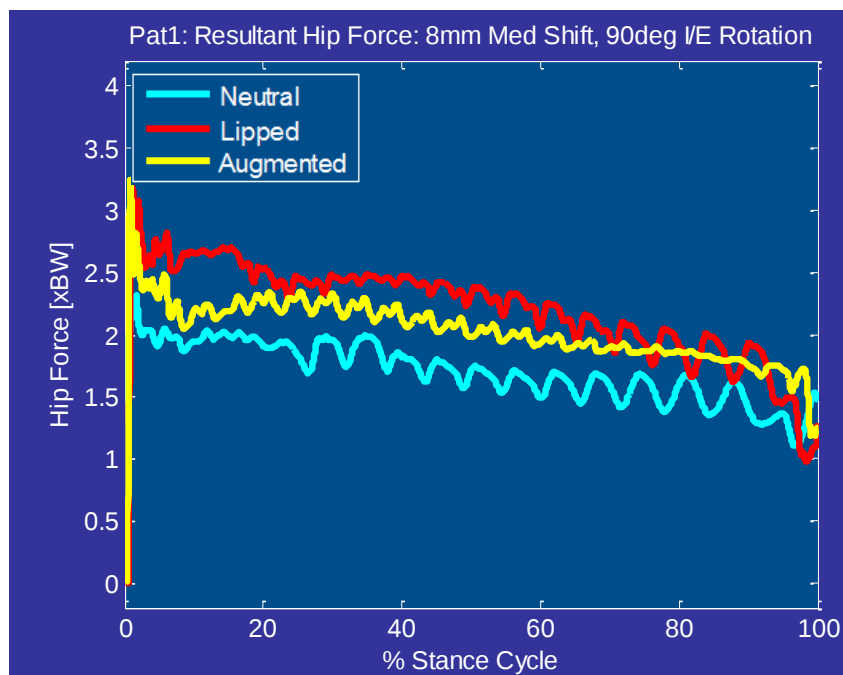


(b)

Figure D75: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

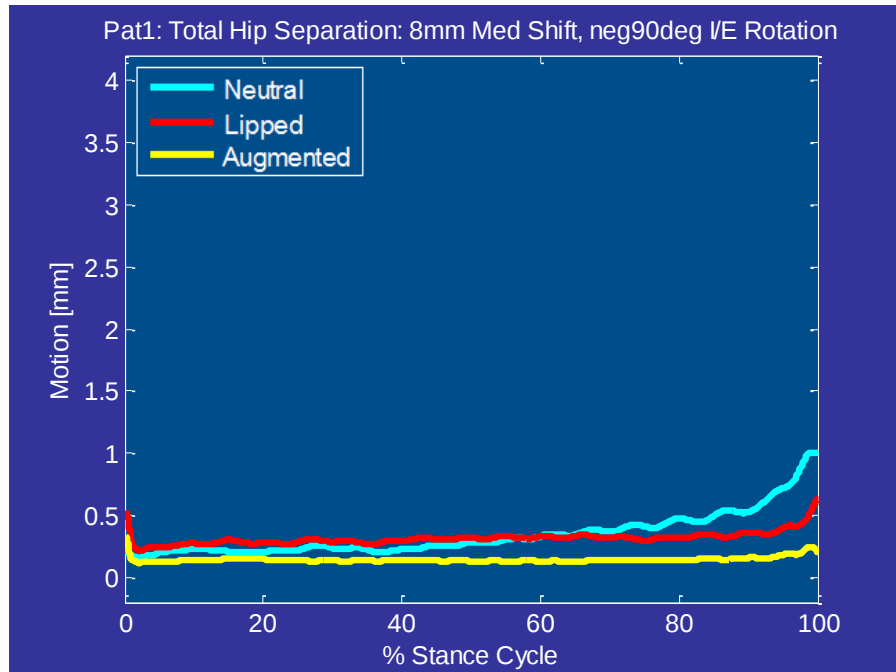


(a)

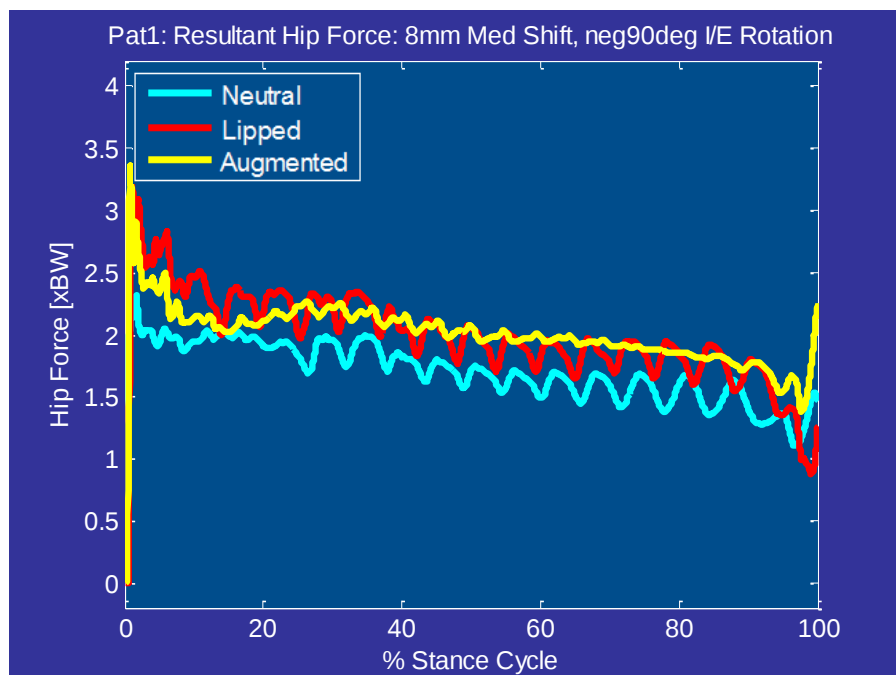


(b)

Figure D76: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

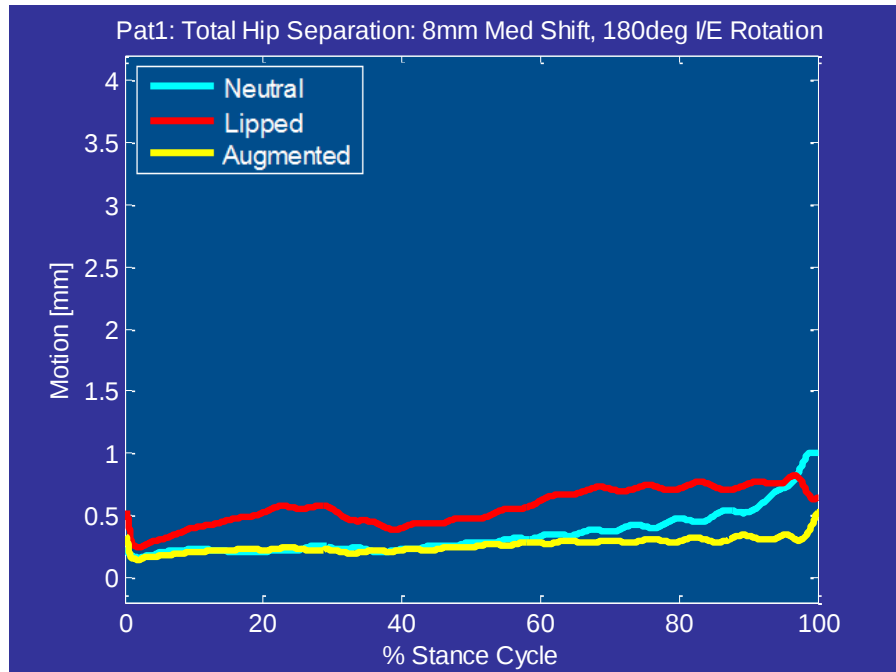


(a)

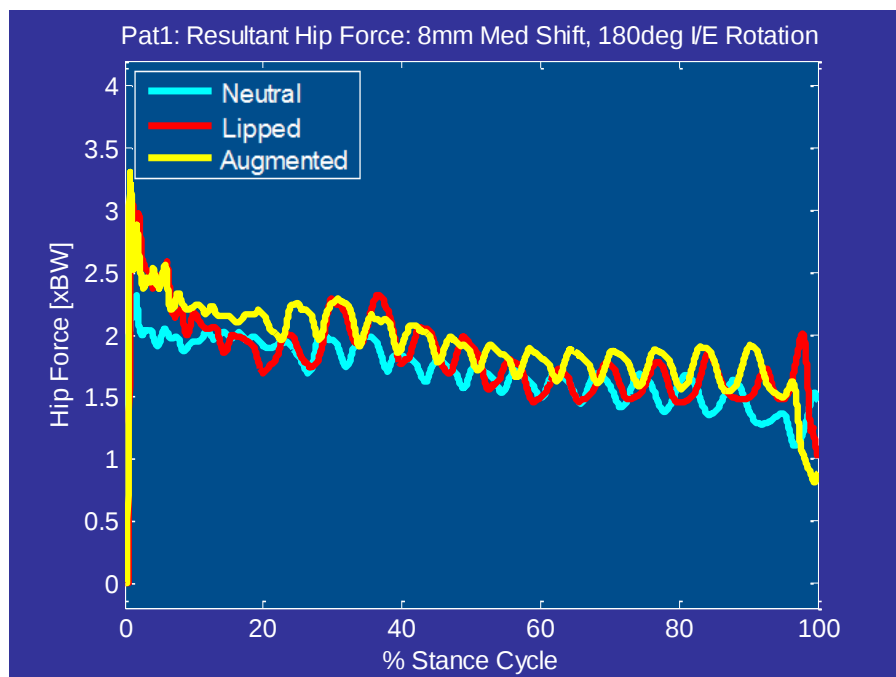


(b)

Figure D77: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

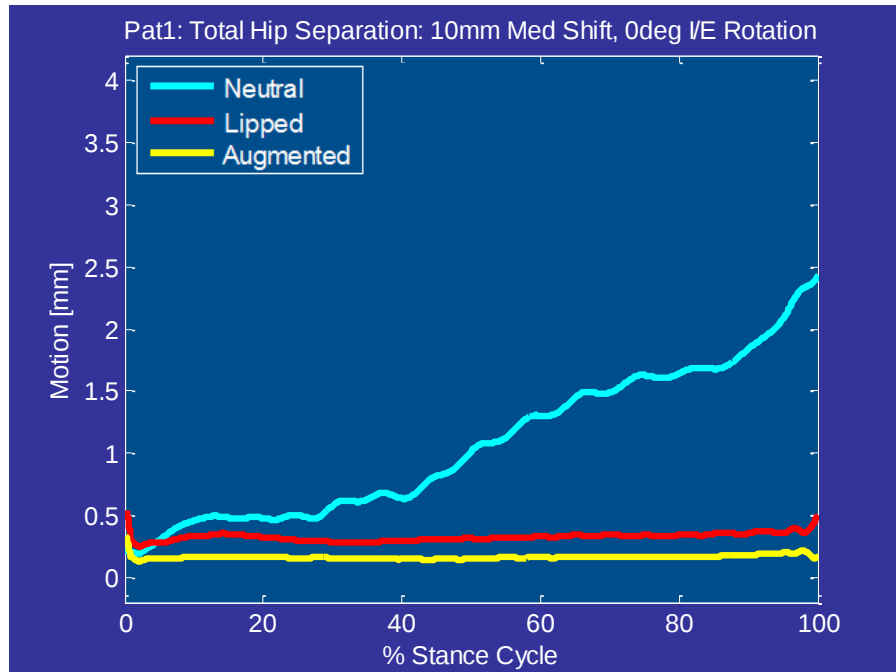


(a)

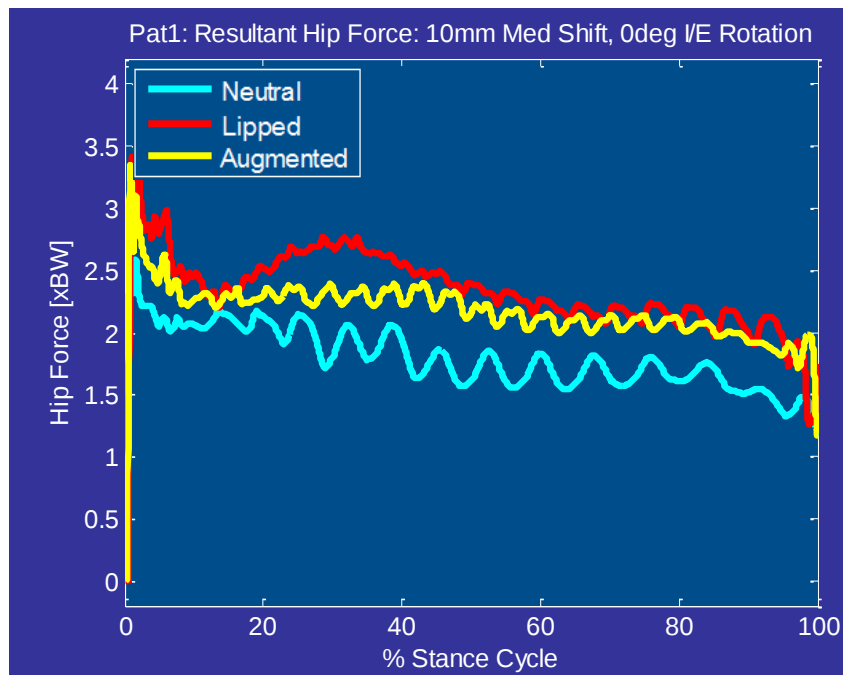


(b)

Figure D78: (a) Hip separation and (b) hip force Pat 1: 8mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

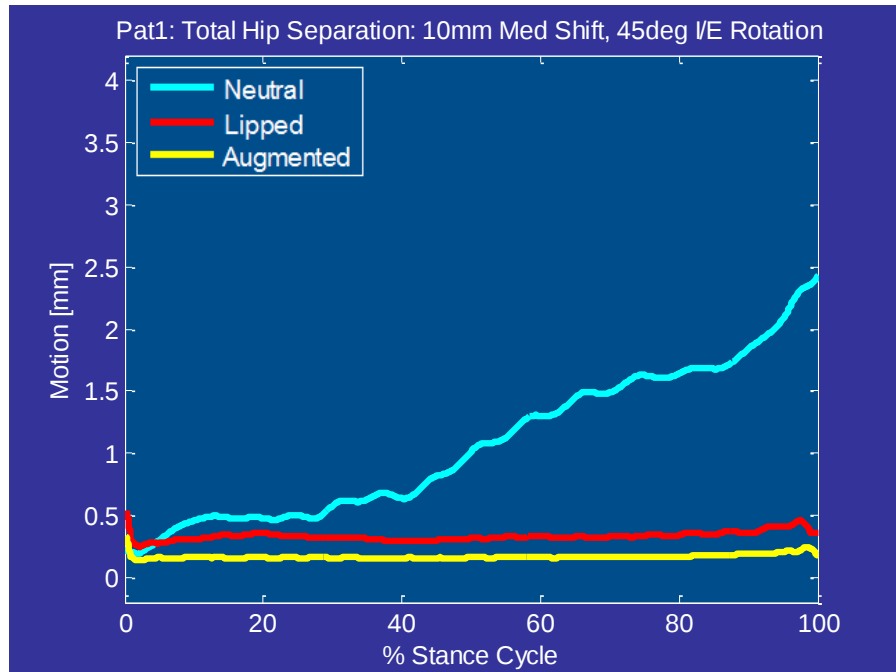


(a)

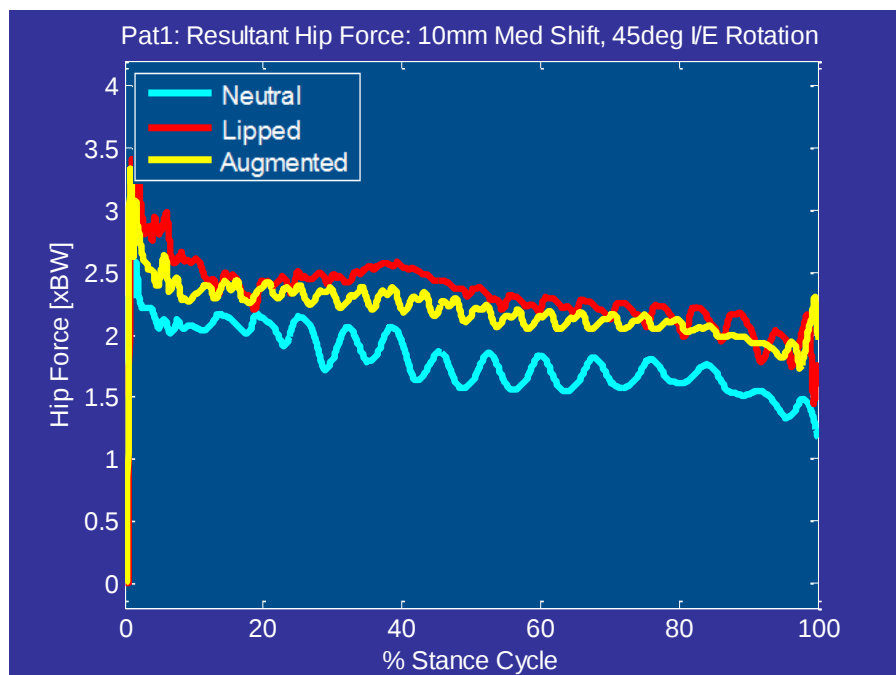


(b)

Figure D79: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

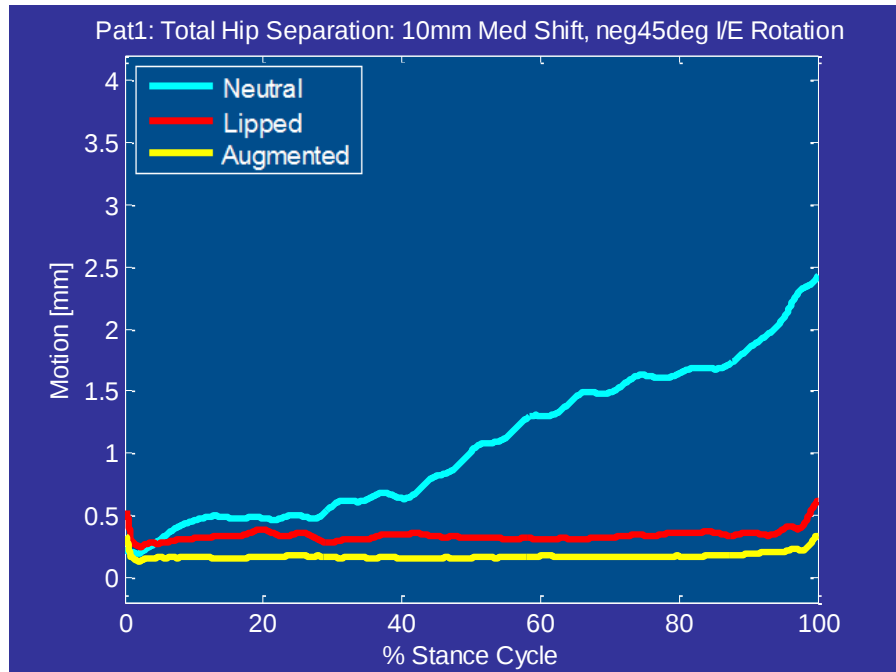


(a)

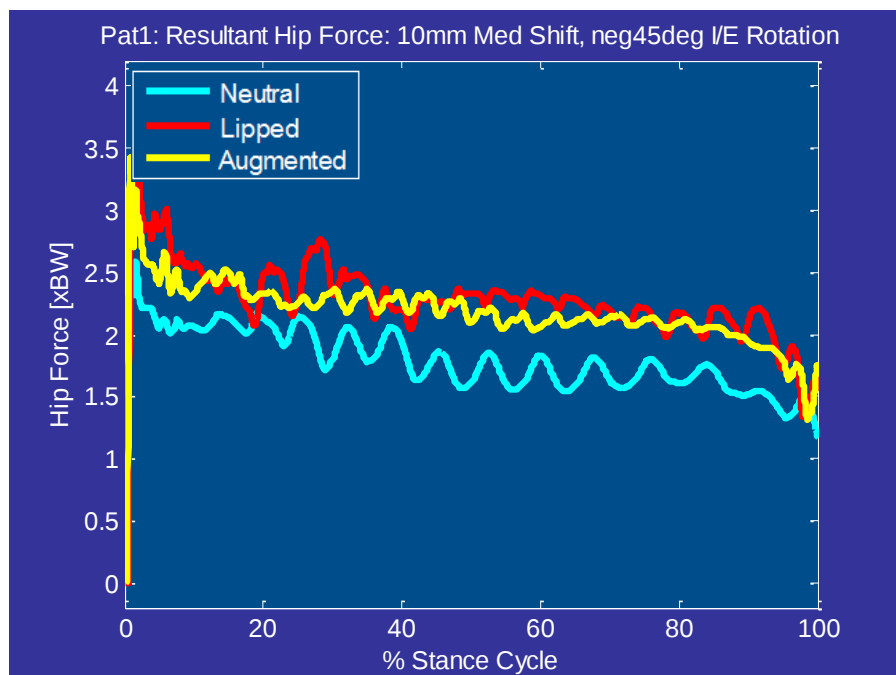


(b)

Figure D80: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

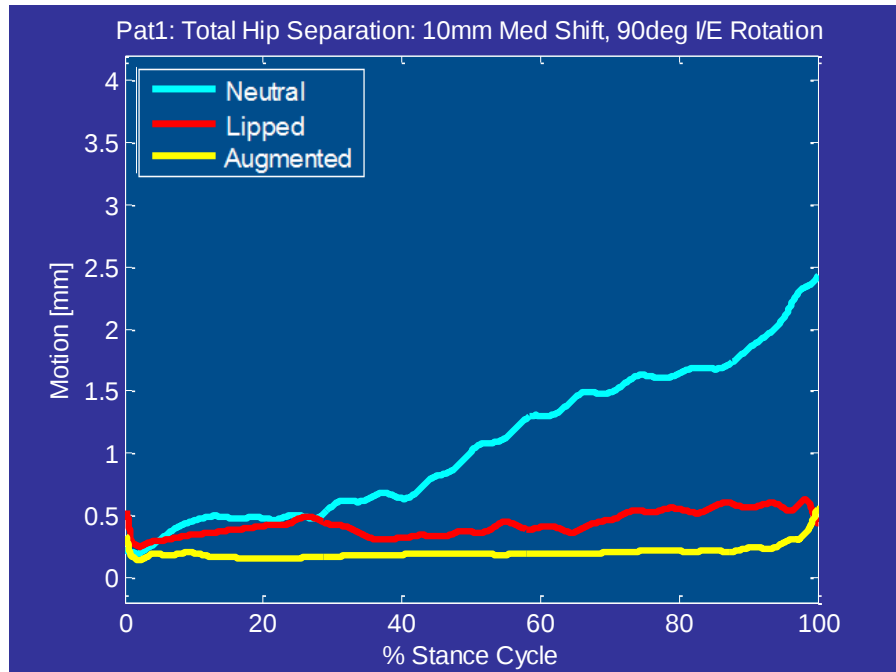


(a)

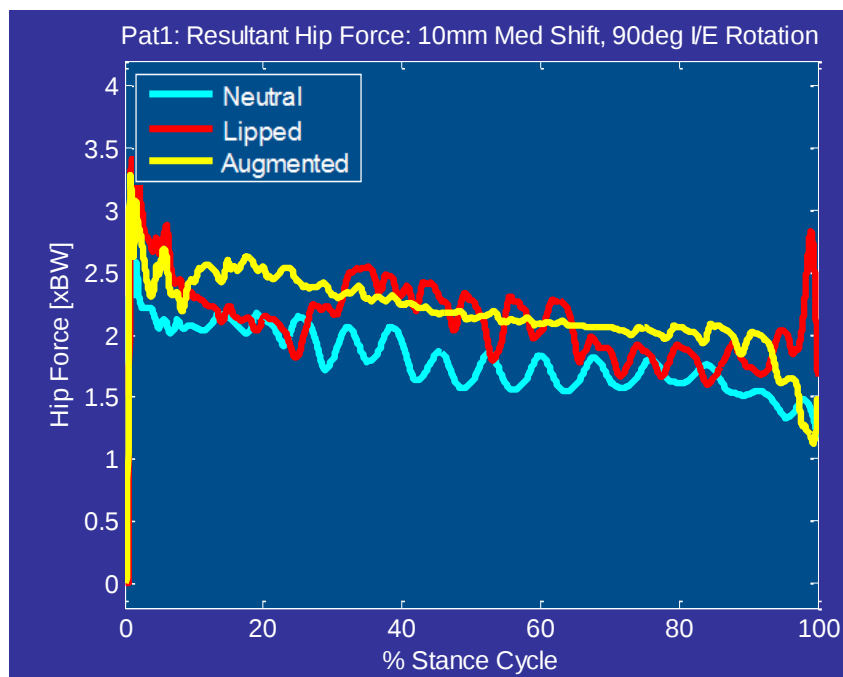


(b)

Figure D81: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

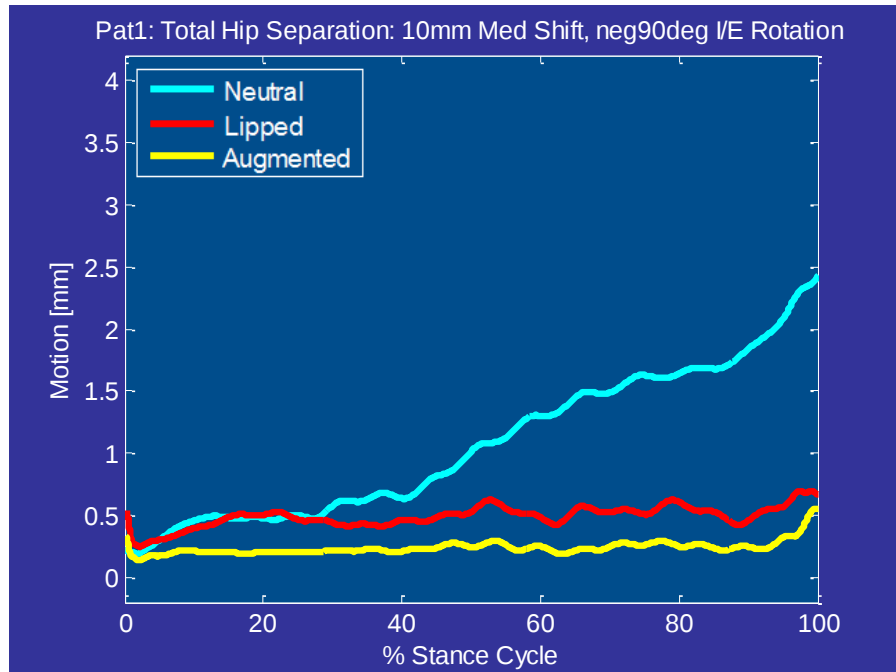


(a)

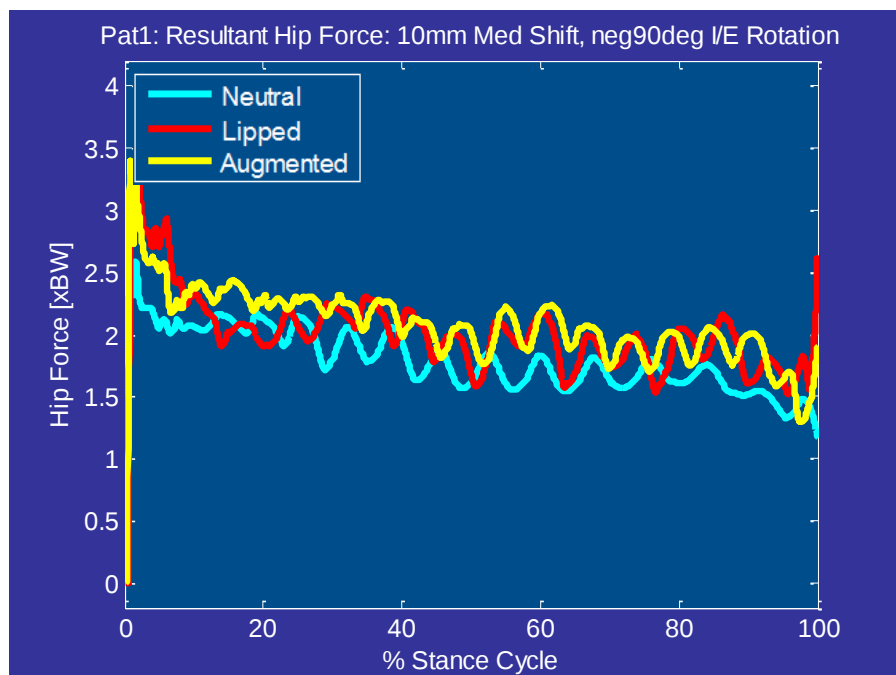


(b)

Figure D82: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

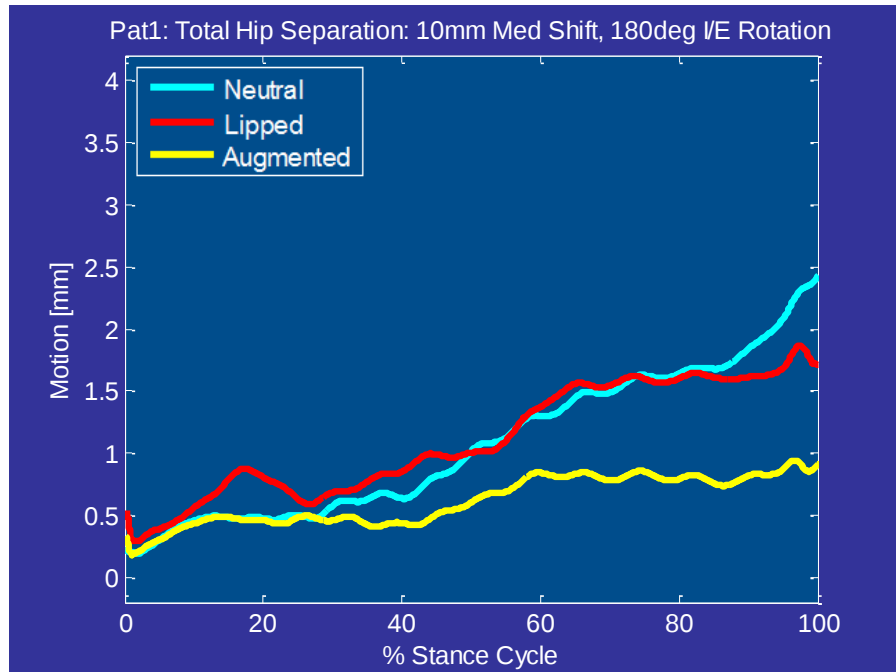


(a)

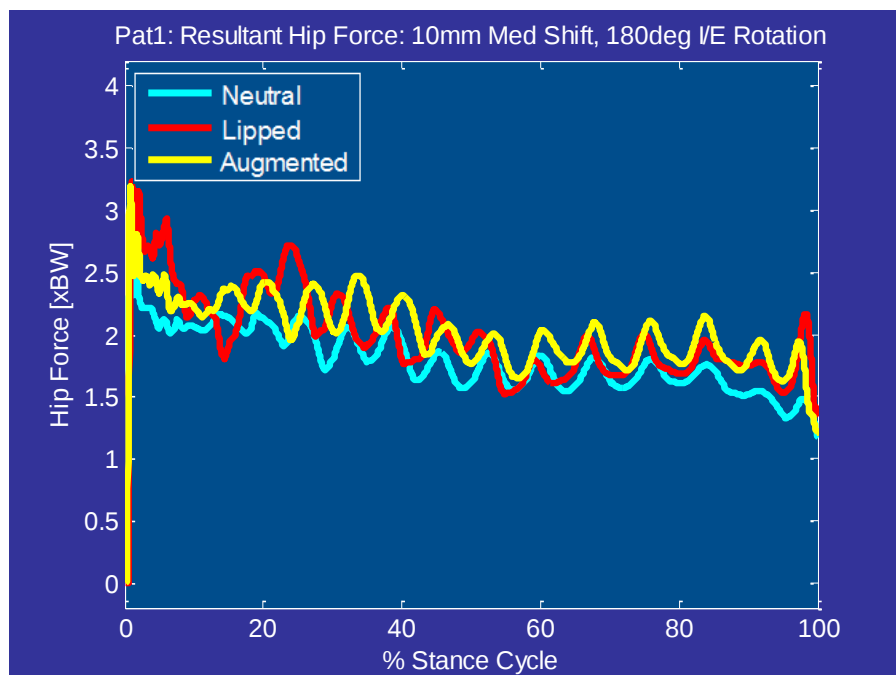


(b)

Figure D83: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

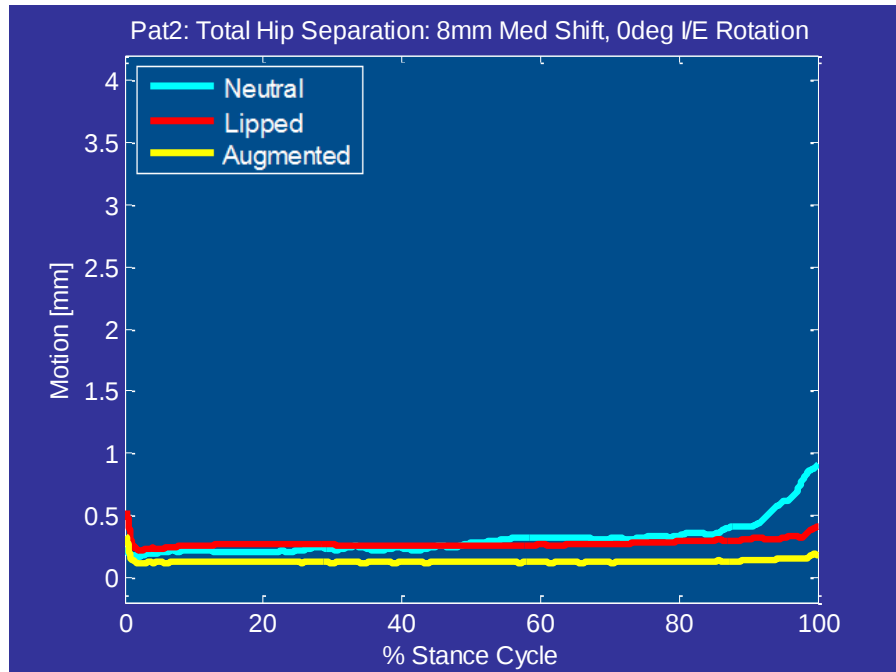


(a)

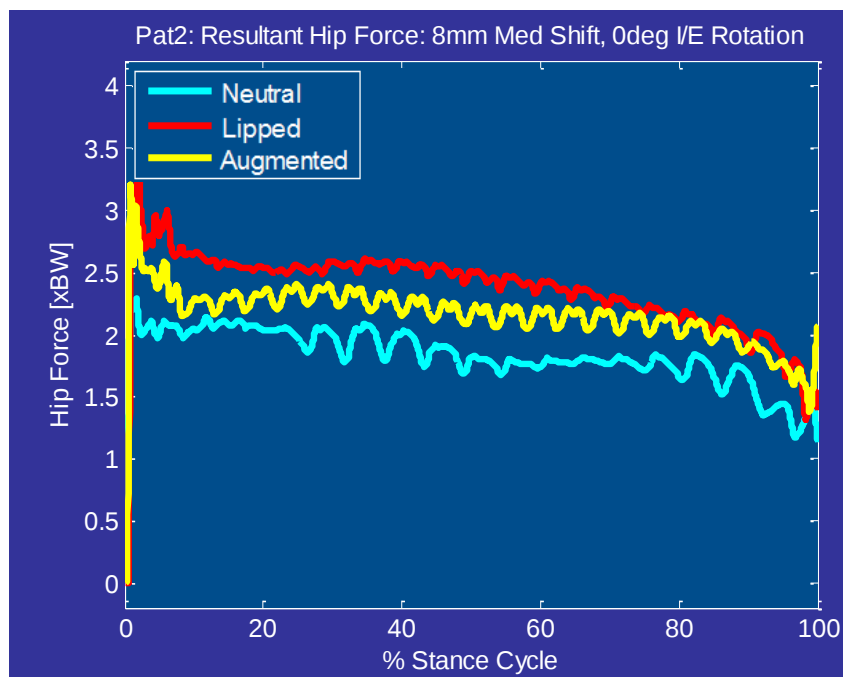


(b)

Figure D84: (a) Hip separation and (b) hip force Pat 1: 10mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

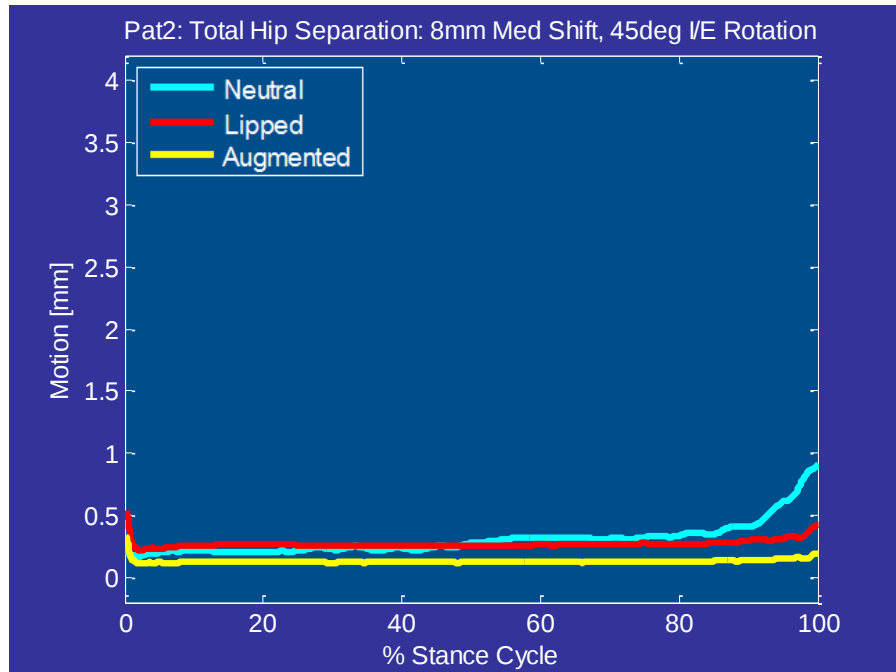


(a)

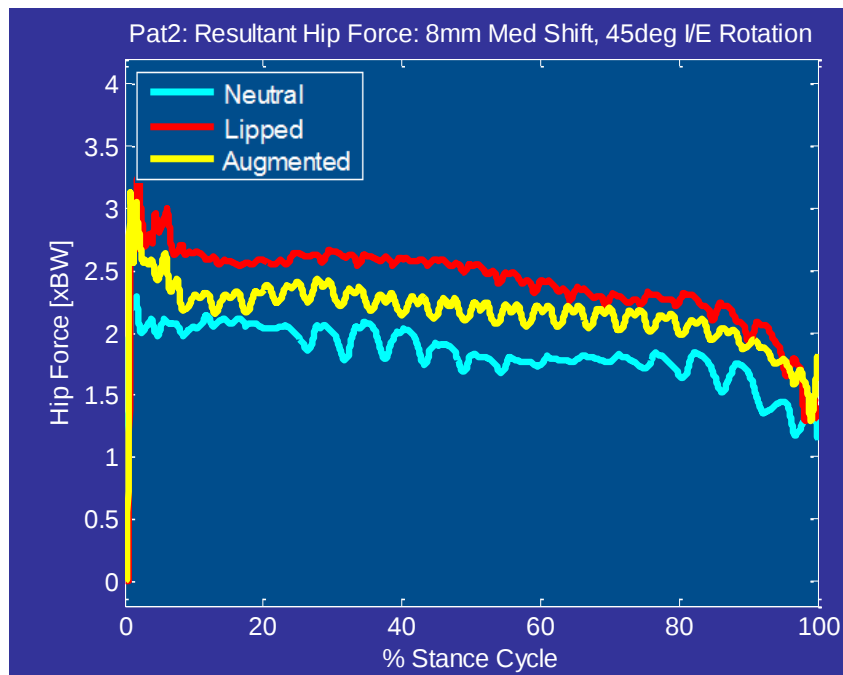


(b)

Figure D85: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

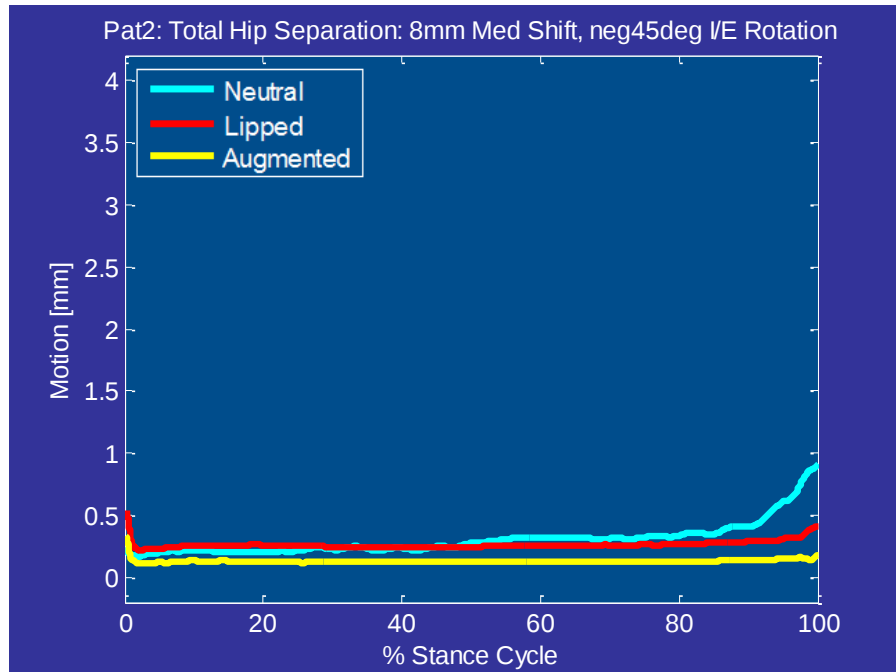


(a)

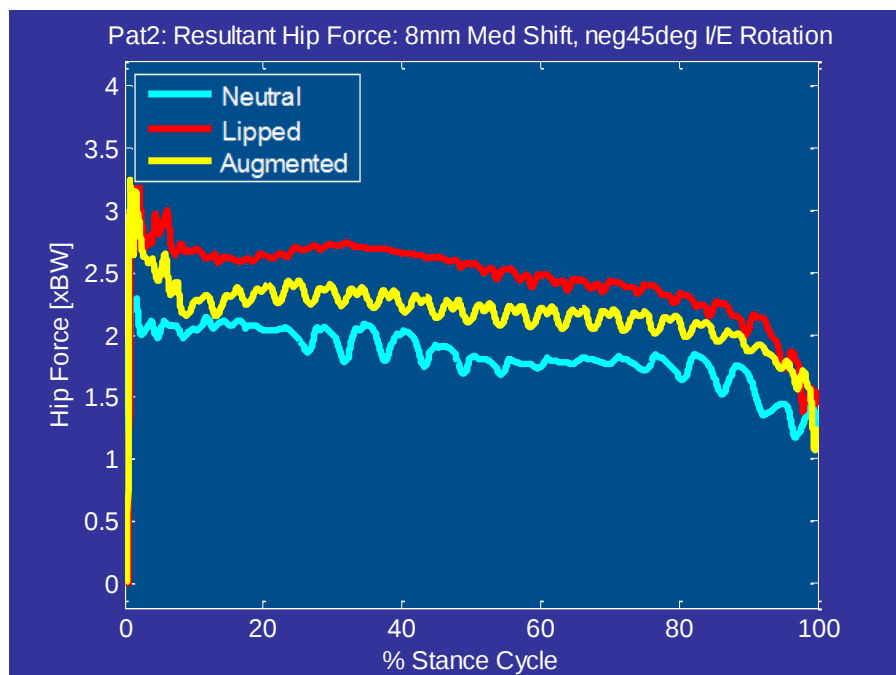


(b)

Figure D86: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

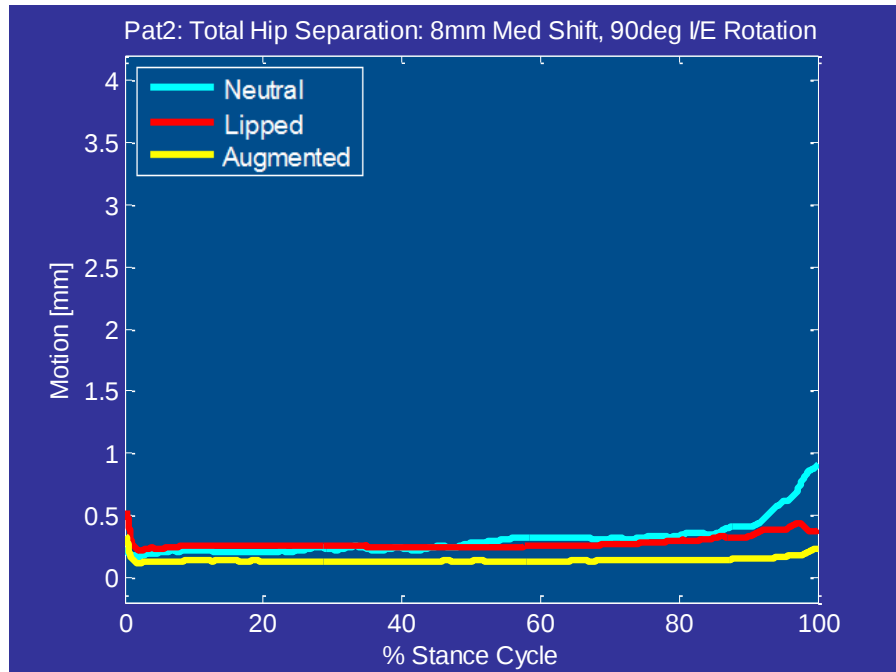


(a)

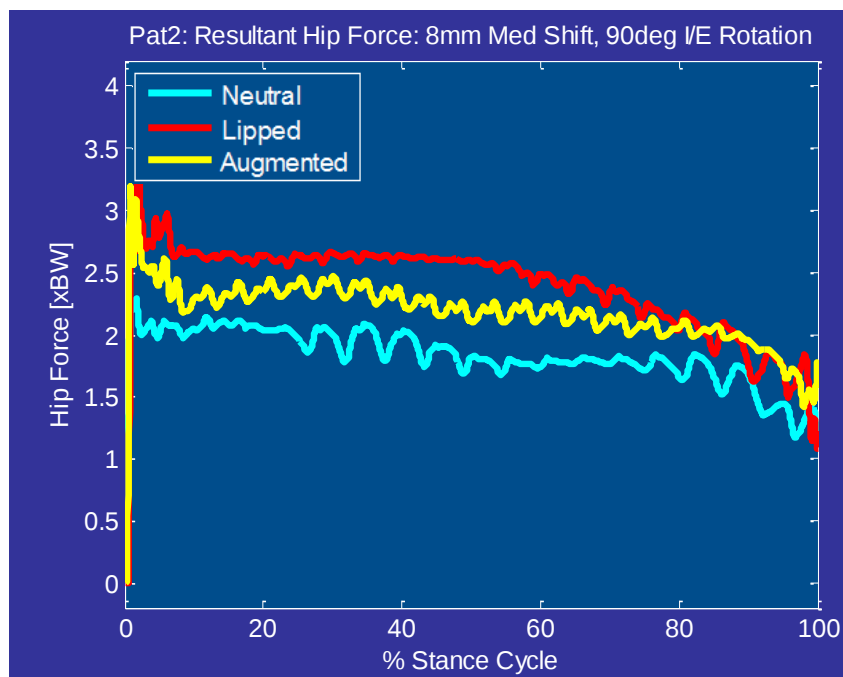


(b)

Figure D87: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

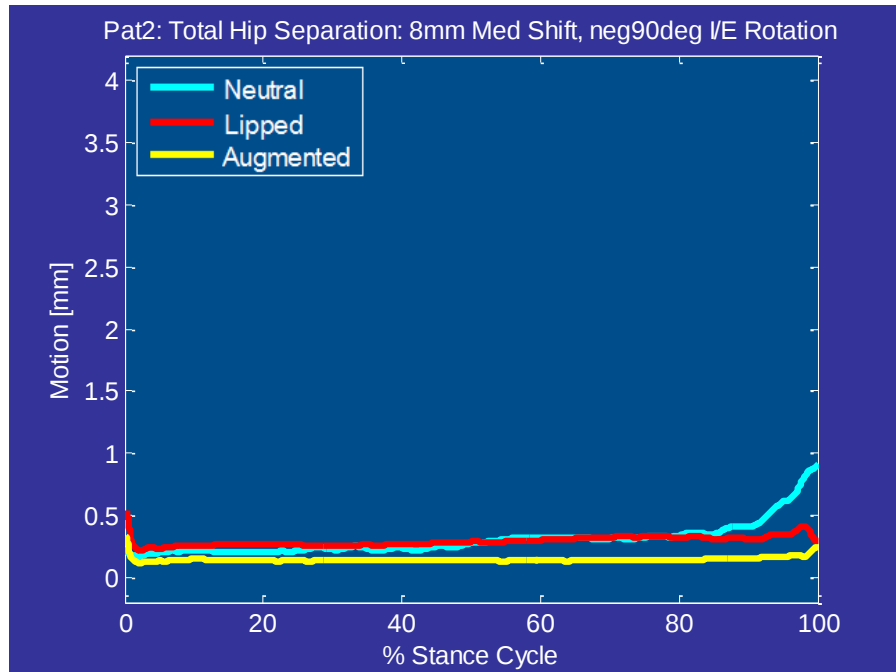


(a)

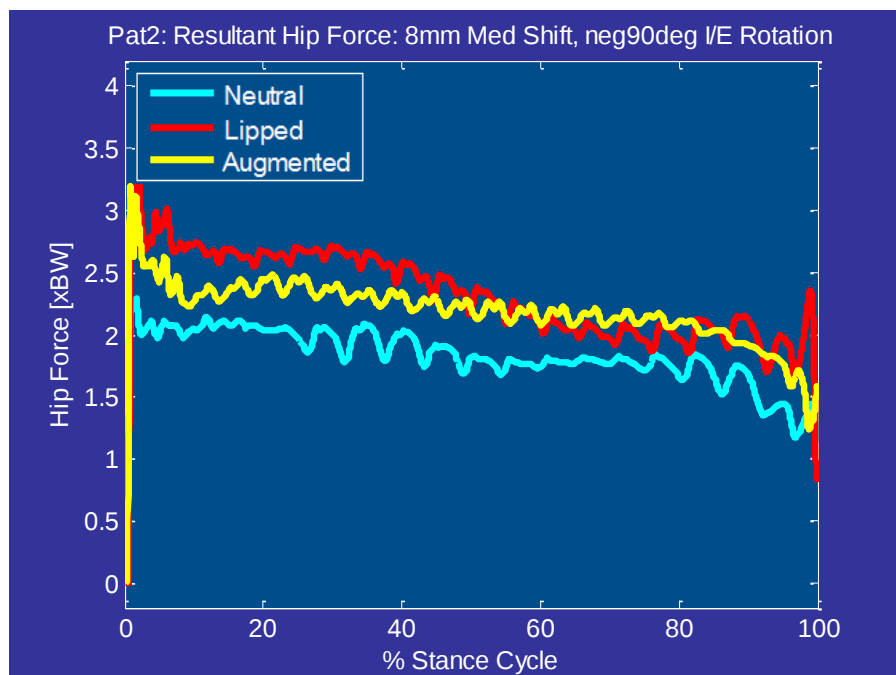


(b)

Figure D88: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

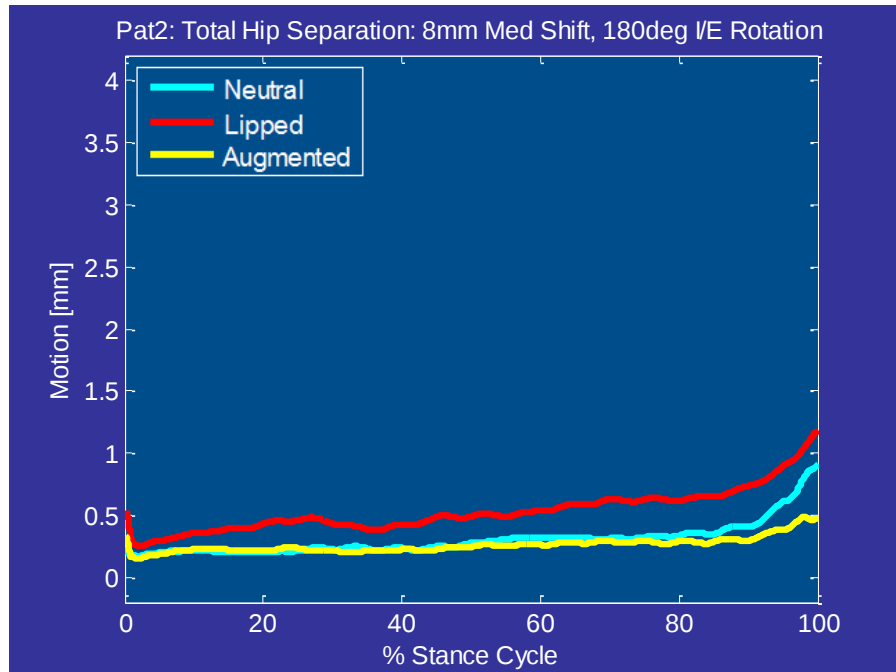


(a)

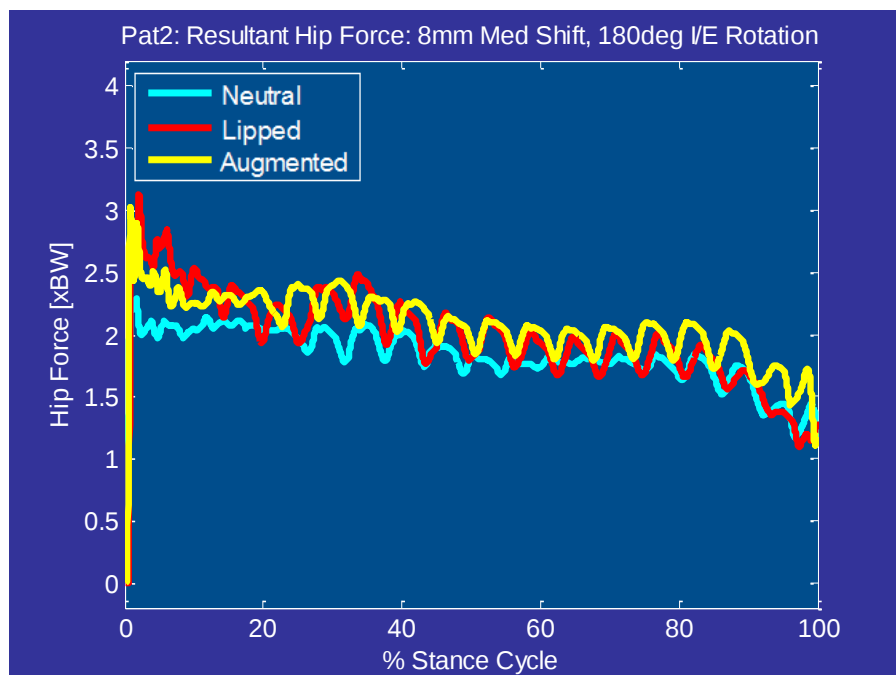


(b)

Figure D89: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

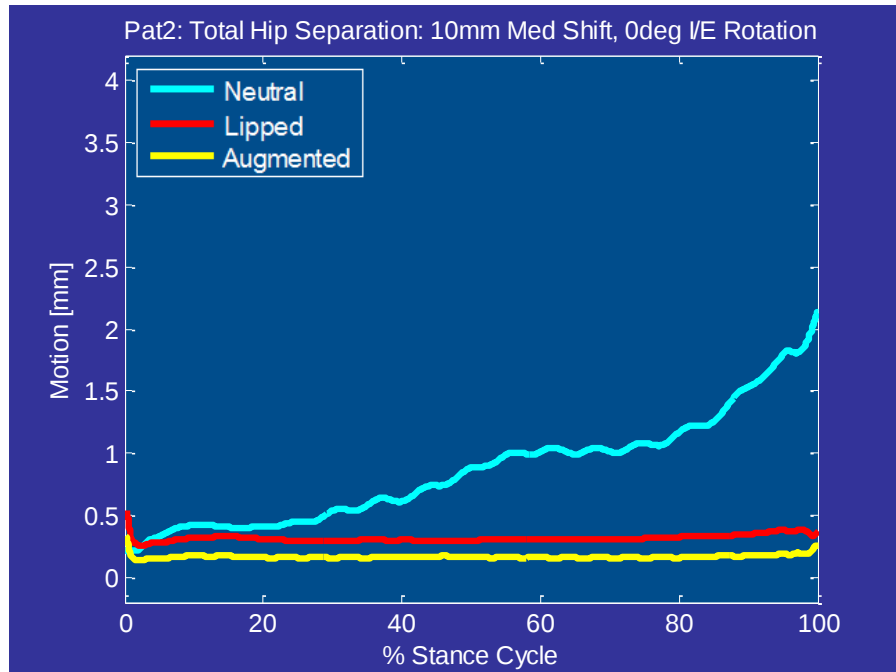


(a)

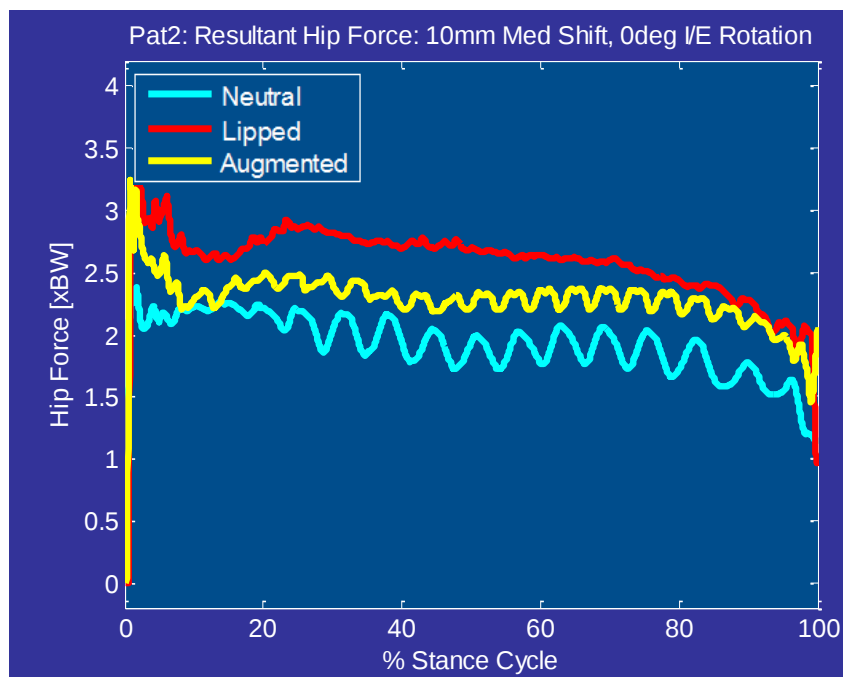


(b)

Figure D90: (a) Hip separation and (b) hip force Pat 2: 8mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

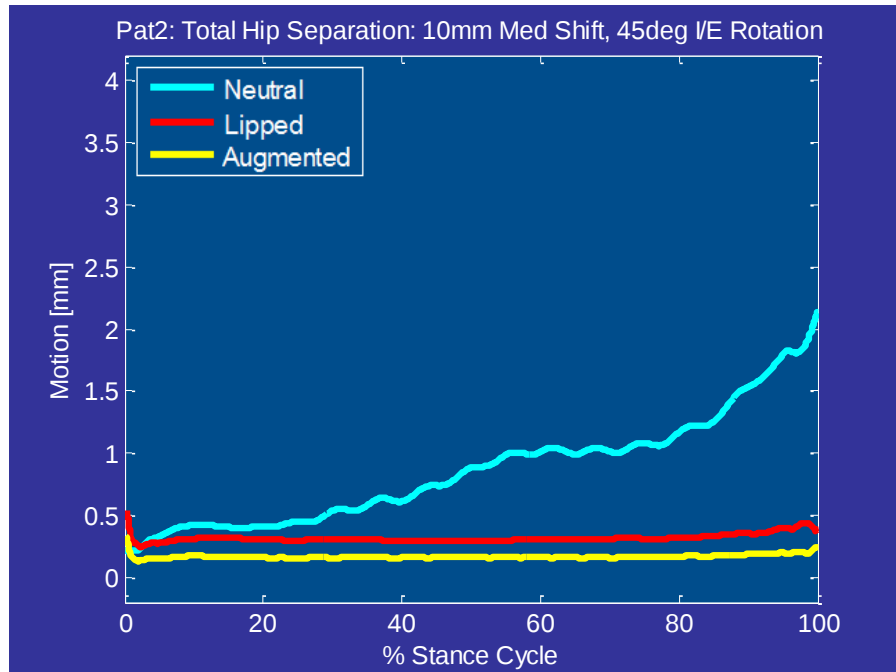


(a)

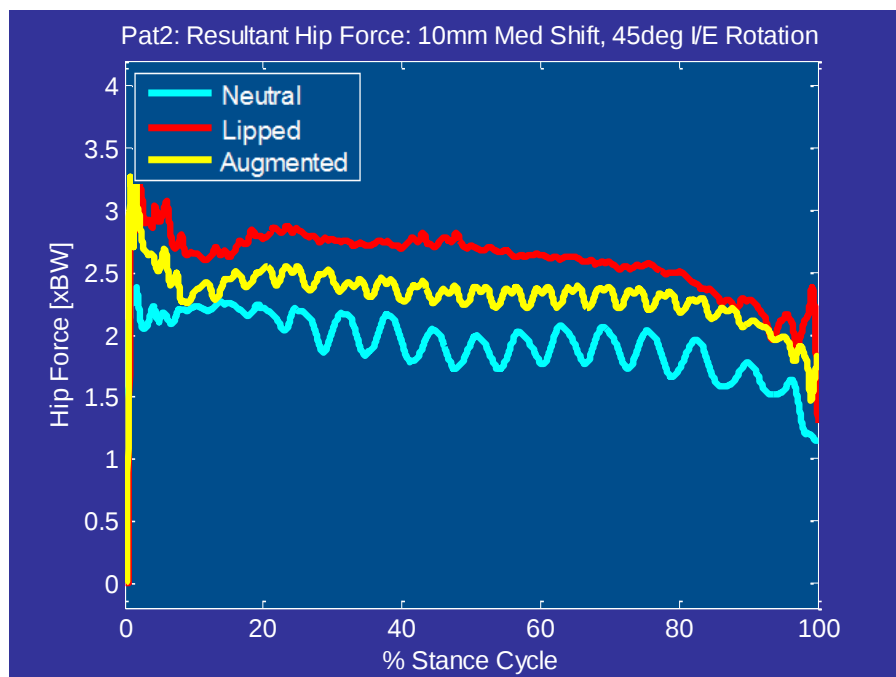


(b)

Figure D91: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

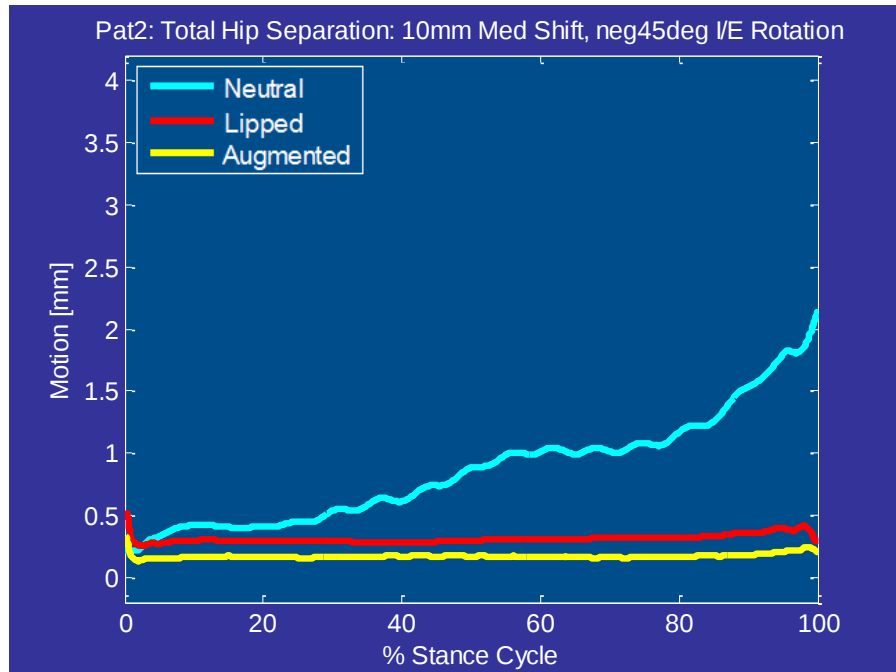


(a)

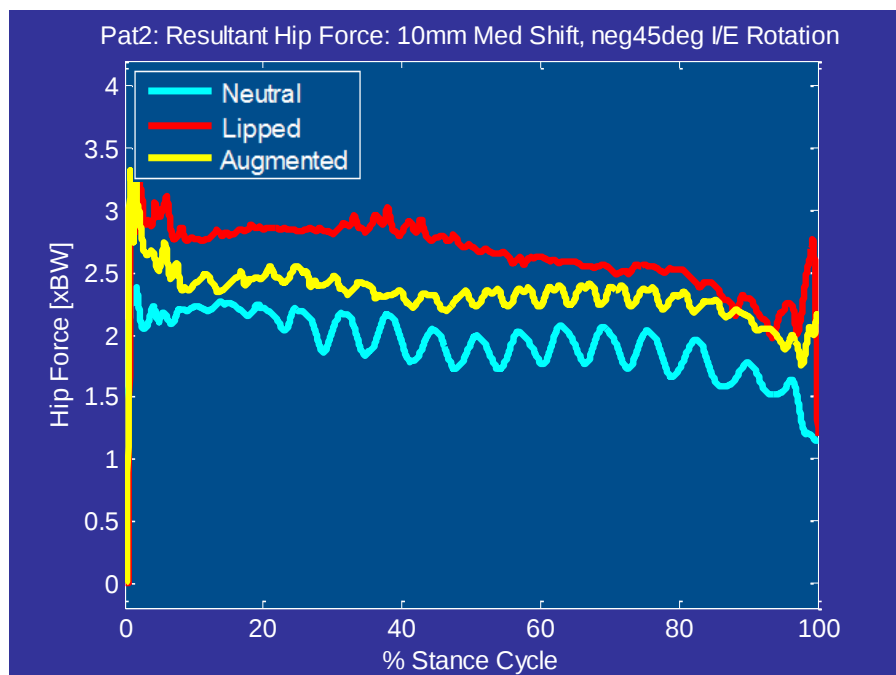


(b)

