COURSE READER
BME 599 ~ Modeling & Simulation of Human Movement

1. Delp SL, Anderson FC, Arnold AS, Loan P, Habib A, John CT, Guendelman E, Thelen DG. OpenSim: Open-source software to create and analyze dynamic simulations of movement. *IEEE Transactions on Biomedical Engineering* 54(11):1940-50, 2007.

2. Anderson FC, Pandy MG. A dynamic optimization solution for vertical jumping in three dimensions. *Computer Methods in Biomechanics and Biomedical Engineering* 2(3):201-31, 1999.

3. Zajac FE. Muscle coordination of movement: a perspective. *Journal of Biomechanics* 26(Suppl 1): 109-24, 1993.

4. Buchanan TS, Lloyd DG, Manal K, Besier TF. Neuromusculoskeletal modeling: estimation of muscle forces and joint moments and movements from measurements of neural command. *Journal of Applied Biomechanics* 20(4):367-95, 2004.

5. Erdemir A, McLean S, Herzog W, van den Bogert AJ. Model-based estimation of muscle forces exerted during movements. *Clinical Biomechanics (Bristol, Avon)* 22(2):131-54, 2007.

6. Arnold AS, Salinas S, Asakawa DJ, Delp SL. Accuracy of muscle moment arms estimated from MRI-based musculoskeletal models of the lower extremity. *Computer Aided Surgery* 5(2):108-19, 2000.

7. Delp SL, Hess WE, Hungerford DS, Jones LC. Variation of rotation moment arms with hip flexion. *Journal of Biomechanics* 32(5):493-501, 1999.

8. Blemker SS, Asakawa DS, Gold GE, Delp SL. Image-based musculoskeletal modeling: applications, advances, and future opportunities. *Journal of Magnetic Resonance Imaging* 25(2):441-51, 2007.

9. Lu TW, O'Connor JJ. Bone position estimation from skin marker co-ordinates using global optimisation with joint constraints. *Journal of Biomechanics* 32(2):129-34, 1999.

10. De Groote F, De Laet T, Jonkers I, De Schutter J. Kalman smoothing improves the estimation of joint kinematics and kinetics in marker-based human gait analysis. *Journal of Biomechanics* 41(16):3390-8, 2008.

11. Gilchrist LA, Winter DA. A multisegment computer simulation of normal human gait. *IEEE Transactions on Rehabilitation Engineering* 5(4):290-9, 1997.

12. Remy CD, Thelen DG. Optimal estimation of dynamically consistent kinematics and kinetics for forward dynamic simulation of gait. *Journal of Biomechanical Engineering* 131(3):031005-1-9, 2009.

13. Reinbolt JA, Schutte JF, Fregly BJ, Koh BI, Haftka RT, George AD, Mitchell KH. Determination of patient-specific multi-joint kinematic models through two-level optimization. *Journal of Biomechanics* 38(3):621-6, 2005.

14. Reinbolt JA, Haftka RT, Chmielewski TL, Fregly BJ. Are patient-specific joint and inertial parameters necessary for accurate inverse dynamics analyses of gait? *IEEE Transactions on Biomedical Engineering* 54(5):782-93, 2007.

15. Fregly BJ, Zajac FE. A state-space analysis of mechanical energy generation, absorption, and transfer during pedaling. *Journal of Biomechanics* 29(1):81-90, 1996.

16. Higginson JS, Zajac FE, Neptune RR, Kautz SA, Delp SL. Muscle contributions to support during gait in an individual with post-stroke hemiparesis. *Journal of Biomechanics* 39(10):1769-77, 2006.

17. Fregly BJ, Reinbolt JA, Rooney KL, Mitchell KH, Chmielewski TL. Design of patient-specific gait modifications for knee osteoarthritis rehabilitation. *IEEE Transactions on Biomedical Engineering* 54(9):1687-95, 2007.

18. Peasgood M, Kubica E, McPhee J. Stabilization of a dynamic walking gait simulation. *Journal of Computational and Nonlinear Dynamics* 2(1):65-72, 2007.

19. Gilchrist LA, Winter DA. A two-part, viscoelastic foot model for use in gait simulations. *Journal of Biomechanics* 29(6):795-8, 1996.

20. Mahboobin A, Cham R, Piazza SJ. The impact of a systematic reduction in shoe-floor friction on heel contact walking kinematics—A gait simulation approach. *Journal of Biomechanics* 43(8):1532-9, 2010.

