

## CURRICULUM VITAE

### **Sandra A. Billinger, PT, PhD, FAHA**

Mail Code 2002  
3901 Rainbow Boulevard  
Kansas City, KS 66160  
Phone: (913) 945-6685  
Department of Physical Therapy and Rehabilitation Science  
University of Kansas Medical Center

### **Education**

University of Kansas Medical Center, KC, KS 2002-2008	Rehab. Science	PhD	2008
University of Kansas Medical Center, KC, KS 2002-2004	Physical Therapy	MS	2004
Fort Hays State University, Hays, KS 1997-2002	Physical Education	BS	2002

### **Licensure Information/Registration Number**

Physical Therapy, State of Kansas, #PT 1103411, 2004 – present

### **Certifications**

American College of Sports Medicine Certified Clinical Exercise Specialist #4248 2003-present  
American Physical Therapy Association Certified Exercise Expert for Aging Adults 2012-present

### **Employment and Positions Held**

Interim Associate Dean for Research KUMC		2016-2017
Associate Professor (with tenure) KUMC		2015-present
Joint Appointment in the Dept of Neurology, School of Medicine (SOM)		2011-present
Director, REACH Laboratory KUMC		2010-present
Assistant Professor KUMC		2010-2015
Joint Appointment in the Dept of Molecular and Integrative Physiology, SOM		2010-present
Research Asst Professor KUMC		2009-2010
Clinical Instructor Univ. Kansas Med Center (KUMC)		2008-2009
PRN Physical Therapist SummitCare, Inc.		2007-2012
PRN Physical Therapist Aegis Therapies		2008-2005
Staff Physical Therapist Meadowbrook Rehab. Hosp. Gardner, KS		2004-2006
Stroke Dynamics Consulting Owner		2002-present
Program Manger/Research Assist. Fort Hays State Univ., Hays, KS		2000-2002

### **Current Grant Funding**

1 R21 AG061548-01A1 Vidoni (PI) 07/01/2019 - 06/30/2021

Dementia Risk and Dynamic Response to Exercise

Major Goals: Research suggests that physical exercise supports brain health and cognition as we age. The goal of this project is to examine the specific changes in brain blood flow and biological factors in the blood immediately after exercise in older adults who have the APOE4 gene, a genetic risk factor for developing Alzheimer's. Results from this study will help researchers and clinicians understand and measure changes in the body and brain as a function of exercise, and how those changes relate to Alzheimer's risk.

Role: Co-I (7% effort)

Morton A (PI)

06/01/19-07/31/19

**Atherosclerotic Cardiovascular Disease Risk and Middle Cerebral Artery Response in Stroke**

American Heart Association, Student Scholarship in Cerebrovascular Disease and Stroke

Role: Mentor

1 R01 AG058162 Marmarelis and Billinger (Co-PI) 09/01/18 - 05/31/23  
**Model-based Cerebrovascular Markers Extracted from Hemodynamic Data for Diagnosing MCI or AD and Predicting Disease Progression**

Major Goal: Explore the utility of a new class of cerebrovascular markers for the improved diagnosis and prediction of disease progression in amnesic Mild Cognitive Impairment (MCI) and mild Alzheimer's disease (AD).

Role: PI (15% effort)

1 R01 HD093694 Boyne (PI) 04/03/18 - 02/28/23  
**High Intensity Interval Training to Recover Walking Post-Stroke: HIT-Stroke Trial**

Major Goal: Determine the optimal training intensity and the minimum training duration needed to maximize immediate improvements in walking capacity in chronic stroke.

Role: Co-I/Site PI (20% effort)

1 R01 AR071263-01 Thyfault and Neufer (PI) 07/20/17 - 06/30/22  
**Statins, Mitochondrial Function and Aerobic Capacity**

Major Goals: Examine the impact of statins to impair skeletal muscle mitochondrial respiration, insulin sensitivity, and aerobic capacity. Examine if and how statin therapy blunts exercise adaptations including aerobic capacity, insulin sensitivity, and aerobic capacity.

Role: Co-I (15% effort)

R01AG053952 Burns Jeff (site PI) 09/15/16 - 05/31/21  
University of Pittsburgh \$627765.58

**Investigating Gains in Neurocognition in an Intervention Trial of Exercise**

Major Goals: Assess the effect of exercise on cognition and brain structure American Heart Assn Natl

Role: Co-Investigator (10% effort)

Billinger, Sandra (PI) 07/01/16 - 06/30/18\*  
**Understanding Cardiovascular Risk and Cerebrovascular Regulation in Older Adults**

The objective of this project are to: (1) Examine the relationship of cerebrovascular regulation with cardiovascular risk factors (2) Examine the relationship of cerebrovascular regulation and white matter lesion (WML) burden and (3) Explore whether people with preclinical AD demonstrate impaired measures of cerebrovascular regulation.

Role: PI (15% effort)

\*No cost extension to 12/31/2018 to spend remaining budgeted funds for publication costs.

R01 AG049749 Zhang R/Burns J (Co-PIs) 10/01/15 – 09/30/20  
**Exercise and intensive vascular risk reduction in preventing dementia**

The purpose of this project is to improve vascular health through exercise and drug therapy to prevent dementia.

Role: Co-I (10% effort)

R01NR014518 Maliski, Sally (PI) 09/01/15-08/31/20  
**Staying Stroke and Healthy during Androgen Deprivation Therapy (ADT) for Men**

The purpose of this study is to learn if lifestyle changes and counseling along with standard medical care, compared to standard medical care alone, can prevent heart problems and diabetes in men receiving ADT for prostate cancer treatment.

Role: Co-I (10% effort)

### **Pending Grant Funding**

P20 GM134999 Nudo, PI 12/01/2019 - 11/30/2024  
Center of Biomedical Research Excellence (COBRE) Phase I: Brain and Metabolism in Health and Disease

Role: Co-Investigator

Major Goals: Establish a Center focused on Brain and Metabolism Research at KUMC.

**Completed Grant Funding**

K01 HD067318

Billinger SA (PI)

07/01/11-05/30/17

**Examining Vascular Regulation Following Acute Stroke**

This project is two-fold: 1) Examine the role of stroke severity and inflammatory markers on vascular system after stroke and 2) Determine whether an aerobic exercise program early after stroke reduces inflammation and improves functional capacity.

1-year no cost extension to 05/30/2017

Role: PI

Acorda Therapeutics, Inc.

Billinger, Sandra A

02/02/16 - 01/15/17

**A Double-Blind, Placebo-Controlled, Parallel-Group Study to Evaluate the Efficacy and Safety of Two Dose Strengths of Dalfampridine Extended Release Tablets for Treatment of Stable Walking Deficits in Post-Ischemic Stroke (MILESTONE)**

The objective of this study is to determine the effect of two dose strengths of dalfampridine-Extended Release (ER) tablets, taken twice daily for 12 weeks, on stable walking deficits in subjects with post-ischemic stroke.

Role: Site PI

NA, KU Alzheimer's Disease Center Billinger, Sandra (PI)

06/04/14 – 06/30/16

**Cerebrovascular Regulation and Vascular Risk**

The purpose of this project was to obtain pilot data to characterize cerebrovascular regulation in older adults at low and high cardiovascular risk.

This is a one year project but was given a 1-year no cost extension

Role: PI

PP2068, National Multiple Sclerosis Society Pilot Grant

Siengsukon (PI)

10/01/13-09/30/14

**The Effects of Aerobic Exercise on Cognitive Function and Sleep Quality in Individuals with Multiple Sclerosis**

Randomized-controlled trial to assess the effects of an aerobic exercise program on cognitive function and sleep quality in people with MS

Role: Co-Investigator

Frontiers Collaborative and Translational Pilot Award

Siengsukon (PI)

03/01/13-02/28/14

**The effects of aerobic exercise on daytime sleepiness and speed of information processing in individuals with multiple sclerosis**

This project will examine the role of a moderate-intensity exercise program on autonomic function, physical performance and metabolic cost of activity during the in-patient stroke rehabilitation. Funded as part of UL1 TR000001/TR000119/TR000120

Role: Co-Investigator

Frontiers Collaborative and Translational Pilot Award

Patricia Kluding (PI)

06/01/12-02/28/13

**Exercise and Improved Nerve Function in People with Diabetic Peripheral Neuropathy: Exploration of Mechanisms**

This project examines the role of aerobic exercise and the potential mechanisms that contribute to improved nerve function people with diabetic peripheral neuropathy. Funded as part of UL1

TR000001/TR000119/TR000120

Role: Co-Investigator

Frontiers Collaborative and Translational Pilot Award

**Billinger SA (PI)**

09/15/11-12/31/13

**Moderate-Intensity Recumbent Stepping Exercise on Cardiovascular Health In Stroke**

This project will examine the role of a moderate-intensity exercise program on autonomic function, physical performance and metabolic cost of activity during the in-patient stroke rehabilitation.

American Physical Therapy Association

**Billinger SA (PI)** 07/01/11-10/31/12

**Aerobic exercise and metabolic efficiency during in-patient stroke rehabilitation**

This project funded from the Cardiovascular and Pulmonary Section of the APTA will examine the metabolic cost of walking and movement in the acute and subacute stage of stroke rehabilitation and whether aerobic exercise improves metabolic cost of activity.

