

# MICHAEL J. PAVOL

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Oregon State University  
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## EDUCATION

**The Ohio State University**, Columbus, OH

Ph.D., Biomedical Engineering, 1999.

Major concentration: Biomechanics.

Minor concentrations: Rehabilitation, Neuromuscular Systems, Exercise Physiology.

Dissertation: Biomechanical determinants of the outcome of an induced trip in healthy older adults

**Rensselaer Polytechnic Institute**, Troy, NY

Masters of Engineering, Computer and Systems Engineering, 1985.

Concentration: Automatic Control Systems.

Master's Project: A least-squares projection algorithm for reduced-order modeling.

**Rensselaer Polytechnic Institute**, Troy, NY

Bachelor of Science, Computer and Systems Engineering, 1984.

## PROFESSIONAL EXPERIENCE

- 2002-present **Oregon State University**, Corvallis, OR  
2011-present **School of Biological & Population Health Sciences**, Associate Professor  
2008-2011 **Department of Nutrition and Exercise Sciences**, Associate Professor  
2005-2008 **Department of Nutrition and Exercise Sciences**, Assistant Professor  
2002-2005 **Department of Exercise and Sport Science**, Assistant Professor
- 2000-2002 **University of Illinois at Chicago**, **Department of Physical Therapy**, Chicago, IL  
Post-doctoral Research Associate
- 1999-2000 **Northwestern University Medical School**, **Department of Physical Therapy and Human Movement Sciences**, Chicago, IL  
Post-doctoral Research Associate
- 1992-1999 **The Cleveland Clinic Foundation**, **Department of Biomedical Engineering**, Cleveland, OH  
Graduate Research Assistant
- 1985-1991 **Texas Instruments**, **Industrial Systems Division**, Johnson City, TN  
Applications Engineer. Developed control systems for the food, gas and petroleum, paper, and chemical industries. Helped develop the Applications Productivity Tool programming product.

## **Professional Affiliations**

- 2017-present **Oregon State University**, **Bioengineering Graduate Program**, Affiliated Faculty Member  
2015-present **Oregon State University**, **Human-Centered Design Faculty Group**, Member  
2005-2006 **Oregon State University**, **School of Mechanical, Industrial & Manufacturing Engineering**, Adjunct Faculty Member  
2004-present **Oregon State University**, **Center for Healthy Aging Research**, Member  
2003-present **Oregon State University**, **Center for Accessible Transportation**, Member  
2003-present **Oregon State University**, **Gerontology Program**, Affiliated Faculty Member

## PUBLICATIONS AND PRESENTATIONS

### **Refereed Publications**

- Agiovlasitis S, McCubbin JA, Yun J, Widrick JJ, Pavol MJ. Gait characteristics of adults with Down syndrome explain their greater metabolic rate during walking. *Gait & Posture*, 2015;41:180-184.
- Mache MA, Hoffman MA, Hannigan K, Golden GM, Pavol MJ. Effects of decision making on landing mechanics as a function of task and sex. *Clinical Biomechanics*, 2013;28:104-109.