21. Buchanan TS, Lloyd DG, Manal K, Besier TF. Neuromusculoskeletal modeling: estimation of muscle forces and joint moments and movements from measurements of neural command. *Journal of Applied Biomechanics* 20(4):367-95, 2004.

22. Pandy MG, Zajac FE, Sim E, Levine WS. An optimal control model for maximum-height human jumping. *Journal of Biomechanics* 23(12):1185-98, 1990.

23. Zajac FE. Muscle and tendon: properties, models, scaling, and application to biomechanics and motor control. *Critical Reviews in Biomedical Engineering* 17(4):359-411, 1989.

24. Anderson FC, Pandy MG. Static and dynamic optimization solutions for gait are practically equivalent. *Journal of Biomechanics* 34(2):153-61, 2001a.

25. van den Bogert AJ, Gerritsen KG, Cole GK. Human muscle modelling from a user's perspective. *Journal of Electromyography and Kinesiology* 8(2):119-24, 1998.

26. De Groote F, Van Campen A, Jonkers I, De Schutter J. Sensitivity of dynamic simulations of gait and dynamometer experiments to hill muscle model parameters of knee flexors and extensors. *Journal of Biomechanics* 43(10):1876-83, 2010.

27. Garner BA, Pandy MG. Estimation of musculotendon properties in the human upper limb. *Annals of Biomedical Engineering* 31(2):207-20, 2003.

28. Arnold EM, Ward SR, Lieber RL, Delp SL. A model of the lower limb for analysis of human movement. *Annals of Biomedical Engineering* 38(2):269-79, 2010.

29. Ward SR, Eng CM, Smallwood LH, Lieber RL. Are current measurements of lower extremity muscle architecture accurate? *Clinical Orthopedics and Related Research* 467(4):1074-82, 2009.

30. Arnold AS, Delp SL. Rotational moment arms of the medial hamstrings and adductors vary with femoral geometry and limb position: implications for the treatment of internally rotated gait. *Journal of Biomechanics* 34(4):437-47, 2001.

31. Arnold AS, Asakawa DJ, Delp SL. Do the hamstrings and adductors contribute to excessive internal rotation of the hip in persons with cerebral palsy? *Gait & Posture* 11(3):181-90, 2000.

32. Franklin DW, So U, Kawato M, Milner TE. Impedance control balances stability with metabolically costly muscle activation. *Journal of Neurophysiology* 92(5):3097-105, 2004.

33. Selen LP, Franklin DW, Wolpert DM. Impedance control reduces instability that arises from motor noise. *Journal of Neuroscience* 29(40):12606-16, 2009.

34. Gerritsen KGM, van den Bogert AJ, Hulliger M, Zernicke R. Intrinsic muscle properties facilitate locomotor control – a computer simulation study. *Motor Control* 2(3):206-20, 1998.

35. van der Kooij H, Jacobs R, Koopman B, Grootenboer H. A multisensory integration model of human stance control. *Biological Cybernetics* 80(5):299-308, 1999.

36. Fraysse F, Dumas R, Cheze L, Wang X. Comparison of global and joint-to-joint methods for estimating the hip joint load and the muscle forces during walking. *Journal of Biomechanics* 42(14):2357-62, 2009.

37. Glitsch U, Baumann W. The three-dimensional determination of internal loads in the lower extremity. *Journal of Biomechanics* 30(11-12):1123-31, 1997.

38. Anderson FC, Pandy MG. Dynamic optimization of human walking. *Journal of Biomechanical Engineering* 123(5):381-90, 2001b.

39. Thelen DG, Anderson FC. Using computed muscle control to generate forward dynamic simulations of human walking from experimental data. *Journal of Biomechanics* 39(6):1107-15, 2006.

40. Lloyd DG, Besier TF. An EMG-driven musculoskeletal model to estimate muscle forces and knee joint moments in vivo. *Journal of Biomechanics* 36(6):765-76, 2003.

41. Shao Q, Bassett DN, Manal K, Buchanan TS. An EMG-driven model to estimate muscle forces and joint moments in stroke patients. *Computers in Biology and Medicine* 39(12):1083-8, 2009.

42. Bunderson NE, Burkholder TJ, Ting LH. Reduction of neuromuscular redundancy for postural force generation using an intrinsic stability criterion. *Journal of Biomechanics* 41(7):1537-44, 2008.

43. Ting LH, McKay JL. Neuromechanics of muscle synergies for posture and movement. *Current Opinion in Neurobiology* 17(6):622–628, 2007.