KUMC Clinical Pilot Award, KUMC internal grant

**Billinger SA (PI)** 04/01/10-12/31/11

**Aerobic Exercise and Cardiovascular Function in Sub-Acute Stroke**

This pilot project will examine the effects of aerobic exercise on cardiovascular function in people with sub-acute stroke.

\*\*No cost extension granted until 01/2012 due to a delay in project start date.

Lentz A(PI)

07/01/11-12/31/11

**Cardiovascular Regulation and Cardiorespiratory Fitness After Stroke**

American Heart Association, Student Scholarship in Cerebrovascular Disease and Stroke

Role: **Mentor**

Kansas Partners in Progress

**Billinger SA (PI)** 04/10/10-04/01/11

**Maximizing Exercise Testing Performance in Persons with Early Alzheimer's Disease**

The purpose of this study is two-fold: 1) Assess exercise test performance using a seated recumbent stepper and a treadmill in individuals with early Alzheimer's disease (AD) and 2) Use clinical assessments of balance and cognitive ability to exercise test performance.

Allied Health Research Institute

Pohl, P (PI) 06/01/10-05/31/11

**The Role of Gender and Marital Status on Outcomes and Placement Following Stroke.**

Role: Co-I

Kluding, PM (Co-PI) and **Billinger, SA (Co-PI)**

\$32,709.00

2009 Biomedical Research Equipment Fund for purchase of Doppler ultrasound, University of Kansas Medical Center.

**Billinger, S. A.** (P.I.)

\$565.00

The Effect of Single Limb Exercise Training on Femoral Artery Blood Flow and Oxygen Uptake in Chronic Stroke, non-federal support, Kansas Partners in Progress, Inc; 2007-2008

**Billinger, S. A.** (P.I.)

\$70,000.00

The Effect of Single Limb Exercise Training on Femoral Artery Blood Flow and Cardiorespiratory Fitness- A Pilot Study, non-federal support, equipment grant, SonoSite, Inc; 2006-2008

Grobe, H. (P.I.)

\$1,915,977.00

A Randomized Exercise Trial for Wheelchair Users. NCMRR/NICHHD/NIH 5R01HD048628-04

Role: Graduate research asst.

Kluding, P (P.I.)

The Effect of Diabetes on the Benefits of Exercise after Stroke, 2006 NIDRR, H133F050006

Role: Graduate research asst.

**Billinger, S. A. (P.I.)** \$2,000.00  
American Heart Association Student Scholarship in Cardiovascular Disease and Stroke; 2003-2004

**Billinger, S. A. (P.I.)** \$2,000.00  
American Heart Association Student Scholarship in Cerebrovascular Disease and Stroke; 2002-2003

**Cho, J (P.I.), Billinger, S. A. (Co-P.I.)** \$1,250.00  
Establishment of a Rural Stroke Research and Rehabilitation Center for the Improvement in Quality of Life, Northwest Kansas Area Agency on Aging

**Billinger, S. A.** \$7,200.00  
Northwest Kansas stroke conference, "Life After Stroke: Picking Up the Pieces, with match grant from United Methodist Health Ministry Fund

**Billinger, S. A.** \$8,265.00  
Stroke Wellness and Research Center Northwest Kansas Area Agency on Aging. 2001-2002

**Billinger, S. A.** \$8,265.00  
Stroke Wellness and Research Center Northwest Kansas Area Agency on Aging. 2000-2001

**Billinger, S. A.** \$2,800.00  
Northwest Kansas Area Agency on Aging for a NuStep equipment grant

**Billinger, S. A.** \$10,000.00  
Solicited private donation of \$10,000.00 for Stroke Wellness and Research Center equipment

**Submitted Not Funded**

U19 Burns and Billinger (Site Co-PIs) 09/01/2019 - 08/31/2025  
University of Kentucky [NIH]

**Index-Stroke Characteristics, Heritability, Epidemiology, Mechanisms, and Influences of Alzheimer pathology in the development of post-stroke Dementia: The ISCHEMIA-D Study**  
Major Goals: Identify demographic, genetic, stroke characteristics, and clinical risk factors for the development of post stroke dementia. Characterize and explore the interplay between index stroke and the presence and/or incident development of degenerative Alzheimer's and related disorder processes.  
Role: Multi-Principal Investigator

R01 AG065531-01 Martin 09/01/2019 - 08/31/2024  
**Healthy decision making and aging: Increasing the reward value of physical activity in mid-life and older adults**  
Our objective is to empirically test a novel PA intervention on indices of PA enjoyment, delay discounting (DD), changes in PA, and demand for healthy decisions  
Role: Co-I

1R03HD086542-01 Billinger (PI)  
**Cerebrovascular Regulation and Stroke Recovery**  
The goal of this project is to characterize cerebrovascular regulation at 1 month post-stroke compared to healthy control participants. Second, we will determine whether cerebrovascular regulation at 1 month post-stroke is related to stroke recovery at 3 months.

Billinger (PI) 09/01/2014-08/30/2016  
Alzheimer's Association New Investigator Award  
**Cerebrovascular Regulation in People at Risk for AD**

The goal of this project is to assess brain blood flow and cerebrovascular regulation in people who are amyloid positive and at the highest risk for AD.

1R21HD078831-01

Billinger (PI)

10/01/2013-09/30/2015

**Cerebrovascular Regulation and Early Mobility in Acute Stroke**

The goal of this project is to assess brain blood flow regulation at rest and during exercise and the effect of early mobilization on brain health.

U10

Wang YX (PI)

10/01/2013-9/30/2018

**The Heartland Stroke Research Network**

NINDS Stroke Trials Network-Regional Coordinating Stroke Centers

Submitted May 2013

**Role: Co-PI**

**Peer Reviewed Publications**

**Publications**

Alwatban MR, Liu Y, Perdomo SJ, Ward JL, Vidoni ED, Burns JM, **Billinger SA**. TCD Cerebral Hemodynamic Changes During Moderate Intensity Exercise In Older Adults. *J Neuroimaging*, Nov 2019, in press.

Perdomo SJ, Ward J, Liu Y, Vidoni ED, Sisante JF, Kierkendoll K, Burns JM, **Billinger SA**. Cardiovascular Disease Risk is Associated with Middle Cerebral Artery Blood Flow Velocity in Older Adults. *Cardiopulmonary Physical Therapy Journal. PAP*, March 2019.

Kaufman CS, Bai SX, Ward JL, Eickmeyer SM, **Billinger SA**. Middle cerebral artery velocity dynamic response profile during exercise is attenuated following multiple ischemic strokes: a case report, *Physiological Reports*. 2019, (21):e14268. doi: 10.14814/phy2.14268.

Kempf KS, Whitaker A, Liu Y, Witte E, Perdomo SJ, Ward JL, Eickmeyer S, Ledbetter L, Abraham M, **Billinger SA**. The Effect of Stroke on Middle Cerebral Artery Velocity during Moderate Intensity Exercise, *Journal of Neurologic Physical Therapy*, 2019; 43(4):212-219. PMID: 31449179; PMCID: 6744289.

Liu Y, Perdomo SJ, Ward J, Vidoni ED, Sisante JF, Kirkendoll K, Burns JM, **Billinger SA**. Vascular Health is Associated with Amyloid- $\beta$  in Cognitively Normal Older Adults. *Journal of Alzheimer's Disease*. 2019; 70(2):465-73.

van Wijck F, Bernhardt J, **Billinger SA**, Bird ML, Eng J, English C, Teixeira-Salmela LF, MacKay-Lyons M, Melifonwu R, Sunnerhagen KS, Solomon JM, Thilarajah S, Mead G. Improving Life after Stroke Needs Global Efforts to Implement Evidence-based Physical Activity Pathways. *International Journal of Stroke*. 2019; 14(5):457-459. doi: 10.1177/1747493019840930.

Perales-Puchalt J, Vidoni ML, Llibre Rodríguez J, Vidoni ED, **Billinger S**, Burns J, Guerchet M, Lee M. Cardiovascular Health and Dementia Incidence among Older Adults in Latin America: Results from the 10/66 Study. *International Journal of Geriatric Psychiatry*. 2019; 34(7):1041-1049. doi: 10.1002/gps.5107.

Witte E, Liu Y, Ward JL, Kempf KS, Whitaker A, Vidoni ED, Craig JC, Poole DC, **Billinger SA**. Exercise Intensity and Middle Cerebral Artery Dynamics in Humans. *Respir Physiol Neurobiol*. 2019; 262:32-39.

Sisante JF, Vidoni ED, Kirkendoll K, Ward J, Liu Y, Kwapiszeski S, Maletsky R, Burn JM, **Billinger SA**. Blunted Cerebrovascular Response Is Associated with Elevated Beta-Amyloid. *Journal of Cerebral Blood Flow and Metabolism*. 2019; 39(1):89-96.

Ward JL, Craig JC, Liu Y, Vidoni ED, Maletsky R, Poole DC, **Billinger SA**. Effect of Healthy Aging and Sex on Middle Cerebral Artery Blood Velocity Dynamics During Moderate Intensity Exercise. *Am J Physiol Heart Circ Physiol*. 2018; 315(3):492-501.

Lobelo F, Rohm Young D, Sallis R, Garber MD, **Billinger SA**, Duperly J, Hutber A, Pate RR, Thomas RJ, Widlansky ME, McConnell MV, Joy EA. Routine Assessment and Promotion of Physical Activity in Healthcare Settings: A Scientific Statement from the American Heart Association. *Circulation*. 2018; 137(18): e495-522.