### Refereed Publications (cont.)

- Kadono N, Pavol MJ. Effects of aging-related losses in strength on the ability to recover from a backward balance loss. *Journal of Biomechanics*, 2013;46:13-18.
- McNamara AJ, Pavol MJ, Gunter KB. Meeting physical activity guidelines through community-based group exercise: "Better bones and balance". *Journal of Aging & Physical Activity*, 2013;21:155-166.
- Perrier ET, Pavol MJ, Hoffman MA. The acute effects of a warm-up including static or dynamic stretching on countermovement jump height, reaction time, and flexibility. *Journal of Strength & Conditioning Research*, 2011;25:1925-1931.
- Pai YC, Bhatt T, Wang E, Espy D, Pavol MJ. Inoculation against falls: Rapid adaptation by young and older adults to slips during daily activities. *Archives of Physical Medicine & Rehabilitation*, 2010;91:452-459.
- Agiovlasitis S, McCubbin JA, Yun J, Mpitsos G, Pavol MJ. Effects of Down syndrome on three-dimensional motion during walking at different speeds. *Gait & Posture*, 2009;30:345-350.
- Golden GM, Pavol MJ, Hoffman MA. Knee joint kinematics and kinetics during a lateral false-step maneuver. *Journal of Athletic Training*, 2009;44:503-510.
- Agiovlasitis S, McCubbin JA, Yun J, Pavol MJ, Widrick JJ. Economy and preferred speed of walking in adults with and without Down syndrome. *Adapted Physical Activity Quarterly*, 2009;26:118-130.
- Agiovlasitis S, Yun J, Pavol MJ, McCubbin JA, Kim S. Gait transitions of persons with and without intellectual disability. *Research Quarterly for Exercise and Sport*, 2008;79:487-494.
- Sasimontokul S, Bay BK, Pavol MJ. Bone contact forces on the distal tibia during the stance phase of running. *Journal of Biomechanics*, 2007;40:3503-3509.
- Bauer JJ, Pavol MJ, Snow CM, Hayes WC. MRI-derived body segment parameters of children differ from age-based estimates derived using photogrammetry. *Journal of Biomechanics*, 2007;40:2904-2910.
- Pavol MJ, Pai YC. Deficient limb support is a major contributor to age differences in falling. *Journal of Biomechanics*, 2007;40:1318-1325.
- Pai YC, Yang F, Wening JD, Pavol MJ. Mechanisms of limb collapse following a slip among young and older adults. *Journal of Biomechanics*, 2006;39:2194-2204.
- Grabiner MD, Owings TM, Pavol MJ. Lower extremity strength plays only a small role in determining the maximum recoverable lean angle in older adults. *Journal of Gerontology: Medical Sciences*, 2005;60:1447-1450.
- Pavol MJ, Runtz EF, Pai YC. Diminished stepping responses lead to a fall following a novel slip induced during a sit-to-stand. *Gait and Posture*, 2004;20:154-162.
- Pavol MJ, Runtz EF, Pai YC. Young and older adults exhibit proactive and reactive adaptations to repeated slip exposure. *Journal of Gerontology: Medical Sciences*, 2004;59:494-502.
- Pai YC, Wening JD, Runtz EF, Iqbal K, Pavol MJ. Role of feedforward control of movement stability in reducing slip-related balance loss and falls among older adults. *Journal of Neurophysiology*, 2003;90:755-762.
- Pavol MJ, Pai YC. Feedforward adaptations are used to compensate for a potential loss of balance. *Experimental Brain Research*, 2002;145:528-538.
- Pavol MJ, Runtz EF, Edwards BJ, Pai YC. Age influences the outcome of a slipping perturbation during initial but not repeated exposures. *Journal of Gerontology: Medical Sciences*, 2002;57A:M496-503.
- Pavol MJ, Owings TM, Grabiner MD. Body segment inertial parameter estimation for the general population of older adults. *Journal of Biomechanics*, 2002;35:707-712.
- Owings TM, Pavol MJ, Grabiner MD. Lower extremity muscle strength does not independently predict proximal femur bone mineral density in healthy older adults. *Bone*, 2002;30:515-520.
- Pavol MJ, Owings TM, Foley KT, Grabiner MD. Influence of lower extremity strength of healthy older adults on the outcome of an induced trip. *Journal of the American Geriatrics Society*, 2002;50:256-262.
- van den Bogert AJ, Pavol MJ, Grabiner MD. Response time is more important than walking speed for the ability of older adults to avoid a fall after a trip. *Journal of Biomechanics*, 2002;35:199-205.
- Owings TM, Pavol MJ, Grabiner MD. Mechanisms of failed recovery following postural perturbations on a motorized treadmill mimic those associated with an actual forward trip. *Clinical Biomechanics*, 2001;16:813-819.
- Pavol MJ, Owings TM, Foley KT, Grabiner MD. Mechanisms leading to a fall from an induced trip in healthy older adults. *Journal of Gerontology: Medical Sciences*, 2001;56A:M428-437.
- Brady RA, Pavol MJ, Owings TM, Grabiner MD. Foot displacement but not velocity predicts the outcome of a slip induced in young subjects while walking. *Journal of Biomechanics*, 2000;33:803-808.

### **Refereed Publications (cont.)**

- Pavol MJ, Grabiner, MD. Knee strength variability between individuals across ranges of motion and hip angles. *Medicine and Science in Sports and Exercise*, 2000;32:985-992.
- Owings TM, Pavol MJ, Foley KT, Grabiner MD. Measures of postural stability are not predictors of recovery from large postural disturbances in healthy older adults. *Journal of the American Geriatrics Society*, 2000;48:42-50.
- Pavol MJ, Owings TM, Foley KT, Grabiner MD. Gait characteristics as risk factors for falling from trips induced in older adults. *Journal of Gerontology: Medical Sciences*, 1999;54A:M583-590.
- Foley KT, Owings TM, Pavol MJ, Grabiner MD. Maximum grip strength is not related to bone mineral density of the proximal femur in older adults. *Calcified Tissue International*, 1999;64:291-294.
- Pavol MJ, Owings TM, Foley KT, Grabiner MD. The sex and age of older adults influence the outcome of induced trips. *Journal of Gerontology: Medical Sciences*, 1999;54A:M103-108.
- Gatt CJ, Pavol MJ, Parker RD, Grabiner MD. Three-dimensional knee joint kinetics during a golf swing: influences of skill level and footwear. *American Journal of Sports Medicine*, 1998;26:285-294.

### **Refereed Publications in Revision/Review**

- Pavol MJ, Hoffman MA, Kipp K. Effects of fatiguing exercise on peak angles and moments during landing last less than two days in women and men. *American Journal of Sports Medicine*, in revision.

### **Conference Proceedings Publications**

- Hunter-Zaworski K, Pavol M, Philbrick K. Minimum spatial requirements for an accessible aircraft lavatory. *Proceedings of the 12th International Conference on Mobility and Transport for Elderly and Disabled Persons*, Hong Kong, China, 2010.
- Kipp K, Pavol MJ. Effects of the seat armrest and assistive devices on trunk kinematics during dependent transfers on an aircraft. *Proceedings of the Human Factors and Ergonomics Society, 52nd Annual Meeting*, New York, NY, 2008.
- Philbrick KA, Pavol MJ. Spatial consumption and kinematics for an assisted transfer in an aircraft lavatory. *Proceedings of the Human Factors and Ergonomics Society, 52nd Annual Meeting*, New York, NY, 2008.
- Higginson B, Welsh L, Pavol M. Risk factors for injury during dependent transfers on an aircraft. *Proceedings of the 11th International Conference on Mobility and Transport for Elderly and Disabled Persons*, Montreal, Canada, 2007.
- Philbrick K, Pavol M. Spatial requirements for an accessible aircraft lavatory. *Proceedings of the 11th International Conference on Mobility and Transport for Elderly and Disabled Persons*, Montreal, Canada, 2007.
- Higginson BK, Pavol MJ. Effects of spatial constraints on trunk kinematics during a dependent transfer on an aircraft. *Proceedings of the Human Factors and Ergonomics Society, 50th Annual Meeting*, San Francisco, CA, 2006.