Figure D92: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

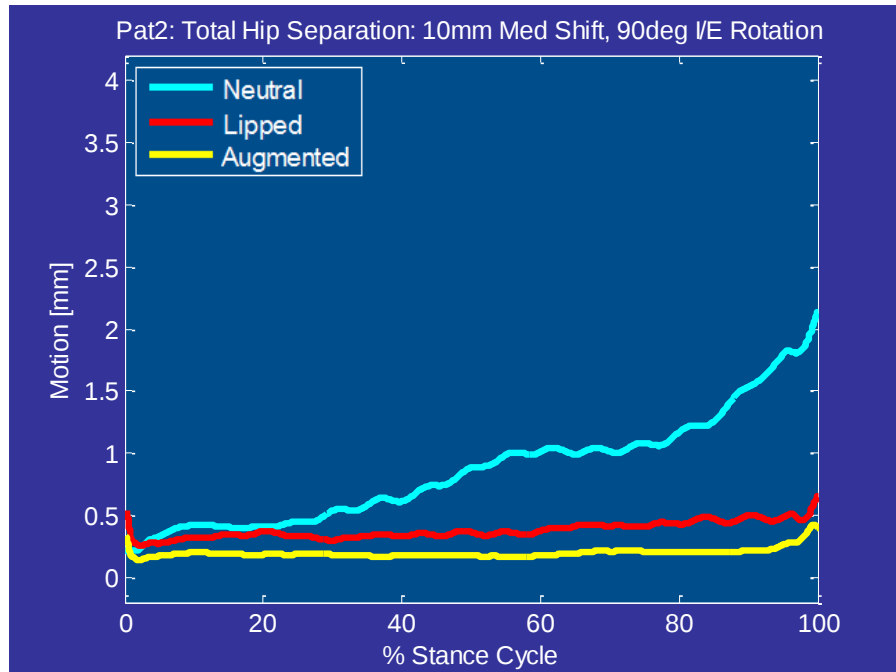


(a)

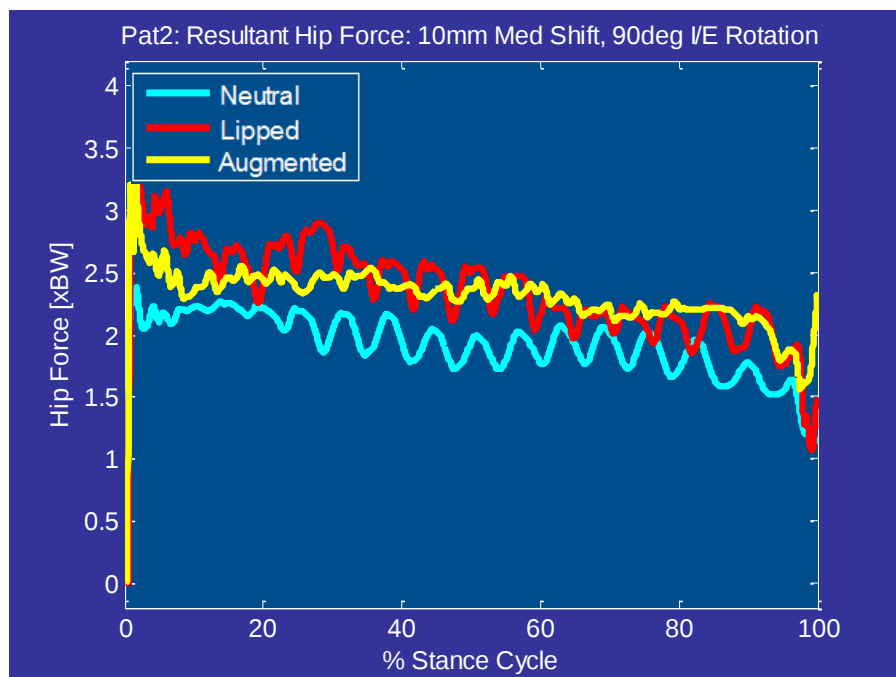


(b)

Figure D93: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

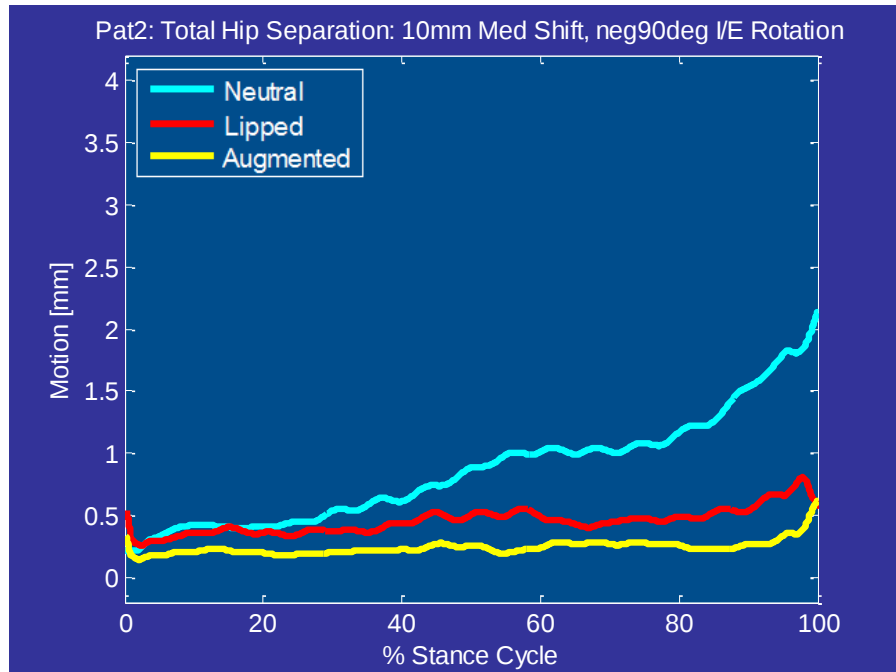


(a)

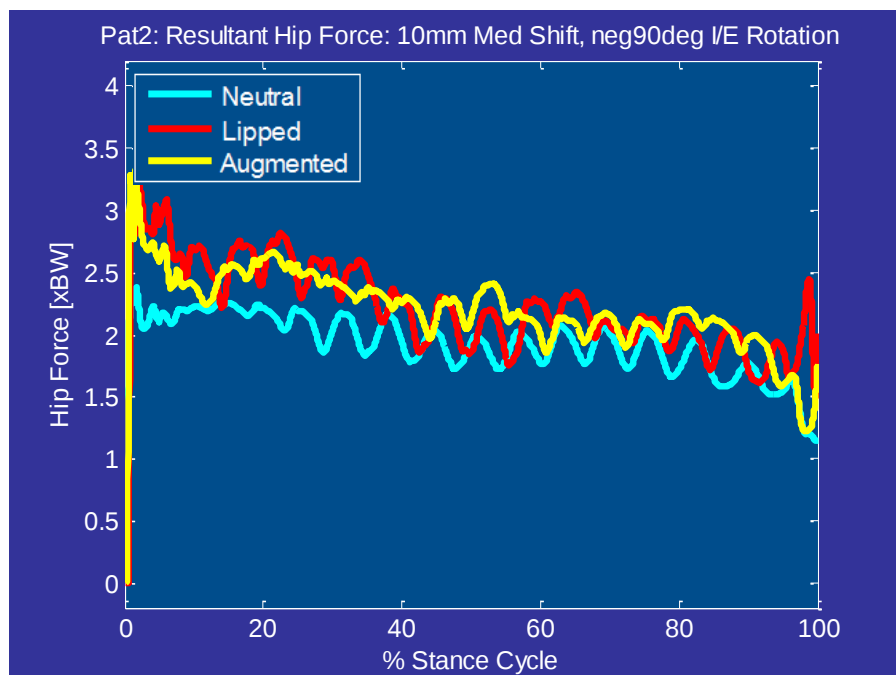


(b)

Figure D94: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

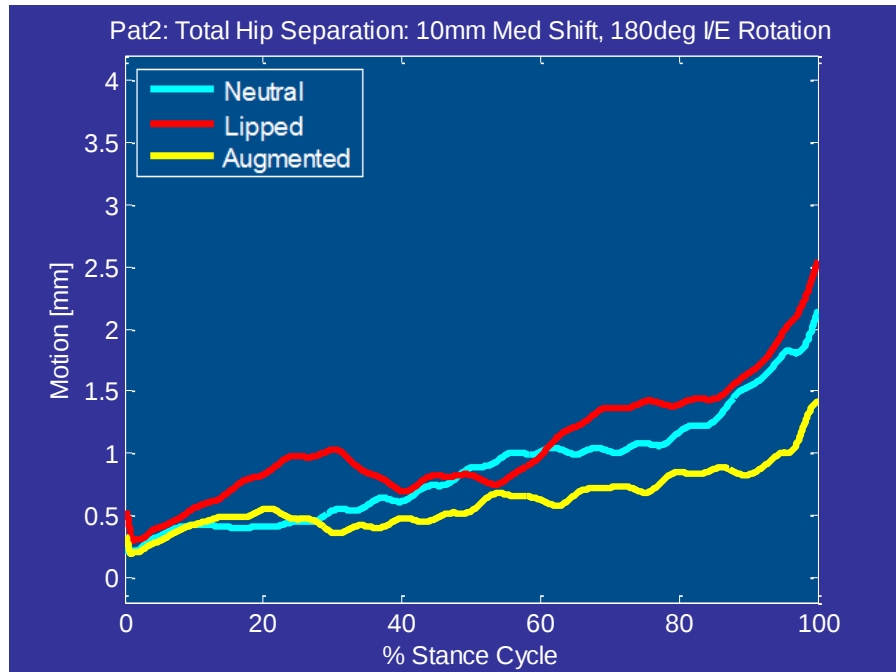


(a)

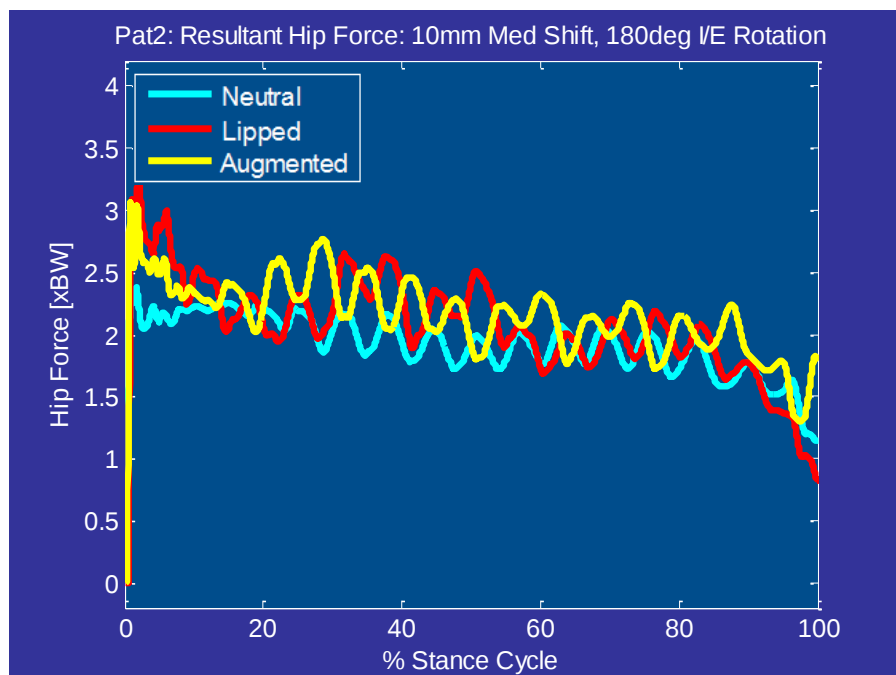


(b)

Figure D95: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

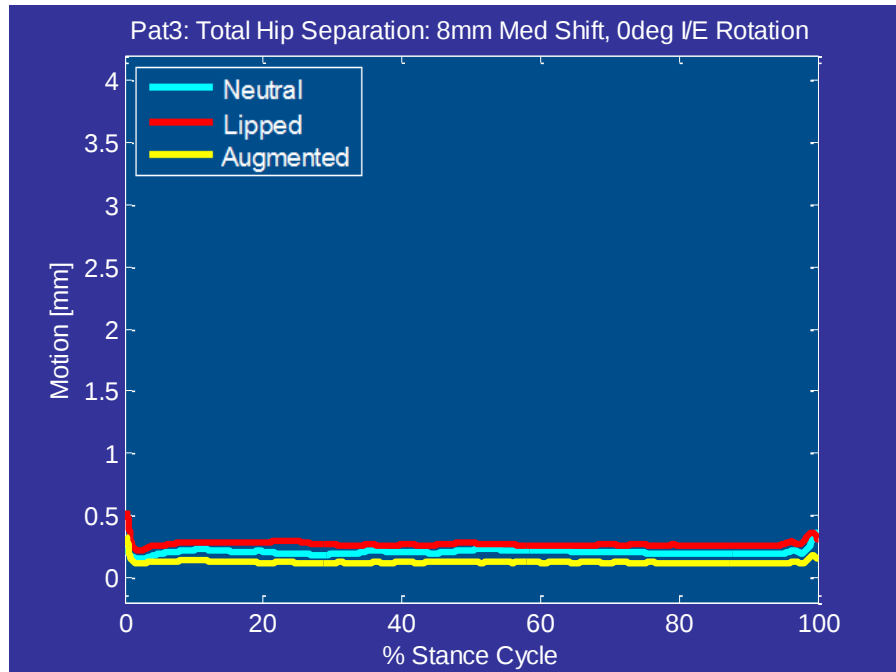


(a)

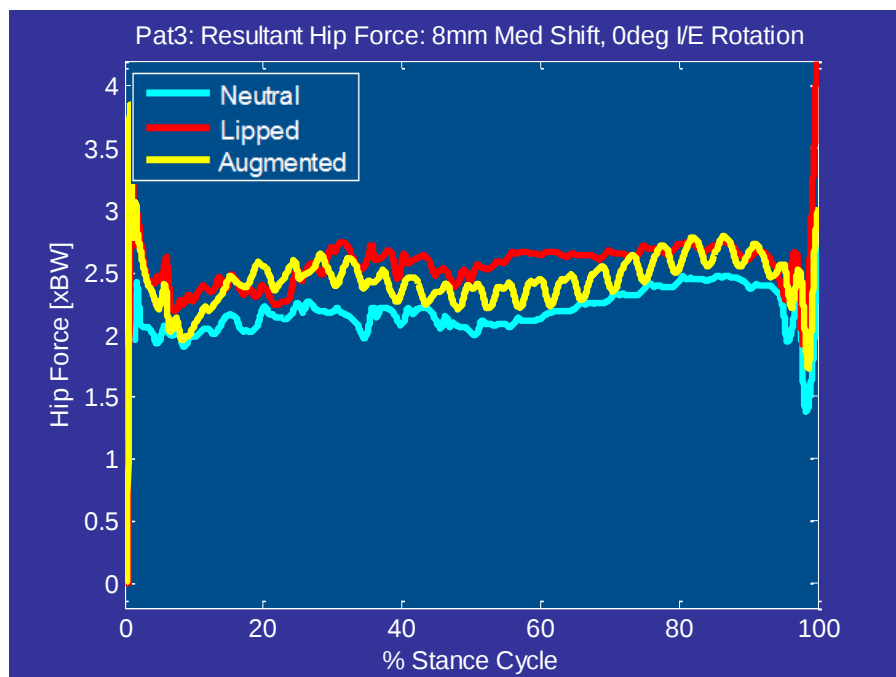


(b)

Figure D96: (a) Hip separation and (b) hip force Pat 2: 10mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

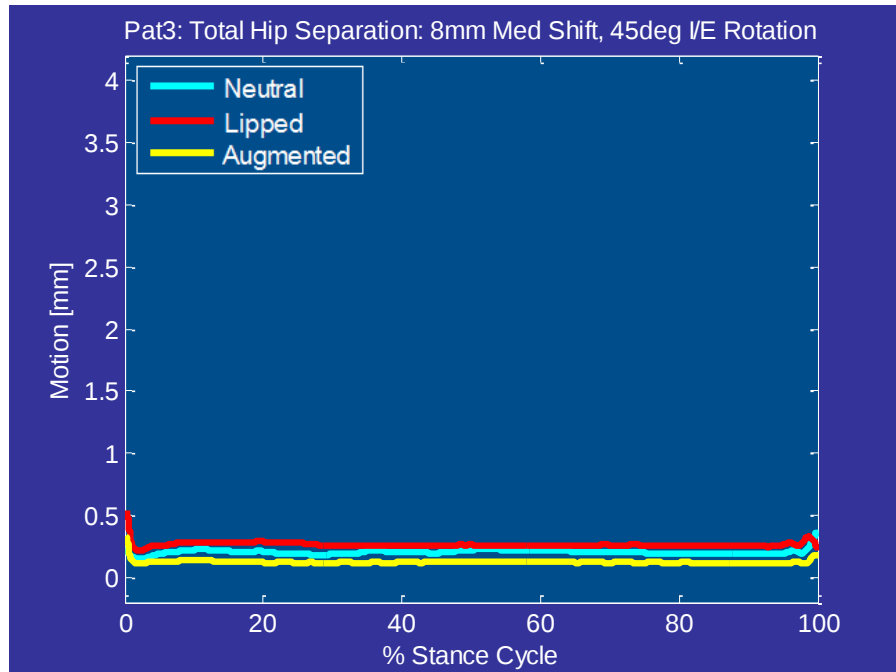


(a)

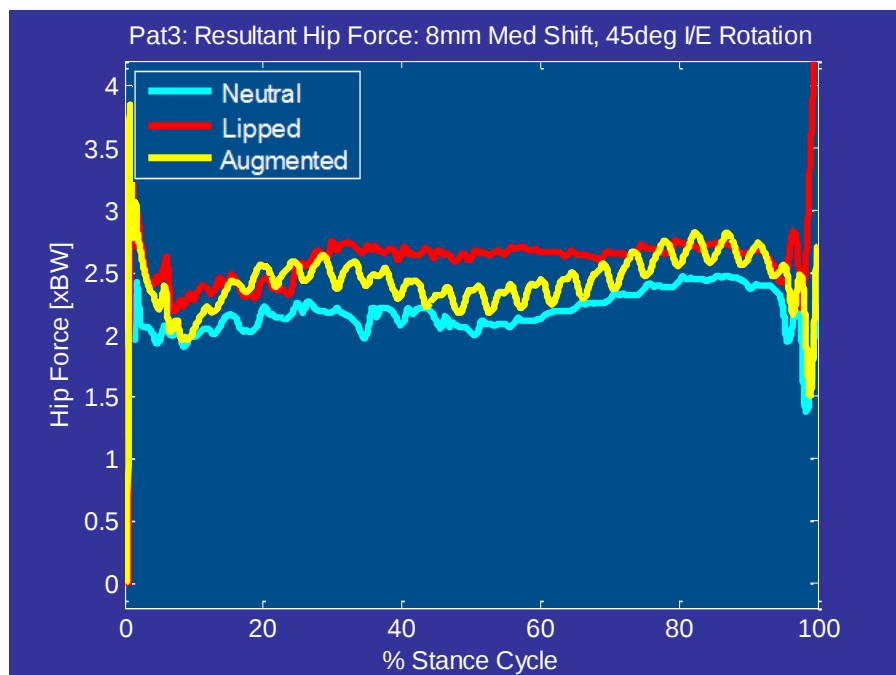


(b)

Figure D97: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

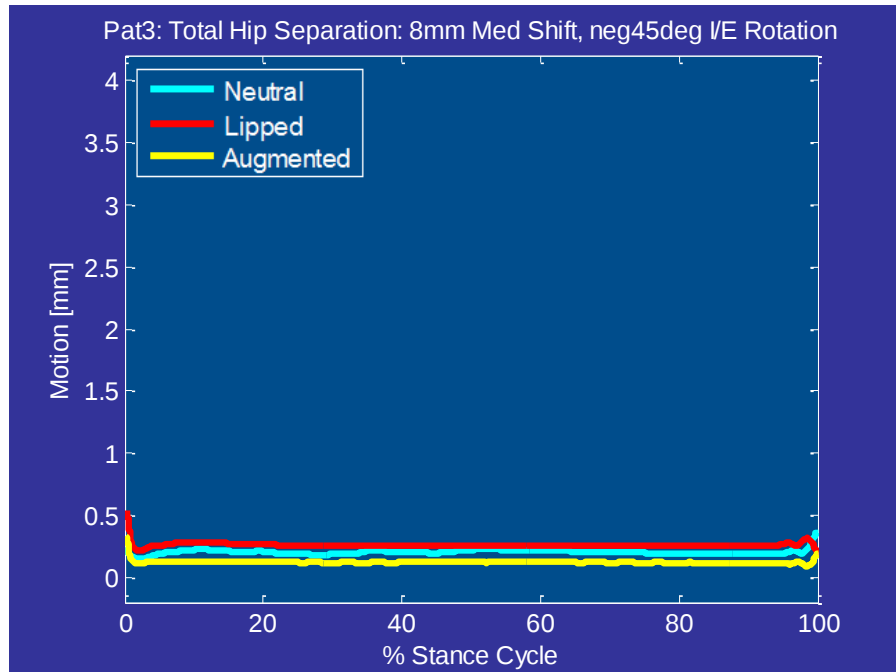


(a)

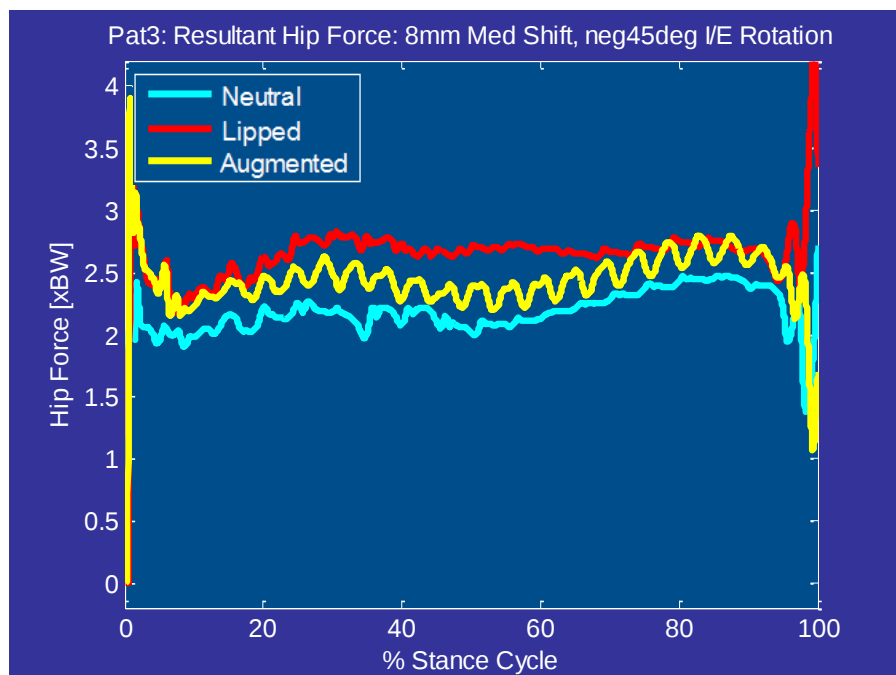


(b)

Figure D98: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

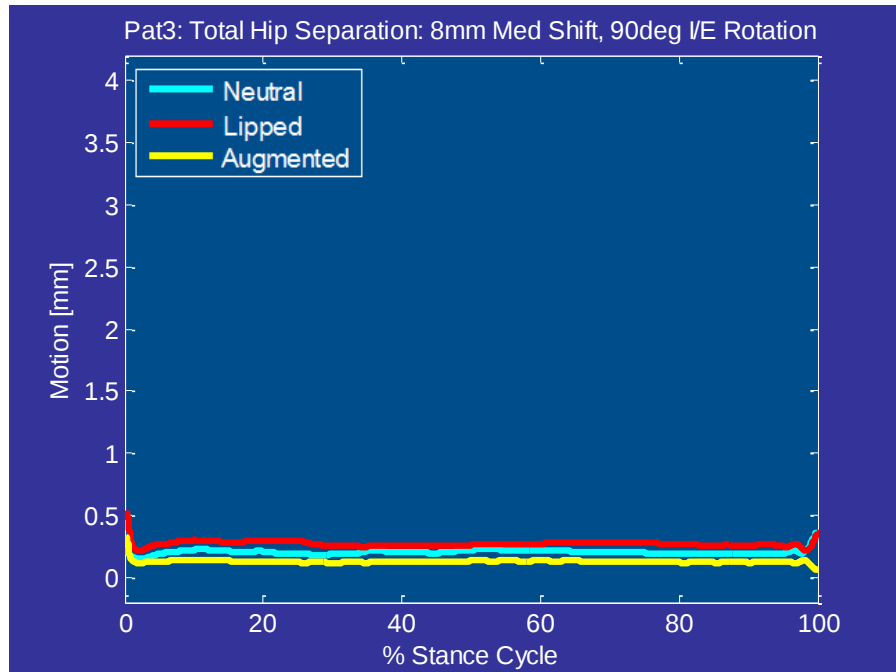


(a)

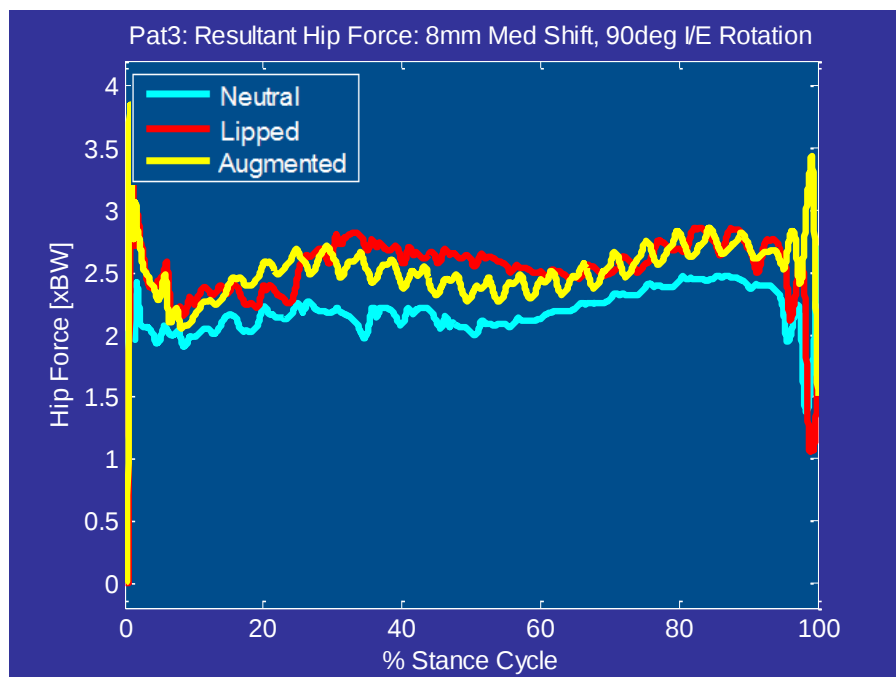


(b)

Figure D99: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

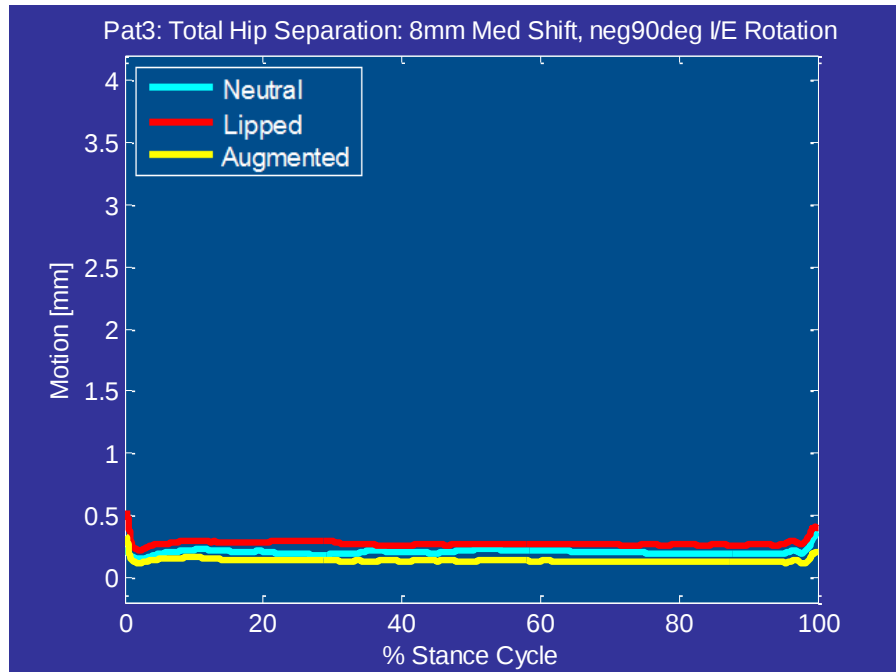


(a)

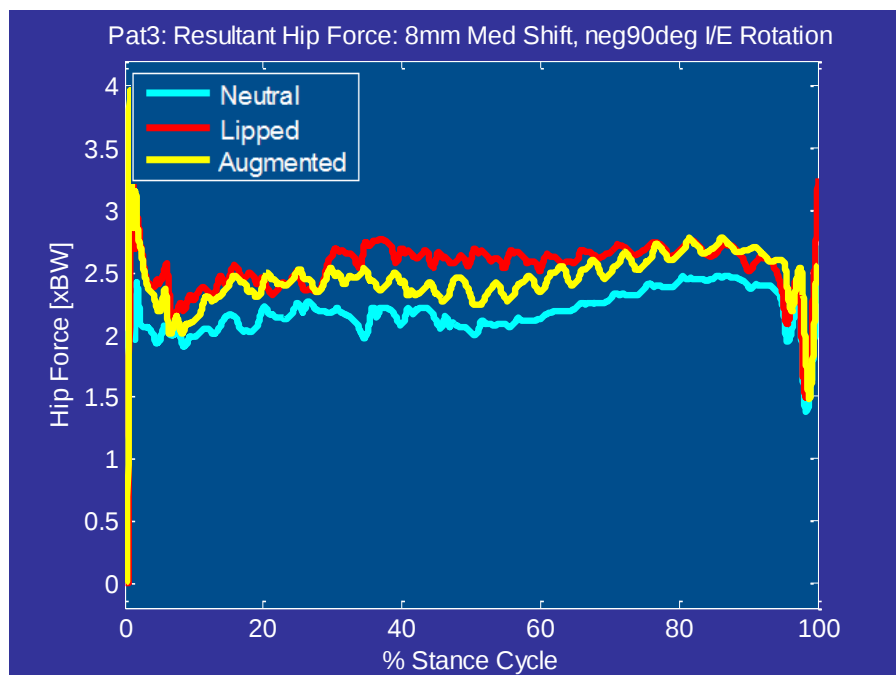


(b)

Figure D100: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

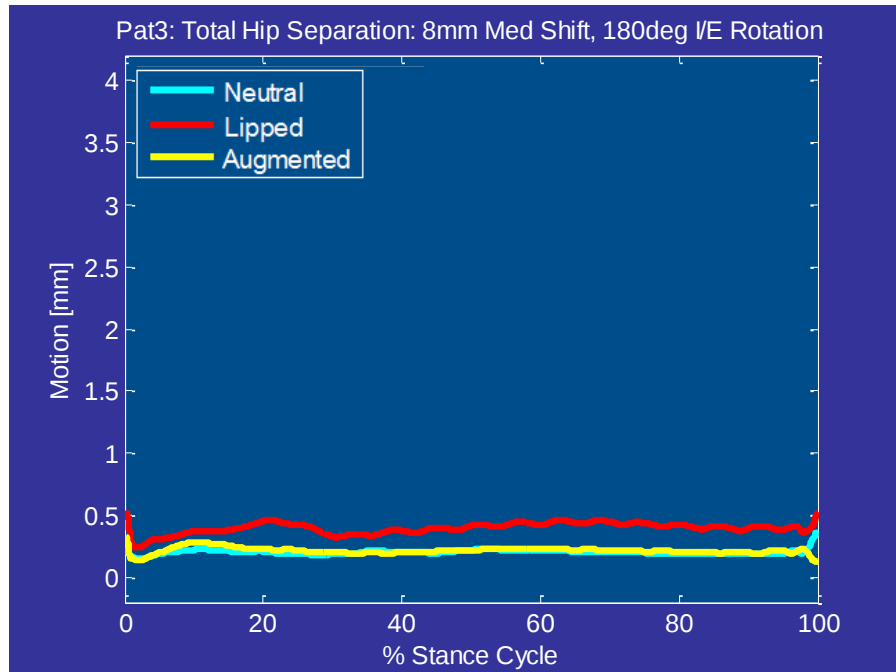


(a)

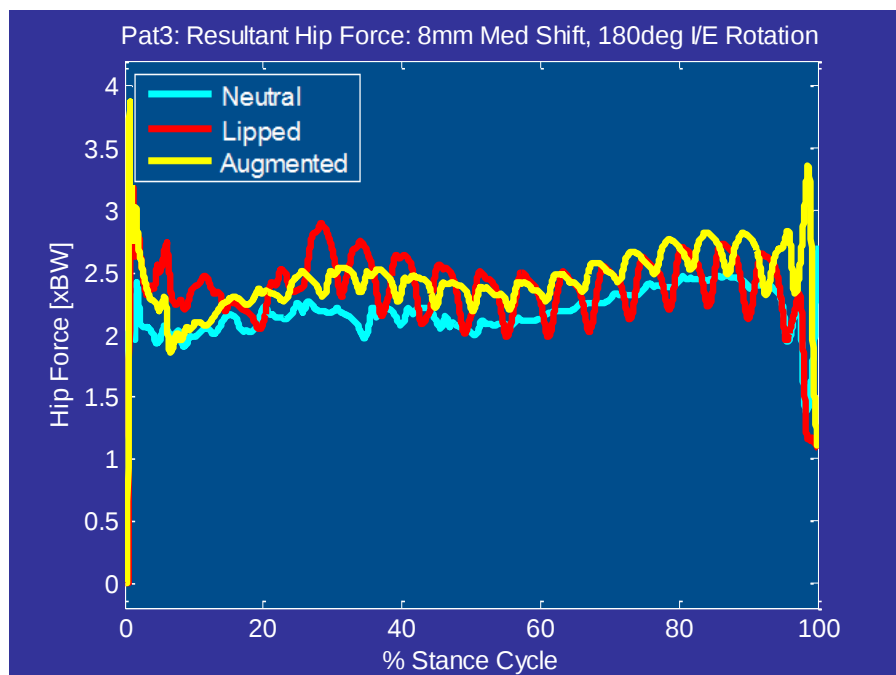


(b)

Figure D101: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

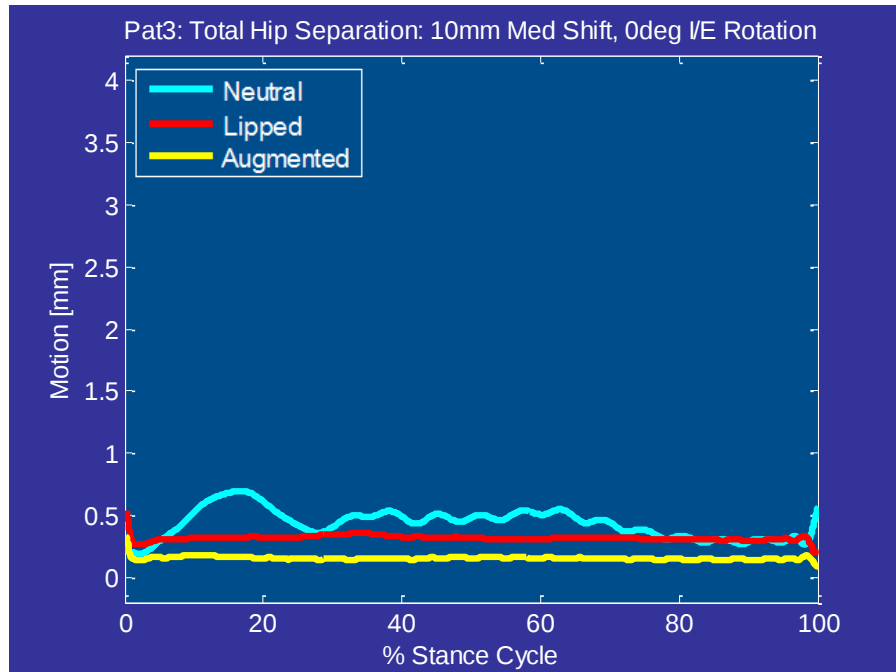


(a)

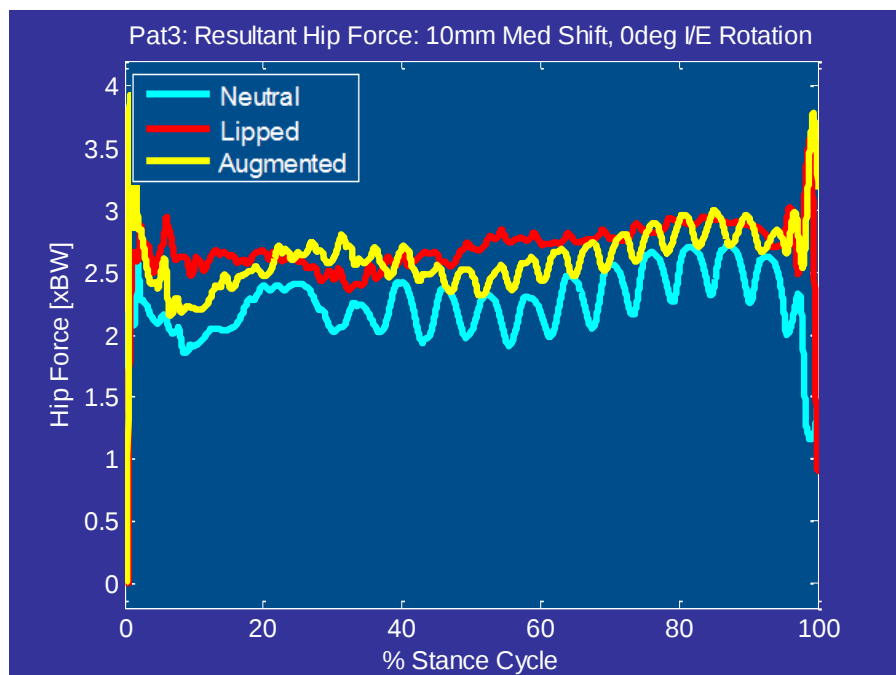


(b)

Figure D102: (a) Hip separation and (b) hip force Pat 3: 8mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

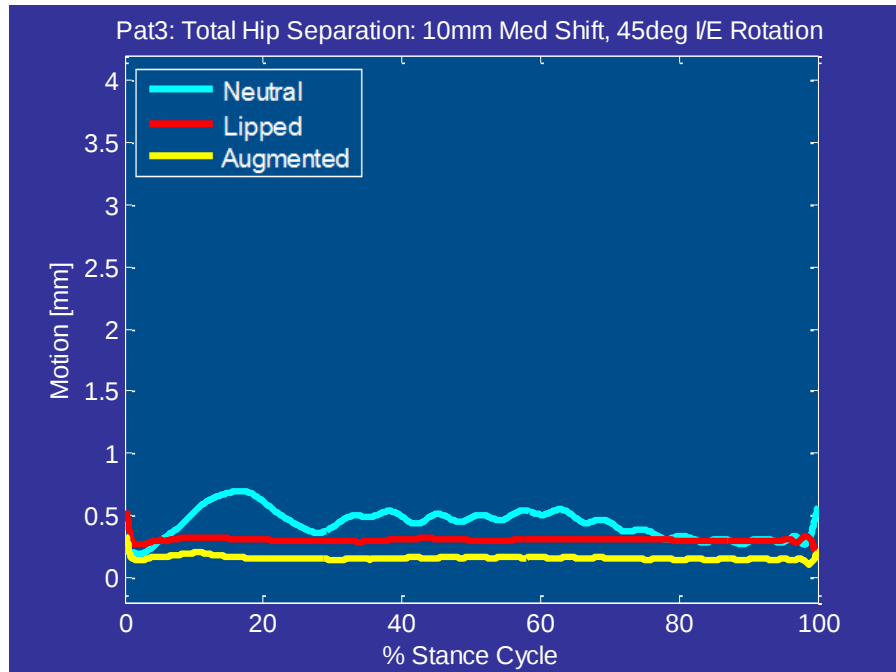


(a)

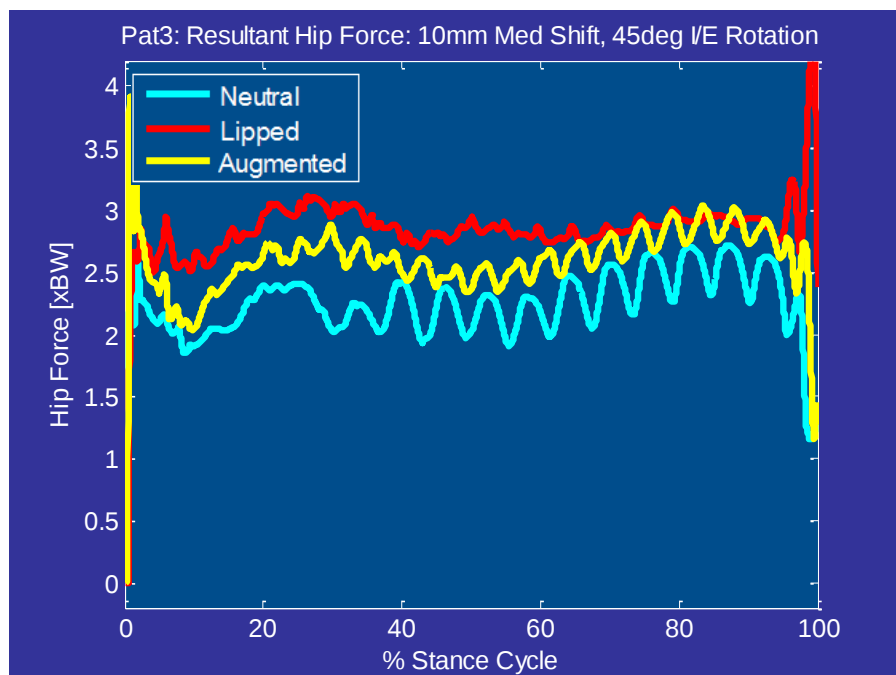


(b)

Figure D103: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

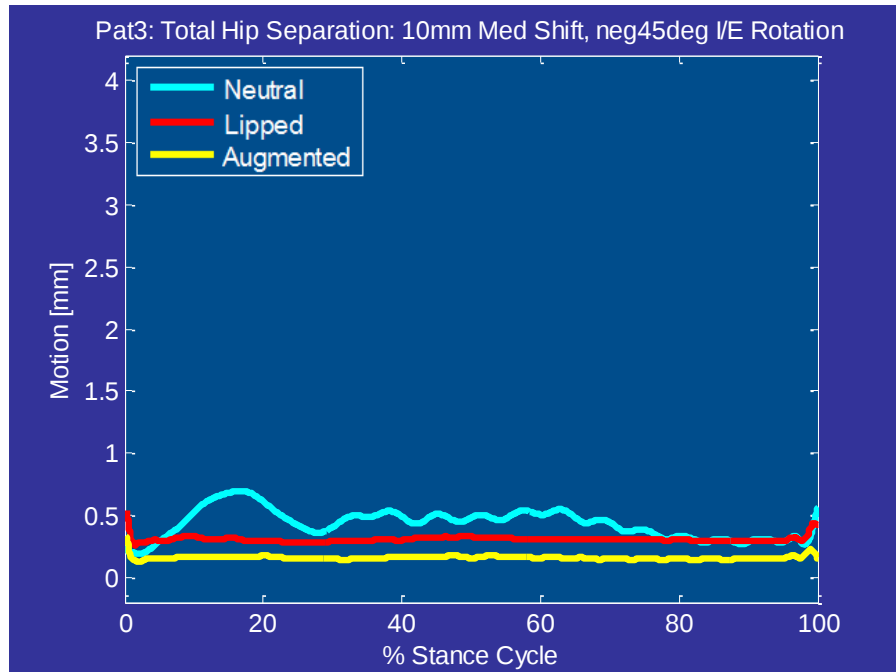


(a)

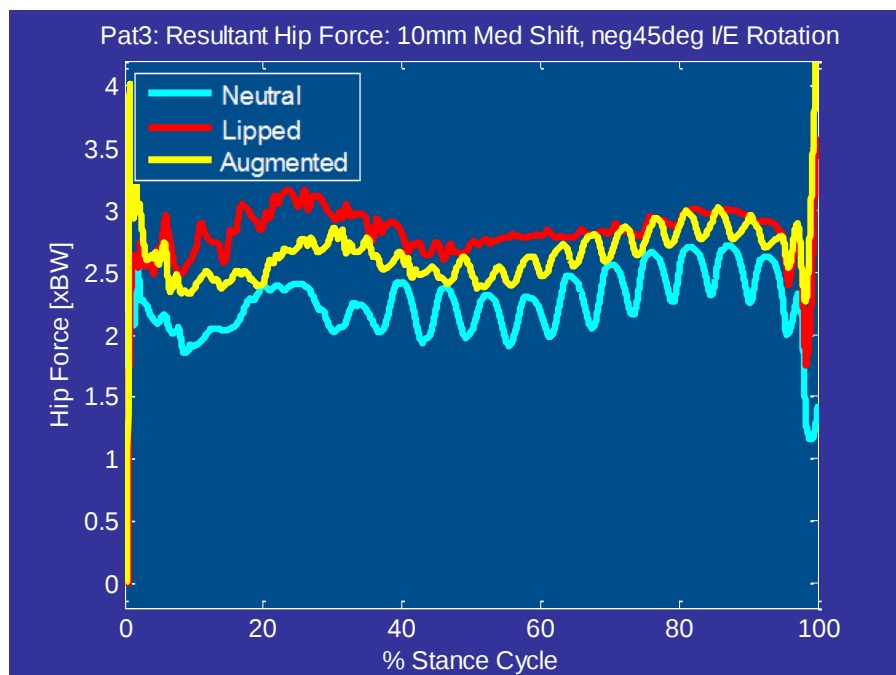


(b)

Figure D104: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

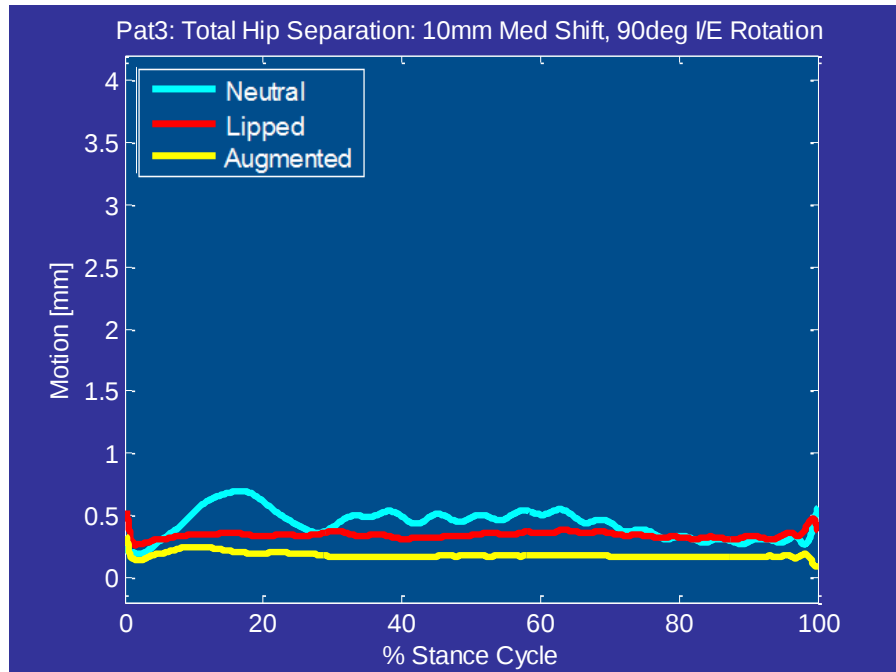


(a)



(b)

Figure D105: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

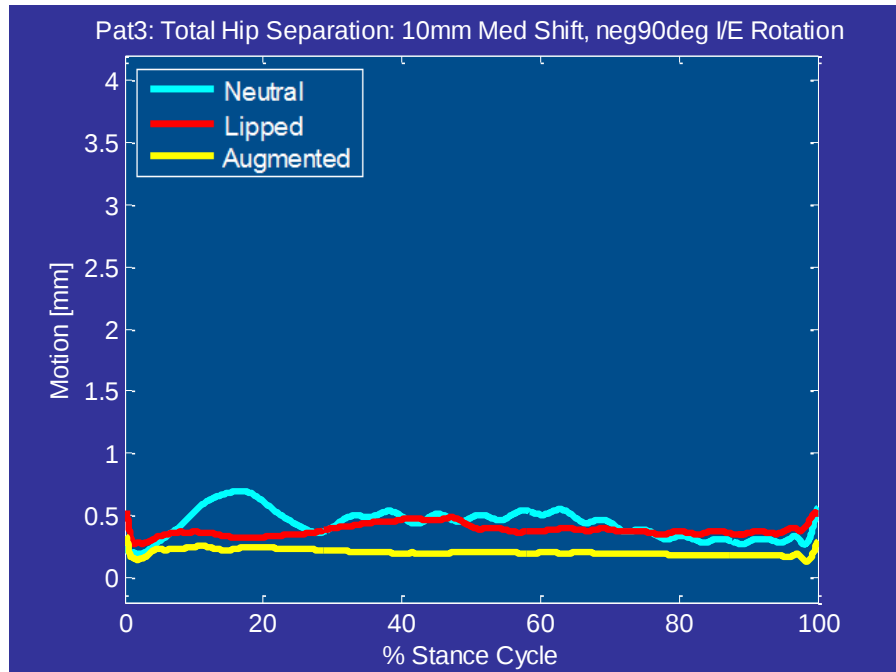


(a)

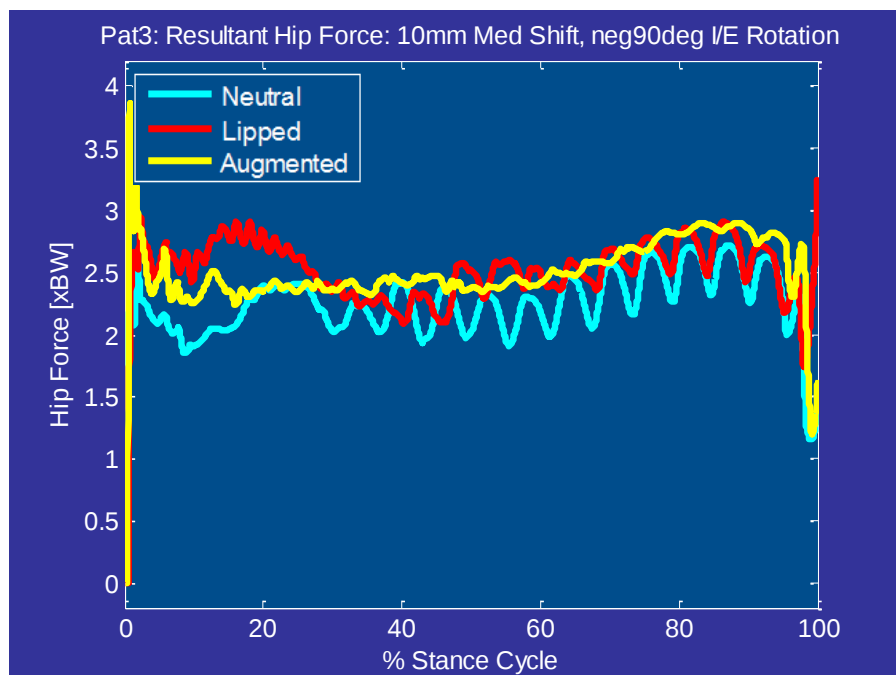


(b)

Figure D106: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

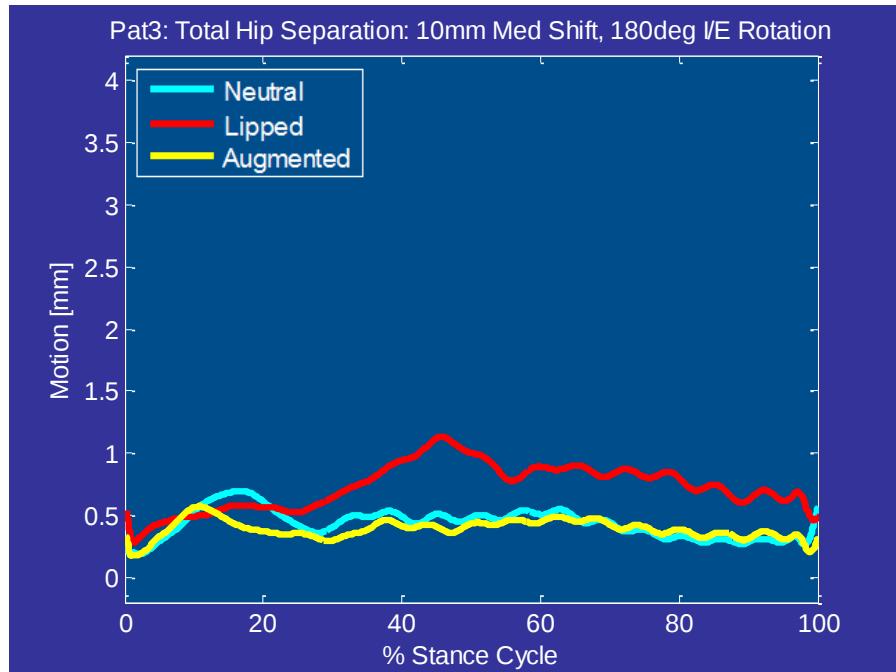


(a)

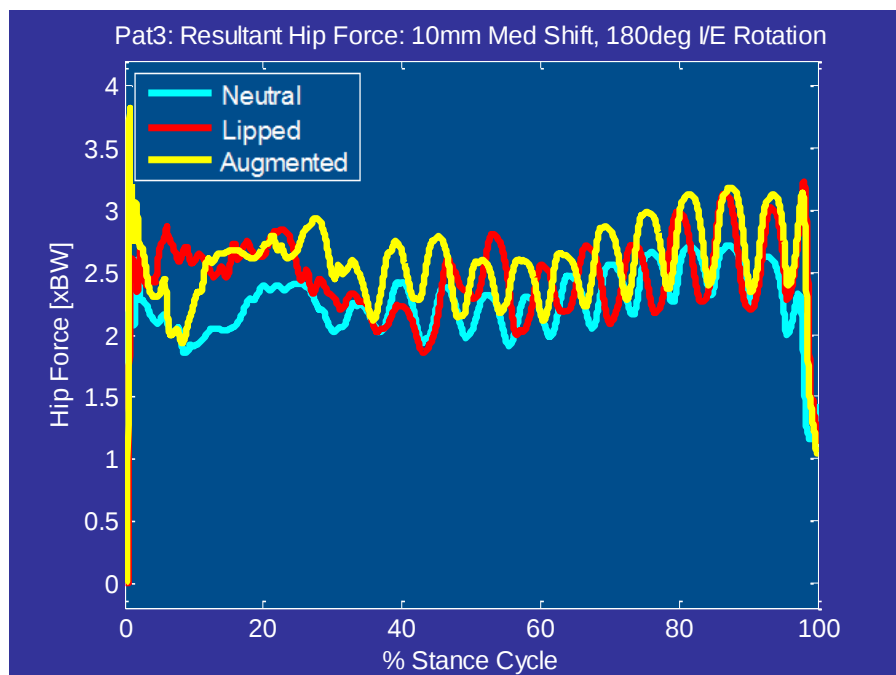


(b)

Figure D107: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

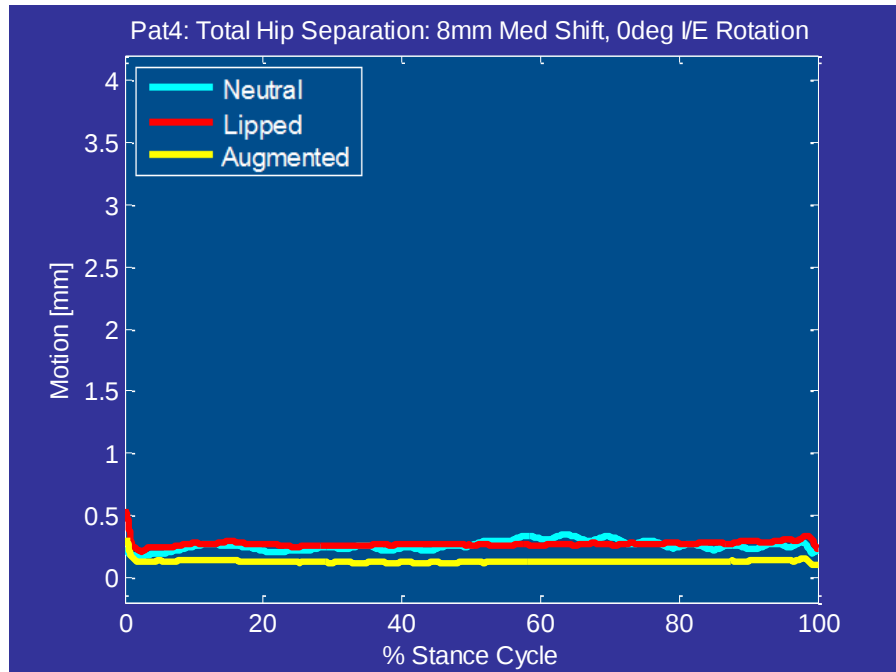


(a)

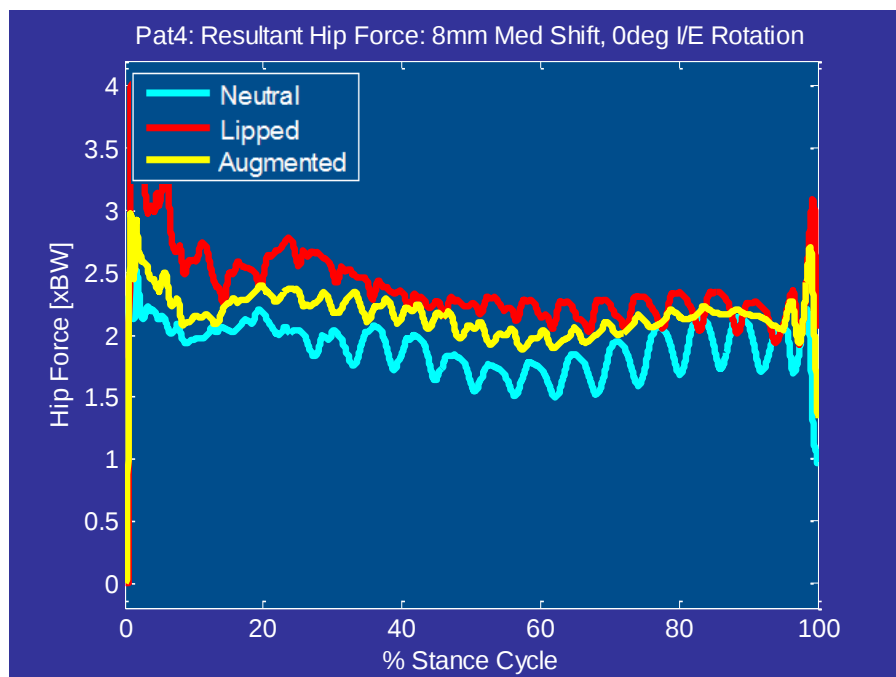


(b)

Figure D108: (a) Hip separation and (b) hip force Pat 3: 10mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

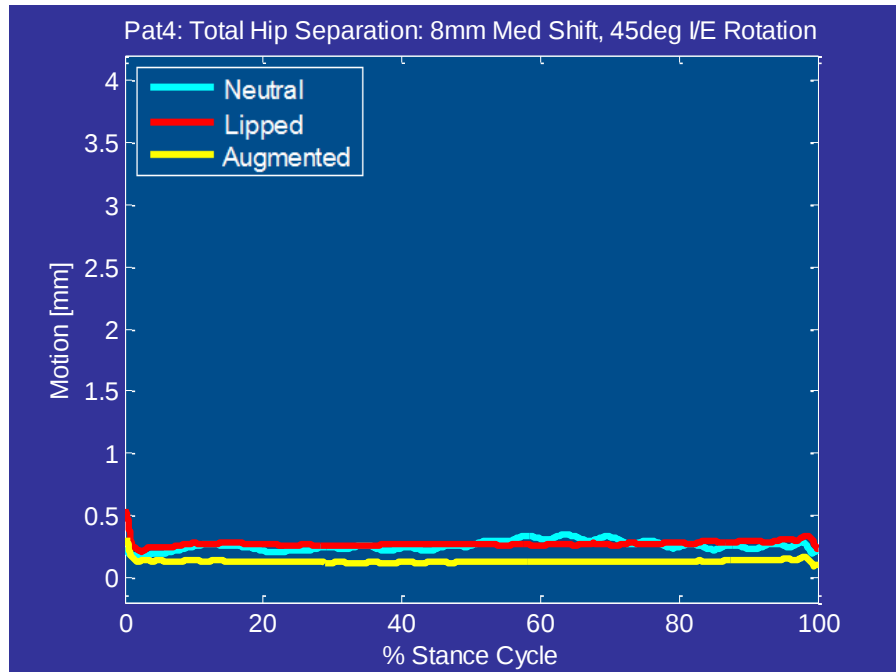


(a)

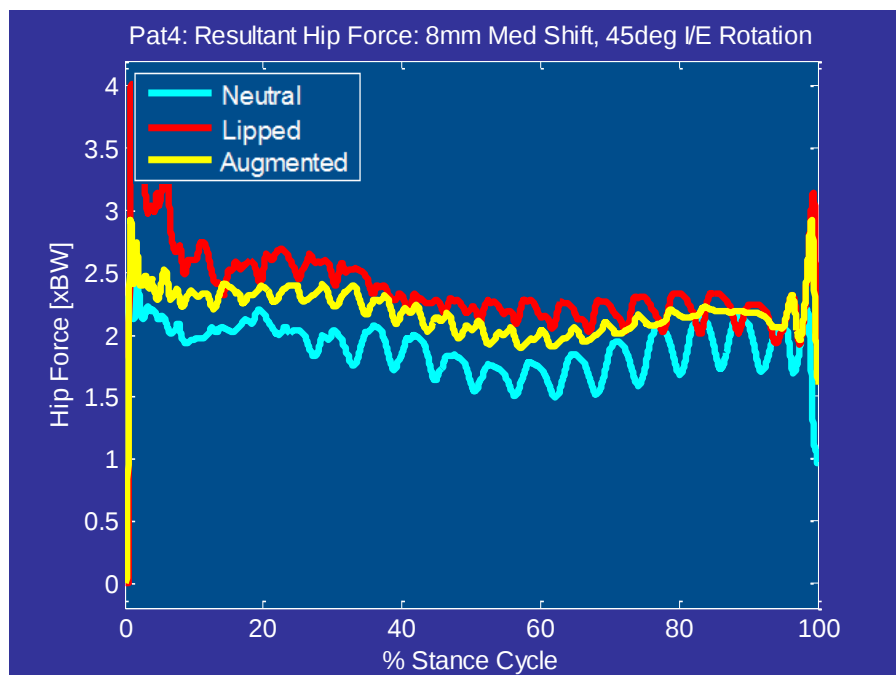


(b)

Figure D109: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

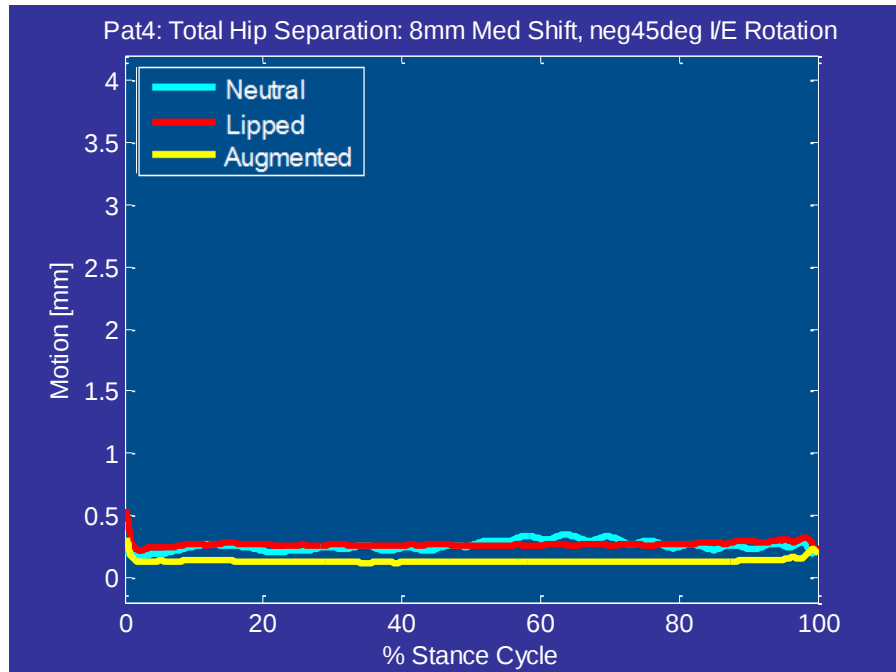


(a)