**Billinger SA**, Sisante JV, Whitaker AA, Abraham MG. Time Course of Flow-Mediated Dilation and Vascular Endothelial Growth Factor following Acute Stroke. *Journal of Stroke and Cerebrovascular Disease*. 2018; 27(4): 957-962.

Clausen AN, **Billinger SA**, Sisante JFV, Susuki, H, Aupperle RA. Preliminary Evidence for the Impact of Combat Experiences on Grey Matter Volume of the Posterior Insula. *Frontiers in Psychology*. 2017; 8:2151. ecollection2017.

Martin LE, Sisante JF, Wilson D, Moody A, Savage CR, **Billinger SA**. Pilot study of endurance training and brain responses associated with delay discounting. *International Journal of Exercise Science*. 2017; 10(5), 690-701.

Siengsukon CF, Aldughmi M, Kahya M, Bruce J, Lynch S, Ness Norouzinia A, Glusman M, **Billinger S**. Randomized Controlled Trial of Exercise Interventions to Improve Sleep Quality and Daytime Sleepiness in Individuals with Multiple Sclerosis: A pilot study. *Mult Scler J Exp Transl Clin*. 2016. 2:2055217316680639 ecollection.

Siengsukon CF, Aldughmi M, Kahya M, Lynch S, Bruce J, Glusman M, Ness Norouzinia A, **Billinger S**. Individuals with mild MS with Poor Sleep Quality Have Impaired Visuospatial Memory and Lower Perceived Functional Abilities. *Disabil Health J*. 2017. Epub ahead of print

Billinger SA, Craig JC, Kwapiszeski SJ, Sisante JV, Vidoni ED, Maletsky R, Poole DC. Dynamics of Middle Cerebral Artery Blood Flow Velocity during Moderate-Intensity Exercise. *Journal of Applied Physiology*. 2017; 122(5):1125-1133.

Boyne P, **Billinger S**, MacKay-Lyons M, Barney B, Khoury J, Dunning K. Aerobic Exercise Prescription in Stroke Rehabilitation: A Web-Based Survey of US Physical Therapists. *Journal of Neurologic Physical Therapy*. 2017; 41(2):119-128.

Wilson DR, Mattlage AE, Seier NM, Todd JD, Price BG, Kwapiszeski SJ, Vardey R, **Billinger SA**. Recumbent Stepper Submaximal Test Response Is Reliable in Adults with and without Stroke. *PLoS One*. 2017;12(2):e0172294.

Morris JK, Vidoni ED, Johnson DK, Van Sciver A, Mahnken JD, Honea RA, Wilkins HM, Brooks WM, **Billinger SA**, Swerdlow RH, Burns JM. Aerobic Exercise for Alzheimer's Disease: An randomized controlled pilot trial. *PLoS One*. 2017; 12(2) e0170547.

Mattlage AE, Rippee MA, Abraham MG, Sandt J, **Billinger SA**. Estimated Pre-Stroke Peak VO<sub>2</sub> is Related to Circulating IGF-1 Levels during Acute Stroke. *Neurorehabilitation and Neural Repair*, 2017; 31(1):65-71.

**Billinger SA**, Vidoni ED, Morris JK, Thyfault JP, Burns JM. Exercise Test Performance Reveals Support of the Cardiorespiratory Fitness Hypothesis. *Journal of Aging and Physical Activity*. 2016; 5:1-17.

Clausen AN, Upperle RL, Sisante JF, Wilson DR, **Billinger SA**. Pilot Investigation of PTSD, Autonomic Reactivity, and Cardiovascular Health in Physically Healthy Combat Veterans. *PLoS One*. 2016; 11(9):e0162547.

Mattlage AE, Redlin SA, Rosterman LR, Harn N, Sisante JV, Abraham MG, **Billinger SA**. Use of a Non-Exercise Estimate for Prestroke Peak VO<sub>2</sub> during the Acute Stroke Hospital Stay. *Cardiopulmonary Physical Therapy Journal*. 2016; 27(3): 96-103.

Sisante JV, Abraham MG, Phadnis MA, **Billinger SA**, Mittal MK. Ambulatory Status Protects against Venous Thromboembolism in Acute Mild Ischemic Stroke Patients. *J Stroke Cerebrovasc Dis*. 2016; 25(10):2496-501.

**Billinger SA**, Sisante JV, Mattlage AE, Alqahtani AS, Abraham MG, Rymer MM, Camarata PJ. The relationship of pro-inflammatory markers to vascular endothelial function after acute stroke. *Int J Neurosci*. 2016; 23:1-7.

Clausen AN, Youngren W, Sisante JF, **Billinger SA**, Taylor C, Upperle RL. Combat PTSD and Implicit Behavioral Tendencies for Positive Affective Stimuli: A Brief Report. *Front Psychol*. 2016; 7:758.

Mattlage AE, Rippee MA, Sandt J, **Billinger SA**. Decrease in Insulin-like Growth Factor 1 and Insulin-like Growth Factor 1 Ratio in the First Week of Stroke is Related to Positive Outcomes. *Journal of Stroke and Cerebrovascular Diseases*. 2016; 25(7):1800-6.

**Billinger SA**, Sisante JV, Alqahtani AS, Pasnoor M, Kluding PM. Aerobic exercise improves measures of vascular health in diabetic peripheral neuropathy. *Int J Neurosci*. 2016 Feb 16; PubMed PMID: 26785723.

Graves RS, Mahnken JD, Perea RD, **Billinger SA**, Vidoni ED. Modeling Percentile Rank of Cardiorespiratory Fitness Across the Lifespan. *Cardiopulm Phys Ther J*. 2015 Dec;26(4):108-113. PubMed PMID: 26778922; NIHMSID: NIHMS708659; PubMed Central PMCID: PMC4711926.

Riley AE, Craig TD, Sharma NK, **Billinger SA**, Wilson SE. Novice lifters exhibit a more kyphotic lifting posture than experienced lifters in straight-leg lifting. *J Biomech*. 2015 Jul 16;48(10):1693-9. PubMed PMID: 26077846.

Mattlage AE, Redlin SA, Rippee MA, Abraham MG, Rymer MM, **Billinger SA**. Use of Accelerometers to Examine Sedentary Time on an Acute Stroke Unit. *Journal of Neurologic Physical Therapy*. 2015 Jul;39(3):166-71. PMID: 26035120

Sisante JF, Mattlage AE, Arena R, Rippee, MA, **Billinger SA**. Decreased Tidal Volume May Limit Cardiopulmonary Performance during Exercise in Subacute Stroke. *J Cardiopulm Rehabil Prev*. 2015 Sep-Oct;35(5):334-41. PubMed PMID: 26034936



Watts A, Honea RA, **Billinger SA**, Rhyner KT, Hutfles L, Vidoni ED, Burns JM. A Combined Measure of Vascular Risk for White Matter Lesions. *J Alzheimers Dis.* 2015; 45(1): 187-93. PMID: 25690663

Kluding PM, Pasnoor M, Singh R, D'Silva LJ, Yoo M, **Billinger SA**, LeMaster JW, Dimachkie MM, Herbelin L, Wright DE. Safety of Aerobic Exercise in People with Diabetic Peripheral Neuropathy. *Physical Therapy Journal*, 2015 Feb;95(2):223-34. PMID: 25278335

**Billinger SA**, Boyne P, Coughenour E, Dunning K, Mattlage AE. Does Aerobic Exercise and the FITT Principle Fit into Stroke Recovery? *Current Neurology and Neuroscience Reports.* 2015;15(2):519. PMID: 25475494

Mahnken JD, Chen X, Brown L, Vidoni ED, **Billinger SA**, Gajewski BJ. Evaluating Variables as Unbiased Proxies for Other Measures: Assessing the Step Test Exercise Prescription as a Proxy for the Maximal, High-intensity Peak Oxygen Consumption in Older Adults. *International Journal of Statistics and Probability.* 2014; 3(4): 25-34. PMID: 25505498

**Billinger SA**, Vidoni ED, Greer CS, Graves RS, Mattlage AE, Burns JM. Cardiopulmonary exercise testing is well tolerated in people with Alzheimer-related cognitive impairment. *Arch Phys Med Rehabil.* 2014; 95(9):1714-8. PMID: 24780290, PMCID 4149924.

Herda AA, Lentz AA, Mattlage AE, Sisante JF, **Billinger SA**. Cross-validation of the recumbent stepper submaximal exercise test to predict peak oxygen uptake in older adults. *Physical Therapy Journal.* 2014; 94(5):722-9. PMC4016679

**Billinger SA**, Arena R, Bernhardt J, Eng JJ, Franklin BA, Johnson C, MacKay-Lyon M, Macko RF, Mead GE, Roth EJ, Shaughnessy M, and Tang A. Physical Activity and Exercise Recommendations for Stroke Survivors: AHA/ASA Scientific Statement, *Stroke*, 2014; 45(8):2532-53. PMID 24846875.

Dibble L and **Billinger S**. On the front lines but not engaged in the battle. *Journal of Neurologic Physical Therapy.* 2013;37(2):49-50. PMID 23111686.