### **Invited and Non-Refereed Publications**

- Maddalozzo GF, Pavol MJ, Philbrick KA, Widrick JJ, Iwaniec UT, Rosen CJ, Turner RT. Whole-body vibration slows the acquisition of fat in mature female rats: A response to BA Christiansen [Letter to the editor]. *International Journal of Obesity*, 2009;33:382-383.
- Pavol MJ. Detecting and understanding differences in postural sway. Focus on "A new interpretation of spontaneous sway measures based on a simple model of human postural control". *Journal of Neurophysiology*, 2005;93:20-21.
- Grabiner MD, Pavol MJ, Owings TM. Can fall-related hip fractures be prevented by characterizing the biomechanical mechanisms of failed recovery? *Endocrine*, 2002;17:15-20.
- Owings, TM, Pavol MJ, Foley KT, Grabiner PC, Grabiner MD. Exercise: Is it a solution to falls by older adults? *Journal of Applied Biomechanics*, 1999;15:56-63.

### **Refereed Presentations**

- Haberly GJ, Pavol MJ. Predicted effects of strength training on the ability of older adults to recover from a backward balance loss. ISB / ASB 2019, Calgary, Alberta, Canada, 2019.
- Stutzenberger L, Pavol M. Effect of trunk position and angle of pull on spinal loading during a row exercise. American Society of Biomechanics, 41st Annual Meeting, Boulder, CO, 2017.
- Stutzenberger L, Pavol M. Effect of trunk position on spinal loading during angled rows. Northwest Biomechanics Symposium 2017, Eugene, OR, 2017.

### **Refereed Presentations (cont.)**

- Zorn JM, Pavol MJ. Hip loading during forward and side lunges. American Society of Biomechanics, 39th Annual Meeting, Columbus, OH, 2015.
- Haberly G, Pavol M. Hip loading during the squat exercise. 2014 Northwest Biomechanics Symposium, Salem, OR, 2014.
- Doran ER, Pavol MJ. Effects on lumbar loading of adding upper body resistance to a squat exercise. American Society of Biomechanics, 37th Annual Meeting, Omaha, NE, 2013.
- Silverman S, Yun J, Pavol M. Effects of restricted ankle range of motion on human walking: An application to transtibial amputee gait patterns. North American Federation of Adapted Physical Activity 2012 Conference, Birmingham, AL, 2012.
- Agiovlasitis S, McCubbin JA, Yun J, Widrick JJ, Mpitsos G, Pavol MJ. Gait characteristics of adults with Down syndrome explain their greater metabolic rate during walking. North American Federation of Adapted Physical Activity 2012 Conference, Birmingham, AL, 2012.
- McGregor SF, Johnson ST, Pavol MJ. Effects of long-term use of ankle taping on balance. American Society of Biomechanics, 36th Annual Meeting, Gainesville, FL, 2012.
- Kadono N, Pavol MJ. Which muscles limit the ability of older adults to recover balance? American Society of Biomechanics, 36th Annual Meeting, Gainesville, FL, 2012.
- Mache MA, Hoffman MA, Pavol MJ. Effect of decision making on frontal plane hip muscle co-activation patterns during landing. American College of Sports Medicine, 59th Annual Meeting, San Francisco, CA, 2012.
- Mache M, Hoffman MA, Pavol MJ. Effect of decision making on landing mechanics in women and men. American Society of Biomechanics, 35th Annual Meeting, Long Beach, CA, 2011.
- Golden GM, Pavol MJ, Hoffman MA. Sex differences in frontal-plane kinematics and kinetics of the knee and hip during running and rapid change-of-direction tasks. ACL Research Retreat V, Greensboro, NC, 2010.
- Kadono N, Pavol M. Effects of aging-related losses in muscle strength on the feasible region for balance recovery. American Society of Biomechanics, 33rd Annual Meeting, State College, PA, 2009.
- Golden GM, Pavol MJ, Hoffman MA. Sex differences in frontal-plane kinematics and kinetics of the knee and hip during running and rapid change-of-direction tasks. National Athletic Trainers' Association, 60th Annual Meeting, San Antonio, TX, 2009.
- Agiovlasitis S, Pavol MJ, Yun J, McCubbin JA, Widrick JJ. Predictors of metabolic rate during treadmill walking in adults with and without Down syndrome. 9th North American Federation of Adapted Physical Activity Symposium, Indianapolis, IN, 2008.
- Kipp K, Pavol M. Effects of the seat armrest and assistive devices on lumbar kinetics during dependent transfers on an aircraft. 4th North American Congress on Biomechanics, Ann Arbor, MI, 2008.
- Agiovlasitis S, Pavol MJ, McCubbin JA, Yun J. Effects of Down syndrome on mediolateral motion during walking at different speeds. 4th North American Congress on Biomechanics, Ann Arbor, MI, 2008.
- Agiovlasitis S, McCubbin JA, Widrick J, Yun J, Pavol MJ. Walking economy and preferred walking speed in adults with and without Down syndrome. American College of Sports Medicine, 55th Annual Meeting, Indianapolis, IN, 2008.
- Kipp K, Pavol M. Predictors of lumbar loading during dependent transfers on board an aircraft. 2008 Northwest Biomechanics Symposium, Boise, ID, 2008.
- Pavol MJ, Higginson B, Kipp K. Biomechanics of dependent transfers on an aircraft. 2008 International Conference on Aging, Disability and Independence, St. Petersburg, FL, 2008.
- Welsh LR, Pavol MJ. Young adults adapt to prevent falls from unpredictable balance disturbances. American Society of Biomechanics, 31st Annual Meeting, Stanford, CA, 2007.
- Higginson BK, Welsh LR, Pavol MJ. Factors affecting lumbar kinetics during dependent transfers on an aircraft. American Society of Biomechanics, 31st Annual Meeting, Stanford, CA, 2007.
- Wallace DA, Pavol MJ, Harter RA. Efficacy of lateral wedge orthotics during stair descent in patients with knee osteoarthritis. International Society of Biomechanics, 21st Congress, Taipei, Taiwan, 2007.
- Golden GM, Pavol MJ, Hoffman MA. Relationships between standing Q-angle, hip abduction strength and knee abduction during running and sidestep cutting tasks. National Athletic Trainers' Association, 58th Annual Meeting, Anaheim, CA, 2007.
- Wallace DA, Pavol MJ, Harter RA. Efficacy of lateral wedge orthotics during level walking in patients with medial knee osteoarthritis. American College of Sports Medicine, 54th Annual Meeting, New Orleans, LA, 2007.
- Swander A, Snow C, Pavol M. Knee kinematics and kinetics of boys and girls during landing. 3rd Northwest Biomechanics Symposium, Eugene, OR, 2007.