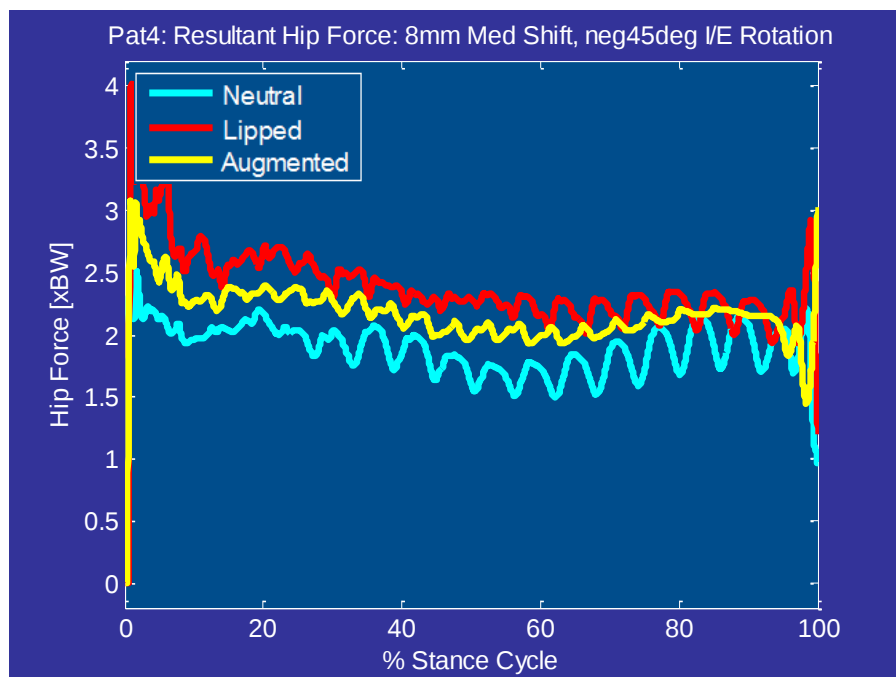


(b)

Figure D110: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

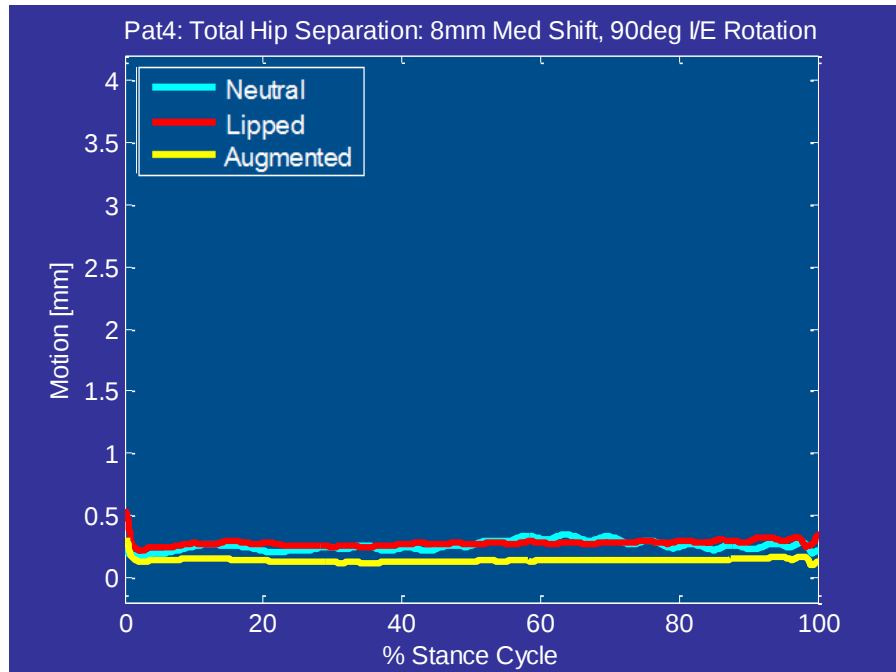


(a)



(b)

Figure D111: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

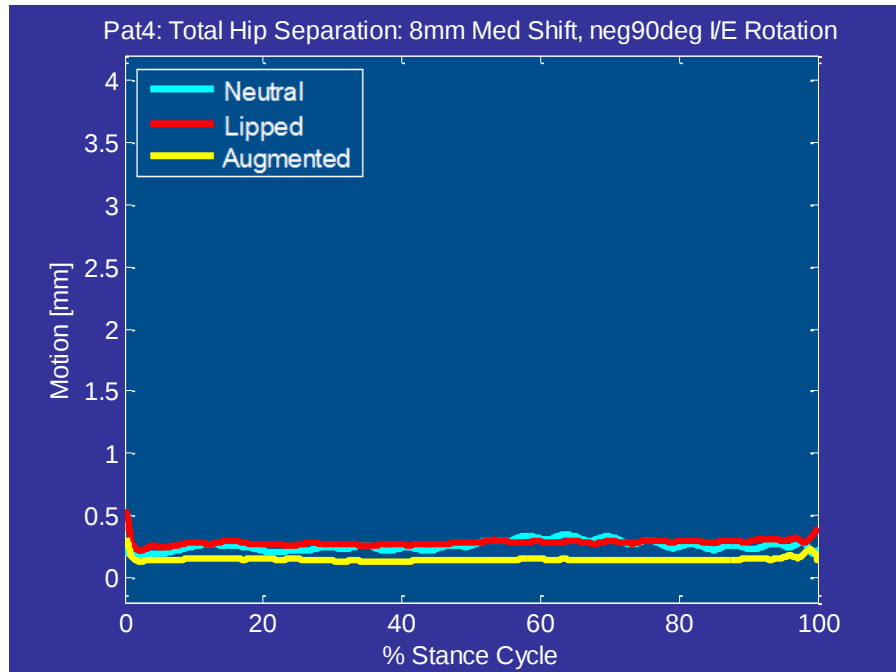


(a)

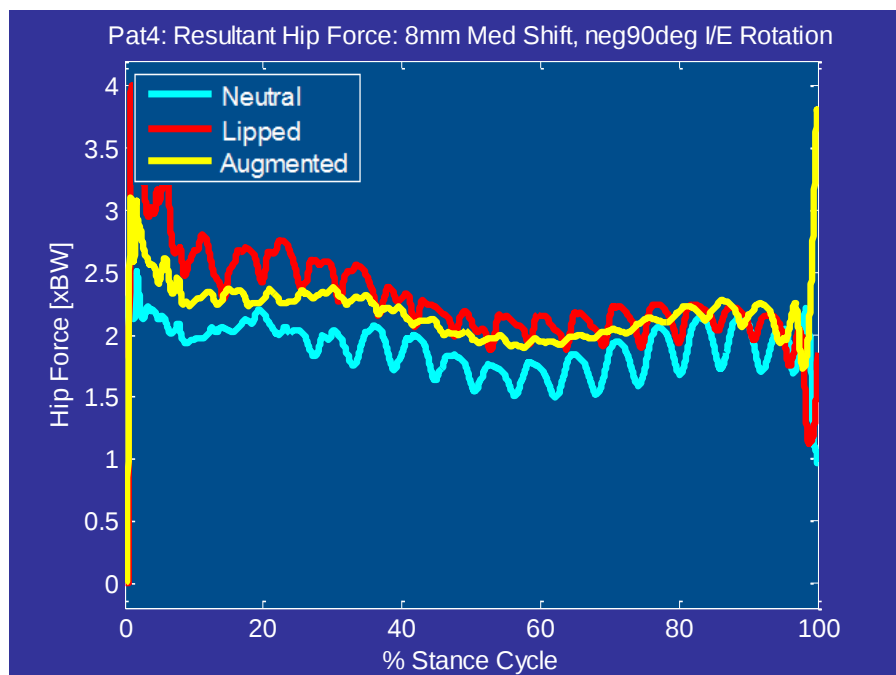


(b)

Figure D112: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

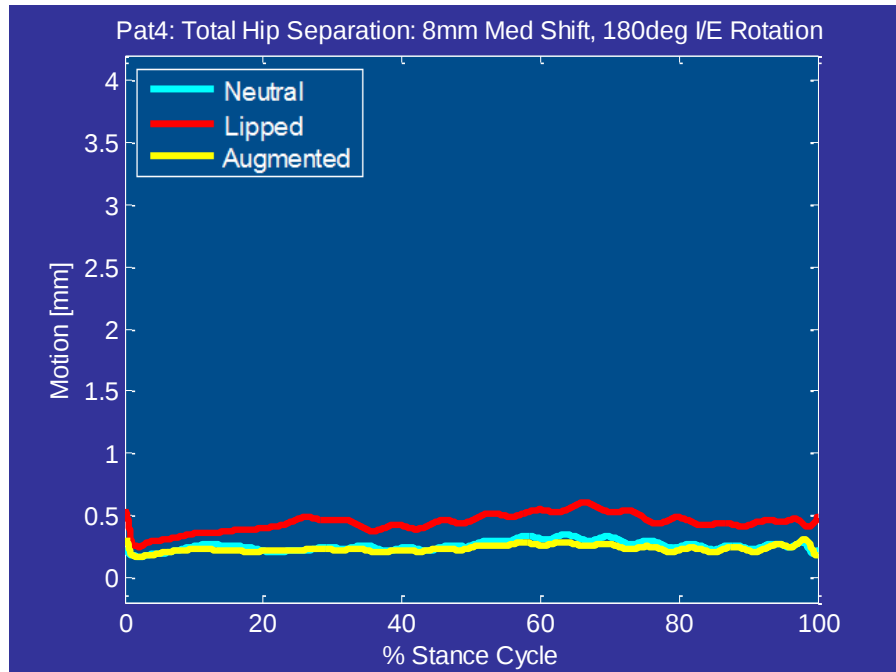


(a)

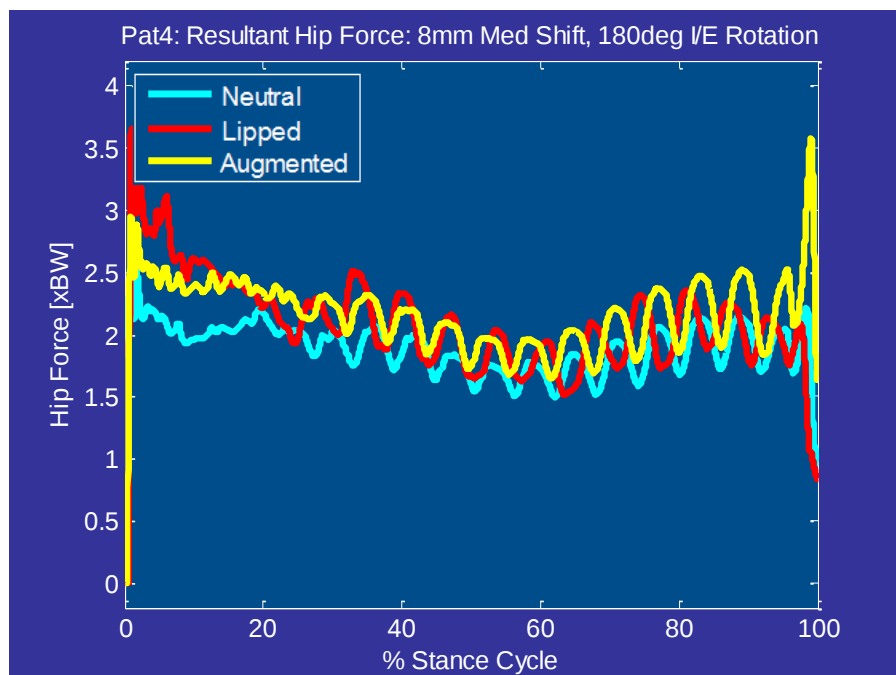


(b)

Figure D113: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.

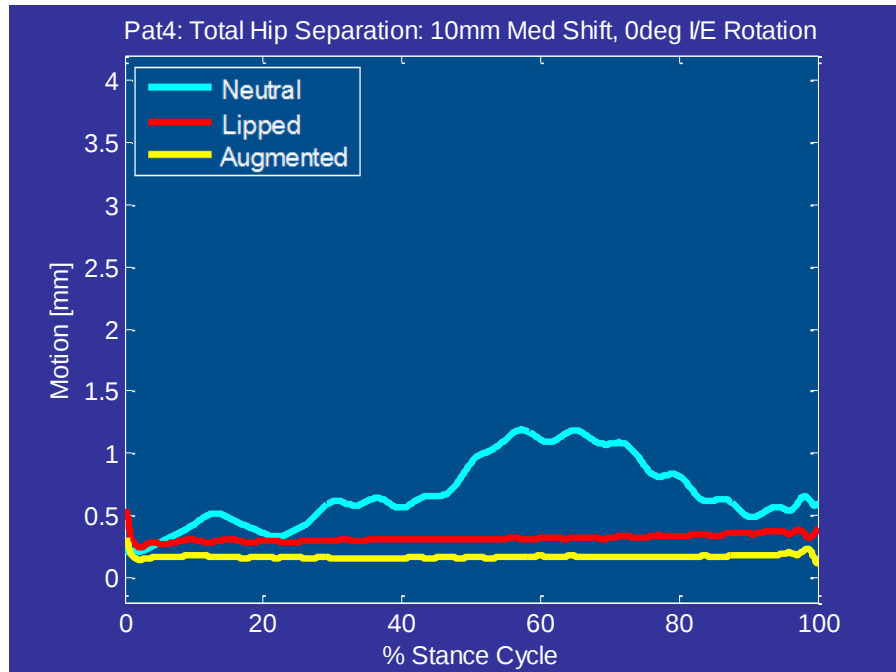


(a)

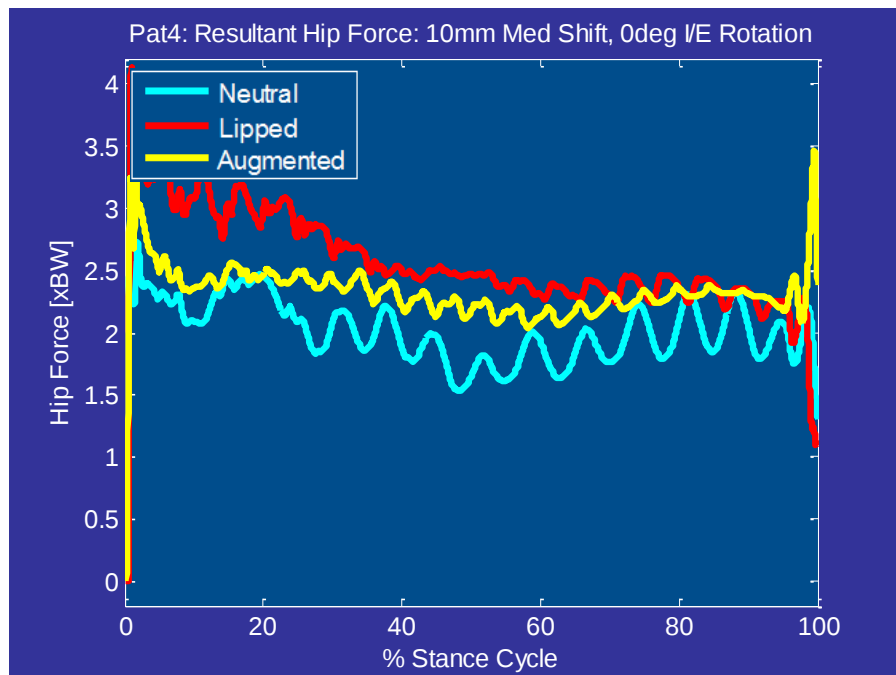


(b)

Figure D114: (a) Hip separation and (b) hip force Pat 4: 8mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

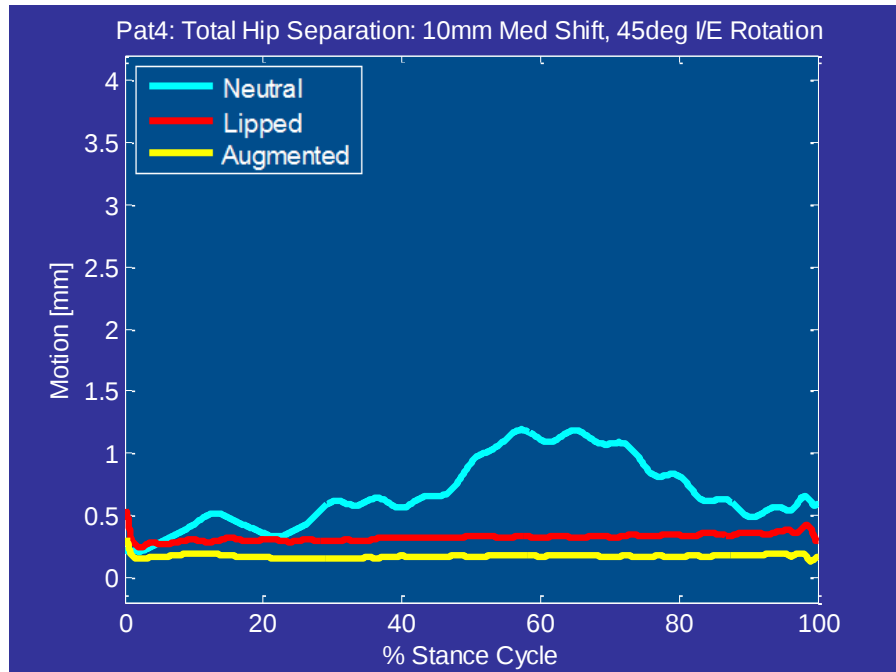


(a)

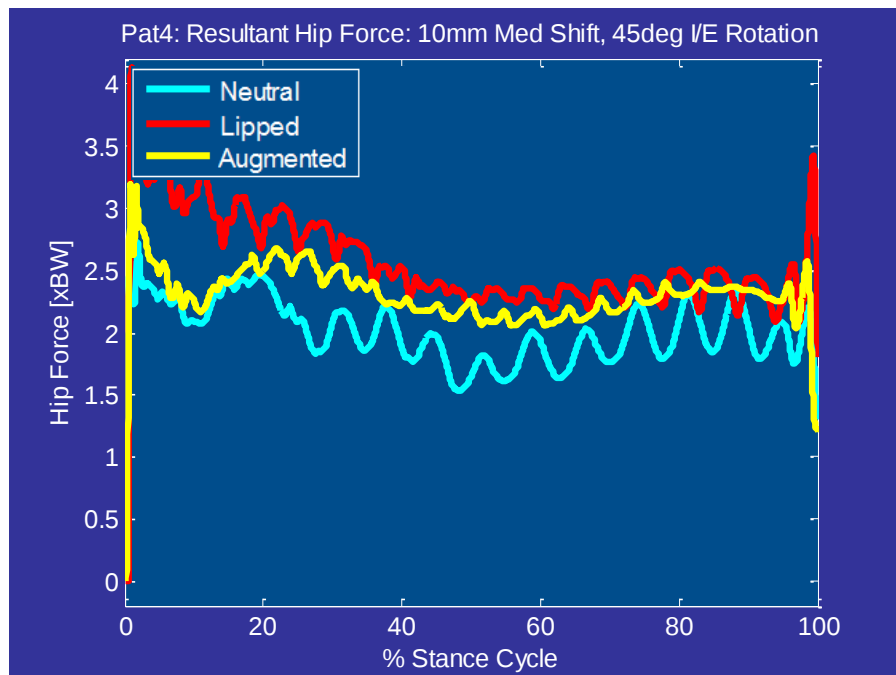


(b)

Figure D115: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
0° I/E Cup Rotation with Liner Center (LC) alignment.

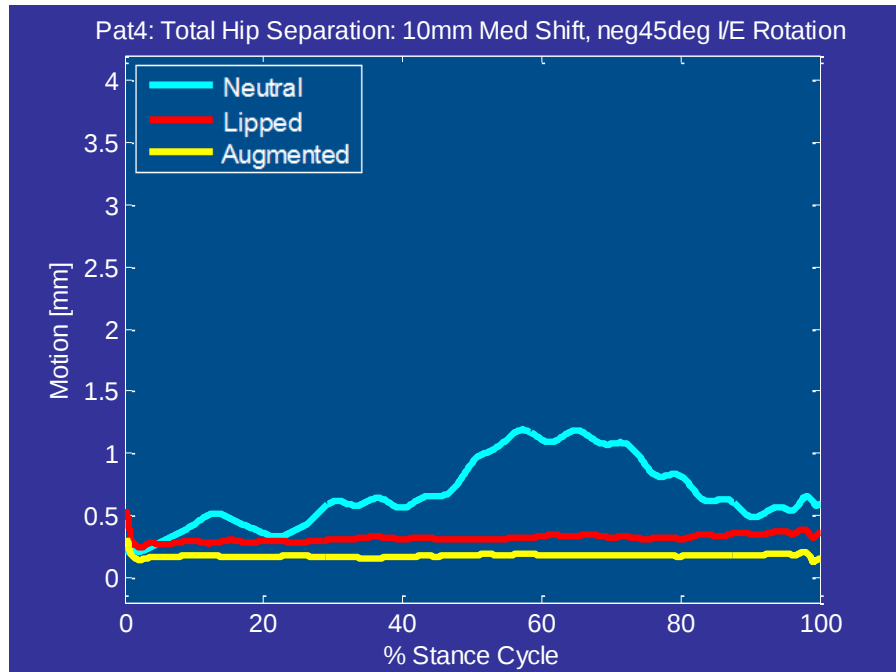


(a)

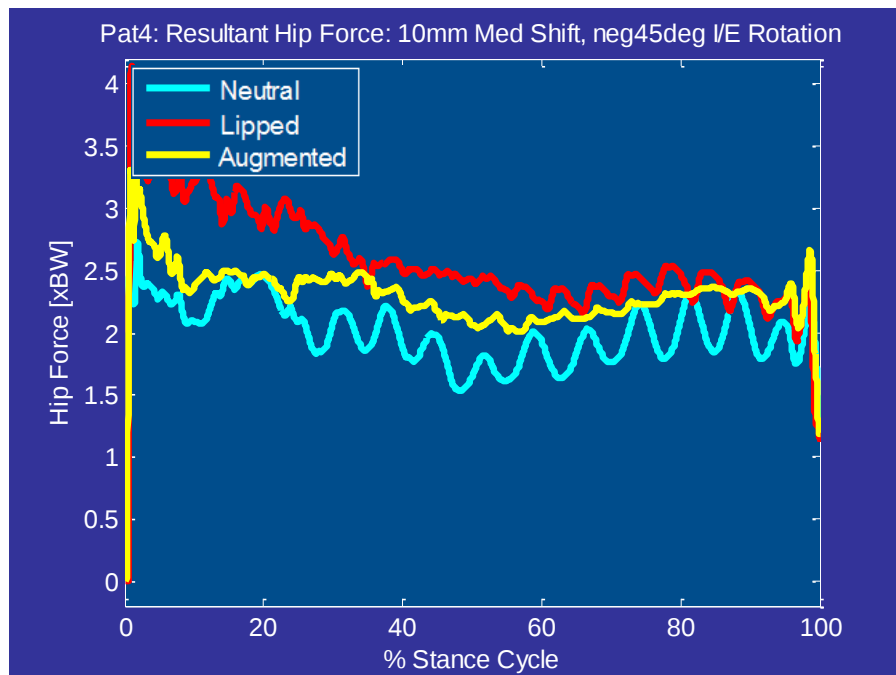


(b)

Figure D116: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
45° I/E Cup Rotation with Liner Center (LC) alignment.

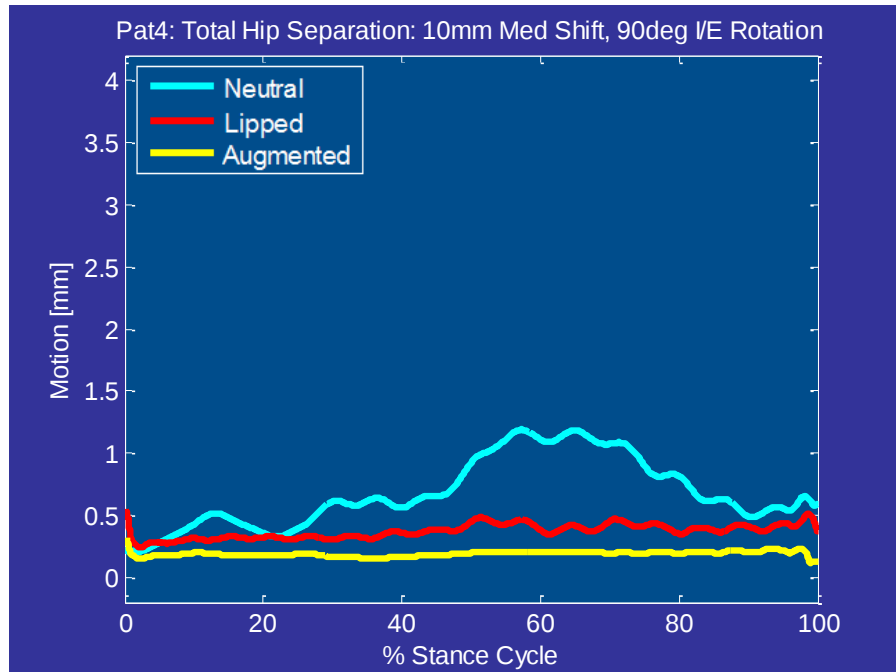


(a)

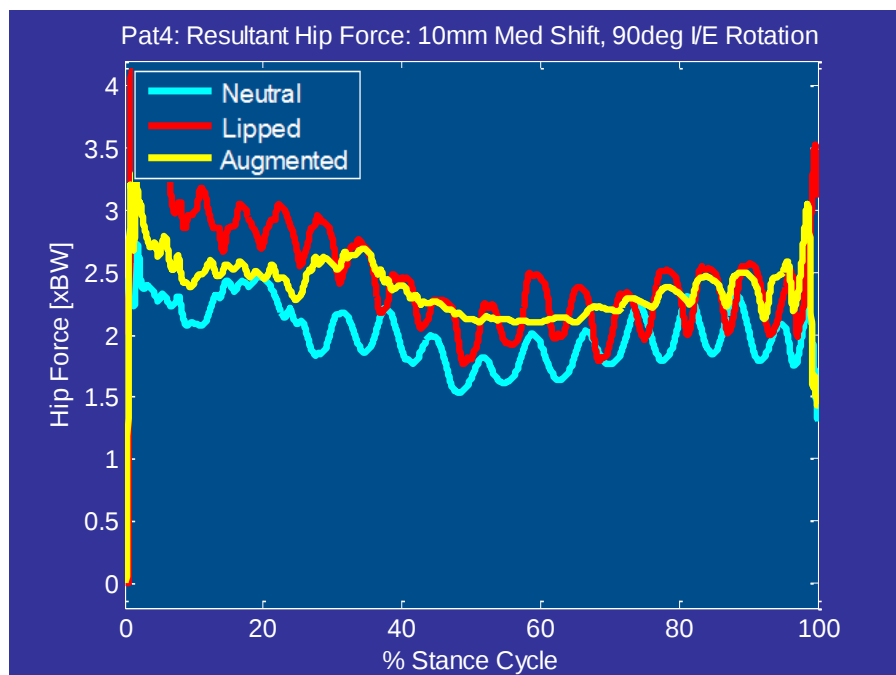


(b)

Figure D117: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
-45° I/E Cup Rotation with Liner Center (LC) alignment.

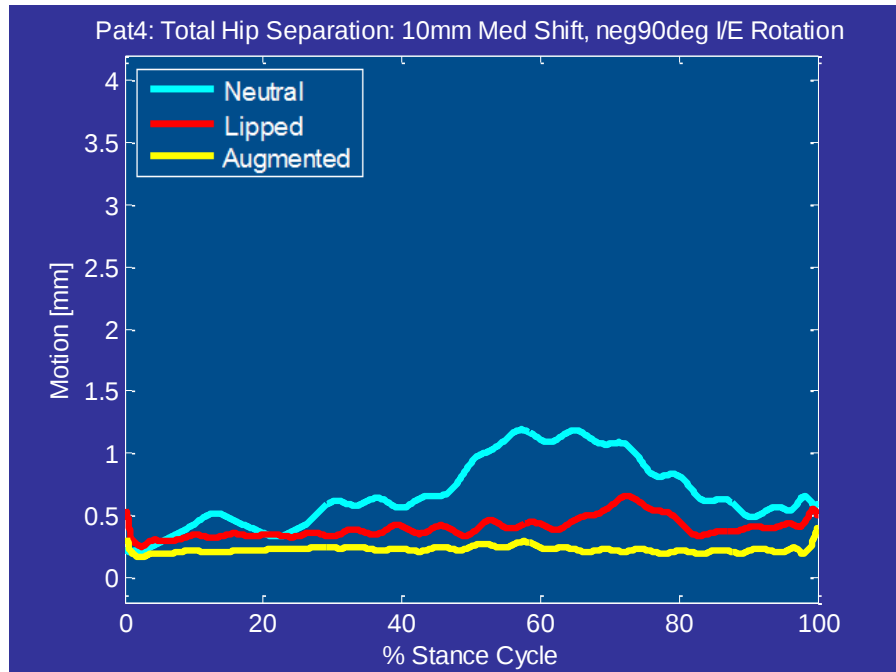


(a)

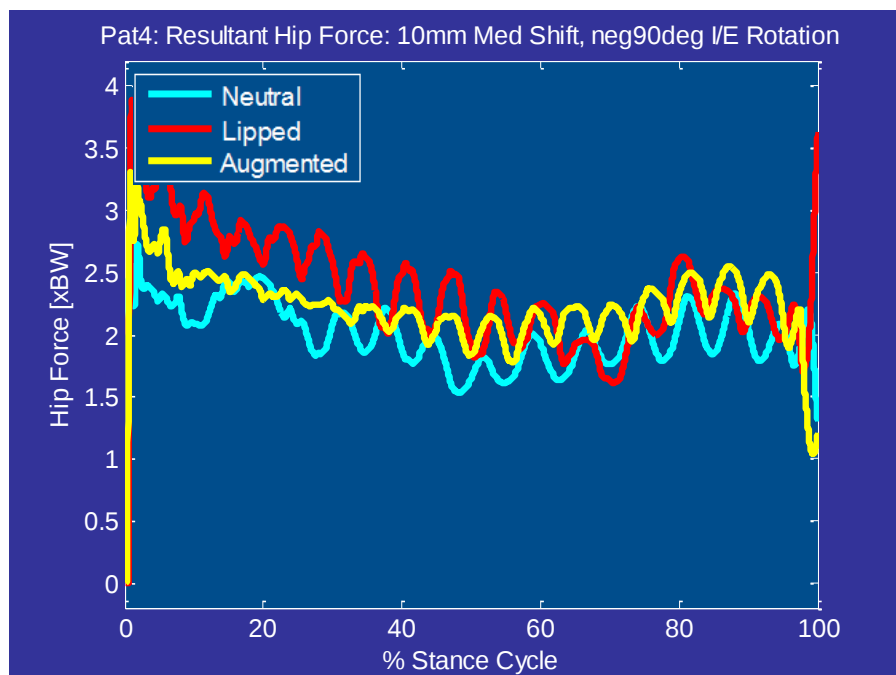


(b)

Figure D118: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
90° I/E Cup Rotation with Liner Center (LC) alignment.

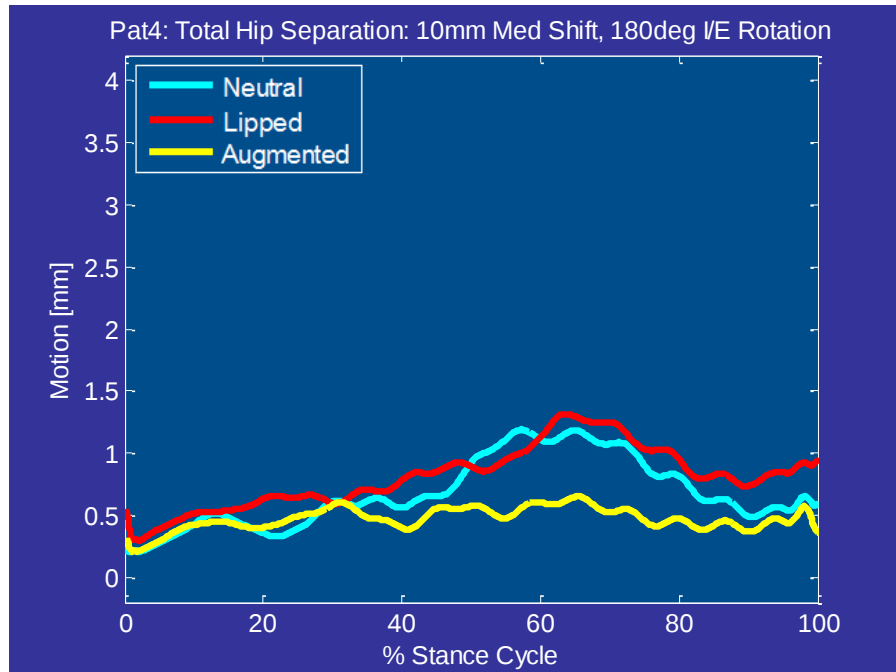


(a)

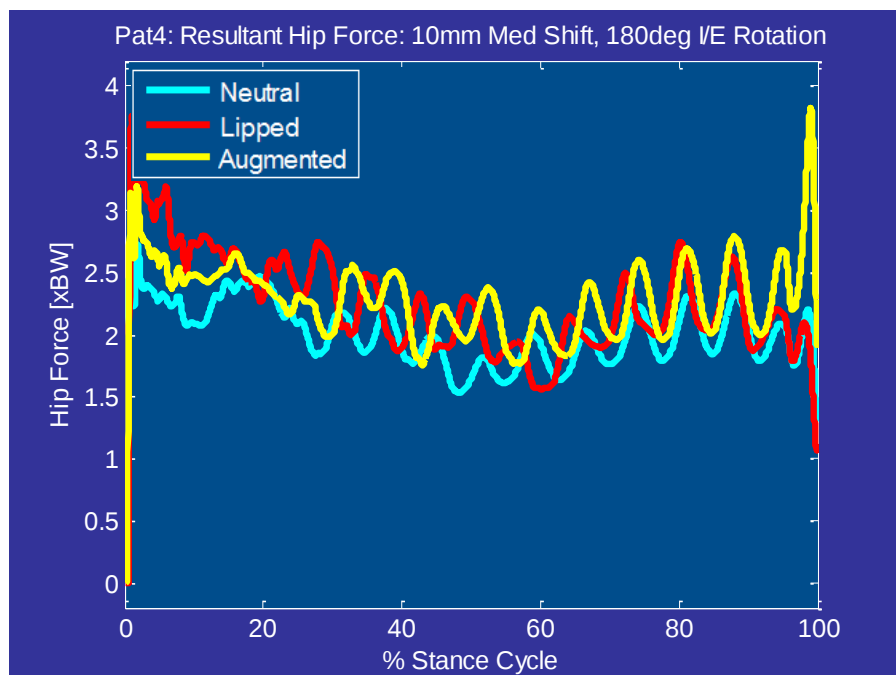


(b)

Figure D119: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
-90° I/E Cup Rotation with Liner Center (LC) alignment.



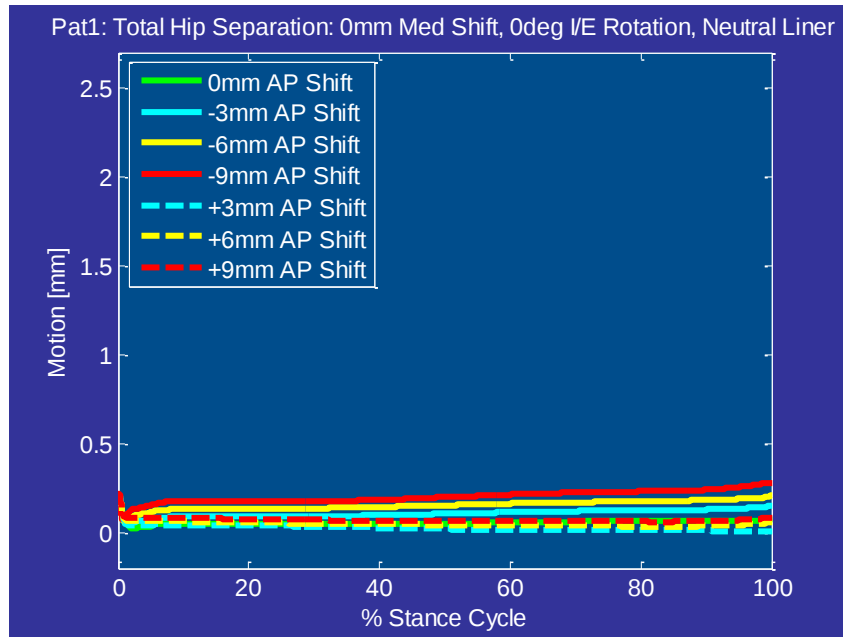
(a)



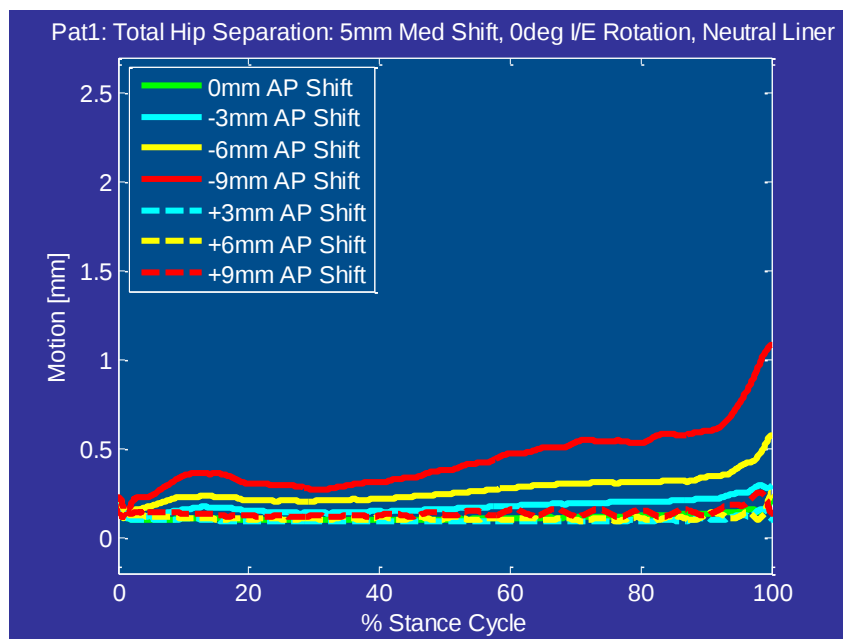
(b)

Figure D120: (a) Hip separation and (b) hip force Pat 4: 10mm Medial Cup Shift
180° I/E Cup Rotation with Liner Center (LC) alignment.

Appendix E: Anterior/Posterior Shifting Figures with Rotational Center Alignment



(a)

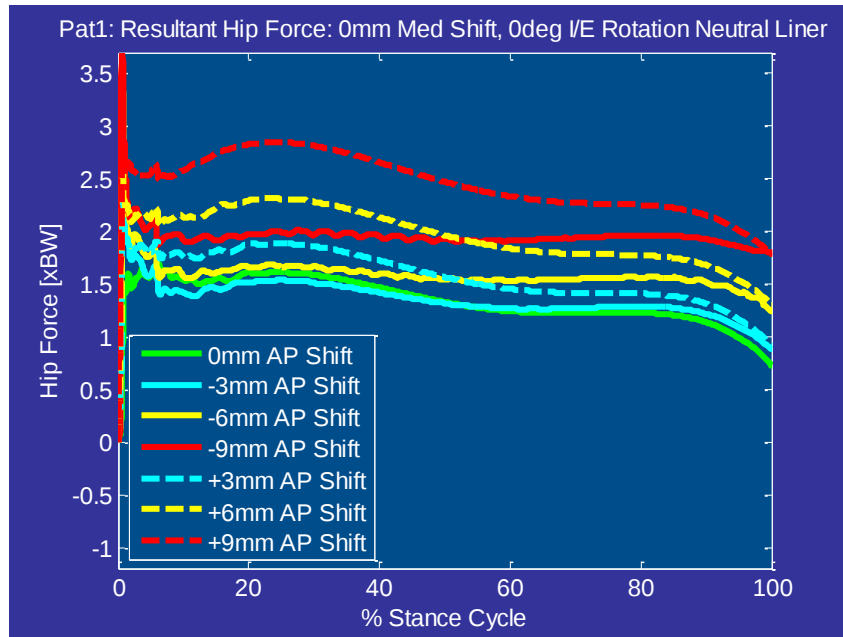


(b)

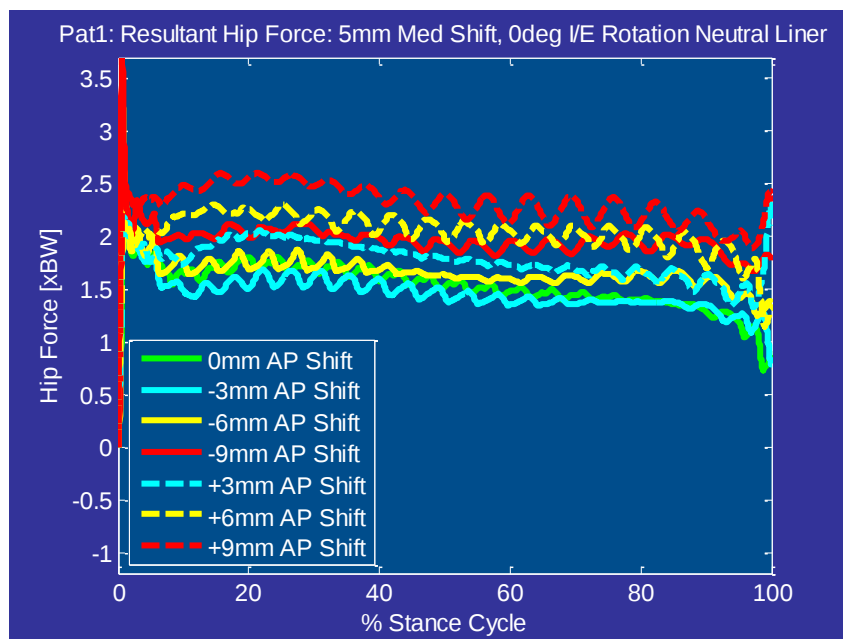
Figure E1: Pat 1: Neutral Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

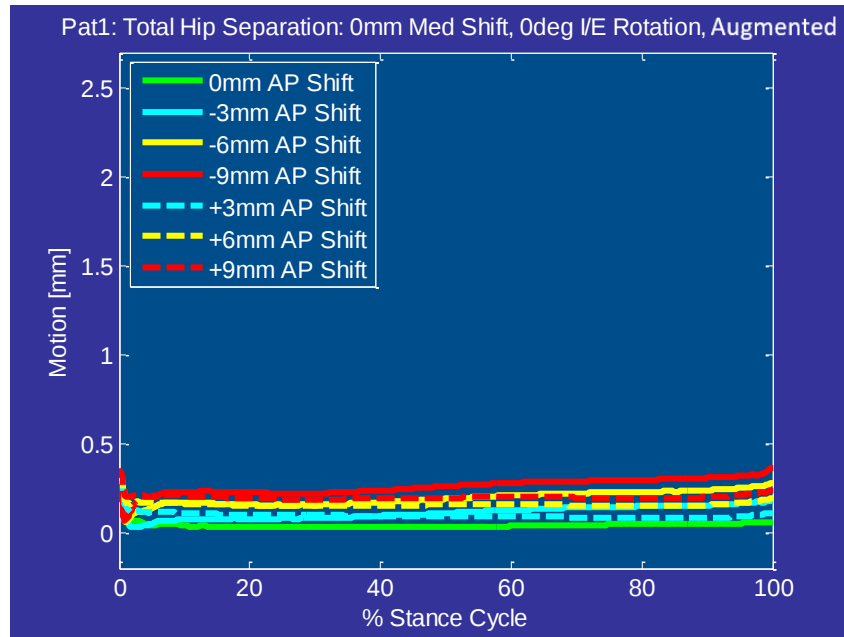


(b)

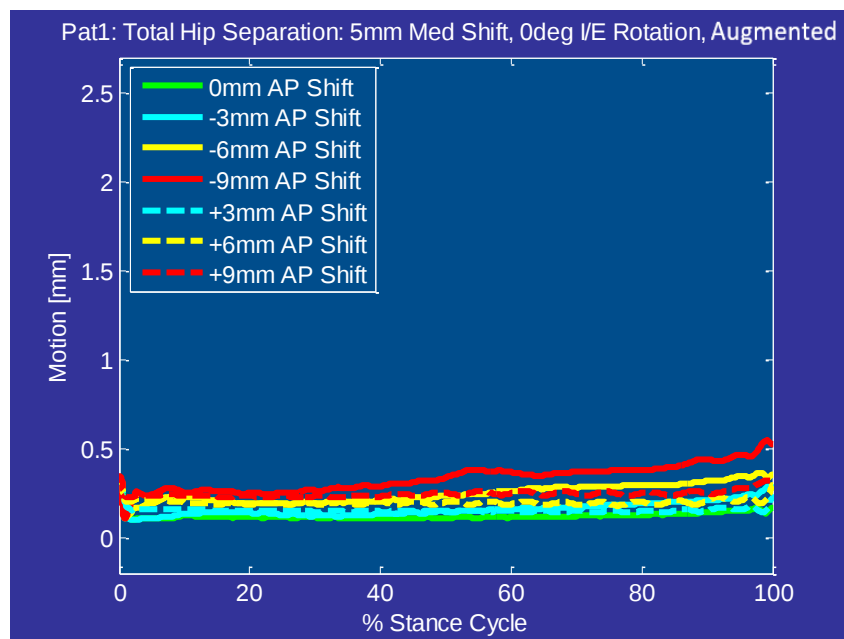
Figure E2: Pat 1: Neutral Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

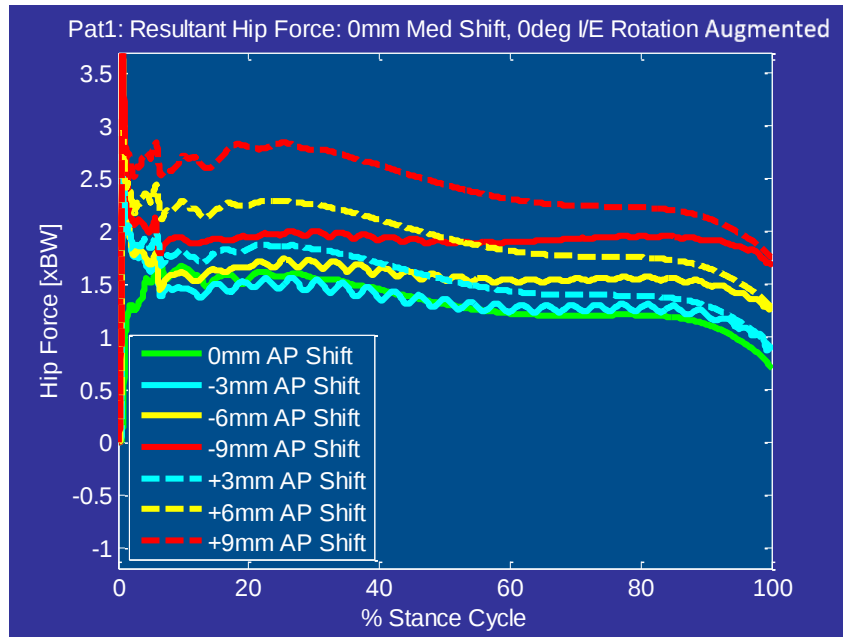


(b)

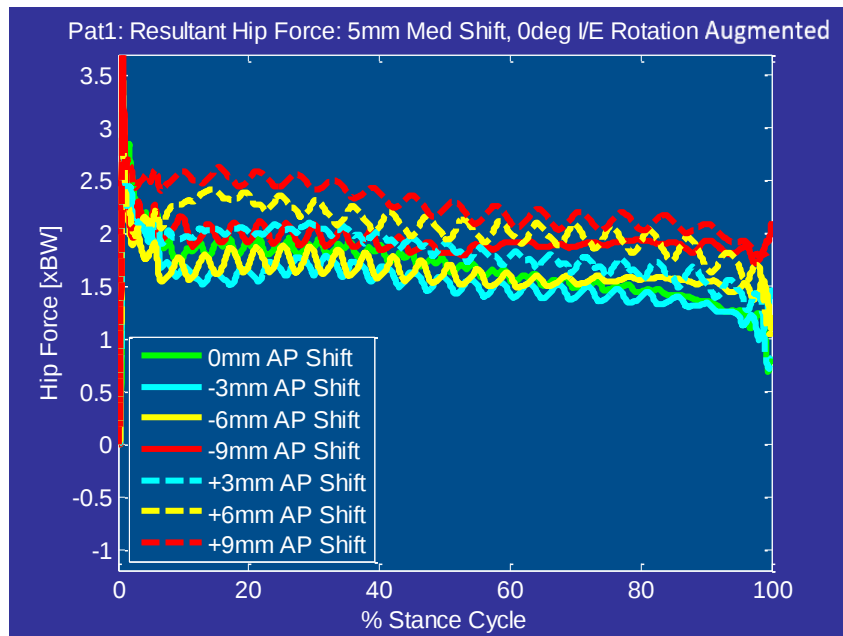
Figure E3: Pat 1: Augmented Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

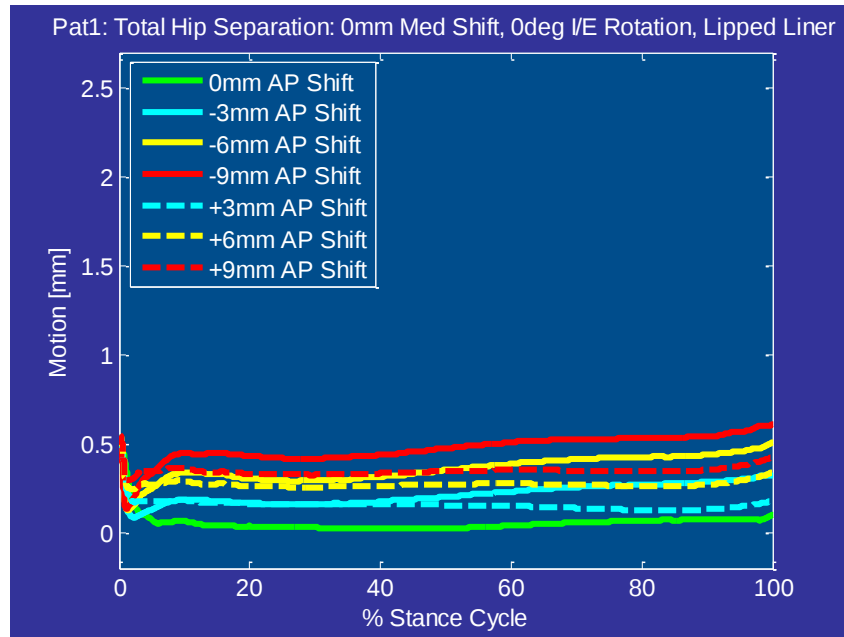


(b)

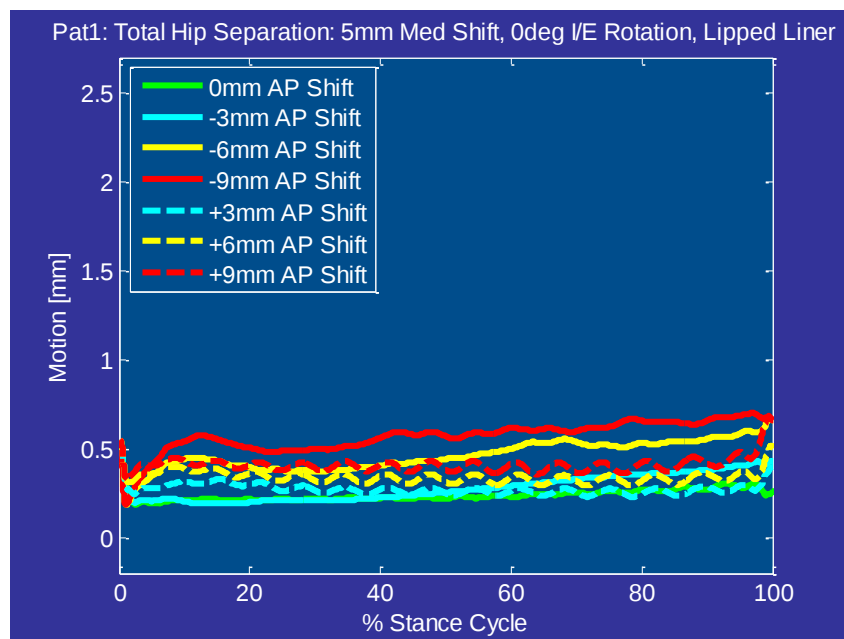
Figure E4: Pat 1: Augmented Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

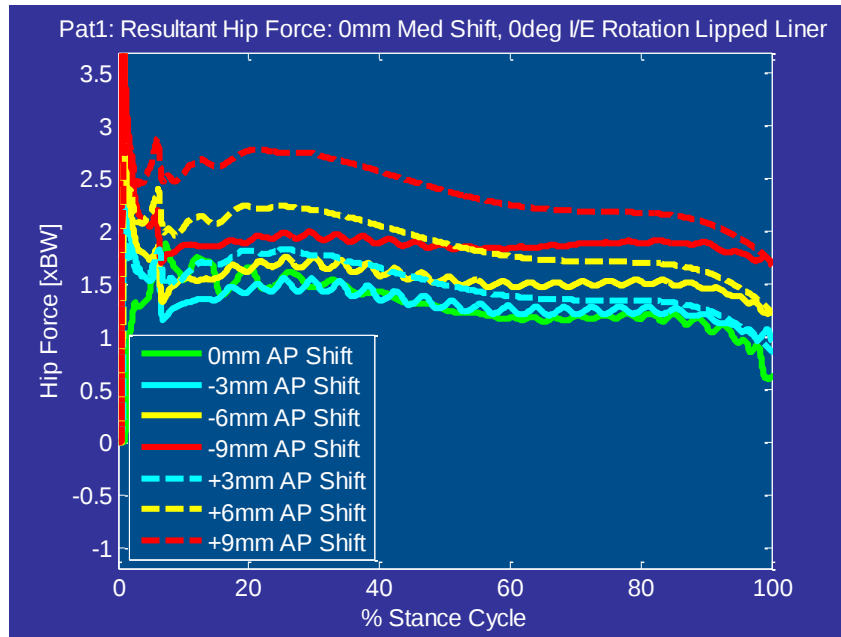


(b)

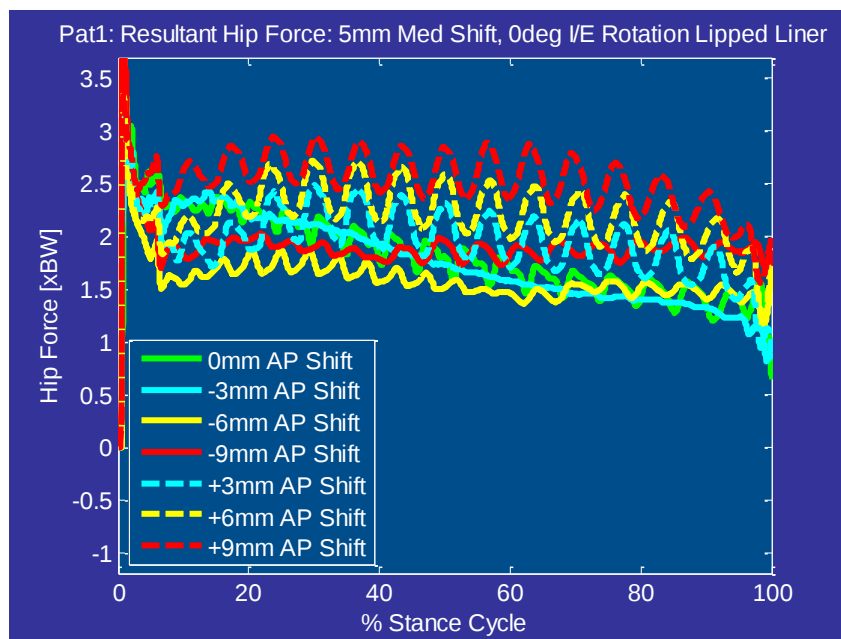
Figure E5: Pat 1: Lipped Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

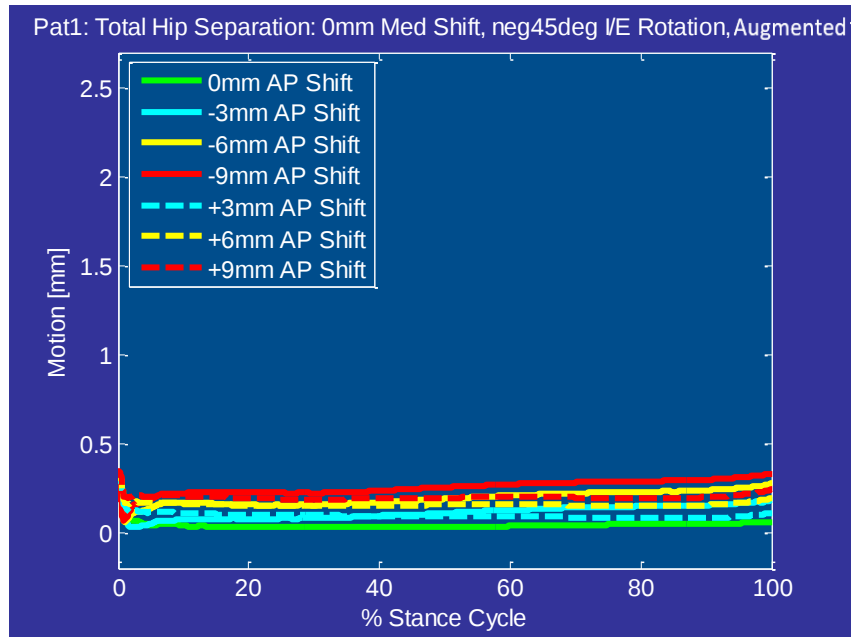


(b)

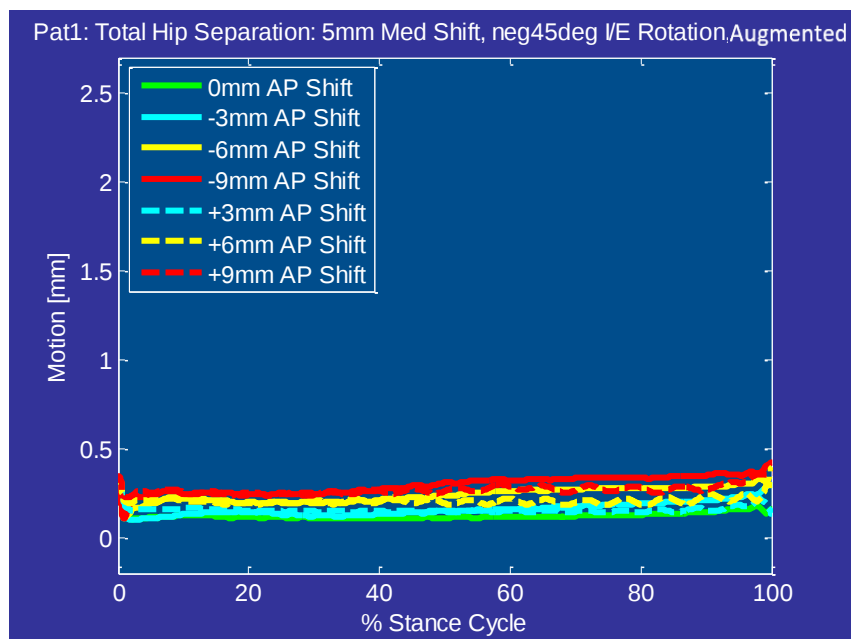
Figure E6: Pat 1: Lipped Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

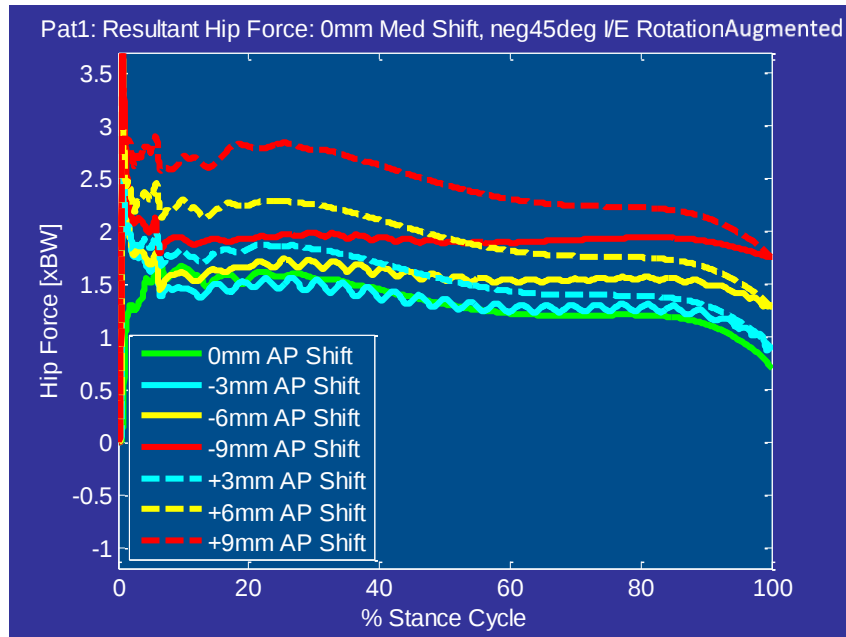


(b)

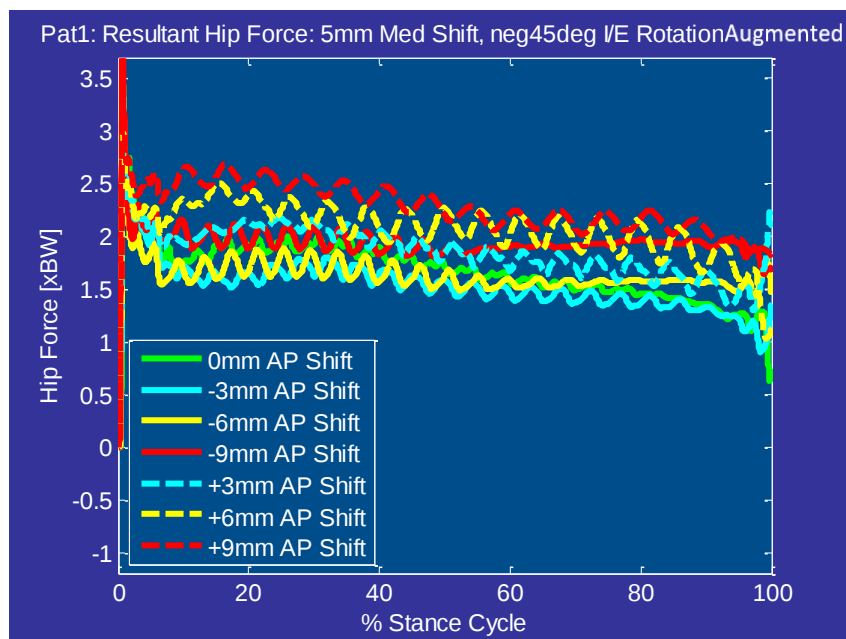
Figure E7: Pat 1: Augmented Liner: Separation

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

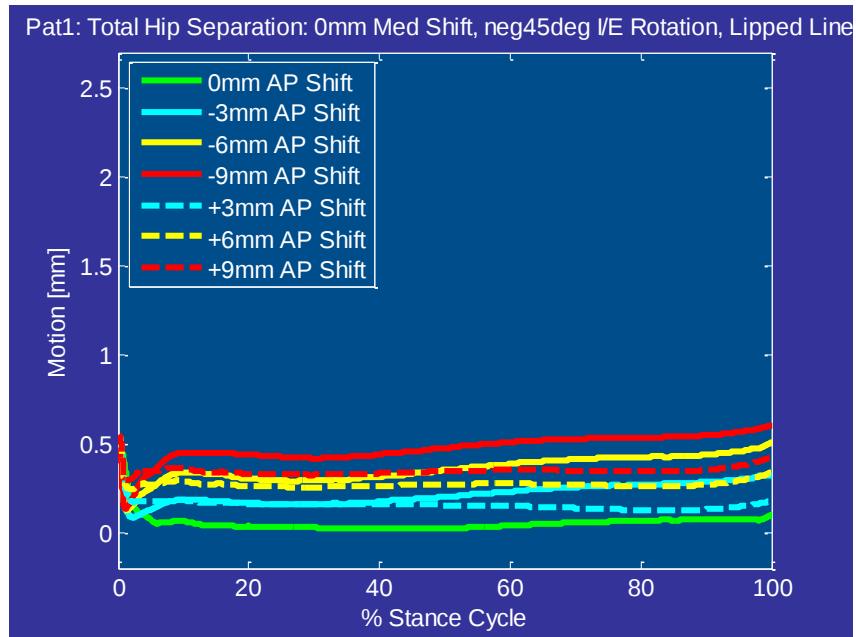


(b)

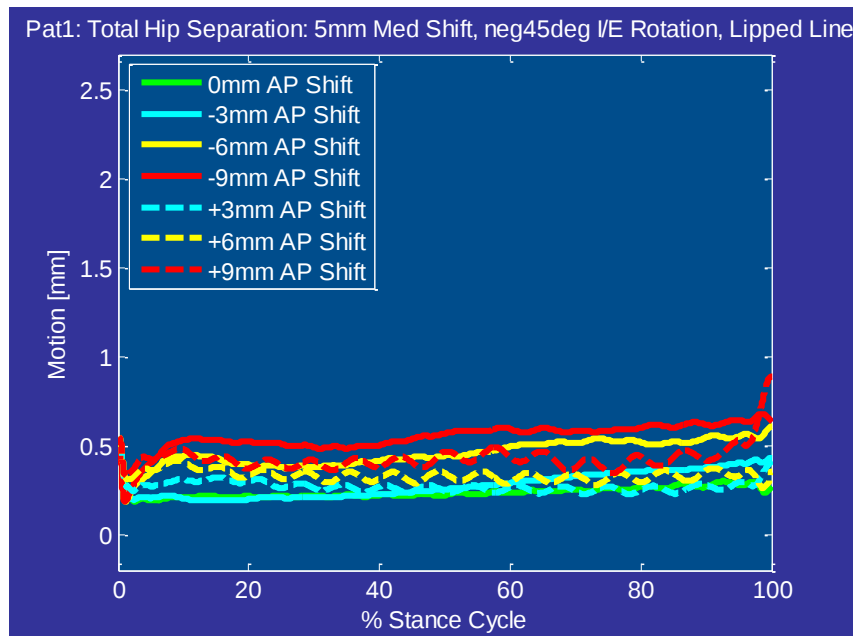
Figure E8: Pat 1: Augmented Liner: Hip Force