Mattlage AE, Ashenden AL, Lentz AA, Rippee MA, and **Billinger SA**. Submaximal and Peak Cardiorespiratory Response After Moderate-High Intensity Exercise Training in Sub-acute Stroke. *Cardiopulmonary Physical Therapy Journal.* 2013; 24(3):14-20.

Pohl PS, **Billinger SA**, Lentz AA, Gajewski, BJ. The role of patient demographics and clinical presentation in predicting discharge placement after inpatient stroke rehabilitation: analysis of a large, U.S. data base. *Disability and Rehabilitation*, 2013; 35(12):159-65.

**Billinger SA**, Mattlage AE, Ashenden AL, Harter G, Lentz AA, Rippee MA. Aerobic Exercise in Subacute Stroke Improves Cardiovascular Function and Physical Performance. *Journal of Neurologic Physical Therapy*, 2012, 36(4):159-65. PMID 23111686.

**Golden Synapse Award** for outstanding manuscript published in the *Journal of Neurologic Physical Therapy*

Lentz AA, Mattlage AE, Ashenden AL, Rippee MA, **Billinger SA**. Improvement in Measures of Cardiovascular Health and Physical Function after an Aerobic Exercise Intervention in a Patient Fifteen Days Post-Stroke. *Journal of Student Physical Therapy Research*, 2012, 5(2).

Vidoni EV, Van Sciver A, Johnson DK, Haines B, Goodwin J, Laubinger P, Anderson HS, Kluding PM,

Donnelly JE, **Billinger SA**, Burns JM. A community-based approach to trials of aerobic exercise in aging and Alzheimer's disease. *Contemporary Clinical Trials*, 2012, 33(6):1105-16. PMID 22903151

**Billinger SA**, van Swearingen E, McClain M, Lentz AA, Good MB. Recumbent Stepper Submaximal Exercise Test to Predict Peak Oxygen Uptake. *Medicine and Science in Sports and Exercise*. 2012; 44(8): 1539-44. PMID 22382170.

**Billinger SA**, Taylor JM, Quaney BM. Cardiopulmonary Response to Exercise Testing in People with Chronic Stroke: A Retrospective Study. *Stroke Research and Treatment*. 2012, 2012:987637. PMID 21961083

**Billinger SA**, Coughenour E, MacKay-Lyons MJ, Ivey FM. Reduced Cardiorespiratory Fitness After Stroke: Biological Consequences and Exercise-Induced Adaptations. *Stroke Research and Treatment*. 2012, 2012;959120. PMID 21876848

Vidoni EV, **Billinger SA**, Lee C, Hamilton J and Burns, JM. Physical Performance Test Is Associated with Cardiorespiratory Fitness Decline in Early Alzheimer's Disease, *Journal of Geriatric Physical Therapy*. 2012, 35(2):72-8. PMID 22020383.

Vidoni ED, Honea RA, **Billinger SA**, Swerdlow RH, Burns JM. Cardiorespiratory Fitness is Associated with Atrophy in Alzheimer's and Aging Over 2 Years. *Neurobiology of Aging*. 2012, 33(8):1624-32. PMID 21531480.

**Billinger SA**, Vidoni ED, Honea RA, Burns JM. Cardiorespiratory Response to Exercise Testing in Individuals with Alzheimer's Disease. *Archives of Physical Medicine and Rehabilitation*. 2011, 92(12): 2000-5.

Yuen WK, Schreiner SR, Hoover DL, Loudon JK, **Billinger SA**. Does the Friel Anaerobic Threshold Test Accurately Detect Heart Rate Deflection in Trained Cyclists? *International Journal of Exercise Science*. 2011; 4(3).

Tseng BY, **Billinger SA**, Gajewski BJ and Kluding PM. Exercise and Executive Function in Individuals with Chronic Stroke: A Pilot Study, *Journal of Neurologic Physical Therapy*. 2011; 35(1): 11-17. PMID 21475079

**Billinger SA**. The Importance of Exercise Training for Cardiorespiratory Fitness Post-Stroke. Invited Editorial. *International Journal of Therapy and Rehabilitation*. 2010. 17(10): 516-7.

Tseng BY, **Billinger SA**, Gajewski BJ and Kluding PM. Exertion Fatigue and Chronic Fatigue Are Two Distinct Constructs in People Post-Stroke. *Stroke*. 2010, 41(12): 2908-12. PMID: 20947841.

**Billinger SA**. Examining Cardiorespiratory Fitness and the Importance for Exercise Training Post-Stroke. *International Journal of Therapy and Rehabilitation*, 2010. 17(10): 516-7.

Miller E, Murray L, Richards L, Zorowitz R, Bakas T, Clark P, **Billinger S**. A Comprehensive Overview of Nursing and Interdisciplinary Rehabilitation Care of the Stroke Patient. 2010, *Stroke*. 41(10):2402-48. PMID: 20813995

**Billinger SA**, Guo LX, Pohl PS and Kluding PM. Single Limb Exercise: The Physiological and Functional Responses to Encouraged Use in the Hemiparetic Lower Extremity. 2010 *Topics in Stroke Rehabilitation*, 17:128-139.

**Billinger, SA**, Gajewski, BJ Guo, LX, and Kluding, PM. Single Limb Exercise Induces Femoral Artery Remodeling and Improves Blood Flow in the Hemiparetic Leg Post-Stroke 2009. *Stroke*, 40:3086-90.

**Billinger, SA** and Kluding, PM. Use of Doppler Ultrasound to Assess Femoral Artery Adaptations in the Hemiparetic Limb in Chronic Stroke, 2009. *Cerebrovascular Disease*, 27:552-8.

**Billinger, SA**, Kluding, PM, and Tseng, BY. Modified Total Body Recumbent Stepper Exercise Test (mTBRS-XT) to Obtain VO<sub>2</sub> Peak in People With Chronic Stroke, 2008. *Physical Therapy*, 88(10): 1188-1195.

**Billinger, SA**, Loudon, JK, and Gajewski, B. Validity of a Recumbent Stepper for Obtaining Maximal Oxygen Consumption. *Journal of Strength and Conditioning Research*, 2008 22(5): 1556-1562.

Kluding P, and **Billinger S**. Exercise-Induced Changes of the Upper Extremity in Chronic Stroke Survivors. *Topics in Stroke Rehabilitation*, 2005; 12(1): 58-68.

### **Non-Peer Reviewed Articles**

**Billinger, S**. "Physical Fitness and the Stroke Survivor." *Functional U*. vol. 1(3), June 2003; p. 5-13.

**Billinger, SA**. "The NuStep cross trainer may help elevate cardiorespiratory fitness after stroke. *Advance for Directors in Rehabilitation* 2006.

**Billinger, S.A**. "New Exercise Options in Kansas," *Stroke Connection Magazine*, July/August 2001.

**Billinger, S.A**. "Fort Hays Program Changes Lives," 2001. *Kansas Connections for Rural Health Education and Services* 9(1).

### **Peer Reviewed Scientific and Professional Presentations (Abstracts not published)**

Bai, S.X., Freemyer, A., Eickmeyer, S.M., Kempf, K.S., Whitaker, A., Witte, E., Perdomo, S.J., Ward, J.L., Ledbetter, L., & Billinger, S.A. Cerebral blood flow response to exercise post-stroke. Poster presentation at the American Academy of Physical Medicine and Rehabilitation Annual Assembly, San Antonio, TX, November 14-17, 2019.

**Billinger SA**, Whitaker AA, Kempf K, Liu Y, Perdm S, Ward J, Witte, Eickmeyer, Ledbetter L. Aerobic Exercise to Assess Cerebrovascular Regulation in Stroke: A Potential "Brain Exercise Stress Test. American Physical Therapy Association Combined Sections Meeting, Washington D.C.; January 2019.

Scholl V, Doren S, Staggs E, Whitesel D, Dunning K, Sultan H, Carl D, Gerson M, **Billinger S**, Reisman D, Kissela B, Vannest J, Boyne P. Short Versus Long Intervals for High-Intensity Interval Training (HIT) in Chronic Stroke: Within-Session Exercise Responses. APTA Combined Sections Meeting, Washington D.C.; January 2019.

Perdomo S, Ward J, Liu Y, Vidoni ED, Witte E, Sisante JF, Kirkendoll K, Burns J, **Billinger SA**. Cardiovascular Disease Risk Influences Cerebrovascular Regulation in Older Adults. 2019 American College of Sports Medicine Annual Meeting, Orlando FL; May 2019.

Alwatban MR, **Billinger SA**. Cerebral Hemodynamic Changes during Moderate Intensity Exercise in Older Adults with High and Normal Resting Pulsatility Index. 2019 Alzheimer's Association International Conference, Los Angeles CA; July 2019.

Kaufman C, Chavez M, Vidoni ED, **Billinger SA**. Self-Reported Omega-3 Supplement Use Is Associated with Lower Brain Amyloid Deposition and Higher Cerebrovascular Conductance in Non-Demented Older Adults. 2019 Alzheimer's Association International Conference, Los Angeles CA; July 2019.

Salazar-Villanea M, Chacon-Araya Y, Watts A, Vidoni ED, **Billinger SA**, Johnson DK, Moncada-Jimenez J. Aerobic Fitness and Neurocognitive Performance in Older Adults from Costa Rica and the United States. Poster Presentation, American College of Sports Medicine Annual Meeting, Denver CO; May 30-June 3, 2017.