### **Refereed Presentations (cont.)**

- Philbrick K, Pavol M. A method for calculating the spatiotemporal requirements of a movement task. 3rd Northwest Biomechanics Symposium, Eugene, OR, 2007.
- Agiouvasitis S, Yun J, McCubbin JA, Pavol MJ, Kim S. A comparison of gait transitions between persons with and without intellectual disability. 8th North American Federation of Adapted Physical Activity Symposium, Ann Arbor, MI, 2006.
- Higginson B, Welsh L, Pavol M. Risk factors for low-back injury during dependent transfers on an aircraft. American Society of Biomechanics, 30th Annual Meeting, Blacksburg, VA, 2006.
- Piazza C, Pavol M. Achilles tendon forces during a round-off back handspring. American Society of Biomechanics, 30th Annual Meeting, Blacksburg, VA, 2006.
- Higginson B, Welsh L, Pavol M. Does task difficulty influence transferee injury risk during a dependent transfer on an aircraft? 2nd Northwest Biomechanics Symposium, Vancouver, Canada, 2006.
- Golden GM, Pavol MJ, Hoffman MA. The effect of altering the width of a single step of a running stride on knee joint moments. National Athletic Trainers' Association, 57th Annual Meeting, Atlanta, GA, 2006.
- Golden GM, Pavol MJ, Hoffman MA. The effect of altering the width of a single step of a running stride on knee joint kinematics. American College of Sports Medicine, 53rd Annual Meeting, Denver, CO, 2006.
- Asahara S, Yun J, Pavol M. Kinematic characteristics and energy expenditure during manual wheelchair propulsion. American College of Sports Medicine, 53rd Annual Meeting, Denver, CO, 2006.
- Black BA, Snow CM, Pavol MJ. Effects of jump type on ground reaction forces during landing in children. International Society of Biomechanics, 20th Congress, Cleveland, OH, 2005.
- Sasimontokul S, Bay BK, Pavol MJ. Estimation of stresses and cycles to failure of the tibia during rested and fatigued running. International Society of Biomechanics, 20th Congress, Cleveland, OH, 2005.
- Wallace DA, Pavol MJ, Harter RA. Ground reaction forces during level walking with and without heel wedge orthotics. International Society of Biomechanics, 20th Congress, Cleveland, OH, 2005.
- Schafer CA, Zaworski J, Pavol MJ. A force plate for measuring contact forces during dependent transfers. Rehabilitation Engineering Society of North America 2005 Conference, Atlanta, GA, 2005.
- Golden GM, Hoffman MA, Pavol MJ, Wallace DA. The effect of warm-up routine on sit and reach, muscle onset, and vertical jump performance. National Athletic Trainers' Association, 56th Annual Meeting, Indianapolis, IN, 2005.
- Bauer JJ, Pavol MJ, Edwards DC, Snow CM, Hayes WC. Pelvic width predicts hip joint center location in children. American College of Sports Medicine, 52nd Annual Meeting, Nashville, TN, 2005.
- Lulay AT, Bauer JJ, Snow CM, Pavol MJ. Drop landing exercise does not increase maximum jump height in children. American Society of Biomechanics, 28th Annual Meeting, Portland, OR, 2004.
- Bauer JJ, Pavol MJ, Hayes WC, Snow CM. Coronal knee motion in children performing drop landings is not influenced by gender. American Society of Biomechanics, 28th Annual Meeting, Portland, OR, 2004.
- Pai YC, Pavol MJ. Reactive adaptations can avert falls among older adults. Motor Learning & Plasticity: A Satellite of the Neural Control of Movement, 14th Annual Meeting, Barcelona, Spain, 2004.
- Owings TM, Pavol MJ, Grabiner MD. Lower extremity strength plays only a small role in determining the maximum recoverable lean angle in older adults. American Society of Biomechanics, 27th Annual Meeting, Toledo, OH, 2003.
- Pai YC, Wening JD, Runtz EF, Iqbal K, Pavol MJ. Young and older adults exhibit proactive and reactive adaptations to repeated slip exposure. 3rd International Posture Symposium, Smolenice, Slovakia, 2003.
- Kim S, Kim A, Lee E, Kang S, Jeong M, Pavol M, Yun J. Intra-variability of overhand throwing patterns in children with spastic cerebral palsy. International Federation of Adapted Physical Activity, 14th Biannual Conference, Seoul, Korea, 2003.
- Pai YC, Wening JD, Runtz EF, Iqbal K, Pavol MJ. Role of movement stability in reducing slip-related balance loss and falls among older adults. IEEE Engineering in Medicine and Biology Society, 1st Conference on Neural Engineering, Capri, Italy, 2003.
- Pavol MJ, Runtz EF, Pai YC. Diminished stepping responses lead to falls in both young and older adults. IV World Congress of Biomechanics, Calgary, Alberta, Canada, 2002.
- Pai YC, Pavol MJ. Adaptation to slipping and fall prevention. IV World Congress of Biomechanics, Calgary, Alberta, Canada, 2002.
- Owings TM, Pavol MJ, Grabiner MD. Physical performance factors and falls by older adults: What is the weakest link? IV World Congress of Biomechanics, Calgary, Alberta, Canada, 2002.