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

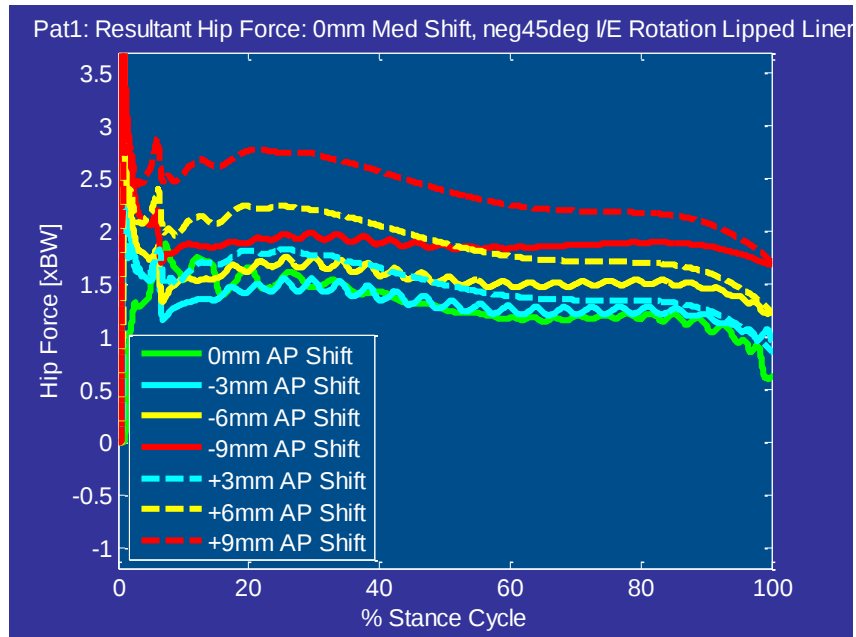


(b)

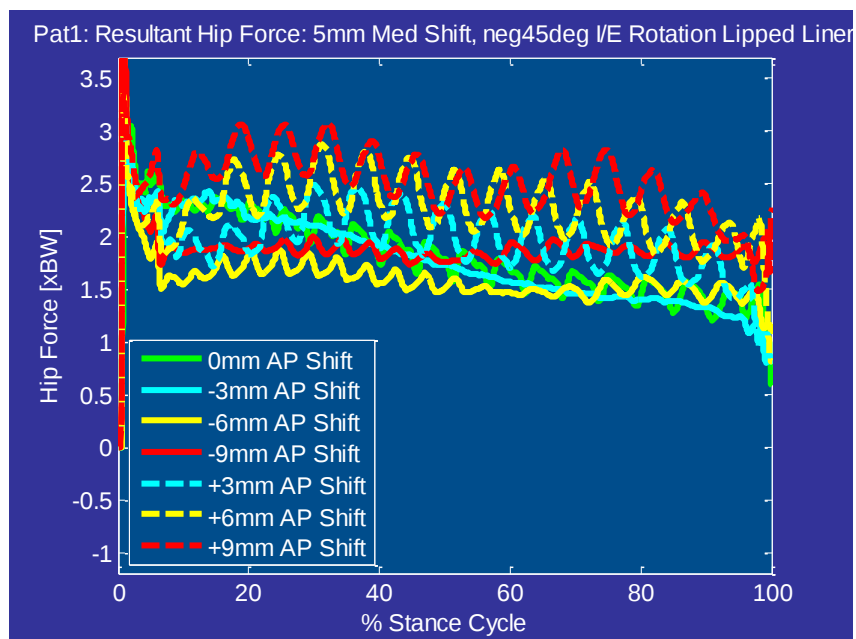
Figure E9: Pat 1: Lipped Liner: Separation

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

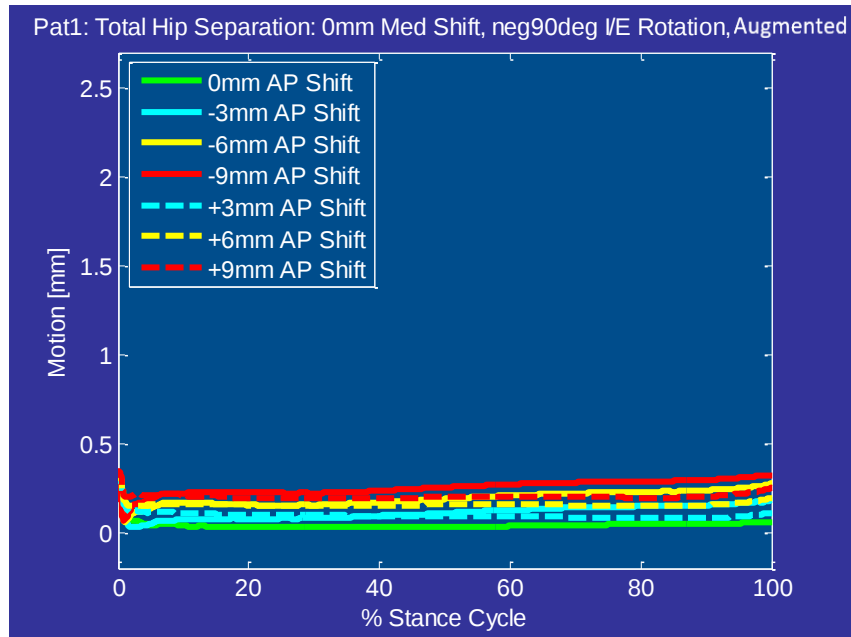


(b)

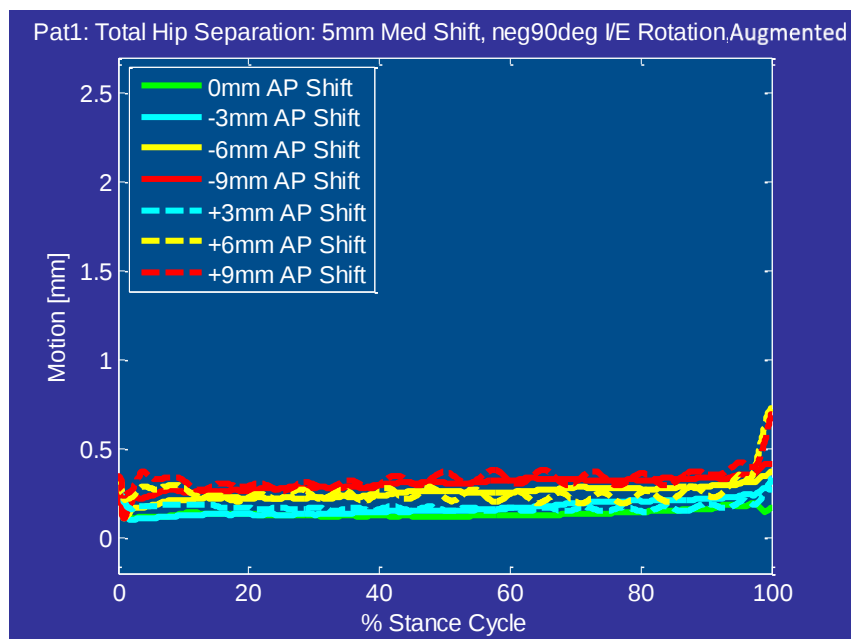
Figure E10: Pat 1: Lipped Liner: Hip Force

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

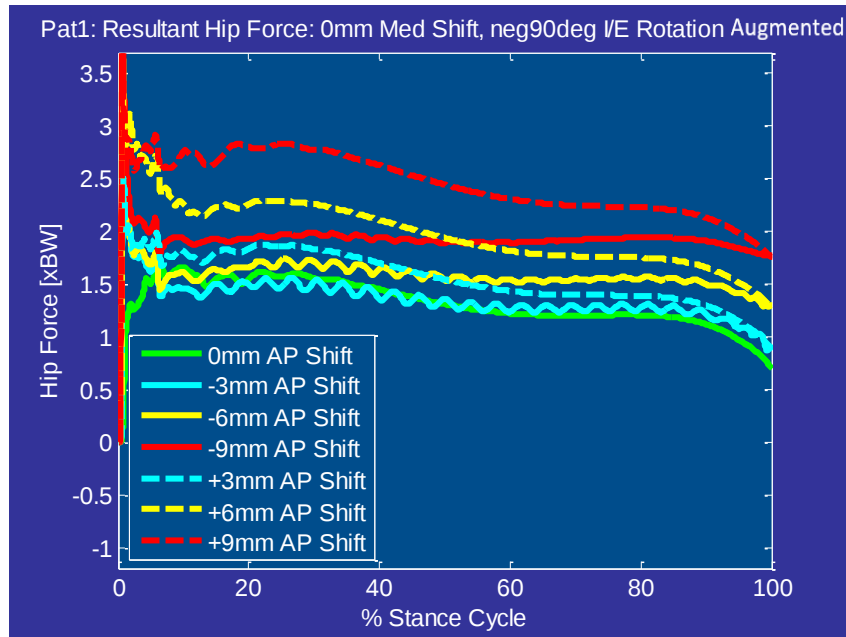


(b)

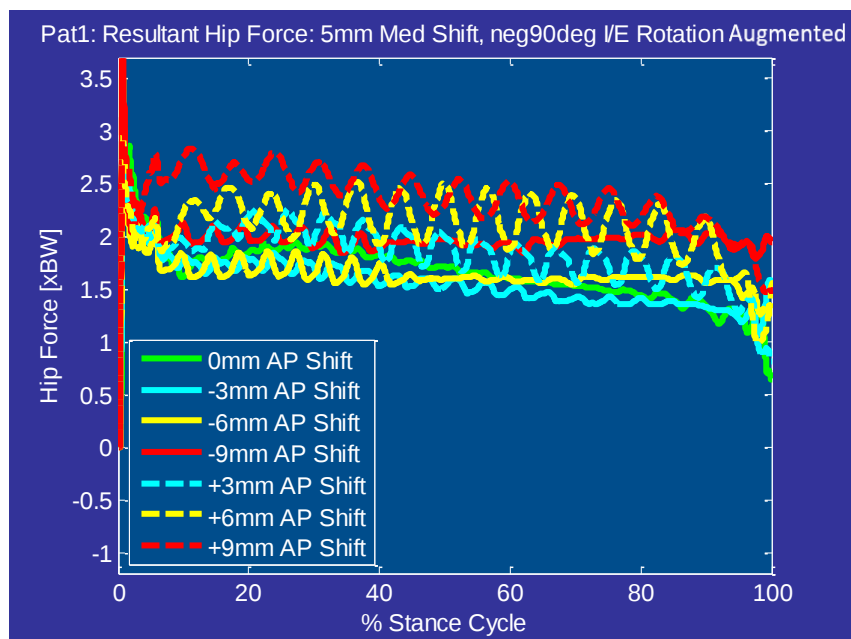
Figure E11: Pat 1: Augmented Liner: Separation

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

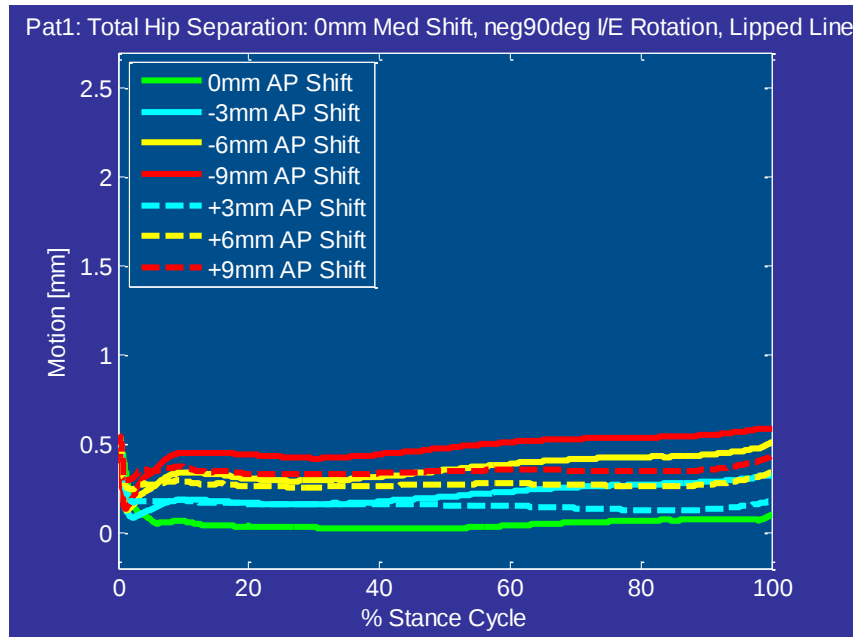


(b)

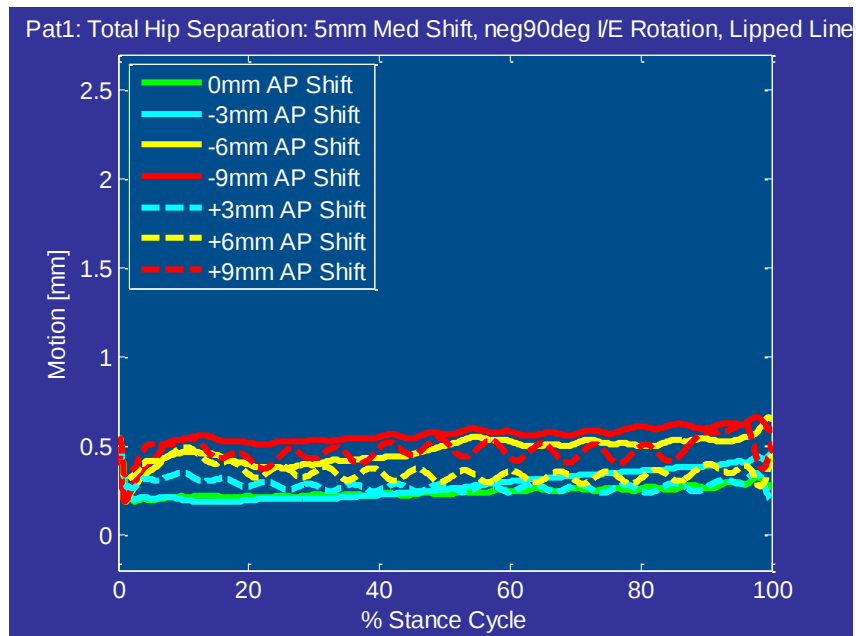
Figure E12: Pat 1: Augmented Liner: Hip Force

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

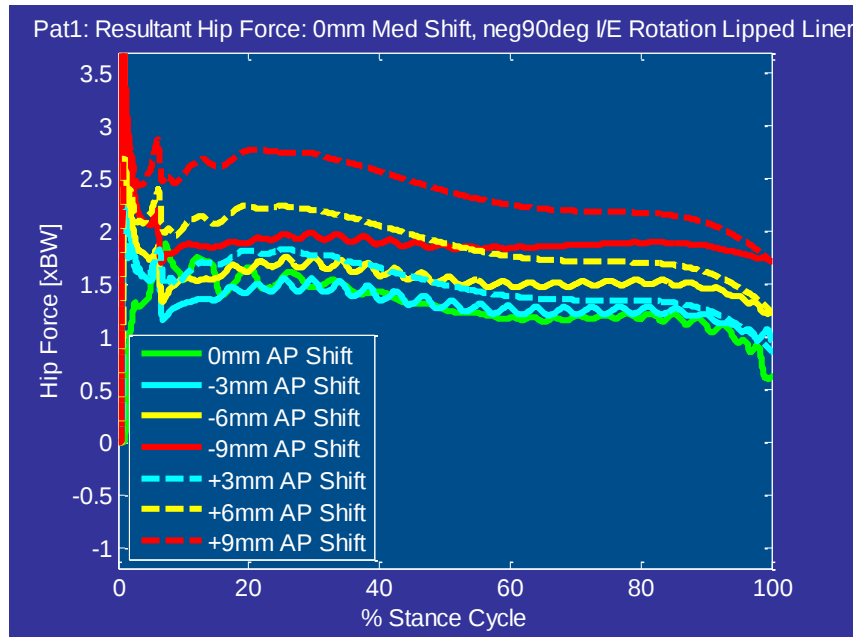


(b)

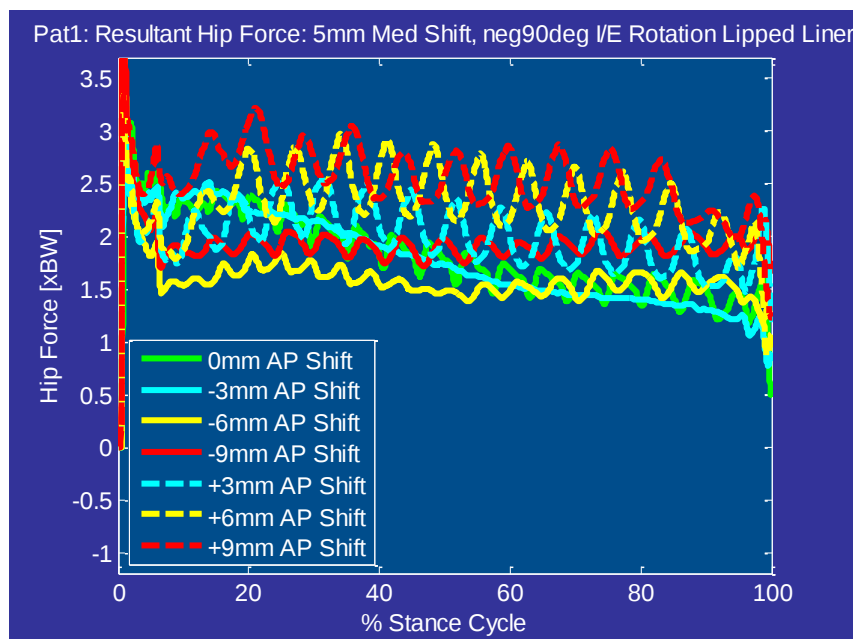
Figure E13: Pat 1: Lipped Liner: Separation

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

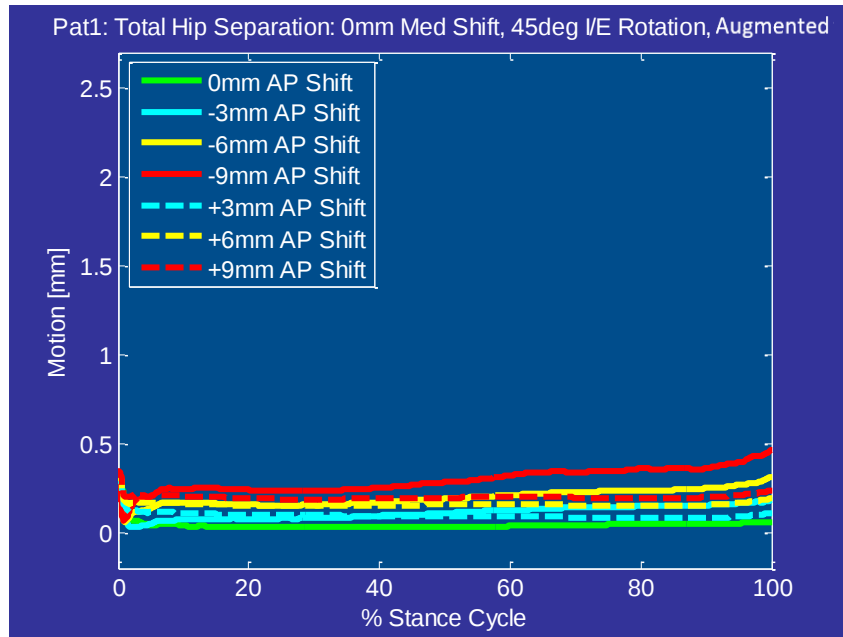


(b)

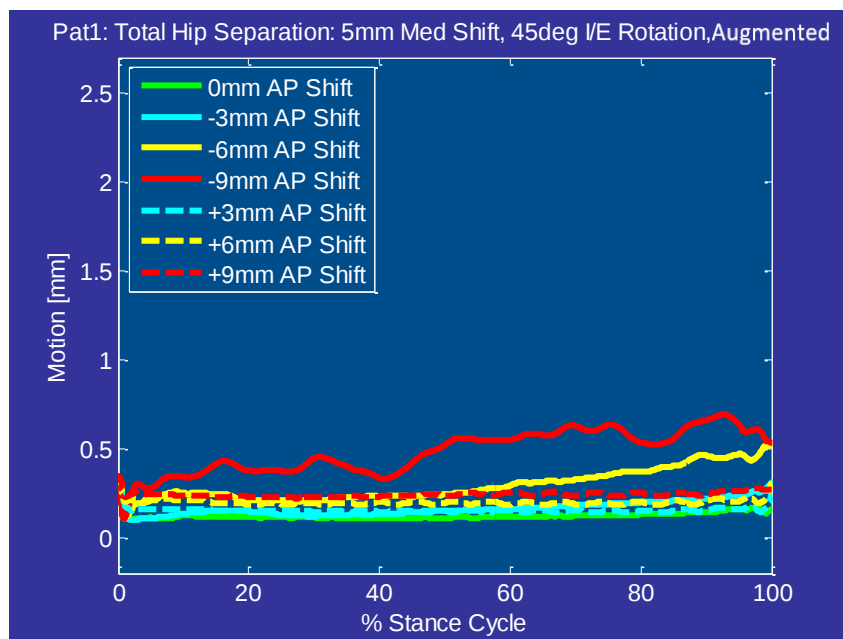
Figure E14: Pat 1: Lipped Liner: Hip Force

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

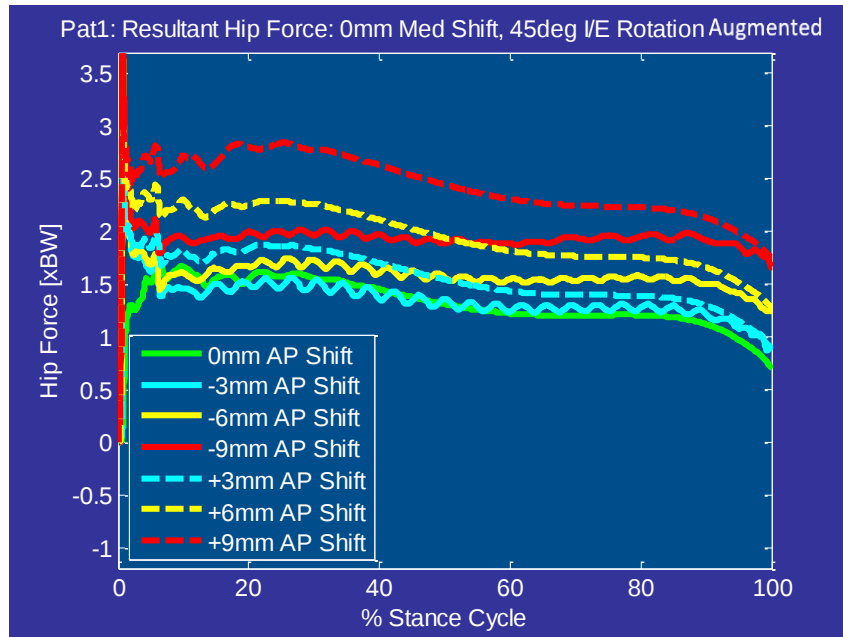


(b)

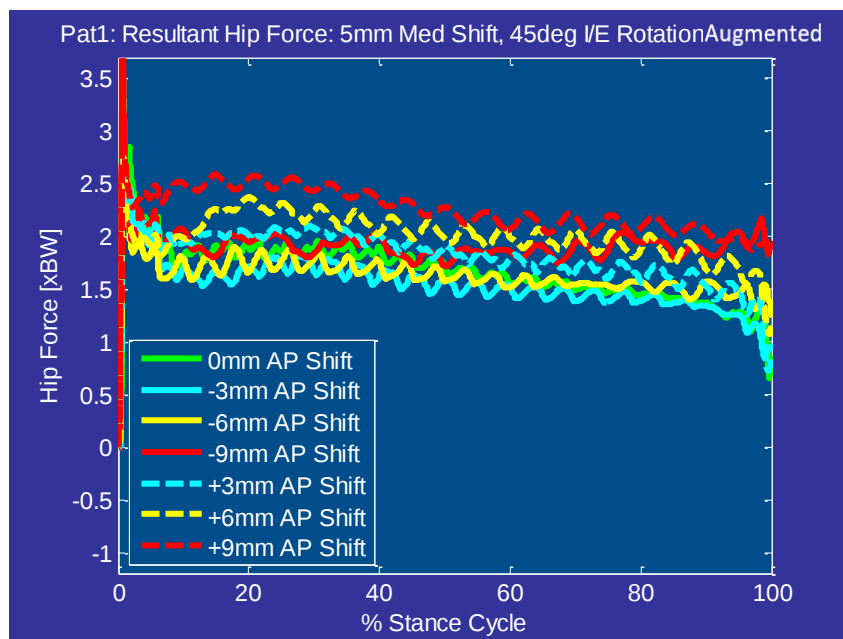
Figure E15: Pat 1: Augmented Liner: Separation

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

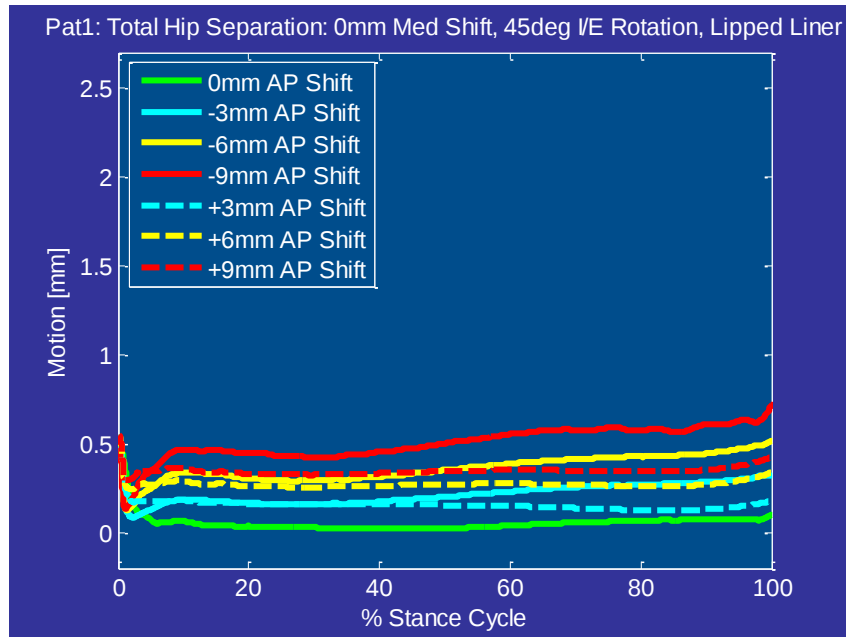


(b)

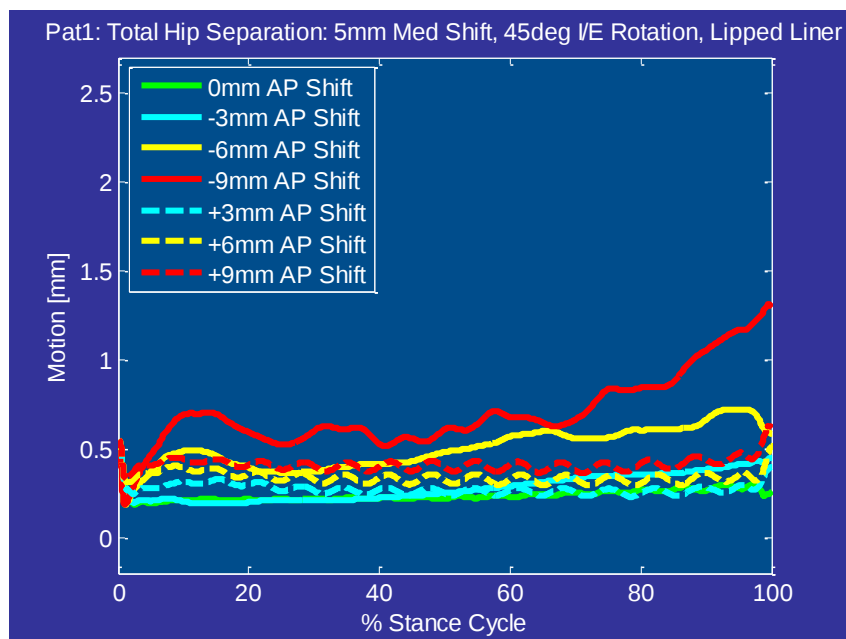
Figure E16: Pat 1: Augmented Liner: Hip Force

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

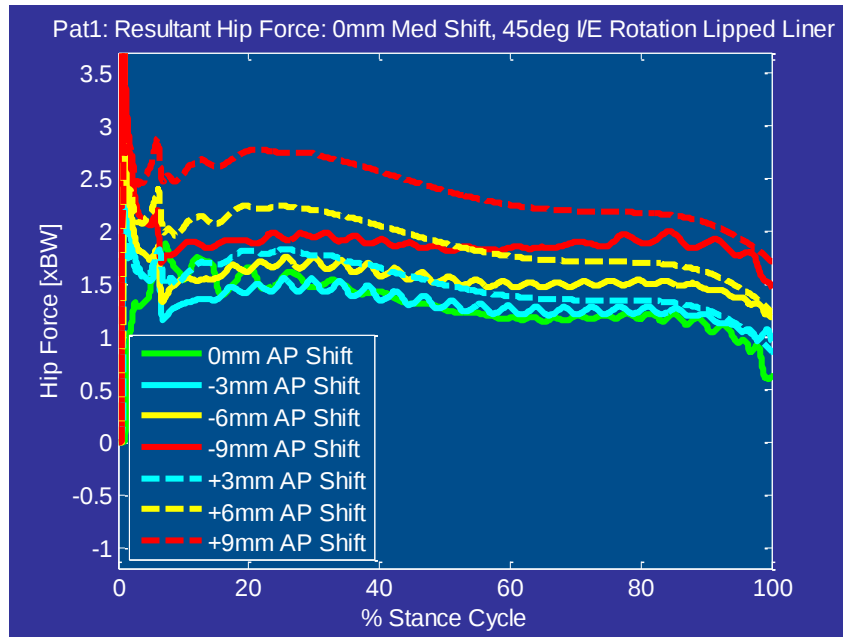


(b)

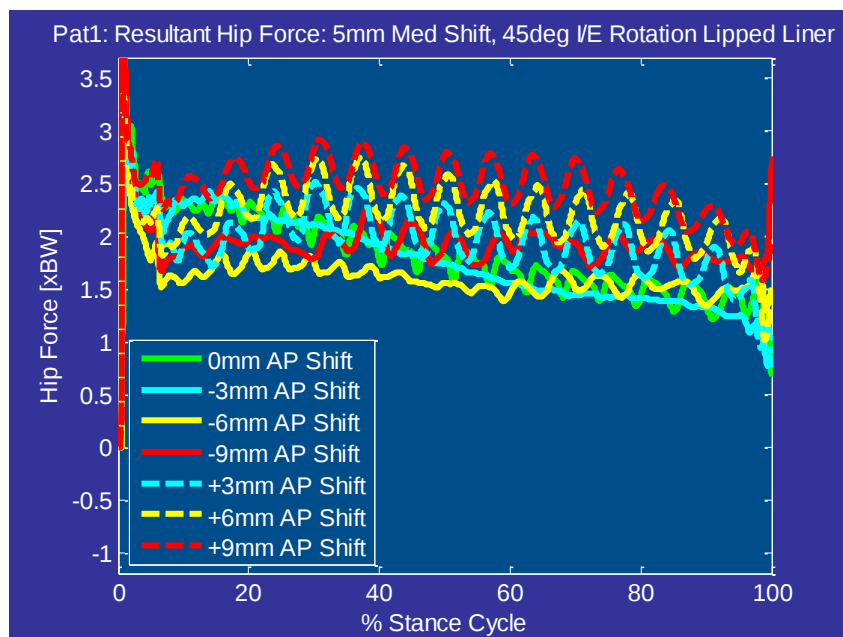
Figure E17: Pat 1: Lipped Liner: Separation

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

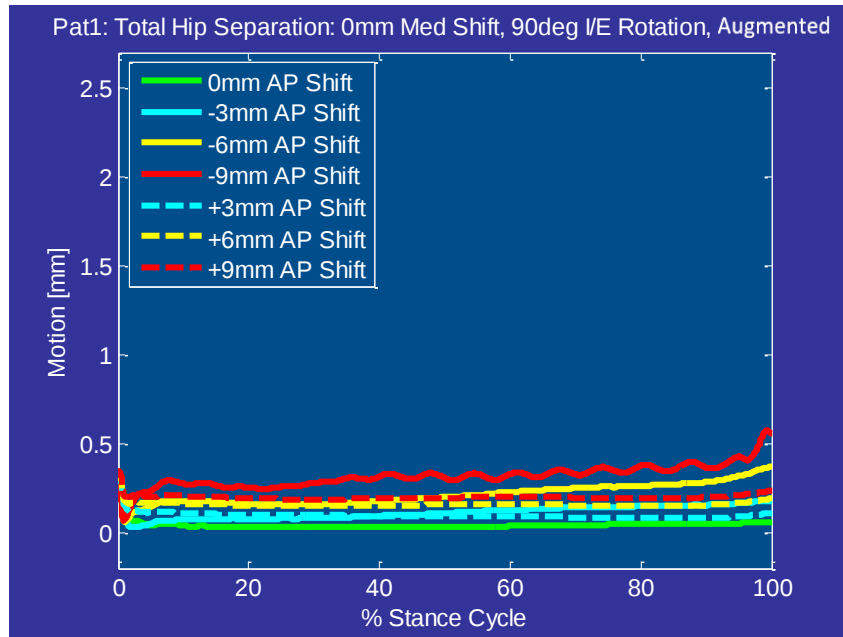


(b)

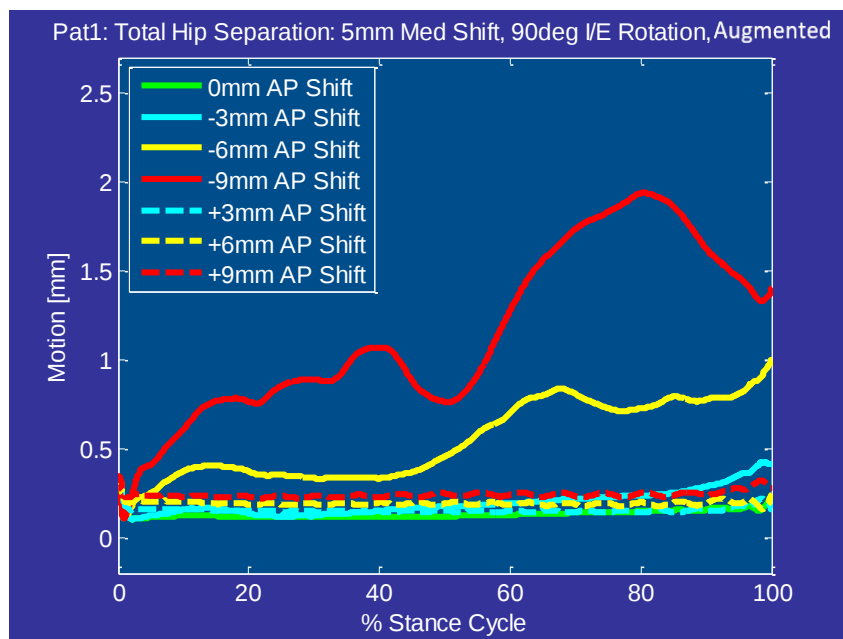
Figure E18: Pat 1: Lipped Liner: Hip Force

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

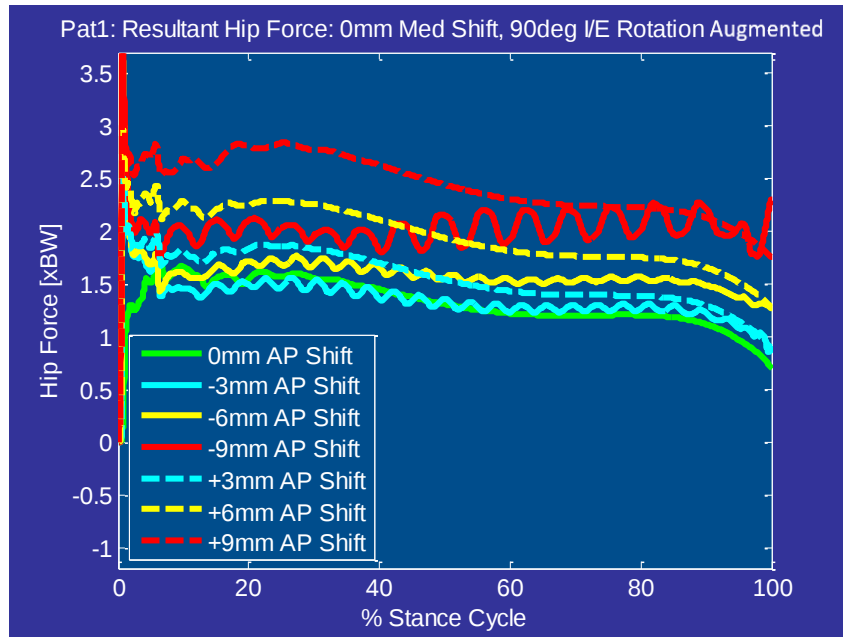


(b)

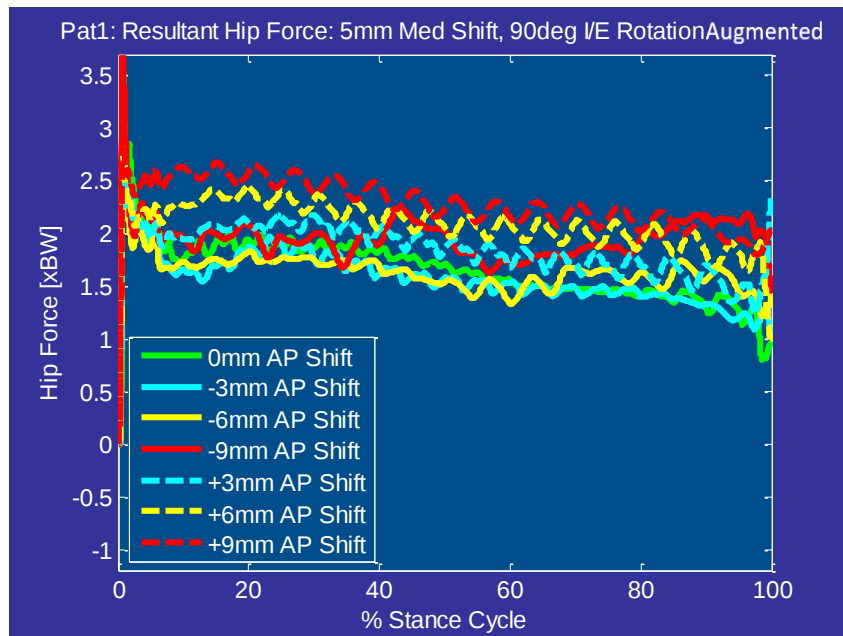
Figure E19: Pat 1: Augmented Liner: Separation

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

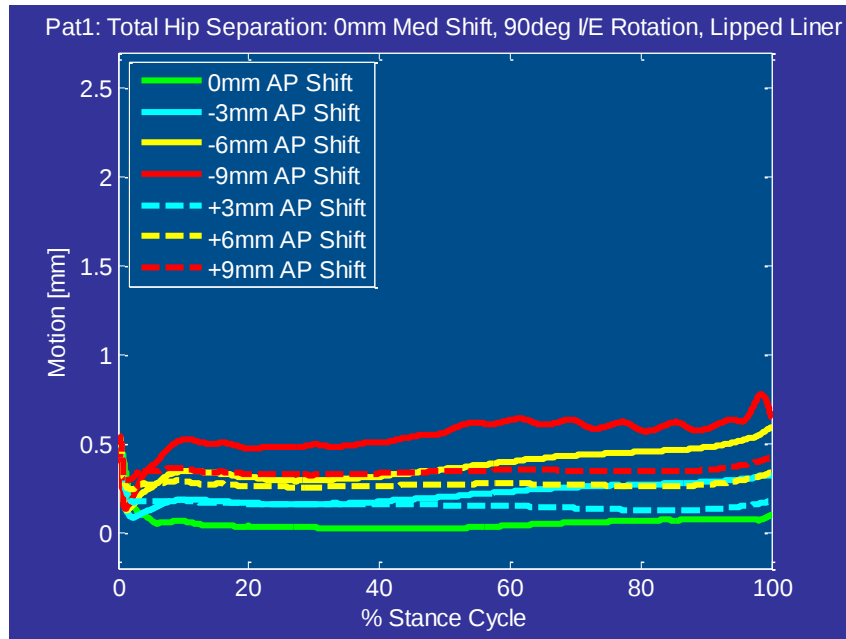


(b)

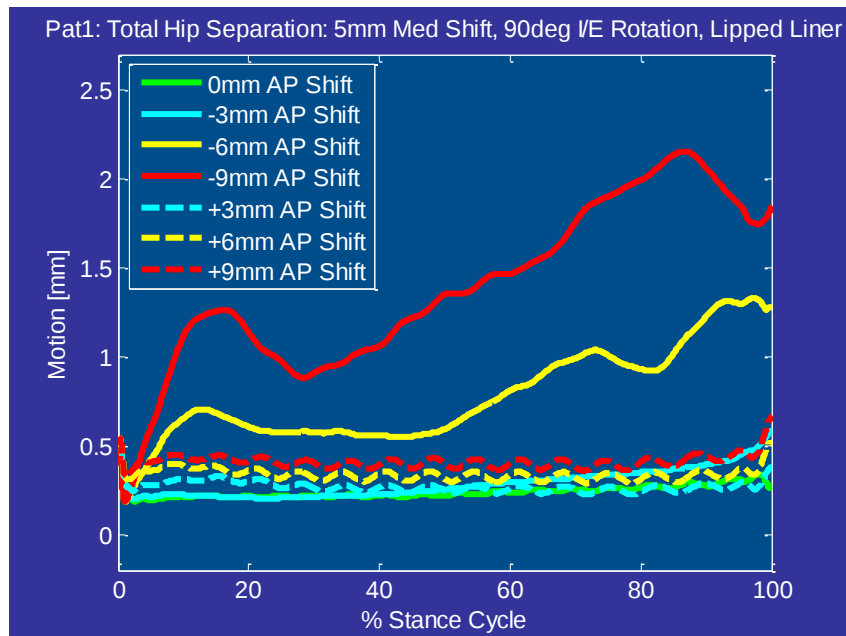
Figure E20: Pat 1: Augmented Liner: Hip Force

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

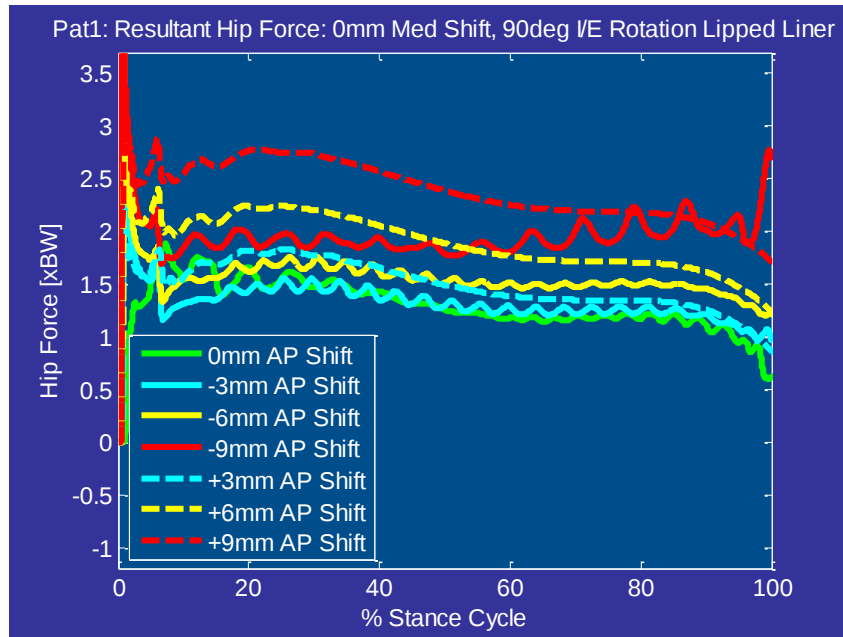


(b)

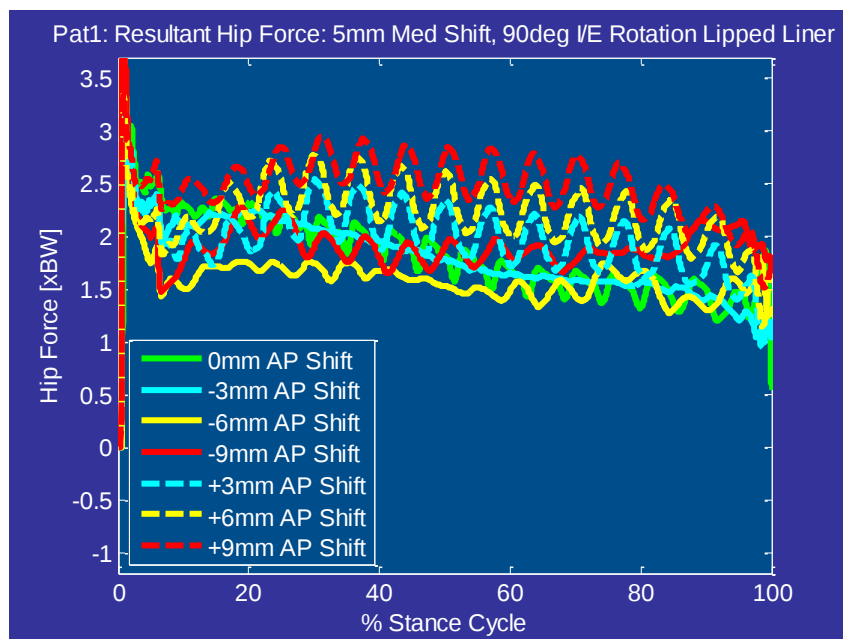
Figure E21: Pat 1: Lipped Liner: Separation

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

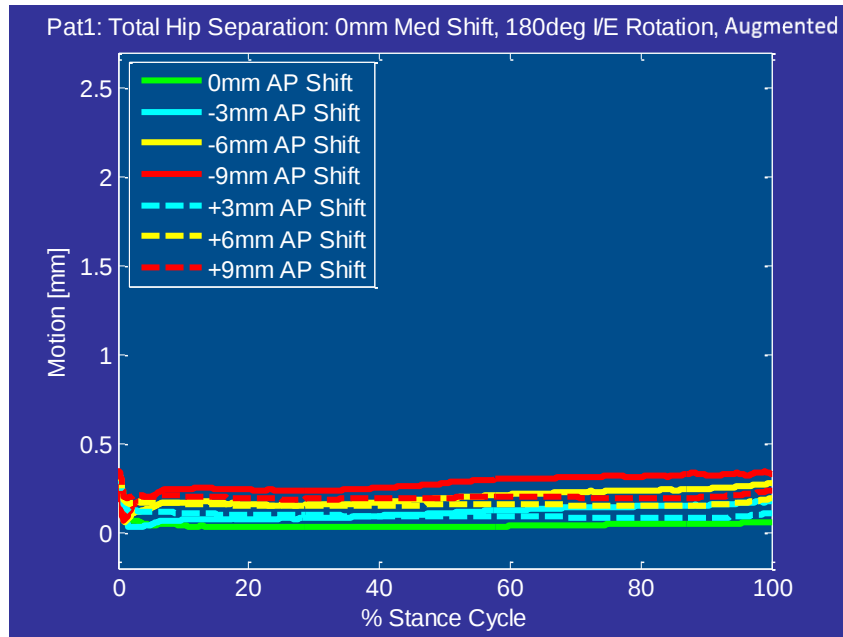


(b)

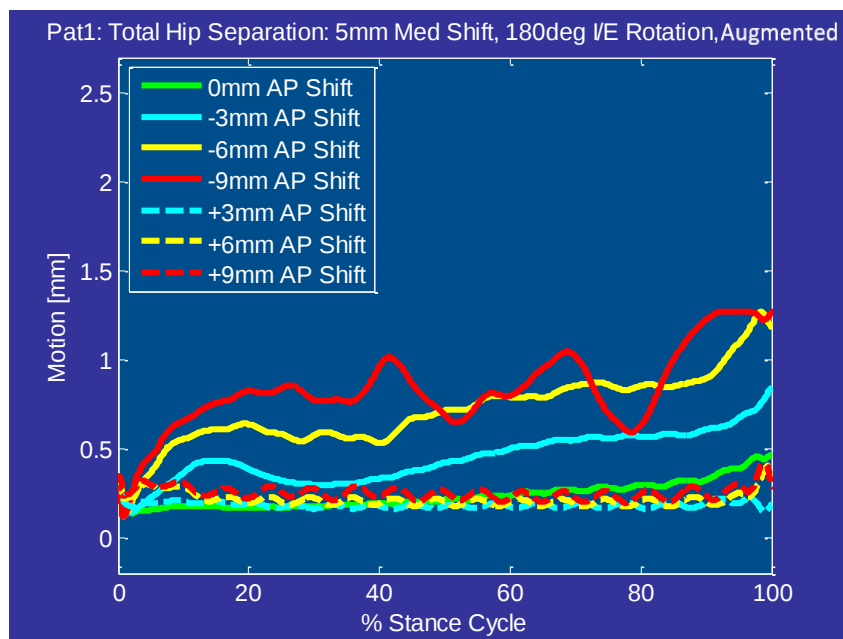
Figure E22: Pat 1: Lipped Liner: Hip Force

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

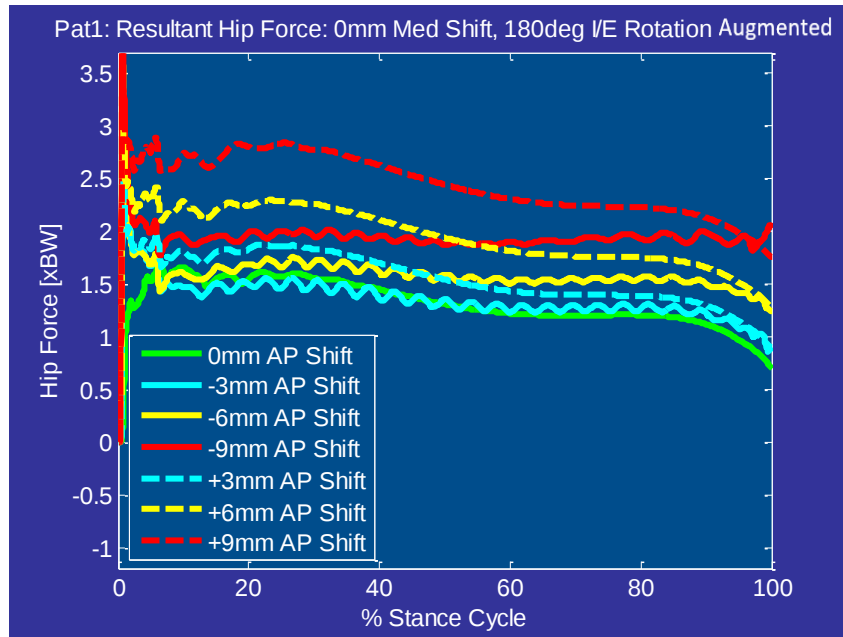


(b)

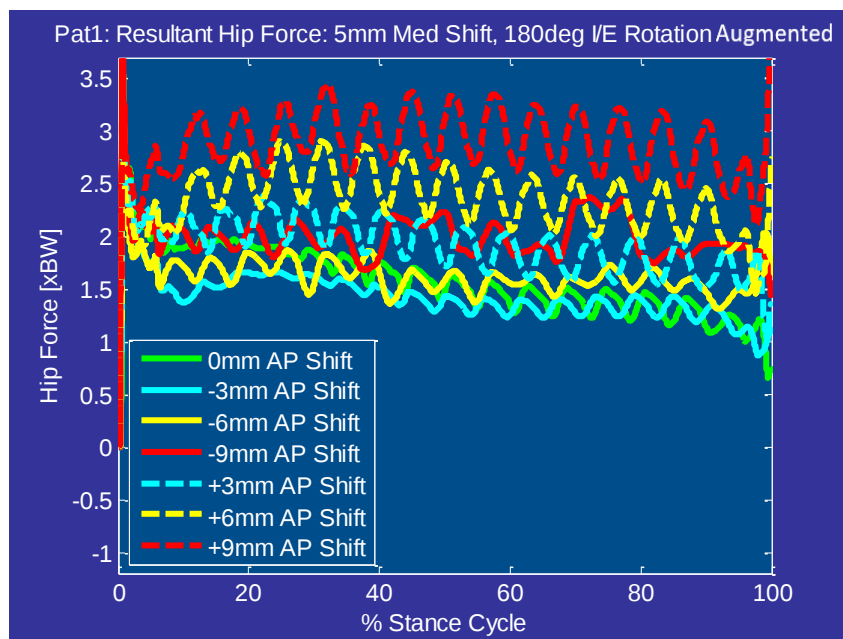
Figure E23: Pat 1: Augmented Liner: Separation

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

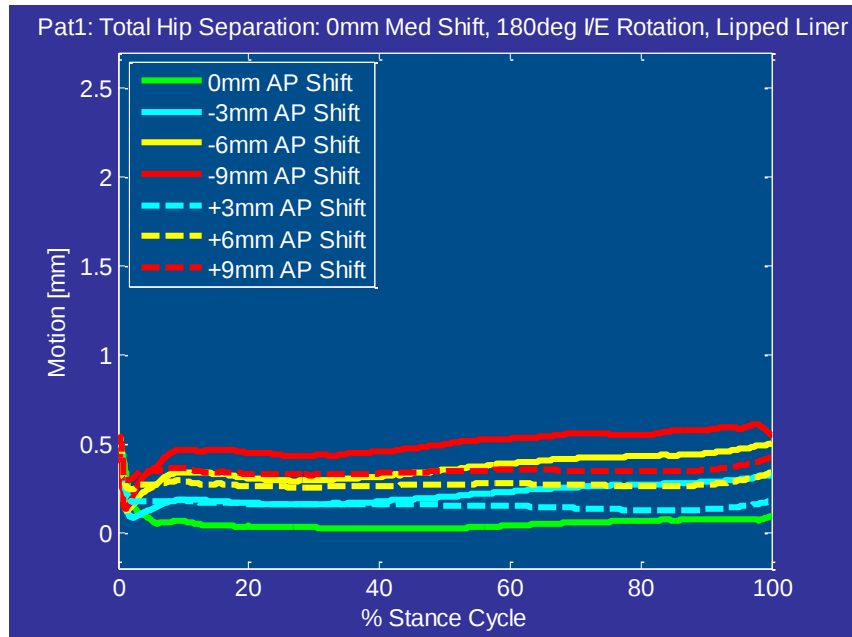


(b)

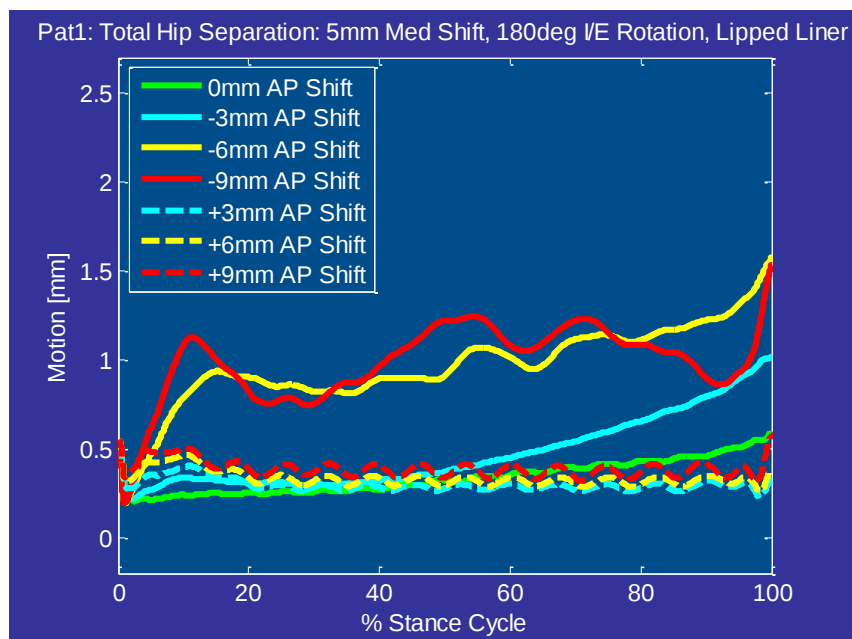
Figure E24: Pat 1: Augmented Liner: Hip Force

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

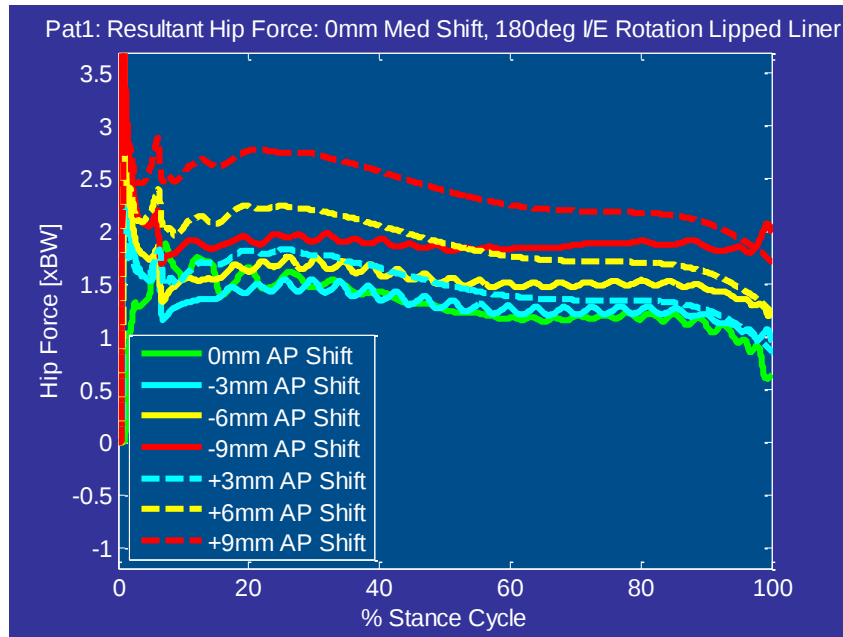


(b)

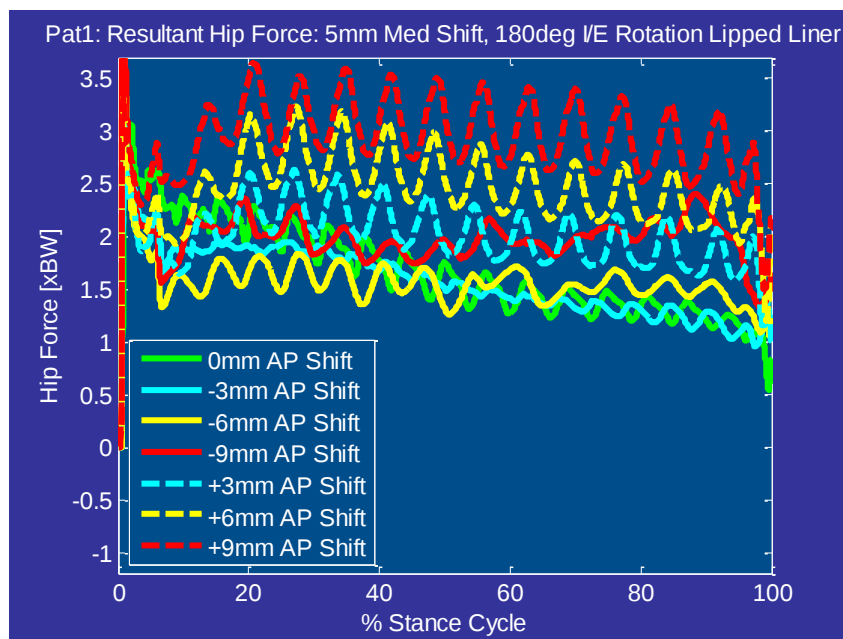
Figure E25: Pat 1: Lipped Liner: Separation

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

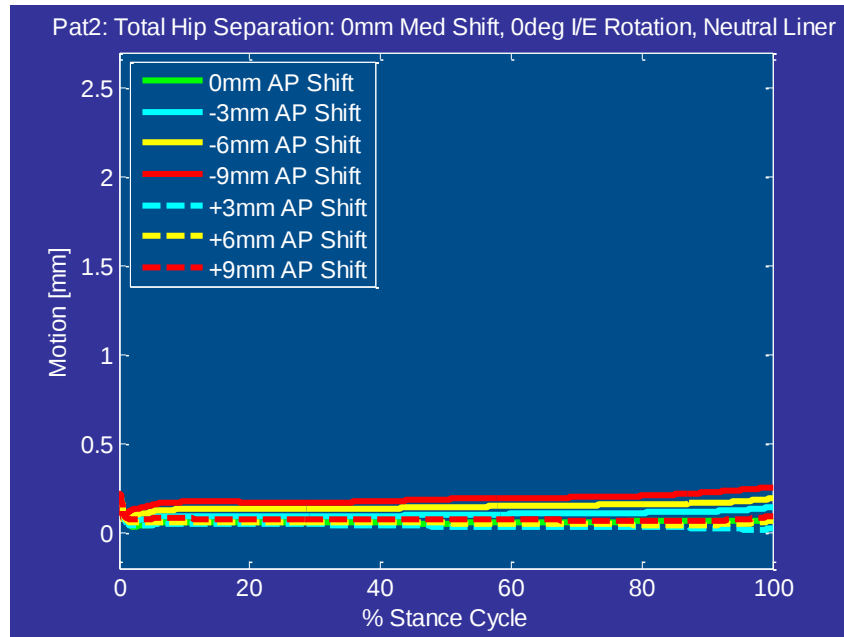


(b)

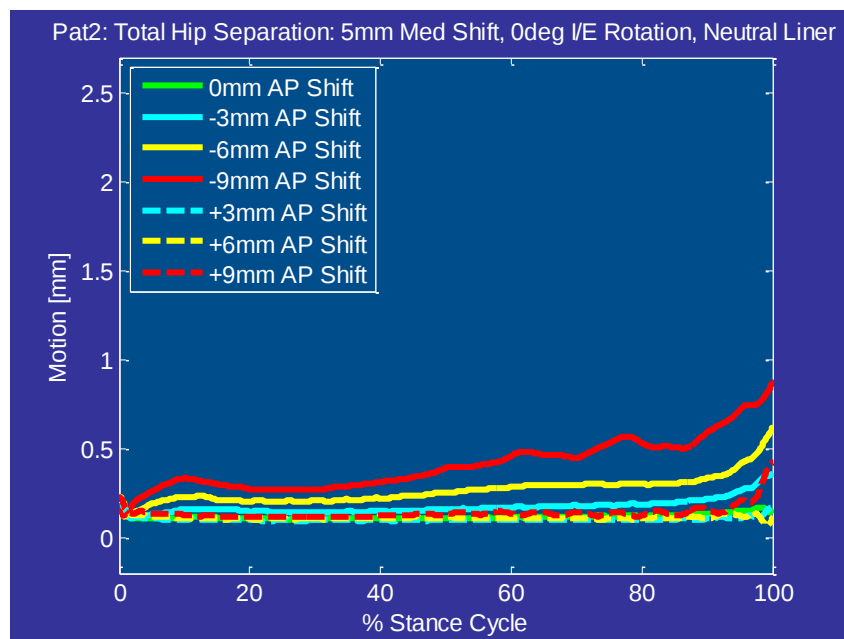
Figure E26: Pat 1: Lipped Liner: Hip Force

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

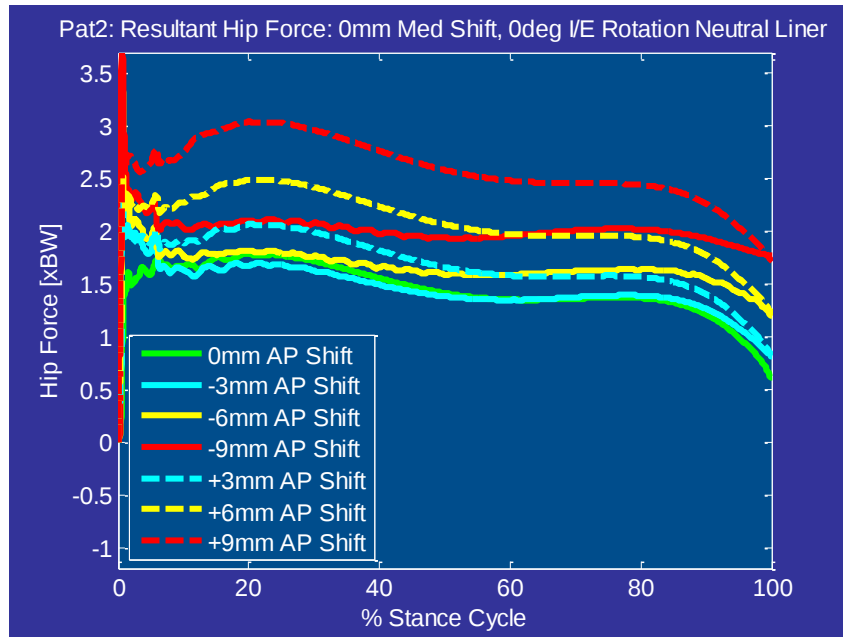


(b)