Clausen AN, Suzuki H, **Billinger SA**, Aupperle RL. Initial Evidence for the Impact of Combat Deployments and PTSD symptomology on Grey Matter Volume of the Posterior Insula in OIF/OEF Veterans. Poster Presentation, Anxiety and Depression Association of America.

**Billinger SA**. Clinical-Community Linkages and Team Care to Support Physical Activity for Prevention and Management of CVD Risk. American Heart Association Scientific Sessions, New Orleans, LA; November 11-15, 2016.

**Billinger SA**, Sisante JF, Alqahtani A, Kwapiszeski S, Vidoni ED, Burns JM. Reduced Cerebrovascular reserve capacity during moderate intensity exercise in people with elevated B-amyloid. Poster Presentation, Alzheimer's Association International Conference, Toronto, ON; July 24-28, 2016.

Siengsukon C, Aldughmi M, Kahya M, Newman M, Lynch S, Bruce J, **Billinger SA**. The Impact of Exercise on Sleep Quality in Individuals with Multiple Sclerosis. Consortium of Multiple Sclerosis Centers Annual Meeting, platform presentation, June 2016.

Seier N, Wilson D, Coughenour E, Mattlage AE, Vardey R, Todd J, Price B, **Billinger SA**. The Total Body Recumbent Stepper Submaximal Exercise Test is Reliable in Healthy Adults and in People during Inpatient Stroke Rehabilitation. Poster Presentation, American Physical Therapy Association Combined Sections Meeting, Anaheim, CA; February 18-20, 2016.

Mattlage AE, Rippee MA, Sandt J, **Billinger SA**. Higher Predicted Aerobic Fitness is Related to Above Median Insulin-Like Growth Factor 1 in Individuals with Acute Stroke. Moderated Poster Presentation, American Heart Association International Stroke Conference. Los Angeles, CA; February 17-20, 2016.

Seier NM, Wilson DR, Mattlage AE, Todd JD, Price BG, Alqahtani AS, **Billinger SA**. Reliability of the Total Body Recumbent Stepper Submaximal Exercise Test. Platform Presentation, KPTA Spring Conference, Wichita, KS; April 10-12, 2015.

Aldughmi M, Kahya M, Dowling P, Bruce J, Lynch S, **Billinger SA**, Siengsukon C. The Effect of Aerobic Exercise on Cognitive Function, Sleep Quality, and Physical Function in Individuals with Multiple Sclerosis: A Pilot Study. Poster Presentation, KPTA Spring conference, Wichita KS, April 10-12, 2015.

Aldughmi M, Dowling P, Bruce J, Lynch S, **Billinger SA**, Siengsukon C. The Association Between Self-reported Fatigue, Cognitive and Physical Function, and Sleep Quality in Individuals with Multiple Sclerosis. Poster Presentation, KPTA Spring conference, Wichita KS, April 10-12, 2015.

Alqahtani AS, Mattlage AE, Karcher SA, Rosterman LR, Sisante JV, Abraham MG, **Billinger SA**. A Pilot Study to Determine the Relationship between Estimated Pre-Stroke Peak VO<sub>2</sub> and Functional Outcomes at Discharge in Acute Stroke. Poster Presentation, KPTA Spring Conference, Wichita, KS;

April 10-12, 2015.

Stillman AN, Aupperle RL, Sisante JFV, Wilson DR, **Billinger, SA**. Heart of a soldier: Relationships between combat exposure, PTSD, autonomic regulation and cardiovascular health in veteran populations. Presentation, Anxiety and Depression Association of America 35<sup>th</sup> Annual meeting. Miami, FL. April, 2015.

**Billinger SA**, Boyne P, Dunning K, MacKay-Lyons MM. Considering Cardio in Stroke Rehabilitation: Evaluation and Exercise Prescription after Stroke. Invited Platform Presentation, American Physical Therapy Association Combined Sections Meeting, Indianapolis, IN; February 4-7, 2015.

Mattlage AE, Karcher SA, Rippee MA, **Billinger SA**. Estimated Pre-Stroke Fitness Is Associated with Insulin-Like Growth Factor 1 During Acute Stroke. Poster Presentation, American Physical Therapy Association Combined Sections Meeting, Indianapolis, IN; February 4-7, 2015.

Mattlage AE, Karcher SA, Rippee MA, **Billinger SA**. Estimated MET Levels Using Accelerometers is Associated with Physical Performance Test at Discharge in Acute Stroke. Poster Presentation, American Physical Therapy Association Combined Sections Meeting, Indianapolis, IN; February 4-7, 2015.

Siengsukon, C, Aldughmi, M, Dowling, P; Bruce J, Lynch S, Billinger S. The benefits of aerobic exercise on fatigue, functional status, sleep, and cardiorespiratory fitness in individuals with multiple sclerosis: a pilot study. Poster Presentation, American Physical Therapy Association Combined Sections Meeting, Indianapolis, IN; February 4-7, 2015.

Aldughmi M, Dowling P, Bruce J, Lynch S, Billinger S, Siengsukon C. The association between subjective fatigue measured by the MFIS and objective measures of cognitive and physical fatigue and subjective sleep quality in individuals with multiple sclerosis. Poster Presentation, American Physical Therapy Association Combined Sections Meeting, Indianapolis, IN; February 4-7, 2015.

Sisante J-FV, Mattlage AE, Rippee MA, **Billinger SA**. Decreased Tidal Volume May Limit Cardiopulmonary Performance During Peak Exercise in Subacute Stroke. Poster Presentation, American Congress of Rehabilitation Medicine, Toronto, ON, Canada; October 7-11, 2014.

Mattlage AE, Herda A, Sisante JF, Lentz AA, Quinn E, Mathers A, Towell A, **Billinger SA**. Recumbent Stepper Submaximal Exercise Test to Predict Peak Oxygen Uptake in Older Adults. Platform Presentation, Kansas Physical Therapy Association, Wichita, KS; April 5, 2014.

**Billinger SA**. "Sensing" physical activity from acute stroke to community living, American Heart Association, International Stroke Conference, February 2013.

Sisante JF, Mattlage AE, Rippee MA, **Billinger SA**. Cardiorespiratory Response during Peak Exercise Testing in Subacute Stroke. Platform presentation, Kansas Physical Therapy Association, Spring Meeting, April 6, 2013.

Mattlage AE, Sisante JF, Rippee MA, **Billinger SA**. Use of Accelerometers to Assess Physical Activity in Acute Stroke, Platform presentation, Kansas Physical Therapy Association, Spring Meeting, April 6, 2013.

**Billinger SA**, Mattlage AE, Lentz AA, Rippee MA. Submaximal Exercise Test to Predict VO<sub>2</sub> Peak in Subacute Stroke. American Heart Association, International Stroke Conference, February 2013.

**Billinger SA**, Mattlage AE, Lentz AA, Rippee MA. Moderate-High Intensity Exercise Training Improves Submaximal and Peak Cardiorespiratory Response in Sub-acute Stroke. American Heart Association, International Stroke Conference, February 2013.

Coughenour ET, Harter GJ, Schifferdecker SL, Simpson MR, Rippee MA and **Billinger SA**. Benefits of Aerobic Exercise on Cardiovascular and Physical Function in Subacute Stroke. Platform Presentation, KPTA Spring Conference, Wichita, KS; March 30-April 1, 2012.

\*\*\* **2012 KPTA Scientific Inquiry Award for best platform presentation**\*\*\*

Pohl PS, **Billinger SA**, Lentz AA, Gajewski B. Predicting discharge placement after rehabilitation for a stroke: the role of demographics and clinical presentation. Poster Presentation, American Physical Therapy Association Combined Sections Meeting, February 2012.

Lentz AA, van Swearingen E, McClain M, Lentz AA, Good MB, **Billinger SA**. Recumbent Stepper Submaximal Exercise Test to Predict Peak Oxygen Uptake. Student Research Forum, KU Medical Center, April 2012.

\*\*\* **Awarded Best Student Presenter for Session and overall winner of School of Health Professions**

Ashenden A, Lentz AA, Mattlage AE, Rippee MA, and **Billinger SA**. Cardiovascular Regulation after an 8-week Aerobic Exercise Program in Subacute Stroke. Student Research Forum, KU Medical Center, April 2012.

E L, **Billinger SA**, Swerdlow RH. The effects of exercise training on mouse liver and brain energetic metabolism: lactate and activation of monocarboxylate transporter 2 (MCT2). Poster Presentation, American Physical Therapy Association Combined Sections Meeting, February 2012.

Vidoni ED, **Billinger SA**, Burns JM. Brief clinical tests predict 2-year decline in activities of daily living in early-stage AD. Poster Presentation, American Physical Therapy Association Combined Sections Meeting, February 2012.

van Swearington EL, McClain ME, Burcks KM, Good ME, **Billinger SA**. Recumbent Stepper Submaximal Exercise Test to Predict Peak Oxygen Uptake. Poster Presentation, ACSM Central States Meeting, Oct 2011.

Call E, Taylor JM and **Billinger SA**. Gender Differences in Hemodynamic and Cardiopulmonary Responses at Peak Oxygen Uptake in People with Chronic Stroke, platform presentation, Kansas Physical Therapy Association, Spring Meeting, April 9, 2011.

Lee C, Hamilton J, **Billinger SA**, and Vidoni EV. The Relationship Between Physical Performance Test and Cardiorespiratory Fitness, poster presentation, Kansas Physical Therapy Association, Spring Meeting, April 9, 2011.