### **Refereed Presentations (cont.)**

- Jackson ME, Owings TM, Pavol MJ, Grabiner MD. Head movement does not characterize the failure of recovery from an induced trip. IV World Congress of Biomechanics, Calgary, Alberta, Canada, 2002.
- Pavol MJ, Pai YC. Center of mass state at step contact influences the ability to restore balance with a backward step. American Society of Biomechanics, 25th Annual Meeting, San Diego, CA, 2001.
- Owings TM, Pavol MJ, Grabiner MD. Maximum recoverable angle of lean does not differ between older men and women. American Society of Biomechanics, 25th Annual Meeting, San Diego, CA, 2001.
- van den Bogert AJ, Pavol MJ, Grabiner MD. The influence of walking velocity and response time on the ability to avoid a fall after a trip. International Society of Biomechanics, 18th Congress, Zurich, Switzerland, 2001.
- Pavol MJ, Runtz EF, Pai YC. Diminished stepping responses lead to a fall following a novel slip induced during a sit-to-stand. Neural Control of Movement, 11th Annual Meeting, Seville, Spain, 2001.
- Pavol MJ, Runtz EF, Pai YC. Initial center of mass state does not determine the outcome of a novel slip induced during a sit-to-stand. American Society of Biomechanics, 24th Annual Meeting, Chicago, IL, 2000.
- Pavol MJ, Owings TM, Grabiner MD. Influence of lower extremity strength on the outcome of an induced trip in healthy older adults. American Society of Biomechanics, 24th Annual Meeting, Chicago, IL, 2000.
- Owings TM, Pavol MJ, Grabiner MD. Lower extremity muscle strength does not independently predict bone mineral density of the proximal femur in healthy older adults. American Society of Biomechanics, 24th Annual Meeting, Chicago, IL, 2000.
- Pavol MJ, Owings TM, Grabiner MD. A mechanism of falling from a trip in older adults related to walking speed and the support limb. American Society of Biomechanics, 23rd Annual Meeting, Pittsburgh, PA, 1999.
- Pavol MJ, Owings TM, Grabiner MD. Body mass distribution influences the outcome of a trip in older adults. American Society of Biomechanics, 23rd Annual Meeting, Pittsburgh, PA, 1999.
- Owings TM, Pavol MJ, Grabiner MD. Reactive balance strategies in response to an accelerated support surface. International Society of Biomechanics, 17th Congress, Calgary, Alberta, Canada, 1999.
- Pavol MJ, Owings TM, Foley KT, Grabiner MD. Ankle strength does not determine postural steadiness and stability limits in healthy older adults. 3rd North American Congress on Biomechanics, Waterloo, Ontario, Canada, 1998.
- Owings TM, Pavol MJ, Foley KT, Grabiner MD. Recovery from large postural perturbations is not discriminated by lower extremity strength in healthy older adults. 3rd North American Congress on Biomechanics, Waterloo, Ontario, Canada, 1998.
- Owings TM, Pavol MJ, Foley KT, Grabiner MD. Can falling behavior be predicted using measures of neuromuscular performance? American College of Sports Medicine, 45th Annual Meeting, Orlando, FL, 1998.
- Pavol MJ, Owings TM, Foley KT, Grabiner MD. Trips induced in older adults: Frequency of falls. Gerontological Society of America, 50th Annual Scientific Meeting, Cincinnati, OH, 1997.
- Pavol MJ, Grabiner MD. Estimation of knee and hip joint moments from KIN-COM forces. American Society of Biomechanics, 21st Annual Meeting, Clemson, SC, 1997.
- Owings TM, Pavol MJ, Foley KT, Grabiner MD. Postural sway and limits of stability are not predictors of fall recovery in healthy older adults. American Society of Biomechanics, 21st Annual Meeting, Clemson, SC, 1997.
- Pavol MJ, Owings TM, Foley KT, Grabiner MD. Incidence of falls resulting from trips induced in older adults. International Society of Biomechanics, 16th Congress, Tokyo, Japan, 1997.
- Pavol MJ, Grabiner MD. Range of motion, body configuration, and individual differences affect predictions of functional capacity based upon knee strength measurements. American Society of Biomechanics, 20th Annual Meeting, Atlanta, GA, 1996.
- Gatt CJ, Pavol M, Grabiner MD, Parker RD. A kinematic and kinetic analysis of the knees during a golf swing. 2nd World Congress on Sports Trauma/AOSSM Annual Meeting. Lake Buena Vista, FL, 1996.
- Lundin T, Pavol M, Grabiner M. Sway velocity may not predict postural instability. American Society of Biomechanics, 19th Annual Meeting, Stanford, CA, 1995.
- Desrochers AA, Pavol MJ. A projection algorithm for model reduction. American Control Conference, Seattle, WA, 1986.