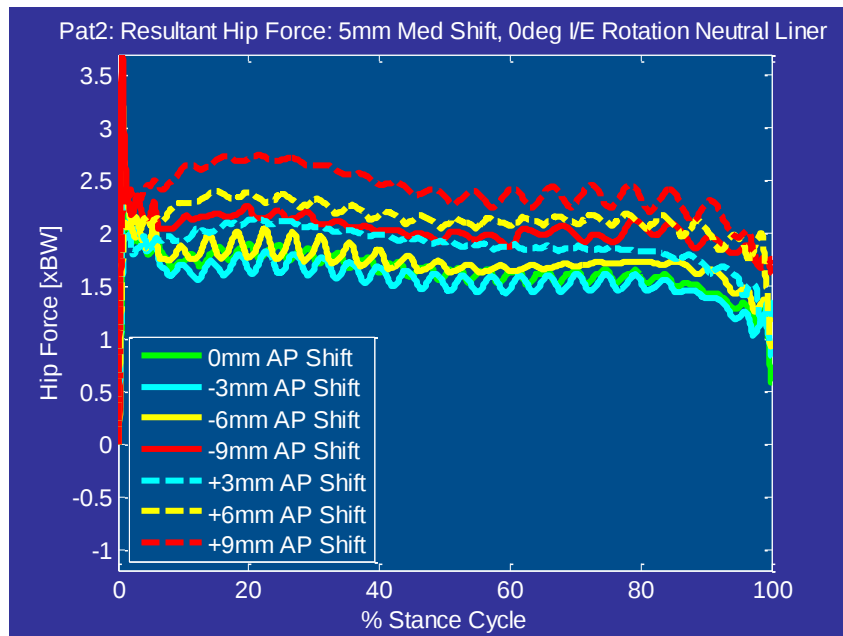
Figure E27: Pat 2: Neutral Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

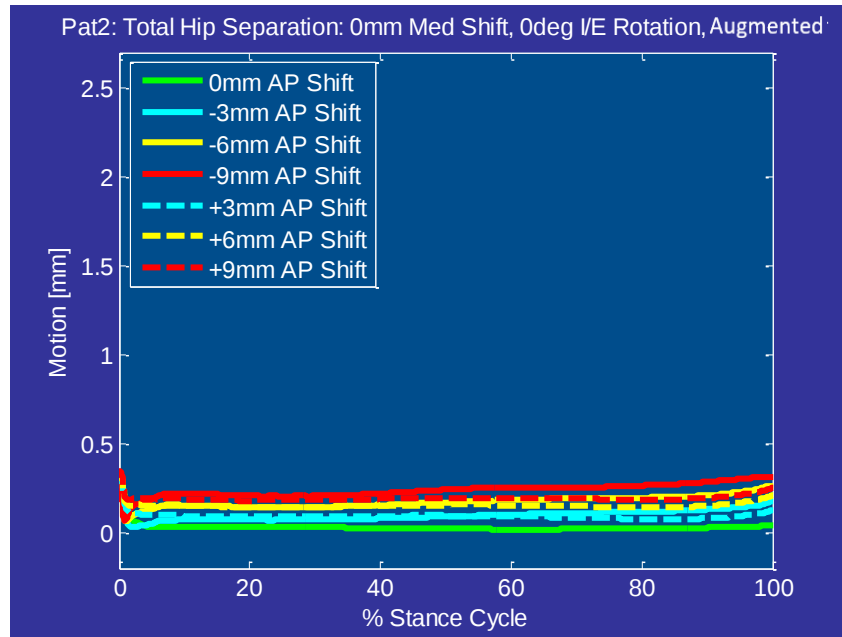


(b)

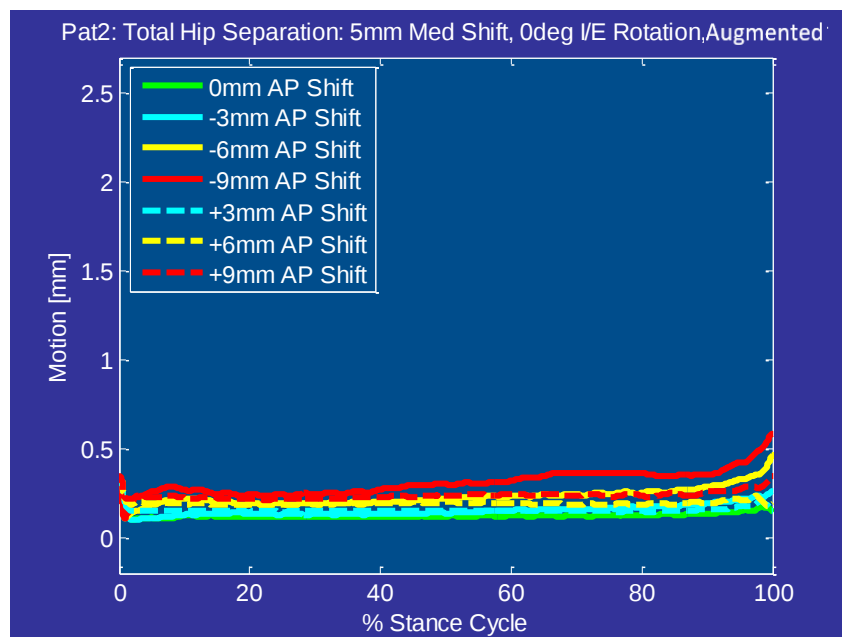
Figure E28: Pat 2: Neutral Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

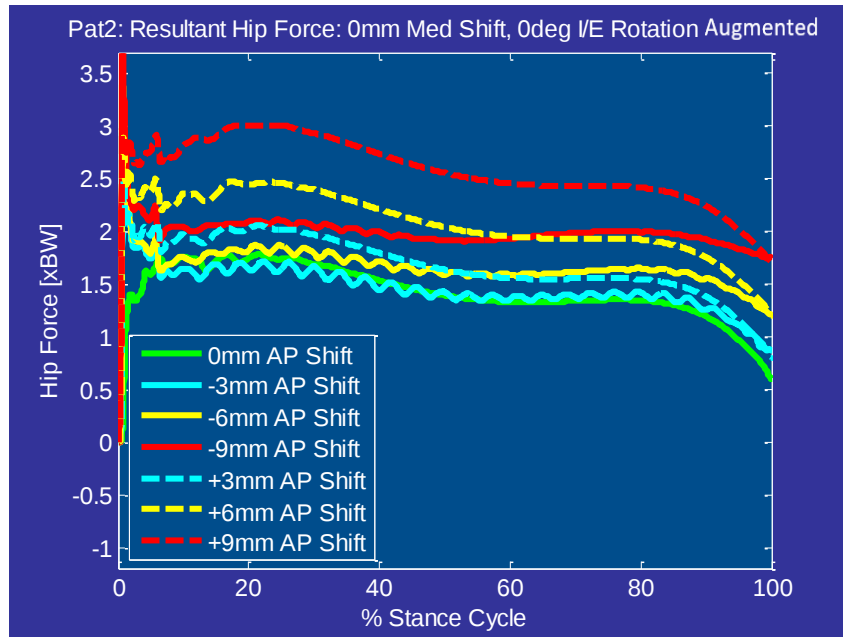


(b)

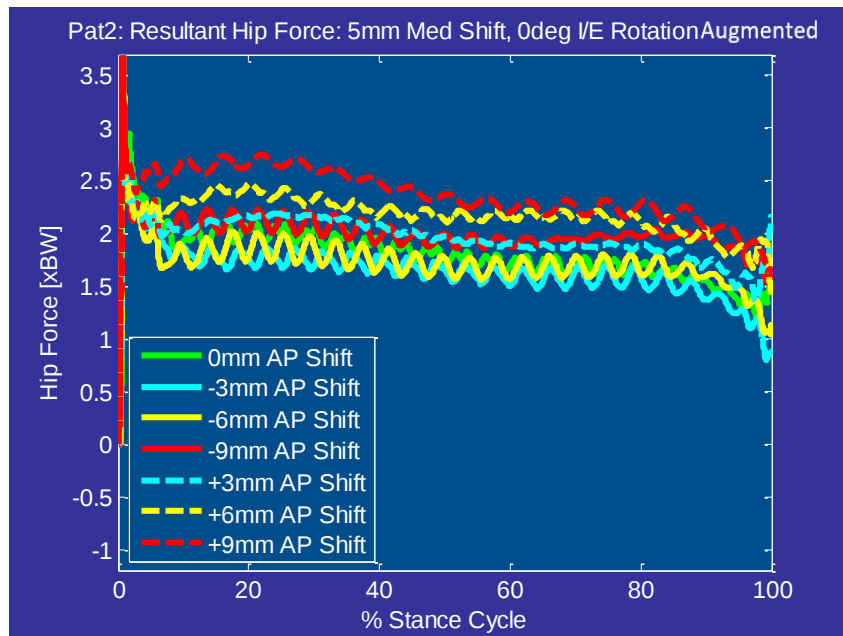
Figure E29: Pat 2: Augmented Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

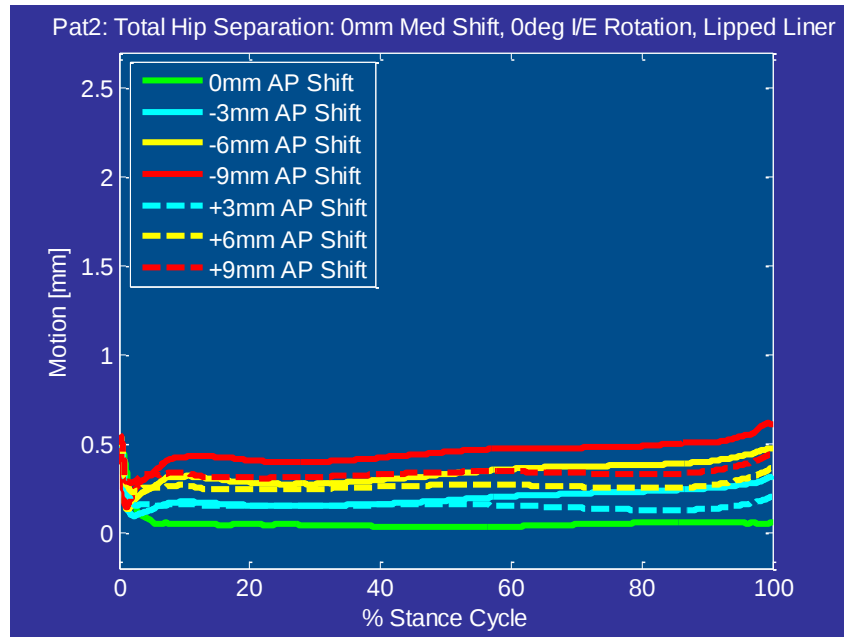


(b)

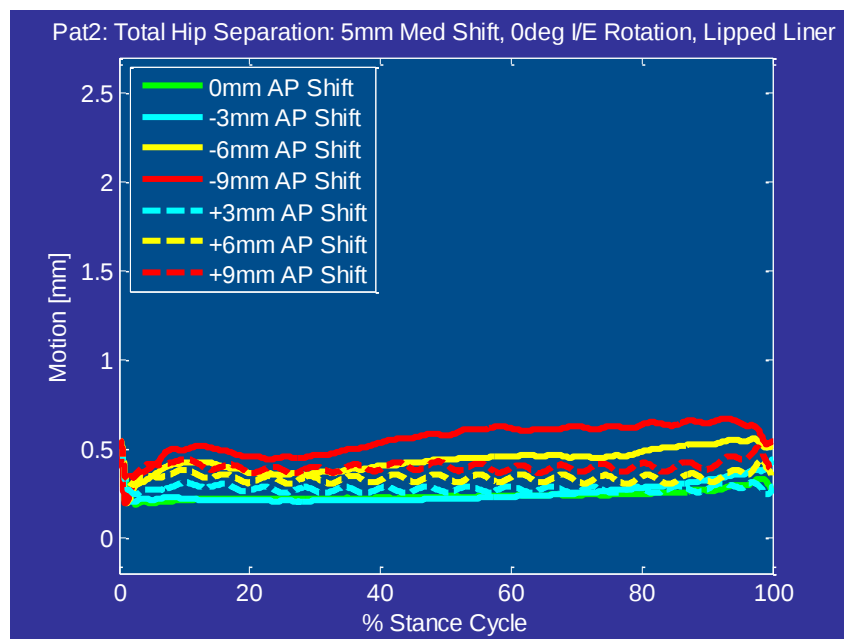
Figure E30: Pat 2: Augmented Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

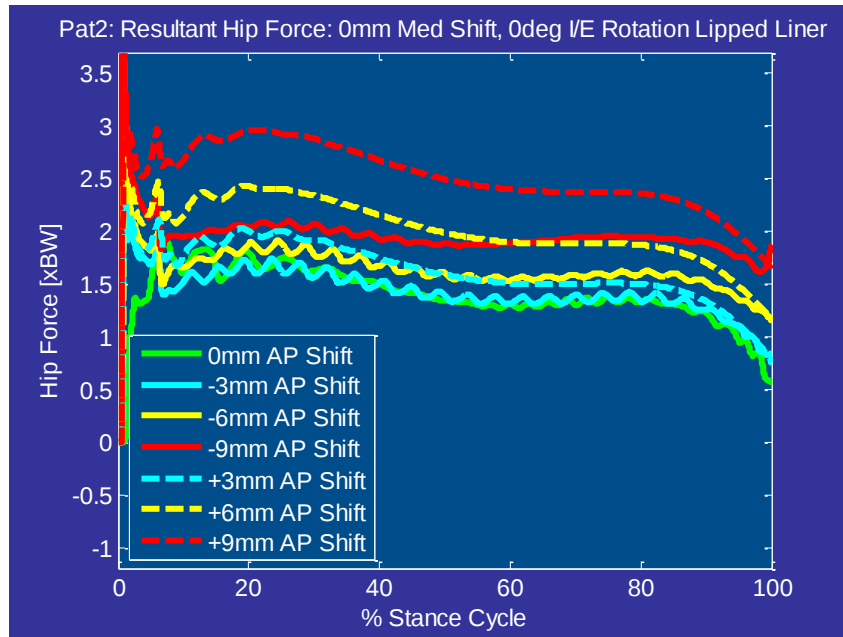


(b)

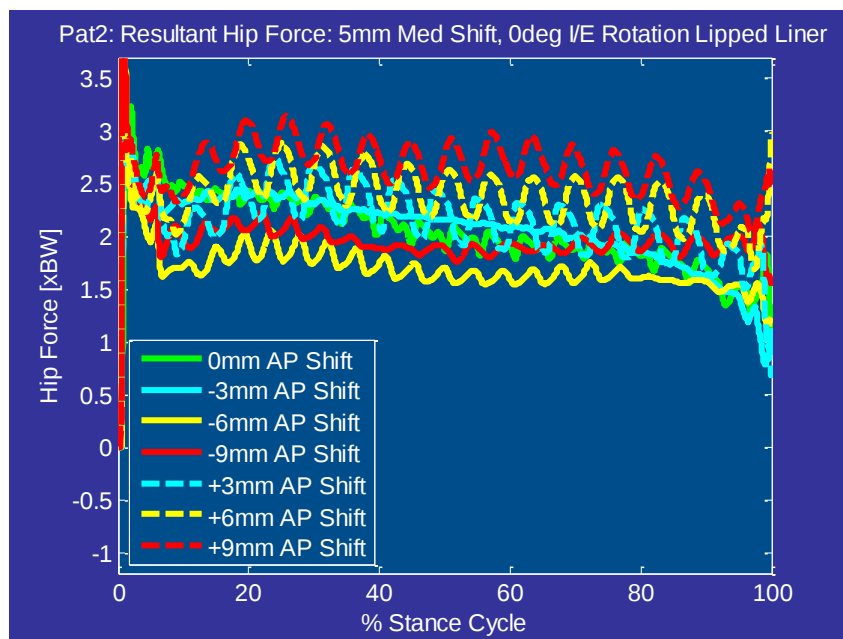
Figure E31: Pat 2: Lipped Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

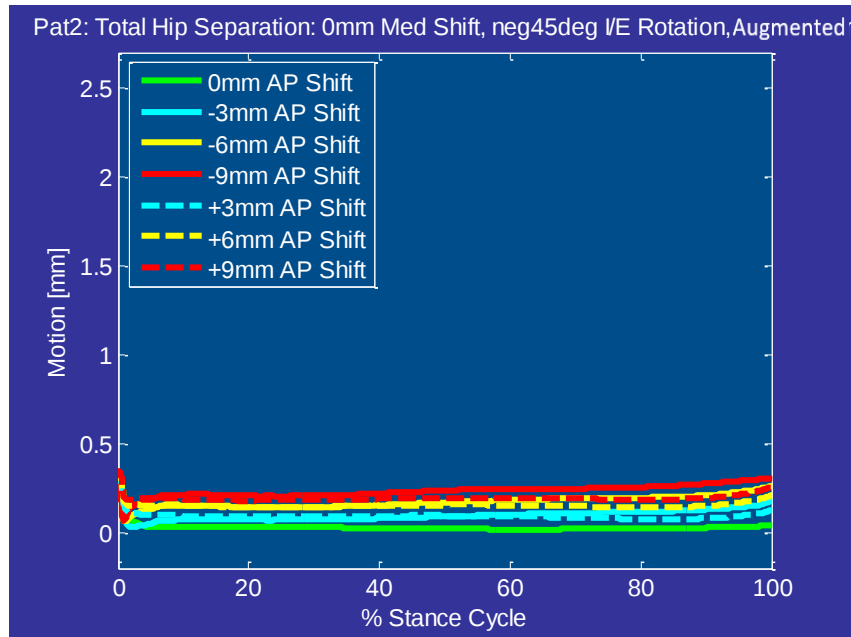


(b)

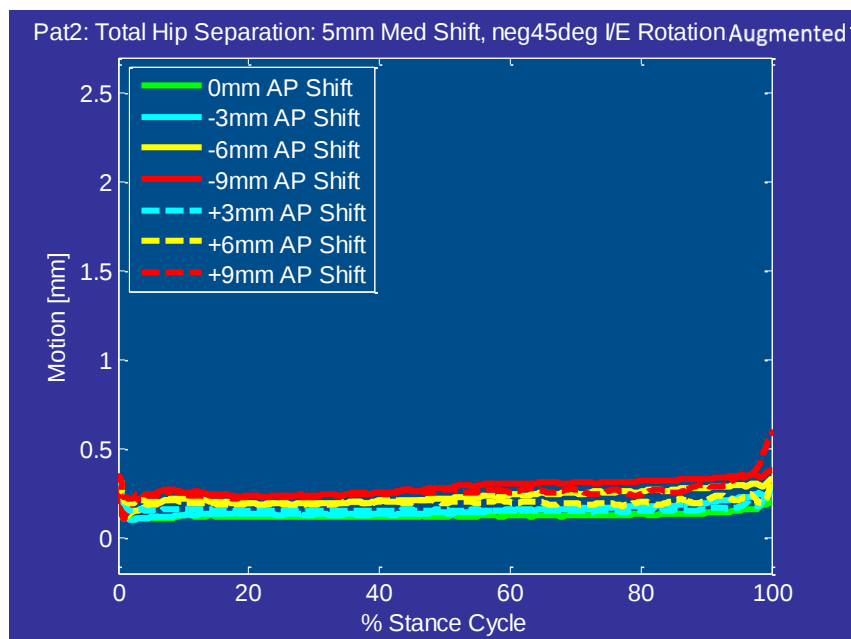
Figure E32: Pat 2: Lipped Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

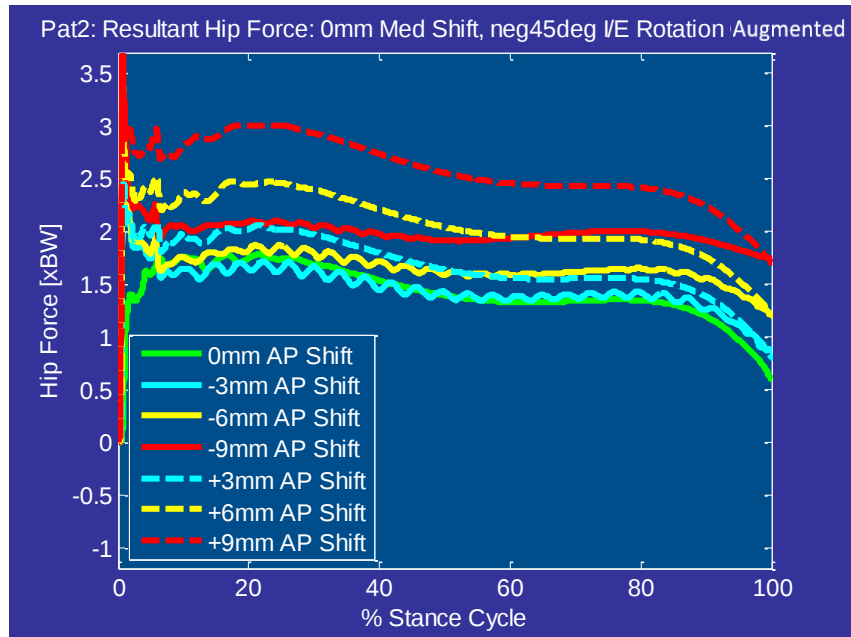


(b)

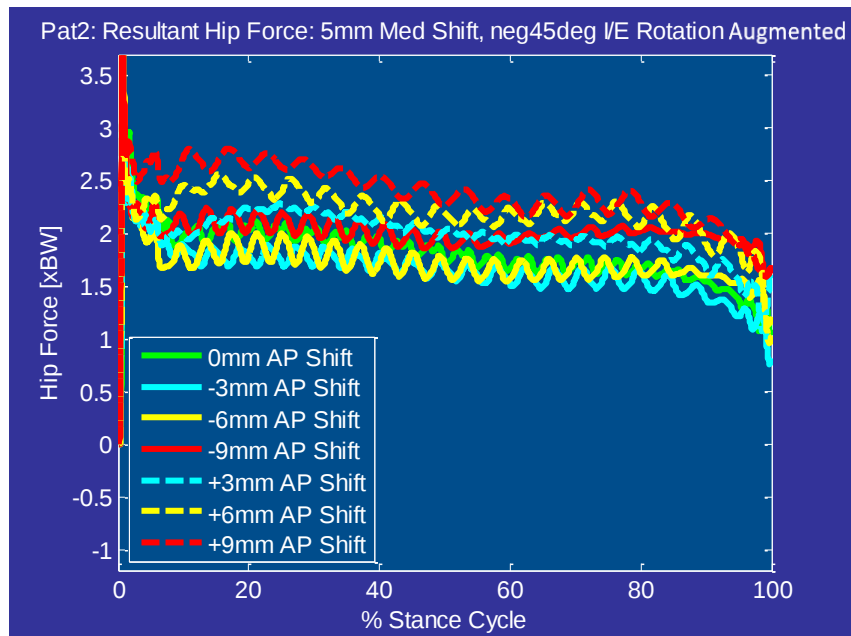
Figure E33: Pat 2: Augmented Liner: Separation

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

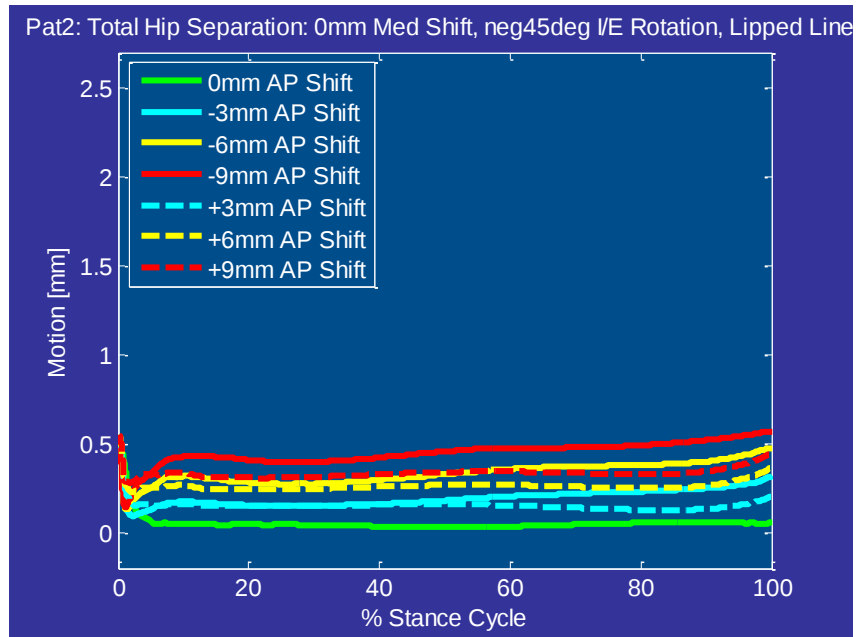


(b)

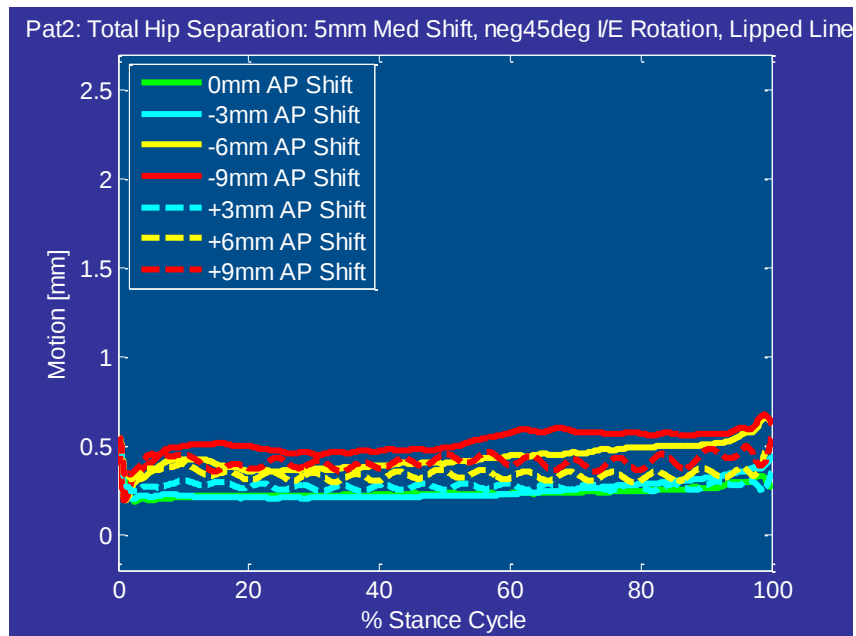
Figure E34: Pat 2: Augmented Liner: Hip Force

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

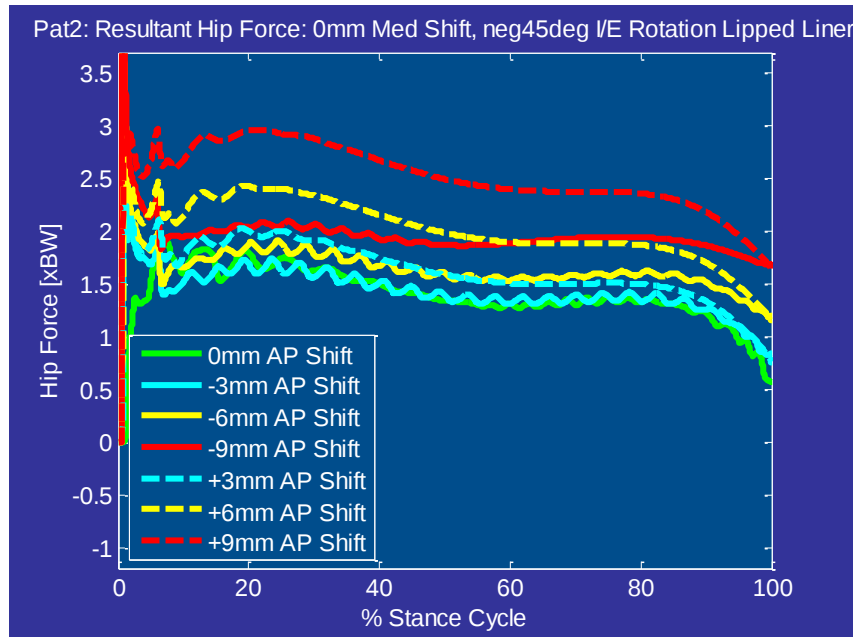


(b)

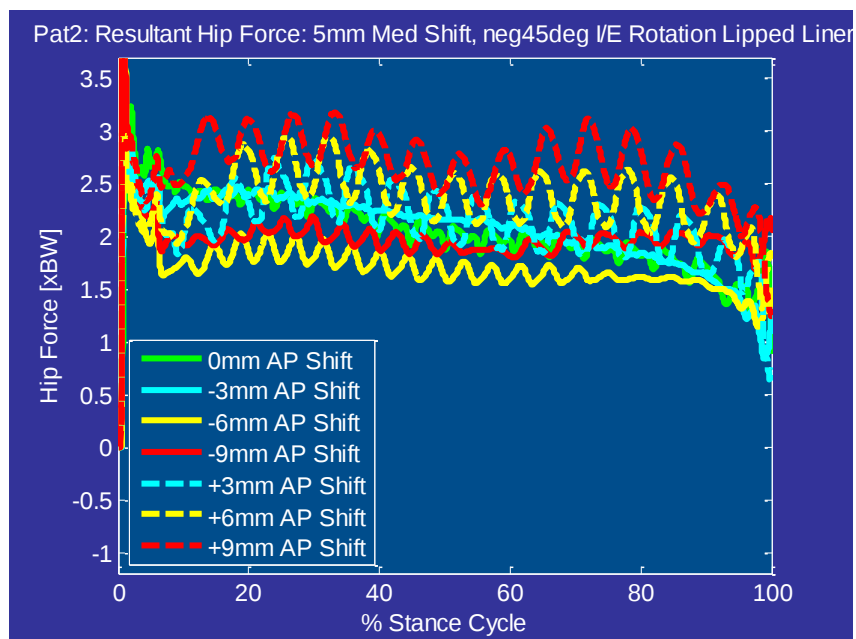
Figure E35: Pat 2: Lipped Liner: Separation

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

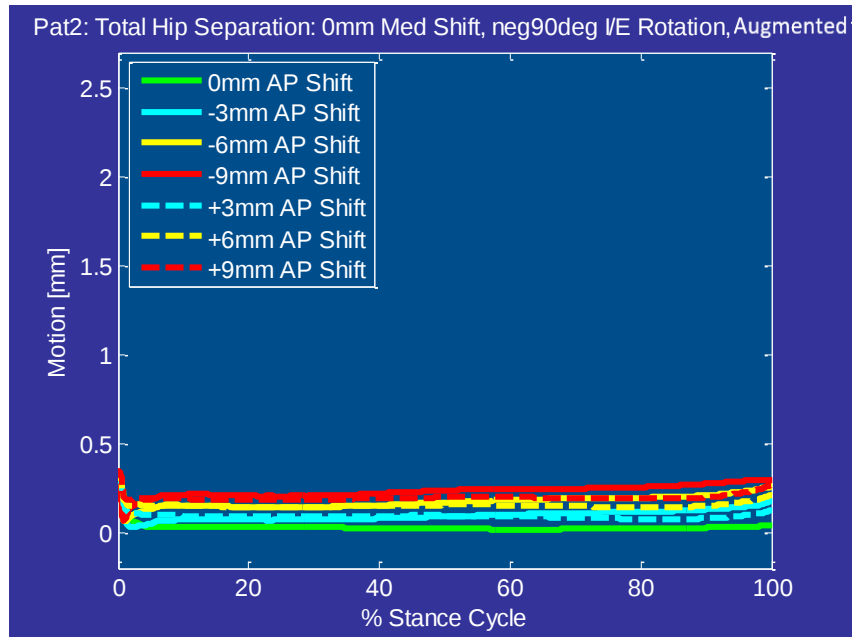


(b)

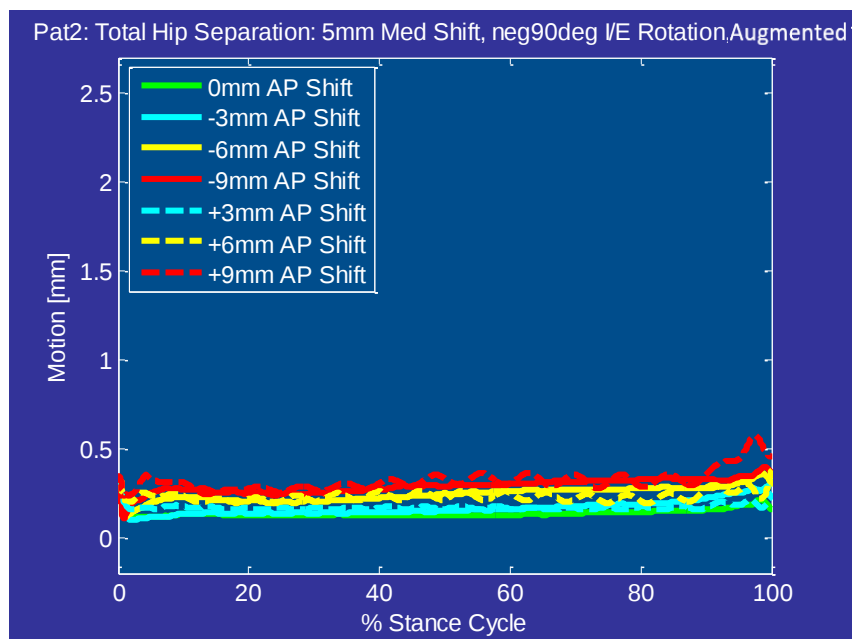
Figure E36: Pat 2: Lipped Liner: Hip Force

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

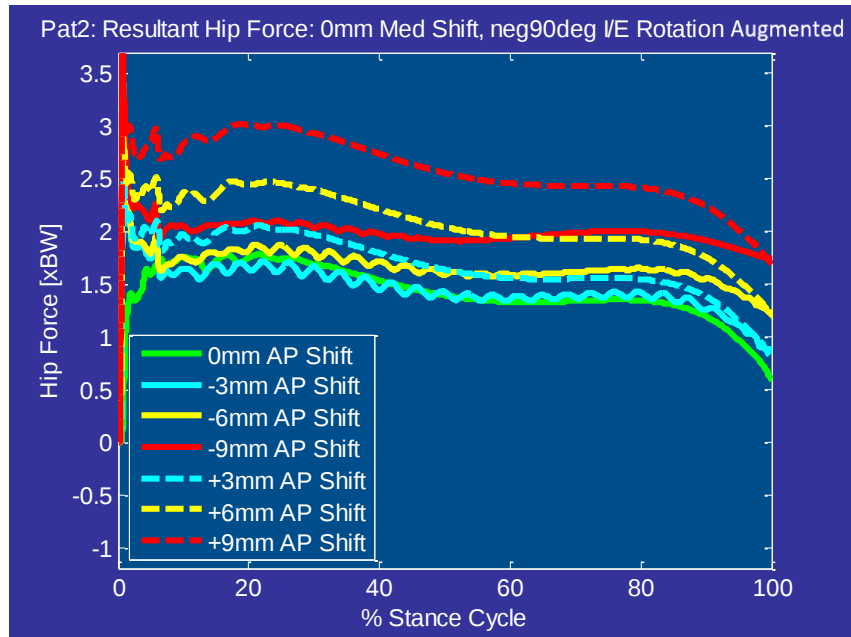


(b)

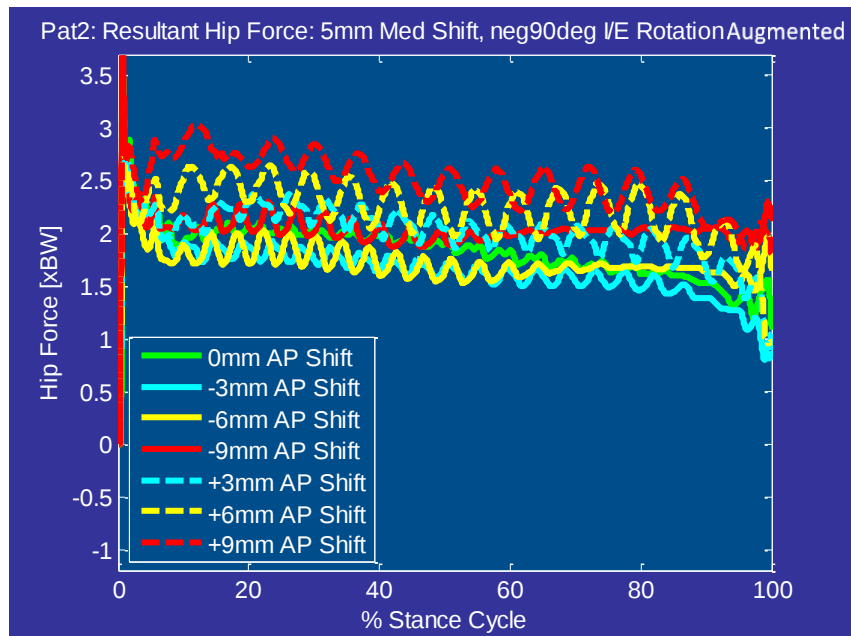
Figure E37: Pat 2: Augmented Liner: Separation

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

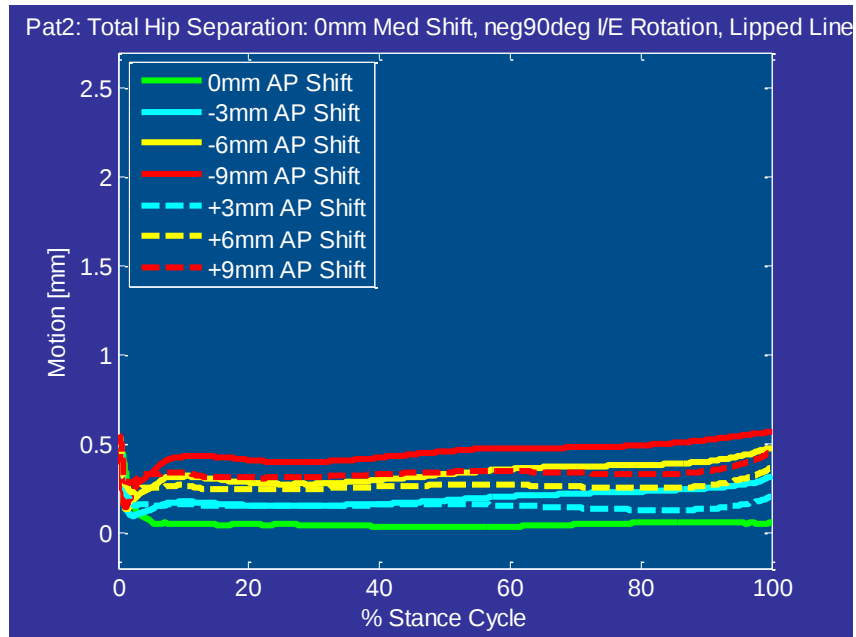


(b)

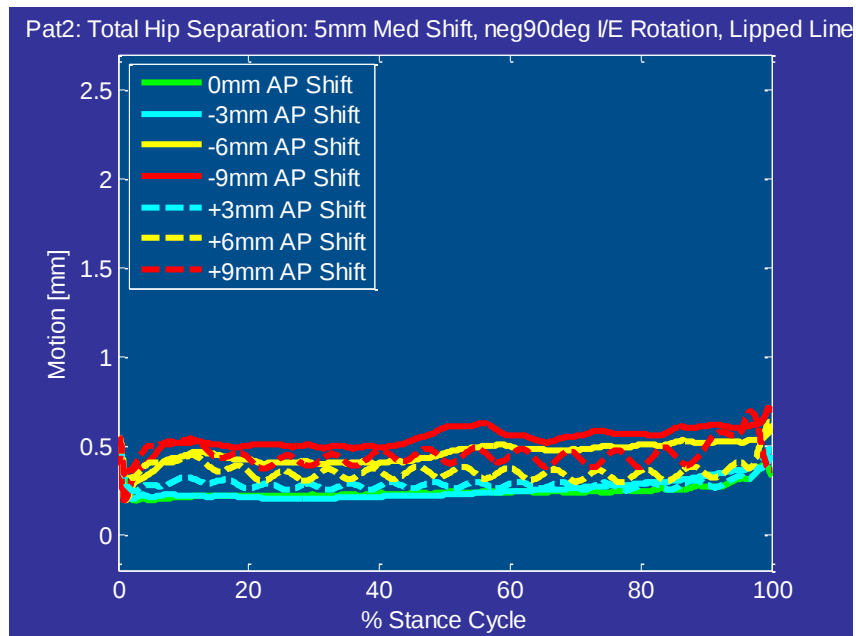
Figure E38: Pat 2: Augmented Liner: Hip Force

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

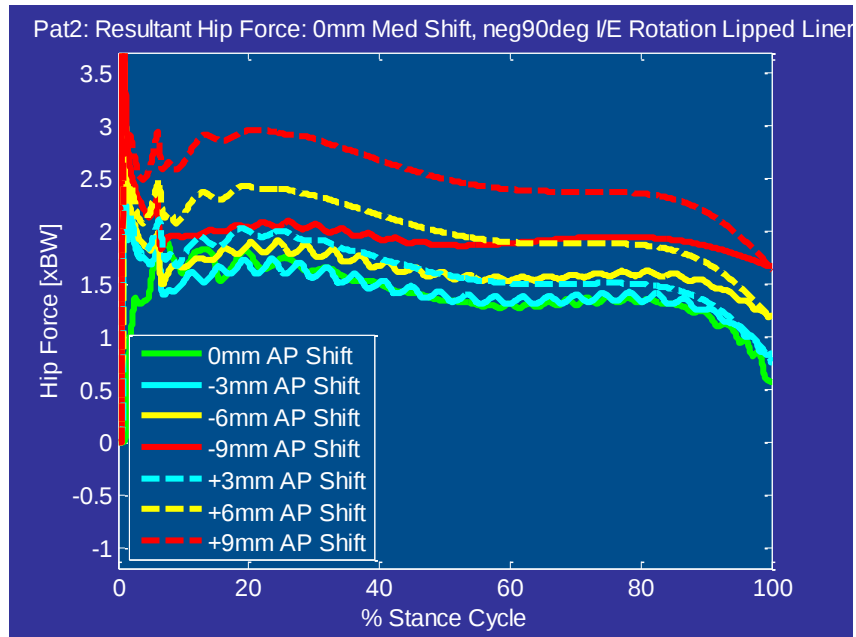


(b)

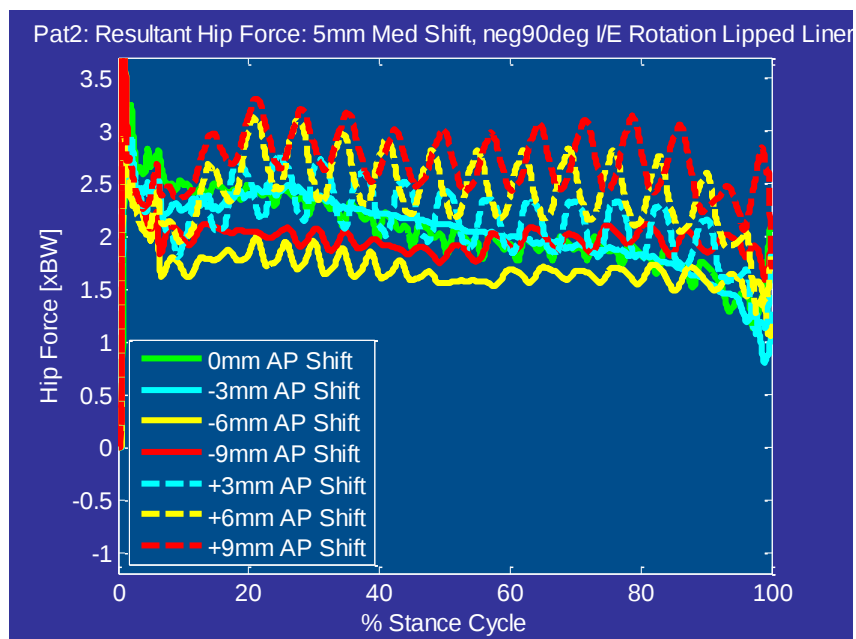
Figure E39: Pat 2: Lipped Liner: Separation

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

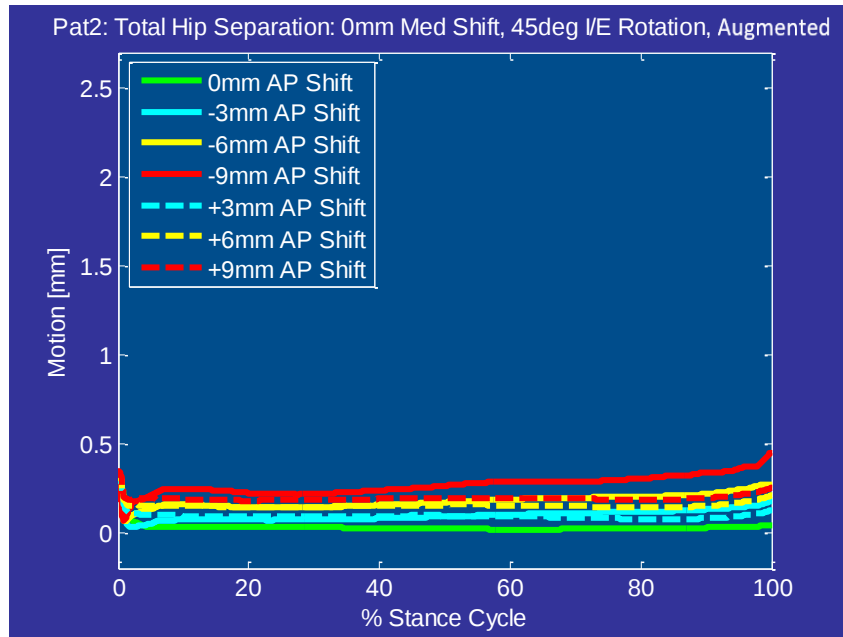


(b)

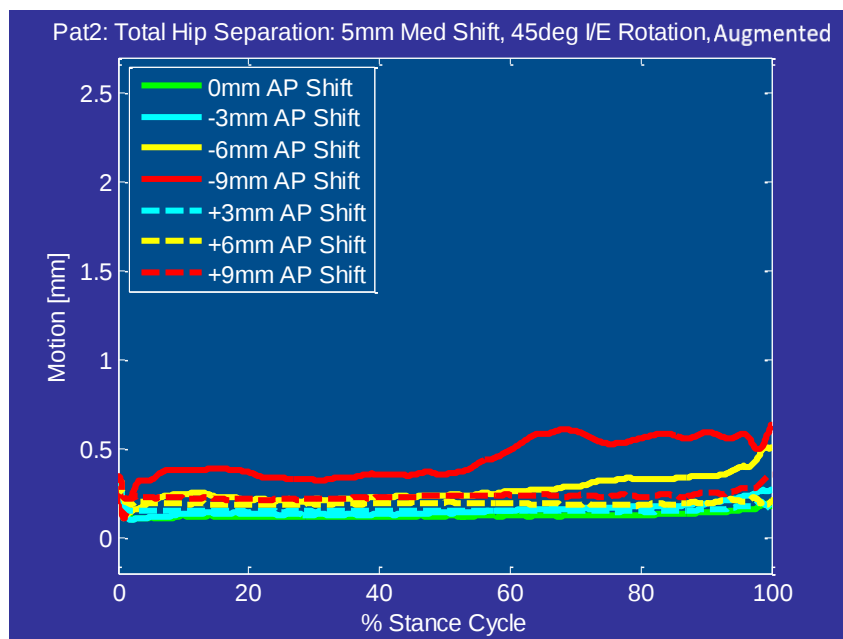
Figure E40: Pat 2: Lipped Liner: Hip Force

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

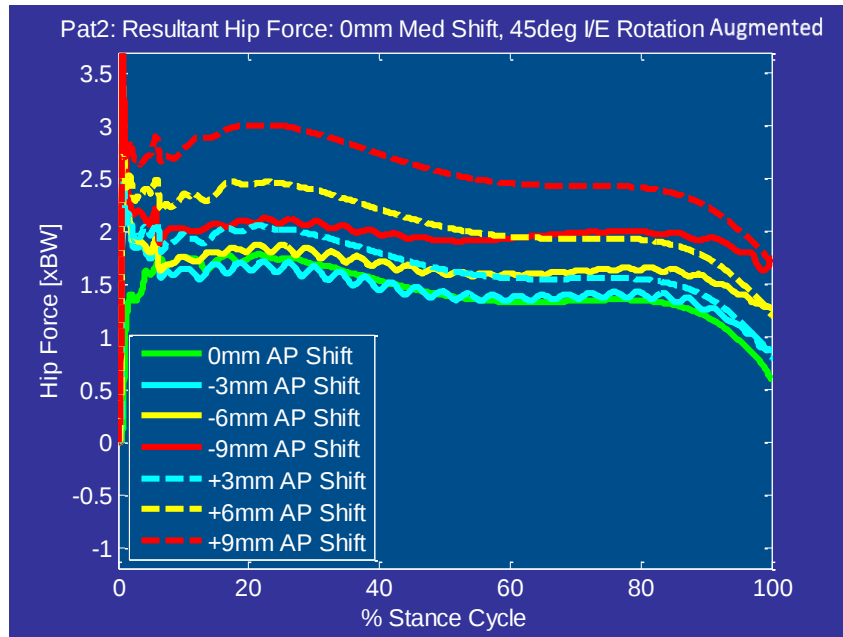


(b)

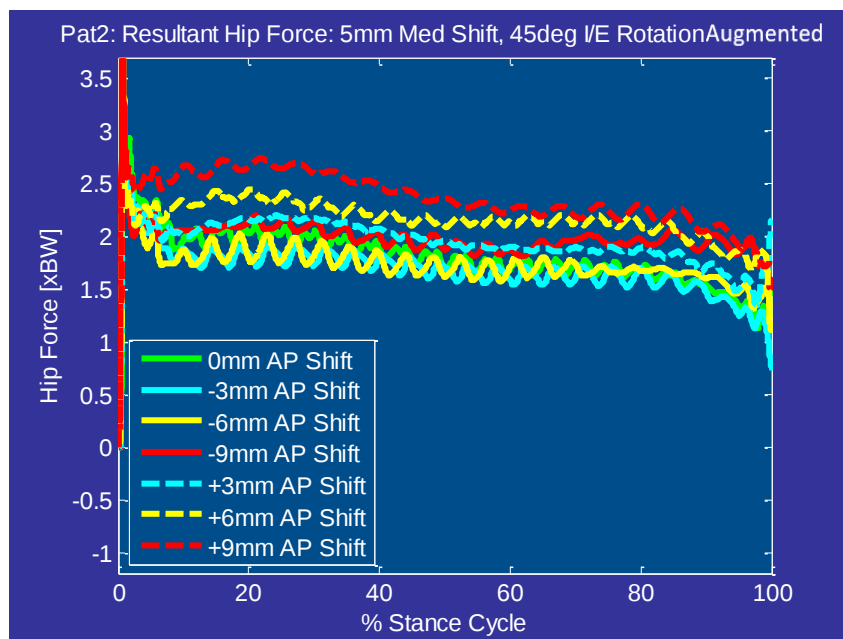
Figure E41: Pat 2: Augmented Liner: Separation

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

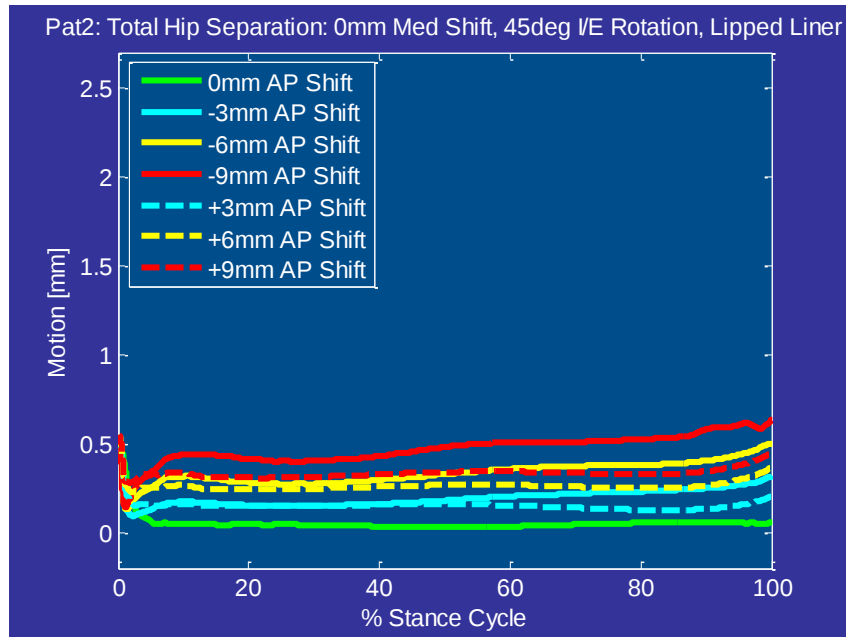


(b)

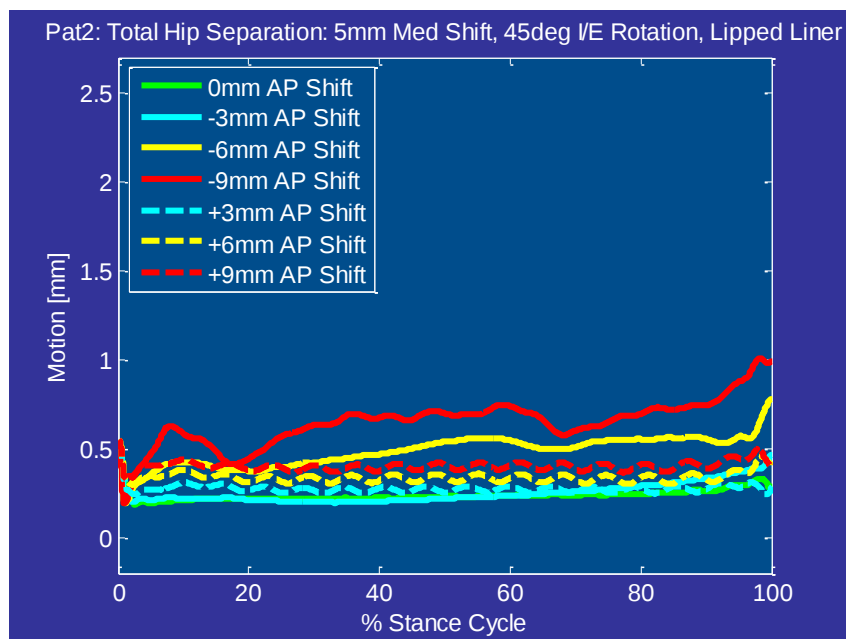
Figure E42: Pat 2: Augmented Liner: Hip Force

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

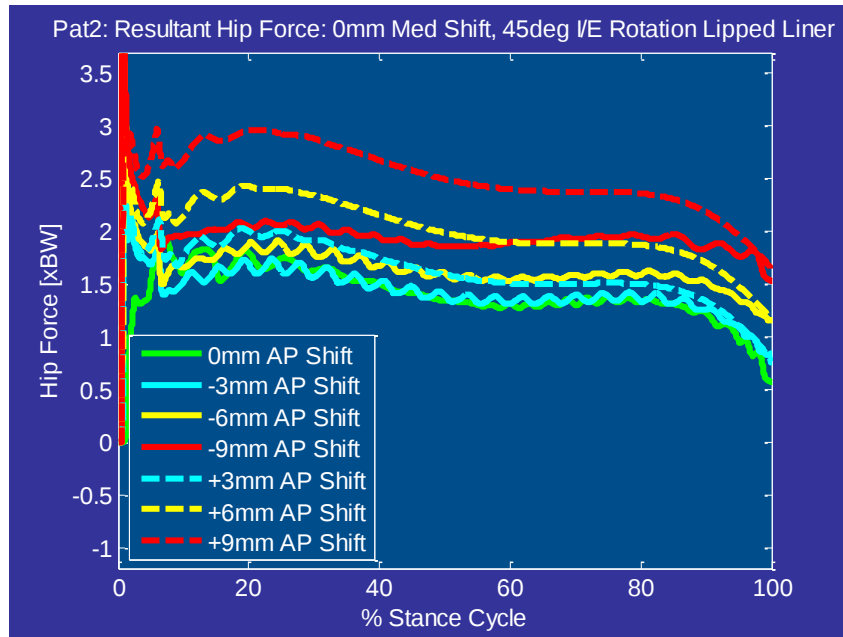


(b)

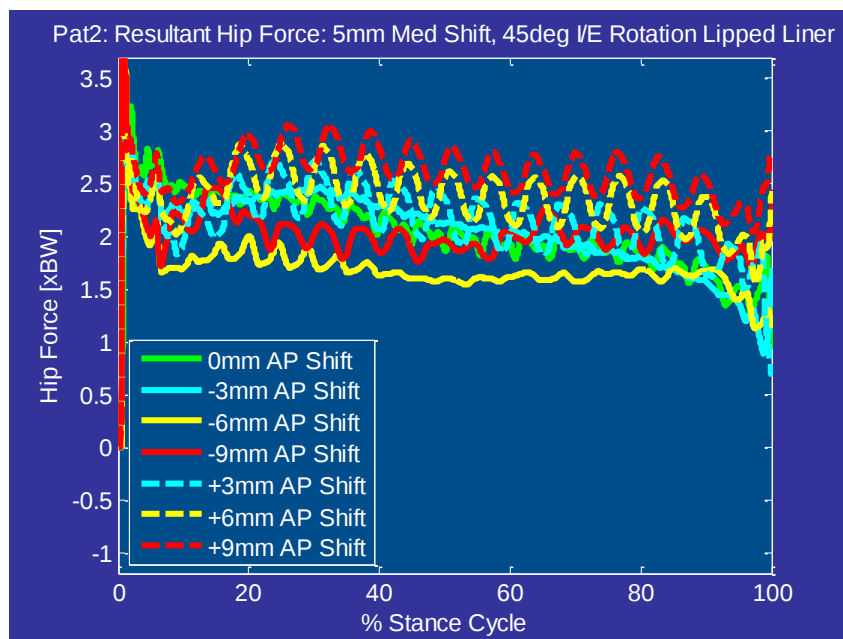
Figure E43: Pat 2: Lipped Liner: Separation

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

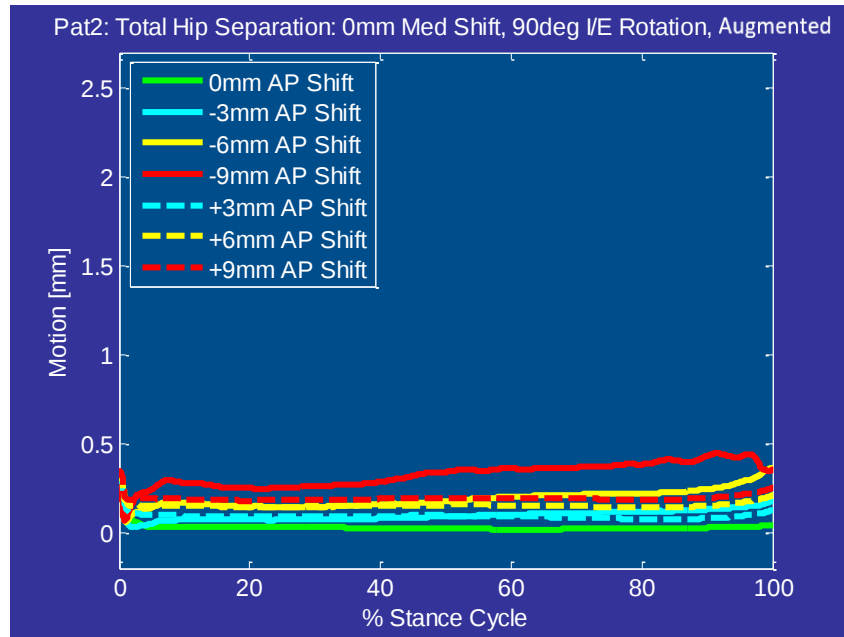


(b)

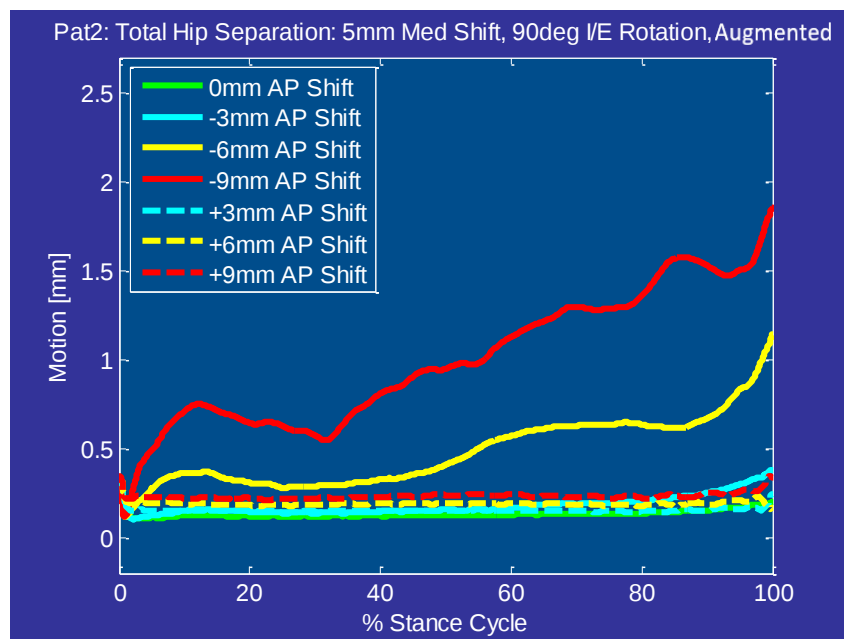
Figure E44: Pat 2: Lipped Liner: Hip Force

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

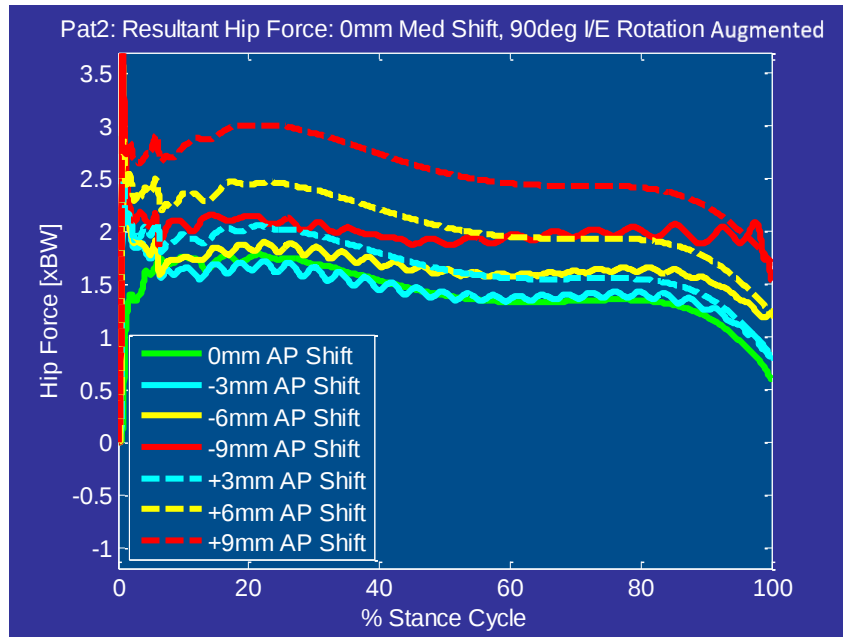


(b)

Figure E45: Pat 2: Augmented Liner: Separation

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

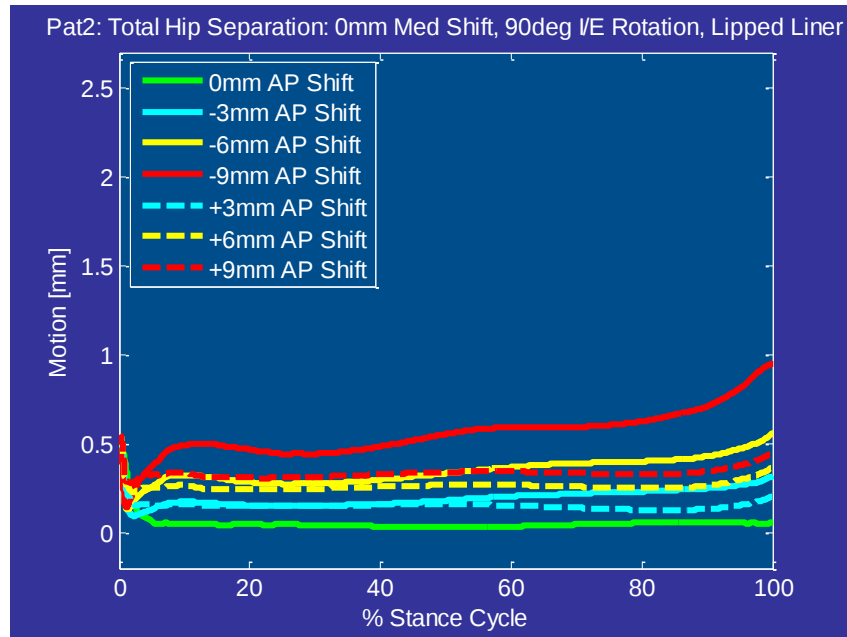


(b)

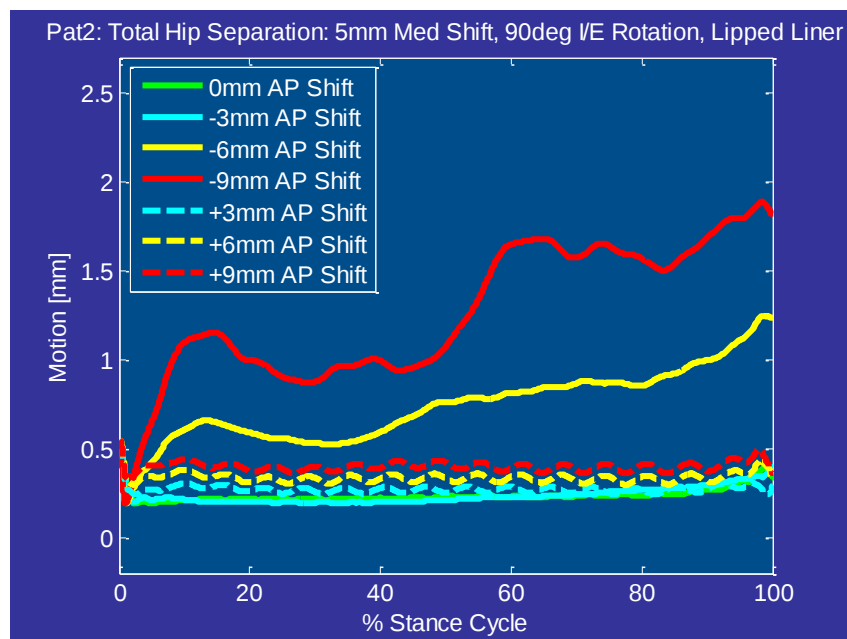
Figure E46: Pat 2: Augmented Liner: Hip Force