**Billinger SA**, Lentz A, Gajewski BJ, Pohl, PS. Gender Does Not Predict Discharge Functional Independence Measure after Stroke. Poster Presentation, Kansas Physical Therapy Association, Spring Meeting, April 9, 2011.

- Ms. Angela Lentz, PT/PhD student working with Dr. Billinger, was the lead presenter for this conference. She was awarded the Scientific Inquiry Award for best poster presentation.

Lee C, Hamilton J, Vidoni EV, Billinger SA, Burns J. Physical Performance and Cardiorespiratory Fitness Testing in Alzheimer's Disease. Poster Presentation. Kansas Physical Therapy Association, April 2011.

**Billinger SA**, Lentz A, Gajewski BJ, Pohl, PS. Gender Does Not Predict Discharge Functional Independence Measure after Stroke. Poster Presentation, International Stroke Conference, February 2011.

**Billinger SA**. Cardiopulmonary and Vascular Regulation: The Implications for Stroke Rehabilitation, invited platform presentation, Kansas Physical Therapy Association, October, 2010.

**Billinger SA**. Measuring and Improving Cardiovascular Health in People Post-stroke, Invited Platform, Stroke Special Interest Group, Neurology Section of the APTA, February, 2010.

**Billinger SA**. Assessing and Improving Cardiovascular Health through Exercise in People Post-stroke, Physical Activity: Benefits and Mechanisms, Invited Platform, Florey Institute, Melbourne, Australia, November 2009.

**Billinger SA**. Future Trends in Stroke Rehabilitation, American Heart Association, 12<sup>th</sup> Annual Stroke Symposium, Kansas City, MO, October 2009.

Schreiner SR, Yuen WK, Hoover D, **Billinger SA**, and Loudon JK. Effects of Hand Position on Stationary Cycling Motor Performance during Graded Exercise Testing, Poster Presentation, American College of Sports Medicine Central States Meeting, October, 2009.

Yuen WK, Schreiner SR, **Billinger SA**, Hoover D, and Loudon JK. Validity of the Friel Anaerobic Threshold Test in Trained Cyclists, Poster Presentation, American College of Sports Medicine Central States Meeting, October, 2009.

**Billinger, SA**, Tseng, BY and Kluding, PM. The Effect of Single Limb Exercise Training on Femoral Artery Blood Flow in Chronic Stroke: A Case Study. Invited platform presentation, APTA Combined Sections Meeting, Neurology section, February 2008.

Macko, R, **Billinger, SA**, Rimmer, J. Exercise Prescription and Fitness Post-stroke: "Limitations with Exercise Testing and Prescription in People Post-stroke. Invited Symposium. International Stroke Conference, American Heart Association, Feb. 2007

**Billinger, SA**, Tseng, BY, and Kluding, PM. A Total Body Recumbent Stepper Exercise Test to Obtain VO<sub>2</sub> Peak in People with Stroke. Invited Platform Presentation, Student Section, ACSM Central States Meeting, Kansas City, MO, Oct 2006.

**Billinger, SA**. Aerobic Exercise Training in Individuals Post-Stroke. Invited Platform Presentation. AACVPR National Meeting, Charleston, WV, September 2006.

**Billinger SA**, Loudon JK and Gajewski B. Use of a Recumbent Stepper to Obtain Maximal Oxygen Consumption, American College of Sports Medicine, Platform Presentation, Student Section, Central States Annual Meeting, October 2005.

**Billinger, S**. "Neuroplasticity and Stroke Rehabilitation." Invited Speaker, Nursing and Rehab Professions Roundtable, 30<sup>th</sup> International Stroke Conference, American Stroke Association. New Orleans, LA, February 2-4, 2005.

**Billinger, S**. "Brain Injury: The Effects, Rehabilitation, and Exercise Retraining." Invited Platform Presentation. Central States Annual Meeting, American College of Sports Medicine. Kansas City, MO, October 1-2, 2004

**Billinger, S**, Gobert, D, Cho, J, Bouckhout, V. "Total Body Reciprocal Training Improves Hand Function in Chronic Stroke Survivors," Poster Presentation, American Stroke Association, 29<sup>th</sup> International Stroke Conference, San Diego, CA, February 2004.

John E, Gajewski B, Gobert D, Bouckhout V, **Billinger S**, and Cho, J. "Cardiovascular Response of Chronic Stroke Survivors to an Aerobic Exercise Training Program." Poster Presentation, Annual American College of Sports Medicine Conference, San Francisco, CA. June 2003.

Gobert D, Cho J, Bouckhout V, Kim S, **Billinger S**, Santos M, and Kapros I. "Can an Exercise Program with Total Body Reciprocal Training Improve Gait and Balance in the Chronic Stroke Survivor?" Poster Presentation, Conference of the International Society for Postural and Gait Research. Sidney, Australia. March 24, 2003.

**Billinger, S**, Gobert, D, Cho, J, Bouckhout, V. "Changes in Hand Function in Chronic Stroke Survivors Involved in an Intense Reciprocal Exercise Program." Poster Presentation American Physical Therapy Association Combined Sections Meeting, Tampa, FL. February 12-16 2003.

Cho, J, Gobert, D, Bouckhout, V, **Billinger, S**. "Cardiovascular Changes in Stroke Survivors in an Aerobic Exercise Program." Poster Presentation American College of Sports Medicine Central States Meeting. Embassy Suites Hotel, Kansas City, MO. October 11-12, 2002.

### **Peer Reviewed Scientific and Professional Presentations (Abstracts published)**

Maliski S, Hamilton-Reeves J, **Billinger SA**, Thrasher B, Wilhoite E, Enslin A. Staying Strong and Healthy: Minimizing Cardiovascular and Metabolic Side Effects of Androgen Deprivation Therapy. Poster Presentation. ONS Annual Congress. May 17-20, 2018. [abstract] *Oncology Nursing Forum*.

Sisante J-FV, Abraham MG, **Billinger SA**, Mittal MK. Ambulatory Status: A Protective Mechanism against Venous Thromboembolism in Acute Stroke Patients. Poster Presentation. International Stroke Conference, Nashville, TN; February 10-13, 2015. [abstract] *Stroke* 2015; 46:ATP299.

Sisante J-FV, Abraham MG, **Billinger SA**, Mittal MK. A Retrospective Cohort Study: Effect of Ambulation on Urinary Tract Infections in Acute Stroke Patients. Poster Presentation., International Stroke Conference, Nashville, TN; February 10-13, 2015 [abstract] *Stroke* 2015; 46:ATP304.

Mattlage AE, Karcher SA, Sisante JF, Lentz AA, Rippee MA, Abraham, MG, **Billinger SA**. Sedentary Time During the Acute Hospital Stay is Associated with Functional Performance. Poster Presentation, American Heart Association International Stroke Conference, San Diego, CA; Feb 12-14 2014.

**Billinger SA**, Mattlage AE, Lentz AA, Rippee MA. Aerobic Exercise Improves Walking Endurance and Cardiorespiratory Response during Exercise Testing in SubAcute Stroke. [abstract]. *Cardiopulmonary Physical Therapy Journal*; December 2012; 23(4): 26.

**Billinger, SA**, Schippers, K, Nordstrom, J, and Kluding, PM. The Effect of Single Limb Exercise Training on Femoral Artery Blood Flow and Oxygen Uptake in Chronic Stroke. [abstract]. *Cardiopulmonary Physical Therapy Journal*; 2008; 19(4): 123.

**Billinger, SA**, Kluding, PM, and Tseng, BY. Femoral Artery Blood Flow Velocity and Diameter Changes in the Hemiparetic Limb in Chronic Stroke. [abstract]. *Stroke*; 2008; 39(2):549.



**Billinger, SA**, Loudon, JK, and Gajewski, B. The Validity of a Recumbent Stepper for Obtaining Maximal Oxygen Consumption. [abstract]. *Cardiopulmonary Physical Therapy Journal*; 2007: 18(4):28.

**Billinger, SA**, Kluding, PM, and Tseng, BY. The Effects of Single Limb Exercise Training on Femoral Artery Blood Flow in Chronic Stroke: A Case Study. [abstract]. *Journal of Neurologic Physical Therapy*; 2007: 31(4): 202.

Kluding, PM, Tseng, BY, and **Billinger, SA**. Response to Exercise in People with Both Stroke and Diabetes. [abstract]. *Diabetes*; 2007: 56(S1):A638.

**Billinger, SA**, Tseng, B, and Kluding, PM. Use of a Recumbent Stepper to Obtain VO<sub>2</sub> Peak in People with Chronic Stroke. [abstract]. *Journal of Gerontology*. December 2006.

**Billinger, SA**, Loudon, JK, and Gajewski, B. The Validity of a Recumbent Stepper for Obtaining Maximal Oxygen Consumption. [abstract]. *Medicine and Science in Sports and Exercise*; 2006: 38(5):S363.

**Billinger SA**, Cho J, Bouckhout V and Gobert DV. Total body reciprocal training improves hand function in chronic stroke survivors [abstract]. *Stroke*; 2004:35(1):287.

**Billinger, S**, Gobert, D, Cho, J, Bouckhout, V. "Changes in Upper Extremity Function in Chronic Stroke Survivors Involved in Total Body Reciprocal Training [abstract]. *Arch Phys Med and Rehab*. 2003; 84(10):E11.