### **Invited Presentations, Professional**

- Pavol, M, Stutzenberger, L. Neuromechanics and human-centered design. OSU School of Mechanical, Industrial & Manufacturing Engineering, Corvallis, OR, 2017.
- Panel session: Teaching in the round. Integrated Learning Resource Center Colloquium, Corvallis, OR, 2016.

### **Invited Presentations, Professional (cont.)**

- Smeesters C, Bigelow KE, Domire Z, Grabowski A, Kang HG, Nelson-Wong E, Pavol M. Tips for first time biomechanics teachers. American Society of Biomechanics, 39th Annual Meeting, Columbus, OH, 2015.
- Pavol M. Neuromechanics of preventing falls and fall-related fractures. OSU School of Mechanical, Industrial & Manufacturing Engineering, Corvallis, OR, 2014.
- Pavol M. The biomechanics of falls prevention. Seminar, OSU Department of Nutrition and Exercise Sciences, Corvallis, OR, 2009.
- Pavol M, Higginson B, Kipp K, Welsh L. Biomechanics of dependent transfers on an aircraft. ICDR-IST State-of-the-Art Conference: Technologies and Strategies for Physical Transfer of Individuals with Motor Impairments, Arlington, VA, 2007.
- Pavol M. Biomechanics of dependent transfers on an aircraft. State of the Science Symposium: Charting the Future of Accessible Transportation, Portland, OR, 2006.
- Pavol MJ, Yang F, Pai YC. Deficits in limb support contribute no less than instability to age-differences in falling. 5th World Congress of Biomechanics, Munich, Germany, 2006.
- Hunter-Zaworski K, Pavol M. Accessibility challenges in transportation. Rehabilitation Engineering Society of North America 2006 Conference, Atlanta, GA, 2006.
- Pavol MJ. Preventing falls and hip fractures: A lifespan approach. Seminar, Department of Human Physiology, University of Oregon, Eugene, OR, 2005.
- Pavol M. Preventing falls and hip fractures: A lifespan approach. Seminar, OSU Department of Nutrition and Exercise Sciences, Corvallis, OR, 2005.
- Pavol MJ. Improving air travel for people with disabilities: The National Center for Accessible Transportation. In seminar: Research roundtable. 28th Annual Oregon State University Gerontology Conference, Corvallis, OR, 2004.
- Pai YC, Pavol MJ. Adaptability to repeated slip exposure among older adults. In education session: Dealing with movement perturbations: Adaptations across the life span. American Physical Therapy Association Annual Conference, Chicago, IL, 2004.
- Pavol MJ. The biomechanics of falls and fall prevention in older adults. 27th Annual Oregon State University Gerontology Conference, Corvallis, OR, 2003.
- Pai YC, Pavol MJ. Failure in protective stepping and adaptation to slipping with aging. In pre-conference course: Dynamic Balance Recovery Through Change-in-Support Strategies: Mechanisms & Clinical Implications, American Physical Therapy Association, Combined Sections Meeting, Boston, MA, 2002.
- Pavol MJ, Owings TM, Foley KT, Grabiner MD. Lower-limb strength does not determine postural stability in healthy older adults. In symposium: Does Lower Extremity Strength Contribute to Stability in Older Adults?, Midwest Chapter of the American College of Sports Medicine, Annual Meeting, Cleveland, OH, 1998.
- Owings TM, Pavol MJ, Foley KT, Grabiner MD. Can lower extremity muscular strength determine fall recovery in healthy older adults? In symposium: Does Lower Extremity Strength Contribute to Stability in Older Adults?, Midwest Chapter of the American College of Sports Medicine, Annual Meeting, Cleveland, OH, 1998.