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

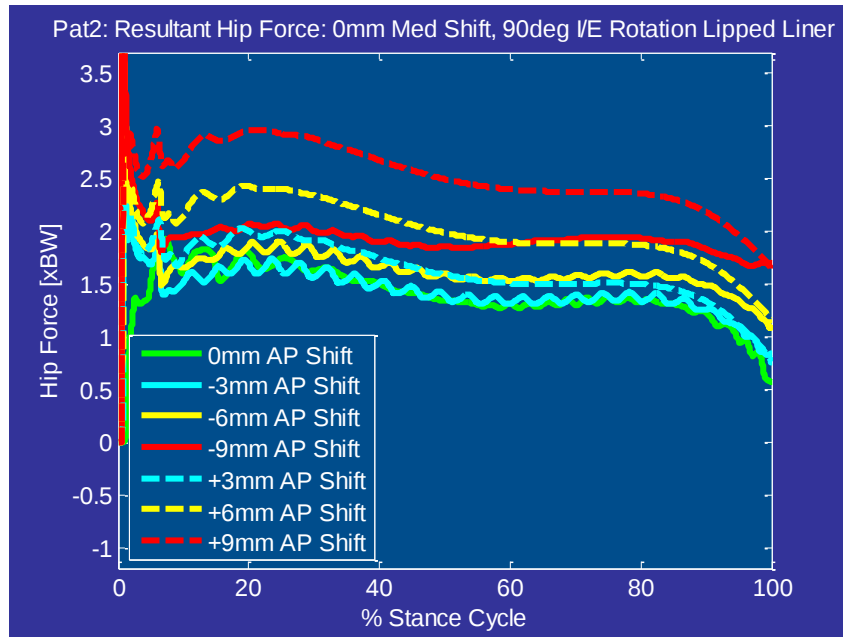


(b)

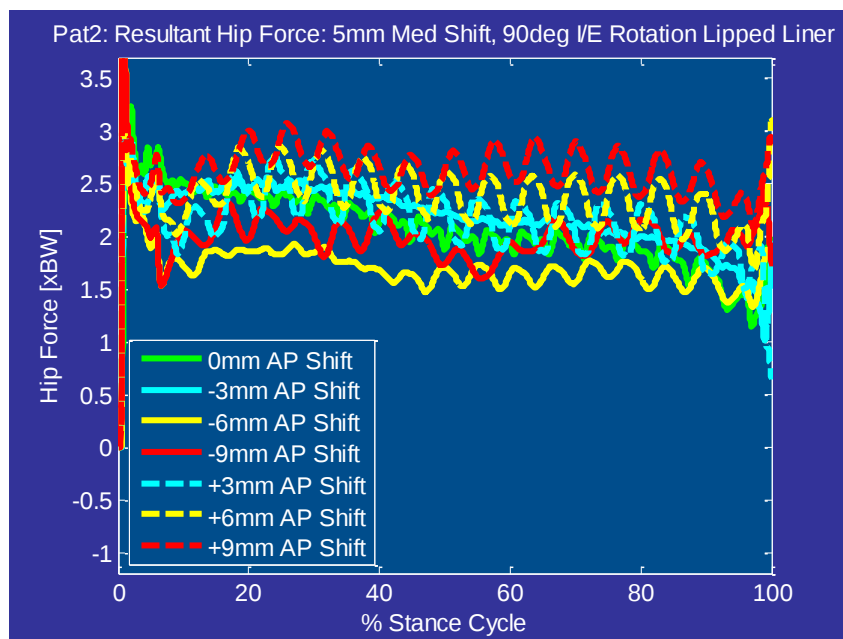
Figure E47: Pat 2: Lipped Liner: Separation

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

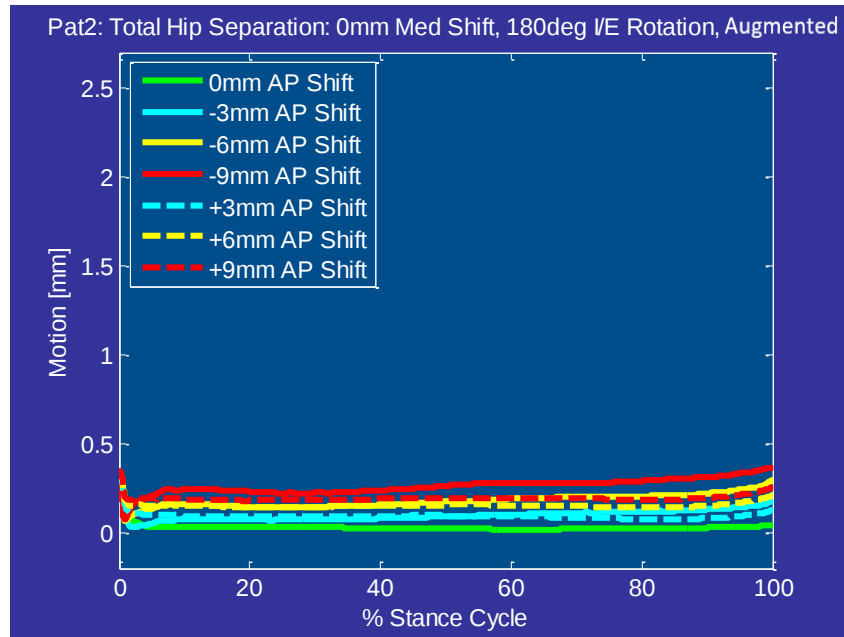


(b)

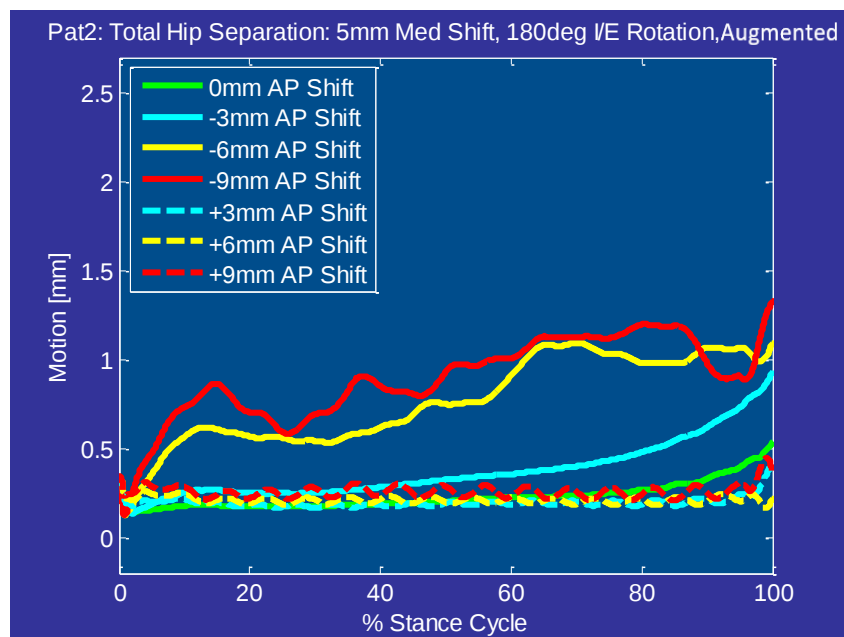
Figure E48: Pat 2: Lipped Liner: Hip Force

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

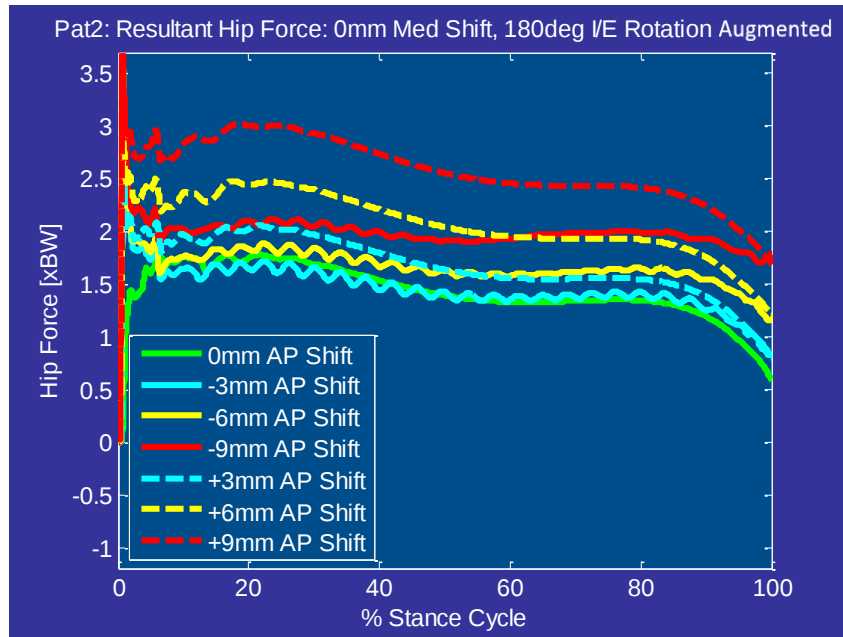


(b)

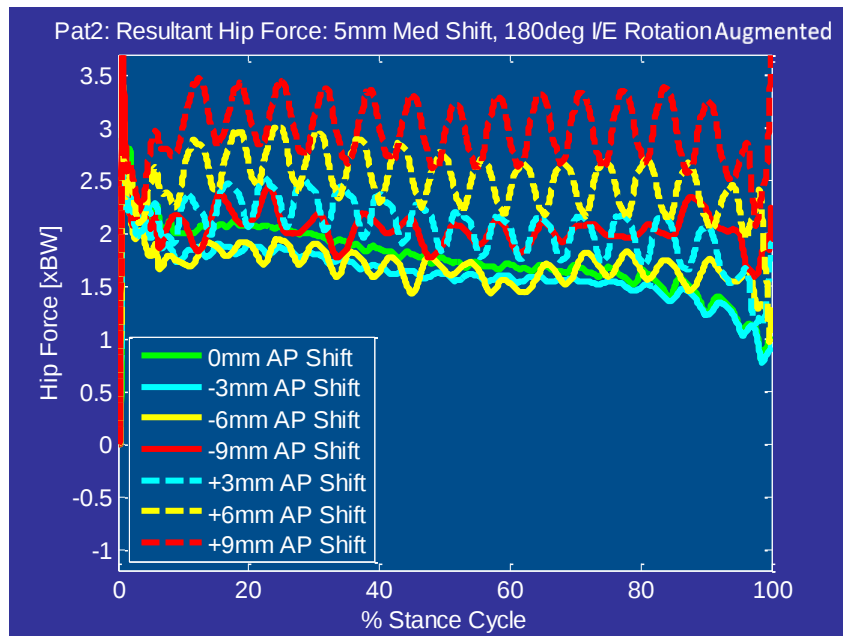
Figure E49: Pat 2: Augmented Liner: Separation

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

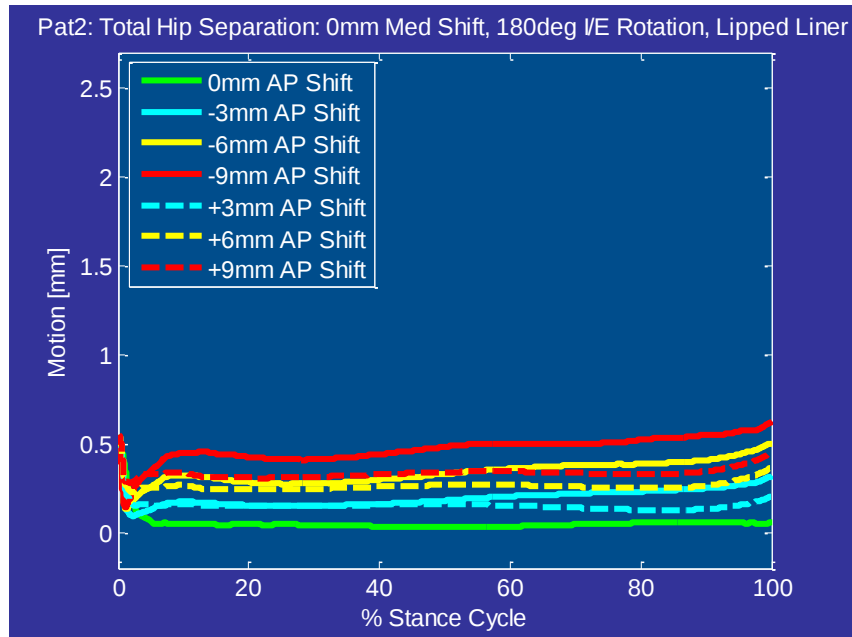


(b)

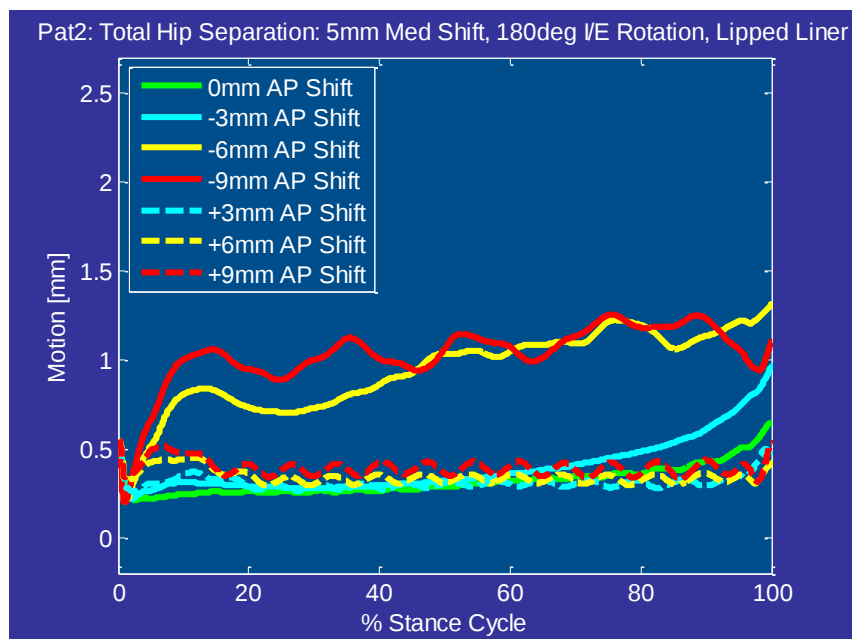
Figure E50: Pat 2: Augmented Liner: Hip Force

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

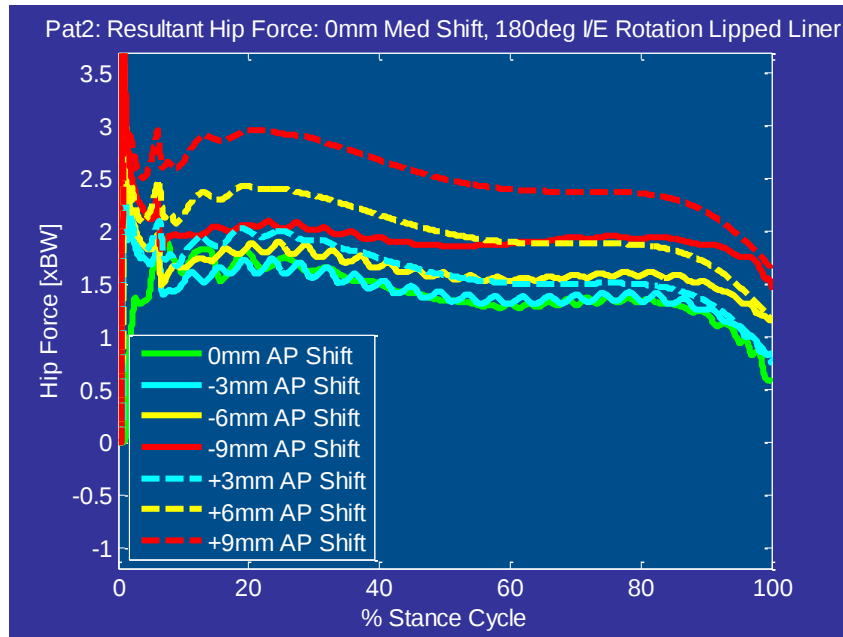


(b)

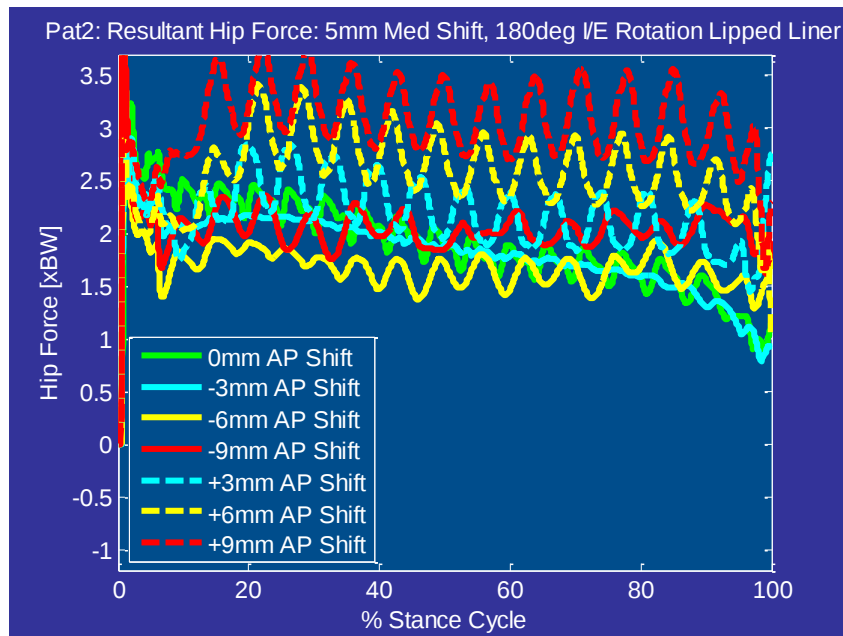
Figure E51: Pat 2: Lipped Liner: Separation

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

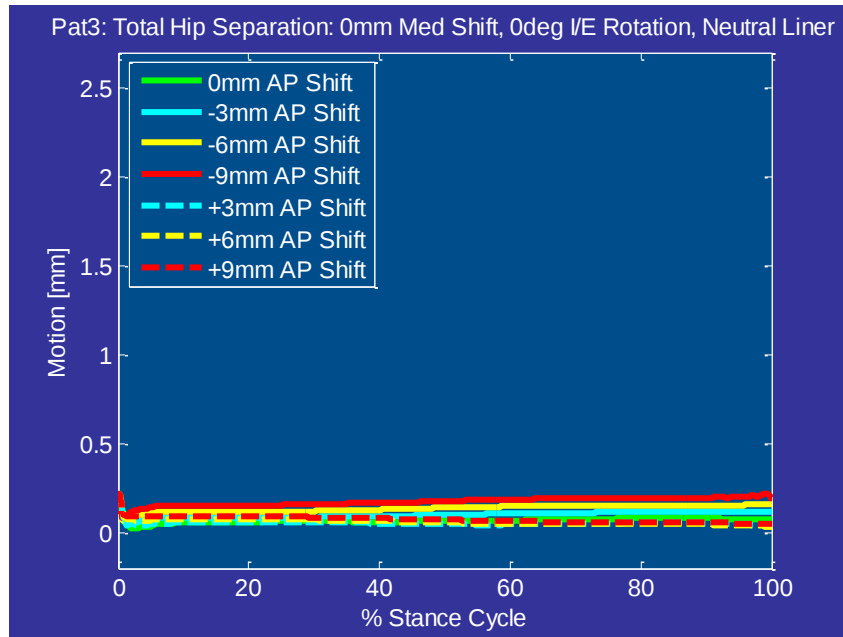


(b)

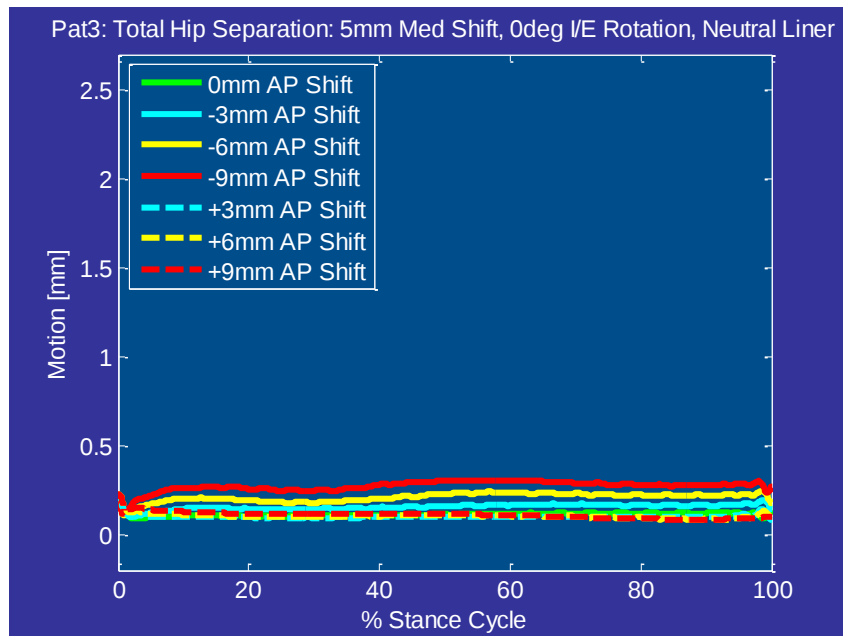
Figure E52: Pat 2: Lipped Liner: Hip Force

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

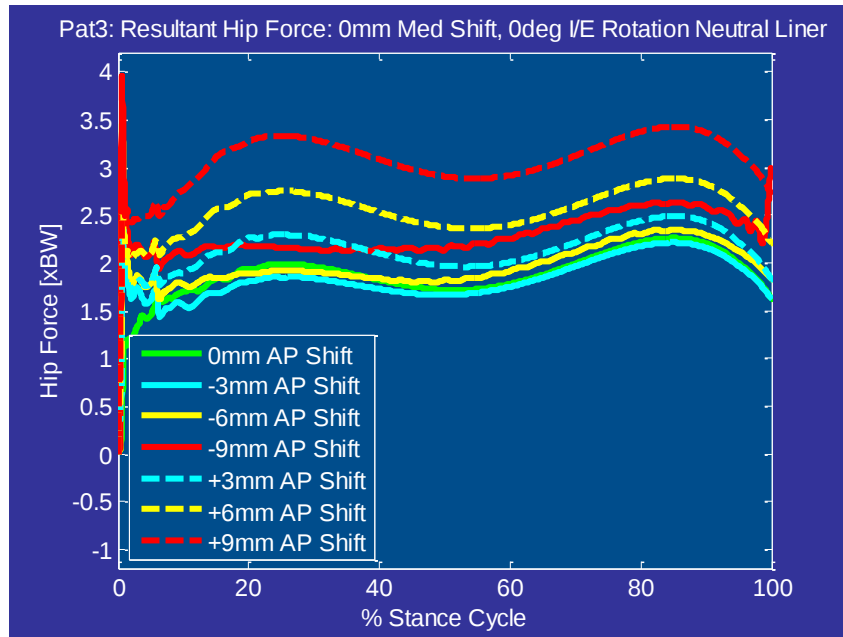


(b)

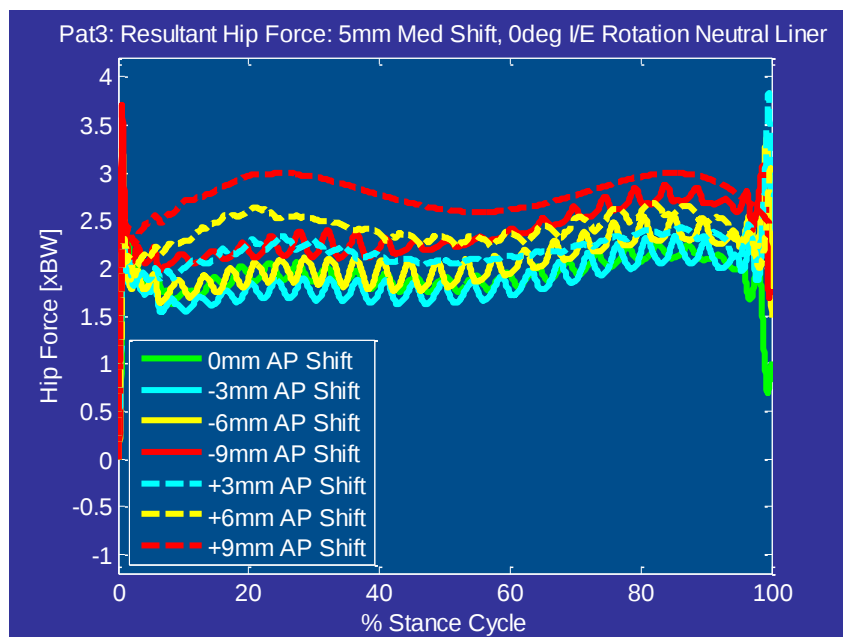
Figure E53: Pat 3: Neutral Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

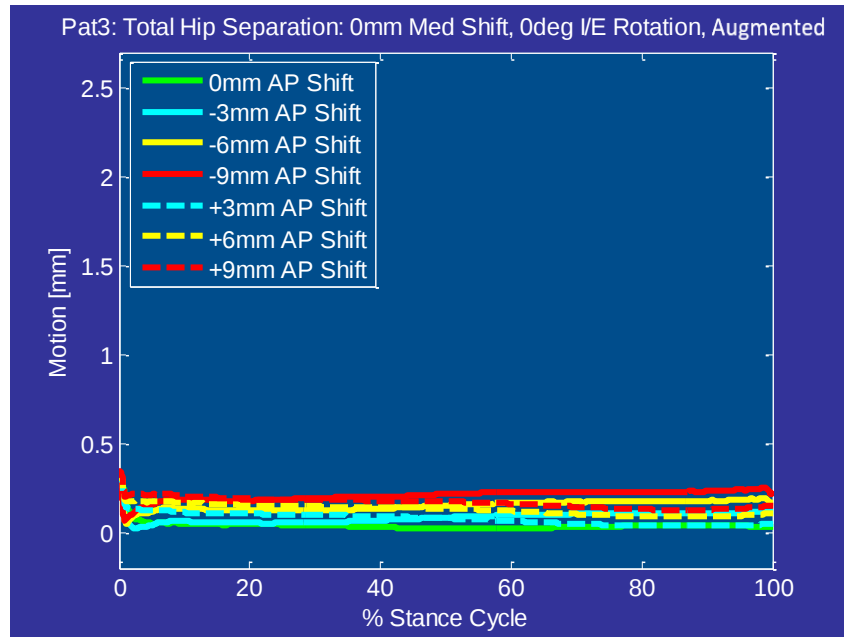


(b)

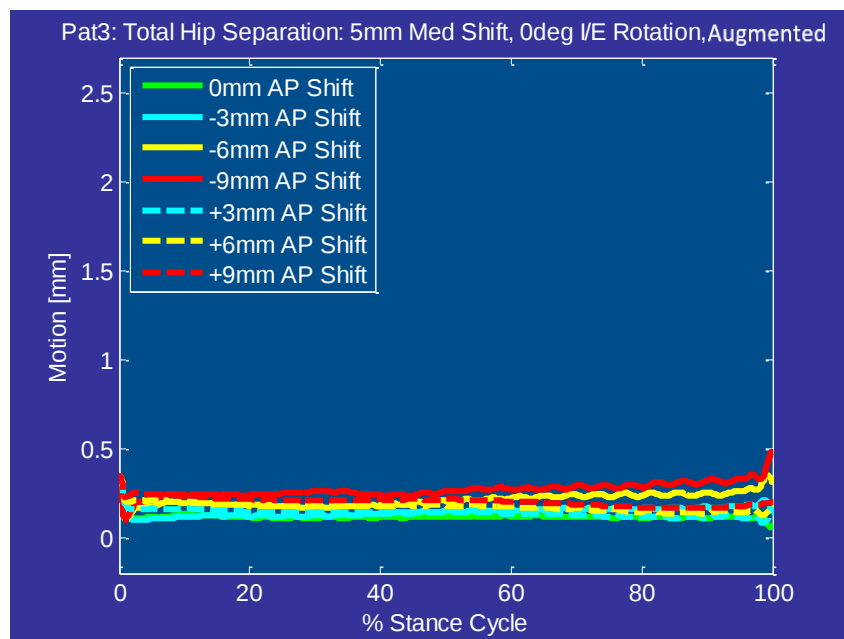
Figure E54: Pat 3: Neutral Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

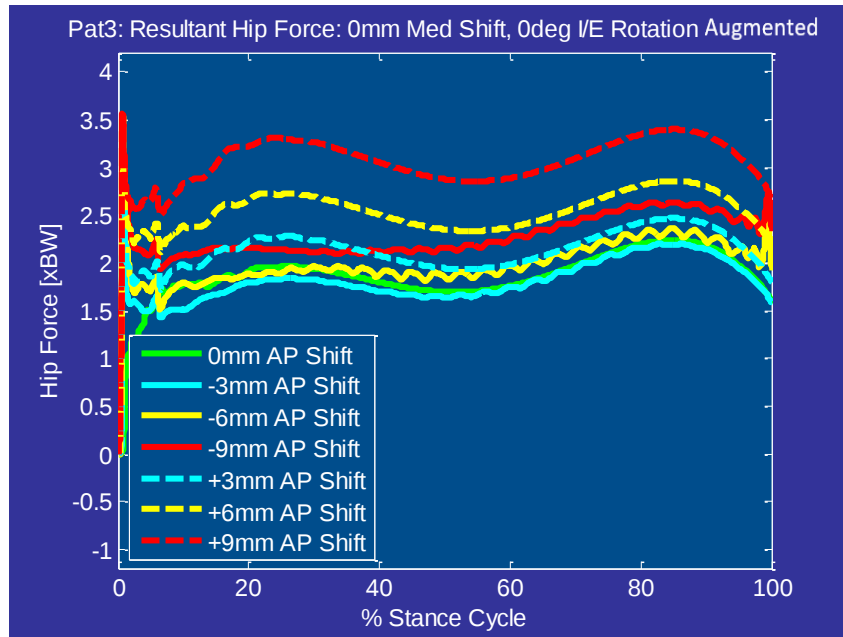


(b)

Figure E55: Pat 3: Augmented Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

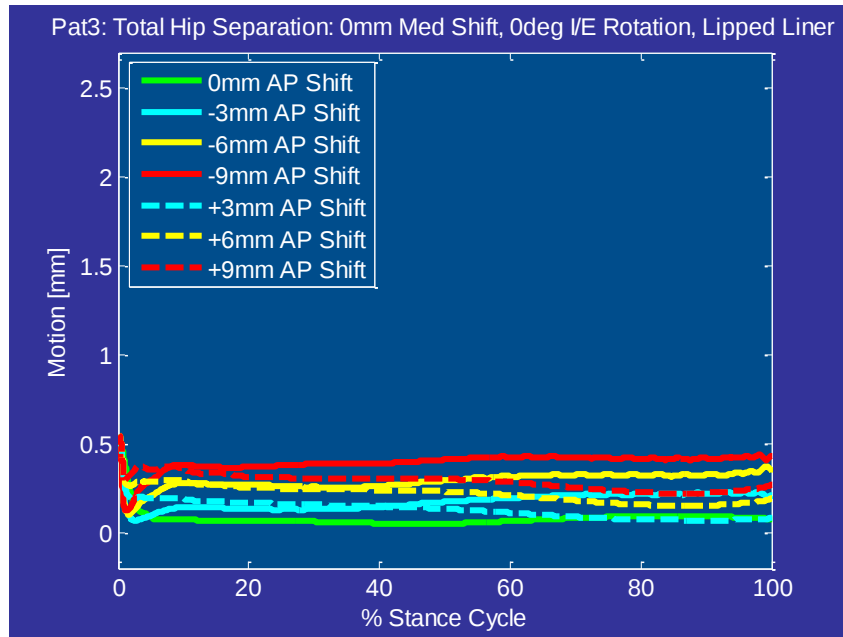


(b)

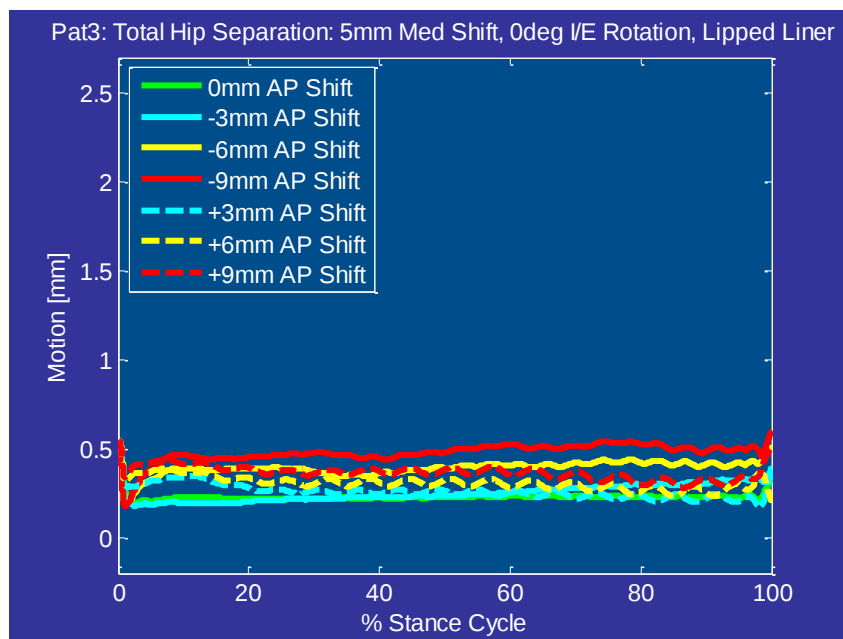
Figure E56: Pat 3: Augmented Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

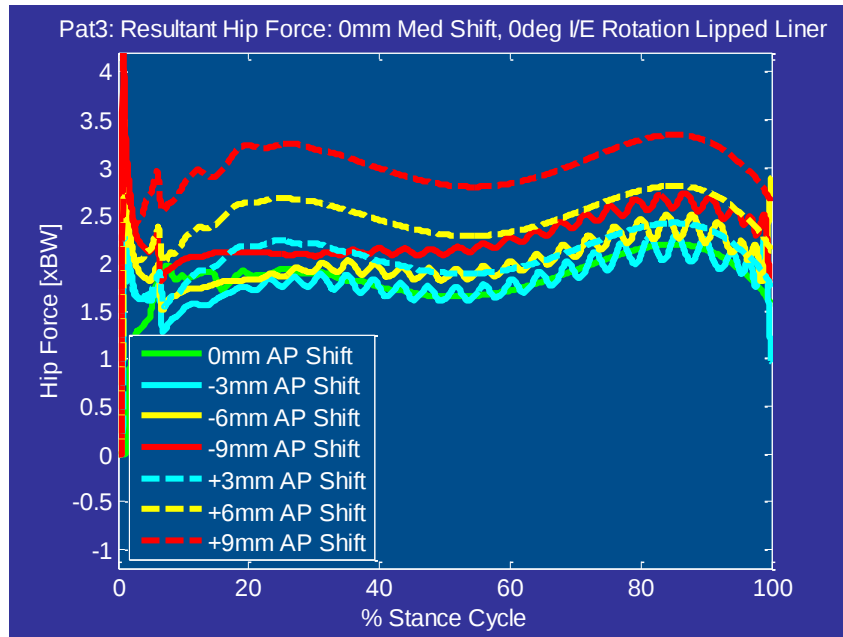


(b)

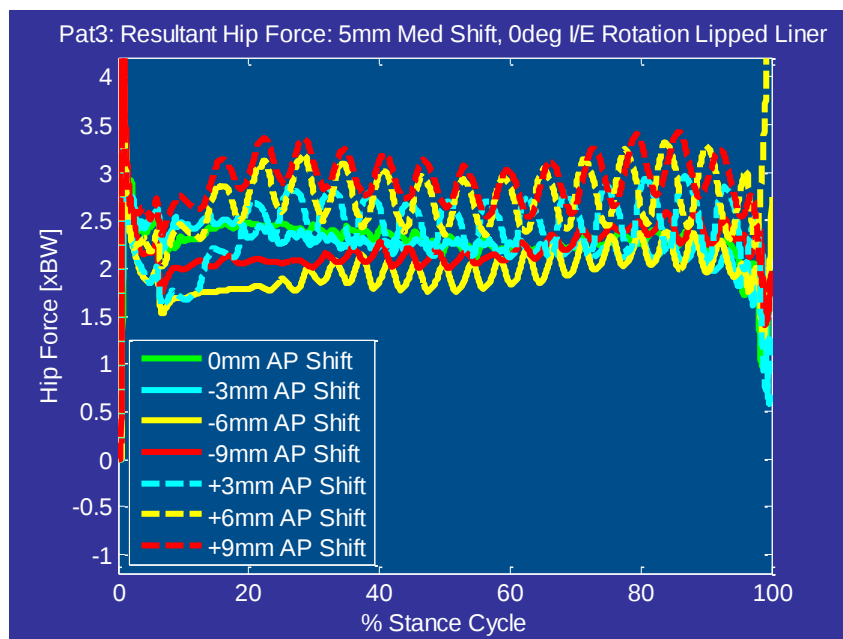
Figure E57: Pat 3: Lipped Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

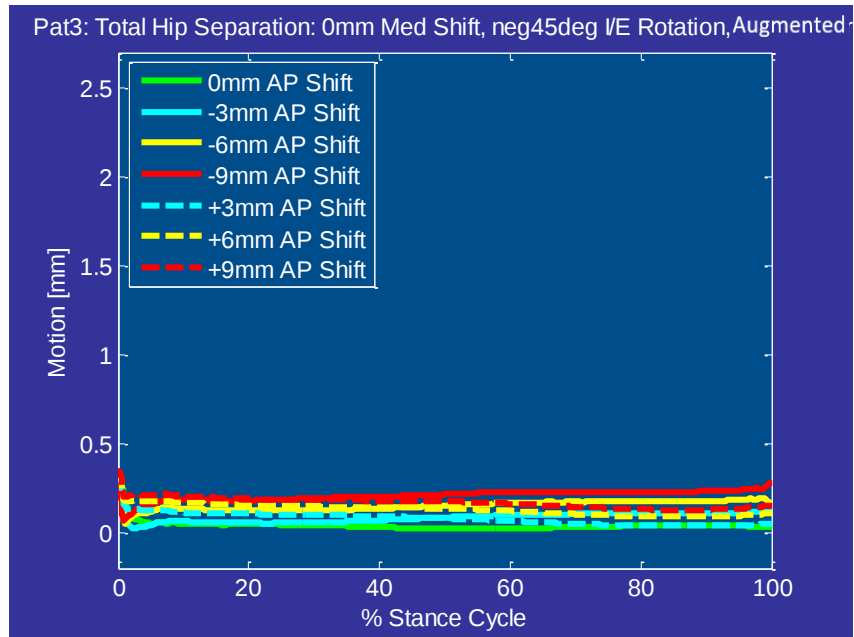


(b)

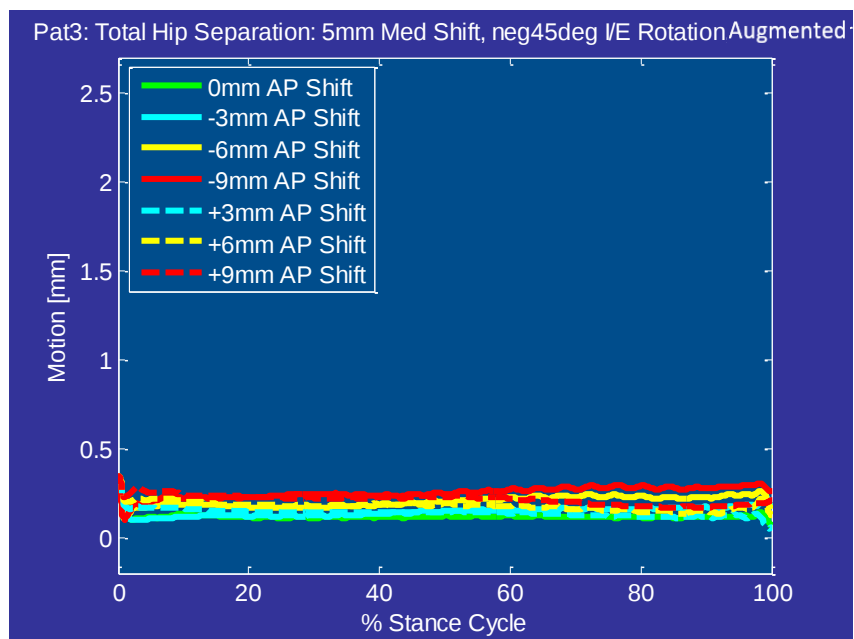
Figure E58: Pat 3: Lipped Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

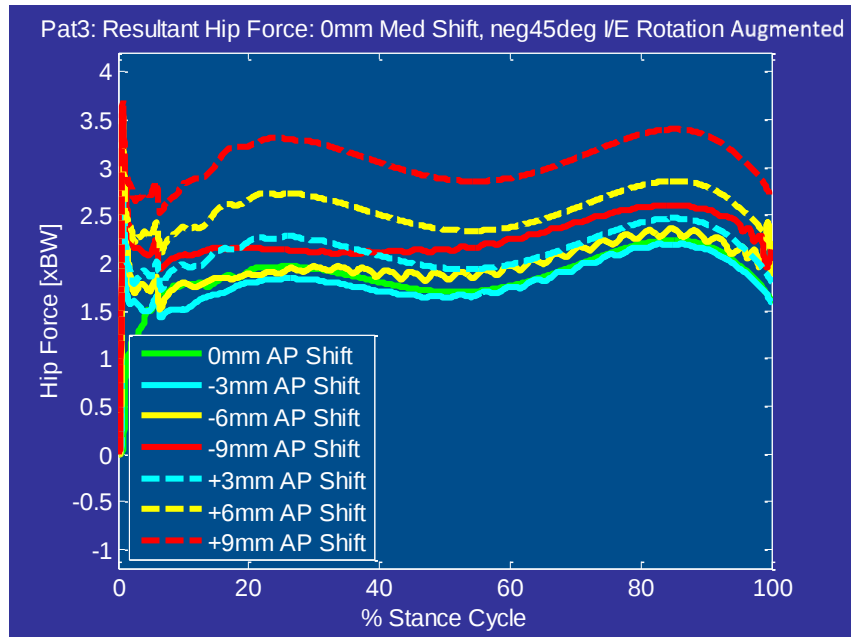


(b)

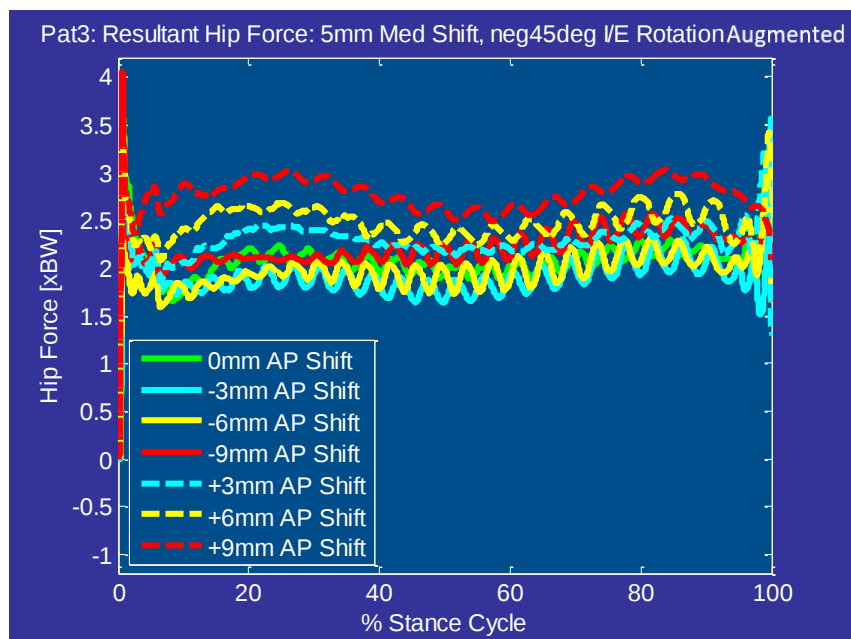
Figure E59: Pat 3: Augmented Liner: Separation

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

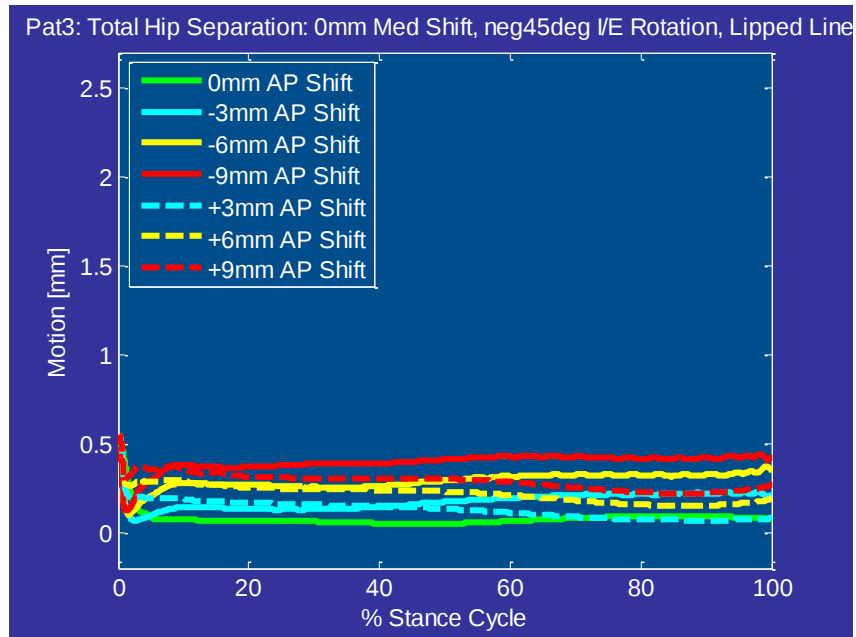


(b)

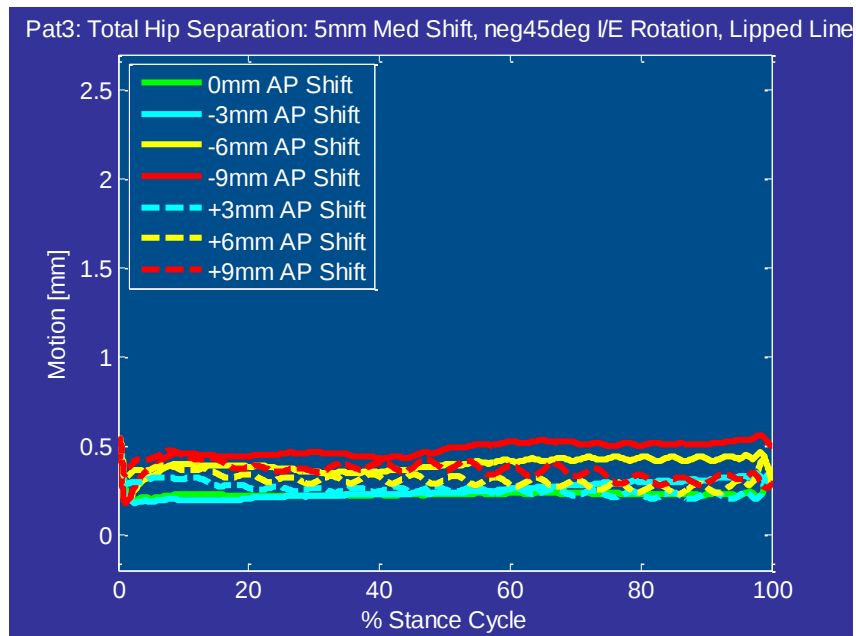
Figure E60: Pat 3: Augmented Liner: Hip Force

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

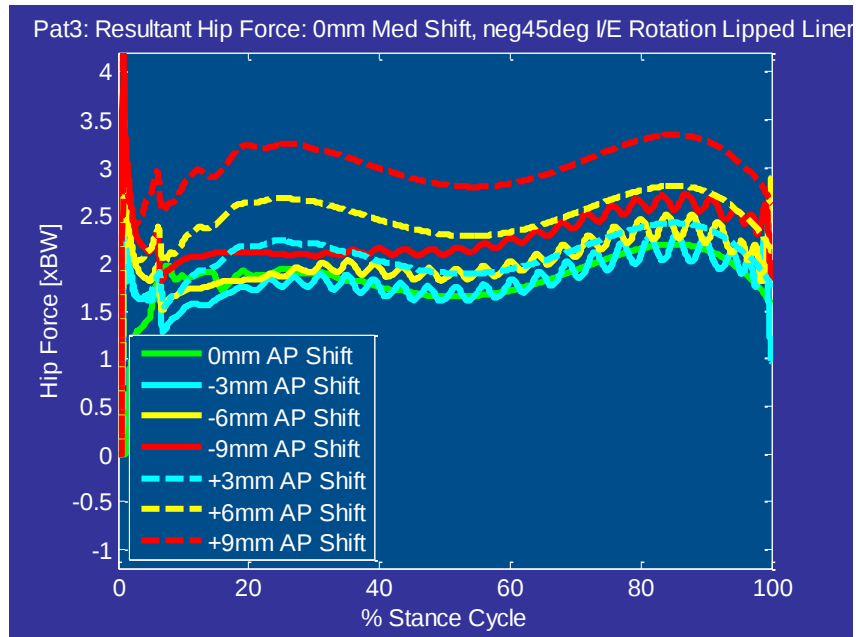


(b)

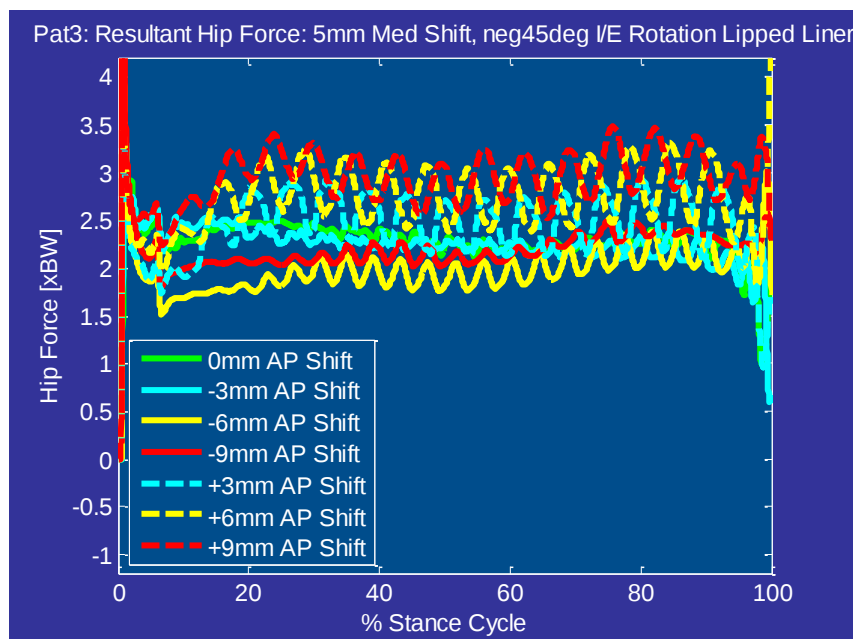
Figure E61: Pat 3: Lipped Liner: Separation

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

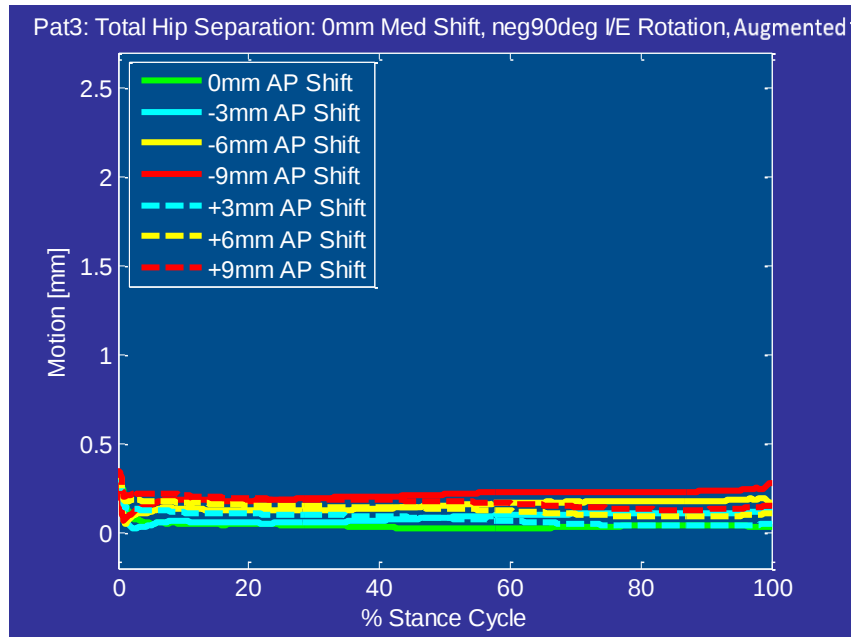


(b)

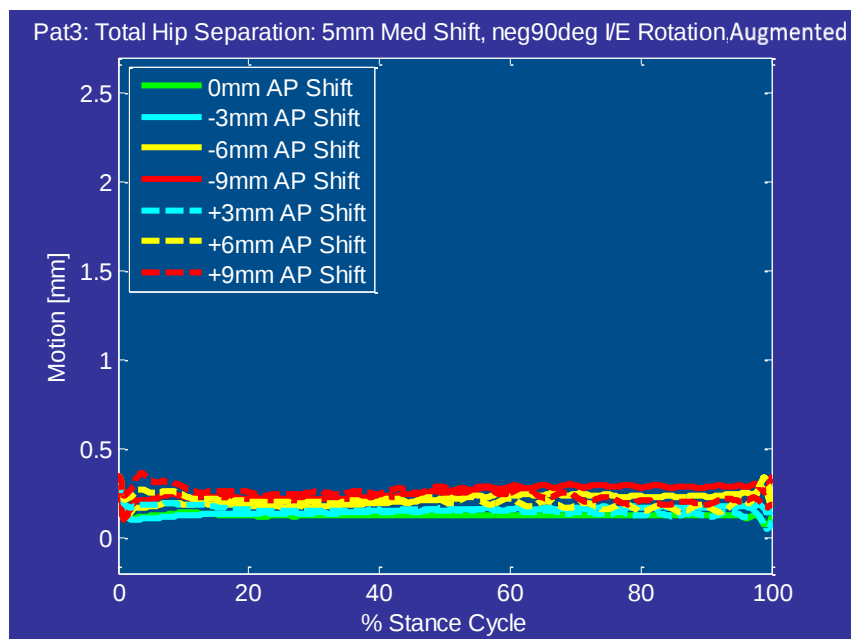
Figure E62: Pat 3: Lipped Liner: Hip Force

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

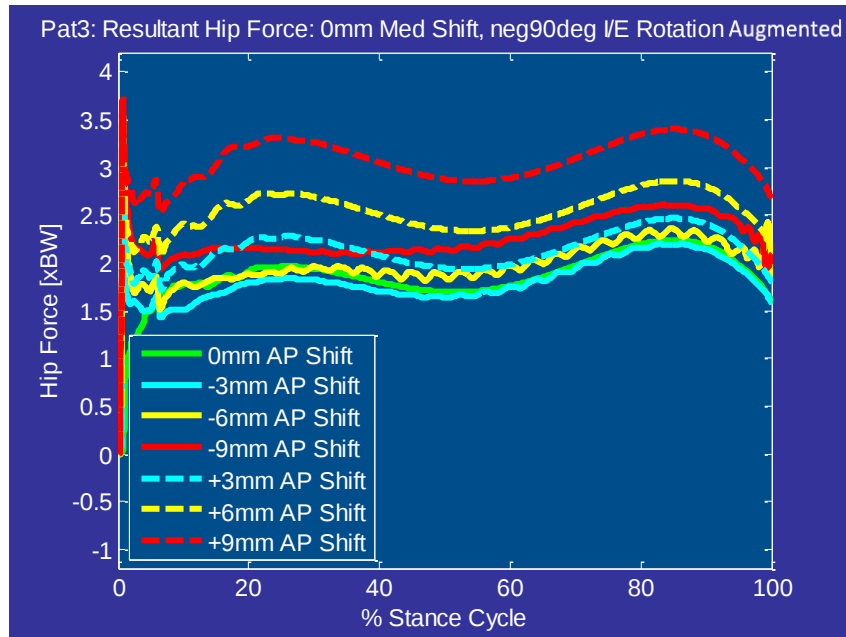


(b)

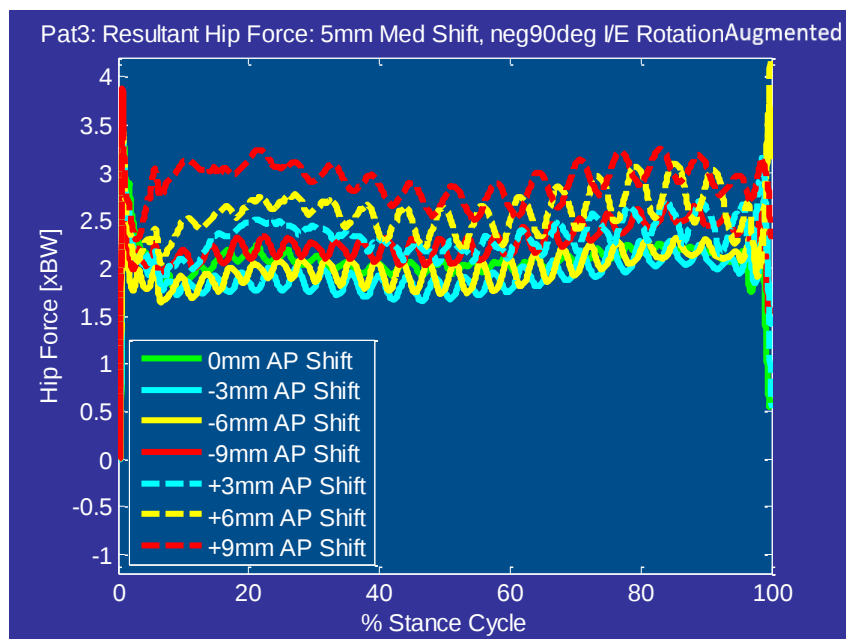
Figure E63: Pat 3: Augmented Liner: Separation

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

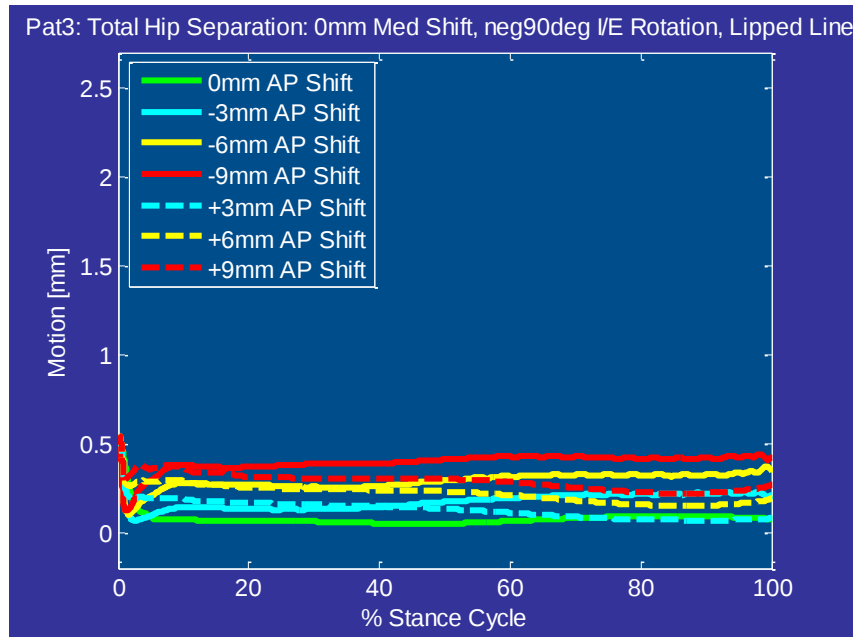


(b)

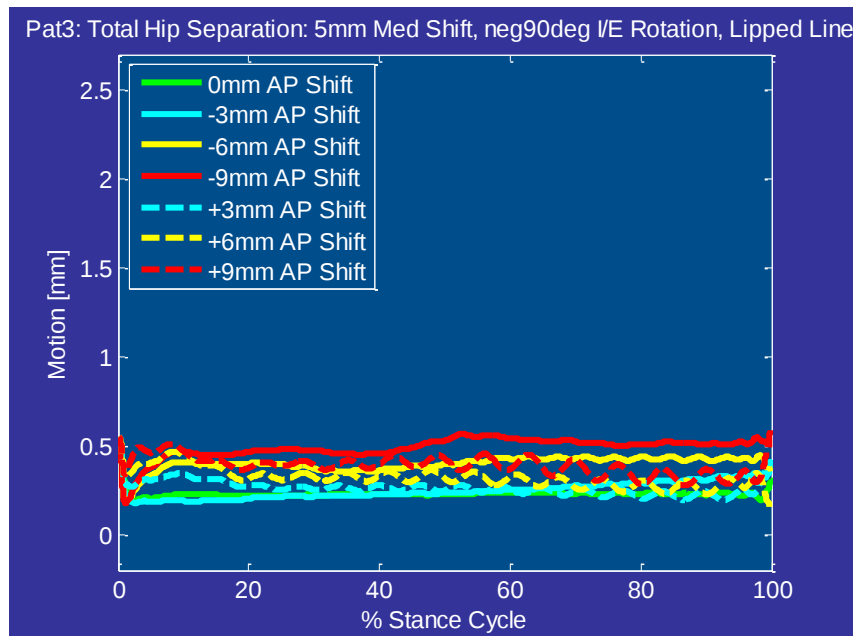
Figure E64: Pat 3: Augmented Liner: Hip Force

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)



(b)

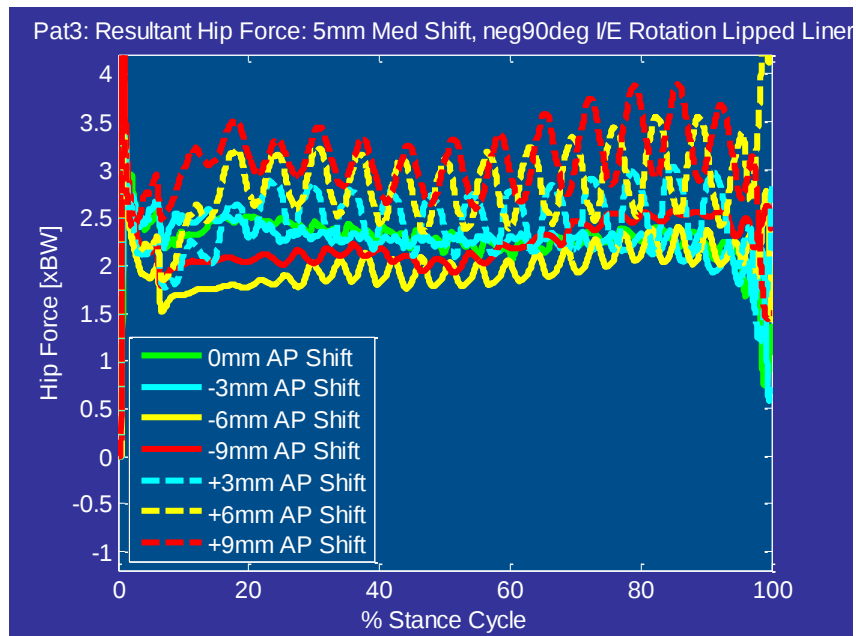
Figure E65: Pat 3: Lipped Liner: Separation

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

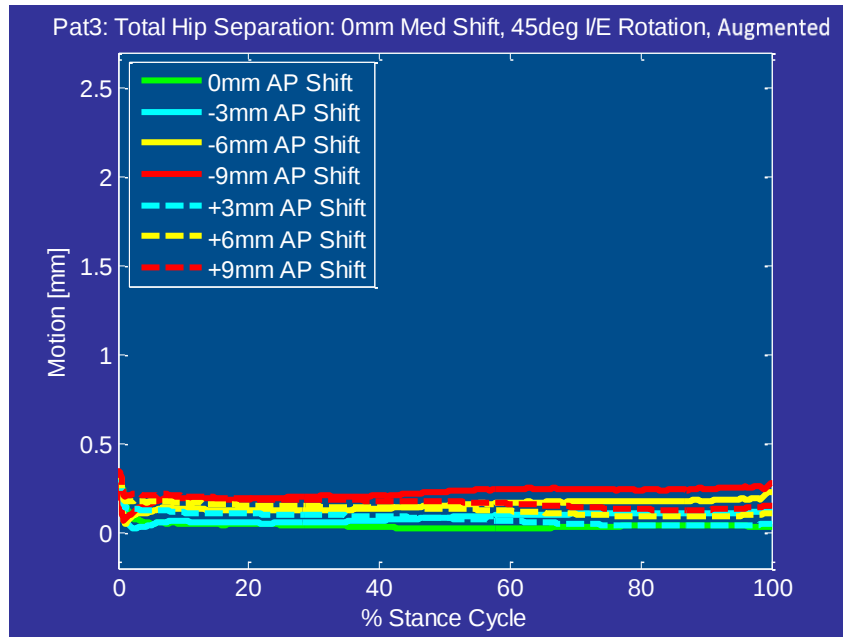


(b)

