



## Daniel P. Ferris Ph.D.

Associate Professor  
Division of Kinesiology  
Department of Biomedical Engineering  
3060C CCRB  
Ann Arbor, MI 48109  
(734) 615-1711

[ferrisd@umich.edu](mailto:ferrisd@umich.edu)

[My website](#)

[My other website](#)

 [Download](#) this page



### Research Interests

My research focuses on how the nervous system and musculoskeletal system interact to produce coordinated locomotion. I use multiple techniques from neurophysiology, engineering, and biomechanics to study human walking and running. Specifically, my approaches include myoelectrically controlled robotic exoskeletons, inverse dynamics, electromyography, Hoffmann reflex recording, and computer simulations. Projects examine locomotion in neurologically intact and spinal cord injury subjects. The aim of the research is to provide a better understanding of neuromechanical control and design better strategies and devices for neurological rehabilitation.

### Selected References

Zehr EP, Balter JE, Ferris DP, Hundza SR, Loadman PM and Stoloff RH (2007) Neural regulation of rhythmic arm and leg movement is conserved across human locomotor tasks. *Journal of Physiology*, in press.

Gordon KE and Ferris DP (2007) Learning to walk with a robotic ankle exoskeleton. *Journal of Biomechanics*, in press.

Simon AM, Gillespie RB and Ferris DP (2007) Symmetry-based resistance as a novel means of lower limb rehabilitation. *Journal of Biomechanics*, 40:1286-92.

Stoloff RH, Zehr EP and Ferris DP (2007) Recumbent stepping has similar but simpler neural control compared to walking. *Experimental Brain Research*, 178:427-

38.

Sawicki GS, Domingo A and Ferris DP (2006) The effects of powered ankle foot orthoses on muscle activation and joint kinematics during walking by individuals with incomplete spinal cord injury. *Journal of Neuroengineering and Rehabilitation*, 3(1):3.

Ferris DP, Huang HJ and Kao P-C (2006) Moving the arms to activate the legs. *Exercise and Sport Sciences Reviews*, 34:113-20.

Ferris DP, Sawicki GS and Domingo AR (2005) Powered lower limb orthoses for gait rehabilitation. *Topics in Spinal Cord Injury Rehabilitation*, 11:34-49.

Kao P-C and Ferris DP (2005) The effect of movement frequency on interlimb coupling during recumbent stepping. *Motor Control*, 9:144-163.

Huang HJ and Ferris DP (2004) Neural coupling between upper and lower limbs during recumbent stepping. *Journal of Applied Physiology*, 97:1299-1308.

Ferris DP, Gordon KE, Beres JA and Harkema SH (2004) Muscle activation during unilateral stepping occurs in the nonstepping limb of humans with clinically complete spinal cord injury. *Spinal Cord*, 42:14-23.

Find more publications by [Dr. Daniel Ferris](#)  
Last updated 5/8/2007 [Click here to update](#)

00341