### **Invited Presentations, Community**

- Pavol M. Falls and fall prevention. National Osteoporosis Foundation, Eugene/Springfield Chapter, Eugene, OR, 2012.
- Pavol M. The biomechanics of falls and fall prevention. OSU Academy for Lifelong Learning, Corvallis, OR, 2007.
- Pavol MJ, Gunter K. Better bones and bodies. Teachers of Family and Consumer Studies Conference, Corvallis, OR, 2006.
- Pavol M, Gunter K. Better bones and balance for healthy aging. OSU Alumni Association "Classes Without Quizzes," Corvallis, OR, 2006.
- Pavol MJ. The biomechanics of falls and fall prevention in older adults. First Monday Lecture, OSU Cascades Campus, Bend, OR, 2005.
- Pavol, MJ. Helping people through biomechanics. Mid-Valley Home Economists, Corvallis, OR, 2004.
- Pavol, MJ. Biomechanics research at Oregon State. OSU Alumni Association "Classes Without Quizzes," Corvallis, OR, 2003.
- Grabiner MD, Pavol MJ, Owings TM, Foley KT. Successful aging and falls in older adults. OASIS, University Heights, OH, 1998.
- Grabiner MD, Pavol MJ, Owings TM, Foley KT. Successful aging and falls in older adults. OASIS, Parma, OH, 1998.

## **Creative Activities**

“The story pouch.” Animated short film, directed by T. Kesterson, 2009.

## **TEACHING**

### **Courses**

Oregon State University

Biomechanics of Human Movement (EXSS/KIN 321)	2014-2019	(14 terms)
Biomechanics of Sport and Exercise (EXSS 323)	2003-2014	(33 terms)
Analysis of Critical Issues in Kinesiology (KIN 481)	2017-2019	(4 terms)
Biomechanics of Motor Activities (EXSS/KIN 523)	2004-2018	(8 terms)
Biomechanics of Musculoskeletal Injury (EXSS 525)	2010-2019	(5 terms)
Research in Human Movement (EXSS 575)	2010-2019	(10 terms)
Clinical, Sport, and Occupational Biomechanics (EXSS 599)	2005-2009	(3 terms)
Physiology for Engineers (BIOE 599); co-instructor	2018	(2 terms)
Seminar/Topics in Aging (EXSS/KIN 607)	2012-2016	(5 terms)

University of Illinois at Chicago

Kinesiology (PT 617); co-instructor	2002	
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### **Unevaluated Courses**

Oregon State University

Reading and Conference (EXSS 505/605)	2003-2014	(20 offerings)
Projects: Advanced 3D Dynamics (EXSS 506/606)	2005, 2008	(2 terms)
Seminar (EXSS 507/607)	2008-2011	(4 terms)

### **Guest Lectures**

“Introduction to biomechanics” and “Biomechanics of the high jump”, Ecampus version of Introduction to Kinesiology (KIN 131), 2017.

“Biomechanics and the Fosbury flop”, Introduction to Kinesiology (KIN 131), 2008 - 2017 (9 offerings).

“Biomechanics of preventing falls and fall-related fractures”, Design & Technology for the Senior Tsunami (HC 299), 2017.

“Musculoskeletal aging”, Advanced Molecular Mechanisms of Aging (BB 650), 2012.

“Musculoskeletal aging”, Psychosocial Approaches to Health and Aging (HDFS 565), 2011.

“The biomechanics of accessible transportation” / “Biomechanics of accessibility”, Special Topics in Civil Engineering (CE 299H), 2004 – 2007 (3 offerings).

“Biomechanics: The physics of movement”, Introduction to Kinesiology (KIN 131), 2002 - 2005 (4 offerings).

### **Theses/Dissertations Supervised**

Haberly GJ, M.S. Hip loading during the squat exercise. 2013.

Doran ER, M.S. Effects of combining upper and lower body resistance training on lumbar loading. 2013.

McGregor S, B.S. Effects of long-term use of ankle taping on balance. 2013.

Mache MA, Ph.D. Effects of decision making on landing neuromechanics as a function of task and sex. 2010.

Baxter JR, M.S. The effects of voluntary step-training on slip recovery. 2009.

Kadono N, Ph.D. Effects of the aging-related loss in lower extremity strength on the feasible region for balance recovery. 2009.

Kipp K, Ph.D. Acute and delayed effects of an exhaustive bout of exercise on landing biomechanics in women and men. 2009.

Philbrick KA, M.S. Spatial consumption and risk of lower back disorder during assisted toilet transfers on board an aircraft. 2008.

Blackwell AM, B.S. Effects of medial and lateral motion of the foot during a forward slip on the loss and recovery of balance. 2008.

Higginson BK, Ph.D. Biomechanics of dependent transfers on an aircraft. 2007.

Golden GM, Ph.D. Investigation of the biomechanics of running and rapid change of direction tasks. 2007. (co-major professor with M Hoffman)



### **Theses/Dissertations Supervised (cont.)**

Welsh LR, M.S. Preventing falls from unpredictable balance disturbances. 2006.

Black BA, M.S. Effect of jumping on growing bones: Forces during different landings. 2005.