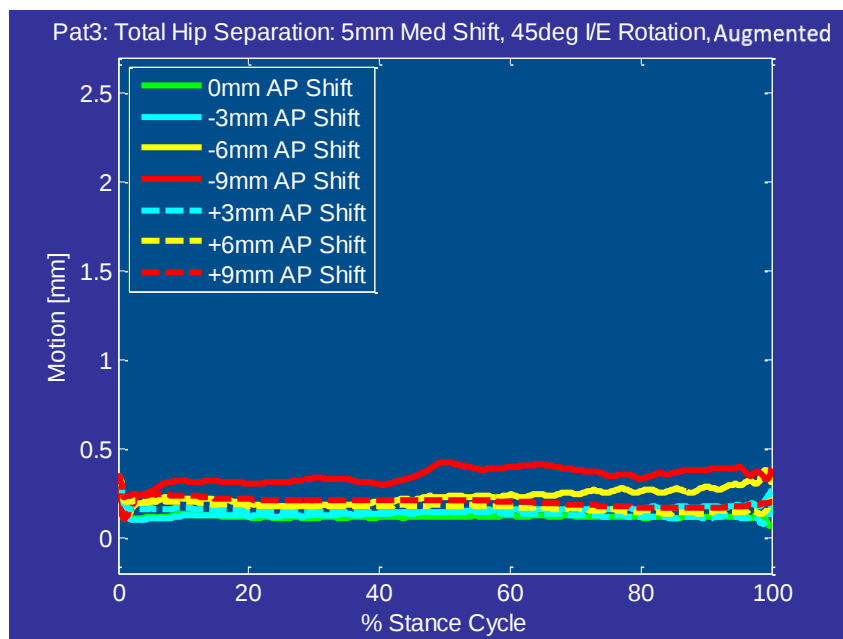
Figure E66: Pat 3: Lipped Liner: Hip Force

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

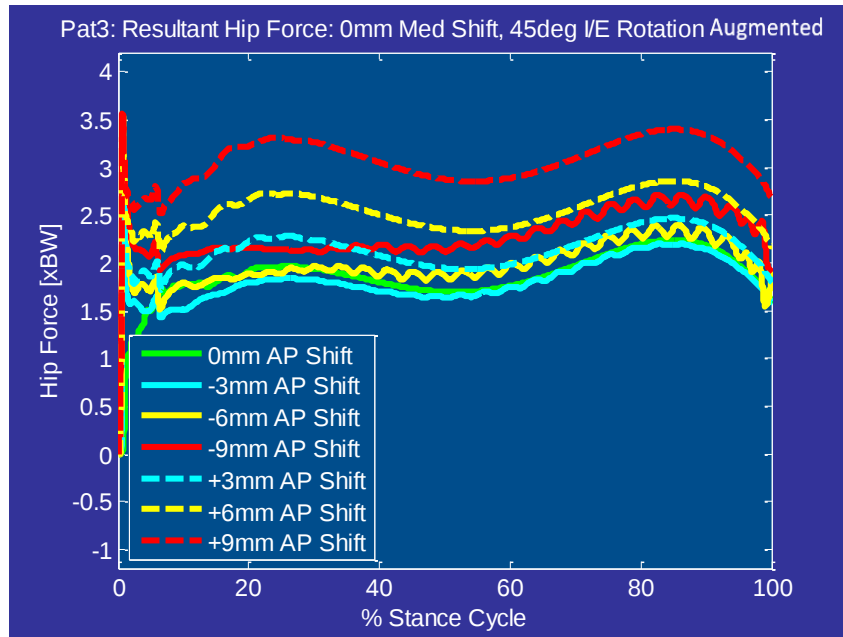


(b)

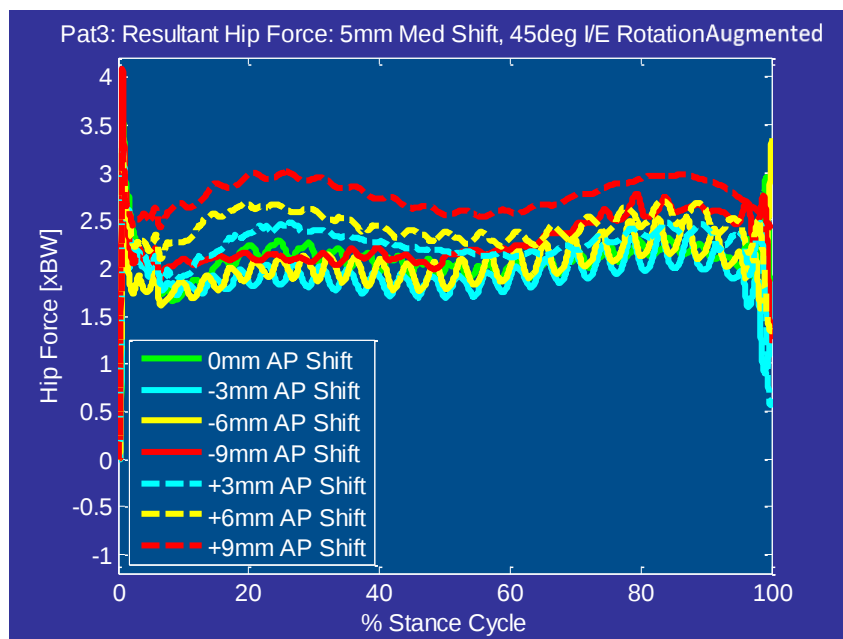
Figure E67: Pat 3: Augmented Liner: Separation

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

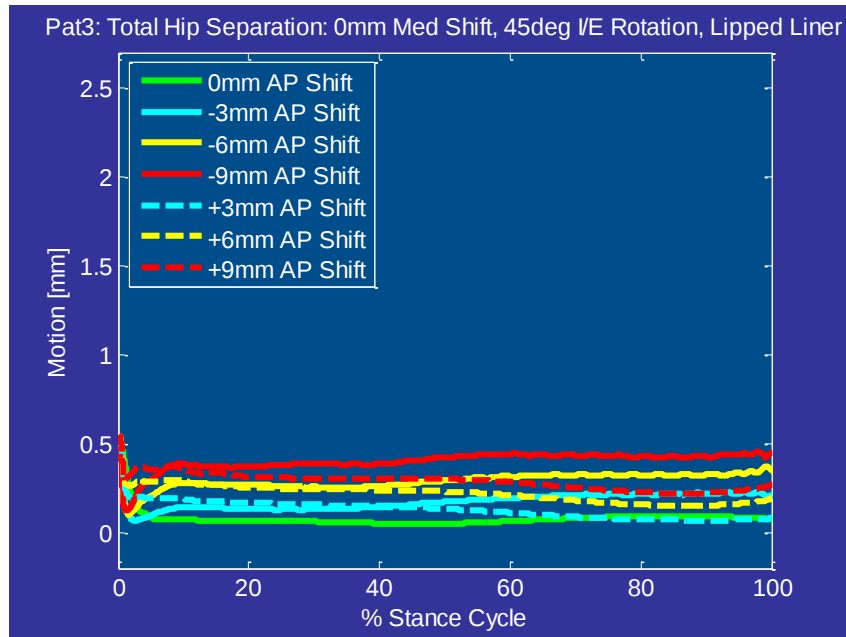


(b)

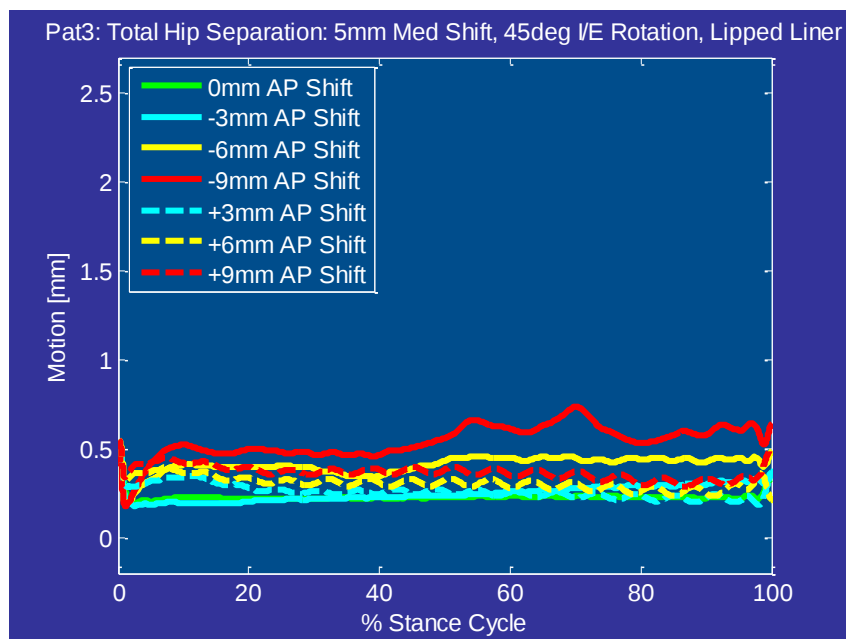
Figure E68: Pat 3: Augmented Liner: Hip Force

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

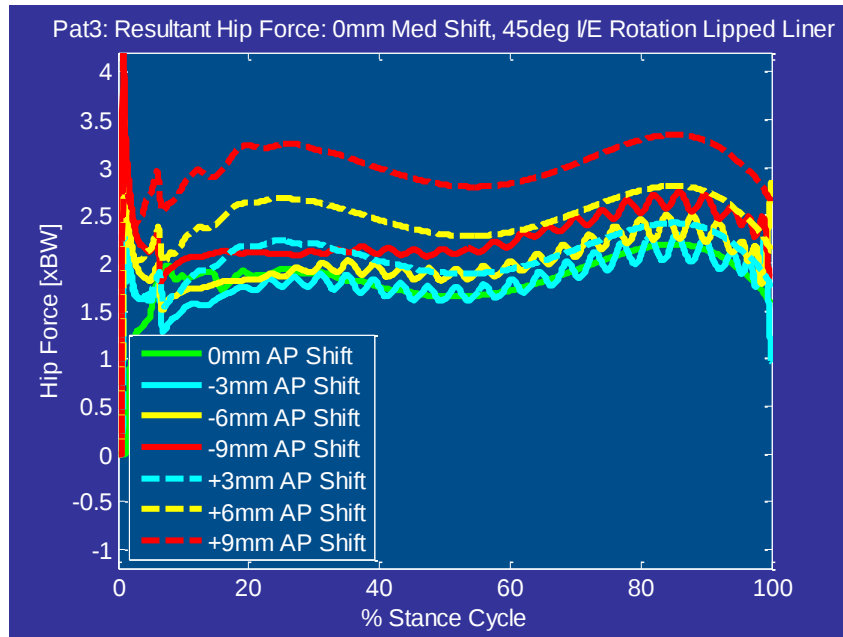


(b)

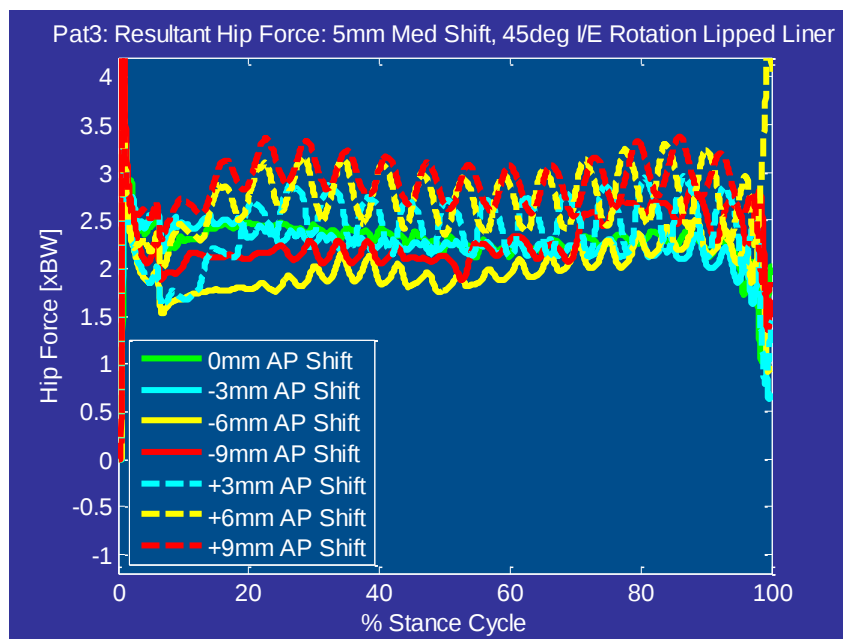
Figure E69: Pat 3: Lipped Liner: Separation

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

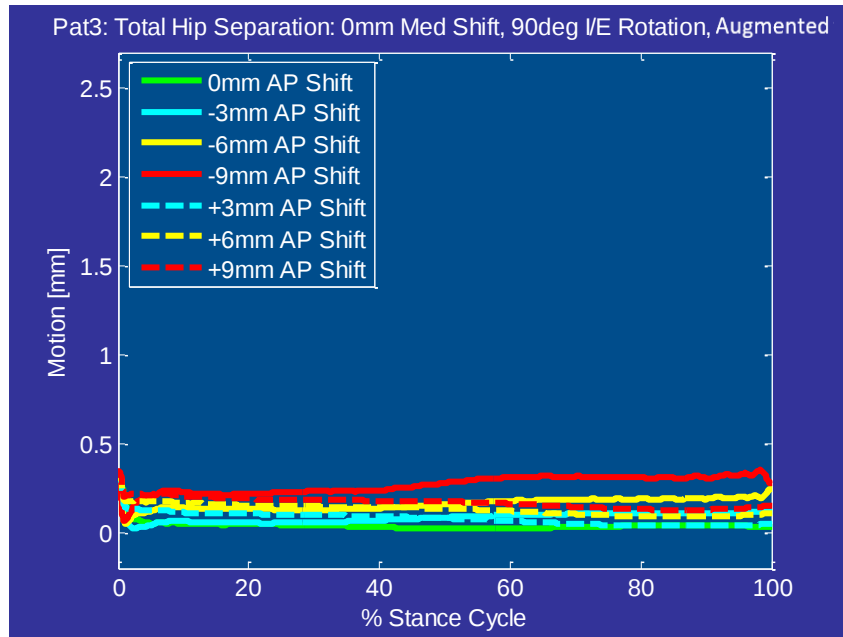


(b)

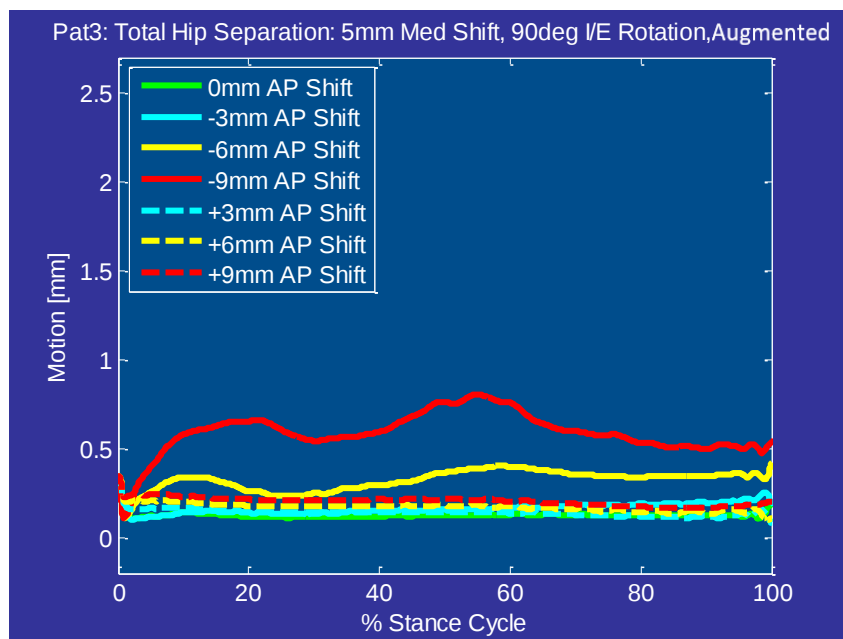
Figure E70: Pat 3: Lipped Liner: Hip Force

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

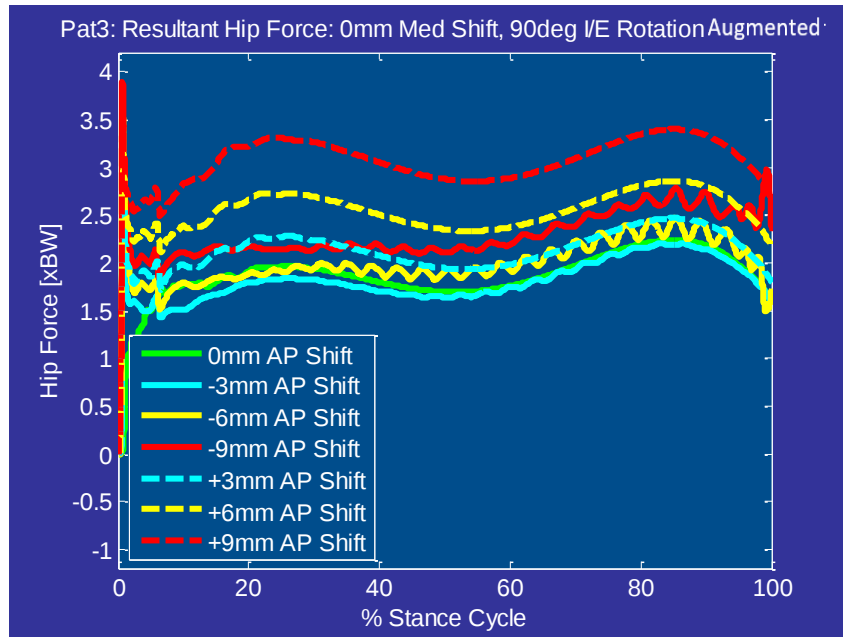


(b)

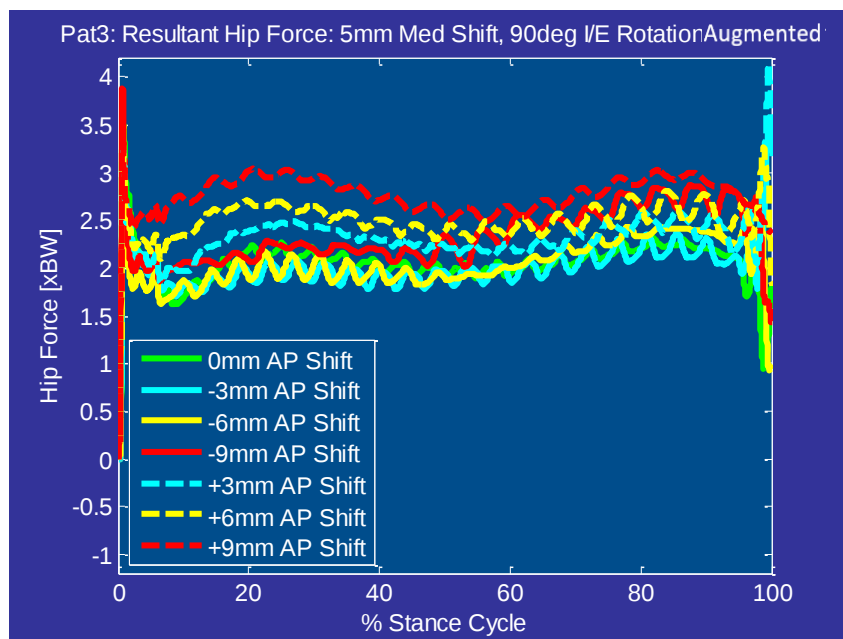
Figure E71: Pat 3: Augmented Liner: Separation

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

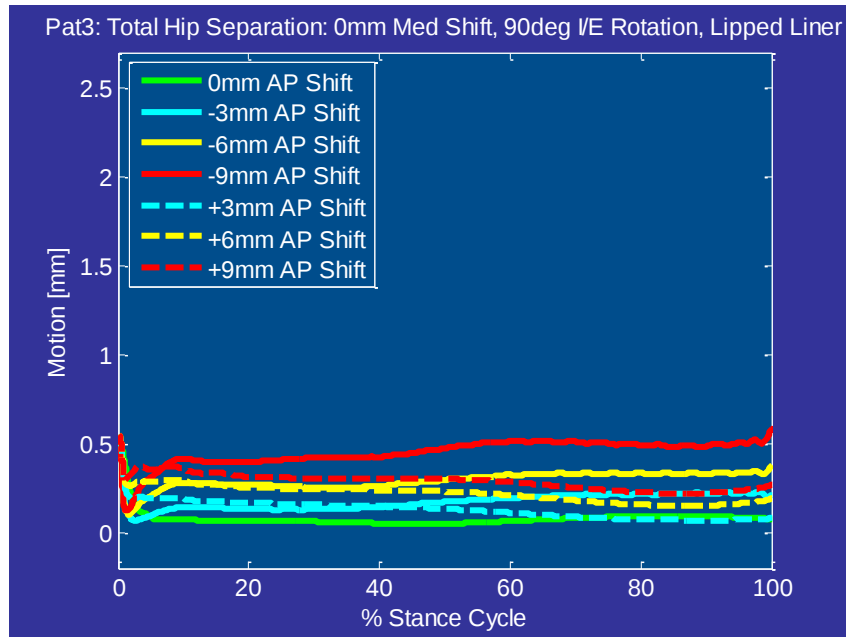


(b)

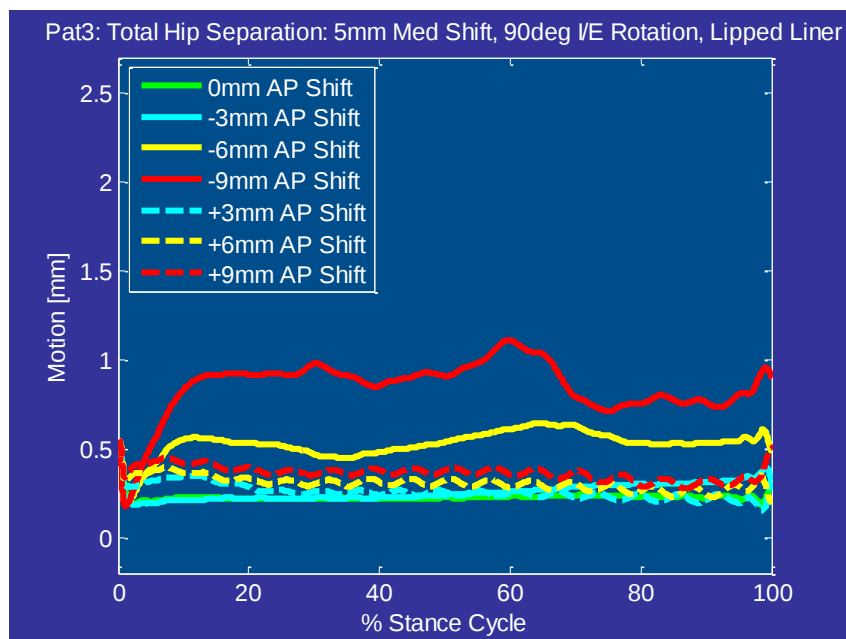
Figure E72: Pat 3: Augmented Liner: Hip Force

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

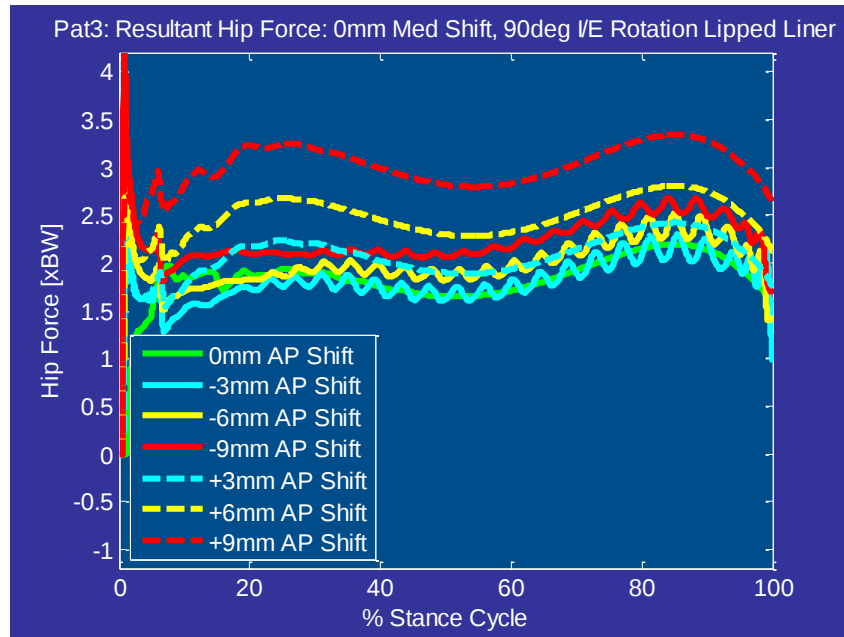


(b)

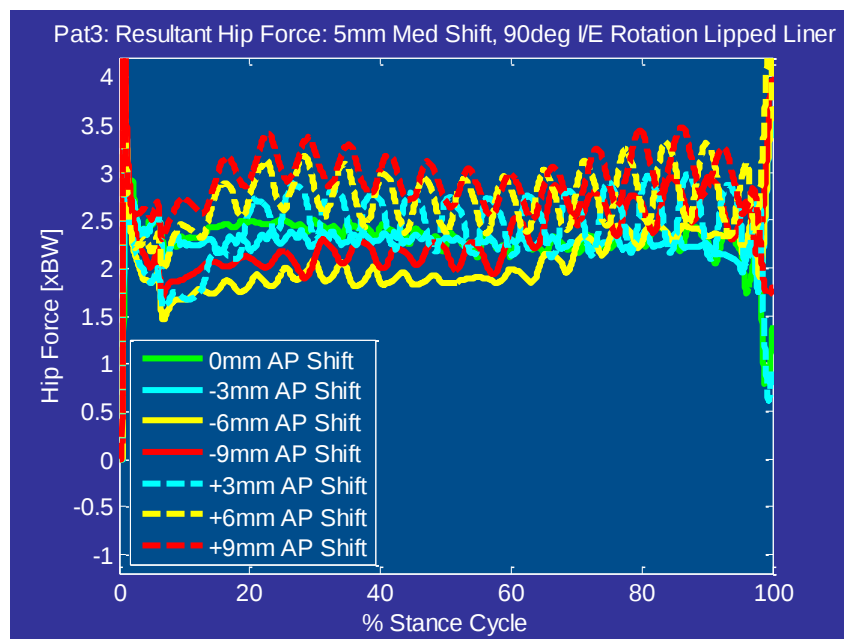
Figure E73: Pat 3: Lipped Liner: Separation

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

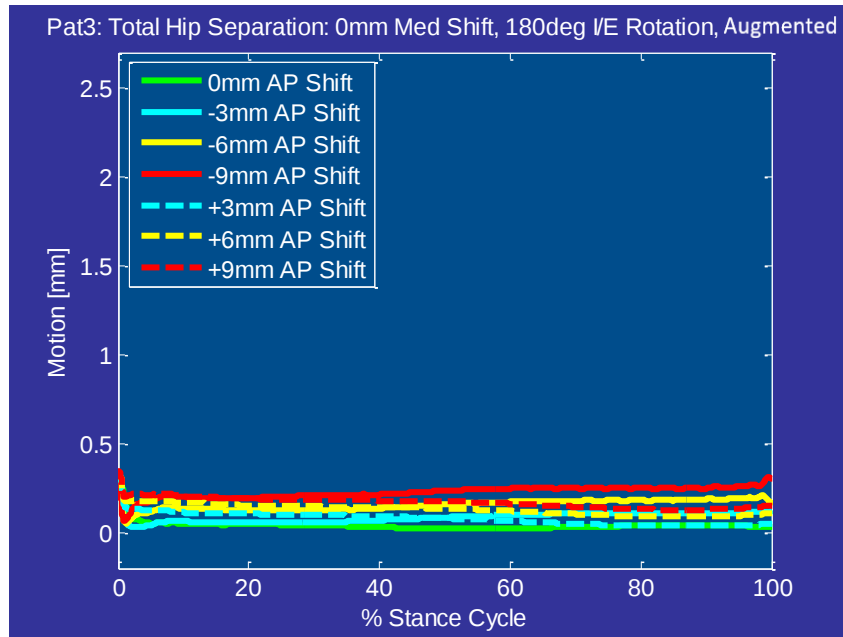


(b)

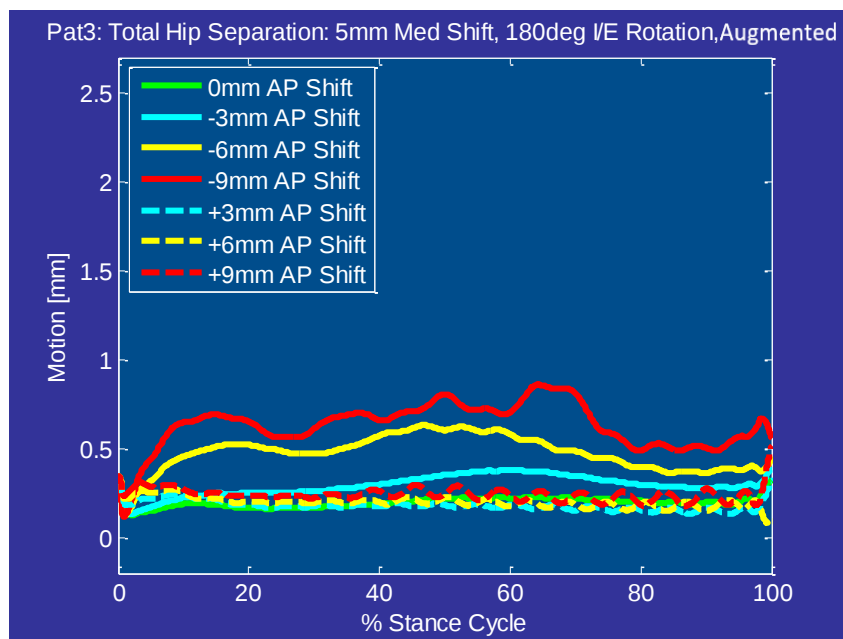
Figure E74: Pat 3: Lipped Liner: Hip Force

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

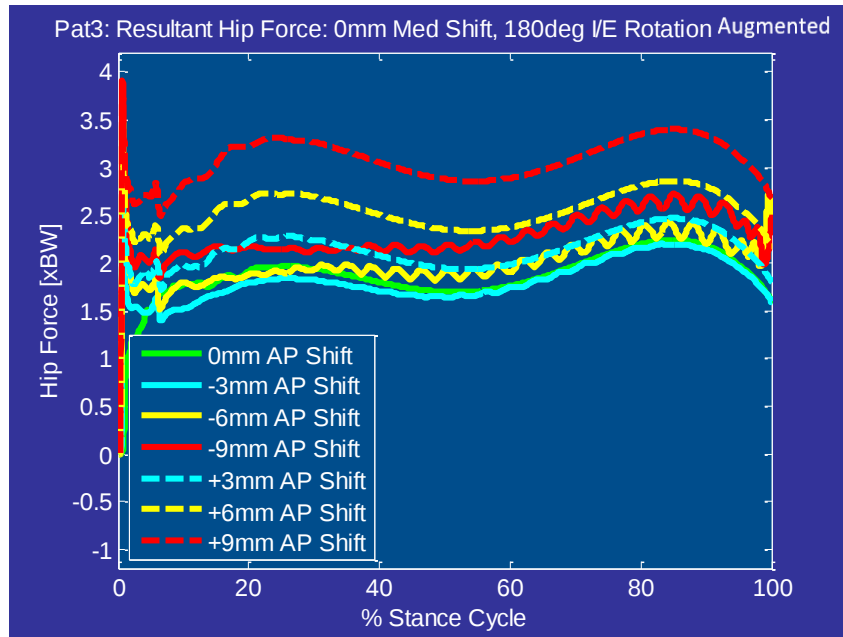


(b)

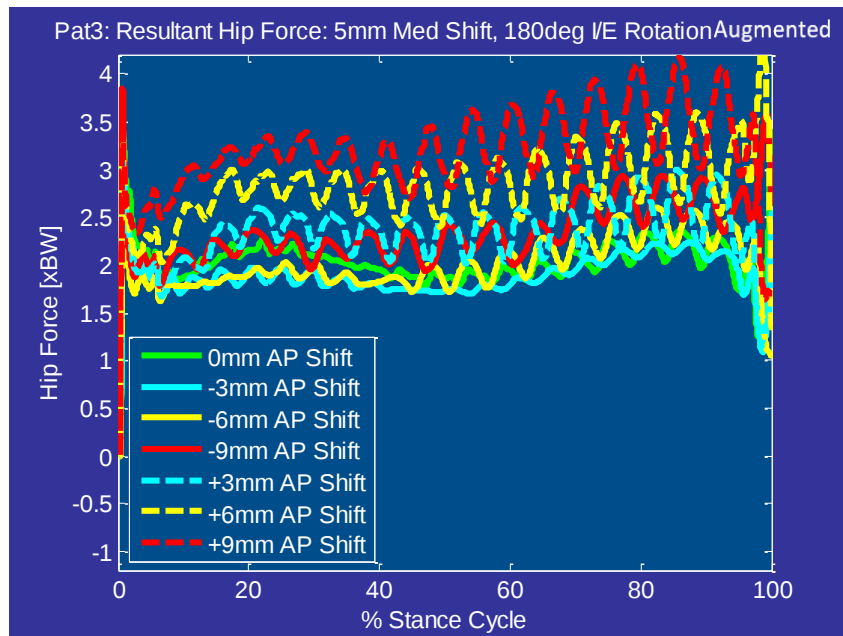
Figure E75: Pat 3: Augmented Liner: Separation

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

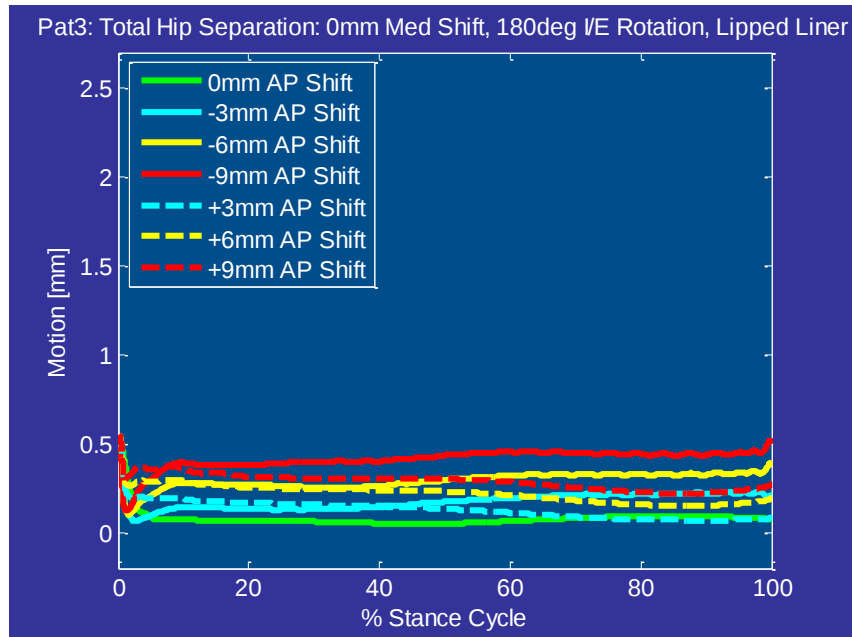


(b)

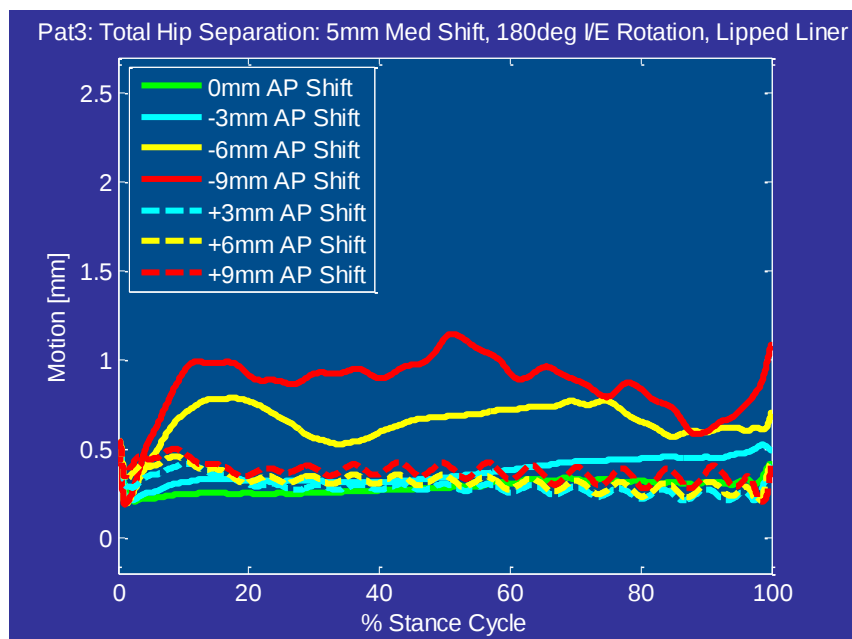
Figure E76: Pat 3: Augmented Liner: Hip Force

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

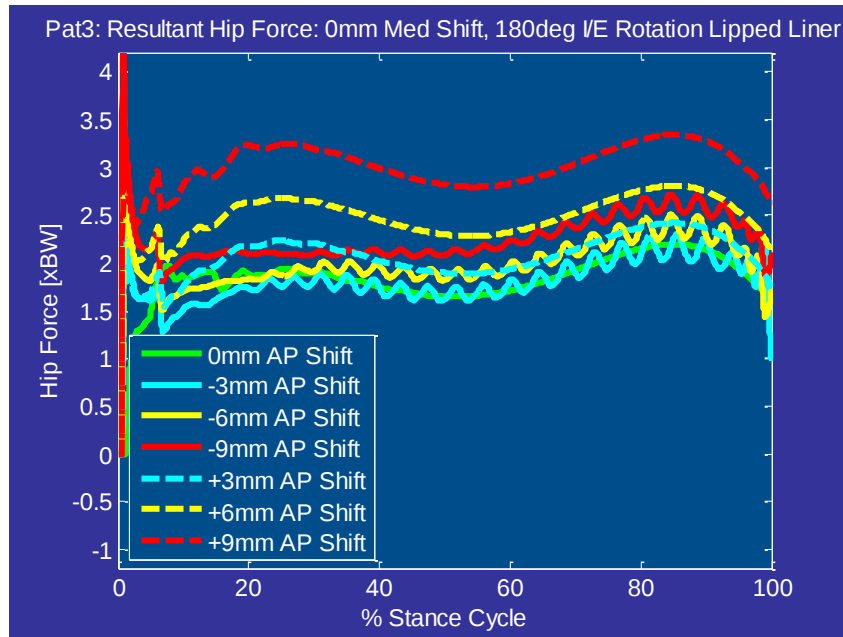


(b)

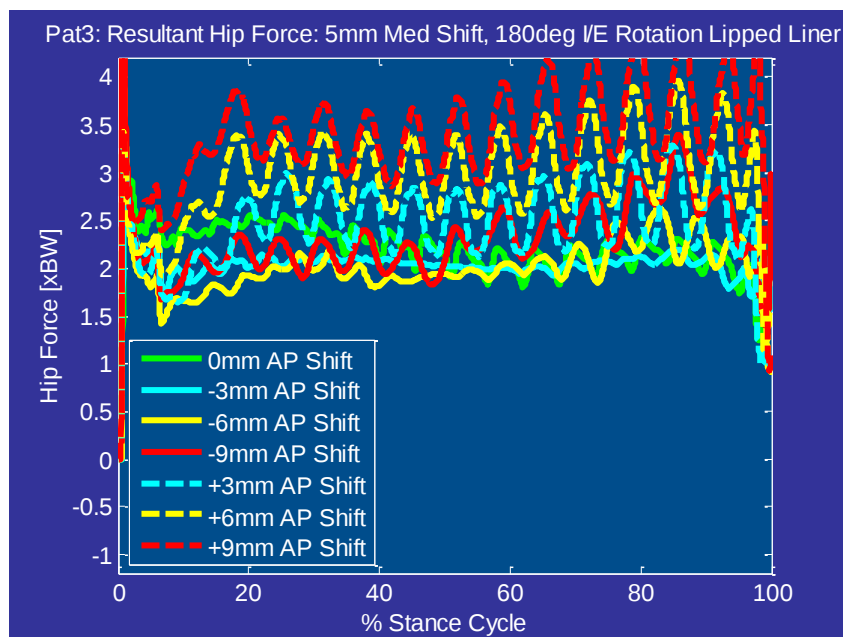
Figure E77: Pat 3: Lipped Liner: Separation

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

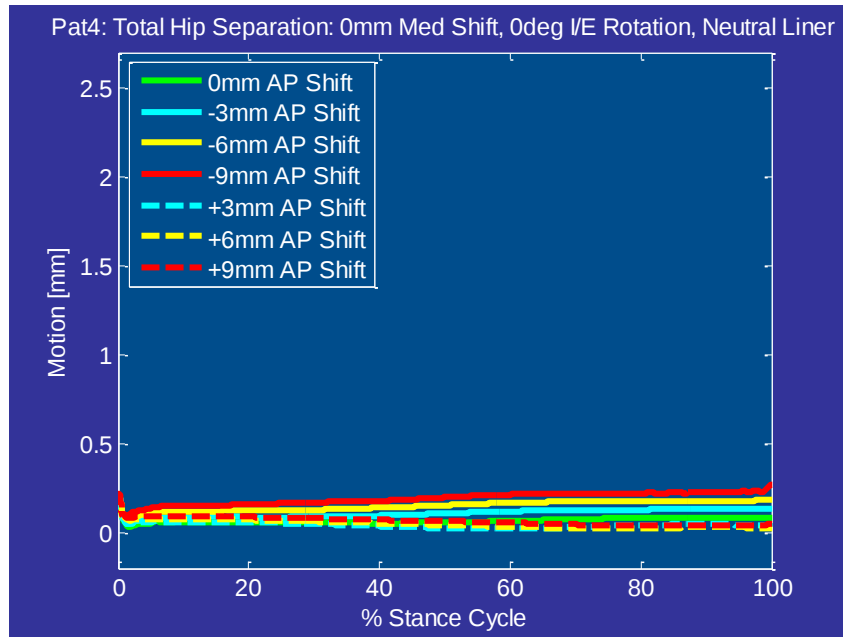


(b)

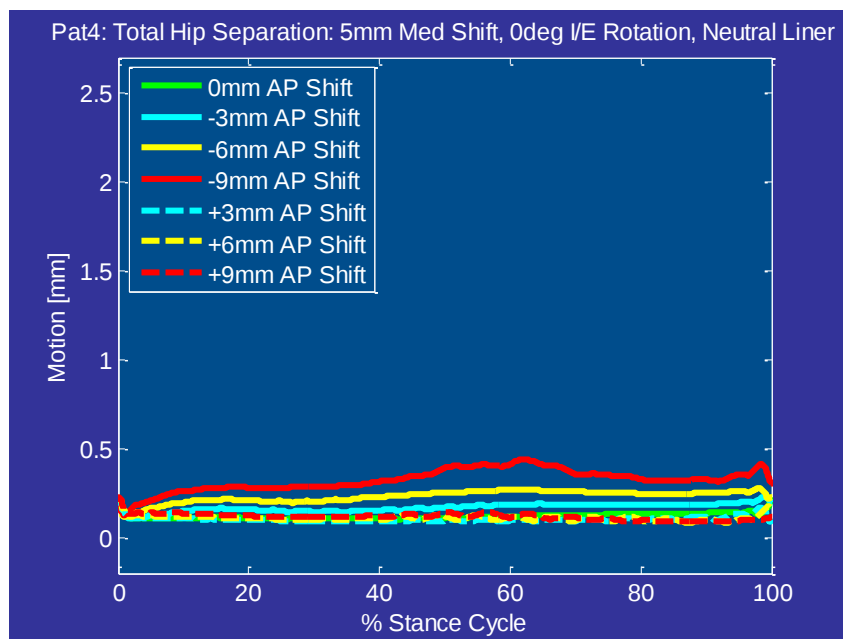
Figure E78: Pat 3: Lipped Liner: Hip Force

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

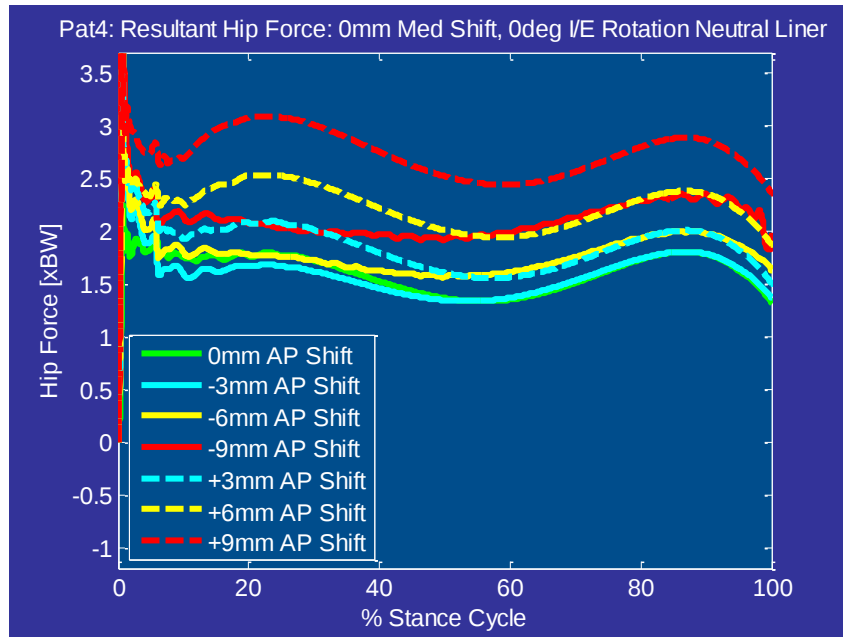


(b)

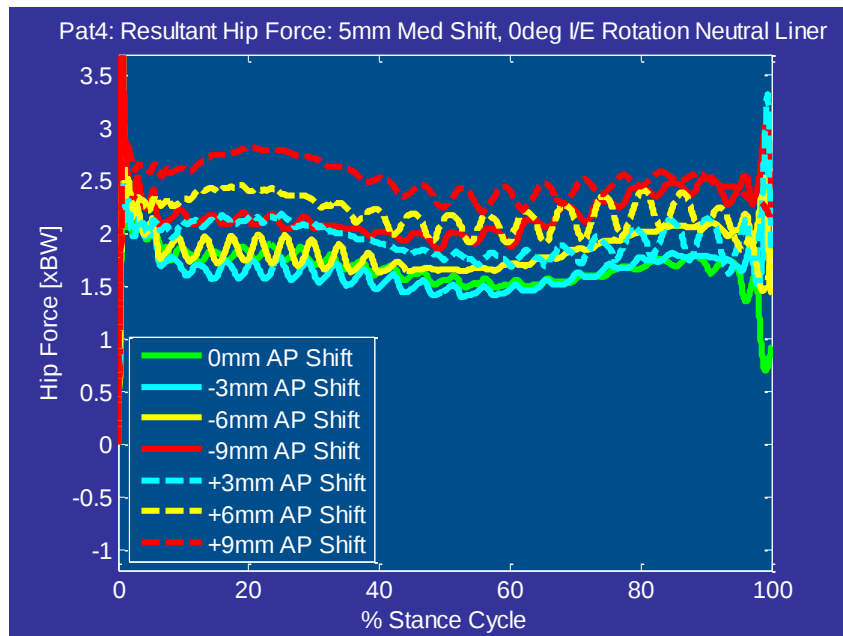
Figure E79: Pat 4: Neutral Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

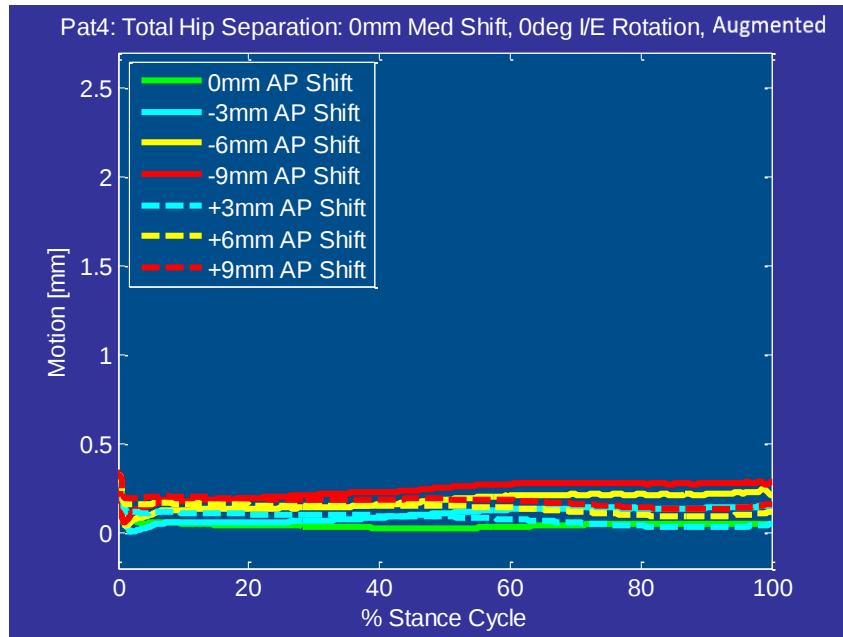


(b)

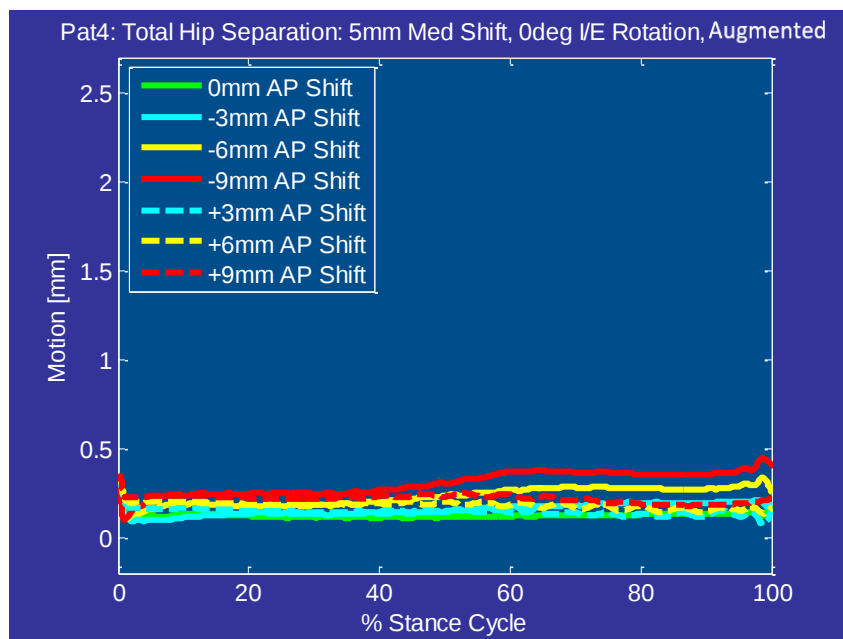
Figure E80: Pat 4: Neutral Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

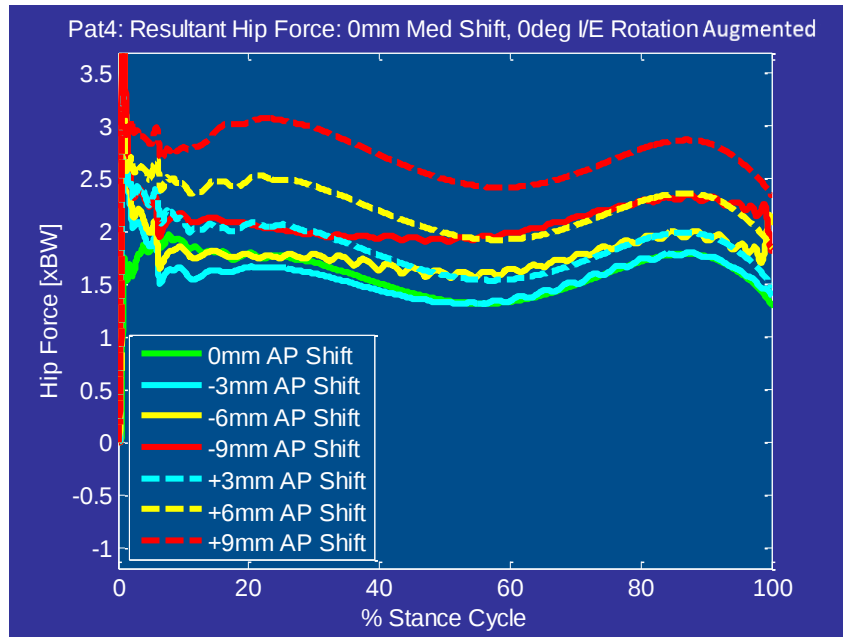


(b)

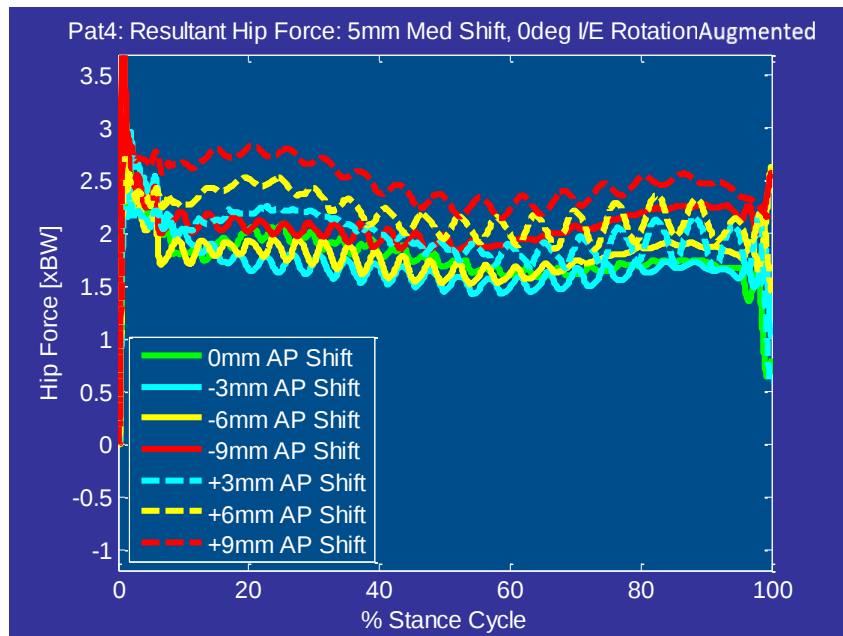
Figure E81: Pat 4: Augmented Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

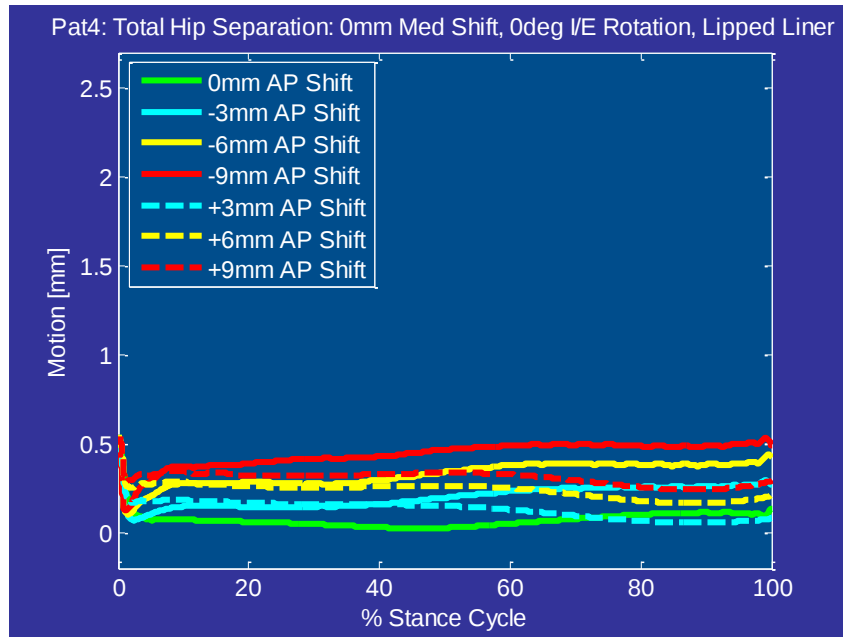


(b)

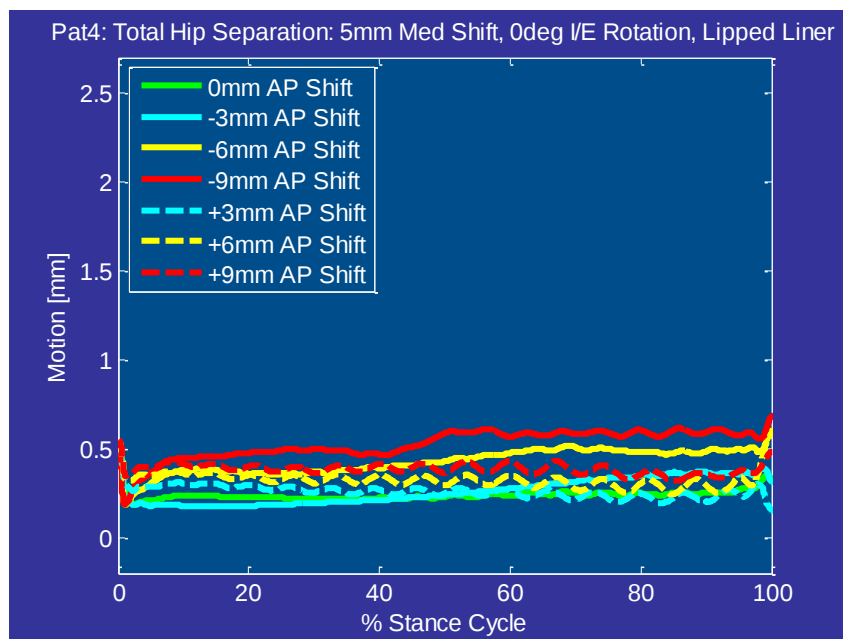
Figure E82: Pat 4: Augmented Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

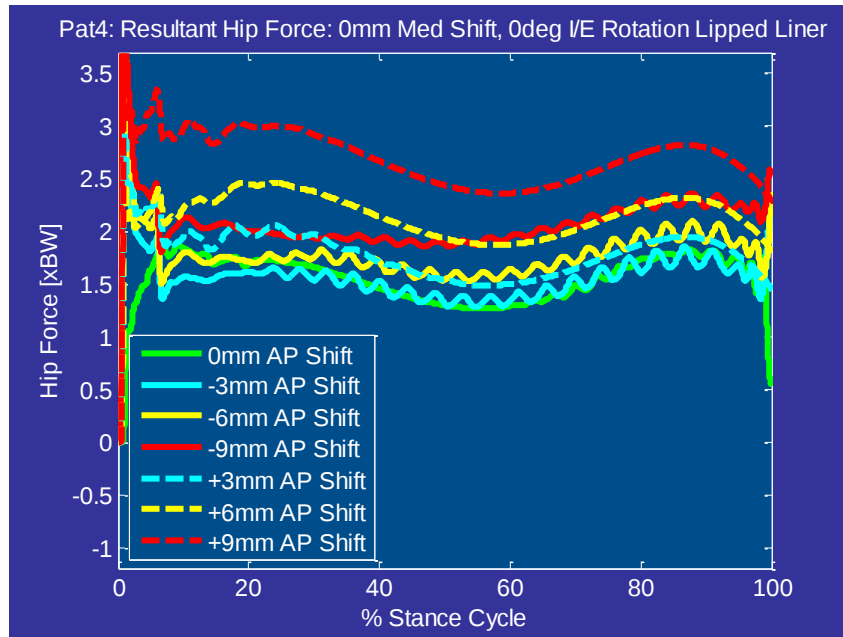


(b)

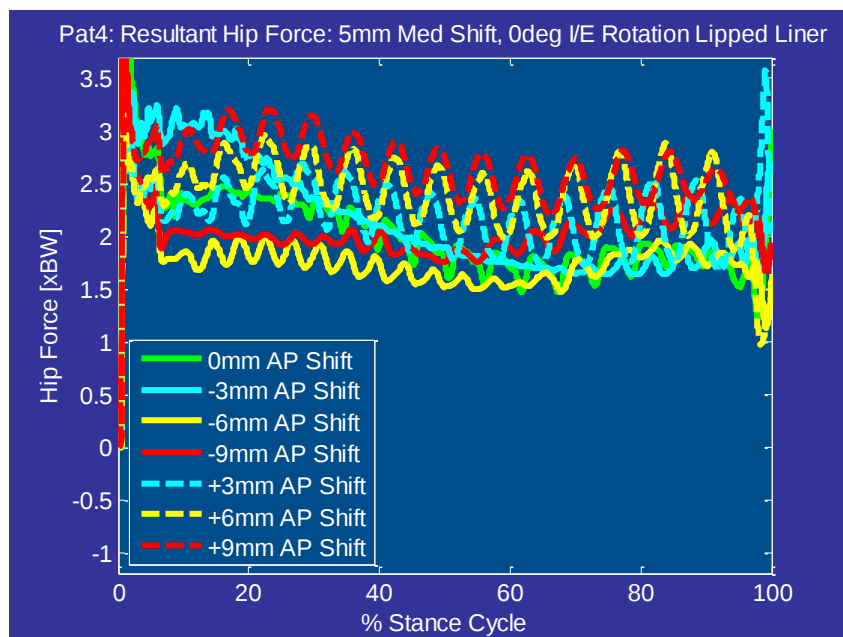
Figure E83: Pat 4: Lipped Liner: Separation

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

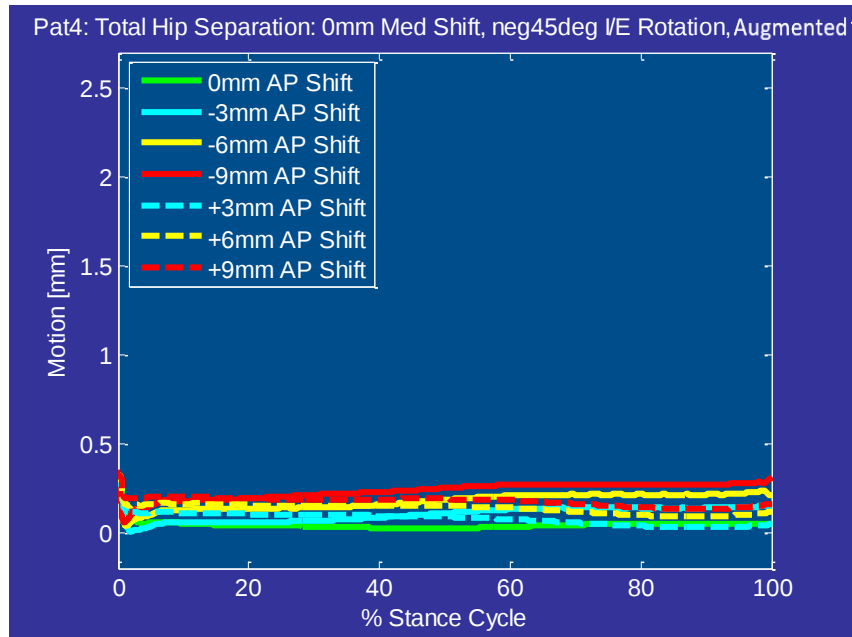


(b)

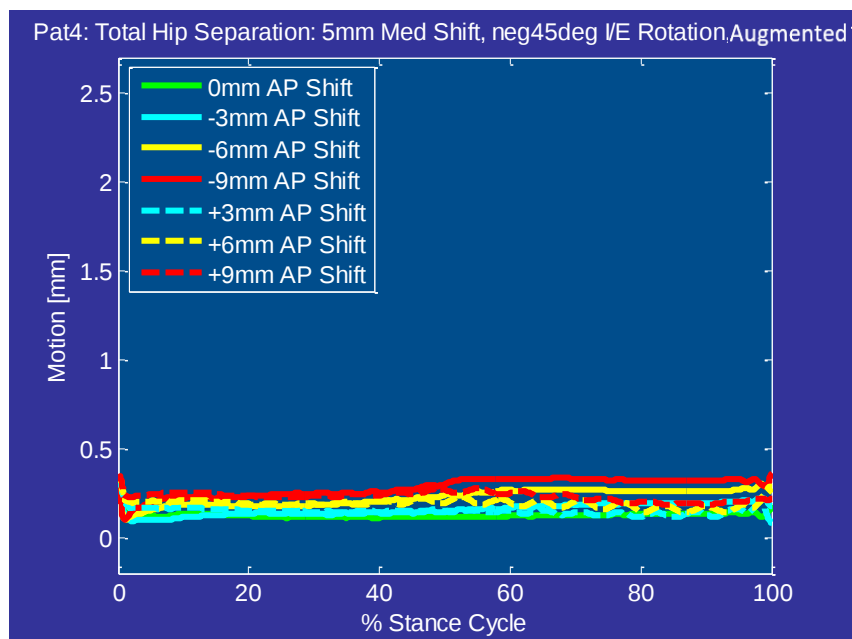
Figure E84: Pat 4: Lipped Liner: Hip Force

0° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

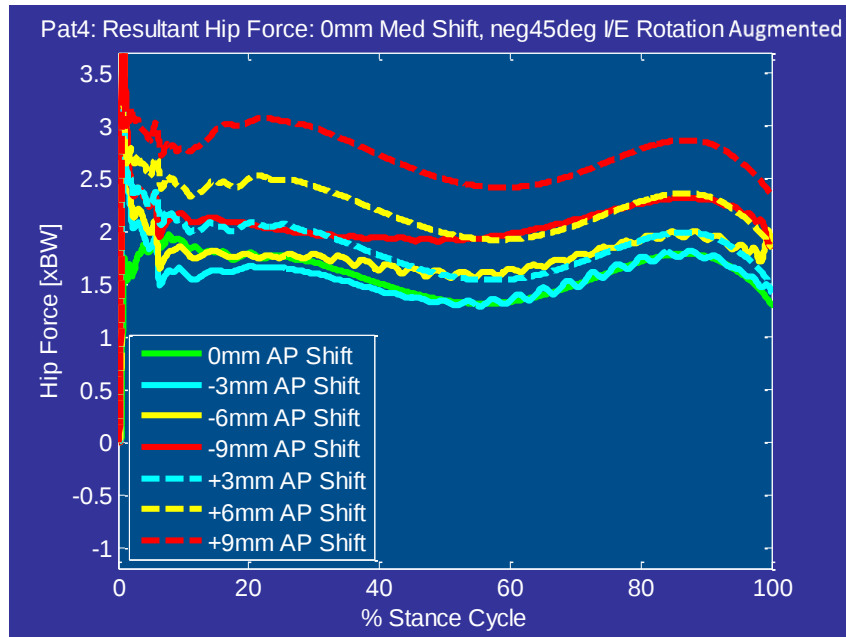


(b)