### **Invited Scientific and Professional Presentations (Abstracts not published; Not Peer Reviewed)**

**Billinger SA**. Training Fitness after Stroke: Putting It into Practice. 1.5 day post-congress workshop. Postgraduate Allied Health Institute, Singapore, May 22-23, 2018

**Billinger SA**. Aerobic Exercise Testing and Prescription in Neurological Patients and Older Adults, Postgraduate Allied Health Institute, Singapore, May 22, 2018.

**Billinger SA**. Entering into the Physiotherapy Research Career Track. Singapore-International Physiotherapy Congress 2018 and Singapore Physiotherapy Association, May 20, 2018.

**Billinger SA**. Going with the Flow: New Insight to Cerebrovascular Response during Exercise. Singapore-International Physiotherapy Congress 2018 and Singapore Physiotherapy Association, May 20, 2018.

**Billinger SA**. Cardiovascular Regulation, VEGF and Pre-Stroke Fitness. Singapore-International Physiotherapy Congress 2018 and Singapore Physiotherapy Association, May 19, 2018.

**Billinger SA**. Aerobic Exercise Post-Stroke: Evaluation and Exercise Prescription after Stroke. Invited Conference Workshop (Full Day). Singapore-International Physiotherapy Congress 2018 and Singapore Physiotherapy Association, May 19, 2018.

**Billinger SA**. Aerobic Exercise Post-Stroke: Evaluation and Exercise Prescription after Stroke. Invited Conference Workshop (Full Day). Hong Kong, Hong Kong Physiotherapy Conference, October 30, 2017

**Billinger SA**. Cardiovascular Regulation, Vascular Endothelial Growth Factor and Fitness Early after

Stroke. Invited Oral Presentation. Hong Kong. Hong Kong Physiotherapy Conference, October 28-29, 2017

**Billinger SA.** Cerebrovascular Reserve Capacity: A Potential Biomarker for Brain Health. Invited Oral Presentation. Hong Kong. Hong Kong Physiotherapy Conference, October 28-29, 2017

**Billinger SA.** Cerebrovascular Reserve Capacity: A Potential Biomarker for Brain Health. Invited Oral Presentation. Center for Brain Research, University of Auckland, Auckland, NZ, October 26, 2017.

**Billinger SA.** Stroke Recovery: Importance of Exercise. Invited Public Symposium for the Neurological Foundation for New Zealand. October 25, 2017.

**Billinger SA.** Exercise Is Medicine: Considering the Evidence for Exercise in PT practice. Invited Oral Presentation. American Physiotherapy Conference, Sydney, Australia; October 19-21, 2017

**Billinger SA.** Cerebrovascular Reserve Capacity: A Potential Biomarker for Brain Health. Invited Oral Presentation. American Physiotherapy Conference, Sydney, Australia; October 19-21, 2017

**Billinger SA.** Evaluation and Exercise Prescription after Stroke. Invited Conference Workshop, American Physiotherapy Conference, Sydney, Australia; October 18, 2017

**Billinger SA.** Why Physical Activity Should Be at the Heart of Stroke Rehabilitation. Stroke Council Lecture Award. Invited Lecture. American Heart Association Scientific Sessions, New Orleans, LA; November 11-15, 2016.

**Billinger SA.** Exercise Is Medicine: Secondary Stroke Prevention. American Stroke Foundation. February 3, 2016

**Billinger SA.** Exercise Is Medicine: Secondary Stroke Prevention. St. Luke's Hospital Stroke Support Group. May 12, 2016

**Billinger SA.** Evidence for Incorporating Aerobic Exercise into Stroke Recovery. Kansas City Stroke Rehabilitation Conference, Kansas City, KS, April 4, 2015.

**Billinger SA.** Physical Activity during the Acute Hospital Stay. Update in Stroke Care 2013, Hays Medical Center, May 3, 2013.

**Billinger SA,** Eng J, Tang A, Macko RF. Changing Practice to Improve Cardiovascular Health and Promote Active Lifestyles after Stroke. Invited Symposium, American Congress of Rehabilitation Medicine. October 2012.

**Billinger SA,** Scheets P, Burnfield J. Action Potential: How and why to get involved with the Neurology Section. Platform Presentation, APTA CSM, February 2012.

**Billinger SA,** Colgrove Y, Sabus C, Sharma N, and VanHoose LD. Beyond SOAP Notes: Use of an Electronic Health Record System in a Case-based Curriculum to Develop Student Competencies for Contemporary Health Care Delivery, Platform Presentation, American Physical Therapy Association, February 2011.

Call E, Taylor JM and **Billinger SA.** Gender Differences in Hemodynamic and Cardiopulmonary Responses at Peak Oxygen Uptake in People with Chronic Stroke, Poster Presentation, Student Research Colloquium, Department of Physical Therapy and Rehabilitation Science, KUMC, November

2010.

Lee C, Hamilton J, **Billinger SA**, and Vidoni. The Relationship Between Physical Performance Test and Cardiorespiratory Fitness, Poster Presentation, Student Research Colloquium, Department of Physical Therapy and Rehabilitation Science, KUMC, November 2010.

**Billinger, SA**, Lentz A, Gajewski BJ, and Pohl PS. Gender Does Not Predict Discharge Functional Independence Measure after Stroke, Poster Presentation, Faculty Research Day and Poster Session, KUMC, November 2010.

**Billinger SA**. Cardiopulmonary and Vascular Regulation: The Implications for Stroke Rehabilitation. Invited Presentation, Kansas Physical Therapy Association, October 2010.

**Billinger SA**. Traumatic Brain Injury: Effects, Recovery and Retraining, invited presentation for Distinguished Lecture Series, Southeast Missouri State University, March 2010.

**Billinger SA**. Altered Cardiovascular Function after Stroke. Seminars in Physiology, sponsored by the Department of Molecular and Integrative Physiology, January 2010.

**Billinger SA**. Cardiorespiratory and Vascular Function after Stroke. Invited Inservice Presentation. The Rehabilitation Institute of Kansas City, December 2009.

**Billinger SA**. Assessing and Improving Cardiovascular Health through Exercise in People Post-stroke, Physical Activity: Benefits and Mechanisms, Invited Platform, Florey Institute, Melbourne, Australia, November 2009.

**Billinger SA**. Future Trends in Stroke Rehabilitation, American Heart Association, 12<sup>th</sup> Annual Stroke Symposium, Kansas City, MO, October 2009.

**Billinger, SA**. The Effect of Single Limb Exercise Training on Femoral Artery Blood Flow in Chronic Stroke. KUMC Student Research Forum, Platform Presentation, April, 2008.

**Billinger, SA**. Use of Recumbent Stepper to Obtain VO<sub>2</sub> Peak in Chronic Stroke, KUMC Student Research Forum, Platform Presentation, (**Cardiovascular Biology section winner**), April, 2007.

Tseng, BY, **Billinger, SA**, and Kluding, PM. Relationship between Post-stroke Fatigue, Aerobic Fitness, Motor Control and Depression: A Pilot Study. Poster presentation. 4<sup>th</sup> Annual Capitol Graduate Research Summit, Topeka, KS, March 2007

**Billinger, S**. Use of Recumbent Stepper to Obtain Maximal Oxygen Consumption, KUMC Student Research Forum, Platform Presentation, (**Cardiovascular Biology section winner**), April, 2005.

**Billinger, SA**, "Future of Stroke Recovery Training." Invited Platform Speaker, Communicating the Message of Physical Activity to the Older Adult, sponsored by the International Council on Active Aging, Orlando, FL., December 4-6, 2003.

**Billinger, S**, Cho, J, Bouckhout, V, Gobert, D. "Changes in Hand Function in Chronic Stroke Survivors Involved in an Intense Reciprocal Exercise Program." Poster Presentation KUMC Student Research Forum. April 2003.

**Billinger, S.A.:** “Stroke Research and Wellness Programming,” Invited Clinical Presentation, KU Medical Center Area Health Education Center, Professional Stroke Conference, Hays, KS, May 10, 2002.

**Billinger, S.A.:** “Stroke Rehabilitation and Research,” Invited Presentation and Round Table Discussion, American Heart Association Regional Volunteer Recognition Conference, August 2001.

**Billinger, S.A.:** “Stroke Rehabilitation,” Invited Presentation, Northwest Kansas Area Agency on Aging Annual Board Meeting, August 2001.

Cho, J.K., **Billinger, S.A.:** “The Effects on Aerobic Training in Chronic Stroke Survivors with Physiological, Sensory Organization, Balance, and Gait Measurements,” Invited Clinical Presentation, Central States American College of Sports Medicine (ACSM) Conference, Oct 2000.

### **Continuing Education Workshops Conducted/Organized**

Certified Exercise Expert in the Aging Adult (CEEAA), Section on Geriatrics, APTA. KU Medical Center PT Department was the host site for the 3-course series. July, August, September 2012. Each course is 15 contact hours. **Billinger SA (Coordinator with Section on Geriatrics and KU Medical Center)**

“Exercise Is Medicine 2012. KUMC, Kansas City, KS. Sponsorships from Rockhurst University, University of Kansas Medical Center and Central States Chapter of American College of Sports Medicine. 6 CEUs for PT; 7 CEU for ACSM Professionals. May 2012. **Billinger, SA (Chair)**

“Exercise Is Medicine: A Prescription for Better Health.” KUMC, Kansas City, KS. Sponsorships from Rockhurst University, University of Kansas Medical Center and Central States Chapter of American College of Sports Medicine. 8 CEUs for PT; 8 CEU for ACSM Professionals, May 2010. **Billinger, SA (Chair)**

**Billinger, SA.** Aerobic Exercise Training in Individuals Post-Stroke. Invited Platform Presentation, sponsored by KUMC AHEC, Hays, KS September 2006.