### **PROFESSIONAL SERVICE**

#### **Oregon State University**

Institutional Review Board	2016-2018
Working Group on Equitable Subject Selection	2018-present
Center for Healthy Aging Research, Musculoskeletal Research Core Director	2004-2016
College-level Service:	
Promotion and Tenure Committee	2009-2011
Scholarship Committee	2006-2009
School-level Service:	
Human Sciences Curriculum Committee	2012-2013
Department- or Program-level Service:	
Undergraduate Coordinator	2011-2013
Strategic Plan Task Force, Co-chair	2011-2013
Curriculum Committee	2006-2009
Undergraduate Committee	2009-2011
Awards and Recognition Committee	2003-2004
Facility Committee	2002-2003

#### **Professional Organizations**

American Society of Biomechanics	1997-present
Education Committee member	2013-2016
Mentor for student mentorship program	2015-2017, 2019

#### **Editorial Boards**

Journal of Applied Biomechanics, Associate Editor	2016-2017
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#### **Manuscript Reviews**

<i>Journal of Biomechanics</i>	<i>Journal of Applied Physiology</i>
<i>Journal of Applied Biomechanics</i>	<i>Journal of Neurophysiology</i>
<i>Gait &amp; Posture</i>	<i>Experimental Brain Research</i>
<i>Human Movement Science</i>	<i>Journal of Gerontology: Medical Sciences</i>
<i>Journal of Electromyography &amp; Kinesiology</i>	<i>Adapted Physical Activity Quarterly</i>
<i>Journal of Biomechanical Engineering</i>	<i>Annals of Biomedical Engineering</i>
<i>Ergonomics</i>	<i>Medical Engineering &amp; Physics</i>
<i>Human Factors</i>	<i>Assistive Technology</i>
<i>IIE Transactions on Occupational Ergonomics &amp; Human Factors</i>	<i>Journal of NeuroEngineering &amp; Rehabilitation</i>
<i>Medicine and Science in Sport &amp; Exercise</i>	<i>Journal of Theoretical Biology</i>
<i>Exercise and Sport Sciences Reviews</i>	<i>Journal of Medical Research &amp; Development</i>

#### **Grant Reviews**

Natural Sciences and Engineering Research Council of Canada, 2014
National Science Foundation, 2011
Irish Health Research Board, 2010
NIH Study Section on Musculoskeletal Rehabilitation Sciences, Ad hoc member, 2005
National Athletic Trainers' Association, Research and Education Foundation, 2005

### **Working Group Membership**

Independent Wheelchair Transfer Workgroup, 2012

ICDR-IST State-of-the-Art Conference: Technologies and Strategies for Physical Transfer of Individuals with Motor Impairments, Arlington, VA, 2007

### **Professional Conference Service**

Conference co-chair:

Northwest Biomechanics Symposium, Salem, OR, 2014

3rd Northwest Biomechanics Symposium, Eugene, OR, 2007

Conference session co-chair:

“Sports/Performance”, 2015 Northwest Biomechanics Symposium, 2015

“Motor Control”, American Society of Biomechanics, 36<sup>th</sup> Annual Meeting, 2012

“Balance/Gait”, 2012 Northwest Biomechanics Symposium, 2012

“Locomotion”, 2008 Northwest Biomechanics Symposium, 2008

“Aging I”, 4th North American Congress on Biomechanics, 2008

“Gait & Aging”, International Society of Biomechanics, 20th Congress, 2005

“Balance & Posture”, American Society of Biomechanics, 27th Annual Meeting, 2003

Abstract reviewer:

American Society of Biomechanics Annual Meeting, 2003, 2010, 2012, 2017, 2018

Northwest Biomechanics Symposium, 2008, 2012, 2015-2017

International Society of Biomechanics Congress, 2005

Northwest American College of Sports Medicine Annual Meeting, 2004

### **Outreach**

Workshop, “Researching the biomechanics of human movement”, Apprenticeships in Science and Engineering Midsummer Conference, 2004-2011, 2014

Biomechanics lab tours/demonstrations for various pre-college programs, 2005, 2008-2011

Presentation, “Biomechanics: Studying the physics of human movement”, Louis Stokes Alliance for Minority Participation Program at OSU, 2011

Presentation, “Biomechanics”, OSU College of Engineering Mentors and Mentees Program, 2010

Workshop, “Researching the biomechanics of human movement”, Society of Women Engineers (SWE) Region J Annual Conference, 2005

### **FUNDED PROJECTS**

#### **Externally Funded Projects**

National Science Foundation. “IGERT linking individuals, families and environments in an aging society” (\$2,874,000). Co-principal Investigator 2010-2016

HanesBrands Inc. “Analysis of breast motion control provided by sports bras” (\$127,378). Principal Investigator 2003-2014

Good Samaritan Hospital Foundation, John C. Erkkila, M.D. Endowment for Health and Human Performance. “Persistent effects of muscle fatigue on landing mechanics in women and men” (\$12,402). Principal Investigator 2008-2009

U.S. Dept. of Education, National Institute of Disability and Rehabilitation Research. “The Rehabilitation Engineering Research Center for Accessible Public Transportation” (\$4,750,000). Co-investigator (PI: K. Hunter-Zaworski) 2003-2009

#### **Internally Funded Projects**

OSU School of Chemical, Biological and Environmental Engineering. “Professional competency development in Bioengineering graduate students through embedded co-curricular activities across core curriculum” (\$1,000). Co-awardee 2018-2019

OSU College of Health and Human Sciences. “Effects of voluntary step training on slip recovery” (\$10,131). Principal Investigator 2008-2010

**Internally Funded Projects (cont.)**

OSU College of Health and Human Sciences. "The efficacy of exercise and pedorthotics in the treatment of knee osteoarthritis" (\$11,997). Co-investigator (PI: R. Harter)	2006
OSU Research Office, Research Equipment Reserve Fund Award. (\$18,000). Co-principal Awardee	2004