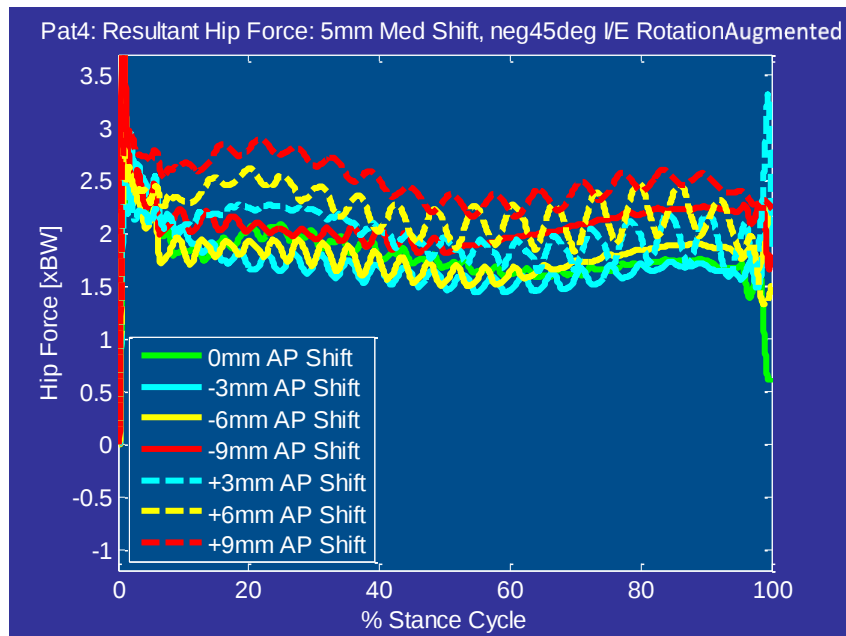
Figure E85: Pat 4: Augmented Liner: Separation

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

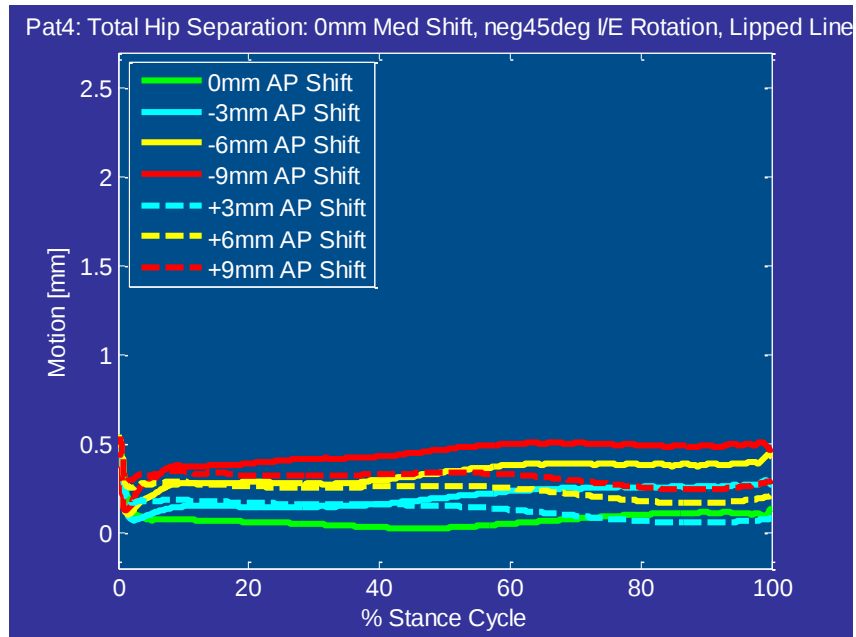


(b)

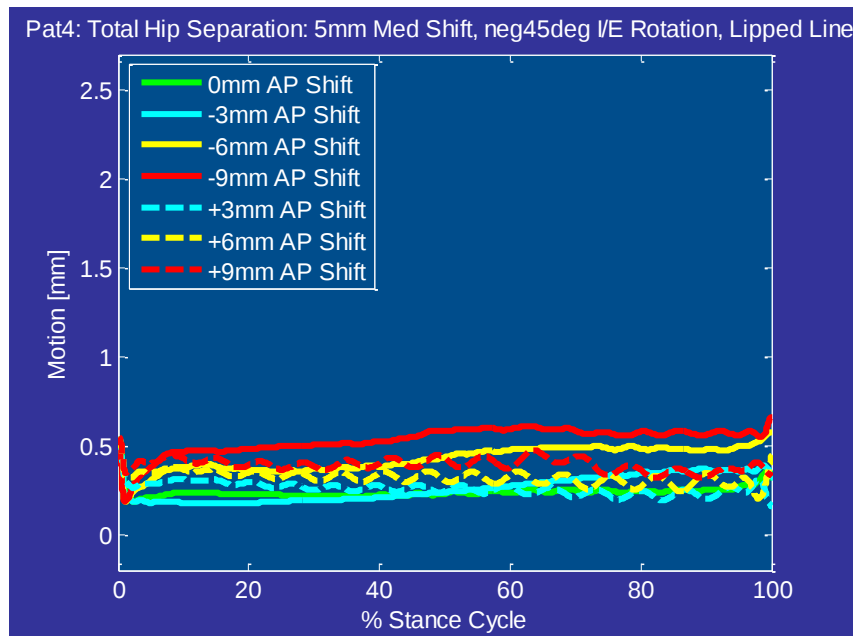
Figure E86: Pat 4: Augmented Liner: Hip Force

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

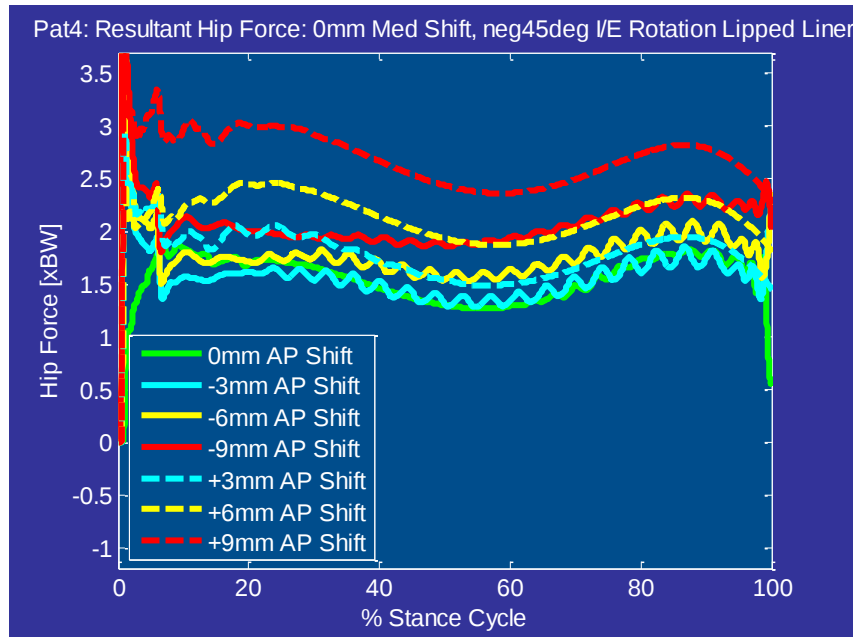


(b)

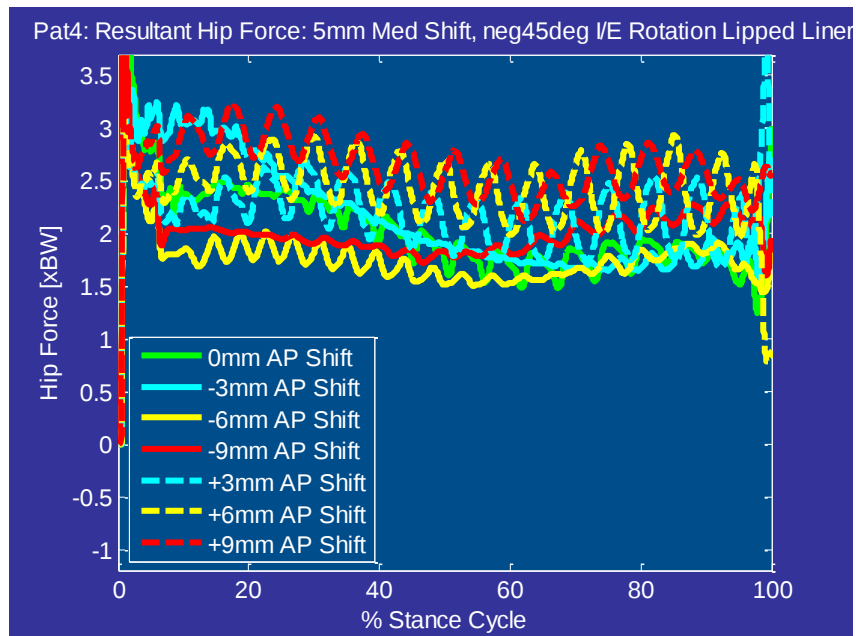
Figure E87: Pat 4: Lipped Liner: Separation

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

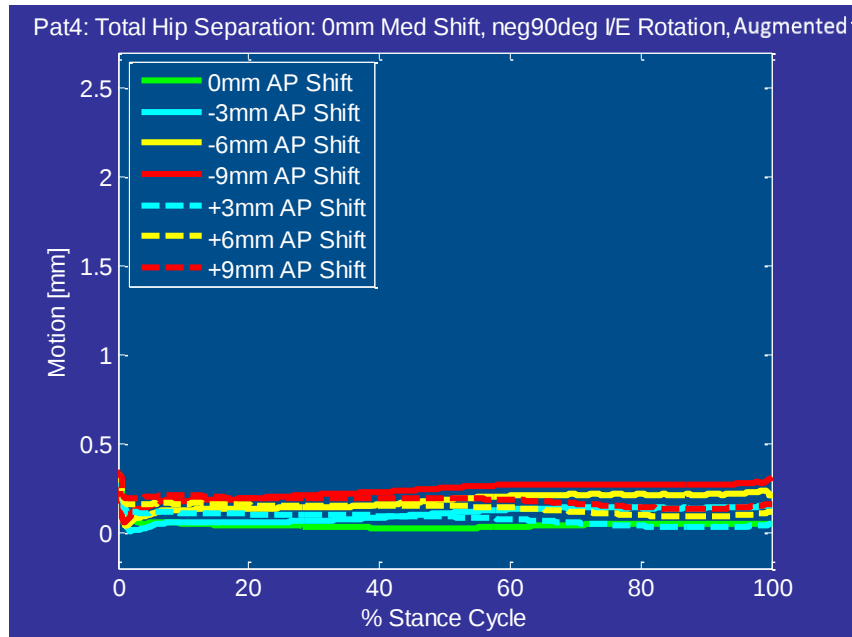


(b)

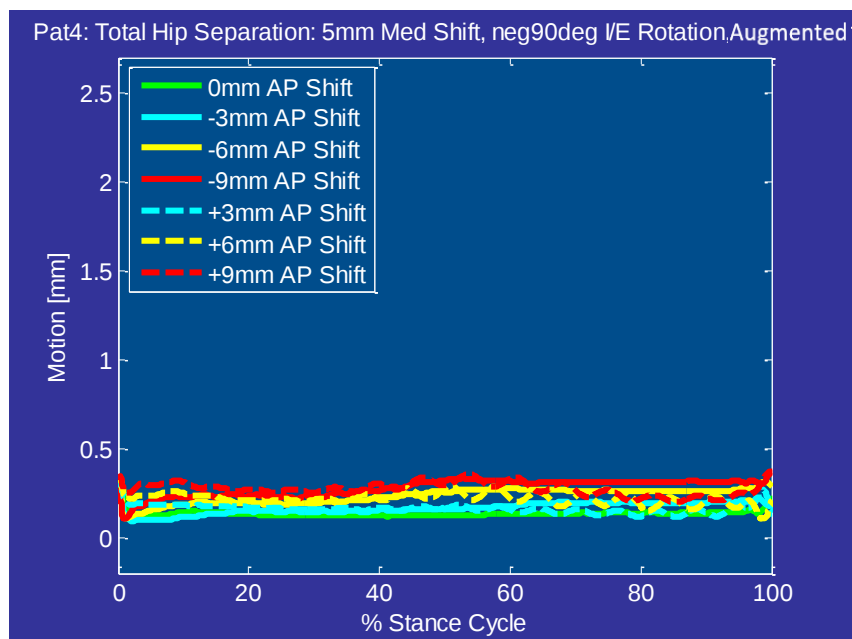
Figure E88: Pat 4: Lipped Liner: Hip Force

-45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

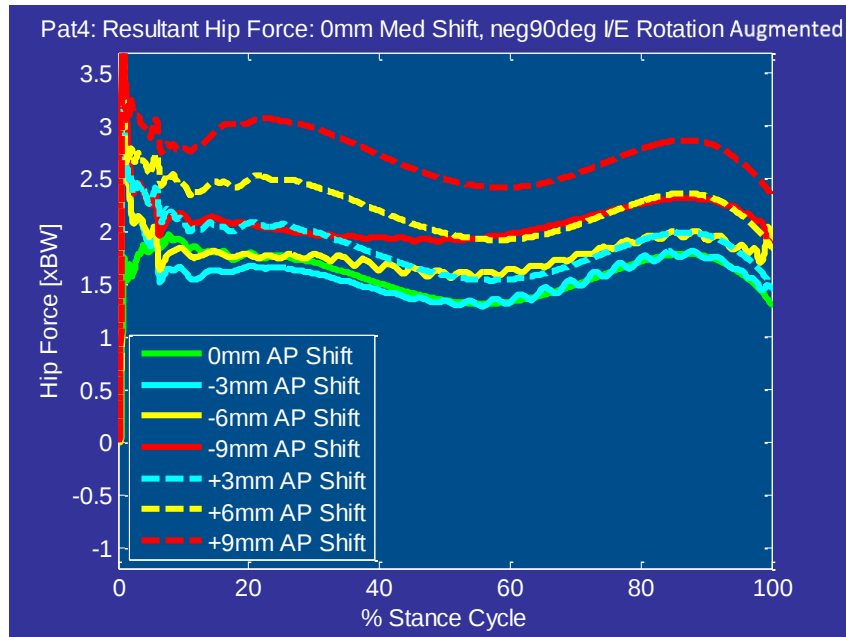


(b)

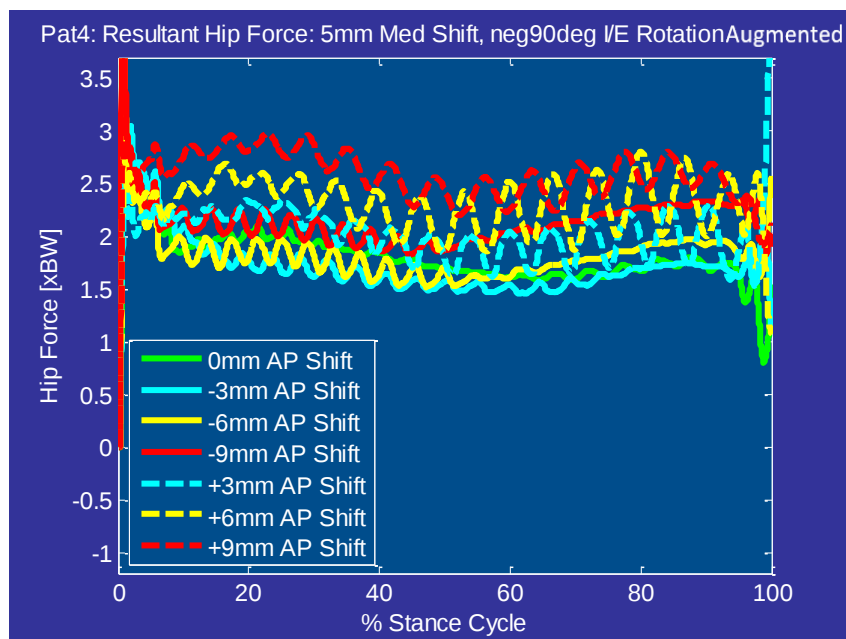
Figure E89: Pat 4: Augmented Liner: Separation

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

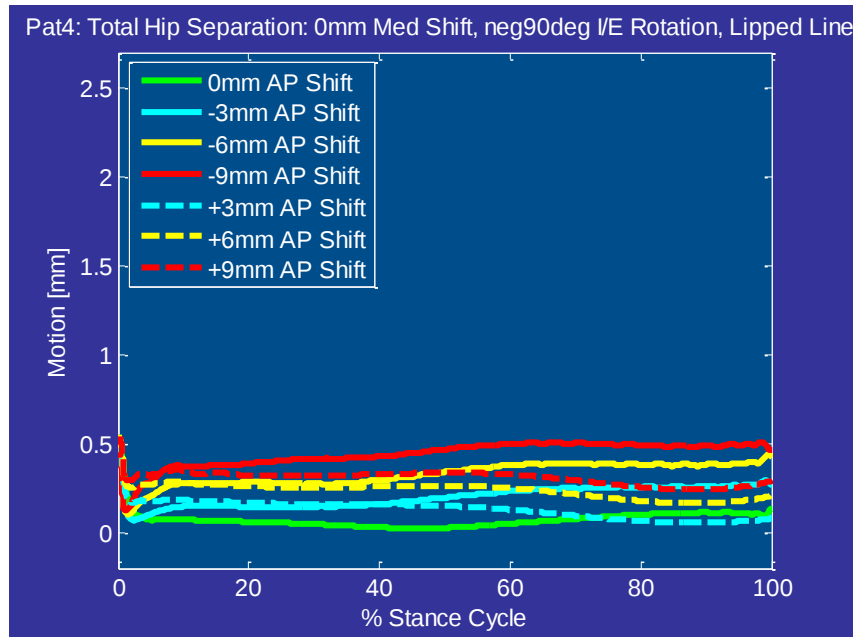


(b)

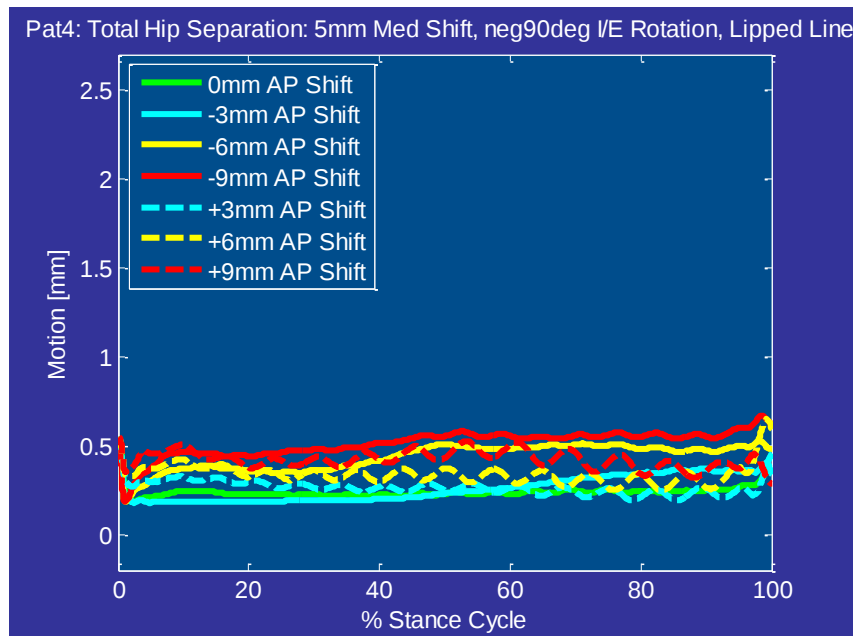
Figure E90: Pat 4: Augmented Liner: Hip Force

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

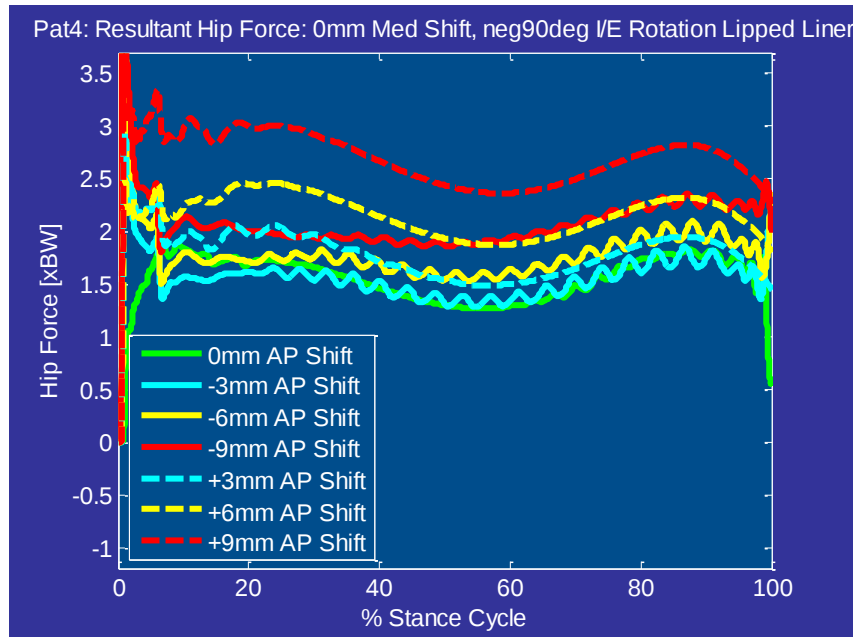


(b)

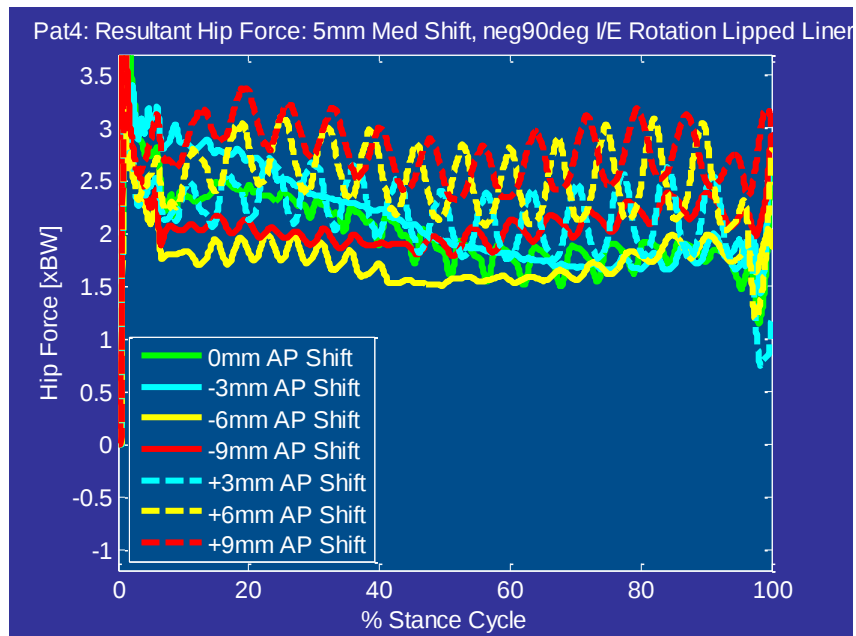
Figure E91: Pat 4: Lipped Liner: Separation

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

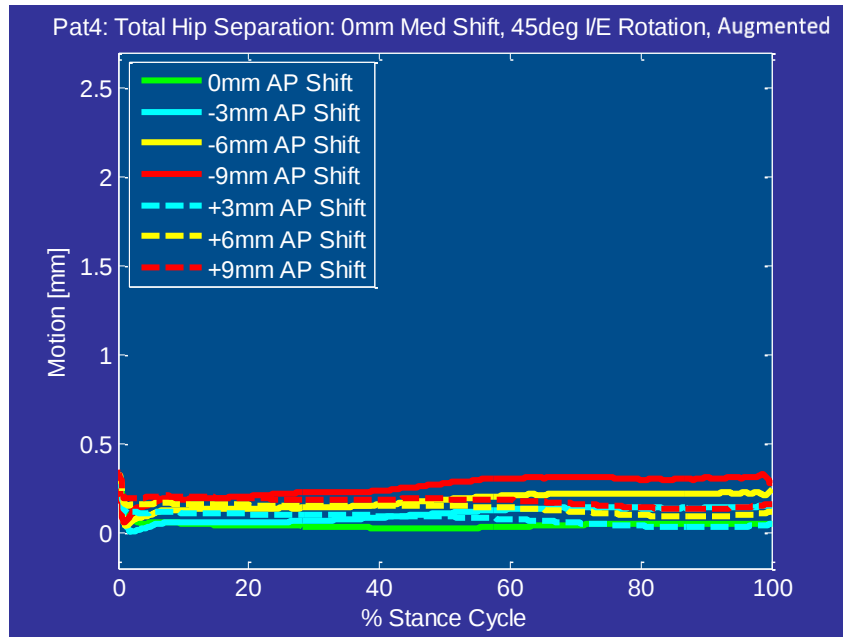


(b)

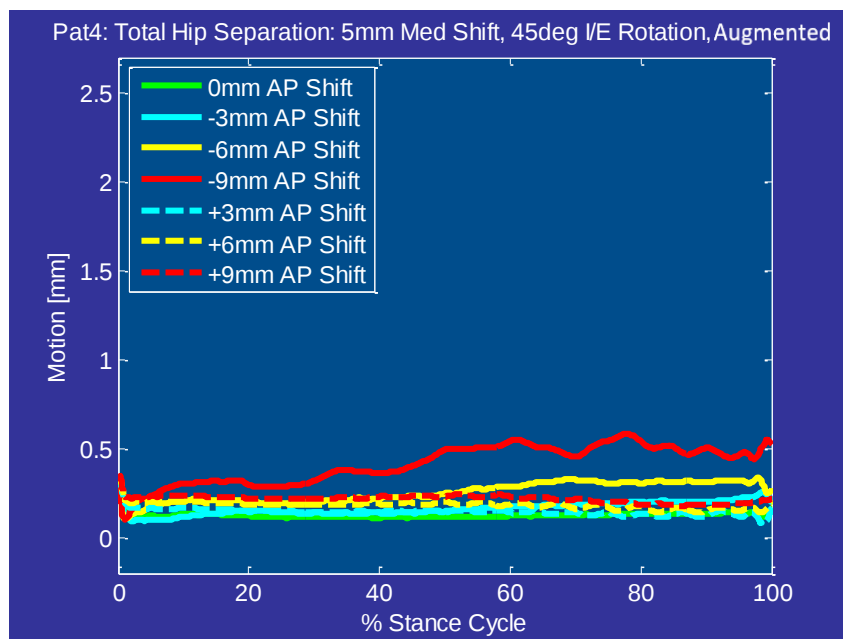
Figure E92: Pat 4: Lipped Liner: Hip Force

-90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

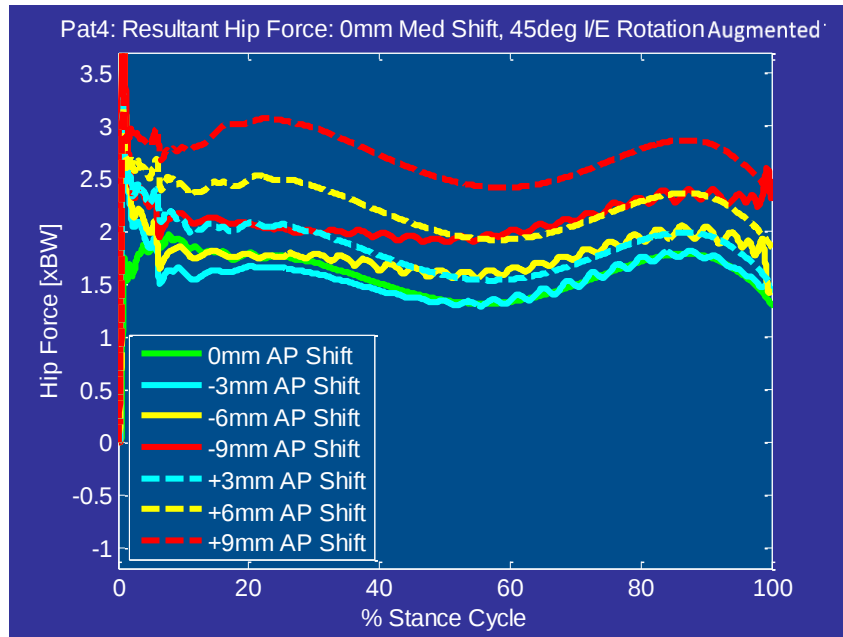


(b)

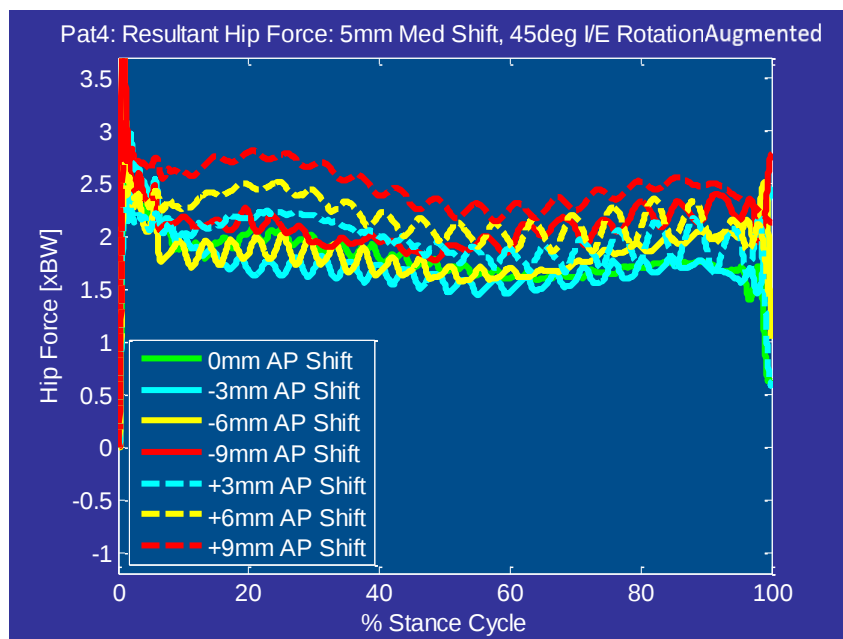
Figure E93: Pat 4: Augmented Liner: Separation

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

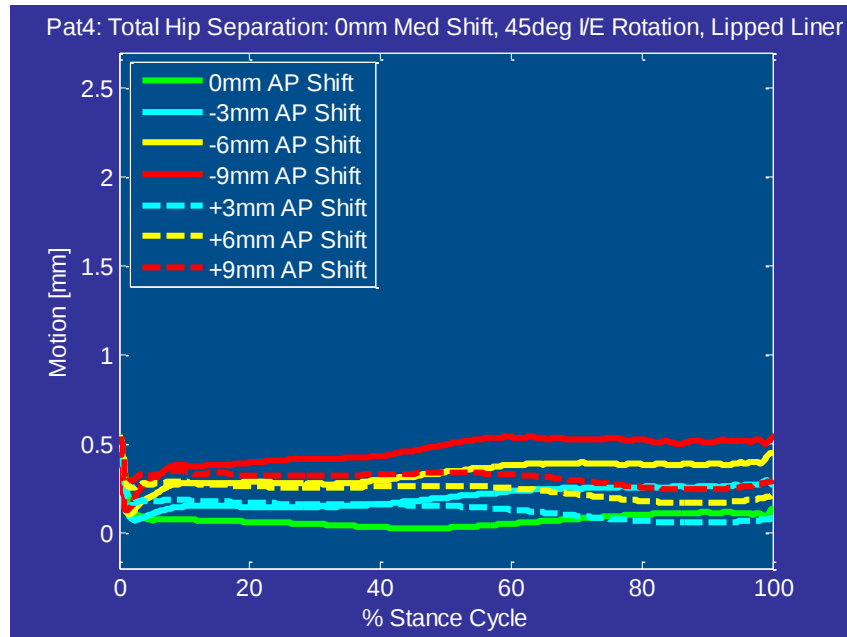


(b)

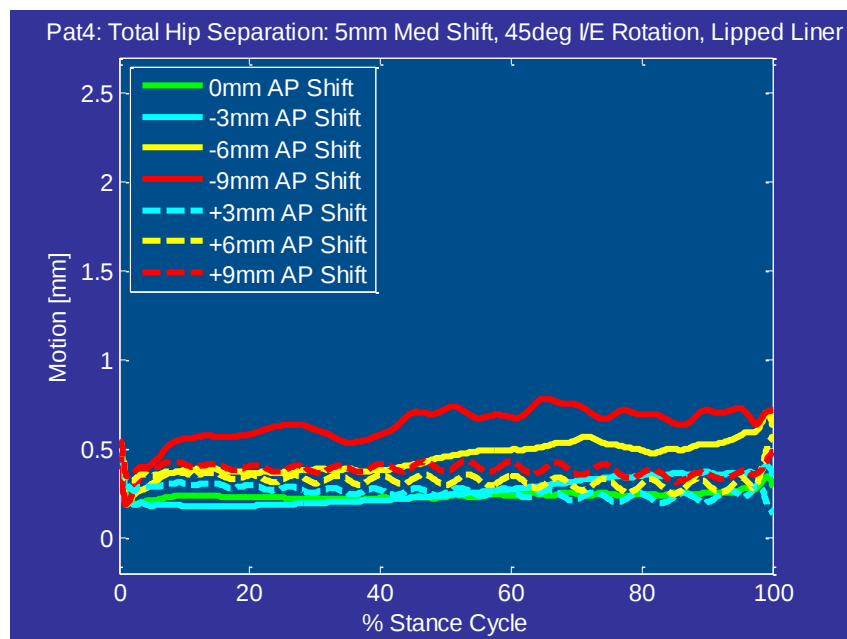
Figure E94: Pat 4: Augmented Liner: Hip Force

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

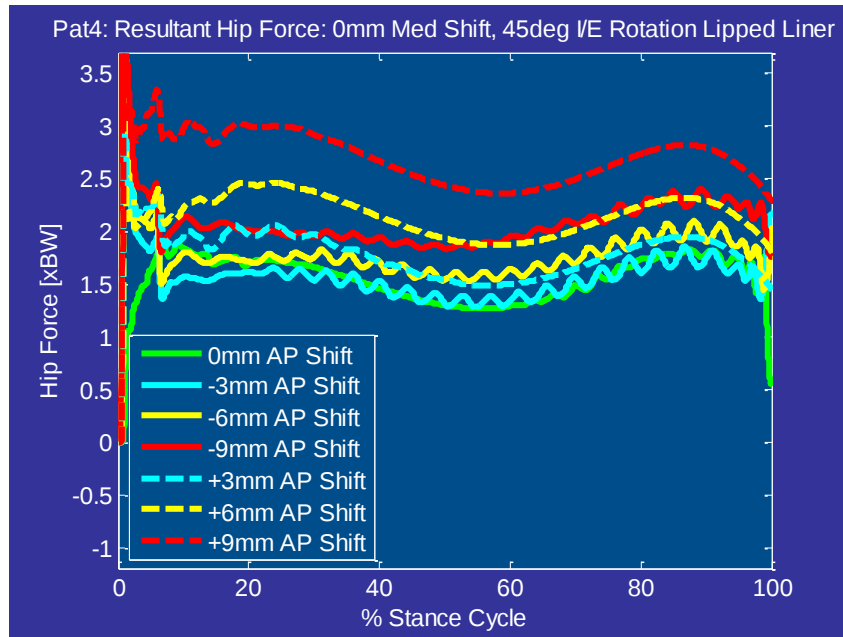


(b)

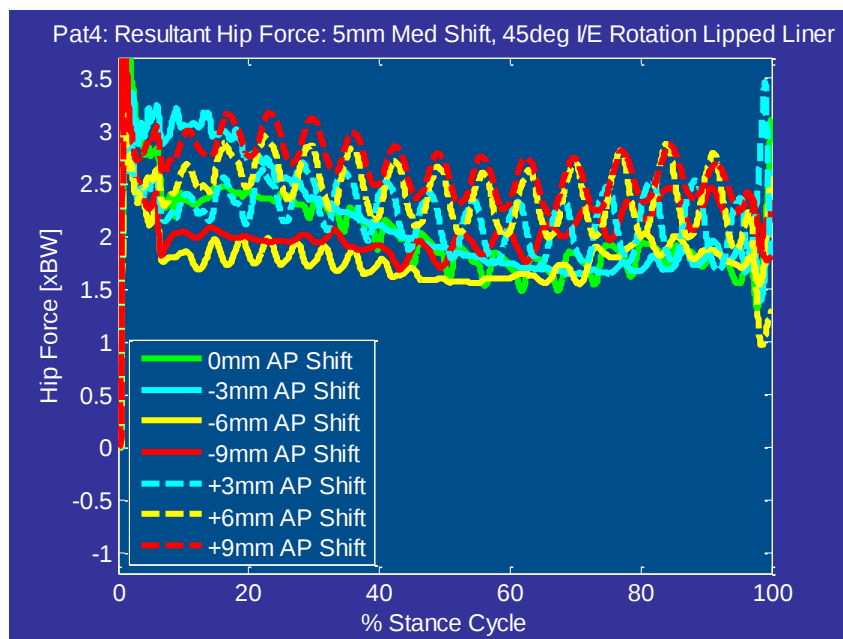
Figure E95: Pat 4: Lipped Liner: Separation

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

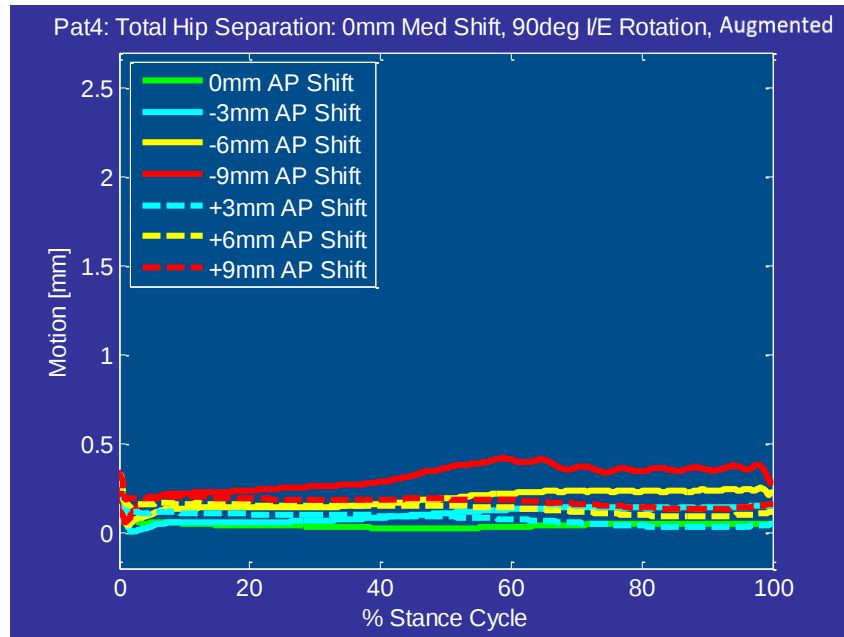


(b)

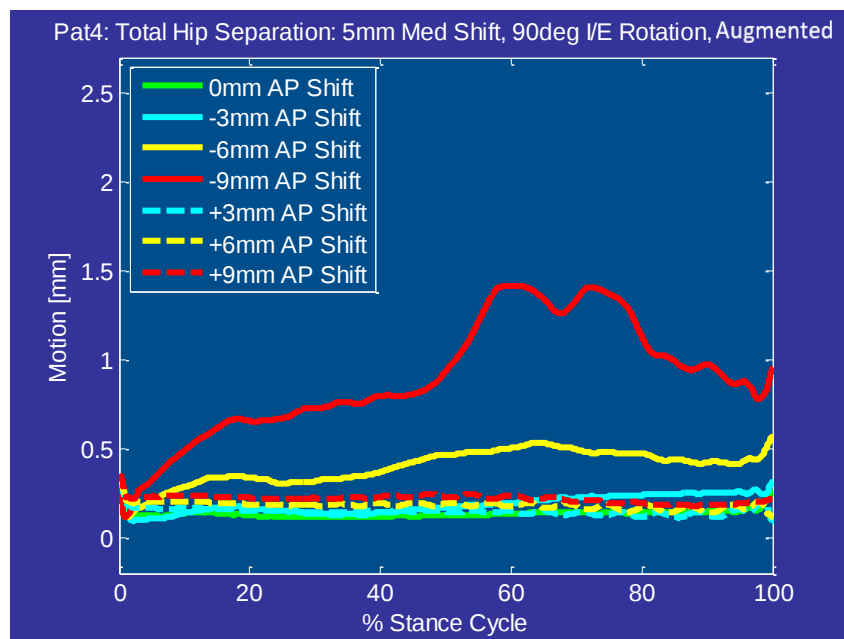
Figure E96: Pat 4: Lipped Liner: Hip Force

45° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

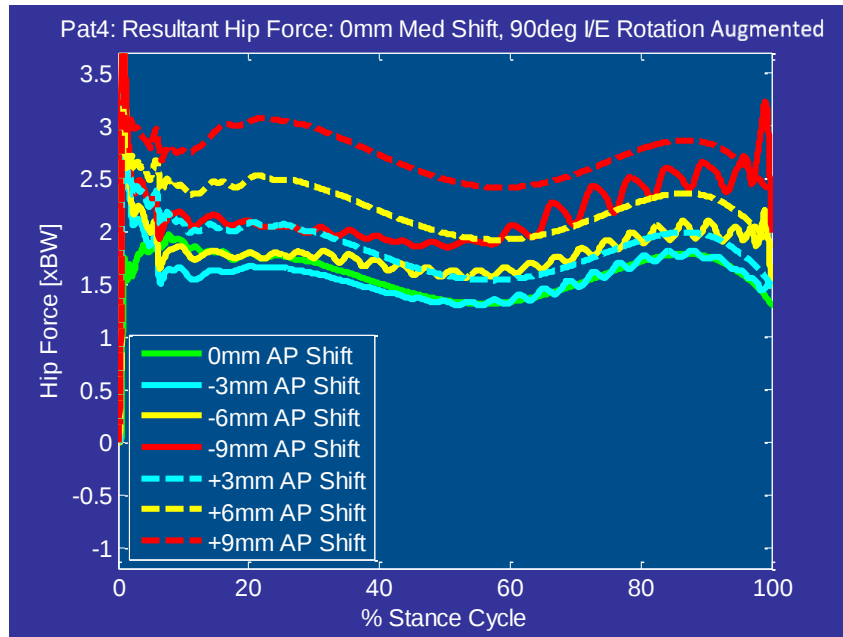


(b)

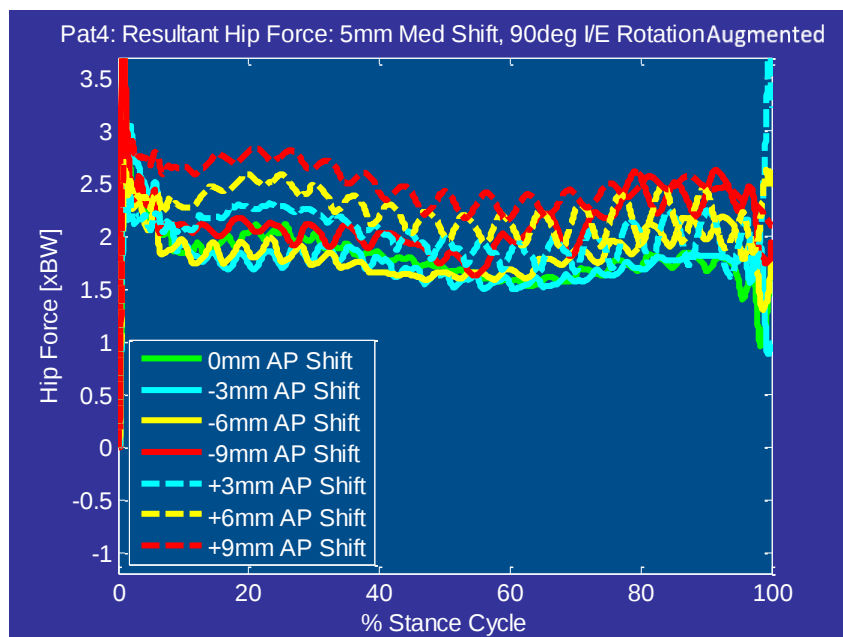
Figure E97: Pat 4: Augmented Liner: Separation

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

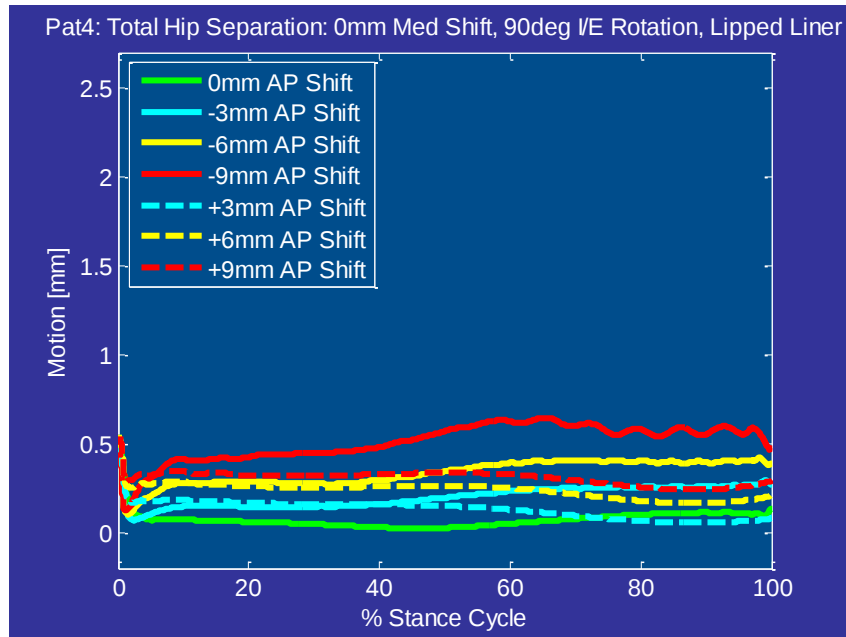


(b)

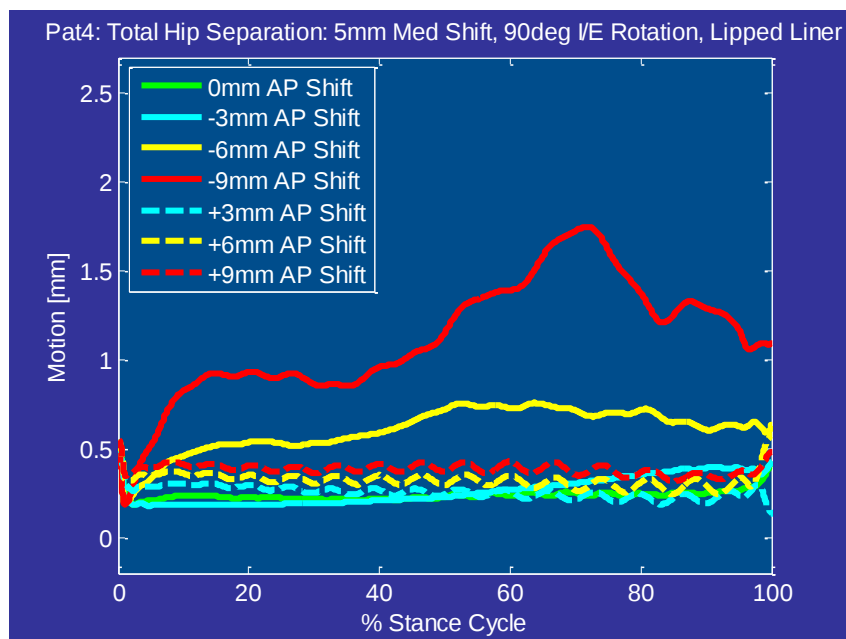
Figure E98: Pat 4: Augmented Liner: Hip Force

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

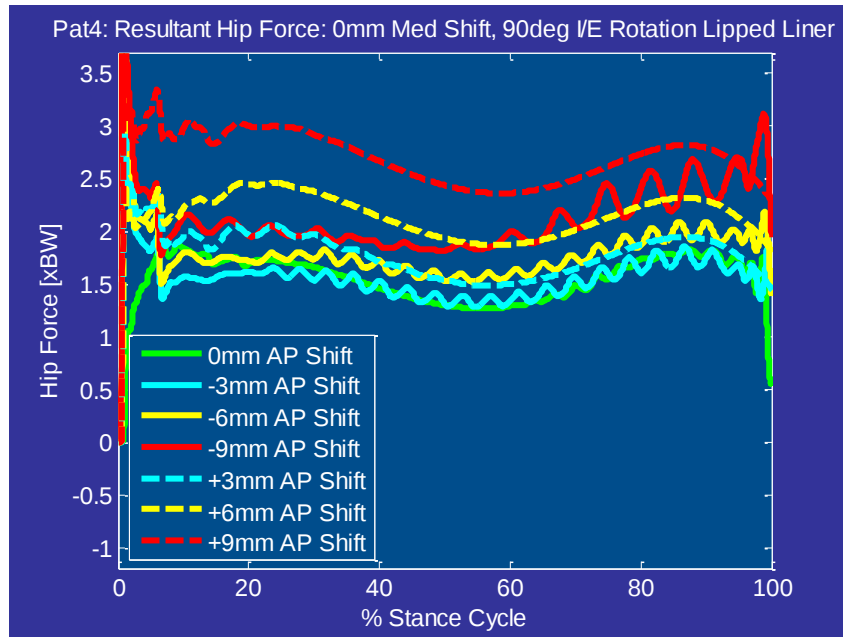


(b)

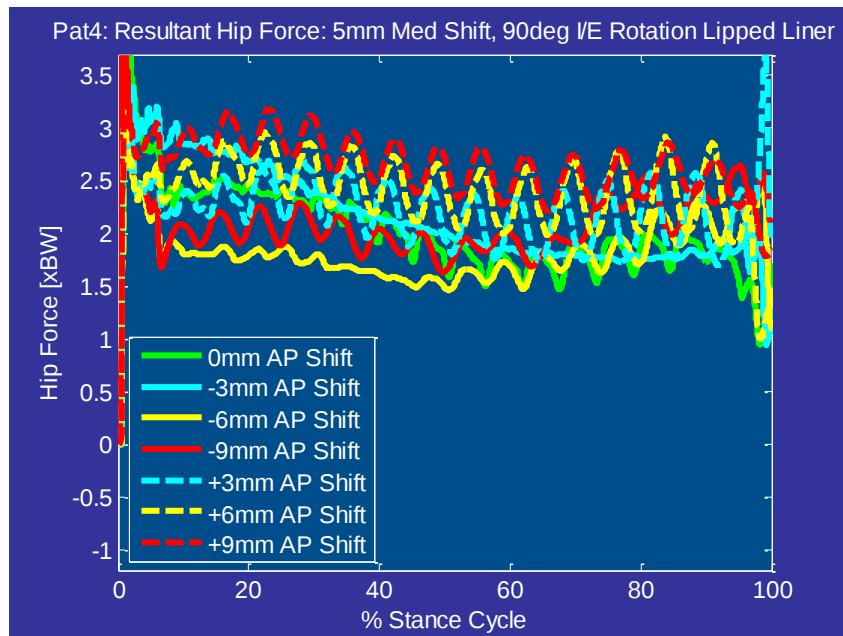
Figure E99: Pat 4: Lipped Liner: Separation

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

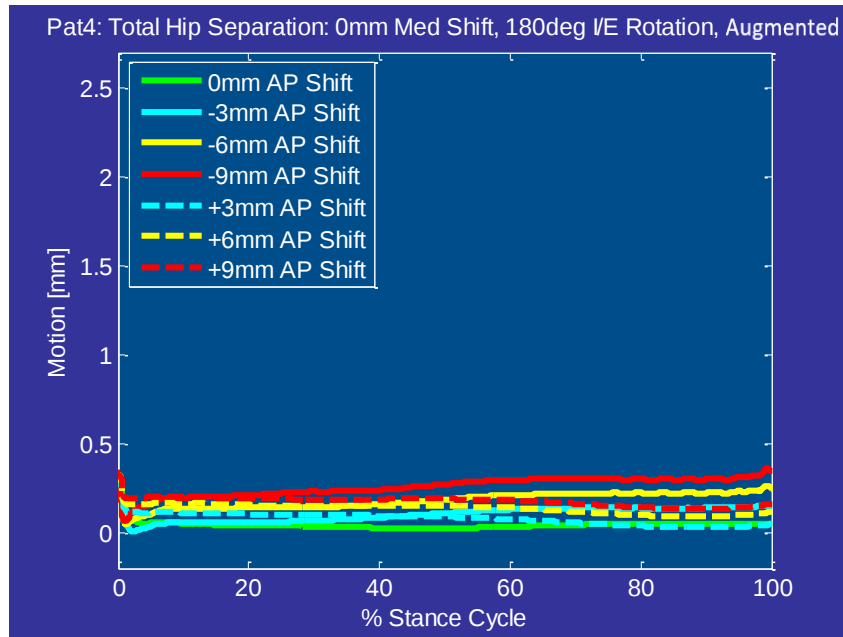


(b)

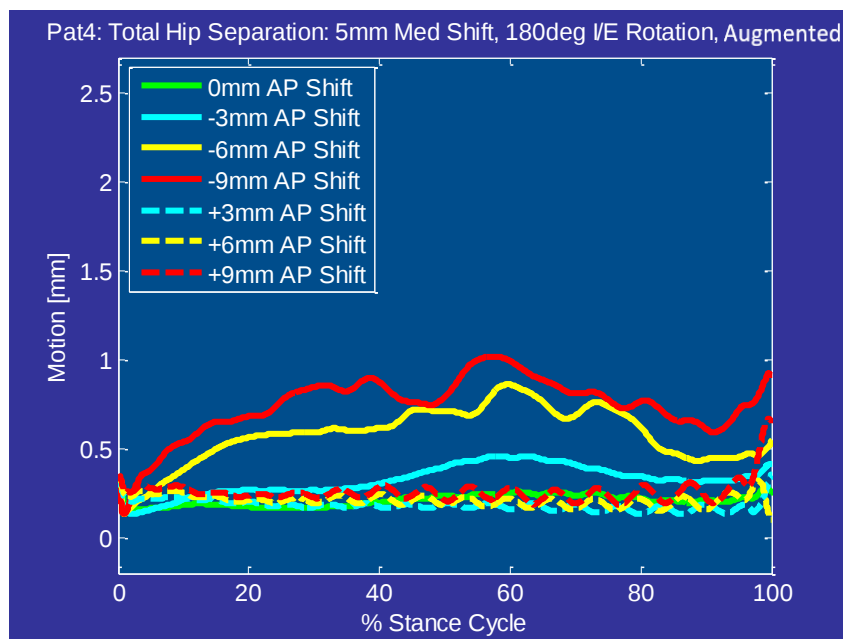
Figure E100: Pat 4: Lipped Liner: Hip Force

90° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

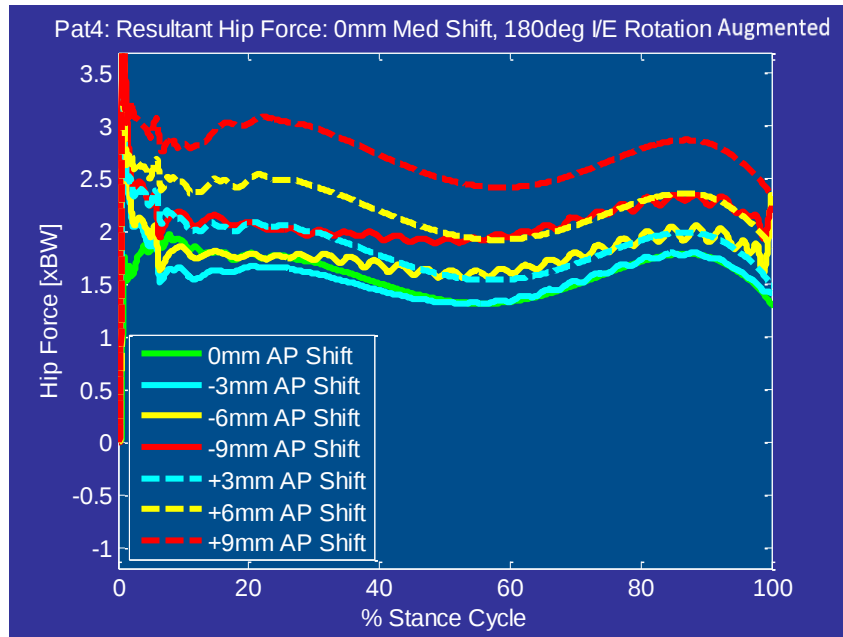


(b)

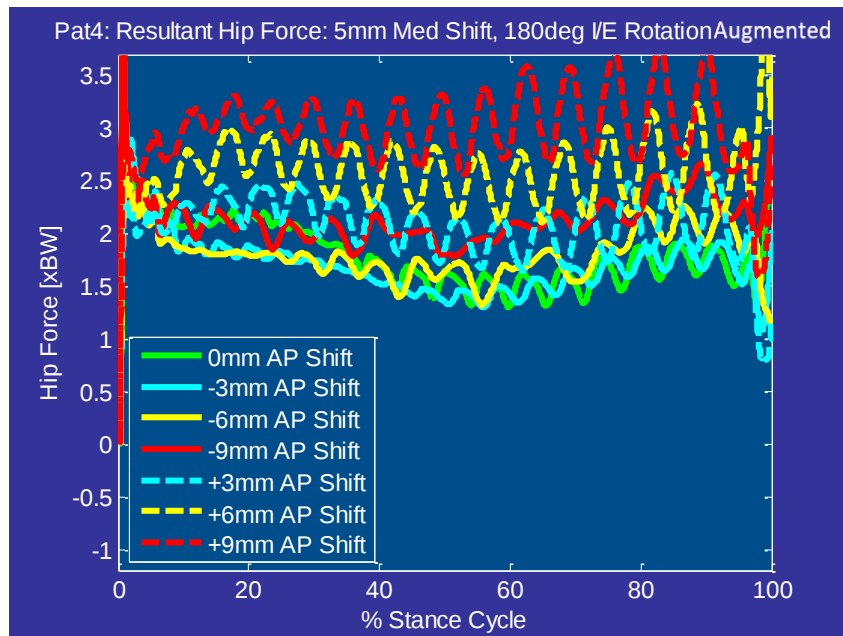
Figure E101: Pat 4: Augmented Liner: Separation

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

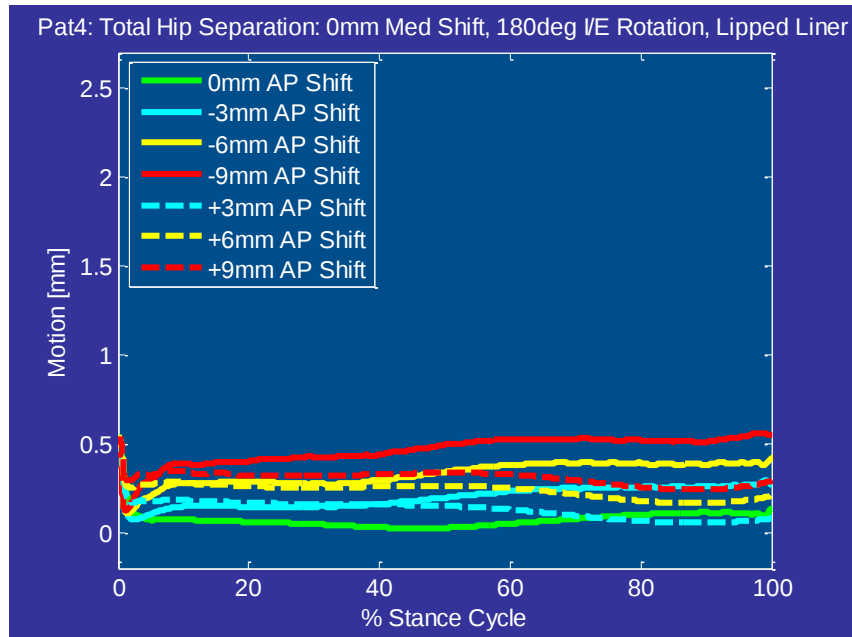


(b)

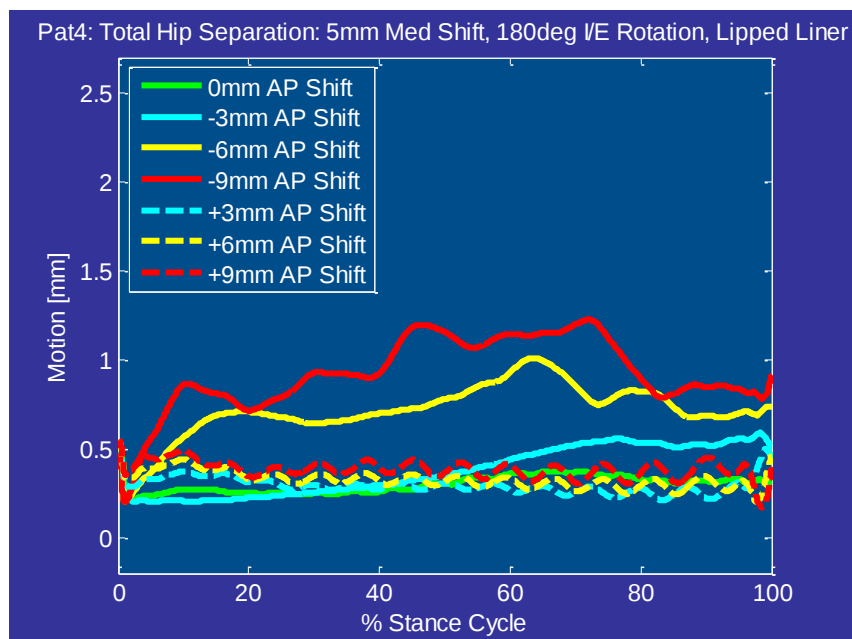
Figure E102: Pat 4: Augmented Liner: Hip Force

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)

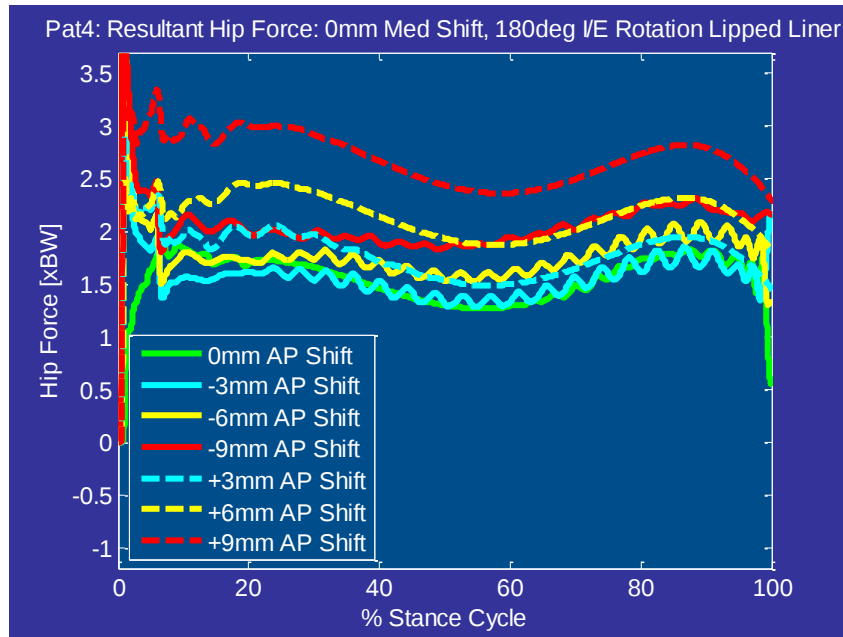


(b)

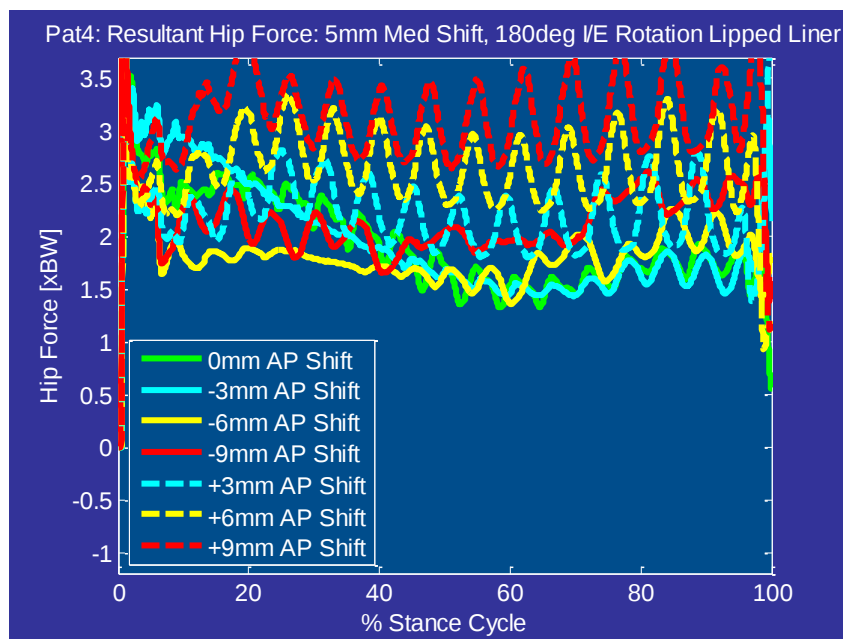
Figure E103: Pat 4: Lipped Liner: Separation

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift



(a)



(b)

Figure E104: Pat 4: Lipped Liner: Hip Force

180° I/E Cup Rotation

Rotational Center (RC) alignment, for (a) 0mm and (b) 5mm medial shift