**Billinger, SA.** Traumatic Brain Injury. Invited Platform Presentation, sponsored by KUMC AHEC, Hays, KS September 2006.

**Billinger, S,** Brown, T, and Smith, K. “Community Reintegration: A Transdisciplinary Rehab Program for Individuals with Traumatic Brain Injury.” Evidence-Based Practices: Strategies to Improve Healthcare, Hays Medical Center and Fort Hays State University, Hays, KS, May 4, 2005.

**Billinger, S.** “Benefits of Total Body Reciprocal Training in Physical Therapy.” Invited Platform Presentation. American Retirement Corporation, Dept of Rehabilitation. Nashville, TN, June, 2004.

**Billinger, S.** “Total Body Reciprocal Training Improves Hand Function in Chronic Stroke Survivors.” Invited Platform Presentation. “Evidence-Based Practice: Strategies to Improve Healthcare,” sponsored by Hays Medical Center and Fort Hays State University, Hays, KS, May 5, 2004.

**Billinger, S.A.:** “Stroke Research and Wellness Programming,” Invited Presentation, Betsy Johnson Hospital Rehabilitation Department, Dunn, NC, March 2002.

**Billinger, S.A.:** “Stroke Wellness Programs and Research,” Invited Presentation, NuStep Inc., Ann Arbor, MI, October 2001.

### **Membership in Scientific/Professional Organizations**

- Member/Fellow, American Heart Association, Stroke Council, 2004- present
  - Chair, Stroke Rehabilitation and Recovery Committee, 2013-2016
  - Vice-Chair, Stroke Rehabilitation and Recovery Committee, 2012-2013
- Member, APTA Section Member of Cardiovascular and Pulmonary, 2008- present
  - Research Committee Member
- Member, APTA Section Member of Neurology and Geriatrics, 2002- present
  - Research Committee Member, 2012-current
  - Nominating Committee Chair, 2011-2012, Neurology Section
  - Nominating Committee, 2009-2011, Neurology Section
- Member, APTA Section Member of Research, 2010- present
- Member, Kansas Physical Therapy Association, 2002- present
  - Research Committee, 2009-2012
- Member, Brain Injury Association, 2004- present
- Member, American College of Sports Medicine, 1997- present

## **Positions Held**

### **University of Kansas Medical Center**

Student Union Travel Award Committee Member, 2007-2012

DPT Academic Review Committee (Ad-hoc), 2008

Clinical Research Advisory Council, 2010-present

School of Health Professions Representative, Executive Council for Women in Medicine and Science (WIMS), 2010- 2012

- Program Committee, WIMS, 2010-2011
- President, 2016-2017

School of Health Professions Academic Affairs Committee, 2011- 2015.

### **Kansas Physical Therapy Association (KPTA)**

Research Committee Member, 2008-2012

### **American Physical Therapy Association (APTA)**

Neurology Section Research Committee, 2012- present

Nominating Committee, Neurology Section 2009-2012

- Chair of Nominating Committee, 2011-2012

Research Committee, Cardiovascular and Pulmonary Section

Invited Committee Member for the Neurology Section Strategic Planning Meeting, 2011-2012

### **American Heart Association**

Writing Group Chair, revision of the Scientific Statement for Physical Activity and Exercise Recommendations for Stroke Survivors, published May 2014

Nursing and Rehab Professions Committee, 2010- 2012

Rehabilitation and Recovery Committee, 2010- present

- Vice Chair, 2012-2013
- Chair, 2013-2015
  - Invited to serve a 1-year extension 2015-2016
- Past Chair, 2016-2018

Nursing and Rehabilitation Professionals Committee, 2004 – 2006

Abstract Reviewer for International Stroke Conference, 2004-2007

Chairperson for Operation Stroke Committee for Ellis County 2001-2002

Operation Heartbeat Committee Member, 2000-2002

## Other

National Institutes of Health, Clinical and Translational Science Award SIG for Women in Clinical and Translational Research, 2011-2014.

Invitation by Dr. Marilyn MacKay-Lyons to participate in the development of the Canadian Best Practice Guidelines for Exercise After Stroke, Nova Scotia, CA, September 2010.

Editorial Board Member, *Journal of Neurologic Physical Therapy*, 2010-present

Department of Health and Human Services, National Physical Activity Plan, Healthcare sector, Committee Member, 2009-2015.

Special Reviewer, *Psychological Reports, Perceptual and Motor Skills*, 2009

Special Reviewer, *Rehabilitation Nursing*, 2009

2008- Current Manuscript Reviewer

- *Archives of Physical Medicine and Rehabilitation*
- *Topics in Stroke Rehabilitation*
- *Cardiopulmonary Physical Therapy Journal*
- *Clinical Rehabilitation*
- *Medicine in Science and Sports and Exercise (MSSE)*
- *Journal of Neurologic Physical Therapy*
- *Physical Therapy*
- *Journal of Rehabilitation Research and Development*
- *Stroke Research and Treatment*
- *Journal of Applied Physiology*
- *European Journal of Applied Physiology*
- *Neurorehabilitation and Neural Repair*

## Honors and Awards

- 2018 Irma Ruebling Distinguished Speaker Series, Invited Lecture, St. Louis University, (March 22, 2018)
- 2016 Stroke Council Lecture Award, American Heart Association
- 2016-2019 Edward and Thelma Wohlgemuth Faculty Scholar, KU Medical Center
- First faculty presented this award at KU Medical Center
- 2016 Chancellor's Distinguished Teaching Award, University of Kansas
- 2016 Stata Norton Distinguished Teaching Award, School of Health Professions, KU Medical Center
- 2015 Faculty Investigator Research Award, KU Medical Center
- 2014 Margaret L. Moore Award for Outstanding New Academic Faculty Member, American Physical Therapy Association
- 2013 Early Career Achievement In Health Professions Alumni
- 2012 Golden Synapse Award for outstanding manuscript published in the *Journal of Neurologic Physical Therapy*.
- 2012 National Institutes of Health Student Loan Repayment Program, Clinical Research, 2012-2014.
- 2009-2010 U. S. Department of Health and Human Services, Health Resources and Services Administration, Faculty Loan Repayment Program for Individuals with a Disadvantaged Background, \$40,000.00
- 2009 Dorothy Briggs Memorial Scientific Inquiry Award (APTA, June 2009) for manuscript, Modified Total Body Recumbent Stepper Exercise Test (mTBRS-XT) to Obtain VO<sub>2</sub> Peak in People With Chronic Stroke, 2008. *Physical Therapy*, 88(10): 1188-1195.

2007 Bittel Family Leadership and Scholarship Award  
 2005, 2007 Outstanding Student Research Award, Cardiovascular Biology section, KUMC Student Research Forum  
 2004-present Fellow, American Heart Association (FAHA) Stroke Council  
 2003 Scholarship for Health Professionals from Disadvantaged Background  
 2003 Outstanding PT/PhD student- Dept of PT and Rehab Sciences  
 2001-2002 Outstanding Student Award, College of Health and Life Sciences, FHSU  
 2001-2002 Torch Award Nominee for Outstanding Graduating Senior, FHSU  
 2001,2002 Elizabeth Barbour Award for Outstanding Female in Health, Human Performance, FHSU  
 2000,2001 Top Fundraiser American Heart Walk, American Heart Association, Hays, KS  
 2000-2002 Committee Chairperson Operation Stroke for Northwest Kansas- American Heart Association

**Current Teaching Responsibilities in the DPT entry-level program**

PTRS 825 Exercise Physiology 3 credit hours with laboratory (2008-2015) Course Coordinator  
 PTRS 826 Cardiopulmonary Physical Therapy 5 credit hours with laboratory (2009-2018) Course Coordinator  
 PTRS 826 Cardiopulmonary Physical Therapy 5 credit hours with laboratory (2019-) Instructor  
 PTRS 852 Neurologic Physical Therapy I, Lecture for Traumatic Brain Injury (2007-2016)  
 PTRS 853 Neurologic Physical Therapy II, Lecture for Traumatic Brain Injury Rehabilitation (2016, 2017)  
 PTRS 860 Evidence-based Research Practicum I (2008-current)  
 PTRS 861 Evidence-based Research Practicum II (2008-current)

**Current Teaching Responsibilities in the PhD Program in Rehabilitation Science**

PTRS 889 Grant Writing, Panelist/Lecture for Mentored Training Awards (2012-current)  
 REHS 864 Introduction to Rehabilitation Science, Lecture for Cardiovascular and Pulmonary Rehabilitation (2016, 2018)

**Teaching Outside of School of Health Professions**

1 hour seminar series for Physical Medicine and Rehabilitation Medicine residents (2012-2017)  
 PSYC 834: Clinical Health Psychology III Physical Aspects of Health and Disease, 1-hour lecture (2016, 2018)